



Revised Comprehensive Conservation Plan and Environmental Impact Statement

Kodiak National Wildlife Refuge



U.S. Fish and Wildlife Service Mission Statement

The mission of the U.S. Fish and Wildlife Service is working with others to conserve, protect, and enhance fish, wildlife, plants, and their habitats for the continuing benefit of the American people.



Refuge Mission Statement

The mission of the National Wildlife Refuge System is to administer a national network of lands and waters for the conservation, management, and, where appropriate, restoration of the fish, wildlife, and plant resources and their habitats within the United States for the benefit of present and future generations of Americans.

—National Wildlife Refuge System Improvement Act of 1997

The comprehensive conservation plan details program planning levels that are substantially greater than current budget allocations and, as such, is for strategic planning and program prioritization purposes only. This plan does not constitute a commitment for staffing increases or funding for future refuge-specific land acquisitions, construction projects, or operational and maintenance increases.

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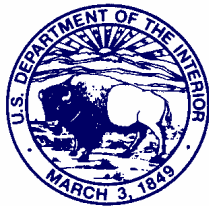
Kodiak National Wildlife Refuge

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Dear Reader:

The Revised Comprehensive Conservation Plan (Plan) and Environmental Impact Statement (EIS) will guide management of Kodiak National Wildlife Refuge for the next 15 years. This Plan outlines four management alternatives, including the U.S. Fish & Wildlife Service's preferred alternative, and presents the Service's evaluation of the environmental consequences of each of those alternatives.

To develop this final Plan, we analyzed and considered the comments received on the Draft Plan, which was released in October 2004.

The Plan provides management direction for activities and uses of Kodiak Refuge, goals and objectives for refuge programs, and compatibility determinations for the current uses of the Refuge. The major change between the Draft Plan and this final Plan is that we modified the amount of refuge land proposed for reclassification to Minimal Management. Rather than only 12, 321 acres under Moderate Management, Alternative D (the Preferred Alternative) now includes 31, 521 acres under Moderate Management. We clarified the role of public use regulations under Alternatives B, C, and D if voluntary use guidelines are not effective; clarified the differences between current and proposed management related to introduction/reintroduction of fish and wildlife species; and added aquaculture support facilities to the list of possible uses of the Refuge (Tables 2-2 and 2-5). We have revised the language addressing Service jurisdiction over waters within the boundaries of Kodiak Refuge.

We will publish a Record of Decision no sooner than 30 days after release of this final Plan. The Record of Decision will present the rationale for selecting the course of action that will be followed by the Refuge.

Direct comments and requests for further information to:

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Request copies of the full document (on CD-ROM) or the Executive Summary (printed) through the same sources. You may also view the Plan online at <http://alaska.fws.gov/nwr/planning/plans.htm>.

*We thank everyone who participated in the planning and public involvement process.
Your comments helped us prepare a better plan for the future of Kodiak Refuge.*

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Abbreviations and Acronyms

ADF&G	Alaska Department of Fish & Game
AEIS	Alaska Economic Information System
AKI	Akhiok-Kaguyak, Inc.
ANCSA	Alaska Native Claims Settlement Act
ANHA	Alaska Natural History Association
ANILCA	Alaska National Interest Lands Conservation Act
BLM/AFS	Bureau of Land Management/Alaska Fire Service
CAC	Citizens Advisory Committee (for the Kodiak Archipelago Bear Conservation and Management Plan)
CFR	Code of Federal Regulations
cfs/mi ²	cubic feet per second per square mile
DCED	Alaska Department of Community and Economic Development
DNR	Alaska Department of Natural Resources
EIS	environmental impact statement
EO	executive order
EVOS	<i>Exxon Valdez</i> oil spill
FAA	Federal Aviation Administration
FTE	full-time equivalent
GMU	game management unit
ISER	Institute for Social and Economic Research (University of Alaska)
KEA	Kodiak Electric Association
KMA	Kodiak [Fishery] Management Area
KRAA	Kodiak Regional Aquaculture Association
KUBS	Kodiak Unified Bear Subcommittee
MMS	Maintenance Management System
NEPA	National Environmental Policy Act
OHNC	Old Harbor Native Corporation
ORV	off-road vehicle
PLO	public land order
RAWS	remote automated weather stations
RIT	refuge information technician
RNA	research natural area
ROD	record of decision
RONs	Refuge Operational Needs System
Service	U.S. Fish & Wildlife Service
System	National Wildlife Refuge System
Trustee Council	<i>Exxon Valdez</i> Oil Spill Trustee Council
USGS	U.S. Geological Survey

Glossary

air taxi operator or air transporter	A person who transports people, equipment, supplies, harvested fish and wildlife products, or other personal property by means of aircraft for compensation or with the intent or agreement to receive compensation; a transporter who provides commercial transportation services by means of aircraft. Must have a special use permit to operate on a refuge.
allowed	Activity, use, or facility is allowed under existing National Environmental Policy Act (NEPA) analysis, a specific compatibility determination, and compliance with all applicable laws and regulations of the Service, other federal agencies and the State of Alaska.
<i>not allowed</i>	Activity, use, or facility is not allowed.
alternatives	Different ways to resolve issues, achieve refuge purposes, meet refuge goals, and contribute to the mission of the National Wildlife Refuge System. Alternatives provide different options to respond to major issues identified during the planning process.
<i>No-Action Alternative</i>	In the context of a comprehensive conservation plan, this is the current management direction. With this alternative, no change from the current comprehensive conservation plan would be implemented.
<i>Preferred Alternative</i>	A proposed action in the NEPA document for the comprehensive conservation plan identifying the alternative that the Service believes best achieves planning unit purposes, vision, and goals; helps fulfill the Refuge System mission; maintains and, where appropriate, restores the ecological integrity of each refuge and the Refuge System; addresses the significant issues and mandates; and is consistent with principles of sound fish and wildlife management.
angler	Any person who participates in recreational fishing.
angler hour	One person fishing for one hour with recreational fishing gear (e.g., rod and reel).
archaeological resource	Any material remains of past human life or activities that are of archaeological interest. Materials that are capable of providing understanding of past human behavior, cultural adaptation, and related topics through the application of scholarly or scientific techniques.
authorized	Activity, use, or facility allowed upon issuance of a special use permit or other authorization.
big-game guide	See guide; a person who is licensed by the State of Alaska to provide services, equipment, or facilities to a big-game hunter in the field. A big-game guide accompanies or is present with, personally or through an assistant, the hunter in the field. Must have a special use permit to operate on a refuge.

big-game outfitter	See outfitter; provides said services to a big-game hunter in the field. Neither accompanies nor is present with the hunter in the field. Must have a special use permit to operate on a refuge.
biological diversity	The variety of life, including the variety of living organisms, the genetic differences among them, and the communities in which they occur (Service Manual 602 FW 1.6).
biological integrity	Biotic composition, structure, and functioning at the genetic, organism, and community levels consistent with natural conditions, including the natural biological processes that shape genomes, organisms, and communities (USFWS, 602 FW 1.6).
categorical exclusion (CE, CX, CATEX, CATX)	A category of actions that do not individually or cumulatively have a significant effect on the human environment and have been found to have no such effect in procedures adopted by a federal agency pursuant to the National Environmental Policy Act (40 CFR 1508.4).
commercial recreational uses	Recreational uses of lands, waters, and resources for business or financial gain; includes guided recreational fishing, guided recreational hunting, other guided recreation, and air taxi services.
commercial visitor service	Any service or activity made available for a fee, commission, brokerage, or other compensation to persons who visit a refuge, including such services as providing food, accommodations, transportation, tours, and guides.
compatible use	A proposed or existing wildlife-dependent recreational use or any other use of a refuge that, based on sound professional judgment, will not materially interfere with or detract from the fulfillment of the mission of the System or the purposes of the refuge (Service Manual 603 FW 2.6).
compatibility determination	A written determination signed and dated by the refuge manager and the Service regional chief signifying that a proposed or existing use of a national wildlife refuge is a compatible use or is not a compatible use. The director of the Service makes this delegation through the regional director (Service Manual 603 FW 2.6).
comprehensive conservation plan	A document that describes the desired future conditions of a refuge or planning unit and provides long-range guidance and management direction to achieve the purposes of the refuge; to help fulfill the mission of the Refuge System; to maintain and, where appropriate, restore the ecological integrity of each refuge and the Refuge System; to help achieve the goals of the National Wilderness Preservation System; and to meet other mandates (Service Manual 602 FW 1.6).
consumptive use	Use of a refuge resource that removes the resource from the refuge (e.g., killing an animal to eat, catching and keeping fish, harvesting berries or plants, or removal of mineral or other specimens).
cultural resources	Fragile, nonrenewable properties, including any district, site, building, structure, or object significant in American history, architecture, archaeology, engineering, or culture. These resources

	are significant for information they contain or the associations they have with past people, events, or life ways (USFWS 1992).
ecological integrity	The integration of biological integrity, natural biological diversity, and environmental health; the replication of natural conditions (Service Manual 602 FW 1.6).
ecosystem	A biological community functioning together with its environment as a unit.
ecotourism	Travel to natural areas that conserves the environment and sustains the well-being of local people.
effects (wildlife and habitat)	
<i>long-term effects</i>	Effects occurring after or lasting longer than five years after implementation of the action.
<i>major effects</i>	Affecting a regional or local population of a species, or its habitat, sufficiently to cause a change in abundance or a change in distribution beyond which natural recruitment is not likely to return the population to its former abundance within several generations.
<i>minor effects</i>	Affecting the survival, reproduction, distribution, or behavior of a specific group of individuals of a population in a localized area for one generation or less without affecting the regional population. Habitat composition and structure remain unchanged; habitat quality, however, may be affected by indirect actions (e.g., disturbance or displacement affecting a specific group of individuals that may result in altered use of an area).
<i>moderate effects</i>	Affecting a local population, or habitat quality and composition in a localized area, sufficiently to cause a change in abundance or distribution for more than one generation, but unlikely to affect the integrity of the regional population over the long term.
<i>negligible effects</i>	Temporary effects that do not result in a change in the survival, reproduction, distribution, or behavior of individuals. The ability of the habitat to support populations would remain unchanged (e.g., temporary disturbance of a specific group of individuals that does not result in a change in use of an area).
<i>short-term effects</i>	Effects are anticipated to occur within five years from implementation of the action.
environmental assessment	A concise public document that provides a sufficient analysis for determining whether to prepare an environmental impact statement (EIS) or a finding of no significant impact. It also aids an agency's compliance with NEPA when no EIS is necessary (40 CFR 1508.9).
environmental health	Abiotic composition, structure, and functioning of the environment consistent with natural conditions, including the natural abiotic processes that shape the environment (Service Manual 602 FW 1.6).

environmental impact statement

A detailed written statement, required by section 102(2)(C) of the National Environmental Policy Act (NEPA), analyzing the environmental impacts of a proposed action, adverse effects of the project that cannot be avoided, alternative courses of action, short-term uses of the environment versus the maintenance and enhancement of long-term productivity, and any irreversible and irretrievable commitment of resources (40 CFR 1508.11).

escapement

The number of adult fish returning to a stream that escape mortality from harvest and natural attrition and comprise a spawning population.

field

An area outside of established year-round dwellings, businesses, or other development usually associated with a city, town, or village; does not include permanent hotels or roadhouses on the state road system or state or federally maintained airports. Has the same meaning as used by the State of Alaska defined in Alaska Statute 8.54.790.

fishery enhancement

The process of establishing a fish population of stock at levels above those that would exist solely from utilizing the available habitat; introducing a species that is not native to a river or drainage.

fishery restoration

Any management action that increases fishery resources to allow full use of available habitat or to reach a population level based on historical biological data. Although the goal of restoration is self-sustaining populations, situations may exist in which some form of fishery management or facilities could continue indefinitely.

fishing guide

See guide; provides said services to an angler engaged in fishing.

floating facilities

Floathomes, floatcamps, floating lodges, floating caretaker facilities (including mariculture), floating recreation facilities, and other floating residential or commercial facilities located on shorelands, tidelands, or submerged lands.

goal

A descriptive, open-ended, and often broad statement of desired future conditions that conveys purposes but does not define measurable units (Service Manual 620 FW 1.6).

guide

A person who provides—for compensation or with the intent or agreement to receive compensation—assistance, services, equipment or facilities to a person engaged in any outdoor recreational activity and accompanies or is present with the visitor, either personally or through an assistant, during any portion of their trip. Has the same meaning as used by the State of Alaska as defined in Alaska Statute 8.54.790. Must have a special use permit to operate on a refuge.

habitat

The physical and biological resources required by an organism for its survival and reproduction; these requirements are species-specific. Food and cover are major components of habitat and must extend beyond the requirements of the individual to include a sufficient area capable of supporting a viable population.

haul-out	A beach or other terrestrial coastal location used by marine mammals on a regular basis.
helicopter use for recreation access	Use of helicopters for other than official government management activities, search and rescue, or other authorized activities.
human food-conditioning	A behavior learned when an animal receives food, fish, or garbage from people.
human habituation	Decrease in natural responsiveness upon repeated exposure to a nonthreatening, human stimulus.
hunting guide	See guide; provides said services to a hunter in the field.
issue	Any unsettled matter that requires a management decision (e.g., a Service initiative, opportunity, resource management problem, a threat to the resources of the unit, conflict in uses, public concern, or the presence of an undesirable resource condition) (Service Manual 602 FW 1.6).
Kodiak Refugium	The lowland area of the southwestern section of Kodiak Island is commonly referred to as the Kodiak Refugium, the only area of Kodiak Island that was not covered by glaciers during the Pleistocene Era, about 10,000 years ago. This area is considered unique to the Island, with vegetation similar to that found on the Arctic and Bering sea coasts. It is not known whether or not species endemic to the Island may be found there.
land use permit	An authorization issued by the State of Alaska for use of state land. Permits are issued by the Alaska Department of Natural Resources, Division of Mining, Land, and Water.
Leave No Trace	Principles of outdoor recreation designed to minimize effects on the natural environment and other visitors. These principles are (1) plan ahead and prepare, (2) travel and camp on durable surfaces, (3) dispose of waste properly, (4) leave what you find, (5) minimize campfire impacts, (6) respect wildlife, and (7) be considerate of other visitors (http://www.lnt.org , accessed May 11, 2004).
likelihood	
<i>low</i>	Effects are typically not expected, but could occur under unusual conditions.
<i>medium</i>	Effects are not expected to occur in the majority of instances.
<i>high</i>	Effects are anticipated to occur as a result of implementing the action.
marine transporter	See transporter; a vessel operator licensed by the U.S. Coast Guard who provides water transportation services for people.
minimal requirements	The concept of “minimum requirements”—the minimum action or instrument necessary to successfully, safely, and economically accomplish wilderness management objectives—applies to all activities, uses, and facilities allowed in designated Wilderness.

national wildlife refuge	A designated area of land, water, or an interest in land or water within the National Wildlife Refuge System; does not include coordination areas. Find a complete listing of all units of the Refuge System in the current Annual Report of Lands Under Control of the U.S. Fish and Wildlife Service (USFWS 2006).
native species	A species, subspecies, or distinct population that occurs within its natural range or natural zone of potential dispersal (i.e., the geographic area the species occupies naturally or would occupy in the absence of direct or indirect human activity or an environmental catastrophe). This definition recognizes that ecosystems and natural ranges are not static; they can and do evolve over time. Thus a species may naturally extend its range onto (or within) a refuge and still be considered native.
navigable waters	Under federal law, for the purpose of determining ownership of submerged lands beneath inland waterbodies not reserved at the date of statehood, navigable waters are waters used or susceptible to being used in their ordinary condition as highways of commerce over which trade and travel are or may be conducted in the customary modes of trade and travel on water. In situations where navigability and the ownership of submerged lands are disputed, the final authority for determining navigability rests with the federal courts.
National Environmental Policy Act (NEPA)	This act, promulgated in 1969, requires all federal agencies to disclose the environmental effects of their actions, incorporate environmental information, and use public participation in the planning and implementation of all actions. Federal agencies must integrate NEPA with other planning requirements and must prepare appropriate NEPA documents to facilitate better environmental decision-making (40 CFR 1500). The law also established the Council on Environmental Quality to implement the law and to monitor compliance with the law.
nonconsumptive uses	Recreation activities (e.g., hiking, photography, wildlife observation) that do not involve the taking or catching of fish, wildlife, or other natural resources.
noncommercial recreational uses	Recreational uses of lands, waters, and resources not for business or financial gain, including recreational fishing and hunting, boating and floating, camping, hiking, photography, and sightseeing.
nonnative species	A species, subspecies, or distinct population that has been introduced by humans (intentionally or unintentionally) outside its natural range or natural zone of potential dispersal.
objective	A concise statement of what we want to achieve, how much we want to achieve, when and where we want to achieve it, and who is responsible for the work. Objectives derive from goals and provide the basis for determining strategies, monitoring refuge accomplishments, and evaluating the success of strategies. Objectives should be attainable, time-specific, and measurable (Service Manual 602 FW 1.6).

ordinary high-water mark	The line on the shore established by the fluctuations of water and indicated by physical characteristics such as a clear, natural line impressed on the bank, shelving, changes in the character of soil, destruction of terrestrial vegetation, the presence of litter and debris, or other appropriate means that consider the characteristics of the surrounding area (33 CFR 328.3[e]).
outfitter	A person who provides—for compensation or with the intent or agreement to receive compensation—services, equipment or facilities to a person engaged in hunting, fishing, or any other outdoor recreational activity, but neither accompanies nor is present with the person in the field. Has the same meaning as used by the State of Alaska as defined in Alaska Statute 08.54.790. Must have a special use permit to operate on a refuge.
permanent base camp	A camp with permanent or semipermanent structures that serves as a base of operations for recreational fishing or hunting, research, or other uses. In general, permanent base camps are larger and provide more comfort and amenities than do temporary base camps. The facilities cannot be readily dismantled or moved and normally remain in place from year to year.
primitive tent camps	Portable camps, normally consisting of small tents, used by unguided and guided visitors. They usually remain in place when in use and then are disassembled and removed.
proposed action	The alternative that best achieves refuge purposes, vision and goals; helps fulfill the mission of the Refuge System; maintains, and where appropriate, restores the ecological integrity of the refuge and the Refuge System; addresses the significant issues and mandates, and is consistent with principles of sound fish and wildlife management. The proposed action is, for all practical purposes, the draft comprehensive conservation plan for the refuge (Service Manual 602 FW 3.4C). See also preferred alternative (under Alternatives).
prospectus	The document that the Service uses in soliciting competition to award permits for commercial visitor services on a refuge.
public	Individuals, organizations, and groups; officials of federal, state, and local government agencies; Indian tribes; Native organizations; and foreign nations. Public may include anyone outside the core planning team. It includes those who may or may not have indicated an interest in Service issues and those who do or do not realize that Service decisions may affect them.
public involvement	A process that offers affected and interested individuals and organizations opportunities to become informed about, and to express their opinions on, Service actions and policies. In the process, these public views are studied thoroughly and are thoughtfully considered in shaping decisions for refuge management.
public-use management plan (PUMP)	A public-use management plan (also known as a visitor service plan) guides the management of public use on a refuge. Public use encompasses both recreation and subsistence uses and includes

	hunting, trapping, fishing, guiding, camping, photography, sightseeing, hiking, and wildlife viewing. A public use management plan summarizes how the public is involved in developing issues and alternatives and describes the alternatives developed to manage public use.
purposes of the refuge	The purposes specified in or derived from the law, proclamation, executive order, agreement, public land order, donation document, or administrative memorandum establishing, authorizing, or expanding a refuge, refuge unit, or refuge subunit (Service Manual 602 FW 1.6).
quality recreation program	A refuge quality recreation program promotes safety of participants, other visitors, and facilities; reliable and reasonable opportunities for the public to experience wildlife; refuge goals and objectives; resource stewardship and conservation; public understanding and increased public appreciation of America's natural resources and the Service's role in managing and protecting these resources; compliance with applicable laws and regulations and responsible behavior; accessibility and availability to a broad spectrum of the American people; facilities that blend into the natural setting; and the use of feedback from visitors to help define and evaluate programs (Service Manual 605 FW 1.6, in draft).
record of decision (ROD)	A concise public record of a decision prepared by the federal agency, pursuant to NEPA, that contains a statement of the decision, identification of all alternatives considered, identification of the environmentally preferable alternative, a statement whether all practical means to avoid or minimize environmental harm from the alternative selected have been adopted (and if not, why they were not), and a summary of monitoring and enforcement where applicable for any mitigation (40 CFR 1505.2).
recreation guide	A commercial operator who accompanies clients on the refuge for photography, sightseeing, or other activities not related to hunting or fishing, for either day or overnight trips.
recreational fishing	Taking or attempting to take for personal use, not for sale or barter, any fish by hook and line held in the hand or attached to a pole or rod that is held in the hand or is closely attended.
recreational hunting	Taking or attempting to take for personal use, not for sale or barter, a game animal (as defined by the regulatory agency) by any means allowed by the regulatory agency.
recreational fishing or hunting guide	A commercial operator who accompanies recreational fishing or hunting clients on the refuge for day or overnight trips.
refuge information technician	A U.S. Fish and Wildlife Service employee who serves as a liaison between local communities and the Service.
Refuge Operating Needs System (RONS)	The Refuge Operating Needs System is a national database that contains a listing of the unfunded operational needs of each refuge.

	We include projects required to implement approved plans and to meet goals, objectives, and legal mandates.
refugium	An area of relatively unaltered climate that is inhabited by plants and animals during a period of continental climatic change (such as a glaciation) and remains as a center of relic forms from which a new dispersion and speciation may take place after climatic readjustment, such as the Kodiak Refugium.
river classifications	
<i>Wild Rivers</i>	Those rivers or sections of rivers that are free of impoundments and generally inaccessible except by trail, with watersheds or shorelines essentially primitive and waters unpolluted. These represent vestiges of primitive America.
<i>Scenic Rivers</i>	Those rivers or sections of rivers that are free of impoundments, with shorelines or watersheds still largely primitive and shorelines largely undeveloped, but accessible in places by roads.
<i>Recreational Rivers</i>	Those rivers or sections of rivers that are readily accessible by road or railroad, that may have some development along their shorelines, and that may have undergone some impoundment or diversion in the past.
salmon	Any of the following five anadromous Pacific salmon species (<i>Oncorhynchus sp.</i>) native to Alaska: chinook or king (<i>O. tshawtscha</i>), sockeye or red (<i>O. nerka</i>), coho or silver (<i>O. kisutch</i>), pink or humpy (<i>O. gorbuscha</i>), and chum or dog (<i>O. keta</i>).
scoping	An early and open process with the public for determining the scope of issues and the significant issues related to a proposed action (40 CFR 1501.7).
special use permit	A U.S. Fish & Wildlife Service authorization required for all commercial uses of refuge lands and waters.
sport fishing or hunting	See “recreational fishing” or “recreational hunting.”
step-down management plan	A plan that provides specific guidance on management subjects (e.g., habitat, public use, fire, safety) or groups of related subjects. It describes strategies and implementation schedules for meeting comprehensive conservation plan goals and objectives.
subsistence uses	The customary and traditional uses by rural Alaska residents of wild, renewable resources for direct personal or family consumption as food, shelter, fuel, clothing, tools, or transportation; for the making and selling of handicraft articles out of nonedible byproducts of fish and wildlife resources taken for personal or family consumption; for barter or sharing for personal or family consumption; and for customary trade (from Section 803 of the Alaska National Interest Lands Conservation Act).
temporary base camp	Serves as a center of operations and overnight accommodations for guests and guides. A temporary base camp usually remains in place for the full season of use (90 to 120 days) but may be removed within

48 hours. It generally consists of larger tents than do primitive camps and often has tent platforms or other rigid floors. A typical camp would include several large tents, a cook tent and a few smaller tents, showers, waste disposal, storage, etc. In some cases, smaller camps that include only four or five tents and related facilities are used for overnight visits of two to four days. The primary distinction between temporary base camps and primitive camps is the period of occupancy. The specific details of a temporary base camp located on refuge lands would be spelled out in the refuge special use permit.

temporary tent platform

A wooden floor used to support fabric tent. It is easy to assemble and disassemble, is used only for a short period of time, and is removed seasonally. It does not include supports that have been buried into the ground. The floor is typically leveled with rocks or boards. An example is a plywood floor used to support a “weatherport” tent. It is often referred to as a tent floor.

tent platform

A structure, usually made of manufactured wood products, constructed to provide a solid, level floor for a tent. Partial walls not exceeding three feet in height above the floor may be used. Only the tent fabric, the ridge pole, and its support structure may extend higher than three feet above the floor.

transporter

A person who transports people, equipment, supplies, harvested fish and wildlife products, or other personal property for compensation or with the intent or agreement to receive compensation. Must have a special use permit to operate on a refuge. Refuge transporter permits will authorize the specific modes of transportation used, i.e., aircraft, pack horses, boats, etc.

unguided visitor

A visitor who arranges, organizes, and conducts his or her own trip without the assistance of a guide.

use day

A period of one calendar day (24 hours), or portion thereof, for each entity using a resource. When employed as a measure of human use, it is called a visitor or visitor-use day.

visitor-contact station

A staffed or unstaffed facility where the public can learn about the refuge and its resources.

vision statement

A concise statement of the desired future condition of the planning unit, based primarily on the System mission, specific refuge purposes, and other relevant mandates (Service Manual 602 FW 1.6).

visitor day

See “use day.”

wilderness

An area essentially undisturbed by human activity, together with its naturally developed life community.

Wilderness

A designated Wilderness, in contrast with those areas where man and his own works dominate the landscape, is hereby recognized as an area where the earth and its community of life are untrammelled by man, where man himself is a visitor who does not remain. A Wilderness area is further defined to mean, in this plan, an area of undeveloped federal land retaining its primeval character and influence, without permanent improvements or human habitation,

which is protected and managed to preserve its natural conditions and which (1) generally appears to have been affected primarily by the forces of nature, with the imprint of man's work substantially unnoticeable; (2) has outstanding opportunities for solitude or a primitive and unconfined type of recreation; (3) has at least 5,000 acres of land or is of sufficient size as to make practicable its preservation and use in an unimpaired conditions; and (4) may also contain ecological, geological, or other features of scientific, educational, scenic, or historical value (Wilderness Act 1964).

Wilderness Area

An area designated by the United States Congress to be managed as part of the National Wilderness Preservation System (Service Manual 602 FW 1.6).

wilderness review

The process we use to determine if we should recommend Refuge System lands and waters to Congress for Wilderness designation.

wildlife-dependent recreation

A use of a refuge involving hunting, fishing, wildlife observation and photography, or environmental education and interpretation. These are the six priority public uses of the Refuge System, as established in the National Wildlife Refuge System Administration Act, as amended. Wildlife-dependent recreational uses, other than the six priority public uses, are those that depend on the presence of wildlife.

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1. Introduction

This Revised Comprehensive Conservation Plan (Conservation Plan or Plan) and Environmental Impact Statement (EIS) for Kodiak National Wildlife Refuge (Kodiak Refuge, Refuge) presents preferred management direction and three alternatives for Kodiak Refuge. The original conservation plan for Kodiak Refuge was adopted in 1987. Kodiak National Wildlife Refuge was established in 1941 and includes approximately 1.6 million acres of the Kodiak Archipelago (see Figure S-1).



Figure S-1 Alaska national wildlife refuges and Kodiak Refuge location map

1.1 Purpose and Need for Action

The purpose of revising the Kodiak Conservation Plan is to ensure activities, actions, and management fulfill the purposes for which the Refuge was established and to provide clear direction to the public and managers on how we intend to meet those purposes. While the Conservation Plan has provided good general direction, changes in our understanding of the resources and uses on the Refuge, and changes in policies resulted in the plan being out of date. Following guidance in the Alaska National Interest Lands Conservation Act of 1980 (ANILCA) and the National Wildlife Refuge System Administration

Act of 1966, as amended, we are revising the Plan to provide direction for management of the Refuge for the next 15 years.

In general, a comprehensive conservation plan serves to:

- Ensure that the purposes of the Refuge and the mission of the National Wildlife Refuge System (System) are being fulfilled.
- Ensure that national policy is incorporated into management of the Refuge.
- Ensure that interested parties have the opportunity to participate in the development of management direction.
- Provide a systematic process for making and documenting decisions about refuge resources.
- Establish broad management direction for refuge programs and activities.
- Provide continuity in refuge management.
- Provide a basis for budget requests.
- Provide a basis for evaluating accomplishments.

The Plan describes current management (Alternative A) and three “action alternatives” for managing the Refuge, including the Service’s preferred alternative (Alternative D). See Chapter 2 for details of the four management alternatives. The document includes a description of the existing environment on the Refuge (Chapter 3) and an assessment of the effects of implementing each of the alternatives (Chapter 4). Each alternative provides options to address issues identified during the planning process.

1.2 The U.S. Fish & Wildlife Service and the National Wildlife Refuge System

1.2.1 Fish & Wildlife Service and Refuge System Missions

The mission of the Service is

working with others to conserve, protect, and enhance fish, wildlife, and plants and their habitats for the continuing benefit of the American people (602 FW 1.6W).

The mission of the Refuge System is

to administer a national network of lands and waters for the conservation, management, and, where appropriate, restoration of the fish, wildlife, and plant resources and their habitats within the United States for the benefit of present and future generations of Americans [16 U.S.C. 668dd(a)(2)].

1.2.2 Principles for Managing the National Wildlife Refuge System

The Refuge System Administration Act, as amended, states that each refuge shall be managed to fulfill both the mission of the Refuge System and the purposes for which the individual refuge was established. It requires that any use of a refuge be a compatible use—a use that will not materially interfere with or detract from fulfillment of the mission of the System or the purposes of the refuge, based on sound professional judgment.

2. Refuge Purposes, Vision, & Goals

2.1 Refuge Purposes

Kodiak National Wildlife Refuge was established in 1941 “. . . for the purpose of protecting the natural feeding and breeding ranges of the brown bears and other wildlife on Uganik and Kodiak Islands, Alaska . . .”

Under ANILCA, the purposes of Kodiak Refuge were further defined and expanded. Section 303(5)(B) of ANILCA states:

“The purposes for which the Kodiak National Wildlife Refuge is established and shall be managed include

(i) to conserve fish and wildlife populations (and) habitats in their natural diversity, including, but not limited to, Kodiak brown bears, salmonids, sea otters, sea lions and other marine mammals and migratory birds;

(ii) to fulfill the international treaty obligations of the United States with respect to fish and wildlife and their habitats;

(iii) to provide, in a manner consistent with the purposes set forth in subparagraphs (i) and (ii), the opportunity for continued subsistence uses by local residents; and

(iv) to ensure, to the maximum extent practicable and in a manner consistent with the purposes set forth in paragraph (i), water quality and necessary water quantity within the refuge.”

2.2 Vision Statement

Brown bear, fish, and other wildlife populations will continue to thrive on Kodiak National Wildlife Refuge in their natural diversity, living in pristine habitats. Refuge management will blend public and private partners in a dynamic alliance that fulfills the purposes and goals of Kodiak Refuge. The Refuge will provide a lasting legacy of resource stewardship for the use and enjoyment of current and future generations.

2.3 Refuge Goals

The refuge vision statement and the refuge purposes provide the framework for developing goals and objectives for managing the Refuge. Goals are broad statements of desired future conditions, and reflect the contribution of the Refuge to the National Wildlife Refuge System as well as other key management responsibilities from law and policy. Objectives are concise statements of what the Refuge wants to accomplish. Objectives are found in section 2.1 (Chapter 2). The Conservation Plan must work toward meeting all of the goals and objectives.

Goal 1: Increase our knowledge of fish and wildlife populations, their habitats, and their interrelationships.

Goal 2: Ensure that Kodiak brown bears continue to flourish throughout the Refuge and congregate at traditional concentration areas.

Goal 3: Manage nonnative species to minimize impacts on native resources, while continuing to provide opportunities for harvest.

Goal 4: Continue to improve understanding and management of furbearing and nongame mammals that use Kodiak Refuge.

Goal 5: Monitor populations of resident and migratory birds as indicators of ecosystem health.

Goal 6: Maintain and restore native plant populations, communities, and habitats.

Goal 7: Conserve the abundance of natural salmonid populations for continued human and wildlife use and to ensure the diversity of species as indicators of the health of the Refuge's ecosystem.

Goal 8: Provide the opportunity for local residents to continue their subsistence uses on the Refuge, consistent with the subsistence priority and with other refuge purposes.

Goal 9: Improve baseline understanding of natural flowing waters on the Refuge and maintain the water quality and quantity necessary to conserve fish and wildlife populations and habitats in their natural diversity.

Goal 10: Provide opportunities for quality public use and enjoyment of refuge resources through compatible fish and wildlife-dependent recreation activities, including hunting, fishing, wildlife observation, and photography.

Goal 11: Improve management of commercial use opportunities that are compatible with refuge purposes, provide quality public use opportunities, enhance visitor experiences, and ensure compliance with provisions of ANILCA.

Goal 12: Provide outreach, environmental education, and interpretive programs that increase a sense of stewardship for wildlife, cultural resources, and the environment and that enhance visitor experiences on the Refuge.

Goal 13: Conserve cultural and archaeological resources of the Refuge.

Goal 14: Conserve special and unique features of the Kodiak Archipelago ecosystem within the Refuge.

Goal 15: Promote close working relationships through effective coordination, interaction, and cooperation with other federal agencies, state agencies, local communities, tribes, organizations, industries, the general public, and the landowners within and adjacent to the Refuge whose programs affect or are affected by refuge management activities.

3. Refuge Overview

3.1 Refuge Establishment

On August 19, 1941, President Franklin D. Roosevelt signed Executive Order 8857 establishing Kodiak National Wildlife Refuge, withdrawing nearly two million acres from unreserved public domain on Kodiak and Uganik islands.

Interior Secretary Fred A. Seaton signed Public Land Order 1634 on May 9, 1958, revoking Executive Order 8857 in part. The Shearwater and Kupreanof peninsulas were removed from the Refuge and reclassified as unreserved public domain. The new refuge boundary, extending from Viekola Bay along a mountainous ridge to the head of Kiliuda Bay, separated the Refuge from cattle grazing and other incompatible uses. The adjustment reduced the Refuge to about 1.8 million acres.

As part of the settlement resulting from enactment of the Alaska Native Claims Settlement Act of 1971 (ANCSA; 43 U.S.C. 1601–1624), up to 345,600 acres of land within Kodiak Refuge were to be conveyed to Native village corporations.

In 1980 ANILCA added about 50,000 acres of public lands on Afognak and Ban islands to the Refuge. Since 1994 nearly 280,000 acres of valuable private wildlife habitat have been protected through direct purchase or donation of (1) fee title, (2) conservation easements, and (3) limited-development easements. Refuge boundaries currently encompass about 1.77 million acres; about 1.63 millions acres are federal land. As funding becomes available, acquisition of valuable habitat from willing sellers continues. See section 1.1.1 (Chapter 1) and sections 3.1.1 and 3.1.2 (Chapter 3) for more details.

3.2 Refuge Environment

Kodiak Refuge encompasses nearly 1.8 million acres within its boundaries—the southwestern two-thirds of Kodiak Island, all of Uganik Island, and about 54,000 acres on Afognak and Ban islands. The islands, part of the Kodiak Archipelago, lie at the western edge of the Gulf of Alaska in southwestern Alaska. Kodiak Island has a rugged, irregular 930-mile coastline consisting of bays, inlets, and mountains. Spruce forests dominate Afognak Island. The mountainous interior of Kodiak Island, with several peaks over 4,000 feet, is covered by lush, dense vegetation during the summer, with alpine plants on the highest slopes. The southwestern portion of the island is covered with tundra plants and grassy hummocks. Access to the Refuge is primarily by float plane and boat.

Kodiak Refuge is characterized by a large range of habitats within a relatively small geographic area. Because of this, the Refuge supports some of the highest densities of brown bears, nesting bald eagles, and spawning salmon found anywhere in North America. The Refuge has an estimated population of 2,200 bears; an estimated 2,890 bears inhabit the entire Kodiak Archipelago. The current bear population on the Archipelago supports an annual harvest of about 160 bears. Bear viewing and photography are increasing in popularity, particularly over the past 10 to 15 years.

Only five other mammals—red fox, river otter, short-tailed weasel, little brown bat, and tundra vole—are native to Kodiak Island. Several other species—including Sitka black-tailed deer, Roosevelt elk (introduced only on Afognak Island), snowshoe hare, beaver, mountain goat, and reindeer—have been introduced onto the Archipelago. Deer are the most popular quarry of recreational and subsistence hunters. Hunting of Roosevelt elk, small game, waterfowl, and upland game birds also occurs on the Refuge.

Eleven large lakes and many rivers are major spawning grounds for five species of Pacific salmon which support subsistence users, recreational anglers, and the Kodiak commercial salmon fishery. Other fish species, including rainbow and steelhead trout, Dolly Varden, and Arctic char, are also found in refuge waters.

More than 240 species of birds have been recorded in the Kodiak Archipelago. Bald eagles, with an estimated population of 2,250 (including more than 500 nesting pairs), upwards of 2 million seabirds, and more than 150,000 ducks and geese are found on the Refuge and along its shoreline.

Visitors participate in other recreation activities, including hiking, trapping, berry picking, beachcombing, sightseeing, and photography. These are often secondary activities to big game hunting or fishing.

No developed camping areas are found on the Refuge, and weather conditions can make tent-camping difficult; thus, many recreational

visitors base their activities out of privately owned lodges, temporary guide camps, or the seven public use cabins on the Refuge.

A description of the physical environment, biological resources, and public use that occur on the Refuge is found in Chapter 3.

4. The Planning Process

The process we are using to revise the Kodiak Plan consists of eight steps:

1. Design the planning process (also called preplanning).
2. Initiate public involvement and scoping.
3. Determine significant issues.
4. Develop and analyze alternatives.
5. Prepare draft conservation plan and environmental impact statement.
6. Prepare and adopt a final plan and environmental impact statement.
7. Implement the plan and monitor and evaluate it.
8. Review and revise the plan.

With publication of this Plan and Final EIS, we are part way through step 6. Following a 30-day period, the Service's regional director will issue a record of decision (ROD) that will describe the alternative to be implemented. The Service will publish and distribute the ROD and a stand-alone Revised Kodiak Refuge Comprehensive Conservation Plan (no alternatives and EIS documentation) after that decision is made. Implementation of the Plan will begin once the ROD is signed. Details of the Kodiak planning process are found in section 1.5 (Chapter 1).

5. Issues

Two significant planning issues were identified from comments received during the scoping process. These issues reflect problems or opportunities that the Refuge can address in a variety of ways. The alternatives described in Chapter 2 comprise different options for addressing these issues. The environmental analysis presented in Chapter 4 discusses the probable effects that implementing these options would have on the environment of the Refuge.

The significant issues are (1) how to manage public use, given limited access and projected growth in demand, to continue providing opportunities for appropriate and quality use while preventing significant impacts to refuge resources; and (2) what types of bear viewing opportunities should be available on the Refuge and how should these opportunities be managed while protecting bears and their habitats. The EIS evaluates four alternatives for management of Kodiak NWR, primarily focusing on four areas related to these issues: (1) protection of bear concentration

areas; (2) management of public use cabins; (3) management of camping areas; and (4) management of O'Malley River.

5.1 Public Comments on the Draft Conservation Plan/EIS

In response to comments on the Draft Conservation Plan/EIS by government agencies, nongovernmental organizations, and the general public, the Service has revised the document. The major changes that were made in the draft document include the following:

- The proposed reduction in the Moderate Management category acreage in Alternative D (the Preferred Alternative) has been modified. Instead of 12,321 acres under Moderate Management, the Preferred Alternative now includes 31,521 acres under Moderate Management. All areas located on the Refuge's west coast between Zachar Bay and Viekoda Bays (including Uganik Island) currently managed under the Moderate Management category have been removed from the lands proposed for Minimal Management in the preferred alternative. This includes the general area used by the set net fishery in this area, excluding the heads of bays.
- Language has been incorporated into Alternatives B, C, and D clarifying how regulations could be adopted for managing use—regulations seasonally restricting use in bear concentration areas could be adopted if voluntary use guidelines are not effective.
- Tables 2-2 and 2-5, which list what activities are allowed in what management categories, have been revised to better reflect the differences between current and proposed management related to introduction/reintroduction of fish and wildlife species and better reflect current scientific understanding of population genetics.
- At the request of the State of Alaska, language has been added which explains the mechanism allowing the Service to prohibit helicopter landings for recreational activities on Kodiak Refuge (section 2.2.13).
- Aquaculture support facilities have been added to Table 2-2 and Table 2-5 as a possible use of the Refuge, although such facilities would only be allowed in Intensive Management areas (none occur in Kodiak Refuge).
- Discussion of Service jurisdiction over waters within Kodiak Refuge (section 2.2.8) has been added to the final document. This discussion reflects the U.S. position that it owns most submerged lands beneath navigable and nonnavigable waters within the boundaries of the Refuge. The section discussing navigable waters (in section 2.2.9 of the Draft Plan) has been removed.

6. Management Alternatives

6.1 Elements Common to All Alternatives

Each of the alternatives would do the following:

- Contribute to achieving the purposes for which the Refuge was established, as set forth in Executive Order 8857 (August 19, 1941), Public Land Order 1634 (May 9, 1958), and section 303(5)(B) of ANILCA.
- Ensure local rural residents have access to and priority use of refuge resources for purposes of subsistence, as determined by law.
- Ensure that refuge management complies with all other federal laws and regulations that provide direction for managing units of the National Wildlife Refuge System.
- Protect and maintain fish and wildlife in their natural diversity.
- Maintain opportunities to pursue traditional subsistence activities, scientific research, and hunting, fishing, and other wildlife-dependent recreation activities.
- Maintain most of the Refuge in a relatively undeveloped state.
- Minimize disturbances to fish and wildlife habitats and populations.
- Allow public use of the Refuge using traditional access methods provided use remains compatible with purposes of the Refuge.

Goals and objectives are an integral part of each alternative. Goals describe broad general direction for refuge management and objectives provide specific measurable ways to achieve the goals. Refuge goals (presented in section 2.1) do not vary among alternatives; they are common to all. The objectives, which have been developed for each goal and are also presented in section 2.1, generally apply to all the alternatives. A few objectives may require modification, or new objectives may be incorporated into one or more alternatives, based on particular issue-driven actions under a specific alternative.

The Kodiak Archipelago Bear Conservation and Management Plan (ADF&G 2002) was completed in 2002. As a primary land management agency on the Archipelago, the Refuge agreed to incorporate all relevant recommendations from the Bear Management Plan into the Conservation Plan. (See Appendix C.)

In 2002, the Service, Koniag, Incorporated, and the State of Alaska signed a master agreement that ensures protection of and guarantees public access to nearly 57,000 acres of Koniag-owned land in western Kodiak Refuge. Provisions of this complex agreement apply to these lands regardless of which alternative is implemented under the Conservation Plan. This agreement is described in more detail in section 2.7.2 (Chapter 2).

6.2 Alternative A—Current Management

This alternative, the “no-action alternative,” describes current management of the Refuge and future management assuming present actions and initiatives are carried forward. It provides the baseline against which to compare the other alternatives. It is required by NEPA. Details of Alternative A are in section 2.7 (Chapter 2).

Management of the Refuge would continue to follow the 1987 Kodiak Refuge Conservation Plan (USFWS 1987a) and Record of Decision (USFWS 1987b), as amended by the Refuge Public Use Management Plan (USFWS 1993). Public and commercial uses of the Refuge would change only as implementation of current management direction dictates. The Service would take the following actions:

- **Protection of Bear Concentration Areas**—Adopt regulations to seasonally limit public use of nine bear concentration areas; maintain limits on commercial use of these areas until regulations are in place; and close two key bear denning areas to snowmachine use.
- **Public Use Cabins**—Maintain seven public use cabins, construct two additional cabins, and manage cabins on newly acquired lands as needed for public use.
- **Management of Camping Areas**—Camping areas (undeveloped sites where people camp) would not be improved, and equipment or facilities such as food storage containers, latrines, or electric fences would not be provided unless other methods designed to reduce impacts in heavily used camping areas are not effective. Use impacts would be managed by restricting use through regulation. Regulations restricting camping near public use cabins and administrative facilities would be adopted.
- **Management of O’Malley River**—Continue seasonal closure of O’Malley River area to all users. No formal bear viewing program would be operated on the Refuge.

Under this alternative, three management categories—Moderate, Minimal, and Special River Management—would continue to be applied to lands within the Refuge. Moderate Management would be applied to 44,100 acres; Minimal Management would be applied to 1,580,174 acres. The Special River Management category would apply to four river drainages—the Karluk, Sturgeon, Ayakulik, and Dog Salmon—only if river management plans were developed, thus no acreage figure has been applied to this category. Figure 2-2 (Chapter 2) depicts this alternative.

Table 2-5 (Chapter 2) highlights the significant changes in management direction between Alternative A—Current Management and the management direction proposed in the action alternatives (Alternatives B, C, and D) in the revised Conservation Plan.

6.3 Alternative B

Although most of the general management direction described in Alternative A would continue, some specific direction and actions occurring under current management would be altered or not pursued under Alternative B. Management direction in Alternative B that differs from Alternative A is summarized below. In addition, Refuge Goals and Objectives (section 2.1), Management Policies and Guidelines (section 2.2), and Management Categories (section 2.3) apply to this alternative.

- **Protection of Bear Concentration Areas**—Do not promulgate regulations to seasonally limit use at bear concentration areas or to close two key bear denning areas to snowmachine use. Develop voluntary guidelines for public use of bear concentration areas; current seasonal use restrictions placed on commercial operators via their special use permits would be replaced with special conditions mirroring the voluntary guidelines. Regulations would be developed if the use of voluntary guidelines proved ineffective.
- **Public Use Cabins**—Allow the public use cabin program to expand as demand increases, either through construction of new cabins or management of cabins on newly acquired lands as public use cabins. There would be no limit on the number of public use cabins on the Refuge.
- **Management of Camping Areas**—Camping areas (undeveloped sites where people camp) could be improved, and equipment or facilities—such as food storage containers, latrines, or electric fences—would be provided if needed to mitigate public use impacts. Regulations restricting camping near public use cabins or administrative facilities would not be adopted.
- **Management of O'Malley River**—Modify the O'Malley River area closure regulations to allow operation of a bear viewing program operated by a qualified guide under special use permit awarded through a competitive process.

Two management categories—Moderate and Minimal Management—would be applied to lands within Kodiak Refuge under this alternative. Moderate Management would be applied to 44,100 acres; Minimal Management would be applied to 1,580,174 acres. Figure 2-4 (Chapter 2) depicts this alternative.

6.4 Alternative C

Although most of the general management direction described in Alternative A would continue, some specific direction and actions occurring under current management would be altered or not pursued under Alternative C. Management direction in Alternative C that differs from Alternative A is summarized below. In addition, Refuge Goals and Objectives (section 2.1), Management Policies and

Guidelines (section 2.2), and Management Categories (section 2.3) apply to this alternative.

- **Protection of Bear Concentration Areas**—Develop voluntary guidelines for public use of bear concentration areas; current seasonal use restrictions placed on commercial operators via their special use permits would be replaced with special conditions mirroring these guidelines. Regulations implementing seasonal closures or day-use only restrictions could be developed for some key areas based on the ongoing evaluation of these areas and the effectiveness of the voluntary guidelines. Close two key bear denning areas to snowmachine use.
- **Public Use Cabins**—Phase out the public use cabin program by not undertaking major maintenance projects, not constructing new cabins, and not managing cabins on newly acquired lands for public use.
- **Management of Camping Areas**—Camping areas (undeveloped sites where people camp) would be managed as described in Alternative A.
- **Management of O'Malley River**—Modify the O'Malley River area closure regulations to allow operation of a bear viewing program run by the Service in cooperation with ADF&G. Permits would be allocated by lottery.

Two management categories—Moderate and Minimal Management—would be applied to lands within Kodiak Refuge under this alternative. Moderate Management would be applied to 32,738 acres; Minimal Management would be applied to 1,591,536 acres. Figure 2-5 (Chapter 2) depicts this alternative.

6.5 Alternative D (Preferred Alternative)

Although most of the general management direction described in Alternative A would continue, some specific direction and actions occurring under current management would be altered or not pursued under Alternative D. Management direction in Alternative D that differs from Alternative A is summarized below. In addition, Refuge Goals and Objectives (section 2.1), Management Policies and Guidelines (section 2.2), and Management Categories (section 2.3) apply to this alternative.

- **Protection of Bear Concentration Areas**—Develop voluntary guidelines for public use of bear concentration areas; current seasonal use restrictions placed on commercial operators via their special use permits would be replaced with special conditions mirroring these guidelines. Regulations implementing seasonal day-use only limits could be developed for some areas based on the ongoing evaluation of these areas and the

effectiveness of the voluntary guidelines. Close one key bear denning area to snowmachine use.

- **Public Use Cabins**—Maintain the seven public use cabins that currently exist, construct two additional cabins, and manage cabins on newly acquired lands, as needed, for public use.
- **Management of Camping Areas**—Camping areas (undeveloped sites where people camp) could be improved and equipment and facilities—such as food storage containers, latrines, or electric fences—could be provided if they are the least-intrusive management needed to mitigate public use impacts. Regulations restricting camping near public use cabins and administrative facilities would be adopted.
- **Management of O’Malley River**—Modify the O’Malley River closure regulations to allow operation of a bear viewing program combining agency-supervised use with guided use. Unguided and guided visitors would not be present on site at the same time. Permits for agency-supervised use would be allocated to the public by lottery. Qualified bear viewing guides would apply for the guided-use opportunity, which would then be available to their clients via private bookings.

Two management categories—Moderate and Minimal Management—would be applied to lands within Kodiak Refuge under this alternative. Moderate Management would be applied to 31,521 acres; Minimal Management would be applied to 1,592,753 acres. Figure 2-6 (Chapter 2) depicts this alternative.

6.6 Summary Comparison of the Alternatives

The following tables (Tables S-1 and S-2) compare the alternatives by major topic

Table S-1 Comparison of the alternatives

Category	Alternative A— Current Management	Alternative B	Alternative C	Alternative D— Preferred Alternative
Protection of Bear Concentration Areas	Implement public use management plan by adopting regulations to seasonally restrict all public access at nine bear concentration areas; continue to restrict commercial operators until regulations are in place. Close two areas of key bear denning habitat, Baumann Creek (2,240 acres) and Den Mountain (2,820 acres), to snowmachine use.	Develop voluntary guidelines for public use of bear concentration areas; current restrictions on commercial operators would be replaced with these guidelines. No regulations to seasonally restrict public access, as recommended in the public use management plan, would be proposed at this time. No denning areas closed to snowmachine use.	Develop voluntary guidelines for public use of bear concentration areas; current restrictions on commercial operators replaced with these guidelines. Seasonal closures and/or day-use-only restrictions may be proposed for some areas based on results of ongoing monitoring of these areas (may not be the same areas as in Alternative A). Close two denning areas to snowmachine use.	Develop voluntary guidelines for public use of bear concentration areas; current restrictions on commercial operators would be replaced with these guidelines. Seasonal day-use-only restrictions may be proposed for some areas based on results of ongoing monitoring of these areas (may not be the same as in Alternative A) Close Den Mountain (2,820 acres) to snowmachine use.
Management of Public Use Cabins	Allow nine public use cabins (seven exist now; could construct two more). Additionally, abandoned cabins or cabins on newly acquired lands could be managed as public use cabins.	Allow more public use cabins as needed to meet demand (more than two new cabins could be constructed or acquired). Consult stakeholders prior to constructing, replacing, or relocating cabins.	Allow natural attrition of public use cabins; eventually phase out cabin program.	Same as Alternative A; consult stakeholders prior to constructing, replacing, or relocating cabins or managing cabins on acquired lands for public use.
Management of Camping Areas¹	Camping areas not improved; no facilities provided. Implement Kodiak public use management plan by adopting regulations prohibiting camping within one-quarter mile of public use cabins and 200 yards of administrative facilities.	Improve camping areas and provide facilities if needed to mitigate impacts. No regulations restricting camping near cabins or administrative facilities.	Same as Alternative A.	Improve camping areas and provide facilities using least intrusive management needed to mitigate impacts. Adopt regulations prohibiting camping within one-quarter mile of public use cabins and administrative facilities.
Management of O'Malley River	Maintain seasonal closure of former bear viewing site at O'Malley River (2,560 acres).	Reopen O'Malley site to bear viewing for a commercially guided bear viewing program similar to the 1992 program.	Reopen O'Malley site to bear viewing for a government-run program similar to the 1992 program.	Reopen O'Malley site to bear viewing for a program with both government-run and privately guided viewing opportunities (at different times).

Category	Alternative A— Current Management	Alternative B	Alternative C	Alternative D— Preferred Alternative
Staffing and Budget Needs	Current (FY 2004): 18 permanent full-time 2 permanent part-time 3 seasonal \$1,545,000 (Base Funding)	Additional: 3 permanent full-time 0 permanent part-time 6 seasonal \$697,000 + Base Funding	Additional: 4 permanent full-time 0 permanent part-time 7 seasonal \$734,000 + Base Funding	Additional: 7 permanent full-time 0 permanent part-time 2 seasonal \$1,063,000 + Base Funding
Management Categories (acres)²:				
Moderate	44,100	44,100	32,738	31,521
Minimal	1,580,174	1,580,174	1,591,536	1,592,753
Special River	0	Category eliminated	Category eliminated	Category eliminated

- 1 Camping areas are undeveloped sites where people camp. Improving camping areas may consist of providing the minimum development, equipment, and facilities necessary for resource protection or public health and safety such as minor leveling of tent sites, maintenance of user-developed trails, or provision of pit toilets (latrines), temporary bear-resistant food storage containers, or temporary solar-powered electric fences.
- 2 Acreages were developed by Arc/Info analysis of U.S. Fish & Wildlife Service land status maps. These areas have not been surveyed. Acreage figures may change over time as data sources improve. U.S. Fish & Wildlife Service land status maps were derived from Bureau of Land Management Master Title Plats.

Table S-2 Comparison of impacts by alternative

Resource or Value	Alternative A	Alternative B	Alternative C	Alternative D
Brown bear populations	No significant effects on size and productivity of bear population.	Negative impacts affecting local population but not sufficient to affect integrity of refuge population in long term.	Same as Alternative A.	Same as Alternative A.
Local economy	Negligible effects overall on Kodiak economy.	Negligible effects overall on Kodiak economy, but slight positive effect from increased bear viewing and cabins programs.	Negligible effects overall, but slight positive effect from increased bear viewing perhaps offset by slight negative effect from elimination of cabins	Same as Alternative B.
Subsistence	Negligible effects.	Same as Alternative A and increased opportunity for subsistence users to participate in refuge management through stakeholder planning for bear concentration areas.	Same as Alternative B.	Same as Alternative B.
Guides and commercial operators	Negligible effects.	Slight increase in guided bear viewing opportunities.	Same as Alternative A.	Same as Alternative B.
Bear hunting	Negligible effects; hunting regulated by state and Federal Subsistence Board.	Same as Alternative A.	Negligible effects, although cabins would no longer be available to hunters in the future.	Same as Alternative A.
Deer hunting	No changes to deer-hunting opportunities.	Same as Alternative A.	Negligible effects, although cabins would no longer be available to hunters in the future.	Same as Alternative A.
Recreational fishing	Negligible effects on recreation fishing opportunities.	Same as Alternative A.	Negligible effects, although cabins would no longer be available to anglers in the future.	Same as Alternative A.

Resource or Value	Alternative A	Alternative B	Alternative C	Alternative D
Wildlife viewing	If proposed regulations are implemented, would reduce wildlife-viewing opportunities because of closure of additional areas to general public access during bear viewing season, plus no O'Malley program.	Greatest potential for providing viewing opportunities because of unregulated use in bear concentration areas, reopening O'Malley, and new public use cabins.	Bear concentration area opportunities similar to Alternative A; O'Malley program may attract more viewers if lower cost than Alternatives B and D. Reduced opportunity for those who would use public use cabins.	Management of bear concentration areas would provide opportunities similar to those in Alternative A; increased viewing opportunity at O'Malley and additional public use cabins would be available.
Wilderness character	Overall impact negligible. Addition of structures and not improving campsites could result in localized negative impacts.	Long-term negative effect due to indefinite expansion of cabin program, improved camping areas, and guided bear viewing at O'Malley. However, lands would still retain overall wilderness character and be eligible for inclusion in the National Wilderness Preservation System.	Over time, elimination of the cabin program could result in localized positive effects on wilderness character; however, the effects on the overall wilderness character of the Refuge would be negligible.	Overall negligible impacts. Addition of structures would have slight local negative effects; improving campsites would be neutral. Negative effects of temporary structures offset by positive effects on physical and biological environment.

7. Selection of the Preferred Alternative

The Service has selected Alternative D as its preferred alternative for managing Kodiak Refuge. Although all the alternatives respond positively to the purposes of the Refuge—conserving fish and wildlife populations and habitats in their natural diversity, preserving water quality and quantity, meeting international treaty obligations, and providing opportunities for continued subsistence uses—and to the provision of quality wildlife dependent recreation opportunities, some relatively small differences would occur. Alternative D would provide a slightly higher level of conservation of natural habitats and wildland values on the Refuge by increasing the amount of land in the Minimal Management category more than any other alternative.

The Service will not begin implementing the management direction in the Alternative D until a 30-day comment period following publication of the final Conservation Plan has elapsed, and a Record of Decision has been signed.

8. Implementation, Monitoring, and Revision of the Conservation Plan

Implementation and monitoring of the Kodiak Conservation Plan will depend on the availability of funds and personnel in any given year, and upon the coordination of many governmental activities.

8.1 Implementation

Implementation of the Kodiak Conservation Plan will be accomplished, in part, by means of various step-down plans described in section 6.1 (Chapter 6). Each step-down plan has its own program focus (e.g., fisheries management, environmental education, public use, and public use cabin management), identifying and directing the implementation of strategies (actions, techniques, and tools) designed to achieve programmatic objectives outlined in the Conservation Plan (Chapter 2, section 2.1).

Another aspect of the implementation process includes identifying partnership opportunities (e.g., with Koniag, Inc., the State of Alaska, local communities, other federal agencies, universities and museums, and nongovernmental organizations) that result in implementing strategies and that accomplish refuge objectives, as discussed in section 6.2 (Chapter 6).

8.2 Monitoring

Monitoring helps the refuge staff track the progress of plan implementation. Results of monitoring show how objectives are being achieved and measure progress towards accomplishing goals. Monitoring the progress of plan implementation is accomplished by a variety of methods, including surveys, inventories, and creel

censuses. (See Tables 6-1 and 6-2.) Evaluation of monitoring results may lead to amendment or revision of the Conservation Plan.

8.3 Amendment and Revision

Periodic review and change of this comprehensive conservation plan will be necessary. To allow the public to express their views on management of the Refuge, the Refuge will periodically hold meetings or use other techniques to solicit comments for evaluation purposes. This will allow the Refuge to better serve the public, determine potential problems, and take immediate action to resolve existing problems.

Every three to five years, refuge staff will review public comments, local and state government recommendations, staff recommendations, research studies, and other sources to determine if revisions to the plan are necessary. If major changes are proposed, public meetings may be held, and a new environmental assessment or environmental impact statements may be necessary. Full review and updating of the conservation plan will occur every 15 years.

9. References Cited

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- USFWS. 1993. "Kodiak National Wildlife Refuge: Final Public Use Management Plan and Environmental Assessment for Public Use Regulations." Kodiak, Alaska: U.S. Fish & Wildlife Service. 202 pp.

1. Introduction

This document describes four alternatives for revising the Comprehensive Conservation Plan for management of Kodiak National Wildlife Refuge (Kodiak Refuge or Refuge) and assesses the effects of implementing each of the options. When this revised plan is finalized, it will replace the management direction for Kodiak Refuge described in the *Kodiak National Wildlife Refuge Final Comprehensive Conservation Plan/Environmental Impact Statement/Wilderness Review* (Kodiak Conservation Plan or Conservation Plan; USFWS 1987a) and associated Record of Decision (USFWS 1987b) adopted in 1987.

The U.S. Fish & Wildlife Service (Service) administers approximately 1.6 million acres of land and water on the Kodiak Archipelago (Archipelago) as Kodiak Refuge. (See Figure 1-1.) The Refuge includes the southwestern two-thirds of Kodiak Island (Island), all of Uganik Island, and about 54,000 acres on Afognak and Ban islands. In addition, some 8,500 acres of land and more than 400,000 acres of water on the Archipelago are included within the boundaries of Alaska Maritime National Wildlife Refuge. Administrative responsibility for these lands and waters is shared by Alaska Maritime and Kodiak refuges. (See section 2.2.2, Chapter 2.)

This chapter provides background information that establishes the framework used to develop this document, including (1) purpose of and need for the plan; (2) an overview of the Refuge, including historical perspective and refuge establishment; purposes, vision, and goals of the Refuge; and environmental setting; (3) the legal context of refuge management; and (4) the planning process, including the identification of significant planning issues addressed in the plan.

1.1 Purpose of and Need for Action

The purpose of revising the 1987 Kodiak Conservation Plan is to ensure activities, actions, and management fulfill the purposes for which the Refuge was established and to provide clear direction to the public and managers on how we intend to meet those purposes. While the 1987 Conservation Plan has provided good general direction, changes in our understanding of the resources and uses on the Refuge, and changes in both management and planning policies identify a need to update and revise the Conservation Plan.

Federal statute, specifically Section 304(g) of the Alaska National Interest Lands Conservation Act of 1980 (ANILCA) as amended, directs the Secretary of the Interior to prepare, and from time to time revise, a “. . . comprehensive conservation plan . . . for each refuge (in Alaska)”

Following guidance found in ANILCA and other federal laws—primarily the National Wildlife Refuge System Administration Act of 1966 (Refuge System Administration Act), as amended by the



Figure 1-1 Alaska national wildlife refuges and Kodiak Refuge location map

National Wildlife Refuge System Improvement Act of 1997 (Refuge System Improvement Act); and the National Environmental Policy Act of 1969 (NEPA) as amended—the Service is revising the Kodiak Refuge Conservation Plan to provide direction for management of the Refuge for the next 15 years. Revising the Conservation Plan allows the Service to accomplish the following:

- Evaluate management direction for about 174,000 acres of refuge lands acquired in fee since completion of the original Conservation Plan in 1987.
- Update management direction related to national and regional policies and guidelines implementing federal laws governing refuge management.
- Incorporate new scientific information on refuge resources.
- Reevaluate current refuge management direction based on changing public demands for use of the Refuge and its resources, including public use management direction as defined in the *Kodiak National Wildlife Refuge Final Public Use Management Plan and Environmental Assessment for Public Use Regulations* (USFWS 1993) and associated Decision Notice and Finding of No Significant Impact (USFWS 1994).

This document includes a final environmental impact statement for the Kodiak Refuge Conservation Plan. It describes current management and three alternatives for managing the Refuge, including the Service's preferred alternative (Alternative D). Each alternative represents different options for addressing and resolving issues raised by the public and the Service. The document also includes an assessment of the effects on refuge resources of implementing each alternative and a description of the existing environment of the Refuge, including land status, physical and biological resources, and human use of the Refuge.

In addition to the preceding requirements, a comprehensive conservation plan serves to do the following:

- Ensure that the purposes of the Refuge and the mission of the Refuge System are being fulfilled.
- Ensure that national policy is incorporated into management of the Refuge.
- Ensure that interested parties have the opportunity to participate in the development of management direction.
- Provide a systematic process for making and documenting decisions about refuge resources.
- Establish broad management direction for refuge programs and activities.
- Provide continuity in refuge management.
- Provide a basis for budget requests.
- Provide a basis for evaluating accomplishments.

1.2 Refuge Overview

1.2.1 Historical Perspective and Refuge Establishment

Beginning with the first clearly demonstrated human occupation approximately 7,500 years ago, the Kodiak Archipelago was home to what was most likely the densest human population in Alaska prior to European contact. The first European sighting of Kodiak Island occurred in 1741 when the Vitus Bering expedition passed by without attempting to land. The first permanent European presence on the island was the Russian village at Three Saints Bay, which was established in 1784. After being destroyed by a tidal wave, this settlement relocated to the present location of the City of Kodiak in 1792, which became, and remains, the center of population on the Archipelago. Russians brought the first livestock to Kodiak soon after their arrival, and by the late 1790s, cattle, sheep, goats, and pigs were common assets at settlement sites (Van Daele 2003).

In the late 1800s and early 1900s, major changes began to affect the resources of the Archipelago. During this period, human activity and associated development increased significantly. Canneries were built to process fish; more and more ranching (cattle and sheep) was occurring on Kodiak Island. By the 1930s, interaction of native

brown bears with livestock was resulting in significant loss of livestock. In 1939, the Secretary of Agriculture allowed the Alaska Game Commission to kill up to 25 adult brown bears in the cattle country of northeast Kodiak Island in an attempt to reduce cattle losses. During that summer, a wildlife agent and two professional hunters came to Kodiak Island, interviewing residents, investigating all known cattle losses, and, in the end, killing seven bears (Van Daele 2003). During this same period, several large military withdrawals occurred in the Alaska Territory. Threats to brown bears and other natural resources resulting from these withdrawals and subsequent construction of military facilities were obvious to Dr. Ira N. Gabrielson, then chief of the Bureau of Biological Survey, and to early conservation groups (e.g. the Boone and Crocket Club) who supported establishment of a refuge on Kodiak Island (Hensel 2005).

On August 19, 1941, President Franklin D. Roosevelt signed Executive Order 8857 establishing Kodiak National Wildlife Refuge “. . . for the purpose of protecting the natural feeding and breeding ranges of the brown bears and other wildlife on Uganik and Kodiak islands . . .” The Refuge thus became part of the National Wildlife Refuge System, managed by the U.S. Fish & Wildlife Service. The Refuge System now includes more than 540 units in 50 states and several territories. Sixteen refuges have been established in Alaska. (See Figure 1-1.)

The original Executive Order withdrew nearly two million acres from unreserved public domain on Kodiak and Uganik islands. The Refuge encompassed all of Uganik Island and most of the southwestern portion of Kodiak Island except for the Karluk Indian Reservation. A one-mile-wide shoreline strip remained “. . . subject to settlement, location, sale, or other disposition under the public land laws applicable to Alaska or for classification . . .” and lease for fur farming or other purposes. Continued conflicts with grazing of livestock on other areas of Kodiak Island and concerns by commercial fishermen and biologists about reduced salmon populations resulting from bear predation led to additional controlled bear killings in the late 1940s and early 1950s, though numbers of bears killed were low (Van Daele 2003, USFWS 1951). To help resolve the bear-cattle conflict, Interior Secretary Fred A. Seaton signed Public Land Order 1634 on May 9, 1958. This order revoked Executive Order 8857 and closed the mile-wide shoreline strip to the land laws and other excepted purposes in exchange for reclassifying the Shearwater and Kupreanof peninsulas as unreserved public domain. The purposes of the new reservation continued to be “as a refuge and breeding ground for brown bears and other wildlife.” The new refuge boundary, extending from Vieckoda Bay along a mountainous ridge to the head of Kiliuda Bay, separated the Refuge from cattle grazing and other incompatible uses. Excepted from the withdrawal was “an area one mile square surrounding each of the native villages of Old Harbor, Akhiok, Larsen Bay, Uganik, Uyak, Alitak, Ayakulik, and Kaguyak.” The adjustment reduced the Refuge to about 1.8 million acres.

Enactment of the Alaska Native Claims Settlement Act (ANCSA; 43 U.S.C. 1601–1624) on December 18, 1971, had a major effect on the Refuge System in Alaska. As part of the settlement, up to 345,600 acres of land within Kodiak Refuge were to be conveyed, under Section 12(a) and subject to Section 22(g) of ANCSA, to Native village corporations.

On December 2, 1980, President Jimmy Carter signed into law the Alaska National Interest Lands Conservation Act (16 U.S.C. 140hh-3233, 43 U.S.C. 1602-1784). This act, among other things, redesignated Kodiak National Wildlife Refuge. It also added about 50,000 acres of public lands on Afognak and Ban islands to the Refuge. These lands were previously part of the Afognak Forest and Fish Culture Reservation established by President Benjamin Harrison through Executive Proclamation No. 39 on December 24, 1892, under jurisdiction of the U.S. Commission of Fish and Fisheries. President Theodore Roosevelt added the Reservation to the Chugach National Forest, by Executive Order 908 dated July 2, 1908. These lands, however, remained under joint jurisdiction of the U.S. Forest Service and the U.S. Fish Commission, with the dominant use of these lands being for fish culture, until 1925 when the Forest Service became the sole administrator (Rakestraw 1981). These lands remained under Forest Service jurisdiction until transferred to the Service by ANILCA.

Since 1994, the Service has pursued a land acquisition program for Kodiak Refuge to return privately owned lands within refuge boundaries to the protection of refuge status. Nearly 280,000 acres of valuable wildlife habitat have been protected through direct purchase or donation of (1) fee title, (2) conservation easements, and (3) limited-development easements. Funding has come from the civil and criminal settlements resulting from the *Exxon Valdez* oil spill, from appropriated funds from the Land and Water Conservation Fund, and from private sources. As funding becomes available, acquisition of valuable habitat from willing sellers continues. The Refuge's Land Protection Plan (USFWS 1992) guides this land acquisition program.

1.2.2 Purposes of Kodiak National Wildlife Refuge

As stated in Executive Order 8857, dated August 19, 1941, Kodiak National Wildlife Refuge was established "... for the purpose of protecting the natural feeding and breeding ranges of the brown bears and other wildlife on Uganik and Kodiak Islands, Alaska ..."

Under ANILCA, the purposes of Kodiak Refuge were further defined and expanded beyond the original purpose identified in the 1941 establishing order (see Section 1.2.1).

Section 303(5)(B) of ANILCA states:

"The purposes for which the Kodiak National Wildlife Refuge is established and shall be managed include

(i) to conserve fish and wildlife populations (and) habitats in their natural diversity, including, but not limited to, Kodiak brown bears, salmonids, sea otters, sea lions and other marine mammals and migratory birds;

(ii) to fulfill the international treaty obligations of the United States with respect to fish and wildlife and their habitats;

(iii) to provide, in a manner consistent with the purposes set forth in subparagraphs (i) and (ii), the opportunity for continued subsistence uses by local residents; and

(iv) to ensure, to the maximum extent practicable and in a manner consistent with the purposes set forth in paragraph (i), water quality and necessary water quantity within the refuge.”

1.2.3 Refuge Environment

Kodiak Refuge encompasses nearly 1.8 million acres within its boundaries—the southwestern two-thirds of Kodiak Island, all of Uganik Island, and about 54,000 acres on Afognak and Ban islands. The islands, part of the Kodiak Archipelago, lie at the western edge of the Gulf of Alaska in southwestern Alaska. The approximately 30-mile wide Shelikof Strait separates Kodiak Island from the Pacific coast of the Alaska Peninsula. The City of Kodiak, where refuge headquarters are located, is about 250 air miles south of Anchorage and about 21 miles northeast of the refuge boundary on Kodiak Island.

Kodiak and adjacent islands have irregular coastlines of bays, inlets, and rugged mountains. Other landscapes found on the Refuge include glacial valleys, tundra uplands, lakes, wetlands, sand and gravel beaches, salt flats, and meadows. Spruce forests dominate Afognak Island, extending southward onto the northern end of Kodiak Island. The mountainous interior of Kodiak Island, with several peaks more than 4,000 feet in elevation, is covered by lush, dense vegetation during the summer, with alpine vegetation on the highest slopes. The southwestern portion of the island is covered with tundra plants and grassy hummocks. No place on the Refuge is more than 15 miles from the ocean. Access to the Refuge is primarily by float plane and boat.

Kodiak Refuge is characterized by a large range of habitats within a relatively small geographic area. Because of this, the Refuge supports some of the highest densities of brown bears, nesting bald eagles, and spawning salmon found anywhere in North America.

The 11 large lakes and many rivers on Kodiak Refuge are major spawning grounds for five species of Pacific salmon: pink, Chinook, chum, sockeye, and coho. The large runs of salmon fuel refuge ecosystems by enriching freshwater streams and lakes with nutrients

from the ocean and serve as a source of food for many wildlife species. Salmon spawning on the Refuge are also important to people, supporting subsistence users, recreational anglers, and the Kodiak commercial salmon fishery. Rainbow trout, steelhead trout, Dolly Varden, and Arctic char are also found in waters on the Refuge.

More than 240 species of birds have been recorded in the Kodiak Archipelago. With a total resident population estimated at 2,250, more than 500 pairs of bald eagles nest on the Refuge. This is one of the largest concentrations of nesting bald eagles in the United States. As many as two million seabirds inhabit the refuge shoreline and adjacent bays and inlets. At least 150,000 ducks and geese also winter along the shoreline and on the refuge proper.

Kodiak Refuge was established primarily to protect the brown bear. With an estimated population of 2,200 bears (an estimated 2,890 bears inhabit the entire Archipelago), the Refuge contains some of the best brown bear habitat in the world, which supports some of the highest concentrations of brown bear found anywhere. These bears feed on spawning salmon and forage throughout most of the Refuge. The current bear population on the Archipelago supports an annual harvest of approximately 160 animals. Some 5,000 Alaska residents apply for 319 permits annually, while nonresidents (who are required to hire a professional guide or be accompanied by a family member who is a resident of Alaska) vie for 153 permits. As many as 11 permits are issued for a federally authorized subsistence hunt. Bear viewing and photography are increasing in popularity as well, particularly over the past 10 to 15 years.

Besides the brown bear, only five other mammals—red fox, river otter, short-tailed weasel, little brown bat, and tundra vole—are native to Kodiak Island. Several other species—including Sitka black-tailed deer, Roosevelt elk (introduced only on Afognak Island), snowshoe hare, beaver, mountain goat, and reindeer (introduced for husbandry purposes)—have been introduced onto the Archipelago. Deer are the most popular quarry of recreational and subsistence hunters. Hunting of Sitka black-tailed deer reached peak levels during the late-1980s to mid-1990s when the deer population numbered more than 80,000 animals. During the 1987-1988 deer-hunting season, it was estimated that more than 5,000 hunters harvested about 13,000 deer on the Archipelago. Populations fell through the 1990s, leaving an estimated population in 2001 of 40,000 deer. Subsistence and recreational hunting effort has dropped significantly; estimated harvests have been as low as 2,000 animals in recent years. Hunting of Roosevelt elk, mountain goat, small game, waterfowl, and upland game birds also occurs on the Refuge.

More limited numbers of visitors participate in other recreation activities, including hiking, trapping, berry picking, beachcombing, sightseeing, photography, and snowmachining. Most of these activities occur secondarily to big-game hunting or fishing trips,

although anecdotal evidence indicates that an increasing number of refuge visitors are participating exclusively in nonconsumptive activities. About one-third of refuge visitors pursue their activities with the help of guides who hold permits issued by the Refuge. There are no developed camping areas on the Refuge, and weather conditions can make tent-camping difficult; thus, many recreational visitors base their activities out of privately owned lodges, temporary guide camps, or the seven public use cabins on the Refuge.

1.2.4 Special Values of the Refuge

Section 304(g) of ANILCA directs the Secretary of the Interior to identify and describe “special values of the refuge, as well as any other archaeological, cultural, ecological, geological, historical, paleontological, scenic, or wilderness values of the refuge.” The following special values have been identified for Kodiak Refuge.

Kodiak Brown Bear

The Kodiak brown bear, the largest brown bear in the world, is Kodiak Refuge’s most well-known resource. With a population estimated at 2,200 bears, areas of the Refuge support some of the highest known densities of brown bear in North America (Cowan 1972, Troyer 1961). Hunters from around the globe come to Kodiak to hunt the largest brown bears in the world. Opportunities for viewing and photographing bears are also drawing an increasing number of people to the Refuge.

Kodiak Refugium and Associated Glacial Lakes

The Kodiak Refugium¹ and associated glacial lakes, some 300,000 acres in the southwestern portion of the Refuge, have special scientific, education, and recreation values. The area’s distinctive flora and rolling landscape contrast with the rugged terrain found elsewhere on the Island. During the last glacial advance of the Pleistocene Era, some 20,000 years ago, only this area of Kodiak Island and the highest peaks on the Archipelago remained ice-free. The area supports a diversity of wildlife, including a large population of brown bears that congregate in high numbers during salmon runs, the highest density of nesting waterfowl (including tundra swans) on the Island, and the highest summer feeding concentration of bald eagles. Characteristics of the vegetation found in the area are representative of the Arctic, the Bering Sea coast, and the southern coast of the Alaska Peninsula. Several large glacial lakes in or near the refugium—Karluk, Frazer, Red, and Akalura—provide spawning habitat for salmon and key habitats for bears, eagles, and other wildlife.

¹ A refugium is an area of relatively unaltered climate that is inhabited by plants and animals during a period of continental climatic change (such as a glaciation) and remains as a center of relic forms from which a new dispersion and speciation may take place after climatic readjustment.

Ayakulik-Red, Karluk, Sturgeon, and Dog Salmon Drainages

Four important refuge drainages—the Ayakulik-Red, Karluk, and Sturgeon rivers and Dog Salmon (Frazer) Creek—are associated with the Kodiak Refugium. These rivers support large runs of Pacific salmon; support high concentrations of wildlife, particularly brown bear and eagles; and have high recreation and economic values. The Ayakulik-Red and Karluk support runs of the five species of Pacific salmon found in Alaska; they are the only drainages on the Refuge (and two of only a few within Alaska refuges) to support abundant populations of both Chinook and steelhead. Karluk Lake (about 9,600 acres) and Frazer Lake (about 4,100 acres) are the largest lakes on the Kodiak Archipelago. The Sturgeon River drainage supports an early run of chum salmon. Peak aerial index counts (from information in ADF&G database) since 1976 have ranged from 1,000 to 95,000 fish (K. Brennan, 2005). It is one of the earliest and most important chum salmon runs on the Refuge because it provides an early food source for high concentrations of bald eagles and of brown bears.

Uganik Lake

Uganik Lake is a scenic mountain lake that provides spawning habitat for salmon and key habitat for bears and eagles. The lake also has high recreation values for deer and bear hunting, fishing, and sightseeing. These attributes contribute to making Uganik Lake one of the most popular recreation areas in the Refuge.

Three Saints Bay

Three Saints Bay, located on the southeastern coast of Kodiak Island, is the site of the first European settlement in Alaska. Established by Russian business interests in 1784, the settlement was used primarily by Russian fur traders. The site is a designated National Historic Landmark and has been selected by Koniag, Inc., the Native regional corporation, as a historic site under Section 14(h)(1) of ANCSA. Although it is certified as a 14(h)(1) site, the Service retains custodial responsibilities for the site until it is conveyed to Koniag. Authorized excavation of the site has occurred in the past.

Mount Glottof Research Natural Area

The 88,000-acre Mount Glottof Research Natural Area (RNA) was designated in 1975 to highlight important bear-habitat values and to provide a focal point for research activity in the primary mountain range of the Kodiak Archipelago. The RNA contains an array of mountain habitats, including rock outcrops, glaciers, cirque lakes, streams, and subalpine and alpine tundra, grassland, wetland, and shrubland. Within this matrix of habitats, large numbers of brown bears (two to seven bears per square mile) congregate to forage in two plant communities—sedge-forb meadow and willow-subalpine meadow—from late June to early August (Atwell *et al.* 1980). This high concentration of bears, more typical in the best salmon-foraging habitat, is unique because it involves a significant number of bears that exclusively focus on plant foraging activities over a large

subalpine area. Hunting, fishing, and other wildlife-dependent recreation activities occur, and are expected to continue, within the RNA.

Afognak Island Sitka Spruce Forest

The Afognak unit of Kodiak Refuge, approximately 54,000 acres on Afognak and Ban islands, includes one of the few intact lowland coniferous forests comprising a single evergreen tree species known to exist in North America. Closed Sitka spruce forest makes up about 45 percent of the land cover within this unit of the Refuge. This distinct habitat type provides unique educational and scientific opportunities to investigate old-growth forest ecosystems from a single-species perspective.

The unit also includes Red Peak—at 2,425 feet the highest point on Afognak Island—allowing comparison of monotypic habitat succession over a range of elevations. Much of the old-growth forest on Afognak Island has been clearcut, increasing the scientific value of remaining spruce forest habitat, much of which is within the Refuge.

Coastal Marine Habitats

The Gulf of Alaska coastal ocean currents and the upwelling of nutrient-rich marine waters surrounding the Kodiak Archipelago continually inject large amounts of marine-derived carbon and nitrogen into the coastal habitats bounded by these waters. The Refuge's nearshore habitats support resident and migratory marine bird and mammal populations and provide key habitat during portions of the life cycles of many commercially or biologically valuable pelagic and forage fish species. Salmon accumulate marine-derived nutrients during their one-to-five years of nearshore to open-ocean existence and annually transport them inland for deposition with completion of the spawning cycle and death.

1.3 Refuge Vision and Goals

1.3.1 Refuge Vision Statement

Service Planning Policy (Service Manual 602 FW 3.4G) directs each national wildlife refuge to develop a vision statement for the refuge during the comprehensive conservation planning process. A vision statement is “[a] concise statement of what the planning unit (refuge) could be, or what we could do, in the next 10 to 15 years, based primarily upon the Refuge System mission and specific refuge purposes, and other relevant mandates (USFWS, 602 FW 1.6S).” The staff of Kodiak has developed the following statement:

Brown bear, fish, and other wildlife populations will continue to thrive on Kodiak National Wildlife Refuge in their natural diversity, living in pristine habitats. Refuge management will blend public and private partners in a dynamic alliance that fulfills the purposes and goals of Kodiak Refuge. The Refuge

will provide a lasting legacy of resource stewardship for the use and enjoyment of current and future generations.

1.3.2 Refuge Goals

Refuge goals are based on the purposes of Kodiak Refuge and the refuge vision statement. They reflect the contribution of the Refuge to the National Wildlife Refuge System as well as other key management responsibilities that stem from law and policy. The Conservation Plan adopted as a result of this planning process must work toward meeting all of these goals.

Goal 1: Increase our knowledge of fish and wildlife populations, their habitats, and their interrelationships.

Goal 2: Ensure that Kodiak brown bears continue to flourish throughout the Refuge and congregate at traditional concentration areas.

Goal 3: Manage nonnative species to minimize impacts on native resources, while continuing to provide opportunities for harvest.

Goal 4: Continue to improve understanding and management of furbearing and nongame mammals that use Kodiak Refuge.

Goal 5: Monitor populations of resident and migratory birds as indicators of ecosystem health.

Goal 6: Maintain and restore native plant populations, communities, and habitats.

Goal 7: Conserve the abundance of natural salmonid populations for continued human and wildlife use and to ensure the diversity of species as indicators of the health of the Refuge's ecosystem.

Goal 8: Provide the opportunity for local residents to continue their subsistence uses on the Refuge, consistent with the subsistence priority and with other refuge purposes.

Goal 9: Improve baseline understanding of natural flowing waters on the Refuge and maintain the water quality and quantity necessary to conserve fish and wildlife populations and habitats in their natural diversity.

Goal 10: Provide opportunities for quality public use and enjoyment of refuge resources through compatible fish and wildlife-dependent recreation activities, including hunting, fishing, wildlife observation, and photography.

Goal 11: Improve management of commercial use opportunities that are compatible with refuge purposes, provide quality public use opportunities, enhance visitor experiences, and ensure compliance with provisions of ANILCA.

Goal 12: Provide outreach, environmental education, and interpretive programs that increase a sense of stewardship for wildlife, cultural resources, and the environment and that enhance visitor experiences on the Refuge.

Goal 13: Conserve cultural and archaeological resources of the Refuge.

Goal 14: Conserve special and unique features of the Kodiak Archipelago ecosystem within the Refuge.

Goal 15: Promote close working relationships through effective coordination, interaction, and cooperation with other federal agencies, state agencies, local communities, tribes, organizations, industries, the general public, and the landowners within and adjacent to the Refuge whose programs affect or are affected by refuge management activities.

1.4 Legal and Policy Context and State Coordination

The Service manages national wildlife refuges pursuant to various legal and administrative requirements. Management of Kodiak Refuge is dictated, in large part, by ANILCA, which redesignated the Refuge and identified the purposes for which it was established. However, numerous other laws, treaties, executive orders, and agreements with other parties (e.g., the State of Alaska) also guide management of the Refuge.

1.4.1 Legal Guidance

Operation and management of the Refuge System are influenced by a wide array of laws, treaties, and executive orders and the regulations and policies developed to implement them. Among the most important are the Refuge System Administration Act as amended by the Refuge System Improvement Act, the Refuge Recreation Act, the Alaska Native Claims Settlement Act, and the Endangered Species Act. A brief description of these and other pertinent legal documents that influence management of Kodiak Refuge is found in Appendix A.

For national wildlife refuges in Alaska, ANILCA, as amended, provides key management direction. ANILCA sets forth the purposes for each refuge and provides administrative direction for management of the refuges, including requiring development of comprehensive conservation plans for each refuge. Additional provisions authorize studies and programs related to wildlife and wildland resources, subsistence opportunities, and recreation and economic uses. How ANILCA influences management of the Refuge is reflected throughout this document.

1.4.2 Policy Guidance

Policy documents provide additional direction for management of the Refuge System. These documents include the U.S. Fish & Wildlife Service Manual, director's orders, national and regional policy issuances, handbooks, director's memorandums, and regional directives. These documents are critical to management of Kodiak Refuge and the Refuge System as a whole. Much of the management direction described in Chapter 2, and in other parts of this Plan, is derived from these programmatic and policy documents.

1.4.3 Coordination with the State of Alaska

The Alaska Department of Fish & Game (ADF&G) has the primary responsibility for managing fish and resident wildlife populations in the state. On refuge lands, the Service and ADF&G share a concern for all fish and wildlife resources and their habitats, and both agencies are engaged in extensive fish and wildlife conservation, management, and protection programs. In 1982, the Service and ADF&G signed a Master Memorandum of Understanding (see Appendix B) that defines the cooperative management roles of each agency and sets the framework for cooperation between the two agencies.

The State of Alaska establishes fishing, hunting, and trapping regulations throughout the state at the direction of the Alaska Boards of Fisheries and Game. These regulations apply to federal public lands. If Service restrictions on hunting were needed, they would be done through special refuge closures or restrictions under 50 CFR 36.42 or through Federal Subsistence Board regulations under 50 CFR 100.10(d)(4). The state is divided into 26 game management units (GMUs); most of these are further divided into subunits. Kodiak Refuge is entirely within GMU 8. ADF&G management objectives for big-game and fish populations on the Refuge are described in Chapter 3.

The Alaska Department of Natural Resources (DNR) and its divisions are also key management partners. DNR manages all state-owned land, water and surface and subsurface resources except for fish and game. DNR's Division of Mining, Land, and Water manages the state's water and land interests within national wildlife refuges. Issues related to state interests will expand in the next 10 to 15 years, especially with regard to water rights, navigable waters, ownership of submerged lands, and rights-of-way over refuge lands.

Additional information about key state programs is provided in Appendix B.

1.5 Planning Context

Kodiak Refuge is part of a national system of more than 540 wildlife refuges. The current Conservation Plan for the Refuge was completed in 1987 following guidance in Section 304(g) of

ANILCA. The Refuge System Improvement Act of 1997 provides additional guidance on conservation planning.

1.5.1 The U.S. Fish & Wildlife Service and the National Wildlife Refuge System

Part of the Department of the Interior, the Service is the principal federal agency responsible for conserving, protecting, and enhancing the nation's fish and wildlife populations and their habitats for the benefit of the American people. The Service has responsibilities for migratory birds and fish, endangered species, and certain marine mammals.

Fish & Wildlife Service and Refuge System Missions

The mission of the Service is

working with others to conserve, protect, and enhance fish, wildlife, and plants and their habitats for the continuing benefit of the American people (602 FW 1.6W).

The mission of the Refuge System is

to administer a national network of lands and waters for the conservation, management, and, where appropriate, restoration of the fish, wildlife, and plant resources and their habitats within the United States for the benefit of present and future generations of Americans [16 U.S.C. 668dd(a)(2)].

Principles for Managing the National Wildlife Refuge System

The Refuge System Administration Act, as amended, states that each refuge shall be managed to fulfill both the mission of the Refuge System and the purposes for which the individual refuge was established. It also requires that any use of a refuge be a compatible use—a use that will not materially interfere with or detract from fulfillment of the mission of the System or the purposes of the refuge, based on sound professional judgment.

The 1997 amendments to the Refuge Administration Act identified a number of principles to guide management of the Refuge System:

- Conservation of fish, wildlife, and plants, and their habitats within the Refuge System
- Maintenance of biological integrity, diversity, and environmental health of the Refuge System
- Carrying out the mission of the Refuge System and the purposes of each refuge (except that, if a conflict exists, refuge purposes are protected first)
- Effective coordination, interaction, and cooperation with adjacent landowners and state fish and wildlife agencies
- Maintenance of adequate water quantity and water quality to meet refuge and system purposes and acquisition of necessary water rights under state law

- Recognition of hunting, fishing, wildlife observation and photography, and environmental education and interpretation as the priority general public uses of the Refuge System
- Provision of opportunities for compatible priority wildlife-dependent public uses within the Refuge System
- Provision of enhanced consideration for priority wildlife-dependent uses over other general public uses in planning and management within the Refuge System
- Provision of increased opportunities for families to experience compatible wildlife-dependent recreation, particularly traditional outdoor activities such as fishing and hunting
- Monitoring of the status and trends of fish, wildlife, and plants within each refuge
- Ensuring that timely and effective cooperation and collaboration with and involvement of other federal agencies, state agencies, tribes, organizations, industry, and the general public will occur during the course of managing refuges

Ecosystem Approach to Refuge Management

National wildlife refuges exist within larger ecological systems and land-ownership patterns. The Service's goal for ecosystem management is conservation of biological diversity through perpetuation of dynamic, healthy ecosystems while carrying out its mission and mandates. To achieve this goal, the Service is working to (1) identify and meet fish and wildlife needs within the context of the environmental and socioeconomic landscape in which they occur; (2) increase collaboration within the agency; and (3) communicate, coordinate, and collaborate more frequently, consistently, and effectively with its partners, affected stakeholders, and the public.

An ecosystem approach to management recognizes that institutions outside the Refuge System have responsibilities and authorities for resources that lie both within and outside refuges. For example, the Federal Subsistence Board establishes regulations for the harvest of fish and wildlife for subsistence purposes on federal public lands in Alaska, including refuges. The State of Alaska, including the departments of Fish and Game and Natural Resources, has many roles related to management of the fish, wildlife, and other resources on national wildlife refuges, including establishment of fishing, hunting, and trapping regulations; management of commercial salmon fisheries; and conservation and enhancement of Alaska's wildlife to provide for a wide range of uses for the greatest benefit of current and future generations.

International, National, and Regional Management Guidance

Nature is not constrained by governmental boundaries. Without physical barriers—and with available habitat—fish and wildlife roam through lands and waters regardless of ownership or management authority. To ensure conservation of the many species that migrate

across legal and political boundaries, a number of efforts—at scales ranging from local community and regional plans to national and international conservation programs—have been designed to monitor and protect these species. These plans were reviewed during the revision of the Kodiak Refuge Conservation Plan to ensure that the revised management direction is consistent. Appendix A includes a list and brief description of several of these documents, which, though not intended to be comprehensive, demonstrates the range of documents reviewed. When applicable, specific information from these plans is incorporated into this document.

1.6 The Planning Process for Kodiak Refuge

This section describes the process used to develop this Final Conservation Plan and environmental impact statement (EIS). The process is consistent with the planning requirements specified in Section 304(g) of ANILCA; the Refuge System Administration Act, as amended; the Service's planning policy (602 FW 1 and 3); the National Environmental Policy Act (42 U.S.C. 4321-4347); and the Council on Environmental Quality's Regulations for Implementing the Procedural Provisions of the National Environmental Policy Act (40 CFR 1500-1508). The Service is using an eight-step planning process to revise the Kodiak Refuge Conservation Plan:

- 1) Design the planning process (also called preplanning).
- 2) Initiate public involvement and scoping.
- 3) Determine significant issues.
- 4) Develop and analyze alternatives.
- 5) Prepare draft conservation plan and environmental impact statement.
- 6) Prepare and adopt a final plan and environmental impact statement.
- 7) Implement the plan and monitor and evaluate it.
- 8) Review and revise the plan.

1.6.1 Design the Planning Process (Preplanning)

In late 1998, the Service began reviewing the Kodiak Refuge Conservation Plan to determine if it should be revised or a new plan should be prepared. The Service found that, in most cases, on-the-ground management actions were meeting refuge objectives. However, some management direction needed to be updated. New laws (such as the Refuge System Improvement Act), new regulations and policies, and other changes (such as federal management of subsistence on Alaska refuges) needed to be included in the Conservation Plan. Approximately 174,000 acres of land has been acquired in fee since the original plan was completed. Management direction for these lands needs to be incorporated into the revised plan. For these reasons, the Service decided that a revision of the Kodiak Refuge Conservation Plan was necessary.

The Service then identified all relevant laws, regulations, policies, and other direction that would have to be considered during revision of the Conservation Plan. These are discussed in the legal and planning context sections earlier in this chapter, and additional detail can be found in Appendix A. The Service also reviewed data available on refuge resources and uses and identified some areas in which additional work was required.

1.6.2 Initiate Public Involvement and Scoping

This step let people know that the conservation plan revision process was beginning and solicited ideas on what should be addressed in the revision. Formal scoping began with publication of a Notice of Intent to revise the Kodiak Refuge Conservation Plan and prepare an EIS, which was published in the *Federal Register* on May 3, 1999 (Vol. 64, No. 84).

In May 1999, a newsletter announcing the revision and seeking comments was mailed to 1,100 individuals and organizations. Copies of the newsletter were sent to all post office box holders in Akhiok, Karluk, Larsen Bay, Old Harbor, Ouzinkie, and Port Lions. The newsletter contained information about the Refuge, described issues identified by the refuge staff, and provided an opportunity for the public to identify other issues that should be addressed during revision of the Conservation Plan.

Public meetings to gather input were held in communities adjacent to Kodiak Refuge and in Anchorage. Fifty-seven people attended the meetings, and 87 individuals or organizations provided written or oral comments (34 comments were from outside Alaska, 53 from within Alaska including 28 from the Kodiak Archipelago. Only 12 comments were from government and nongovernment organizations—three representing national organizations, the remainder represented state-wide or local constituents). One hundred and thirty-one residents of the Kodiak Archipelago signed a petition requesting any changes to current management focus on maximizing access to the Refuge for public uses such as wildlife viewing, hunting, fishing, camping, and commercial fishing; that there be no designated Wilderness or other restrictive land classifications; and that there be no eradication of any nonnative animals such as Sitka black-tailed deer. A detailed summary of comments is on file at the USFWS regional office in Anchorage and is available upon request.

Potential issues identified by the public included access, brown bears (population management and viewing opportunities), concessions and outfitter-guides, current management, hunting, land acquisition, special use permits, Wilderness and Wild River designations, subsistence, nonnative species, and consumptive and extractive uses.

1.6.3 Determine Significant Planning Issues

The planning team reviewed the issues raised by the public, refuge staff, and other Service divisions to determine the significant planning

issues to be addressed in the revised Comprehensive Plan. Significant planning issues are those issues where multiple approaches to resolving the issue will be evaluated as part of the planning process. Section 1.7 provides more detail on the process used to identify the significant planning issues and what those issues are.

1.6.4 Develop and Analyze Alternatives

In January 2000, preliminary alternatives for management of the Refuge were presented in a newsletter sent to the public for review and comment. Public response to these preliminary alternatives made it clear that the Service needed to reevaluate and do a better job of involving the public in its process.

At the same time, the Alaska Department of Fish & Game (ADF&G) was developing a bear-management plan for the Kodiak Archipelago. The *Kodiak Archipelago Bear Conservation and Management Plan* (Bear Management Plan) was prepared by a Citizens Advisory Committee (CAC). The CAC developed recommendations presented during a series of meetings held in early 2001. These meetings were open to the public. ADF&G and Kodiak Refuge personnel and other experts presented technical and resource information and served as support staff to the CAC.

Because many of the topics addressed in the Bear Management Plan were relevant to the Kodiak Refuge Conservation Plan, the Refuge agreed to integrate all relevant recommendations from the Bear Management Plan into the Conservation Plan. (See Appendix C.)

The refuge planning team was expanded to include members from ADF&G and DNR. Planning team meetings, open to the public, were held to develop components of alternatives for the Draft Conservation Plan. These meetings provided an opportunity for the public to see the Service's planning process in action and to understand some of the constraints under which the Service must operate. At the last meeting in 2001, the team developed another set of draft alternatives. These alternatives were presented to the public in a July 2001 planning newsletter distributed to approximately 1,500 interested individuals and organizations.

Comments on the preliminary alternatives described in the July 2001 newsletter and the comments received on the draft Bear Management Plan were used to revise the alternatives in an open team meeting held in January 2002. The alternatives were further revised after the Bear Management Plan was completed and as the planning team analyzed the preliminary alternatives during the next two years. The final set of alternatives is presented in Chapter 2, with analysis of the environmental effects displayed in Chapter 4 of this document.

1.6.5 Prepare Draft Plan and Environmental Impact Statement

The Draft Plan and EIS were released in October 2004. It described four alternatives for managing Kodiak Refuge over the next 15 years, including one describing continuation of current management and one that was the Service's preferred alternative. It included an analysis of the potential impacts of implementing each alternative and described how the Service determined its preferred alternative. Also included was a description of management common to all the alternatives—that management would remain the same no matter which alternative is implemented. A 90-day public review and comment period was held. During this period, the Service held public meetings in Anchorage, Kodiak, Port Lions, and Old Harbor.

Comments Received on the Draft Plan

Comments were received at public meetings and in writing, by mail and via the internet. Thirty-four written comments were received: 27 from Alaska and seven from outside Alaska. Agencies and organizations commenting included the State of Alaska, U.S. Environmental Protection Agency, Kodiak Island Convention and Visitors Bureau, Kodiak Regional Aquaculture Association, Kodiak Unified Bear Subcommittee, Cascadia Wildlands Project, Defenders of Wildlife, National Wildlife Federation, Sierra Club, and The Wilderness Society. Twenty-four individuals, including five guides and two air taxi operators, commented. Public meetings in Kodiak, Anchorage, Port Lions, and Old Harbor were attended by 24 people. For a detailed presentation of results and our responses to comments, see Appendix K.

1.6.6 Prepare and Adopt a Final Plan and Environmental Impact Statement

The planning team reviewed and analyzed all comments received on the Draft Conservation Plan and EIS, and modified the draft as needed, including refining the preferred alternative (Alternative D). This Final Revised Comprehensive Conservation Plan and EIS is the result of these changes. Following a 30-day period, the Service's regional director will issue a record of decision (ROD) that will describe the alternative to be implemented. The ROD is a document that identifies the rationale the regional director used to make his decision on how to manage the Refuge for the next 15 years. The Service will publish and distribute the ROD and a stand-alone Revised Kodiak Refuge Comprehensive Conservation Plan (without the alternatives and EIS documentation) after that decision is made.

1.6.7 Implement Plan, Monitor, and Evaluate

After the ROD and Final Comprehensive Plan are distributed, refuge staff will begin implementing any management changes called for in the revised plan. A critical component of management is monitoring—measuring resource and social conditions to make sure

that progress is being made toward meeting our purposes, goals, and objectives. Monitoring includes determining if the Refuge is implementing the plan and if actions being taken are effective in meeting the objectives. The Refuge will use an adaptive management approach, which means that information gained from monitoring will be used to evaluate and, as needed, modify refuge objectives.

1.6.8 Review and Revise Plan

Service policy directs that the Refuge review the Conservation Plan annually to assess the need for change. The Service revises the plan when important new information becomes available, when ecological conditions change, or when the need to do so is identified during a review. If major changes are proposed, public meetings may be held and new environmental assessments or environmental impact statements may be necessary. Consultation with appropriate state agencies and others would occur during any future revisions. Full review and revision of the plan will occur every 15 years, or more often if necessary. The Service will continue to inform and involve the public through appropriate means (such as reporting on activities at village meetings and via updates or other mailings) throughout the implementation and monitoring process.

1.7 Significant Planning Issues

Two significant planning issues were identified for consideration during revision of the Kodiak Refuge Conservation Plan. These issues reflect problems or opportunities that the Refuge can address in a variety of ways. The alternatives described in Chapter 2 comprise different options for addressing these issues. The environmental analysis presented in Chapter 4 discusses the probable effects that implementing these options would have on the environment.

As described previously in this chapter, a wide variety of issues were raised from public and agency comments during the scoping process. Several of the issues identified are outside the scope of the revision process. To identify issues that could be addressed in the plan versus those outside the scope of this plan, each issue was assigned to one of four categories describing how these issues will be addressed. These categories—and the issues falling under each category—are presented in Table 1-1.

In addition to describing the significant planning issues, the table includes a brief summary of the public comments received on each issue. It is important to note that significant issues may be raised by only a few people familiar with a specific area or problem (either by the public or by staff) or they may be of national interest and generate a large number of comments from across the country. The Service's role in identifying and analyzing the issues is to objectively consider a wide range of approaches that could be taken to address each issue.

Following each issue statement, examples are included of people's comments on the issue using their own words. This provides the readers with a greater understanding of how people who care about the Refuge view each issue. Comments were selected to represent the broad range of approaches and opinions people bring to the issues. All comments received are available for the public to review upon request.

Issue 1. Given potential for increasing demands by the public for use of the Refuge and a limited number of access opportunities, how should the Refuge manage public use activities to continue providing opportunities for appropriate uses while preventing significant impacts to the natural resources of the Refuge and the quality of the experience?

The issue of access to and public use (including subsistence and commercial activities) of Kodiak Refuge is a complex topic. Certain forms of transportation (e.g., motorboats and snowmachines) are authorized under sections 811 and 1110 of ANILCA when use is for specific purposes such as subsistence, access to villages and homesites, and access for traditional activities, provided that refuge resources are protected. Hunting, fishing, wildlife viewing and photography, and other wildlife-dependent recreation are also guaranteed by law and policy provided they are conducted in a compatible manner.

Because people use the Refuge in different ways and for different reasons—coupled with limited methods of access and relatively few access points—conflict between users and user groups can arise. Although public use tends to be dispersed, higher concentrations occur in specific locations: e.g., on specific rivers during certain salmon runs and at primary access points. Crowding at some times and locations has been reported. Several areas of concern—including impacts to wildlife associated with potential displacement from key use areas, habituation to and food-conditioning associated with the presence of humans, impacts to sensitive habitats resulting from trampling, and other effects associated with potential overuse, possible conflicts between various user groups, and impacts to the quality of experience resulting from crowding and potential overuse—are elements of this issue that are being addressed, at least in part, through options presented in the alternatives addressing management of human use in key bear concentration areas, the scope of the public use cabin program, and how to manage impacts associated with public use of the Refuge. Other aspects of access to and public use of the Refuge are addressed in the regional management direction presented in Chapter 2, which is common to all alternatives.

Table 1-1 Issues raised during scoping

* Some issues consist of a number of elements that may be dealt with differently.

Category	Issues	Example
Issue is addressed by existing laws, regulations, or policies.	Hunting (including brown bear hunting) Subsistence Access* Consumptive and extractive uses Commercial fishing* Regulation of 22(g) lands	Hunting. Several comments related to subsistence and recreational hunting on the Refuge, both in support of and opposed to hunting. ANILCA guarantees that opportunities for both subsistence and recreational hunting will continue to be provided on national wildlife refuges in Alaska (Section 101 [b] and [c]). While a refuge does have authority to close an area to hunting to protect resources or people, both subsistence and recreational hunting have been found to be compatible with the purposes of Kodiak Refuge.
Issue is outside the scope of this Conservation Plan revision.	Recommendations for Wilderness and Wild & Scenic River designations Land acquisition Coordination of uses on adjacent lands Commercial fishing*	Recommendations for Wilderness and Wild & Scenic River Designations. Comments focused on whether this plan should recommend additional areas for Wilderness designation or rivers for inclusion in the National Wild & Scenic Rivers System. Section 1317 of ANILCA required a review of the wilderness suitability of all lands in Alaska refuges not designated as Wilderness. This review was completed in accordance with the Wilderness Act as part of the original Conservation Plan. The ROD for the Comprehensive Plan (USFWS 1987b) recommended about 1.08 million acres for designation. This recommendation will remain in effect until Congressional action is taken or the Conservation Plan is amended to modify or remove it. After reviewing the requirements for the Wilderness and Wild & Scenic River reviews, the Service determined that the comprehensive planning requirements of Section 304(g) of ANILCA were best satisfied by honoring the Wilderness recommendations of the current plan and focusing on describing the wilderness and river values of the Refuge and providing better direction for how the Refuge could be managed to protect these values.

* Some issues consist of a number of elements that may be dealt with differently.

Category	Issues	Example
Issue is or will be addressed in same manner regardless of alternative selected. Management direction will be common to all alternatives.	Regulation of use and law enforcement Concessionaires and guides-outfitters* Special use permits* Natural diversity (introduced species) Cooperation with others Hydroelectric development Visitor center	Law Enforcement. People suggested that increasing enforcement of existing refuge laws and regulations could address some of the identified issues (current management, concessionaires and outfitter-guides, special use permits). The Service is actively seeking ways to increase enforcement activities on the Refuge under current management and will continue to do so under the revised Conservation Plan.
Significant planning issue; will be addressed in the alternatives	Access* to and management of the Refuge for public use Protection of bear use areas and provision of bear-viewing opportunities	Brown Bear-Viewing Program. Whether or not a guided bear-viewing program should be developed on Kodiak Refuge was an issue identified in many comments. Where this program would be located, who would operate the program, how participants would be selected, and other considerations provide many options to be considered. Alternatives considered ranged from no guided bear-viewing program to a program operated by the government, by private concessionaires, or some combination.

Summary of Comments: A number of people expressed concern about access to and use of the Refuge for a variety of public uses. Some people, believing that current management was fine and that the Refuge should be kept open to all people, wanted to see no change in opportunities for access and use of the Refuge. Others thought that some methods of access and activities should be restricted in some areas of the Refuge. Some people were concerned about conflicts between people participating in different activities and stated that it may be necessary to restrict or limit the number of people using the Refuge. Still others thought that trails and additional cabins were necessary to facilitate public use. In general, most people commented that the Refuge should manage access to protect resources. Many residents in Kodiak commented that access to hunting, fishing, and other traditional activities should be maintained.

Representative Comments

“I would like to see access limited with the primary focus on preservation.”

“Rather than close portions of the refuge, I prefer limiting access. Make critical areas ‘walk-in only’ will rebuff much of the use the land now suffers.”

“I would like the management to be more user-oriented. Sanitary facilities at designated camp sites—individuals should be restricted to designated overnight camping areas.”

“... as more people visit (the) refuge the cabin program will need to expand and will give managers better control over use of (the) park. If there’s a cabin they’ll use it. If there is no cabin, they will camp out who knows where.”

“Additional public use cabins and such associated amenities as meat caches should be constructed only if proven necessary to reduce human impacts on bears, not simply for the ‘comfort and convenience’ of refuge visitors.”

Issue 2. What type of bear-viewing opportunities should be available on Kodiak Refuge and how should the Refuge make these opportunities available? How do we manage human activities within key bear use areas in order to ensure protection of the bears and the habitats they require?

There is potential for increased wildlife viewing and photography on the Refuge, particularly that which is associated with the Kodiak brown bear. Increased use would increase the potential for impacts to bears. Potential impacts include (1) displacement of wildlife into less optimum habitat; (2) human-bear conflicts associated with habituation and food-conditioning of bears; (3) loss of habitat due to trampling; (4) conflicts between users; and (5) reduction in the quality of experience as a result of crowding and overuse.

Current management is directed at keeping these potential impacts at the lowest possible level through a variety of user-education opportunities; by requiring commercial guides to conduct wildlife viewing or photography excursions in a manner that “does not result in displacement of bears from the area or habituate the animals to human presence,” and by closing or establishing day-use-only restrictions at nine key bear concentration areas through refuge regulations. These regulations, when adopted, would apply to all refuge users. These restrictions are currently placed on all commercial operators through special conditions included on their permits. One area on the Refuge, O’Malley River, is closed by regulation to all access, occupancy, and use seasonally. The Refuge provided a bear-viewing program at the O’Malley River in 1992 and a concessionaire operated the program in 1994, allowing up-close viewing opportunities. A similar program was offered from 1995 to 1999 by Koniag, Inc., on private lands within the refuge boundary. Other options for providing bear viewing on the Refuge are presented in the alternatives.

Summary of Comments: Discussion of bear viewing and bear hunting dominated the comments. More than half of the comments received on this issue were in support of providing new bear-viewing opportunities on the Refuge, although the safety of both the bears and those viewing them was of concern to many people. People’s views differed on how hunting should be managed near bear-viewing areas. Comments ranged from the importance of continuing opportunities for bear hunting to those wanting all hunting banned near viewing areas. Other comments suggested that bears and key bear use areas were not being adequately protected and that research studies should be continued.

Representative Comments:

“I think the Kodiak Refuge is probably one of the best brown bear habitats in Alaska. I think we may have to limit people use in some of these habitats if we are going to keep a healthy wild bear population.”

“There should be an area of the refuge specifically designated for bear viewing, but which does not allow hunting as well.”

“The refuge has traditionally limited bear viewing because of many reasons, and not all bear viewing has equal influence on bear habits. However, I believe that if the plan operators submit adhere to refuge guidelines that more opportunities should be given for bear viewing.”

“... re-establishing structured bear viewing at Kodiak NWR can be most effectively accomplished through joint action by the FWS and the State of Alaska.”

“I am writing to urge that a structured, federally administered and regulated brown bear viewing program be permanently established

on the Refuge, similar to the programs in place at Pack Creek on Admiralty Island and at McNeil River on the Alaska Peninsula.”

“I do not like the current views on day use wildlife viewing (bears) or the closures to parts of the refuge, to discourage this activity. I feel that a standard procedure for each area could be developed that would minimize or prevent any impact. I feel that bear viewing and bear hunting can coexist.”

1.8 Changes from the Draft Kodiak Conservation Plan

As a result of the review process, the Service has modified the Draft Revised Kodiak Conservation Plan. A few sections have been modified in response to comments or to better fulfill planning requirements. In addition to editorial and factual changes made in the text and tables, the following substantive changes were made in the draft plan:

- Moderate Management Acreage in Alternative D (Preferred Alternative)—The proposed reduction in the Moderate Management category acreage in Alternative D (the Preferred Alternative) has been modified. Instead of 12,321 acres under Moderate Management, the Preferred Alternative now includes 31,521 acres under Moderate Management. All areas located on the Refuge’s west side between Zachar Bay and Viekada Bay (including Uganik Island) currently managed under the Moderate Management category (as under Alternative A) have been removed from the lands proposed for Minimal Management in the preferred alternative. This includes the general area used by the set net fishery in this area, excluding the heads of bays.
- Volunteer Use Guidelines and Use Regulations—Language has been incorporated into Alternatives B, C, and D clarifying how regulations could be adopted for managing use—regulations seasonally restricting use in bear concentration areas could be adopted if voluntary use guidelines are not effective.
- Fish and Wildlife Species Introductions—Table 2-2 and Table 2-5, which list what activities are allowed in what management categories, have been revised to better reflect the differences between current and proposed management related to introduction/reintroduction of fish and wildlife species and better reflect current scientific understanding of population genetics.
- Helicopter Access—At the request of the State of Alaska, language has been added which explains the mechanism allowing the Service to prohibit helicopter landings for recreational activities on Kodiak Refuge (section 2.2.13).
- Aquaculture Support Facilities—Aquaculture support facilities have been added to Table 2-2 (and Table 2-5) as a possible use of the Refuge, although such facilities would only be allowed in Intensive Management areas (none occur in Kodiak Refuge).

- Service Jurisdiction over Waters within the Refuge—Discussion of Service jurisdiction over waters within Kodiak Refuge (section 2.2.8) has been added to the final document. This discussion reflects the U.S. position that it owns most submerged lands beneath navigable and nonnavigable waters within the boundaries of the Refuge. The section discussing navigable waters (in section 2.2.9 of the Draft Plan) has been removed.

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2. Management Alternatives

This chapter presents four alternatives for managing Kodiak National Wildlife Refuge (Kodiak Refuge, Refuge), including continuation of current management and the U.S. Fish & Wildlife Service's (Service) preferred alternative (Alternative D). The chapter is divided into 12 sections. The first four sections present information that applies to the three action alternatives (Alternatives B, C, and D); the remaining sections describe the process used to develop alternatives and the alternatives being considered.

Goals and objectives, which provide focus for the management direction of the Refuge, are presented in section 2.1. They are followed by management policies and guidelines in section 2.2. Management categories describing the intensity of management and use of specific areas of the Refuge are presented in section 2.3. Section 2.3.5 is a list of management activities, public and commercial uses, and facilities by management category. The amount of the Refuge designated in a management category may vary by alternative; actions allowed within a given management category do not.

The management direction in sections 2.2 through 2.3.5 is National Wildlife Refuge System-wide or Alaska regional management direction. It is the same for all Alaska refuges unless modified to meet specific management needs for Kodiak Refuge. The primary sources of this management direction are the laws governing the National Wildlife Refuge System (System) and the regulations, policies, and other national and regional guidance developed to implement the laws. If specific regulations or other guidance change while this plan is in effect, management direction for the Refuge would be modified as necessary to comply with the changes.

The process for developing the management alternatives is described in section 2.4, and a discussion of management options eliminated from detailed consideration is presented in section 2.5. Section 2.6 contains some of the key elements that will be included in the Comprehensive Conservation Plan regardless of the alternative adopted. Sections 0 through 2.1 describe the four alternatives being analyzed and provide a summary comparison of the alternatives and the projected impacts associated with implementing each alternative.

2.1 Refuge Goals and Objectives

The refuge vision statement and the refuge purposes (see Chapter 1) provide the framework for developing goals and objectives for managing the Refuge. Goals are broad statements of desired future conditions. Objectives are concise statements of what the Refuge wants to accomplish.

Objectives identified for one goal are often applicable to other goals. To avoid unnecessary duplication, each objective is listed only under

the goal that represents the clearest connection. Objectives are numbered and organized in priority order under each goal.

GOAL 1: Increase our knowledge of fish and wildlife populations, their habitats, and their interrelationships.

- 1.1 Within two years of approval of this plan, complete a step-down plan to integrate and direct inventory and monitoring of plants, fish, and wildlife. Subsequently, update the inventory and monitoring plan annually with a regional review and sign off by the Alaska Refuge Chief every five years.

Rationale: The inventory and monitoring step-down plan is required by Service Manual 701 FW 2, Inventory and Monitoring of Populations. It is the tool to ensure that baseline data are collected on plants, fish, and wildlife and that this information is collected in a biologically and statistically sound manner. This step-down plan is key to translating the biological program of the Conservation Plan into a program of work that will be carried out annually on the Refuge.

- 1.2 Collaborate with the Alaska Department of Fish & Game (ADF&G) when monitoring and conducting research on State of Alaska trust species within the Refuge.

Rationale: ADF&G has primary responsibility for managing harvest in and around the Refuge. By working together, Kodiak Refuge and ADF&G are able to pool resources and share information to make the best management decisions possible. Currently, ADF&G and the Refuge collaborate on many projects, including intensive aerial surveys for bear, elk population monitoring, and deer mortality surveys.

- 1.3 Curate wildlife study records using professional database-management standards and methods so data and reports may be readily accessed and understood by future refuge biologists and others.

Rationale: Wildlife study records and data must be stored so they will be available to current refuge staff, ADF&G biologists, and others now and in the future. Background information, study protocols, raw data, analysis, maps, and other information are all essential to comparison of data collected in the past with new data.

- 1.4 In cooperation with ADF&G, monitor for fish, wildlife, and avian diseases that may affect the Kodiak ecosystem, including chronic wasting disease and West Nile virus.

Rationale: Diseases, including chronic wasting disease and West Nile virus, are threatening populations of fish, wildlife, and birds throughout North America. Animal husbandry practices, movement of people and their pets, and natural

migration of birds and fish all may bring diseases to the Kodiak Archipelago (Archipelago). As seen in 2002 and 2003, outbreaks of diseases such as chronic wasting disease and West Nile virus in areas outside Alaska can be devastating to wild animal populations. With active monitoring, timely management actions can reduce the impact of these diseases.

- 1.5 In cooperation with ADF&G, other external partners, and other programs within the Service, monitor for aquatic invasive species such as green crab, mitten crab, Atlantic salmon, New Zealand mudsnails, crayfish, amphibians, and aquatic weeds. With these same partners, participate in the development and distribution of effective education and outreach materials.

Rationale: The introduction of nonnative species is second only to habitat alteration as a factor in the decline of native aquatic species in North America. Kodiak Refuge has extensive coastal and inland aquatic habitats that provide for an abundance of recreation and subsistence uses. Each of the varying routes of access to these refuge resources (e.g., float and wheeled planes, boats, foot traffic) presents unique risks for unintentional spread of invasive species. By working with ADF&G as it begins implementation of its Alaska Aquatic Nuisance Species Management Plan, the Refuge can increase prevention awareness by refuge users and improve combined capacity for detection and rapid response to new invaders.

Atlantic salmon continue to escape from fish farms in British Columbia and to migrate to Alaska's waters. They are a competitive threat to native species such as steelhead. European green crabs have thus far migrated as far north as Vancouver Island, British Columbia. There was an unconfirmed sighting of green crabs in Alaska waters in 2003. They are a threat to commercial and subsistence crab fisheries (e.g., nearshore Dungeness and juveniles of offshore species). Chinese mitten crab is abundant in West Coast ports whose waters are often released as ballast in Alaska. They are a bait-stealing bother to anglers and can prey directly on salmonid eggs in streams. New Zealand mudsnails have proliferated in the western United States, particularly in popular trout streams; if introduced to Alaska, they could threaten its world-class trout fisheries. New Zealand mudsnails may "starve out" a stream by competing with insects (mayflies, caddis, etc.) that feed on the same things; New Zealand mudsnails cannot be digested and thus create a dead end for nutrients. Crayfish probably present a similar risk as do the mitten crabs. Aquatic weeds can be spread on personal gear and by boats and float planes. They present a risk from habitat alteration and as a danger to human health by creating dangerous conditions for float plane take-offs and landings on weed-choked lakes.

- 1.6 Strive to publish results from refuge-sponsored research in peer-reviewed journals. Report routine fish and wildlife survey results regularly in publically accessible reports.

Rationale: Peer review ensures that the research meets current scientific standards. Before a technical manuscript can be published, it is reviewed for sufficiency by a committee of scientists with specialized expertise in the study topic. This committee recommends publication if the manuscript is sufficient and rejection if it is not. Publication promotes understanding by disseminating results to the scientific community and the public.

- GOAL 2:** Ensure that Kodiak brown bears continue to flourish throughout the Refuge and congregate at traditional concentration areas.

To complement ADF&G objectives for brown bear populations, refuge objectives include the following:

- 2.1 In cooperation with ADF&G, continue to use all available knowledge to monitor and evaluate trends in bear population size, composition, and mortality associated with recreation, subsistence, research, defense-of-life-or-property, and illegal kills.

Rationale: While the State of Alaska manages bear harvest, the Service is obligated to manage bear habitat and to conserve brown bear populations in Kodiak Refuge. The state and the Refuge have a long history of cooperation on brown bear harvest and population management. By continuing this tradition and by continually using the best available information and wildlife population management tools, the state and the Refuge may ensure conservation of Kodiak brown bears and their appreciation by refuge users.

- 2.2 In cooperation with ADF&G, maintain surveyed bear densities no lower than 10 percent below the lowest number within the following ranges: southeastern Kodiak and southwestern Kodiak 0.69–0.76 bears per square mile; northwestern Kodiak 0.64–0.72 bears per square mile.

Rationale: Management of wildlife populations greatly benefits from knowledge of trends in animal density (Caughly and Sinclair 1994, p. 190). The U.S. Geological Survey, in cooperation with the Refuge and ADF&G, developed a method for monitoring trends in regional bear densities during the late-1980s and 1990s (Barnes Jr. and Smith 1998). To implement this objective, the Refuge and ADF&G would base management of refuge bear populations on results of regional density surveys in addition to results of traditionally acquired mortality data (i.e., mortality from hunting and other sources). Managers would strive to maintain bear densities at levels

consistent with those documented in the 1990s. Management actions—such as adjustment of hunt allocations—would be triggered if survey results indicate that regional density level deviated by more than 10 percent from lowest level set in this objective. This objective is taken directly from the Kodiak Archipelago Bear Conservation and Management Plan (Bear Management Plan) (ADF&G 2002).

- 2.3 Increase frequency of bear density estimates to improve bear population–trend monitoring in areas of high public use or special management concern (e.g., Karluk Lake vicinity).

Rationale: The Refuge and its cooperators surveyed bear density in nine areas of Kodiak Island (Island) during the 1987–1997 period. Frequency of repeat surveys was limited by the large number of survey areas, narrow survey window (late May only), and availability of funds, survey planes, and trained personnel. To maximize bear conservation and to maintain a regime of intensive harvest management of bears, managers need to increase frequency of regional surveys to improve understanding of short-term trends in regional bear populations. Increased survey frequency would be achieved mainly by reduction in number of survey areas to those that are considered most representative of regions (Aliulik, Kiliuda-Shearwater, Spiridon, Southwest, Terror) and where special management concern exists (Karluk). This objective is consistent with recommendations of the Bear Management Plan (ADF&G 2002) and the Kodiak Refuge biological program review (Heglund 2002).

- 2.4 Monitor and evaluate bear use, human use, and bear–human interactions at bear concentration areas that have established public use. Specifically study bear use, bear movements, and bear–human interactions in the O’Malley River area. Apply results to guide adaptive management in these bear concentration areas using an open planning process with ample opportunities for stakeholder involvement.

Rationale: Human use of bear concentration areas is a focal management concern for the Refuge. The Bear Management Plan (ADF&G 2002) specifically recommended that the Service continue its monitoring and research of bear habitat use and bear–human interactions in bear concentration areas of the Refuge. To adaptively manage these areas in an atmosphere of trust, the Refuge and stakeholders must have the best available site-specific information.

- 2.5 Evaluate the management utility of the bear stream surveys using appropriate cross-comparisons with bear density survey data, climatic data, fish escapement data, and biological modeling efforts. Complete evaluation with assistance of

Alaska Biological Science Center, U.S. Geological Survey by 2007.

Rationale: For the past 20 years, the Refuge has surveyed selected stream areas where bears congregate to feed on salmon during summer. Presently segments of 10 streams are surveyed to monitor trends in composition of the bear population on southwestern Kodiak Island and to monitor trends in level and extent of bear use of individual stream segments. Reliability and utility of survey results were recently called into question (Heglund 2002, ADF&G 2002) because survey purposes, survey area coverage, and sampling intensity and reporting of results has varied over time. To address these concerns, the U.S. Geological Survey agreed to analyze survey data, interpret results, develop recommendations, and report findings to the Refuge. In turn, the Refuge would evaluate the recommendations and decide upon an appropriate course of action.

- 2.6 Investigate population size, movements, and habitat use of bears on Afognak Island. Develop a method for indexing trends in population size by 2008 and complete research on movements and habitat use four years after funding is obtained.

Rationale: Harvest management of brown bears in the southern part of the Archipelago has benefited from state-of-the-art wildlife studies assessing population density and movement. Because of the dense forest vegetation of the northern Archipelago, these study methods could not be applied to the brown bears of Afognak. In the absence of scientific studies, understanding the effects of brown bear harvest and commercial logging on Afognak is guided only by harvest monitoring data and the best professional judgments of wildlife managers.

- 2.7 By 2006, complete assessment of the genetic diversity of the Kodiak brown bear so as to understand gene flow between the southern and northern Archipelago, the vulnerability of Kodiak brown bears to wildlife diseases, environmental stresses, and parameters of population viability.

Rationale: Previous research indicated that Kodiak brown bears have a surprisingly narrow genetic diversity for a population that is known for its vigor and abundance. This research implied that genetic diversity is less important for brown bear conservation than predicted by theory (Paetkau *et al.* 1998) and that genetic mark-recapture tools may not be applied to Kodiak bears (Waits *et al.* 1998). Validity of these results has been questioned because analysis performed by Paetkau *et al.* (1998) was based on a very limited number and distribution of samples. To better characterize the true genetic

diversity of Kodiak brown bears, there is a need to collect a representative sample from animals distributed throughout the Archipelago, to prepare samples for genetic analysis, and to evaluate both neutral alleles¹ and alleles essential to the immune response. Commitments to research bear genetics in cooperation with ADF&G and the Alaska Science Center were established in 2003.

- 2.8 By 2010, develop and implement a method of monitoring the supply of berries suspected of being essential to the welfare of the Refuge's brown bear population.

Rationale: Berries produced by different shrub species, especially salmonberry and elderberry, are considered a dietary staple of Kodiak Island's brown bears. The annual berry supply may substantially influence bear movements, bear-human interactions, use of salmon by bears, and bear productivity (ADF&G 2002, Barnes Jr. 1990). A method of monitoring needs to be developed to explain how change in berry abundance influences summer bear use of stream areas frequented by bear viewers and to forecast times when the public needs to take special safety precautions because of shortages in bear food supply attributable to weather-induced failure of the berry crop. This objective is consistent with recommendations of the Bear Management Plan (ADF&G 2002) and the Kodiak Refuge biological program review (Heglund 2002).

GOAL 3: Manage nonnative species to minimize impacts on native resources, while continuing to provide opportunities for harvest.

- 3.1 To facilitate population and habitat management, monitor—in collaboration with ADF&G—trends in summer distribution, size, and productivity of the mountain goat population on the Refuge. By 2008, initiate monitoring of trends in winter distribution of the mountain goat population.

Rationale: Mountain goats were introduced to Kodiak Island in 1952 (Burris and McKnight 1973). Since then, the population has grown to more than 1,500 animals (Van Daele 2003). ADF&G manages the mountain goat hunt and monitors the population annually. Results from summer surveys provide a basis for monitoring trends in distribution, productivity, and population size. Most years, however, surveys cannot be completed over the entire primary range of goats on the Refuge because of time and budget restrictions. This has hindered understanding of population trends and constrained harvest allocation decisions. To address these limitations, the Refuge would collaborate with ADF&G to

¹An allele is any one of two or more genes that may occur alternatively at a given site (locus) on a chromosome.

complete summer surveys of goats on the Refuge; winter surveys to evaluate distribution of goats on winter ranges would eventually be initiated. Results would be used to evaluate trends in goat use of winter ranges and focus habitat studies on selected areas. Both Kodiak Refuge and ADF&G are concerned that the mountain goat population may become too large, damaging winter ranges and alpine summer habitat in areas where hunting pressure is light (USFWS 2000).

- 3.2 By 2008, design and implement studies to evaluate habitat use and preference of deer on Kodiak Island to facilitate understanding of deer influence on the condition of winter range habitat.

Rationale: Sitka black-tailed deer were first introduced to Kodiak Island in 1924 (Burris and McKnight 1973). By the 1980s, the deer population had peaked at more than 100,000 (Van Daele 2001a). Severe winters in the late 1990s resulted in high numbers of winter kills and a greatly decreased deer population. The Refuge and ADF&G have not studied the effects of deer on Kodiak Island habitats. Deer preferentially use lowland areas during heavy snow winters (Schoen and Kirchhoff 1990). It has been inferred that lowland areas may sustain heavy browse damage by concentrated groups of deer. Anecdotal reports indicate that highbush cranberry, a favorite deer food, may have mostly disappeared from the Island. This observation has led to concerns that deer may be overbrowsing some plant species and changing the plant composition of some lowland habitats.

- 3.3 By 2008, develop methods, in partnership with ADF&G, to monitor deer population trends on Kodiak Island to facilitate harvest and habitat management.

Rationale: Sitka black-tailed deer, introduced in 1924, have become the primary species harvested by recreational hunters in the Archipelago. Deer are a source of agency concern because of their potential impact to native vegetation. Population trend estimates have been based primarily on results of hunter questionnaires, field observations by biologists, and assessments of winter mortality (carcass surveys). Despite their importance, no statistically reliable direct methods have been developed for monitoring trend in population composition and abundance of Sitka black-tailed deer on Kodiak Island. To improve understanding, harvest management, and impacts on habitat, new methods need to be developed to provide a statistically reliable basis for evaluating deer population trends. This objective is supported by recommendations from ADF&G (2002) and the Introduced Species Workshop (USFWS 2000).

- 3.4 By 2010, evaluate and report habitat use and preference of mountain goats to improve understanding of goat influence on habitat conditions.

Rationale: Mountain goats were introduced to Kodiak Island in 1952 (Burris and McKnight 1973). The population has grown to more than 1,500 during the last 50 years (Van Daele 2003). Once the population expanded, ADF&G provided recreational sport hunters with harvest opportunities, eventually becoming a routine and important use of the Refuge. While the Refuge acknowledges the importance of introduced goats, it also has concerns about their potential negative effects (USFWS 2000). In the Olympic Mountains of Washington, for example, an introduced and non-hunted population of goats has impacted composition of native vegetation and site erosion potential (Schreiner and Woodward 1994). On Kodiak Island, field observations indicate that concentrated goat use may be altering plant composition and erosion potential of some subalpine areas on State land adjacent to the Refuge (Spencer 2005). We suspect similar conditions may occur on some areas of the Refuge. However, no studies have documented patterns of goat habitat and condition of seasonal goat ranges. Such information is needed to increase our understanding of goat-habitat interactions and to refine management of the goat population.

- 3.5 In cooperation with ADF&G, annually monitor trends in distribution, size, and composition of the elk population on Afognak Island. Maintain the sample of marked animals to enable this population monitoring by assisting with funding and logistics related to animal-capture operations.

Rationale: Roosevelt elk were introduced to Afognak Island in 1929 (Burris and McKnight 1973). In the mid-1990s, the population peaked at more than 1,000 animals. Because of severe winter conditions and a late spring in 1998-1999, the population decreased to around 800 animals (Van Daele and Crye 2002). It has been stable since then. ADF&G is the primary managing agency and works cooperatively with the Refuge to monitor size of the elk herds. Individuals within each herd have been marked with radio collars to allow easier tracking. By continuing to collar elk within each herd, biologists can quickly locate herds and complete population surveys within limited weather windows.

- 3.6 By 2012, develop an objective understanding of the effect of deer on supply of berry-producing shrubs of primary importance to brown bears of Kodiak Island.

Rationale: The large populations of deer, elk, and goats may be changing the vegetation of Kodiak. Brown bears rely on vegetation, especially berry-producing shrubs, for much of

their annual caloric and protein needs. Kodiak Refuge is charged with protecting brown bears and their habitat and with minimizing the effects of introduced species. Currently the Refuge lacks a science-based understanding of use and availability of plants preferentially used by bears and the effect of deer on supply of these plant foods.

GOAL 4: Continue to improve understanding and management of furbearing and nongame mammals that use Kodiak Refuge.

- 4.1 By 2007, in cooperation with the Region 7 (Alaska) Marine Mammals Management Office, develop and implement a sea otter survey to annually index population trends. Provide staff support for periodic, Archipelago-wide surveys conducted by Marine Mammals Management Office staff.

Rationale: Historically, Kodiak Refuge has assisted the Marine Mammals Management Office, Alaska Regional Office, in monitoring sea otter populations around Archipelago. During the past decade, a marked decrease in the number of sea otters has been seen in the southwestern Alaska stock (USFWS 2002). This stock was listed as a threatened species under the Endangered Species Act in 2005. It is thought that some pocket populations of sea otters in the Kodiak area are not in decline, but are holding steady. Through annual assessment, clues may be uncovered for determining possible reasons for the overall population decline. Surveys done at broader intervals allow biologists to determine trends in population size.

- 4.2 In cooperation with the Region 7 Marine Mammals Management Office, expand communication on sea otters with the Alaska Sea Otter Commission, village councils, and others.

Rationale: Sea otters are used by Native peoples in the Kodiak area for traditional arts and crafts. The southwestern population of sea otters, of which the Kodiak population is a part, has been listed as a threatened species under the Endangered Species Act. Because current evidence does not indicate that subsistence harvest of sea otters is a reason for their decline, subsistence use of otters has not been curtailed at this time. If, in the future, evidence indicates otherwise, sea otter harvest could be reduced or curtailed. Despite continued communication with the Island villages, people continue to fear that subsistence harvest will be curtailed because of listing. More communication is needed to ensure that people understand the effects listing of the sea otter will or will not have on subsistence activities.

- 4.3 In cooperation with ADF&G, develop a method for monitoring trends in river otter populations, modify the existing ADF&G trapper questionnaire to capture information on refuge-specific furbearer harvest, and document estimated furbearer harvest and population trends in the annual refuge narrative report.

Rationale: Common and widely distributed, native river otters are frequently targeted by trappers in the Archipelago (Van Daele 2001b). Presently, ADF&G bases otter management on records of harvested and sealed animals. Prompted by concerns about potential overharvest and increased trapping activity in the 1980s, ADF&G recommended actively monitoring population status and trends. In support of this recommendation, the Refuge would work jointly with ADF&G to study and establish capability to document and monitor otter harvest trends on the Refuge.

Trapping on the Refuge requires a state trapping license and a refuge-issued trapping permit. The Refuge routinely issues trapping permits but it has not requested harvest reports. This objective would modify the existing ADF&G trapper questionnaire, document refuge-specific harvest, and improve the Service's ability to monitor trapping activity and trends in level and pattern of harvest on the Refuge.

- 4.4 Initiate study of habitat ecology of snowshoe hares by 2012.

Rationale: Participants in a June 2000 introduced species workshop cited concern about long-term effects of snowshoe hare browsing on native shrubs and sapling trees in and adjacent to refuge riparian habitats (USFWS 2000). They recommended that the Refuge take action and address information gaps by assessing hare habitat ecology. To implement this recommendation, the Refuge would initiate a cooperative study. Goals of the study would include (1) evaluation of diet and habitat selection in different regions, and (2) comparison of structure and composition of similar habitats in areas historically occupied and unoccupied (e.g., islands) by hares.

- 4.5 During cabin maintenance and management of derelict structures, take precautions to minimize damage to native bat populations.

Rationale: Native bats have slow-growing populations that could be damaged during management and maintenance of cabins and structures. By timing cabin maintenance and structure management to avoid the bat pupping and nursing periods of late spring and early summer, providing alternative bat-roosting structures, and providing educational materials to

refuge users, bat populations may be conserved while continuing to protect human health and safety.

GOAL 5: Monitor populations of resident and migratory birds as indicators of ecosystem health.

- 5.1 Continue to monitor coastal populations of environmentally sensitive resident birds in winter, spring, and summer for general information on species composition, distribution, and population trends to use as indices of marine and coastal resource health.

Rationale: Kodiak Archipelago's coastline, totaling 2,500 miles, is considered one of its most important wildlife habitats and one most vulnerable to human impact. Extent of potential impact was demonstrated by the 1989 *Exxon Valdez* oil spill (ADEC 1990). To mitigate impacts, resource managers used a range of site-specific information, including results of refuge surveys of coastal use by aquatic migratory birds. Under this objective, the Refuge would maintain its capability to protect and mitigate impacts to coastal resources by continuing periodic seasonal surveys of coastal use by aquatic migratory birds. This objective is supported by the Kodiak Refuge biological program review (Heglund 2002).

- 5.2 Continue to monitor populations of wintering waterfowl to provide information to the State of Alaska and the Alaska Migratory Bird Co-management Council in support of sound management of recreation and subsistence harvest of waterfowl. Monitoring should emphasize species such as black scoter, harlequin duck, and Barrow's goldeneye, which make up much of the waterfowl harvest in the Archipelago.

Rationale: The Archipelago has supported the largest recreation harvest of sea ducks in the State of Alaska (USFWS 1999). The Refuge needs to continue monitoring wintering populations to ensure sustainable harvest rates, especially for harlequin ducks and goldeneyes, many of which breed on the Refuge.

- 5.3 Continue periodic monitoring of trends in distribution, size, and reproductive success of the Refuge's population of nesting bald eagles. By 2007, determine appropriate frequency and sample sizes for long-term monitoring.

Rationale: Bald eagles, featured in refuge purposes (see section 1.2.2 in Chapter 1 of this plan), garner national and local interest; the Refuge annually fields many inquiries regarding bald eagles of the Archipelago. Since 1963, the population expanded significantly from 200 to more than 600 nesting pairs (Zwiefelhofer 2002). Presently, the population is considered healthy and thriving to such an extent that it may constitute the densest resident population in North America

(Zwiefelhofer 2002). Results from periodic monitoring will continue to foster understanding of trends in size, productivity, and distribution of the eagle population. Management actions may be triggered if monitoring results indicate that the population significantly declines. This objective is supported by recommendations generated by the Kodiak Refuge biological program review (Heglund 2002).

- 5.4 By 2007, develop a banding program to monitor trends in survival and productivity with a focus on sea duck species (black scoter, harlequin ducks, Barrow's goldeneye) that make up much of the local waterfowl harvest. Areas along the Kodiak road system and adjacent to the villages would be given priority for the program.

Rationale: Many sea duck populations in Alaska have declined dramatically during the last 20 years (USFWS 1999). Essential population data such as productivity and survival rates are scant. Factors that caused decline of populations are poorly understood for most species (USFWS 1999). To address these issues, the Service needs to focus efforts in a number of places—including the Archipelago—that provide important habitat for a diversity of sea duck species and that support relatively large annual recreation and subsistence harvests. Specifically, the Service needs to monitor trends in productivity and survival of sea ducks in areas where most harvest occurs in order to provide waterfowl managers with the ability to set sustainable harvest quotas and to maintain healthy populations. This objective is supported by a recommendation made in the Kodiak Refuge biological program review (Heglund 2002).

- 5.5 Identify important habitat areas on the Refuge for bird species of conservation concern, including bald eagles, Steller's eiders, harlequin ducks, emperor geese, marbled and Kittlitz's murrelets, red-throated loons, gray-cheeked thrush, orange-crowned warblers, and yellow warblers. Develop habitat maps by 2010.

Rationale: Protection of habitat requires management action supported by understanding of habitat composition, distribution, and relative use. To foster this understanding, the Service plans to couple results from existing and future surveys of bird species of conservation concern with results from mapping of Archipelago land and nearshore marine habitats. These maps are expected to be completed in the next few years after publication of the Final Conservation Plan. This objective is supported by a recommendation of the Kodiak Refuge biological program review (Heglund 2002).

- 5.6 Continue collaboration with the Migratory Bird Management Office, Alaska Region, on periodic monitoring of wintering

Steller's eider populations to contribute to monitoring and recovery efforts under the Endangered Species Act. Expand this effort to include monitoring of emperor geese.

Rationale: In 1997, the Alaska population of Steller's eiders was listed as threatened under the Endangered Species Act. Listing prompted increased effort by the Service to understand the ecology of the species and to promote its recovery. Emperor geese have been a species of concern to the Service since the mid-1980s (Pacific Flyway Council 1994). In the Archipelago, periodic surveys documented winter distribution and abundance of eiders, but emperor geese have not been surveyed since 1990. Under this objective, the Refuge would cooperate on eider surveys, research of seasonal movements of Steller's eider, emperor goose surveys, and education of waterfowl hunters to prevent illegal harvest. This objective is supported by recommendations of the Kodiak Refuge biological program review (Heglund 2002). While Kodiak's overall wintering Steller's eider numbers are somewhat low (approximately 5,000), they have remained relatively stable compared to declines seen elsewhere. Continuing to monitor this population component of this species may give clues to what may be responsible for the population's continued decline.

- 5.7 Develop baseline contaminants information for environmentally sensitive resident birds by 2010.

Rationale: Historically, decline and recovery of bird populations have been linked to incidence of many factors, including environmental contaminants. Examples include synthetic chemicals, such as DDT, and heavy metals, such as lead. Understanding of, and mitigation for, potential contaminant effects often requires documentation of differences in contaminant incidence among species, locations, and time periods. Under this objective, the Service would establish this documentation capability by securing a cooperative relationship with the appropriate institution, agency, or government branch; collecting tissue samples from a representative range of (indicator) bird species; and analyzing and then archiving the samples for future reference.

GOAL 6: Maintain and restore native plant populations, communities, and habitats.

- 6.1 Develop and conduct reconnaissance surveys for invasive plants—particularly orange hawkweed (*Hieracium aurantiacum*), a known invasive on Kodiak Island—every five years in the vicinity of villages, private lands within the Refuge (e.g., lodges, canneries), and refuge sites subject to routine use by people. Where invasive plants are detected, initiate collaborative control and eradication actions.

Rationale: In 2002, Kodiak Refuge began monitoring spread of orange hawkweed on Camp Island and planning an eradication program (Brown 2003). Orange hawkweed is common in the City of Kodiak. It can grow from rhizome, stolons, or seeds. Visitors may carry orange hawkweed or other invasive plant seeds or plant parts to the Refuge from infested areas. A reconnaissance survey of those areas most heavily traveled on the Island will allow staff to stop spread of invasive plants before they become well established on the Refuge.

- 6.2 By 2008, describe species composition of plant communities for selected areas of the Refuge, with special emphasis on the Kodiak Refugium and areas likely to contain endemic plants.

Rationale: Little is known about plant communities within Kodiak Refuge. The Archipelago ecosystem is considered unique within Alaska and has been separated out as its own ecoregion (Nowacki *et al.* 2001). A vegetative mapping effort was initiated in 2001 and was completed in 2004, but little detail is known about species composition found in each of the vegetation communities listed. Kodiak Archipelago has experienced a long history of mammal introductions, including snowshoe hare, beaver, deer, elk, and mountain goat (Burris and McKnight 1973). Each of these animals focuses on plants for its main dietary needs. Kodiak Archipelago has also undergone considerable change through volcanic eruptions, glaciation, and the slow spread of Sitka spruce. New information is needed to more fully understand the effects of nonnative species and changes in climate to the habitats of Kodiak Refuge.

- 6.3 By 2010, develop a monitoring program to evaluate major plant communities in the vicinity of remote weather stations.

Rationale: In 1994, the Climatic Subcommittee of the Region 7 Habitat Committee proposed a plan to monitor climatic factors on Alaska refuges. Kodiak was one of the first refuges to initiate this program, installing four remote automated weather stations (RAWS) around the Archipelago in 1995. These stations were installed to begin collecting weather data to better understand the relationship between wildlife habitats and weather (USFWS 1994a). The second part of the project—monitoring plant communities surrounding the weather stations—has never been developed but is needed to provide a whole picture of how climate changes may or may not be affecting plant communities.

- GOAL 7:** Conserve the abundance of natural salmonid populations for continued human and wildlife use and to ensure the diversity of species as indicators of the health of the Refuge's ecosystem.

- 7.1 In collaboration with ADF&G, annually monitor escapement of salmon by means of aerial surveys and weir counts to ensure adequate escapement for future production and to support important commercial, recreation, and subsistence fisheries.

Rationale: Escapement monitoring is key to successful salmon stock management. Although ADF&G has primary management and data-collection responsibilities, the Refuge shares these responsibilities and recognizes the importance of fishery resources to support the purposes for which the Refuge was established. Refuge resources will best be conserved through a collaborative, long-term commitment to support monitoring fisheries resources.

- 7.2 Monitor salmon escapement in streams on the Refuge that are key seasonal feeding areas for brown bears and bald eagles and work collaboratively with ADF&G to maintain escapement levels that reflect wildlife needs.

Rationale: Although wildlife needs are recognized in salmon escapement goals set by ADF&G, as required by the Policies on the Management of Sustainable Salmon Fisheries and the Statewide Escapement Goals, the importance of brown bears and eagles and their dependence on the salmon resources require special attention. Documenting wildlife use of salmon resources and ensuring adequate fish abundance to meet these needs is an ongoing effort. The Refuge will continue to work with ADF&G to gather necessary data to update salmon escapement goals during their review cycle.

- 7.3 Annually review commercial, recreation, and subsistence harvest of salmon by means of ADF&G commercial harvest reports, special use permit reports, creel censuses, and subsistence reporting. Harvest data, along with escapement data, will be used to monitor productivity of salmon populations that occur in waters within refuge boundaries.

Rationale: Data collected annually by ADF&G and the Refuge provide key indicators of population status. Changes in harvest levels, catch rates, public use levels, and salmon escapement can indicate shifts in fish abundance and productivity. If changes are detected, more directed studies can be implemented to determine if a problem exists and to determine potential remedies.

- 7.4 Continue to review management plans and harvest regulations that may affect exploitation of fish populations located within the Refuge. Make recommendations to ADF&G, regional advisory councils, the Federal Subsistence Board, local advisory committees, and the Alaska Board of Fisheries, as

needed, for modifications to existing plans and regulations and/or for new plans and regulations.

Rationale: Using existing state and federal regulatory and management processes to conserve fish and wildlife resources within the Refuge is an ongoing effort. The Refuge is committed to actively participate in and contribute to various public processes that affect refuge resources.

- 7.5 Work with ADF&G to evaluate the need for steelhead escapement goals for Karluk, Ayakulik, and Sturgeon rivers. Additionally, recommend to ADF&G management actions or regulatory proposals that foster conservation of population structure and productivity of stocks that use these rivers.

Rationale: Steelhead is an important recreation and subsistence species. At present, management goals for steelhead fisheries are contained in the ADF&G Statewide Rainbow Trout Management Policy; no formal escapement goals are identified. The Refuge would collaborate with ADF&G to establish escapement goals and management targets for steelhead through the Board of Fisheries process.

- 7.6 Assess and monitor populations to gather baseline data on noncommercial fish species such as Arctic char in Karluk Lake, Dolly Varden char, and resident rainbow trout. Use study methods such as mark-recapture, radio-tagging, weirs, video, and creel surveys with assistance of the Service's King Salmon Fish & Wildlife Service field office and ADF&G.

Rationale: Dolly Varden, Arctic char, and rainbow trout support valuable recreation and subsistence fisheries within the Refuge. Documenting the current status of these populations will contribute to understanding of population dynamics and ensure changes in abundance or distribution can be detected. If changes are detected over time, appropriate management actions can be initiated to conserve the stocks.

- 7.7 Continue to require ADF&G to implement monitoring programs for Kodiak Regional Aquaculture Association (KRAA) enhancement projects conducted on the Refuge, as outlined in specific refuge management plans (i.e., Spiridon and Hidden lakes enhancement management plans). Annually review project reports provided by ADF&G to ensure that biological parameters continue to meet management plan criteria, which will ensure protection of wild salmon stocks, char populations, and wildlife within the project area.

Rationale: When the Spiridon and Hidden lakes enhancement projects were first proposed, several biological concerns were expressed by the Service; these included potential interbreeding of wild and enhanced stock, displacement of wild stocks, introduction of disease, impacts to resident fish

populations, and changes in wildlife migration and use patterns. In response to those concerns, ADF&G and KRAA developed enhancement management plans with specific monitoring requirements. While current enhancement projects do not appear to have negative impacts on wild fish and wildlife populations, continued monitoring is necessary to ensure health and well-being of these populations.

- 7.8 Through a collaborative effort with ADF&G, evaluate situations when fish populations are determined not to be meeting escapement goals or management targets. When weak stocks are identified (e.g., the early run of sockeye in Akalura Creek) develop strategies to improve and stabilize runs, which may include implementation of specific management actions and research or rehabilitation projects, while maintaining genetic integrity of these fish populations.

Rationale: The Refuge is committed to maintaining sustainable, productive fish populations. Because ADF&G has primary responsibility to manage fish and wildlife populations, the Service will work together with the department, using the Board of Fisheries process when appropriate, to seek solutions to restore fish stocks that are depressed.

- 7.9 Complete data collection and write a report describing and classifying genetic characteristics of salmon populations in the Kodiak Refugium by 2008.

Rationale: Genetic samples were collected in 1999 and 2001 from sockeye, Chinook, and coho salmon. These samples are at the Service's conservation genetic laboratory pending analysis. A report will be written to summarize these findings, which will be valuable in future management and conservation of these stocks.

- 7.10 In cooperation with ADF&G, document and describe genetic characteristics and variability of natural fish populations that are important indicators of the diversity on the Refuge for both human and wildlife use.

Rationale: Both ADF&G, through its genetic policy, and the Refuge, by its commitment to ecosystem principles, recognize the importance of conserving genetic diversity as a means of maintaining healthy fish populations. Collecting genetic material and documenting current status of the fish populations within the Refuge will provide valuable data to manage and conserve these stocks.

- 7.11 Through a coordinated effort with ADF&G, evaluate salmon spawning and rearing habitat to determine productivity of salmon-producing systems within the Refuge.

Rationale: Only limited catch and escapement data are available for some Pacific salmon species not targeted by the commercial, recreation, or subsistence fisheries. In the absence of catch and escapement data, alternative methods may need to be employed to establish the carrying capacity of each drainage. Carrying capacity estimates can be used to help set escapement goals and to evaluate the stock status.

- 7.12 Through a collaborative effort among ADF&G, the Refuge, and the King Salmon Fish & Wildlife Service field office, use escapement, habitat, and other pertinent data to establish sustainable or biological escapement goals—subject to review by the Alaska Board of Fisheries—for all species of salmon within the Refuge.

Rationale: Using ADF&G and the Alaska Board of Fisheries processes as much as possible, the Refuge would like to have biological escapement goals determined for all salmon stocks within the Refuge. Escapement goals currently in use are based on commercial use and do not necessarily include recreation or wildlife utilization.

- 7.13 Establish and implement monitoring plans for streamside areas to ensure salmon and Arctic char rearing and spawning habitats remain productive.

Rationale: Recreational fishing and bear viewing are concentrated in riparian areas adjacent to important salmon spawning streams. High public use has potential to degrade these important habitats. While riparian habitats within the Refuge have not been negatively affected to the point where fish and wildlife productivity has been decreased, these habitats should be monitored to detect changes.

- GOAL 8:** Provide the opportunity for local residents to continue their subsistence uses on the Refuge, consistent with the subsistence priority and with other refuge purposes.

Most of the objectives listed under Goals 1 through 7 are also objectives for the subsistence goal. For example, there are numerous objectives related to management of deer (Goal 3), fish (Goal 7), and migratory birds (Goal 5), which are commonly used subsistence resources in and around the Refuge.

- 8.1 Coordinate with ADF&G and the Federal Subsistence Board to issue special actions, as authorized under federal in-season management, when necessary to ensure conservation of healthy fish stocks and to provide for subsistence uses (subject to Title VIII of the Alaska National Interest Lands Conservation Act [ANILCA]) of fish in federal waters. Efforts will be made to minimize disruption to resource users and existing agency programs, as agreed to in the Interim Memorandum of Agreement for Coordinated Fisheries and

Wildlife Management for Subsistence Uses on Federal Public Lands in Alaska.

Rationale: The Kodiak Refuge manager has been delegated in-season subsistence fishery management authority by the Federal Subsistence Board for waters within federal conservation units within and adjacent to Kodiak Island. The authority gives the refuge manager responsibility to take in-season regulatory actions to ensure subsistence fishing needs are met. By issuing a “special action,” which is similar to an ADF&G emergency order, the refuge manager has authority to regulate open and closed fisheries and to adjust bag limits. Along with delegating this authority, the Federal Subsistence Board has directed the refuge manager to work closely with ADF&G managers to minimize unnecessary disruptions to ongoing fisheries.

- 8.2 Continue to coordinate with and assist the Division of Migratory Bird Management in completing the annual Migratory Bird Harvest Survey in rural communities surrounding Kodiak Refuge.

Rationale: The Migratory Bird Treaty Act Protocol Amendment provides for harvest of migratory birds during spring and summer; however, the amendment states that there will not be a significant increase in the number of birds harvested relative to their continental population sizes. The need for harvest surveys was officially specified at the time the amendment was approved. Harvest survey data documents the harvest level each year and will help to ensure that harvest does not significantly increase over the coming years (Alaska Migratory Bird Co-Management Council 2003).

- 8.3 Coordinate with ADF&G and the Service’s Office of Subsistence Management to complete subsistence use surveys as needed.

Rationale: Management plans and cultural and traditional use determinations often require research into historical use of an area or a species, including traditional ecological knowledge. There have been many studies done in the Kodiak area by ADF&G’s Subsistence Division. Studies include documentation of mountain goat harvest and use (Williams 2003), harvest of harbor seal and sea lion (Wolfe and Mishler 1996), harvest and use in Alaska communities after the *Exxon Valdez* oil spill (Fall 1991; Fall and Utermohle 1999), and an ethnography of Old Harbor and Ouzinkie (Mishler 2001). Refuge staff will work with the Subsistence Division of ADF&G and the Service’s Office of Subsistence Management to design and complete necessary studies in an appropriate manner.

GOAL 9: Improve baseline understanding of natural flowing waters on the Refuge and maintain the water quality and quantity necessary to conserve fish and wildlife populations and habitats in their natural diversity.

- 9.1 In coordination with the Service's Fisheries and Ecological Services and the Water Resources Branch, in the Regional Office, ensure the Four Dam Pool and the Kodiak Electric Association comply with instream-flow requirements of the Terror Lake Project agreement and the Federal Energy Regulatory Commission license. Additionally, monitor and maintain water quantity and water quality that could be affected by future hydroelectric or other water development projects.

Rationale: In 1981, Kodiak Electric Association (KEA), Department of the Interior, State of Alaska, Sierra Club, National Audubon Society, and National Wildlife Federation signed a cooperative management agreement (see Appendix D) to mitigate adverse effects of the Terror Lake hydroelectric project on salmon and their habitat. The agreement stipulates an instream-flow regime for Terror River that is a part of the Federal Energy Regulatory Commission license for the Terror Lake Project. KEA makes water releases to maintain minimum instream flows for Terror River that are recorded at a U. S. Geological Survey gauging station and reported to the Federal Energy Regulatory Commission. Minimum instream flows are necessary to protect the passage, spawning, incubation, and rearing of pink and chum salmon resources of Terror River and the fish and wildlife resources of other waterbodies.

- 9.2 By 2009, complete the Five-Year Plan of Study for the Water Resources Inventory and Assessment on Kodiak Refuge and, in coordination with the Service's Water Resources Branch, quantify and file for instream water rights for the maintenance and protection of fish and wildlife habitats.

Rationale: The baseline inventory and assessment will provide managers with a basic understanding of the variability of stream flow over time and among watersheds with different physical characteristics. The water resource inventory and assessment will provide the baseline information documenting the occurrence, quantity, distribution, frequency, and quality of selected surface waters on the Refuge. This information will be available to resource managers and the public and will be used to support quantification of instream-flow water rights necessary to maintain water quantity and quality for the protection of fish and wildlife and their habitats to achieve the purposes of Kodiak Refuge as stated in ANILCA. (See section 1.1.2 in Chapter 1.)

- 9.3 In cooperation with ADF&G and the King Salmon Fish & Wildlife Service field office, initiate limnological studies at lakes and streams within the Refuge that provide important habitat for fish and wildlife. Specifically, begin studies at Karluk, Ayakulik (Red Lake), Frazer, Akalura, Uganik, Sturgeon, Spiridon, and Little river systems.

Rationale: Lake rearing is a critical phase of sockeye salmon life history. Lake productivity is often the limiting factor controlling juvenile sockeye salmon abundance. Monitoring and understanding lake productivity through limnological investigations are important and can be used to help establish escapement goals for river systems. Given sockeye salmon's role in transporting nutrients into lake systems and adjacent terrestrial areas, a continuing commitment to monitor lake productivity is warranted.

GOAL 10: Provide opportunities for quality public use and enjoyment of refuge resources through compatible fish- and wildlife-dependent recreation activities, including hunting, fishing, wildlife observation, and photography.

- 10.1 Improve monitoring and continue appropriate onsite management of seasonal aggregations of public use at Ayakulik River, Karluk River, Frazer fish pass, and Uganik River and expand to other areas as use develops.

Rationale: Concentrations of public use occur during June for king salmon fishing on the Ayakulik and Karluk rivers, in July for fishing and bear viewing at Frazer fish pass, and in September for coho fishing on the Uganik River. These aggregations of refuge visitors increase the potential for impacts to bears and other resources and for user conflicts, which require additional management considerations. Monitoring not only the amount of use, but also the nature of visitor experiences (using appropriate social science methods) is important for preventing conflicts and for maintaining quality recreation opportunities.

In some popular use-areas, visitors periodically compete for camping areas that have level terrain and are conveniently located near productive fishing holes. These camping areas are typically located along rivers in the same areas where brown bears travel and congregate during salmon runs. Bears compete with humans for use of gravel bars, which the bears use for feeding areas, and river banks, which they use for movement corridors. The potential for soil and vegetation impacts and for bear-human conflicts is evident. Improved monitoring is necessary to determine if and where onsite

management—such as improving camping areas²—is appropriate to mitigate resource impacts associated with seasonal aggregations of public use.

- 10.2 In cooperation with ADF&G, Koniag, Inc., Akhiok-Kaguyak, Inc., and Old Harbor, continue to implement and manage easement agreements to minimize impacts of public use on fish, wildlife, and habitat; to ensure compatibility with refuge purposes; and to provide for sustainable fish, wildlife, and wildlands recreation.

Rationale: The United States, in cooperation with the State of Alaska, has entered into conservation easements with each of these Native corporations to protect conservation values on corporation lands within the refuge boundary. Each easement provides information on the rights and responsibilities of the Service and the particular Native corporation with respect to public access and use, prohibited uses, and management. It is essential that all participants work together to comply with and implement easement terms.

- 10.3 In 2007, develop an operations plan encompassing all aspects of law enforcement to be completed by 2008. Annually monitor commercial activities on the Refuge, including compliance with special use permit conditions and operation plans. Expand law-enforcement outreach to include education programs and media releases regarding refuge regulations, and increase the number of field patrols to protect resource values and to enhance visitor experiences on Refuge and conservation easement lands.

Rationale: The Refuge lacks an operations plan for law enforcement. Monitoring commercial use is important to ensure compliance with permit conditions and operation plans and compatibility with refuge purposes. Expanding law enforcement outreach to include local presentations, newspaper articles, and radio reports would facilitate visitor use and reduce potential for violations. Topics could include the permit system for Koniag conservation easement lands; resource and legal concerns about low-altitude flights over bear feeding areas; and waterfowl identification to reduce illegal harvest of Steller's eiders. Increased refuge patrols could better ensure visitor safety and resource protection.

- 10.4 Assess the nature of visitor experiences available in different types of bear-viewing settings to support the design and development of viewing programs at O'Malley River and

²Camping areas are undeveloped sites where people camp. Improving camping areas may consist of providing the minimum development, equipment, and facilities necessary for resource protection or public health and safety. These improvements could be minor leveling of tent sites, maintenance of user-developed trails, or provision of outhouses, temporary bear-resistant food storage containers, or temporary solar-powered electric fences.

other potential sites. Complete the assessment(s) in advance of the implementation of any new bear-viewing program(s).

Rationale: In their 2002 assessment of regional bear-viewing opportunities, Allen and Collins (2002) suggest that “future research is needed to assess the correspondence between settings. . . . and the types of experiences people have. . . . Researchers have not compared experiences of bear viewers systematically at various settings to determine the relative role of setting attributes” (Allen and Collins 2002, p. 59). In other words, little is known about the influence on the nature of bear-viewing experiences of things such as viewing platforms and other facilities, viewer density, and proximity to bears. Research of the kind proposed here will help managers effectively design viewing programs to meet their intended purposes.

- 10.5 Using rigorous social science methods, assess the nature of visitor experiences, significant influences on those experiences, and public acceptability of potential management actions at Frazer fish pass. Use results of the study as input to visitor-use management and potential visitor-capacity decisions at that site.

Rationale: There is mounting anecdotal evidence—including reports from visitors, guides, and air taxi operators—that high visitor densities at Frazer fish pass, which is operated by ADF&G for management and research purposes, are causing negative impacts to the quality of the setting and the experience at that site. The popularity and unique attributes of this site warrant attention above and beyond the monitoring called for in objective 10.1. Formal research is needed to systematically document and understand visitors’ and commercial operators’ expectations, the kinds of experiences visitors are currently having, and the root cause(s) of observed and reported problems (some problems may be related to behaviors or value differences among users rather than from user density). Ultimately, decisions about visitor capacity at Frazer fish pass may be informed—but not directed—by this research. Decades of research have shown that there is no objective social carrying capacity that may be “discovered” for a given setting. Rather, capacity is a subjective standard identified by informed managers in cooperation with the public.

- 10.6 Manage the public use cabin system to support a variety of compatible recreation activities by carefully considering the location of all current cabins and potential future additions to the system.

Rationale: Use records maintained by the Refuge show substantial variability in demand for individual cabins,

depending on time of year and the activities that each cabin supports. The most popular cabins support a wide variety of activities and are relatively easily accessible by the public. Even the least popular cabins (based on annual use-days) serve an important function because they are adjacent to saltwater and are therefore accessible in mid-winter when freshwater cabins are inaccessible because of freeze-up. The current collection of public use cabins appears to function relatively well as a system. If changes to the system (including relocation of existing cabins, conversion to public use of cabins on acquired lands, or new construction) are proposed, the following location criteria should be considered: (1) availability of diverse recreation activities and/or activities not supported by other cabins in the system; (2) solitude and isolation from other uses and facilities on the Refuge; (3) ease of access for users and for maintenance, and; (4) prevention of adverse impacts to refuge resources.

- 10.7 Continue to monitor use of 17(b) easements and implement management actions as necessary to prevent resource impacts to the easements. (Also see Goal 1.)

Rationale: 17(b) easements provide important public access to the Refuge across Native corporation lands. Unfortunately, some easements (e.g., between Larsen Bay and the Karluk River) are located in fragile terrain where even moderate use may cause lasting impacts to soils and vegetation. A consistent monitoring program will alert managers to changes in use that will trigger appropriate management actions.

- 10.8 By 2008, assess off-road vehicle (ORV) use on conservation easement lands.

Rationale: Easement agreements with Old Harbor, Akhiok-Kaguyak, Inc., and Koniag, Inc., provide for some ORV use, although stipulations differ among the agreements. It is unknown how much use is occurring and whether use is damaging conservation easement lands. Stakeholders who participated in the Bear Management Plan (ADF&G 2002) process were concerned about possible ramifications of ORV use on conservation easement lands. They recommended that baseline information be gathered on ORV use and that expansion of ORV use be discouraged in areas where they have not been previously used.

- 10.9 Initiate assessment of snowmachine use on the Refuge.

Rationale: Little is known about the nature or intensity of snowmachine use on the Refuge. Snowmachines were prohibited on the Refuge prior to 1980. Improved snowmachine technology and expanded participation have led to concerns about user conflicts and resource impacts in other

parts of Alaska. Although lack of snow may limit snowmachine use on Kodiak, it is important that the Refuge develop a baseline understanding of past and present use levels in order to assess potential for impacts to refuge resources.

GOAL 11: Improve management of commercial use opportunities that are compatible with refuge purposes, provide quality public use opportunities, enhance visitor experiences, and ensure compliance with provisions of ANILCA.

- 11.1 To accommodate an increasing number of permittees, review the current process for administering special use permits and develop a simplified, more time-efficient system for receiving applications, issuing permits, processing use reports, and distributing billings.

Rationale: The current process used to administer special use permits is labor intensive and repetitious (e.g., some operators are issued four permits for recreation fish guiding). Operators have asked if there is a way to simplify the administrative process.

- 11.2 By 2008, develop an education program for commercial operators to inform permittees of refuge requirements, goals, and regulations. As a part of this, provide updated information on bear safety and awareness for distribution to clients.

Rationale: The National Park Service recently started requiring each applicant for a special use permit to conduct commercial services in Katmai National Park to attend an education program prior to being issued a permit. The Park Service found this to be an effective tool in minimizing administrative errors and in aiding user compliance with park regulations. The Refuge is interesting in developing a similar program for the same benefits. The Bear Management Plan (ADF&G 2002) recommended that agencies develop educational materials and that permittees provide bear safety instructions to their clients before going to the field.

- 11.3 By 2007, obtain stakeholder input, determine if the 1987 Management Plan for Commercial Fishing Activities needs to be revised, and update this plan if warranted.

Rationale: Section 304(d) of ANILCA allows the use of refuge lands for campsites, cabins, motorized vehicles, and aircraft landings directly incident to the exercise of valid commercial fishing activities, consistent with the purposes of the Refuge and not significantly above the level of such activities during 1979. The 1987 plan defined the numbers, types, and sizes of facilities and equipment allowed on refuge lands related to commercial fishing. Permit holders, ADF&G, and the general public will be consulted about the need to

update the plan, and the plan will be revised as necessary to reflect changes since it was prepared.

GOAL 12: Provide outreach, environmental education, and interpretive programs that increase a sense of stewardship for wildlife, cultural resources, and the environment and that enhance visitor experiences on the Refuge.

- 12.1 Plan, design, and construct a refuge visitor center in the vicinity of downtown Kodiak, to be completed by 2009.

Rationale: The U.S. Congress has so far provided in excess of four million dollars for planning, land acquisition, design, and initiation of construction. The total cost of the facility is estimated at eight million dollars plus land acquisition. The visitor center will allow the Refuge to greatly expand the number of people it reaches through its interpretive and environmental education programs. Visitation at the current center at refuge headquarters was approximately 2,500 people in 2003. It is estimated that the Refuge is missing a potential audience of as many as 50,000 visitors annually. This estimate includes visitors arriving by air, ferry, and cruise ships during the summer months alone. Note: Funding for construction of the visitor center is a one-time special appropriation from Congress that can be used exclusively for this project; these funds are not part of the Service's general budget.

- 12.2 By 2007, provide better access to refuge information on topics such as bear safety, campfire safety, permits, and public use cabins through a Web site and other electronic media. Information would also be available through a variety of nonelectronic sources.

Rationale: Educational information on key topics provided in a variety of formats is a cost-effective way to reach visitors and others with important messages. The Bear Management Plan (ADF&G 2002) calls for new interpretive and educational materials to help avoid adverse human-bear encounters.

- 12.3 Increase visitor center staffing to allow the center to be open seven days per week during peak visitor use season (dependent on funding).

Rationale: From mid-May through mid-September, the ferry serving Kodiak runs four times a week, cruise ships visit, and visitation numbers spike. To accommodate increased numbers of visitors and to better serve the public, extended hours into the evenings and weekends require additional staff or volunteers.

- 12.4 Acquire base funds for the Kodiak Summer Science and Salmon Camp base camp and village outreach project through Refuge System funding processes to avoid depending on annual fund-raising.

Rationale: Kodiak Summer Science and Salmon Camp is the largest and most significant refuge outreach project. Not only is it an award-winning educational program, but it is an important community tradition. However, fund-raising is so varied and so unreliable that each year staff questions how it will run. The best way to ensure Salmon Camp's continued success, now and into the future, is to secure base funding.

- 12.5 Annually sponsor, co-sponsor, or participate in community events, festivals, and programs (e.g., Migratory Bird Day, Crab Fest, Whale Fest) to build awareness of the Refuge and Kodiak ecosystems.

Rationale: These community events provide the Refuge opportunities to increase community awareness and to share key interpretive and educational messages.

- 12.6 By 2008, work within the community to increase partnerships and volunteers to form a friends group for Kodiak Refuge.

Rationale: One person can make a difference. A friends group could make much more of a difference. There are many projects and programs that are stagnant because of lack of personnel, money, or support. With an active advocacy group for the Refuge, new doors of possibility and opportunity can be opened.

- 12.7 As staff and funding allow, conduct workshops with schools and teachers across Kodiak Island to enhance curriculum and outreach dealing with refuge resources, issues, and opportunities.

Rationale: By training teachers, refuge educational messages can be incorporated into local school curricula. Teachers will then reach many more students than can refuge staff. Messages can be included in educational activities throughout the school year.

- 12.8 Expand opportunities for individuals, organized groups, and families to learn about the Refuge through on and off-headquarters programs, environmental education, nature walks and interpretive programs.

Rationale: Opportunities such as interpretive and educational programs, talks, nature hikes, and workshops provide an important and desired visitor service. They can prepare visitors to have safe and enjoyable experiences on the Refuge

as well as educate a variety of audiences about conservation topics or refuge issues.

GOAL 13: Conserve cultural and archaeological resources of the Refuge.

- 13.1 Identify priority areas to inventory for archaeological and other cultural sites and conduct surveys as time and personnel permit. Perform surveys at a level sufficient to evaluate, without a follow-up visit, eligibility of sites identified for inclusion on the National Register of Historic Places. While actual surveys will be conducted as funding and personnel become available, the identification of priority areas and overall planning for surveys should be completed by the end of 2007.

Rationale: Some areas of the Archipelago are very well-known and studied. Others are virtually unknown. The Service knows there is a high degree of regional variability among archaeological resources in this relatively small area, but many questions about why the diversity exists and how it was maintained are not known. Surveys in relatively unknown areas will provide immediately useful information on site locations and physical characteristics needed to protect the sites. Over the longer term, work in currently unknown areas will provide information on the prehistory of Kodiak. The National Register of Historic Places is a list of districts, sites, buildings, structures, and objects significant in American history, architecture, archaeology and culture.

- 13.2 Formalize the existing partnership with the Alutiiq Museum by the end of 2006. This agreement should spell out participation of the Refuge, the Service's Regional Office in Anchorage, and the Museum in terms of both funding and tasks. Seek out and develop partnerships with Native corporations, universities, other government agencies, etc., to cooperatively inventory, manage, and protect cultural resources.

Rationale: Cooperative projects with museums, universities, and other institutions allow parties to pool often scarce resources and increase the amount of work completed. They allow the Service to receive the advantages of working with recognized experts in the region, which greatly increases the value of completed work. The Service is already engaged in cooperative activities with the Alutiiq Museum, and formalizing the relationship will clarify what each party can expect from the other and the roles of the museum and the Refuge in managing, studying, and interpreting cultural resources on lands managed by the Refuge.

- 13.3 Identify and acquire archaeological, historical, and ethnographical archival resources to provide the necessary background material to support archaeological and historic site protection, public interpretation, and paleobiological information useful in wildlife and habitat management.

Rationale: The amount of information available on the prehistory and paleoenvironment of Kodiak has increased dramatically in the last 10 to 15 years. Much of this will be critical to modern interpretations of the prehistory of the Island and its wildlife.

- 13.4 Provide Archaeological Resources Protection Act training to refuge law-enforcement personnel. Provide basic cultural resource training to refuge staff. Identify sites or areas at risk for vandalism and monitor with periodic law-enforcement patrols.

Rationale: Sites on Kodiak are large, prominent, and contain a wealth of attractive artifacts. Looting is a long-recognized problem in the Archipelago. Training for refuge staff on the kinds and value of cultural resources and in law enforcement will provide the Refuge with several tools to control looting. Coupling this training with identification of sites or areas needing monitoring, the law-enforcement staff can actively monitor and, if necessary, pursue legal actions. At the same time, the other refuge staff can incorporate cultural resource values in their natural resource-protection message. Identification of specific problem areas for monitoring will target high-profile activity areas for maximum deterrence.

- 13.5 Strengthen and expand the Alaska Heritage Resource Stewardship program for site monitoring and evaluating site conditions on Kodiak Refuge.

Rationale: Stewardship has reduced vandalism on Kodiak from 15 percent to 30 percent of sites to less than five percent in areas with active steward monitors. Stewardship engages the public in a truly valuable resource-protection role and makes them stakeholders and proponents of preservation. There is increasing interest in expanding the program to other areas of Kodiak. This is probably the single most valuable effort the Service could make to protect cultural resources on Kodiak.

GOAL 14: Conserve special and unique features of the Kodiak Archipelago ecosystem within the Refuge.

Note: Most of the objectives listed under Goals 1 through 7 are also objectives related to the special and unique features of the Archipelago ecosystem.

- 14.1 With public involvement, develop a management plan for the Mount Glottof Research Natural Area that identifies conservation and monitoring measures to preserve and document featured values and identifies how management under the plan may influence public use and access.

Rationale: The Mount Glottof Research Natural Area was designated in 1975 to highlight important alpine habitat values for bears and to provide a focal point for research activity. Studies and research have been conducted in the area, but there has been no coordinated approach to management and use of the area. Developing a step-down management plan will ensure that the unique habitat and wildlife values of this research natural area are preserved and that appropriate research opportunities are identified. This objective is supported by a recommendation of the Bear Management Plan (ADF&G 2002).

GOAL 15: Promote close working relationships through effective coordination, interaction, and cooperation with other federal agencies, state agencies, local communities, tribes, organizations, industries, the general public, and landowners within and adjacent to the Refuge whose programs affect or are affected by refuge management activities.

- 15.1 Routinely report results of biological and subsistence management, monitoring, and research to external audiences, including Kodiak Fish and Game Advisory Committee, Kodiak-Aleutian Regional Advisory Council, tribal councils, and other interested groups and individuals.

Rationale: The lands of Kodiak Refuge are internationally known. Local people use these lands for subsistence and recreation. People come from across the globe to experience the wildness and abundance of Kodiak Refuge lands. By routinely providing information to all of the Refuge's constituents, more public input is garnered, and better decisions can be made by resource managers. It is in the best interest of the Refuge to keep interested parties involved in the process because they are the ones for whom these lands are managed.

- 15.2 Use and assist in the fish and game regulation process through interaction with ADF&G, local and fish and game advisory committees, state Boards of Fisheries and Game, Federal Subsistence Board, Kodiak-Aleutians Federal Subsistence Regional Advisory Council, and the Alaska Migratory Bird Co-management Council.

Rationale: These various organizations are part of the state and federal fish and wildlife regulatory process. Many fish

and wildlife management issues can best be resolved through these regulatory processes. Refuge staff often have relevant information to support regulation of hunting and fishing on and near the Refuge. Conversely, how hunting and fishing are managed affects refuge management and public use and enjoyment of the Refuge.

- 15.3 Use public processes as necessary to encourage stakeholder involvement in implementation of this Conservation Plan.

Rationale: Kodiak National Wildlife Refuge belongs to the American public. Citizens—individually and through state, local, tribal governments, and organizations—have participated in various aspects of refuge management since the Refuge was established. Many actions proposed in the plan require adaptive management. The least-intrusive management is proposed, tested, and refined in response to monitoring and evaluation. For management to be effective, individuals and organizations with a stake in the outcome, especially those who will be directly or indirectly affected, must be involved in crafting management and implementing planning decisions.

- 15.4 Continue the Refuge Information Technician program to enhance information exchange with local communities on refuge issues, particularly those dealing with subsistence and bear management (such as bears killed in defense-of-life-or-property).

Rationale: Residents of the villages of Kodiak are closer to refuge lands than those who live in the City of Kodiak, yet they have less contact in general with the refuge staff. The refuge information technician (RIT) position at Kodiak Refuge has been one way to change that. With this staff position, more time can be devoted to contacting tribes, corporations, and individuals who do not have ready access to the refuge office. This person prepares information specifically for the villages and visits the villages on a regular basis. While in the village, the individual can personally deliver information, answer questions, and return with feedback for refuge staff.

- 15.5 Participate in interagency activities, cooperative agreements, data sharing, and sharing of equipment and personnel to accomplish mutual management goals and objectives.

Rationale: Working together with others is national and regional Service policy, is called for in the Bear Management Plan (ADF&G 2002), and is generally a good way to do business.

- 15.6 When requested, partner with community members to address bear-management concerns at villages, remote cabins, and lodges.

Rationale: The Bear Management Plan (ADF&G 2002) identifies this type of cooperative approach to bear management concerns in recommendations related to defense-of-life-or-property kills, solid waste management and storage of human and pet food, and bear education.

2.2 Management Policies and Guidelines

Management of national wildlife refuges in Alaska is governed by the National Wildlife Refuge System Administration Act of 1966 (Refuge Administration Act; 16 U.S.C., Section 668dd), as amended by the National Wildlife Refuge System Improvement Act of 1997 (Refuge Improvement Act; P.L. 105-57) and ANILCA: by regulations implementing these laws; by treaties; by Service policy; and by principles of sound resource management—which establish standards for resource management or limit the range of potential activities that may be allowed on the refuges. When the management direction or details of the direction are specific to or modified for application to Kodiak Refuge, it is so noted.

ANILCA authorizes traditional activities such as subsistence, the exercise of valid commercial fishing rights, hunting, fishing and trapping in accordance with state and federal laws. Under Service regulations implementing this direction, “public recreation activities within the Alaska National Wildlife Refuges are authorized as long as such activities are conducted in a manner compatible with the purposes for which the areas were established” [50 CFR 36.31(a)]. Such recreation activities include, but are not limited to, sightseeing, nature observations and photography, hunting, fishing, boating, camping, hiking, picnicking, and other related activities. The Refuge Administration Act, as amended by the Refuge Improvement Act, defines “wildlife-dependent recreation” and “wildlife-dependent recreational use” as “hunting, fishing, wildlife observation and photography, or environmental education and interpretation” (16 U.S.C., Section 668ee[2]). These uses are encouraged and will receive emphasis in management of the public’s use of refuges.

Under all the action alternatives (B, C, and D) being considered, management of the Refuge would comply with the management direction described in this section. As a result, the alternatives share a set of common management policies and guidelines. These directions provide a common base on which each of the alternatives is built and represent the typical level of management necessary to comply with existing law, regulation, and policy.

2.2.1 Management Emergencies

It may be necessary, when emergencies occur on the Refuge, to deviate from policies and guidelines discussed in the conservation plan. Activities not allowed on the Refuge or under a specific management category (as shown in Table 2-2) may occur during or as a result of emergencies. For example, if naturally occurring or human-caused actions (e.g., landslides, floods, fires, droughts) adversely affect refuge resources, it may be necessary to undertake rehabilitation, restoration, habitat improvement, water management, fisheries enhancement, or other actions that would not otherwise be allowed to the same extent on the Refuge. Threats to human health and safety may also result during emergencies. In emergencies, the refuge manager is authorized to take prudent and reasonable actions to protect human life and to address immediate health, safety, or critical resource protection needs.

2.2.2 Administrative Boundary Adjustments and Intra-Agency Management Agreements

Included within the boundaries of Alaska Maritime National Wildlife Refuge are numerous islands, islets, rocks, reefs, and spires and an undetermined quantity of submerged lands in the vicinity of Kodiak National Wildlife Refuge. (See Figure 2-1 and Table 2-1.) While these lands and submerged lands, if any, remain under the legal jurisdiction of Alaska Maritime National Wildlife Refuge, certain management authorities have been transferred to Kodiak Refuge. A 1989 regional memorandum administratively transferred management of Sheep, Sally, and Sitkalidak islands to Kodiak Refuge because the islands' resources and human uses are closely linked to adjacent Kodiak Refuge lands. Kodiak Refuge manages refuge lands on these islands.

To facilitate access to and use of other refuge islands in and around the Archipelago for compatible recreation and commercial activities, Kodiak Refuge and Alaska Maritime Refuge share responsibilities for issuing special use permits and ensuring compliance with permit conditions for these areas. The two refuges have worked together to develop standard permit conditions for common activities. Residents of Kodiak may now deal directly with Kodiak Refuge for their permit needs for these Alaska Maritime lands. Residents of other areas who have or need permits for use of Alaska Maritime lands in the Kodiak vicinity may contact either refuge directly.

Certain Womens Bay waters and surrounding lands were withdrawn for the U.S. Navy by Executive Order 8278 on October 28, 1939. Over time, at least eight different public lands orders have made changes to the original Navy withdrawal. Currently, the U.S. Coast Guard has primary jurisdiction over much of Womens Bay, while Alaska Maritime Refuge will continue to administer a portion of the original Navy withdrawal that was revoked but not granted to the Coast Guard.

Table 2-1 Alaska Maritime National Wildlife Refuge lands near Kodiak Refuge, February 19, 2003

Islands	USFWS Acres	Non-USFWS Acres
Aiaktalik Island	3,462.2 ¹	983.6
Alf Island	60.7	0
Alligator Island Lighthouse	13.9	0
Amee Island	23.6	0
Bear Island (in Bluefox Bay)	226.6	0
Blodgett Islands	5.0 ²	0
Cathedral Island	16.8	0
Cliff Island	1.4	0
Cub Island	2.8	0
Delphin Island	65.5	0
Discoverer Island	164	0
Egg Island	4.5 ²	0
Fox Island	63.9 ³	0
Geese Islands	65.8 ³	458.8
Grassy Island	13.3	0
Green Island (near Village Island)	0.8	0
Hogg Island	119.9	0
Islets at head of Northeast Arm	11.9	0
John Island	1.3	0
Kulichkof Island	1.6	0
Ladder Island	26.0	0
Latex Rocks	7.8	0
Mary Island	22.3 ²	0
Noisy Islands	77.4	0
Nut Island	0.7	0
Puffin Island (near Sitkalidak Island)	0.4	9.4
Puffin Island (in Womens Bay)	5.5	0
Rocky Island	1.7	0
Sally Island	1,407.2	0
Sea Otter Island	42.2	0
Seal Islands	13.2	0
Sealion Rocks	12.1	0
Sheep Island	120.2	0
Shuyak Island	283.1 ⁴	44,116.4
Sitkinak Island	1,704.8 ²	57,125.4
Spruce Island	112.7 ¹	10,268.6
Table Island	4.6 ¹	0
Teck Island	29.9	0
Unnamed Islands (Bluefox Bay)	70.9	0
Unnamed Island (Duck Bay)	9.6	0
Viesoki Island	2.3	0
Village Islands	125.6	0

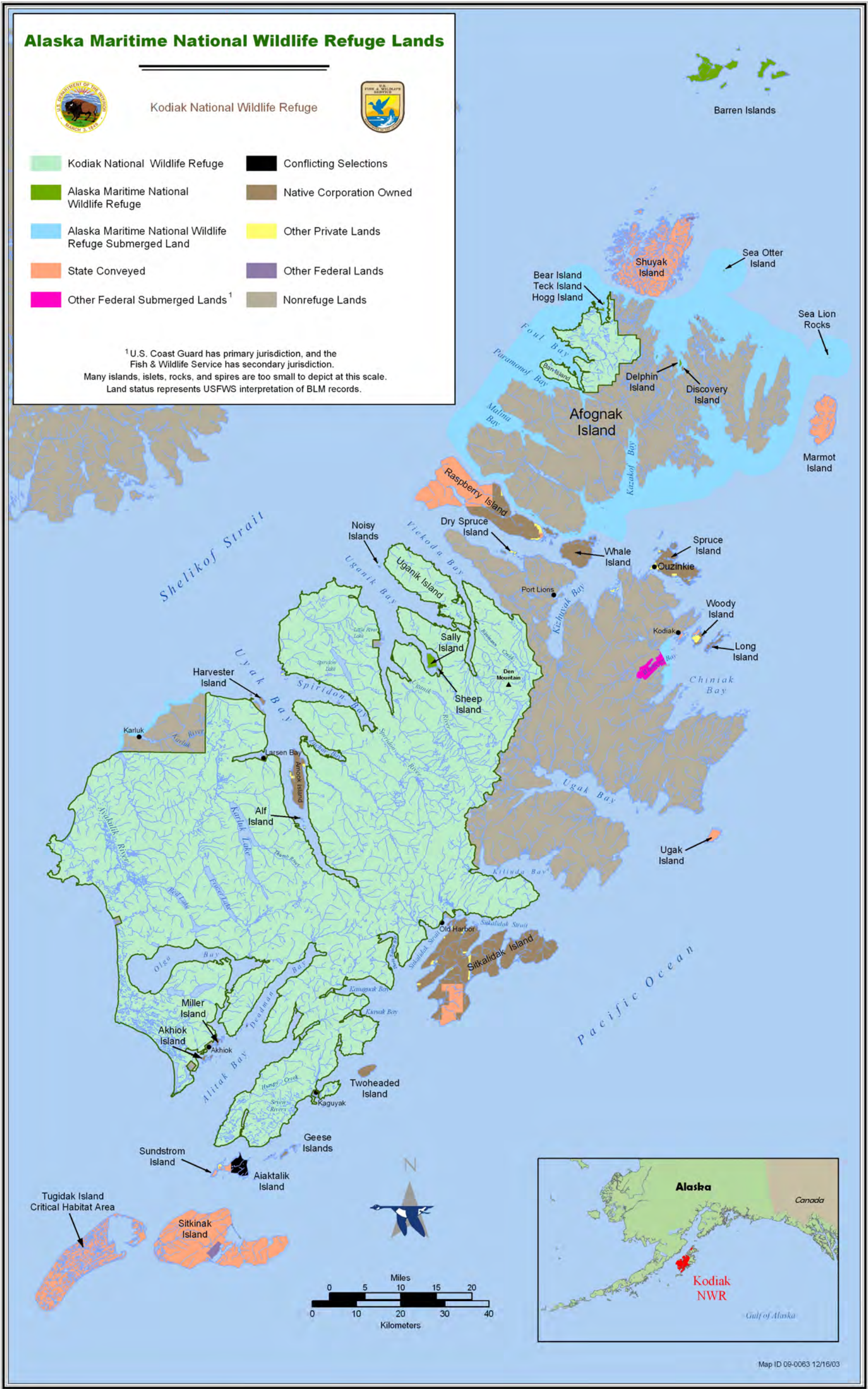
Islands	USFWS Acres	Non-USFWS Acres
Woody Island	12.8 ⁵ 153.6 ³	1,437.3
Zaimka	25.0 ²	0
Submerged Land	USFWS Acres	
Afognak Fish Culture Reserve	394,103.9 ⁶	
Womens Bay	4,385.7 3,899.3 ²	
Karluk Reservation	7,044.3	

- 1 Selected (conflicting state and village corporation selections)
- 2 U.S. Coast Guard (Service has secondary jurisdiction)
- 3 Selected (village corporation)
- 4 Federal Aviation Administration (Air Navigation Site) (Service has secondary jurisdiction)
- 5 Other federal (Service has secondary jurisdiction)
- 6 Acreage will be adjusted once the 1892 boundary of the Afognak Forest and Fish Culture Reserve is clarified

Management of off-shore submerged lands and waters in the Karluk and Afognak areas remains with Alaska Maritime Refuge. These areas, retained in federal ownership at the time of statehood and subsequently included in Alaska Maritime Refuge by ANILCA, include the following:

- Tidelands, submerged lands, and water column within one mile from the shores of Afognak Island and adjacent rocks, including Sea Lion Rock and Sea Otter Island
- A 3,000-foot-wide strip of tidelands, submerged lands, and water column extending from Wolcott Reef to Sturgeon Lagoon (measured from the shoreline at mean low tide) near Karluk on Kodiak Island

The Afognak waters were originally set aside by Presidential Proclamation No. 39 on December 24, 1892, as the Afognak Forest and Fish Culture Reserve; the Karluk waters were part of an Indian reservation established by public land order on May 22, 1943, for the inhabitants of the Native village of Karluk, Alaska. Reservation status was revoked when local residents chose to participate in the Alaska Native Claims Settlement Act land selection process. Special use permits for research and commercial uses in these waters (below mean high tide) will be issued by the Alaska Maritime Refuge.



2.2.3 Land Exchanges and Acquisitions

Under Section 1302 of ANILCA, and subject to certain restrictions, the Service may acquire by purchase, donation, or exchange any lands within the boundaries of Alaska refuges. Proposed land exchanges or acquisitions must benefit fish and wildlife resources, satisfy other purposes for which the refuge was established, or be necessary to satisfy other national interests. The Service can also purchase conservation easements or enter into cooperative management agreements to meet these objectives. See Appendix H for information on the Kodiak Refuge land acquisition program.

2.2.4 Land Conservation Planning

Department of the Interior and Service policies require development of a step-down plan, called a land conservation plan, addressing priorities for habitat conservation within refuge boundaries. Land conservation plans inform private landowners what land within refuge boundaries the Service would like to see conserved for fish and wildlife habitat. The plans do the following:

- Identify the private lands within the refuge boundary that the Service believes should be conserved
- Display the relative protection priority for each parcel
- Discuss alternative means of land and resource conservation
- Analyze the impacts on local residents of acquisition

In Alaska, the Service only acquires land from willing landowners. It is Service policy to acquire land only when other methods of achieving goals are not appropriate, available, or effective. Sometimes resource conservation goals can be met through cooperative management agreements with landowners or by similar means. The Refuge would work with all landowners to ensure that overall fish and wildlife and habitat values within the Refuge are conserved.

A pre-acquisition environmental site assessment is required for all real property proposed for acquisition by the Service or for public domain lands returning to Service jurisdiction (Service Manual, 341 FW 3). A land protection plan for Kodiak Refuge was completed in 1992 (USFWS 1992b); it is scheduled to be revised by 2012.

2.2.5 Compatibility Determinations

The Refuge Administration Act states that “the Secretary is authorized, under such regulations as he [or she] may prescribe, to . . . permit the use of any area within the System for any purpose, including, but not limited to, hunting, fishing, public recreation and accommodations, and access whenever he [or she] determines that such uses are compatible . . .”

A compatible use is a proposed or existing wildlife-dependent recreation use or any other use of a national wildlife refuge that, based on sound professional judgment, will not materially interfere with nor detract from the fulfillment of the National Wildlife Refuge System mission or the purposes for which the national wildlife refuge was established. Economic uses must contribute to achieving refuge purposes and the System mission. Compatibility determinations are not required for refuge management activities, except economic activities.

If a use is found to be incompatible, the Refuge would follow normal administrative procedures for stopping the action. If the use was a new use requiring a special use permit, the refuge manager would not issue a permit. If the use was an existing use already under permit, the refuge manager would work with the permittee to modify the use to make it compatible or would terminate the permit.

Ending incompatible uses that do not require a special use permit or other formal authorization, or that cannot be addressed by other federal or state agencies, would require the Refuge go through the normal rule-making process. This would include publishing in the *Federal Register* the proposed regulations and providing opportunity for public comment.

Compatibility determinations for uses on Kodiak Refuge are found in Appendix E.

Compatibility determinations for existing hunting, fishing, wildlife observation and photography, and environmental education and interpretation must be re-evaluated with the preparation or revision of a comprehensive conservation plan or at least every 15 years, whichever is earlier. Compatibility determinations for all other uses of refuge land must be re-evaluated every 10 years or earlier if conditions change or significant new information relative to the use and its effects becomes available. Current compatibility determinations for activities on or uses of section 22(g) lands (Alaska Native Claims Settlement Act) are excluded from re-evaluation.

Additional details on applying compatibility standards and completing compatibility determinations are found in the compatibility regulations at 50 CFR Parts 25, 26, and 29 and in Service Manual 603 FW 2.

2.2.6 Mitigation

In the interest of serving the public, it is the policy of the Service, throughout the nation, to seek to prevent, reduce, or compensate for losses of fish, wildlife, and their habitats, and uses thereof, from land and water development. To that end, the Service developed a “Mitigation Policy” in 1981 that includes measures ranging from avoiding an activity that results in loss of such resources to seeking compensation by replacement of or substitution for resource loss.

The Service will promulgate regulations, develop stipulations, and issue permits to reduce or eliminate potential adverse impacts resulting from compatible activities that may be authorized under this plan. These regulations, stipulations, and permits would mitigate impacts by a variety of means, as stipulated in the Mitigation Policy guidelines (Service Manual 501 FW 2.1). The means, in order of application, are as follows:

- 1) Avoiding the impact altogether by not taking a certain action or parts of an action
- 2) Minimizing impacts by limiting the degree or magnitude of the action and its implementation
- 3) Rectifying the impact by repairing, rehabilitating, or restoring the affected environment
- 4) Reducing or eliminating the impact over time by preservation and maintenance operations during the life of the action
- 5) Compensating for the impact by replacing or providing substitute resources or environments

When determining activities or uses as compatible, projects should be designed first to avoid adverse impacts. The Service generally would not allow compensatory mitigation on National Wildlife Refuge System lands, and only in limited and exceptional circumstances could compensatory mitigation be used to find an activity compatible. Service Manuals, 501 FW 2 and 603 FW 2 provide more information.

Mitigation may consist of standard stipulations such as those attached to right-of-way permits; special stipulations that may be attached to leases or permits on a site-specific basis; and site-specific, project-specific mitigation identified through detailed step-down management plans or the environmental assessment process. In all instances, mitigation must support the mission of the National Wildlife Refuge System and must be compatible with the purposes of the refuge. The degree, type, and extent of mitigation undertaken would depend on the site-specific conditions present and the management goals and objectives of the action being implemented.

As mitigation for construction of the Terror Lake Hydroelectric Project within Kodiak Refuge, the Service and the State of Alaska, Departments of Natural Resources and Fish and Game, entered into a cooperative management agreement to classify certain state lands as wildlife habitat and manage these lands in consultation with each other, consistent with the Refuge Administration Act and related federal regulations, including the compatibility standard. See Attachment 1 of the Terror Lake agreement in Appendix D.

2.2.7 Coastal Zone Consistency

Although federal lands, including lands in the National Wildlife Refuge System, are excluded from the coastal zone (16 U.S.C., Section 1453[1]), the Coastal Zone Management Act of 1972, as

amended, directs federal agencies conducting activities within the coastal zone or that may affect any land or water use or natural resources of the coastal zone to conduct these activities in a manner that is consistent “to the maximum extent practicable”³ with approved state management programs (16 U.S.C. 1456).

The Alaska Coastal Zone Management Act of 1977, as amended, and the subsequent Alaska Coastal Management Program, as amended, and Final Environmental Impact Statement (1979) establish policy guidance and standards for the review of projects within or potentially affecting Alaska’s coastal zone. In addition, specific policies have been developed for activities and uses of coastal lands and water resources within regional coastal resource districts. Most incorporated cities, municipalities, and boroughs as well as unincorporated areas (coastal resource service areas) within the coastal zone now have state-approved coastal management programs.

Although state and coastal district program policies are to guide consistency determinations, more restrictive federal agency standards may be applied. Federal regulations state that “(w)hen Federal agency standards are more restrictive than standards or requirements contained in the State’s management program, the Federal agency may continue to apply its stricter standards . . .” (15 CFR, Section 930.39[d]).

Certain federal actions may require a Federal Coastal Consistency Determination. The Refuge will contact the Department of Natural Resources’ Alaska Coastal Management Program for program applicability before beginning a project that may affect the coastal zone,

Section 7.1 of Chapter 7 is a consistency determination covering all the alternatives for management of Kodiak Refuge that are addressed in this document.

2.2.8 Cooperation and Coordination with Others

Federal, State, and Local Government

The Refuge will continue to work closely with those federal, state, Native, and local governments and agencies whose programs affect, or are affected by, Kodiak Refuge. State, Native, and local government input will be sought during the development of regulatory policies addressing management of the Refuge System (Executive Order 13083—Federalism). When possible, the Service will participate in interagency activities (such as joint fish and wildlife surveys and co-funded research), cooperative agreements, sharing data, and sharing equipment and/or aircraft costs to meet mutual management goals and objectives.

³ “To the maximum extent practicable” means “to the fullest degree permitted by existing law” (15 CFR, Section 930.32).

When the Refuge is aware of issues involving management jurisdiction or authority over submerged lands or other areas or resources, it will, under appropriate situations, coordinate with the State of Alaska. Coordination may involve formal and informal management agreements between the Service and the state, but the assertion of management authority will not be contingent on completing any agreements or any other action not required by federal law. Questions regarding the ownership of specific submerged lands may be addressed to the refuge headquarters.

The Refuge and the State of Alaska will cooperatively manage the fish and wildlife resources of Kodiak Refuge. The Master Memorandum of Understanding between the Service and the Alaska Department of Fish & Game (dated March 13, 1982) defines the cooperative management roles of each agency (see Appendix B). In this agreement, ADF&G agreed to “recognize the Service as the agency with the responsibility to manage migratory birds, endangered species, and other species mandated by federal law, and on Service lands in Alaska to conserve fish and wildlife and their habitats and regulate human use.” Correspondingly, the Service agreed to “recognize the right of the Alaska Department of Fish & Game as the agency with the primary responsibility to manage fish and resident wildlife within the State of Alaska.” Further discussion of intergovernmental cooperation regarding the preservation, use, and management of fish and wildlife resources is found in Title 43 CFR, Part 24 (Department of the Interior Fish and Wildlife Policy: State and Federal Relationships).

The Service does not require compatibility determinations for state wildlife management activities on a national wildlife refuge pursuant to a cooperative agreement between the state and the Fish & Wildlife Service where the refuge manager has made a written determination that such activities support fulfilling the refuge purposes or the System mission. When the activity proposed by the state is not part of a cooperative agreement or the state is not acting as the Service’s agent, a special use permit may be required, and a compatibility determination will need to be completed before the activity may be allowed. Separate compatibility determinations addressing specific proposals will be required for state management activities that propose predator management, fish and wildlife control (with the exception of emergency removal of individual rogue animals), reintroduction of species, nonnative species management, pest management, disease prevention and control, fishery restoration, fishery enhancement, native fish introductions, nonnative species introductions, construction of facilities, helicopter access, or any other unpermitted activity that could alter refuge ecosystems

Tribes and Native American Organizations

The Service’s Native American Policy (USFWS 1994c) identifies general principles that guide the Service’s government-to-government relationships with tribal governments in the conservation

of fish and wildlife resources. Additional guidance has been provided by Executive Order 13084, “Consultation and Coordination with Indian Tribal Governments,” issued May 14, 1998, and the Department of the Interior—Alaska Policy on Government-to-Government Relations with Alaska Native Tribes issued January 18, 2001 (USDI 2001). The Refuge will maintain government-to-government relationships with tribal governments. The Refuge will also work directly with regional and village corporations and respect Native American cultural values when planning and implementing programs on the Refuge.

Owners of Refuge Inholdings and Adjacent Lands

The Refuge will work cooperatively with inholders and adjacent landowners, providing information on refuge management activities and policies. The Refuge will consult periodically with them regarding topics of mutual interest; will respond promptly to concerns over refuge programs; and will participate in cooperative projects (e.g., water-quality monitoring and fish and wildlife management).

Service Jurisdiction over Waters within Kodiak Refuge

Where the United States holds title to submerged lands beneath waters within Kodiak National Wildlife Refuge, the Service has jurisdiction over activities on the water. The United States owns the large majority of submerged lands beneath navigable and nonnavigable waters within the external boundaries of Kodiak Refuge.

In 1941, by Executive Order 8857 that established Kodiak Refuge (boundaries modified by Public Land Order 1634 in 1958), the United States withdrew and reserved most of the submerged lands of present day Kodiak Refuge. This pre-statehood withdrawal and reservation has maintained Federal ownership of submerged lands beneath navigable waters that otherwise may have transferred to the State of Alaska in 1959 under the Equal Footing Doctrine, the Submerged Lands Act of 1953, and the Alaska Statehood Act.

In 1980, under ANILCA, the U.S. Congress redesignated and expanded Kodiak National Wildlife Refuge. These areas of land and water, located on Afognak and Ban islands, were added to the Refuge under ANILCA and may contain both navigable and non-navigable waters. President Benjamin Harrison withdrew and reserved these lands and waters as part of the Afognak Forest and Fish Culture Reservation in 1892. See Section 1.1.1 for additional jurisdictional history. As with the original Refuge, the pre-statehood withdrawal and reservation has maintained Federal ownership of submerged lands beneath navigable waters that otherwise may have transferred to the State of Alaska upon statehood. The Service has management authority over most activities on both navigable and nonnavigable waters where adjacent uplands are federally owned. Where a Native corporation or Native allottee owns the adjacent

uplands within areas of the Refuge, the Service's management authority is limited. The State of Alaska owns no uplands within the boundaries of the Refuge.

The Service's statutory authority to manage these lands and waters comes from the Alaska National Interest Lands Conservation Act (ANILCA); the Service manages these lands pursuant to the National Wildlife Refuge System Administration Act of 1966, as amended. Under provisions of ANILCA, the Service manages the federal subsistence program on all inland waters within the external boundaries of Kodiak Refuge.

Other Constituencies

The Refuge will inform local communities, special interest groups, and others who have expressed an interest in or are affected by refuge programs about refuge management policies and activities. The Refuge will seek input from these constituents when issues arise that may affect how the Refuge is managed. Whenever possible, local residents and special interest groups will be asked to participate in refuge activities so that their expertise and local knowledge can be incorporated into refuge management.

2.2.9 Ecosystem and Landscape Management

Species do not function alone; they function together in the environment as part of an ecosystem. The Refuge will manage the resources of Kodiak Refuge by employing ecosystem management techniques. Individual species are viewed as integral to the diversity of those ecosystems and, as such, are indicators of the healthy functioning of the entire ecosystem. When the Service identifies species to use as indicators of the health of the ecosystem, it will do so through a rigorous peer-reviewed scientific process involving experts from other federal agencies and the Alaska Department of Fish & Game.

Inventorying, monitoring, and maintaining a comprehensive database of selected ecosystem components are critical for making refuge management decisions and for ensuring the proper long-term stewardship of refuge ecosystems. This includes regular and recurring monitoring of status and trends for ecosystem components such as fish, wildlife, plants, climatic conditions, soils, and waterbodies. All monitoring will employ appropriate disciplines, new technologies, and scientific capabilities, whenever practical.

Air Quality

The Service's authorities for air-quality management are included in several laws. The most direct mandates to manage air resources are found in the Wilderness Act and the Clean Air Act.

The Service is required by the Clean Air Act to preserve, protect, and enhance air quality and air quality-related values on Service lands. Air quality-related values include visibility, plants, animals, soil,

water quality, cultural and historical resources, and virtually all resources that are dependent upon and affected by air quality. In addition, the Wilderness Act requires the Service to protect and preserve the wilderness character, including the pristine air quality, of designated areas.

Class I air-quality sites receive the highest level of protection. Very little deterioration is allowed in these areas, and the federal land manager has an “affirmative responsibility” to protect air quality–related values on those lands. With the exception of three Class I air quality sites in designated Wilderness on the Alaska Maritime National Wildlife Refuge, all other lands managed by the Service in Alaska are classified as Class II and receive protection through the Clean Air Act. Moderate deterioration, associated with well-managed growth, is allowed in Class II areas.

If air quality or related resources are at risk, the refuge manager will work with the Service’s Air Quality Branch; the regional air quality coordinator; the Alaska Department of Environmental Conservation and other state, local, and federal agencies; and the public, as appropriate, in developing an air-quality management plan, as outlined in the Service Manual, Part 563, FW 2.8 (USFWS).

Water Resources (Hydrology) Management

Every national wildlife refuge in Alaska shares the common purpose of ensuring that water resources are maintained and protected. ANILCA mandates that the Service safeguard water quality and necessary water quantity within the refuges to conserve fish and wildlife populations and habitats in their natural diversity.

Although the Service has reserved water rights sufficient to accomplish the purposes of the refuges, the National Wildlife Refuge System Administration Act (16 U.S.C. 660dd) and the Service Manual (430 FW 1-3) direct the Service to obtain, to the extent practicable, water supplies of adequate quantity and quality for Service facilities, for refuge purposes, and as trust resources and to obtain the legal right to use that water through state laws, regulations, and procedures.

The Alaska Region conducted a water-resources threats analysis (Harle 1994) for the purpose of guiding water resource investigations and protecting water resources by acquiring instream water rights protection. Based on the results of the threats analysis, the Service’s regional office developed a strategic plan for systematically quantifying the surface water on refuges within Alaska (Bayha *et al.* 1997).

Using existing data, or through the collection of hydrologic and biologic data, the Service applies to the State of Alaska for appropriative water rights for instream water reservations and for water withdrawals to meet the purposes identified in ANILCA and the Refuge System Improvement Act.

Establishing state water rights is only a part of a management strategy to protect refuge resources and to understand ecosystem processes. Collection of hydrologic data allows the Service to accomplish the following:

- Plan flood-plain and riparian zone management
- Estimate flow for ungauged refuge streams
- Supplement historical or current fisheries and wildlife studies
- Detect and evaluate future natural or human-induced changes in the hydrologic system
- Provide stream profile and velocity data for the design of fish weirs or other structures
- Estimate the potential for future flooding and erosion
- Analyze the impacts of proposed projects on stream flow and water supply
- Provide a basis for decision-making about commercial operations on some important streams

All facilities and activities on refuges must comply with pollution-control standards set by federal laws (e.g., the Clean Water Act [33 U.S.C. 1251] and the Safe Drinking Water Act [42 U.S.C. 300]); state laws where federal law so provides; and the regulations, policies, and standards implementing these laws.

Visual Resource Management

Visual resource management has two primary purposes: (1) to manage the quality of the visual environment and (2) to reduce the visual impact of development activities. To accomplish these purposes, the Refuge will identify and maintain the scenic values of the Refuge and will, within the constraints imposed by the conservation plan, minimize the visual impacts of development and use of the Refuge. All activities and facilities on the Refuge will be designed to blend into the landscape to the extent practical. The Service will cooperate with other federal, state, local, tribal, and private agencies and organizations to prevent significant deterioration of visual resources.

Cultural, Historic, and Paleontologic Resources

The Service has long-term responsibilities for cultural resources on refuge lands. Cultural resources on refuge lands are managed under a number of laws, executive orders, and regulations, including the Antiquities Act; the National Historic Preservation Act, as amended; the Archaeological Resources Protection Act; the American Indian Religious Freedom Act; the Native American Graves Protection and Repatriation Act; Executive Order 11593, Protection and Enhancement of the Cultural Environment; Executive Order 13007, Indian Sacred Sites; and Section 36 CFR, Part 800.

The 1980 amendments to the National Historic Preservation Act direct the Service to inventory and evaluate cultural resources for

their eligibility for inclusion on the National Register of Historic Places. All significant historic, archaeological, cultural, and paleontological resources on the Refuge will be protected and managed in accordance with federal and state law. Because of limits of time, funding, and staffing, the Service must designate priorities in evaluating cultural resources on refuge lands. Pending a complete evaluation, all cultural resources will be considered potentially eligible for the National Register. When funds become available, the first priority will be to prepare a substantial and comprehensive cultural resource overview to be used to guide future inventory and evaluation. Sites determined to be eligible for the National Register will be protected with an appropriate cultural resources management plan.

A cultural resource plan for Kodiak Refuge was completed in 1999. This plan provides guidance for cultural resource management on the Refuge. It outlines legal mandates and considerations, reviews current information about resources, and establishes goals and objectives for the program. The cultural resource plan should be updated every five years; it is scheduled for review in 2009. Cultural resource plans are considered step-down plans.

It is illegal to collect archaeological materials and/or vertebrate paleontological remains on the Refuge without a permit issued under the provisions of the Archaeological Resources Protection Act (for archaeological materials) or of the Antiquities Act of 1906 (vertebrate paleontological remains). Historic aircraft and other World War II material will be managed in accordance with a policy published December 20, 1985, in the *Federal Register* (FR 50:51952-51953). These materials may be collected on refuge lands only as authorized by a permit issued to a qualified organization or individual. Cultural resource research permits will only be issued to qualified individuals operating under appropriate research designs. The Refuge will encourage archaeologists, historians, ethnologists, and paleontologists from educational institutions and other government agencies to pursue their research interests on refuge lands so long as these research interests are compatible with refuge purposes. Research that collects data from threatened sites and minimizes disturbance to intact sites will be encouraged.

When any federal undertaking—including any action funded or authorized by the federal government and having the potential to directly or indirectly affect any archaeological or historic site—is planned, a consultation must be initiated with the State Historic Preservation Officer, under Section 106 of the National Historic Preservation Act. If sites that may be affected are found in the project area, their significance will be evaluated to determine their eligibility for inclusion in the National Register. For eligible sites, consultation will result in a course of action causing the least possible impact. Impacts may be minimized in a variety of ways, including relocation or redesign of a project, site hardening, mitigation through information collection, or cancellation of the

project if no alternatives are feasible. To protect archaeological and historic sites, other uses may be precluded. Private interests proposing to conduct commercial uses on the Refuge will normally be required to fund studies necessary for consultation and for mitigation of impacts.

The Refuge will implement Executive Order 13007, Indian Sacred Sites, allowing access to identified sacred sites and avoiding adversely affecting the physical integrity of these sites. Where appropriate, the Service will maintain the confidentiality of sacred sites.

Further information on cultural resources management can be found in Part 614 FW 1-5 of the Service Manual and the Service's Cultural Resources Management Handbook (USFWS 1992a).

2.2.10 Fish and Wildlife Habitat Management

Habitat Management

Habitats are managed in keeping with the purposes, goals, and objectives of a refuge. In most cases, this means habitats are managed to maintain a natural state with little or no human intervention. In some cases, habitats are manipulated to maintain or improve conditions for selected fish and wildlife populations, to control plant species, or to manage fire fuels on refuge lands. Any habitat management and manipulation activities will be carried out in support of the purposes, goals, and objectives of the Refuge. The Refuge will use the least-intrusive management measures needed. Where practical and economically feasible, habitat management practices will maintain a natural appearance on the landscape. Habitat-management practices, even those carried out for the benefit of a single species or small group of species, will, to the extent possible, contribute to the widest diversity of native (indigenous) wildlife species and habitat types.

Habitat management and manipulation may be achieved by mechanical, chemical, and manual methods, including the use of fire, or by a combination of methods. Mechanical treatment could include mechanical removal, crushing, cutting, or mowing. When applicable, state and federal guidelines for timber management will be followed. Mechanical treatment could also include the construction of fish passages, fish ladders, fish barriers, water impoundments and structures such as fences or artificial nests, and raising or lowering of water levels to manage wildlife or waterfowl habitat. Riparian or aquatic habitat management and manipulation may be achieved by acquiring instream-flow reservations or making beneficial water diversions.

Chemical treatment would involve the use of chemicals to restore nutrient levels in a lake system (fertilization) for fisheries restoration, to reduce hazardous fuels, or to eliminate nonnative plant and animal species, normally by killing them or destroying their ability to spread

or prosper. Before chemical treatment is used, the Refuge will analyze the need for action, the options for treatment, and the potential impacts of those options. A pesticide-use proposal must be approved by the Service's regional office before chemical controls are used on refuge lands (30 AM 12 and 7 RM 14).

Manual treatment could include the use of hand tools to remove, reduce, or modify hazardous fuels or nonnative plant or animal species or to modify habitats (e.g., removal of beaver dams).

Aquatic habitat modification may include activities and structures such as streambank restoration, passage structures, and removal of fish barriers or obstacles that result in physical modification of aquatic or riparian habitats to benefit fish species. These activities would be undertaken to maintain or restore native fish populations and may require appropriate National Environmental Policy Act (NEPA) compliance and compatibility determinations.

Fire Management

Fire management is the full range of activities necessary to conserve, protect, and enhance habitat and to maintain desired ecological conditions for the benefit of fish and wildlife. Fire management activities include preparedness, emergency suppression operations, wildland fire use, fire prevention, education, monitoring, research, prescribed fire, hazardous fuel reduction, and mechanical treatments. All activities will be conducted in accordance with Refuge, Service, and Department of the Interior policies and approved interagency and refuge-specific fire management plans. Additional guidance on fire management can be found in the Service Manual (USFWS, 621 FW 1-3).

The Kodiak Refuge Fire Management Plan provides the basis for integrating fire as a critical natural process into other plans and activities on the Refuge at a landscape scale. The Refuge Fire Management Plan provides specific information on the application and management of fire on the Refuge. The Alaska Interagency Wildland Fire Management Plan (Alaska Wildland Fire Coordinating Group 1998) provides a cooperative framework and operational guidelines for the suppression of wildland fires. The suppression of human-caused and unwanted wildland fires and the use of nature-caused wildland fires and prescribed fires as management tools are important management prerogatives. Kodiak's fire management plan provides specific information on the application and management of fire on the Refuge.

Wildland Fire Suppression—Fire suppression activity is the work of confining, constraining, controlling, or monitoring a fire or portion of a fire to protect, prevent, or reduce the loss of identified values. Suppression takes place, with the highest priority being the safety of firefighters and the public, using the appropriate management response based on values to be protected. The Alaska Interagency Wildland Fire Management Plan, amended in October 1998, is the

guiding document for suppression actions. The plan establishes four management options—critical, full, modified, and limited—that direct a range of wildland fire management responses. Refuge lands have been classified by fire management zones for limited, modified, or full suppression, with all facilities mapped.

Kodiak Refuge has a mixture of lands designated as limited and modified, with a few areas identified as full protection. These can be viewed through the Alaska Fire Service Website (<http://fire.ak.blm.gov/>) under the Maps and Imaging section. The Refuge reviews these classifications periodically and can change management options if appropriate.

The Bureau of Land Management/Alaska Fire Service (BLM/AFS) provides emergency suppression services on refuge lands in Alaska (DOI 2001, 620 DM 2), as directed by the refuge manager. Through a cooperative agreement with BLM/AFS, the State of Alaska Kenai-Kodiak Area Forestry Office provides emergency suppression services on refuge lands in state protection zones, as directed by the refuge manager.

Wildland Fire Use—Wildland fire use is the application of the appropriate management response to naturally ignited wildland fires to accomplish resource management objectives outlined in fire management plans. Wildland fires may be used to protect, maintain, and enhance natural and cultural resources and, as nearly as possible, wildland fires will be allowed to function in their natural ecological role. Optional management is described in the Refuge Fire Management Plan.

Prescribed Fire—Prescribed fires are ignited by management action to meet specific wildland fuel, vegetation, and habitat management objectives. Prior to each ignition, a written, approved plan outlining prescription conditions is required. Use of prescribed fires must also comply with the Alaska Enhanced Smoke Management Plan for Prescribed Fire. The plan provides guidance and direction concerning smoke issues related to prescribed fire.

Weed Control (Pest and Nonnative Plant Management)

Weeds can cause significant impacts to the land and water resources and to the species of plants and animals that use these habitats. To manage weeds, the Refuge will include weed inventories as part of all habitat inventories. The Refuge will review a proposed action's potential to introduce or spread weeds and will take measures to reduce the hazards (e.g., require weed-free feed for pack animals). The Refuge will coordinate with other landowners and agencies and use integrated pest-management practices to enhance the detection, prevention, and management of weed problems. Use of chemical control measures on refuge lands requires Regional Office approval of a pesticide-use proposal (Service Administrative Manual 30 AM 12 and Refuge System Manual 7 RM 14).

2.2.11 Fish and Wildlife Population Management

Conservation of habitat is a key element in maintaining the natural diversity of populations on the Refuge, and management of native fish and wildlife populations is an important component of maintaining a healthy ecosystem. The Refuge will be managed consistent with the Policy on Maintaining Biological Integrity, Diversity, and Environmental Health of the National Wildlife Refuge System (Service Manual 601 FW 3) to ensure native species are managed in their natural diversity and abundance.

The Refuge will work with the State of Alaska to conserve fish and wildlife populations, recognizing that populations may experience fluctuations in abundance because of environmental factors and may require management actions for conservation purposes. Management of the Kodiak brown bear is guided by the Bear Management Plan (ADF&G 2002). The Fisheries Management Plan (USFWS 1990) for the Refuge was completed in 1990 (in cooperation with ADF&G) and guides Service fisheries management activities on Kodiak Refuge. The Refuge will be managed to maintain the genetic variability of wild, native fish stocks.

Wildlife Inventory and Monitoring Plan

To assess presence, relative abundance, distribution, and trends in populations of fish, wildlife, and plants, the Refuge will draft a Wildlife Inventory and Monitoring Plan (WIP). The WIP describes objectives, justification, methods, management implications, geographic scale, report schedules, and database management for studies on species targeted for inventory and monitoring. The WIP will include studies that address environmental parameters (e.g., weather) and hydrology, soils, and fire history to explain potential changes in the distribution, relative abundance, and populations of fish, wildlife, and plants. The WIP will be forwarded to the regional office for review by the regional refuge biologist and other professional staff prior to final approval by the regional refuge chief. The Refuge will update its WIP on an annual basis but will only need regional review and approval every five years.

Scientific Peer Review

Biologists, ecologists, botanists, and other refuge personnel conducting scientific investigations will adhere to Refuge, regional, Service, and Department of the Interior policies on scientific conduct, including scientific peer review. The overall goal of scientific peer review is to ensure that information collected, analyzed, interpreted, and reported to the public and upon which policy and management decisions are based, meets established standards of the scientific community. To achieve this goal, refuge biologists, ecologists, botanists, and others serving as principal investigators will write a study plan that will undergo peer review. In addition, study plans, reports, and manuscripts that summarize the results of scientific studies, analyses, assessments, or syntheses developed by, or supported by, the Service will undergo scientific

review prior to publication. The type and level of review shall be commensurate with the potential significance of the scientific information and its likely influence on policy and management actions.

Compliance with the Animal Welfare Act

The Animal Welfare Act, as amended, established legal standards for animal care and use. To prescribe methods and set standards for the design, performance, and conduct of animal care and use, research facilities and federal agencies must establish an Institutional Animal Care and Use Committee (IACUC). Field studies conducted or authorized by refuge employees within the purview of the Animal Welfare Act will require review and approval of an IACUC. Any refuge study that involves an invasive procedure or that harms or materially alters the behavior of an animal under study should be reviewed and approved by an IACUC prior to implementing field work.

Marking and Banding

These activities include fish and wildlife capture, marking, banding, radio collaring, release, tracking, and other information-gathering techniques. Cooperation with appropriate partners, including the Alaska Department of Fish & Game, will be stressed, and specific protocols will be followed, taking advantage of all appropriate disciplines and new technologies wherever possible.

Threatened or Endangered Species

The Refuge will consult with the U.S. Fish & Wildlife Service Ecological Services field office on actions that may affect listed, proposed, or candidate species or designated or proposed critical habitat. These actions include refuge operations, public use programs, private lands and Federal Aid activities, promulgating regulations, and issuing permits (USFWS 1973, USFWS and NMFS).

Introductions and Reintroductions

A species may be introduced on a refuge only if that species is native to the refuge (i.e., a reintroduction). Nonnative species may not be introduced. Definitions of native and nonnative species are found in the glossary.

Reintroductions can be useful tools for restoring species to natural ranges and reestablishing a refuge's natural fish, wildlife, and habitat diversity. Reintroductions would require appropriate NEPA compliance, a review to ensure consistency with the biological integrity policy, an ANILCA Section 810 determination, and a refuge compatibility determination. Reintroductions also require extensive coordination with adjacent landowners and with the State of Alaska. In evaluating the project, the cause(s) of the extirpation should be evaluated and management actions taken to alleviate the cause(s) prior to reintroduction.

The environmental requirements of the species and the ecological dynamics of the area proposed for the reintroduction need to be thoroughly reviewed prior to a reintroduction. Some factors to consider include behavior, diseases, general ecology of the species, habitat requirements, inter- and intra-specific competition, life history, genetics, management practices, population dynamics, and predators. Consideration should be given to whether there have been significant habitat changes since extirpation of the species (e.g., is the area still within the species natural range?).

Fish and Wildlife Control

These activities involve the control, relocation, and/or removal of native species, including predators, to maintain natural diversity of fish, wildlife, and habitats. These management actions may be employed with species of fish and wildlife within their original range to restore other depleted native populations. These activities are subject to appropriate NEPA compliance, an ANILCA Section 810 subsistence determination, and a refuge compatibility determination.

Predator management includes the relocation, removal, sterilization, and other management of native predators to accomplish management objectives. The Service considers predator management to be a legitimate conservation tool when applied in a prudent and ecologically sound manner and when other alternatives are not practical. The key requirements are that a predator management program be ecologically sound and biologically justified. In keeping with the Service's mandate to first and foremost maintain the biological integrity, diversity, and environmental health of fish and wildlife populations at the refuge scale, a predator population will not intentionally be reduced below a level consistent with the low-end of natural population cycles (see USFWS, 601 FW 3).

A predator management program requires appropriate NEPA compliance, an ANILCA Section 810 evaluation, and, if conducted by other than the Service, a refuge compatibility determination. Alternative management actions must be evaluated prior to pursuing direct predator control activities. Any proposal to allow or implement a predator management program on national wildlife refuges in Alaska will be subjected to public review and closely coordinated with the Alaska Department of Fish & Game, local communities, tribal governments, and adjacent landowners and/or managers. Predator management activities must be monitored and evaluated for effectiveness and resource impacts.

Normal environmental education and population management activities—such as trapper education programs and regulation changes that allow for increased harvest of predatory animals by licensed trappers and hunters—are not considered to be “predator management.” The control or extirpation of nonnative predators is not considered to be “predator management” (see Nonnative Species Management).

Nonnative Species Management

In general, nonnative species (including feral domestic animals) are not compatible with refuge purposes or with National Wildlife Refuge System policies. When nonnative species (fish, wildlife, or plants) occur on a refuge, the Service may control or eliminate that species. Where a population of a nonnative species has already been established on a refuge and this population does not materially interfere with or detract from the fulfillment of the mission of the National Wildlife Refuge System or the purposes of the refuge, the species may be managed as part of the refuge's diverse ecosystem.

Several nonnative species—including Sitka black-tailed deer, Roosevelt elk, mountain goats, and beaver—were introduced to Kodiak Refuge in the 20th century. This plan includes objectives (see section 2.1) to manage these species as part of the wildlife of Kodiak Refuge. The Refuge, in cooperation with the State of Alaska, will monitor the impacts of introduced species, particularly Sitka black-tailed deer and beaver, which have the potential to change either the characteristics or composition of aquatic, riparian, or upland habitat used by native species. If the results of this monitoring indicate these species are having significant impacts, appropriate actions would be proposed with appropriate NEPA compliance and, if necessary, compatibility determinations.

Fish, and Wildlife Pest Management and Disease Prevention and Control

Organisms (e.g., rabies or parasites) that threaten human health and property or survival of native wildlife or plant species may be managed or removed after consideration of all reasonable options and consultation with the State of Alaska and other concerned parties. This will normally only occur when severe resource damage is likely or when public health or safety is jeopardized. Wherever possible, an integrated approach to pest management will be used in accordance with the U.S. Fish & Wildlife Service Administrative Manual, 30 AM 12 and 7 RW 14. If chemical controls are used, a pesticide-use proposal must be submitted to the Regional Office for approval.

Fishery Restoration

Fishery restoration is any management action that increases fishery resources to allow full use of available habitat or to reach a population level based on historical biologic data. Although the goal of restoration is self-sustaining populations, situations may exist in which some form of fishery management or facilities could continue indefinitely.

Where fishery resources have been severely adversely affected, the Refuge will work with the State of Alaska, local tribes, and other partners to restore habitats and populations to appropriate, sustainable conditions. Restoration emphasis will focus on strategies that are the least intrusive to the ecosystem and that do not

compromise the viability or genetic characteristics of the depleted population. This may include regulatory adjustments and/or evaluations of escapement goals.

ADF&G, in cooperation with the Kodiak Regional Aquaculture Association and the Refuge, has undertaken several restoration projects on Kodiak Refuge including temporary actions such as the fertilization of Karluk Lake to restore zooplankton productivity for sockeye salmon and a temporary incubation facility in the upper Thumb River (Karluk drainage) to restore sockeye productivity. The Refuge will continue to support similar restoration actions provided they are compatible with refuge purposes and the Refuge System mission.

Fishery Enhancement

Fishery enhancement is any management action or set of actions that is applied to a fishery stock to supplement numbers of harvestable fish to a level beyond that which could be naturally produced based on a determination or reasonable estimate of historic levels. This could be accomplished by stocking barren lakes, providing access to barren spawning areas (fish passages), constructing hatcheries, outstocking in productive systems, or fertilizing rearing habitat.

Refuge management priorities will focus on conserving naturally diverse ecosystems. Fishery enhancement facilities for the purposes of artificially increasing fish populations normally will not occur within any management category unless stocks have been reduced or are threatened.

Proposals for fishery enhancement projects will be subject to the provisions of NEPA regulations, an ANILCA Section 810 determination, and a compatibility determination. Only temporary fisheries enhancement facilities may be authorized in Minimal Management areas.

2.2.12 Subsistence Use Management

Providing the opportunity for continued subsistence use by local residents is one of the purposes of Kodiak Refuge, as stated in Title III of ANILCA. Title VIII of ANILCA further provides that rural Alaska residents engaged in subsistence use of resources be allowed to continue using refuge resources for traditional purposes. These resources include fish and wildlife, house logs and firewood, and other plant materials (berries, bark, etc.). Many aspects of subsistence management are addressed outside of this plan. The Federal Subsistence Board, through its rule-making process, addresses seasons, harvest limits, and customary and traditional use determinations. The federal board has established Regional Subsistence Advisory Councils to provide for meaningful public input to the rule-making process.

The Refuge will work with others to monitor subsistence harvest, including monitoring conducted by other federal land management

agencies, the State of Alaska, tribal governments, Native organizations, or any other party. The Refuge will supplement the state's ongoing harvest and resource monitoring programs to provide additional information on the status of fish and wildlife populations harvested for subsistence uses. This monitoring is intended to identify potential problems before populations of fish and wildlife become depleted and to ensure preference is given to subsistence users as required by law. All information the Refuge gathers through subsistence monitoring will be shared with local state fish and game advisory committees, tribes, and other entities. The Refuge attends various subsistence-related meetings, including those of local fish and game advisory committees and Regional Subsistence Advisory Councils, and provides information on the status of subsistence resources and management as it relates to Kodiak Refuge.

The noncommercial gathering by local rural residents of fruits, berries, mushrooms, and other plant materials for subsistence uses and of dead standing or down timber for firewood is allowed without a special use permit. Harvest of live standing timber for house logs, firewood, or other uses is allowed, although specific requirements vary by size and location. See 50 CFR 36.15 for specific details. Timber stocks subject to subsistence use will also be monitored to ensure they remain available over the long term.

Under Section 816 of ANILCA, refuge lands may be closed to the taking of fish and wildlife if closure is deemed necessary for reasons of public safety or administration or to ensure the continued viability of particular populations of fish or wildlife. Emergency closure to subsistence taking generally would occur only after other consumptive uses competing for the resources were restricted or eliminated.

Access for Subsistence Purposes

Access to refuge lands by traditional means will be allowed for subsistence purposes in accordance with Section 811 of ANILCA, subject to reasonable regulation. (See 50 CFR 36.12.) Traditional means include snowmachines, motorboats, dog teams, and other means of surface transportation traditionally used by local rural residents engaged in subsistence activities. Use of these traditional means of travel will be in compliance with state and federal law in such a manner to prevent waste of harvested resources or damage to the Refuge and to prevent herding, harassment, hazing, or driving of wildlife.

Section 810 Evaluations

The Refuge will evaluate the effects of proposed activities on subsistence use to ensure compliance with Section 810 of ANILCA. The Refuge will work with the Federal Subsistence Board, regional subsistence advisory councils, local fish and game advisory committees, tribes, Native corporations, the Alaska Department of Fish & Game, and other appropriate local sources to determine

whether a proposed activity would “significantly restrict” subsistence uses. If the Refuge determines that a proposal would probably result in adverse effects to subsistence use, the Refuge would follow the requirements identified in Section 810 before making a final decision on the proposal.

2.2.13 Public Access and Transportation Management

Snowmachines, Motorboats, Airplanes, and Nonmotorized Surface Transportation

Section 1110(a) of ANILCA allows the use of snowmachines (during periods of adequate snow cover and frozen river conditions), motorboats, airplanes, and nonmotorized surface transportation methods for traditional activities and for travel to and from villages and homesites. Such access shall be subject to reasonable regulations to protect the natural and other values of the Refuge (43 CFR 36.11). Specific areas may be closed, in accordance with these regulations, to such uses. The refuge manager is responsible for determining when snow cover is adequate to protect the underlying vegetation and soil from damage by snowmachine use.

Off-Road Vehicles

The regulations in 43 CFR 36.11(g) restrict the use of off-road vehicles within refuges. The definition of off-road vehicles in 50 CFR 36.2 excludes snowmachines but includes air boats and air-cushion vehicles along with motorized wheeled vehicles. Off-road vehicles are allowed only on designated routes or areas within Moderate Management areas or by special use permit.

Helicopters

Special use permits or other authorizations are required for all helicopters landings in any area other than at designated landing areas. Exceptions include emergencies, search and rescue operations, or operations conducted by the Service [43 CFR 36.11(f)(4)].

Helicopter landings for volcano monitoring, geologic hazards evaluations, and fisheries and wildlife management activities may be authorized under special use permit or other authorization, subject to site-specific stipulations. Helicopter landings for initial-attack fire suppression must comply with operational guidance in the Alaska Interagency Wildland Fire Management Plan. It is the policy of Kodiak Refuge to not issue permits for the landing of helicopters for recreational purposes.

The “Memorandum of Agreement Between U.S. Fish & Wildlife Service, Alaska Department of Fish & Game, and United States Coast Guard Regarding Flight Operations over Kodiak” was signed on April 30, 2002. This agreement contains provisions regarding flights by Coast Guard aircraft (including helicopters) to minimize disturbance to wildlife within the Archipelago. The agencies will provide information on the location of bear concentration areas and periods of avoidance as well as annual training to Coast Guard Air

Station personnel governing the use of aircraft on the Refuge plus rules governing the protection of wildlife throughout the Archipelago. The Coast Guard will conduct flights in a manner to actively avoid flying near large mammals, will transit aircraft at an altitude of at least 750 feet above ground level, and will schedule familiarization flights away from brown bear feeding areas during times when brown bears are historically present in those areas. Nothing in this agreement affects the ability of the Coast Guard to conduct operations involving national defense or the saving of human life or property.

Access to Inholdings

Section 1110(b) of ANILCA ensures adequate and feasible access, for economic or other purposes, across a refuge for any person or entity who has a valid inholding. An inholding is defined as state-owned or privately owned land, including subsurface rights underlying public lands, valid mining claims, or other valid occupancy that is within or effectively surrounded by one or more conservation system units. When a right-of-way permit is necessary under this provision (e.g., construction of permanent or long-term facilities), the Service will review and process the application in accordance with regulations in 43 CFR 36.5, 36.6 and 50 CFR 29.21. Such permits are subject to terms and conditions as specified in the regulations at 43 CFR 36.9 and 50 CFR 29.21-4.

Temporary Access

43 CFR 36.12(a)(2) defines temporary access as “limited, short-term (i.e., up to one year from issuance of the permit) access which does not require permanent facilities for access to state or private lands.” Temporary access across federal lands can be granted to State and private landowners for the purposes of survey, geophysical, exploratory, and other temporary uses of non-federal lands, and where access is not otherwise provided for in 43 CFR 36.10 and 43 CFR 36.11.

The Refuge will evaluate an application for temporary access across the Refuge and will issue a permit with the necessary stipulations and conditions to ensure that the access granted is compatible with the purposes for which the Refuge was established, that it complies with the provisions of Section 810 of ANILCA, and that it ensures that no permanent harm will result to the resources of the Refuge.

Subsistence Access

See Access for Subsistence Purposes under Subsistence Use Management (section 2.2.12).

Transportation and Utility Systems

Transportation and utility systems include roads, highways, railroads, airports, pipelines, electrical transmission lines, communication systems, and related structures and facilities reasonably and minimally necessary for the construction, operation,

and maintenance of such systems (Section 1102 of ANILCA). Anyone seeking to acquire a right-of-way across refuge lands for a transportation or utility system must, consistent with 43 CFR Part 36, file an application with the Service's Regional Office. Regulations in 43 CFR Part 36 and 50 CFR Part 29 establish specific procedures and time constraints for application review, compliance with NEPA, decision-making, and appeals.

The Service will decide whether to approve or disapprove that portion of a transportation or utility system that would cross refuge lands, except for those on designated Wilderness. When the proposed transportation or utility system would cross a designated Wilderness area, the Service tentatively approves or disapproves the application subject to the President's subsequent decision. If the President approves, a recommendation is submitted to Congress for final approval.

A right-of-way for a transportation or utility system across refuge lands can be granted only if the system meets the compatibility standard, the criteria outlined in Section 1104(g)(2) of ANILCA, and the regulations at 43 CFR 36.7(a)(2) and if there is no economically feasible and prudent alternative route for the system. If approved, permits issued for a transportation or utility system will contain terms and conditions as required under regulations in 43 CFR 36.9(b) and 50 CFR 29.21-4. Rights-of-way that cross Wild and Scenic River corridors cannot interfere with or impede stream flow and transportation on the river (Section 1107[b] of ANILCA and the regulations at 43 CFR 36.9[c] and [d]). Additional special requirements apply to rights-of-way for pipelines issued under the Mineral Leasing Act of 1920, 30 U.S.C. 185, Section 1107[c] of ANILCA, and the regulations at 43 CFR 36.9[d]).

When considering an application for a transportation or utility system, the authorization process would incorporate a corresponding conservation plan amendment to update the desired management category(s) of the affected area if the system were to be approved.

State Transportation Planning

Federal transportation planning regulations require each state to develop a long-range statewide transportation plan in consultation and coordination with other government agencies and the public. In Alaska, transportation projects nominated for funding are evaluated and ranked by the Alaska Department of Transportation and Public Facilities. When appropriate, the Refuge will participate in the state transportation planning process and provide input regarding environmental considerations of proposed projects affecting refuge lands and resources.

RS 2477 Rights-of-Way

The State of Alaska asserts numerous claims to roads, trails, and paths across federal lands under Revised Statute 2477 (RS 2477), a section in the Mining Act of 1866 that states, "The right-of-way for

the construction of highways over public lands, not reserved for public uses, is hereby granted.” RS 2477 was repealed by the Federal Land Policy and Management Act of 1976, subject to valid existing claims. Under authority of the Federal Land Policy and Management Act, the Bureau of Land Management expanded the regulations at 43 CFR 1864 to allow the State of Alaska and others to apply for Federal “disclaimers” for routes of travel that applicants believe qualify as RS 2477 rights-of-way.

Assertion and identification of potential rights-of-way does not establish the validity of these claims nor the public’s right to use them. The existence of all RS 2477 rights-of-way will be determined on a case-by-case basis, either through the courts or by other legally binding document. The State of Alaska has identified one route on Kodiak Refuge it asserts may be claimed as a right-of-way under RS 2477. See Figure F-1 in Appendix F.

Section 17(b) Easements

Section 17(b) of the Alaska Native Claims Settlement Act of December 18, 1971, authorizes the Secretary of the Interior to reserve easements on lands conveyed to Native corporations to guarantee access to public lands and waters. Easements across Native lands include linear easements (e.g., roads and trails) and site easements. Site easements are reserved for use as temporary campsites and to change modes of transportation.

The Service is responsible for administering those public easements, inside and outside refuge boundaries, that provide access to refuge lands. Service authority for administering 17(b) easements is restricted to the lands within the easement. The size, route, and general location of 17(b) easements are identified on maps filed with conveyance documents. Conveyance documents also specify the terms and conditions of use, including the acceptable periods and methods of public access. See Appendix F for additional information on easements.

Navigation Aids and Other Facilities

Section 1310 of ANILCA authorizes reasonable access to and operation and maintenance of existing air and water navigation aids, communications sites, and related facilities. It authorizes existing facilities for weather, climate, and fisheries research and monitoring subject to applicable laws and regulations. Reasonable access to and operation and maintenance of facilities for national defense and related air and water navigation are also provided for, including within designated Wilderness areas.

New facilities may be authorized after consultation with the head of the federal department or agency undertaking the establishment, operation, or maintenance and in accordance with mutually agreed to terms and conditions.

2.2.14 Recreation and Other Public Use

Public recreation activities compatible with refuge purposes are authorized unless specifically prohibited (50 CFR 36.31).

Compatible recreation uses of Kodiak Refuge will continue. The Refuge Administration Act priority public uses are hunting, fishing, wildlife observation, photography, and environmental education and interpretation. These uses are encouraged and will receive emphasis in management of public use of the Refuge.

Both consumptive (e.g., hunting, fishing, and trapping) and nonconsumptive (e.g., photography and wildlife viewing) recreation uses are appropriate. Some recreational uses are incidental to others. Camping and hiking may be related to hunting, fishing, wildlife photography, or other recreational uses.

There is often a fine line between subsistence and recreation use (e.g., berry picking). Subsistence uses are addressed under Subsistence Use Management (section 2.2.12). When it is necessary to restrict the taking of fish and wildlife on a refuge in order to protect the continued viability of such populations, the taking of fish and wildlife for nonwasteful subsistence uses on refuges shall be accorded priority over the taking of fish and wildlife for other purposes, in accordance with Title VIII of ANILCA.

Kodiak Refuge will be managed to provide recreation experiences in generally natural wildland settings. Recreation use would be managed consistent with the designated management area category. Moderate Management areas will be managed for greater concentrations of visitors than will be Minimal Management areas. The Refuge will manage all recreation use to avoid crowded conditions and to minimize adverse effects to cultural resources, fish and wildlife, wilderness, and other special values of the Refuge. “Leave No Trace” use will be the standard.

The least intrusive means of managing use will be employed. Education will be the primary management tool for recreation management, using brochures, maps, signs, and personal contacts. However, if voluntary methods fail, other actions may be taken. Actions that may be taken to manage recreation include limiting commercial guiding and outfitting; regulating use and access subject to the provisions of Section 1110(a) of ANILCA; and recommending changes in state and/or federal fishing, hunting, or trapping regulations. When necessary, recreation opportunities may be seasonally or otherwise restricted to minimize user conflicts and to protect the natural or other values of the Refuge.

Any restrictions on public use will follow the public participation and closure procedures at 50 CFR Part 36, 43 CFR Part 36, or other applicable regulations. State management actions available through the Master Memorandum of Understanding (see Appendix B) and other state management tools will also be utilized where mutually desirable.

Management plans may be prepared for areas of relatively concentrated use. As called for in the original Kodiak Refuge Conservation Plan (1987), a public use management plan was adopted for the Refuge in 1994. It provides specific direction for management of snowmachine use, pack animals, wildlife concentration areas, camping, private cabins, outfitting and guiding, trails, public use cabins, aircraft and jet-boat use, tent platforms, and a bear-viewing program. Many of the actions proposed in the public use plan would require regulations for implementation. To date, the only refuge-specific regulation adopted is the seasonal closure of the O'Malley River area. Other actions requiring regulations are considered as part of Alternative A (Current Management). The Conservation Plan addresses some of the topics addressed in the public use plan (snowmachine use, management of wildlife concentration areas, public use cabins, pack animals, and bear viewing.) Once the Conservation Plan is completed, the public use plan will be revised. (See sections 0 through 2.1 of this chapter.)

2.2.15 Outreach

Outreach is two-way communication between the Refuge and the public to establish mutual understanding, promote public involvement, and influence public attitudes and actions. The Refuge will continue to take advantage of partnership opportunities in providing these services, including working with the Alaska Natural History Association; Alaska Public Lands Information Centers; local, state, and other federal agencies; local schools; tribal governments; Alaska Native organizations; and individuals.

Use of outreach as a management tool is key to the success of many of the management activities outlined in this plan. Two outreach activities—environmental education and interpretation—are included in the six priority public uses identified in the Refuge System Improvement Act. Many other activities are also available for use by the refuge staff in its outreach program, which may be developed in more detail as a step-down management plan. All outreach activities must be continually evaluated to determine whether they fulfill refuge management goals and objectives. The Refuge will ensure that these services are available to all segments of the public, including those with disabilities and those who speak languages other than English.

Other Outreach Activities

The Refuge will work with the news media, attend public meetings and workshops, develop Internet home pages, invite the public to the Refuge (open houses), and foster one-on-one communication.

2.2.16 Recreation Facilities

Facilities may be provided to support certain recreation uses. Recreation facilities may be located on refuge lands and at administrative sites. Visitor centers and highly developed

environmental education and interpretive sites may be located off refuge lands at administrative sites or other appropriate locations. Recreation facilities may include roads, trails, boat launch sites, airstrips, campgrounds, interpretive sites, environmental education sites, visitor centers, public use cabins, visitor contact facilities, and signs.

All new buildings (e.g., visitor centers, restrooms, public use cabins, and visitor-contact buildings) and additions and alterations to existing buildings will comply with current accessibility standards. Other recreation facilities are not currently covered under these standards, although access for the disabled will be considered in the design of new or upgraded facilities. As funds are available, existing buildings will be updated to meet these standards.

The level of development and appearance of facilities will be appropriate for the management category of the area in which they are located. More intensive and sophisticated facilities will be allowed in the Moderate Management category; more rustic and rudimentary facilities will occur in the Minimal Management category.

Cabins

Special use permits are required for subsistence and commercial cabins. Management of existing cabins and review of proposals for construction of new cabins for traditional uses will be in accordance with the Service's cabin regulations (50 CFR 36.33). Private recreation use cabins will not be authorized.

Public use cabins are intended to provide the public with unique opportunities to enjoy and use the Refuge. They also help ensure public health and safety in bad weather and emergencies.

Development of new permanent facilities for private uses, such as commercial and subsistence cabins, is generally not allowed on Kodiak Refuge. Documentation has shown that the cumulative effects of increasing human activity and development in brown bear habitat will ultimately lead to significant impacts to the brown bear population.

Temporary Facilities

Per Section 1316 of ANILCA, the Refuge will allow the use of temporary campsites, tent platforms, shelters, and other temporary facilities and equipment directly and necessarily related to the taking of fish and wildlife, provided these facilities are not detrimental to the purposes of the Refuge. Special use permits may be issued for tent frames, caches, smokehouses, and other facilities. Appropriate stipulations will be included in the special use permits to ensure protection of refuge resources. Existing tent platforms would continue to be permitted and could be rebuilt in the same location if destroyed. No new tent platforms could be developed.

The following criteria will be considered in evaluating applications for temporary facilities:

- Where feasible, they will be located in a manner to not displace or compete with existing public uses.
- They will be located away from the vicinity of existing cabins.
- They will be located on sites that are not currently popular campsites.
- They will be located to minimize displacement of wildlife.

The following conditions may be imposed on special use permits for temporary facilities:

- The time of occupancy will coincide with the state and/or federal hunting, fishing, and/or trapping season for the species for which the temporary facility is being used.
- At the end of the specified occupancy, tents and other readily portable materials will be removed.
- To the extent feasible, temporary structures will be built with materials that blend into and are compatible with the surrounding landscape.
- To the extent feasible, temporary facilities will be screened from water and located so that they are as unobtrusive as possible when viewed from trails and areas of significant public use.

2.2.17 Commercial Use Management

Commercial uses are activities involving use of a refuge or its resources for a profit. Subsistence uses are not included in commercial uses. Refer to section 2.2.12 for policies related to subsistence.

Except for mining on valid claims under the 1872 Mining Law, other activities where specific property rights are held by entities other than the federal government, or where specifically exempted by law, all commercial uses must comply with both NEPA and the compatibility requirements of the National Wildlife Refuge System Administration Act. A written authorization (such as a special use permit) is required to conduct commercial activities on Kodiak Refuge. Compliance with NEPA and a compatibility determination will be required prior to deciding whether to authorize a commercial use. Prior to authorizing any economic use of a natural resource, the refuge manager must determine that each use, except for proposed activities authorized by ANILCA, contributes to the achievement of refuge purposes or the National Wildlife Refuge System mission (50 CFR 29.1).

Mineral Exploration and Development

Oil and Gas Assessment—Geological and geophysical studies, including subsurface core sampling and seismic activities, require special use permits with site-specific stipulations that ensure

compatibility with refuge purposes and consistency with the management objectives of this plan. Decisions to allow exploration will be made on a case-by-case basis.

Oil and Gas Leasing—Oil and gas leasing may be allowed only if the affected lands are changed to the Intensive Management category through a plan amendment. Oil and gas leasing will not be authorized until completion of the following:

- An assessment of potential
- A national interest determination
- A compatibility determination, where applicable
- A comprehensive conservation plan amendment

During this process, the Service will seek the views of state and local governments and other interested parties, in accordance with Section 1008(b)(2) of ANILCA.

If leasing is authorized, leaseholders will be subject to federal leasing regulations (43 CFR 3100) and appropriate state regulations. Leases will be subject to stipulations on access, seasonal use, and site revegetation; operators would be required to use technology that minimizes impacts on fish, wildlife, and habitat. The Refuge will work closely with leaseholders to minimize adverse effects of mineral exploration and extraction on refuge resources and recreational opportunities. When the original Conservation Plan was prepared (1987), oil and gas leasing was found to be incompatible with the purposes of Kodiak Refuge.

Sand and Gravel, and Other Common Variety (Saleable)

Minerals—Common variety minerals—such as sand, gravel, stone, limestone, pumice, pumicite, cinders, and clay—may be sold pursuant to the Materials Act of July 31, 1947 (30 U.S.C. 601, 602), as amended. Regulations are found at 43 CFR 3600. Disposal is also authorized under the Refuge Revenue Sharing Act (16 U.S.C. 715s). See Part 612 FW 1 of the Service Manual (USFWS). Extraction may be authorized, where compatible, in Moderate Management areas to support construction and maintenance projects on or near refuge lands if no reasonable material sites exist off refuge lands.

Other Mineral Leasing—In general, mineral leasing is not allowed on refuge lands. Geothermal leasing is not allowed on the Refuge under Section 1014(c) of the Geothermal Steam Act (30 U.S.C. 1014). Coal mining is also prohibited, subject to valid existing rights, under Section 16 of the Federal Coal Leasing Amendment Act of 1975 (30 U.S.C. 201 Notes) and the Surface Mining Control and Reclamation Act of 1977 (30 U.S.C. 1272; 43 CFR 3400.2). In specific cases of national need, however, mineral exploration, development, or extraction may be permitted under Section 1502 of ANILCA. The President must determine that the national need for the mineral activity outweighs the other public values of the land.

Any recommendation by the President would take effect only after enactment of a joint resolution by Congress.

Alaska Mineral Resource Assessment Program—Section 1010 of ANILCA requires that all federal lands be assessed for their oil, gas, and other mineral potential, although Section 304(c) prohibits new hardrock mining on refuges. Mineral assessment techniques that do not have lasting impacts—such as side-scanning radar, trenching, and core drilling—may be allowed throughout Kodiak Refuge. Special use permits issued to other government agencies or their contractors for assessment work would include stipulations to ensure that the assessment program is compatible with refuge purposes. For example, stipulations may limit access during nesting, calving, spawning, or other times when fish and wildlife may be especially vulnerable to disturbance.

Commercial Recreation Services

Air-taxi and water-taxi operators, wildlife viewing guides, tour operators, wilderness guides, recreational fishing guides, big-game hunting guides, and others providing recreation services are required, under 50 CFR 27.97, to obtain special use permits to operate on refuge lands. Where the number of special use permits is limited, refuge managers will award permits competitively (see 50 CFR 36.41). Special use permits require compliance with all applicable laws and regulations (e.g., Coast Guard licensing regulations). Permit stipulations ensure that camps; travel methods; storage of food, fish, and game meat; and activities are compatible with refuge purposes and reduce the potential for impacts to resources and to other refuge users. If problems arise relating to commercial recreation activities—such as disturbance of active nests, conflicts with subsistence use, chronic incidence of bears getting into food, or violations of state or federal regulations—the Refuge may modify or terminate use under the special use permit stipulations. The Refuge will monitor the number and type of guides and outfitters operating in the Refuge and the number of their clients and will, if necessary, further regulate use.

Under Section 1307 of ANILCA, local preference is provided for all new commercial visitor services except guiding for recreation hunting and fishing. Regulations defining local preference are in 50 CFR 36.37.

Currently, Kodiak Refuge awards all 25 big game guide permits allowed on the refuge (25 exclusive guide areas are identified on the Refuge) by means of a competitive selection process in order to limit the number of permits and ensure quality guiding services to the public. In addition, recreational fishing guide permits are awarded on specific refuge drainages (the Dog Salmon, Ayakulik, Uganik, and Little rivers) using a similar competitive selection process. Outside these drainages, there is no limit on the number of recreational fishing guides. More detailed information on commercial big game and recreational fish guiding can be found in Chapter 3 (see Hunting

and Fishing discussions in section 3.3.7 Recreation Opportunities on Kodiak Refuge).

Commercial Fishing and Related Facilities

Under Section 304(d) of ANILCA, the Service will continue to allow individuals with valid commercial fishing rights or privileges to operate on the Refuge. The use of campsites, cabins, motor vehicles, and aircraft on the Refuge in support of commercial fishing is subject to reasonable regulation. Section 304(d) provides for restricting commercial fishing rights if the use is determined to be inconsistent with refuge purposes and to be a “significant expansion of commercial fishing activities . . . beyond the level of such activities during 1979.” The Service recognizes that fishery levels are cyclic and will take that into consideration when applying the 1979-level criteria. Any new fishery and related facilities and equipment will have to meet the compatibility standard. Kodiak Refuge developed a Management Plan for Commercial Fishing Activities in 1987; it will be updated in 2007.

Aquaculture and mariculture support facilities may be allowed, subject to provisions of state and federal laws, and only if the affected lands are changed to the Intensive Management category through a plan amendment. Seafood processing plants will not be allowed.

Commercial Harvest of Timber and Firewood

Commercial harvest of timber and firewood will only be authorized under a special use permit and when necessary to fulfill overall refuge management objectives. Within Moderate and Minimal management categories, commercial harvest of timber and firewood to accomplish management objectives will only occur when an approved refuge fire management plan identifies the need to reduce fuel loads in an area. Applicable federal and State of Alaska guidelines for timber management will be followed.

Commercial Gathering of Other Resources

Gathering other resources (e.g., antlers and mushrooms) requires a special use permit under 50 CFR 27.51. Kodiak Refuge requires a trapping permit under 50 CFR 36.32(c)iii. Trappers are required to secure and possess all required state licenses and shall comply with all applicable provisions of state and federal law. The State of Alaska makes no distinction between recreation, subsistence, and commercial trapping.

Commercial Filming and Recording Activities

It is Service policy to provide refuge access and/or assistance to firms and individuals in the pursuit of commercial visual and audio recordings. Such access or assistance will not be provided if visual and audio recordings are incompatible with refuge purposes of the mission of the National Wildlife Refuge System. Commercial films, television productions, or sound tracks made within refuges for other

than news purposes require a special use permit or authorization. (See 43 CFR 5.1)

Commercial filming or recording activities such as videotaping, audio taping, and photography for the purpose of advertising products and services are subject to an A/V Production Permit. (See Refuge System Manual 8 RM Section 16.)

Permits are not required for still photography on refuge lands open to the general public, including commercial still photography so long as no models or props which are not a part of the site's natural or cultural resources or administrative facilities are used. (See 16 U.S.C. 460l-6d.)

Other Commercial Uses

Generally, other commercial uses such as grazing, agriculture, and hydroelectric power development will not be allowed. On Kodiak Refuge, overland access is permitted to the Terror Lake Hydroelectric Project. Expansion of the Terror Lake Hydroelectric Project (through the Hidden Basin diversion) may be permitted if determined to be compatible. An exception may be made for low-head or small run-of-the-river hydropower facilities. These may be authorized on a case-by-case basis. See section 2.2.13 for a discussion of transmission lines, pipelines, and other rights-of-way, as described in Title XI of ANILCA.

2.2.18 Environmental Contaminants Identification and Cleanup

One goal of the National Wildlife Refuge System Administration Act is to maintain the biological integrity, diversity, and environmental health of the system. In support of this goal, the Service has studied environmental contaminants that may threaten trust species (i.e., those species for which the Service has primary jurisdiction) and other refuge resources. This work will continue as new concerns are identified and as funding allows.

An assessment of known or suspected contaminants threats within Kodiak Refuge is planned as part of the national contaminants assessment process; existing information will be reviewed, and an assessment of potential contaminants threats will be entered into an electronic database. A contaminant assessment report will also be prepared.

When contaminants are identified on refuge lands, the Service will initiate discussions with the responsible party or parties to remedy the situation. If the Service caused the contamination, funds will be sought to define the extent and type of the contamination and to remedy it. Appropriate environmental regulations—including the Resource Conservation Recovery Act, Comprehensive Environmental Response and Compensation Liability Act, Oil Pollution Act of 1990, and State of Alaska regulations (e.g., 18 AAC 75)—would be followed during remediation work.

All spills of petroleum products and hazardous materials must be reported to the Alaska Department of Environmental Conservation and to the National Response Center. Incidents also need to be reported to the U.S. Fish & Wildlife Service regional spill response coordinator. The Refuge will refer to the U.S. Fish & Wildlife Service Region 7 Spill Response Contingency Plan when responding to spills.

2.2.19 Administration of Kodiak National Wildlife Refuge

Administrative Sites and Visitor Facilities

Administrative sites include temporary and permanent field camps, residences, offices, and associated storage, communication, and transportation facilities. The type of administrative site and level of development will be consistent with the management intent of the management category in which they are constructed. Administrative field camps or other administrative facilities within the Minimal Management category will only be allowed when required to meet management objectives, when no reasonable alternative sites exist, and when the facilities are essential to protect the health and safety of employees. New facilities would only be the minimum required to meet long-term needs.

Fuel storage or other hazardous material storage in conjunction with administrative sites will meet all federal and state requirements for spill containment and storage.

Under Section 1306 of ANILCA, the Secretary of the Interior may establish administrative sites and visitor facilities, either within or outside the boundaries of a conservation system unit, in accordance with the unit's management plan and for the purposes of ensuring the preservation, protection, and proper management of said unit. This section further states that to the "extent practicable and desirable, the Secretary shall attempt to locate such sites and facilities on Native lands in the vicinity of the unit."

Department of Interior guidelines, developed in 1995, implementing Section 1306 of ANILCA require that, prior to initiating a search for an administrative site or visitor facility, site-selection criteria be developed, with public input, and all proposals be evaluated according to the site-selection criteria. If it is determined that Native lands satisfy the site-selection criteria and are desirable and practicable for the intended use, the highest-ranked Native lands shall be selected as the preferred site, subject to a specific site evaluation. If no Native lands satisfy the site-selection criteria, the highest-ranking parcel will become the preferred site. Public comments will be considered prior to making a final decision.

Applicability of Refuge Regulations to Off-Refuge Administrative and Visitor Facility Sites—50 CFR 36.1(c) authorizes the Service to enforce regulations concerning public safety and protection of government property, as well as State of Alaska fish and wildlife

regulations, on administrative and visitor facility sites that may be held in fee or less-than-fee title and are either inside or outside the approved boundaries of any Alaska national wildlife refuge.

Refuge Management Plans

Some management programs are addressed in sufficient detail in the Conservation Plan to be integrated directly into the budgetary process. For other programs, it may be necessary to prepare step-down management plans to implement general strategies identified in the Conservation Plan. Additional information on the step-down planning process can be found in Part 602 FW 3, of the Service Manual (USFWS).

The following step-down management plans for Kodiak Refuge are required:

Station Safety Plan	Completed 1996, revised annually
Fire Emergency Evacuation Plan	Completed 1996, revised annually
Station Security Plan	Completed 2001, revised annually
Commercial Fisheries Activities	Completed 1987, next review 2007
Cultural Resources Guide	Completed 1999, next review 2009
Fisheries Management Plan	Completed 1987, next review 2007
Fire Management Plan	Completed 1987, next review after revision of AK Interagency Wildland Fire Management Plan
Land Conservation Plan	Completed 1992, next review 2012
Public Use Management Plan	Completed 1993, next review 2009
Public Use Cabin Management Plan	Completed 1993, next review 2012
Environmental Education Plan	To be completed by 2008
Comprehensive Inventorying and Monitoring Plan	To be completed within two years of completion of Conservation Plan
Mt. Glottof Research Natural Area Plan	To be completed by 2010
Water Resources Study Plan	Completed 1998

2.3 Management Categories

Although five management categories, ranging from Intensive Management to designated Wilderness, are used to describe management levels in National Wildlife Refuges in Alaska, only two management categories—Moderate Management and Minimal

Management—would be used to describe management levels on Kodiak Refuge. A management category is used to define the level of human activity appropriate to a specific area of a refuge. It is a set of refuge management directions applied to an area, in light of its resources and existing and potential uses, to facilitate management and the accomplishment of refuge purposes and goals. The Service could, in the future, designate refuge lands as Intensive Management through a plan amendment or revision. The Wilderness and Wild (and Scenic) River management categories are reserved for congressionally designated lands. The management activities table shows those management activities, public uses, commercial uses, and facilities that may be allowed in each management category and under what conditions. (See Table 2-2, page 2-76.)

2.3.1 Moderate Management

Moderate Management is meant to allow compatible management actions, public uses, commercial uses, and facilities that may result in changes to the natural environment that are temporary, or permanent, but small in scale and that do not disrupt natural processes. The natural landscape is the dominant feature of Moderate Management areas although signs of human actions may be visible.

Management actions in the category of Moderate Management will focus on maintaining, restoring, or enhancing habitats to maintain healthy populations of plants and animals where natural processes take over. For example, logging, tree-crushing, and prescribed burning may be used to convert mature forests to earlier native seral stages to enhance wildlife habitat. In general, management facilities, both temporary and permanent, will be allowed for the purposes of gathering data needed to understand and manage resources and natural systems of the refuge. Structures will be designed to minimize overall visual impact.

Public facilities provided in Moderate Management will, while protecting habitats and resources, allow the public to enjoy and use refuge resources in low numbers over a large area or they will encourage the short-term enjoyment of the refuge in focused areas. The emphasis is on small facilities that encourage outdoor experiences. Facilities such as public use cabins, rustic campgrounds, kiosks, viewing platforms, trails, and toilets may be provided. Facilities will be designed to blend with the surrounding environment.

Compatible economic activities may be allowed where impacts to natural processes and habitats are temporary (e.g., small-scale logging where an earlier seral stage meets management goals; facilities in support of guiding and outfitting services such as tent platforms or cabins that encourage enhanced public use). All economic activities and facilities require authorizations such as special use permits.

2.3.2 Minimal Management

Minimal Management is designed to maintain the natural environment with very little evidence of human-caused change. Habitats should be allowed to change and function through natural processes. Administration will ensure that the resource values and environmental characteristics identified in the conservation plan are conserved. Management actions that change existing habitats should be designed and implemented so that a natural appearance is maintained. Public uses, commercial activities, and facilities should minimize disturbance to habitats and resources. Ground-disturbing activities are to be avoided whenever possible.

Management actions in this category focus on understanding natural systems and monitoring the health of refuge resources. Generally, no permanent structures are allowed (except cabins). Temporary structures may be allowed in situations in which removal is planned after the period of authorized use and the site can be rehabilitated using plants native to the immediate area. Existing cabins may be allowed for administrative, public use, subsistence, or commercial or economic (e.g., guiding) purposes. New subsistence or commercial cabins may be authorized if no reasonable alternative sites exist. Public use or administrative cabins may be constructed if necessary for health and safety.

Public use of the refuge for wildlife-dependent recreation and subsistence activities is encouraged. Public use facilities are not generally provided. Mechanized and motorized equipment may be allowed when the overall impacts are temporary or where its use furthers management goals.

If a transportation or utility system, as defined in Section 1102 of ANILCA, is proposed to cross an area in Minimal Management, the authorization process would incorporate a corresponding conservation plan amendment to change the management category in the affected area from Minimal Management to Moderate or Intensive management as appropriate.

Compatible economic activities may be allowed where the evidence of those activities does not last past the season of use, except as noted in the preceding discussion of cabins. The primary economic activities are likely to be guiding and outfitting of recreation activities such as hunting, fishing, hiking, river floating, and sightseeing. All economic activities and facilities require authorizations such as special use permits.

2.3.3 Special Management

Special Management lands are managed within one of the categories previously described but have additional requirements because of their status. An example of a Special Management area would be the Mt. Glottof Research Natural Area.

2.3.4 Alaska Native Claims Settlement Act Section 22(g) Lands

Section 22(g) of the Alaska Native Claims Settlement Act provides that Service-administered lands within refuges established prior to December 18, 1971, that are conveyed under that act remain subject to the laws and regulations governing the use and development of the refuge. Activities occurring on these lands are subject to the compatibility standard, as described in 50 CFR 25.21(b)(1). In addition, the Service retains the right of first refusal on village corporation lands if these lands are ever offered for sale.

Approximately 131,500 acres of lands within the boundaries of Kodiak Refuge are subject to Section 22(g). The Refuge will work with the landowners to balance the commercial development and use of 22(g) lands with the protection of resources important to the purposes of the Refuge.

2.3.5 Activities, Uses, and Facilities by Management Category

Explanatory Note: Table 2-2 summarizes the management direction for the management categories as it applies to Kodiak Refuge. The description of the management categories reflect a clear distinction in the level of action, type of action, and constraints that may be placed on activities or development within the management categories. They should be used to reflect the desired future condition of the area when site-specific proposals are being evaluated. Activities allowed or authorized will be managed differently depending on the management category in which they occur. There are activities, uses, and facilities listed in the table (shaded rows) that are not currently and have little or no likelihood of occurring in the future on Kodiak Refuge.

Key for Table 2-2

The following are definitions for terms used in the table:

Allowed—Activity, use, or facility is allowed under existing NEPA analysis, compatibility determinations, and applicable laws and regulations of the Service, other federal agencies, and the State of Alaska.

May be allowed—Activity, use, or facility may be allowed subject to site-specific NEPA analysis, a specific compatibility determination, and compliance with all applicable laws and regulations of the Service, other federal agencies, and the State of Alaska.

May be authorized—Activity, use or facility **may be allowed**; a special use permit or other authorization is required.

Not allowed—Activity, use, or facility is not allowed.

The following terms are used:

NEPA analysis—All activities, uses, and facilities proposed for a refuge that have the potential to result in significant effects on the

environment require an analysis of potential environmental impacts under the National Environmental Policy Act. This analysis may be documented as a categorical exclusion (CE), an environmental assessment (EA), or an environmental impact statement (EIS), depending on the nature of the proposed project.

Compatibility—All activities, uses, and facilities allowed on a refuge must be compatible with the purposes of the refuge and the mission of the National Wildlife Refuge System. The analysis that occurs results in a compatibility determination. Management activities undertaken by the Service or by volunteers, cooperators, or contractors working for the Service, with limited exception, are exempt from compatibility review (Part 603 of the Service Manual, Compatibility).

Regulations—All activities, uses, and facilities allowed on a refuge must comply with any applicable regulations, as published in the Code of Federal Regulations. Regulations are developed by the Service through a public process to implement the legal authorities under which the Service manages the National Wildlife Refuge System. For more information on these regulations, see the appropriate topic in the Management Directions and Guidelines (section 2.2) of this chapter. For some activities, other federal agency and/or state regulations may also apply.

Temporary—A continuous period of time not to exceed 12 months, except as specifically provided otherwise. Special use permits or other authorizations may prescribe a longer period of time but the structures or other human-made improvements need to be readily and completely dismantled and removed from the site when the period of authorized use terminates.

The following guidelines apply to all activities, uses, and facilities allowed on a refuge:

Area or time restrictions—All activities and uses allowed on a refuge may be restricted in certain areas or at certain times, at the discretion of the refuge manager and with the appropriate level of public involvement, by emergency (short-term) or permanent regulation, if necessary to protect refuge resources or human health and safety.

Management emergencies—Activities, uses, and facilities not allowed on a refuge or in specific management categories may be allowed if naturally occurring or human-caused actions adversely affect refuge resources or threaten human health and safety.

Table 2-2 Activities, public uses, commercial uses, and facilities by management category
(Shaded rows describe activities that are not currently and have little likelihood of occurring on Kodiak Refuge.)

ACTIVITY	MODERATE MANAGEMENT	MINIMAL MANAGEMENT
ECOSYSTEM, HABITAT, AND FISH AND WILDLIFE MANAGEMENT		
ECOSYSTEM/LANDSCAPE MANAGEMENT		
Collecting Information on and Monitoring Ecosystem Components Data-gathering, monitoring, and maintaining a comprehensive database of selected ecosystem components (plants, animals, fish, water, air)	Allowed; see section 2.2.11	Same as Moderate Management
Research and Management Access and collection of data necessary for management decisions or to further science	Service—Allowed ADF&G—Coordinate with refuge manager; see sections 2.2.8 and 2.2.11 Other researchers—May be allowed	Same as (1)
Research and Management Facilities May be permanent or temporary structures or camps, including weirs, counting towers, and sonar counters	May be allowed; see section 2.2.19	Same as Moderate Management
FISH AND WILDLIFE HABITAT MANAGEMENT		
Describing, Locating, and Mapping Habitats Development of quantitative, written, and graphic descriptions of fish and wildlife habitat, including water, food, and shelter components	Allowed; see section 2.2.11	Same as Moderate Management
Habitat Management <u>Mechanical Treatment</u> —Activities such as cutting, crushing or mowing of vegetation; water-control structures; fencing; artificial nest structures <u>Chemical Treatment</u> —Use of chemicals to remove or control nonnative species <u>Manual Treatment</u> —Use of hand tools to remove, reduce, or modify hazardous plant fuels and exotic plant species or to modify habitats (e.g., remove beaver dams)	May be allowed; see section 2.2.10 May be allowed; see section 2.2.10 Allowed; see section 2.2.10	Not allowed; with exceptions consistent with section 2.3.2 Same as Moderate Management Same as Moderate Management
<u>Aquatic Habitat Modifications</u> —Activities such as streambank restoration, passage structures, fish barriers, or removal of obstacles that result in physical modification of aquatic habitats to maintain or restore native fish species	May be allowed: see sections 2.2.10 and 2.2.11	Same as Moderate Management

ACTIVITY	MODERATE MANAGEMENT	MINIMAL MANAGEMENT
Fire Management—Prescribed Fires Fire ignited by management actions to meet specific management objectives	May be allowed; see section 2.2.10	Same as Moderate Management; consistent with section Minimal 2.3.2
Fire Management—Wildland Fire Use The planned use of naturally occurring fires to meet management objectives	May be allowed; subject to Fire Management	Same as Moderate Management; limited to constraints in section 2.3.2
Fire Management—Fire Suppression Management actions intended to protect identified resources from a fire, to extinguish a fire, or to alter a fire's direction of spread	Allowed,; subject to section 2.2.10	Same as Moderate Management; see also section 2.3.2
Weed Control Monitoring, extirpation, control, removal and/or relocation, and other management practices for pest and non-native plant species	May be allowed; see section 2.2.10	Same as Moderate Management
Water Quality and Quantity Management Monitoring of water quality and quantity to identify baseline data and for management purposes; includes installation of gauging stations	Allowed; see section 2.2.9	Same as Moderate Management
FISH AND WILDLIFE POPULATION MANAGEMENT		
Reintroduction of Species The reintroduction of native species to restore natural diversity of fish, wildlife, and habitats	May be allowed; see section 2.2.11	Same as Moderate Management
Fish and Wildlife Control The control, relocation, sterilization, removal, or other management of native species including predators to maintain natural diversity of fish, wildlife, and habitats; favor other fish or wildlife populations; protect reintroduced, threatened, or endangered species; or restore depleted native populations	May be allowed; see section 2.2.11	Same as Moderate Management
Nonnative Species Management The removal or control of nonnative species (including predators)	May be allowed; see section 2.2.11	Same as Moderate Management; use least intrusive methods
Pest Management and Disease Prevention and Control Relocation or removal of organisms that threaten human health or survival of native fish, wildlife, or plant species; management practices directed at controlling pathogens that threaten fish, wildlife, and people (e.g., as rabies and parasite control)	May be allowed; see section 2.2.11	Same as Moderate Management

ACTIVITY	MODERATE MANAGEMENT	MINIMAL MANAGEMENT
Fishery Restoration Actions taken to restore fish access to spawning and rearing habitat or actions taken to restore populations to historic levels; includes harvest management, escapement goals, habitat restoration, stocking, egg incubation boxes, and lake fertilization Temporary actions such as the fertilization of Karluk Lake to restore zooplankton productivity for sockeye salmon is a prime example of fishery restoration	May be allowed; see section 2.2.11	Same as Moderate Management
Fishery Restoration Facilities Fisheries facilities may be permanent or temporary and may include hatcheries, fish ladders, fish passages, fish barriers, and associated structures Actions such as the temporary incubation facility used in the upper Thumb River in Karluk drainage to restore sockeye productivity is a prime example of fishery restoration facilities	May be authorized; see sections 2.2.11 and 2.2.19	Same as Moderate Management; see also section 2.3.2
Fishery Enhancement Activities applied to a fish stock to supplement numbers of harvestable fish to a level beyond what could be naturally produced based on a determination or reasonable estimate of historic levels The Spiridon Lake Sockeye Enhancement Project is a prime example of fisheries enhancement.	May be allowed; see section 2.2.11	Same as Moderate Management
Fishery Enhancement Facilities May be permanent or temporary and may include hatcheries, egg incubation boxes, fish ladders, fish passages, fish barriers, and associated structures	May be authorized; see sections 2.2.11 and 2.2.19	Same as Moderate Management; see also section 2.3.2
Native Fish Introductions Movement of native fish species within a drainage on the refuge to areas where they have not historically existed	May be allowed; see section 2.2.10	Same as Moderate Management
Nonnative Species Introductions Introduction of species not naturally occurring within a watershed	Not allowed; see section 2.2.10	Same as Moderate Management
SUBSISTENCE		
Fishing, Hunting, Trapping, and Berry Picking The taking of fish and wildlife and other natural resources for personal consumption or as provided by law	Allowed; see section 2.2.12	Same as Moderate Management

ACTIVITY	MODERATE MANAGEMENT	MINIMAL MANAGEMENT
Collection of House Logs and Firewood Harvesting live standing timber greater than 6 inches diameter at breast height for personal or extended-family use	May be authorized; see section 2.2.12	Same as Moderate Management
Collection of House Logs and Firewood Harvesting live trees less than 3 inches in diameter at breast height and dead standing or down timber for personal or extended-family use	Allowed; see section 2.2.12	Same as Moderate Management
Collection of House Logs and Firewood Harvesting live trees between 3 and 6 inches diameter at breast height for personal or extended-family use	May be authorized; see section 2.2.12	Same as Moderate Management
Collection of Other Plant Materials Harvesting trees less than 6 inches diameter at breast height for trapping and other purposes; harvesting grass, bark, or other plant materials used as food, in making handicrafts, or for other subsistence purposes	Allowed; see section 2.2.12	Same as Moderate Management
Access Use of snowmachines, motorboats, and other means of surface transportation traditionally employed for subsistence purposes	Allowed; see section 2.2.12	Same as Moderate Management
Temporary Facilities Establishment and use of tent platforms, shelters, and other temporary facilities and equipment directly related to the taking of fish and wildlife	No new tent platforms allowed; other temporary facilities allowed; see section 2.2.16	Same as Moderate Management
Subsistence Cabins—See CABINS and section 2.2.16		
ACCESS (restrictions subject to provisions of Section 1110 of ANILCA; access for subsistence purposes discussed in SUBSISTENCE above)		
NONMOTORIZED		
Foot	Allowed; see sections 2.2.13 and 2.2.14	Same as Moderate Management
Dogs and Dog Teams	Allowed; see sections 2.2.13 and 2.2.14	Same as Moderate Management
Other Domestic Animals Includes horses, mules, llamas, and other domestic animals	Not allowed; see sections 2.2.13 and 2.2.14	Same as Moderate Management
Bicycles Includes all types of bicycles (e.g., road, BMX, mountain)	Allowed; see sections 2.2.13 and 2.2.14	Same as Moderate Management
Nonmotorized Boats Includes canoes, kayaks, rafts, etc.	Allowed; see sections 2.2.13 and 2.2.14	Same as Moderate Management

ACTIVITY	MODERATE MANAGEMENT	MINIMAL MANAGEMENT
MOTORIZED		
Motorboats Includes inboard and outboard motor power boats, including jet boats; does not include jet-driven personal water craft, air boats, and air cushion vehicles	Allowed; see sections 2.2.13 and 2.2.14	Same as Moderate Management
Highway Vehicles	May be allowed on designated roads	Not allowed
Off-Road/All-Terrain Vehicles Includes air boats and air cushion vehicles	May be allowed; see section 2.2.13	Not allowed; see section 2.2.12
Airplanes Fixed-wing aircraft such as float planes and wheeled planes	Allowed; see sections 2.2.13 and 2.2.14	Same as Moderate Management
Helicopters Includes all rotary-wing aircraft	Not allowed for recreation activities; may be authorized for other purposes; see section 2.2.13	Same as Moderate Management
Snowmachines (Snowmobiles) A self-propelled vehicle intended for off-road travel primarily on snow and having a curb weight of not more than 1,000 pounds (450 kg), driven by track or tracks in contact with the snow	Allowed; see sections 2.2.13 and 2.2.14	Same as Moderate Management
PUBLIC USE AND RECREATION AND OUTREACH ACTIVITIES—Note: also see ACCESS section		
Hunting*, Fishing*, Trapping, Walking, Hiking, Camping at undeveloped sites, Wildlife Observation*, and Dog Sledding Note: *priority public use	Allowed; see sections 2.2 and 2.2.14; trapping requires refuge trapping permit (section 2.2.17)	Same as Moderate Management
Wildlife Photography* and General Photography —Also see COMMERCIAL USES Note: * priority public use	Allowed; see sections 2.2 and 2.2.14	Same as Moderate Management
Boating and Snowmachining Motorized and nonmotorized boating (excluding air boats and air cushion vehicles) and snowmachining (also see ACCESS)	Allowed; see sections 2.2, 2.2.13, and 2.2.14	Same as Moderate Management
Interpretation*, Environmental Education*, and other Outreach Activities Note: *priority public use	Allowed; see sections 2.2.15 and 2.3.1	Same as Moderate Management; see sections 2.2.15 and 2.3.2
PUBLIC USE AND RECREATION FACILITIES		
Recreation Use Facilities Facilities provided by the Service	May be allowed; see sections 2.2.16 and 2.3.1	Same as Moderate Management; see sections 2.2.16 and 2.3.2

ACTIVITY	MODERATE MANAGEMENT	MINIMAL MANAGEMENT
All-Weather Roads And associated developments, including bridges	May be allowed; see sections 2.2.16 and 2.3.2	Not allowed
Unimproved Roads	May be allowed; see section 2.2.16	Not allowed
ORV/ATV Trails and Routes	May be allowed; see section 2.2.16	Not allowed
Roadside Exhibits and Waysides	May be allowed; see section 2.2.16	Not applicable
Constructed and Maintained Airstrips	May be allowed; see section 2.2.16	Not allowed
Cleared Landing Strips and Areas	May be allowed; see section 2.2.16	Same as Moderate Management
Constructed Hiking Trails Including bridges, boardwalks, trailheads, and related facilities	May be allowed; see sections 2.2.16 and 2.3.1	Same as Moderate Management; see sections 2.2.16 and 2.3.2
Designated Hiking Routes Unimproved and unmaintained trails; may be designated by signs, cairns, and/or on maps	Allowed; see sections 2.2.16 and 2.3.1	Same as Moderate Management; see sections 2.2.16 and 2.3.2
Boat Launches and Docks Designated sites for launching and storing watercraft	May be allowed; see sections 2.2.16 and 2.3.1	Same as Moderate Management; see sections 2.2.16 and 2.3.2
Visitor Contact Facilities A variety of staffed and unstaffed facilities providing information on the Refuge and its resources to the public; facilities range from visitor centers to kiosks and signs	May be allowed; consistent with direction in sections 2.2.16 and 2.3.1	Same as Moderate Management; consistent with direction in sections 2.2.16 and 2.3.2
Campgrounds Developed sites accessible by highway vehicles	May be allowed; consistent with 2.2.16 and 2.3.1	Not allowed; see campsites (below)
Hardened Campsites Areas where people can camp that are accessible by vehicle or on foot but where the only facilities provided are for public health and safety and/or resource protection; may include gravel pads for tents, hardened trails, and/or primitive toilets	Allowed; see sections 2.2.16 and 2.3.1	Same as Moderate Management; see sections 2.2.16 and 2.3.2
Temporary Facilities Includes tent frames, caches, and other similar or related facilities; does not include cabins; see also Subsistence, Administrative Facilities, and Commercial Uses	No new tent platforms allowed; other temporary facilities allowed; see section 2.2.16	Same as Moderate Management

ACTIVITY	MODERATE MANAGEMENT	MINIMAL MANAGEMENT
CABINS (and other related structures such as outdoor toilets, food caches, storage sheds, and fish-drying racks)		
Public Use Cabin A cabin administered by the Service and available for use by the public; intended only for short-term public recreation use and occupancy	Existing cabins allowed to remain; new cabins may be allowed; see 2.2.16	Same as Moderate Management; consistent with 2.3.2
Administrative Cabin Any cabin primarily used by refuge staff or other authorized personnel for the administration of the refuge	May be allowed; see section 2.2.19	Same as Moderate Management; consistent with section 2.3.2
Subsistence Cabin Any cabin necessary for health and safety and to provide for the continuation of ongoing subsistence activities; not for recreation use	Existing cabins allowed, new cabins not allowed; see section 2.2.19	Same as Moderate Management
Commercial Cabin Any cabin that is used in association with a commercial operation, including commercial fishing activities and recreation guiding services	Existing cabins allowed; new cabins not allowed; see section 2.2.19	Same as Moderate Management
Other Cabins Cabins associated with authorized uses by other government agencies	May be allowed	May be allowed; consistent with section 2.3.2
ADMINISTRATIVE FACILITIES		
Administrative Field Camps Temporary facilities used by refuge staff and other authorized personnel to support individual (generally) field projects; may include tent frames and temporary or portable outhouses, shower facilities, storage and maintenance facilities, and caches	May be allowed; see section 2.2.19	Same as Moderate Management
Administrative Field Sites Permanent facilities used by refuge staff or other authorized personnel for the administration of the refuge; includes administrative cabins and related structures (see CABINS above) and larger multi-facility administrative sites necessary to support ongoing field projects, research, and other management activities; temporary facilities, to meet short-term needs, may supplement the permanent facilities at these sites	Use of existing sites allowed including replacement of existing facilities as necessary; new sites may be allowed; see section 2.2.19	Same as Moderate Management; consistent with section 2.3.2
Refuge Administrative Office Complex Facilities necessary to house refuge operations, outreach, and maintenance activities and associated infrastructure; includes staff offices, storage, maintenance, and other facilities, parking lots, and so forth	Not allowed	Same as Moderate Management

ACTIVITY	MODERATE MANAGEMENT	MINIMAL MANAGEMENT
Hazardous Materials Storage Sites, including appropriate structures and equipment necessary for the storage and transfer of fuels and other hazardous materials, used for administrative purposes; must be in compliance with all federal and state requirements	May be allowed; see section 2.2.19	Same as Moderate Management
Residences Residential housing for refuge staff and their families; includes single and multi-family dwellings	Not allowed	Same as Moderate Management
Bunkhouses Quarters to house temporary and similar employees, volunteers, visitors, and other agency personnel	May be allowed; see section 2.2.19	Not allowed
Float Plane Bases Designated sites for docking and storage of float-equipped aircraft	May be allowed; see section 2.2.19	Not allowed
Aircraft Hangars Facilities for storage of aircraft	Not allowed	Same as Moderate Management
Radio Repeater Sites Sites used to maintain radio communications equipment; may include helispots for access	May be allowed; see section 2.2.19	Same as Moderate Management
COMMERCIAL USES (Does not include subsistence use; see SUBSISTENCE section of this table. Except as specifically noted, a written authorization in the form of a special use permit or other document is required for economic use of a refuge.)		
MINERAL EXPLORATION		
Surface Geological Studies Includes surface rock collecting and geological mapping activities (includes helicopter or fixed-wing access)	May be authorized; see section 2.2.17	Same as Moderate Management
Geophysical Exploration and Seismic Studies Examination of subsurface rock formations through devices that set off and record vibrations in the earth; usually involves mechanized surface transportation, but may be helicopter supported; includes studies conducted for the Department of the Interior	May be authorized; see section 2.2.17	Same as Moderate Management
Core Sampling Using helicopter-transported motorized drill rig to extract subsurface rock samples; does not include exploratory wells; includes sampling conducted for Department of the Interior	May be authorized: see section 2.2.17	Same as Moderate Management
Other Geophysical Studies Helicopter-supported gravity and magnetic surveys and other minimal-impact activities that do not require mechanized surface transportation	May be authorized: see section 2.2.17	Same as Moderate Management

ACTIVITY	MODERATE MANAGEMENT	MINIMAL MANAGEMENT
MINERAL DEVELOPMENT		
Oil and Gas Leasing Leasing, drilling, and extraction of oil and gas for commercial purposes; includes all associated above and below ground facilities	Not allowed	Same as Moderate Management
Sale of Sand, Gravel, and Other Common Variety Minerals Extraction of sand, gravel, and other saleable minerals for commercial purposes; includes commercial use by federal, state, and local agencies	May be authorized: see section 2.2.17	Not allowed
Other Mineral Leasing Includes the extraction of coal, geothermal resources, potassium, sodium, phosphate, sulfur, or other leaseable minerals for commercial purposes	Not allowed; see section 2.2.17	Same as Moderate Management
Mining of Hardrock Minerals Development of valid (pre-ANILCA) mining claims (lode, placer, and mill sites) on refuge lands for the purpose of extracting hardrock minerals Note: Kodiak Refuge has no valid mining claims.	Not allowed; no valid claims on Refuge; see section 2.2.17	Same as Moderate Management
COMMERCIAL RECREATION—Includes all forms of guiding, including those operated by nonprofit, educational, and other noncommercial groups		
Guiding and Outfitting	May be authorized; see section 2.2.17	Same as Moderate Management
Transporting	May be authorized; see section 2.2.17	Same as Moderate Management
Fixed-wing Air Taxis	May be authorized; see section 2.2.17	Same as Moderate Management
Helicopter Air Taxis	Not allowed; see section 2.2.13	Same as Moderate Management
Bus and Auto Tours	May be authorized; see section 2.2.17	Not applicable
OTHER COMMERCIAL ACTIVITIES		
Commercial Filming and Video and Audio Taping	May be authorized, see section 2.2.17	Same as Moderate Management
Grazing	Not allowed; see section 2.2.17	Same as Moderate Management
Agriculture (commercial)	Not allowed; see section 2.2.17	Same as Moderate Management
Commercial Fishery Support Facilities At or Below 1979 Levels	Allowed; see section 2.2.17	Same as Moderate Management

ACTIVITY	MODERATE MANAGEMENT	MINIMAL MANAGEMENT
Commercial Fishery Support Facilities Above 1979 levels	May be authorized; see section 2.2.17	Same as Moderate Management
Seafood Processing	Not allowed; see section 2.2.17	Same as Moderate Management
Aquaculture and Mariculture Support Facilities	Not allowed; see section 2.2.17	Same as Moderate Management
Commercial Timber and Firewood Harvest	May be authorized; see section 2.2.17	Same as Moderate Management
Commercial Gathering of Other Refuge Resources	May be authorized; see section 2.2.17	Not allowed
Transportation and Utility Systems Includes transmission lines, pipelines, telephone and electrical power lines, oil and gas pipelines, communication systems, roads, airstrips, and other necessary related facilities/ Does not include facilities associated with on-refuge oil and gas development	May be authorized; see section 2.2.13	May be authorized; would require plan amendment; see section 2.2.13
Navigation Aids and Other Facilities Includes air and water navigation aids and related facilities, communication sites and related facilities, facilities for national defense purposes and related air and water navigation aids, and facilities for weather, climate, and fisheries research and monitoring; includes both private and government facilities	Existing and new facilities allowed; see section 2.2.13	Same as Moderate Management
Major New Hydroelectric Power Development Hydroelectric dams creating a change in streamflow with an elevation change and reservoir behind the dam	Not allowed; see section 2.2.17	Same as Moderate Management
Small Hydroelectric Power Development Hydroelectric generation by low-head or instream structures that do not change the flow of the river	May be authorized; see section 2.2.17	Not Allowed

2.4 Process Used to Develop Alternatives

The alternatives described later in this chapter were developed to comply with NEPA, ANILCA, and other pertinent laws. They provide different ways to address and respond to major issues, management concerns, and opportunities identified during the planning process. Alternatives take an interdisciplinary approach to problem solving by considering the physical, biological, economic, and social effects of the proposed actions on the environment.

Under regulations implementing NEPA, a plan must “rigorously explore and objectively evaluate all reasonable alternatives, and, for alternatives which were eliminated from detailed study, briefly discuss the reasons for their having been eliminated” (40 CFR 1502.14[a]). A reasonable alternative achieves, in large part, the agency’s defined purpose and need and addresses significant issues.

As discussed in Chapter 1, issues of concern to the public were identified from responses to planning updates and several public meetings. A series of open planning-team meetings discussing the conservation planning process and the issues were held in April and May 2001. Five alternatives were developed at the last of these meetings. The alternatives were designed to meet refuge goals, respond to identified issues, and encompass a range of options for addressing each issue.

Recommendations developed by the Citizens Advisory Committee for the Bear Management Plan (ADF&G 2002) were incorporated into at least one alternative. In addition, each alternative had to be responsive to numerous laws and regulations governing management of the National Wildlife Refuge System as well as to the mission and goals of the Service and the Refuge System and the purposes for which Kodiak Refuge was established. Each alternative also had to embrace regional management direction presented in Refuge Management Policies and Guidelines, Management Categories, and Activities, Uses, and Facilities by Management Category (sections 2.2, 2.3, and 2.3.5, respectively). Although these considerations limited the range of potential alternatives, all input into the planning process was considered in order to achieve a reasonable range of alternatives incorporating differing approaches to resolving issues and accomplishing refuge goals.

Five alternatives were presented to the public for review in a planning update published in July 2001. A number of public comments were received. An open planning-team meeting was held in January 2002 to review these comments. Each major issue, activity, and management concern was discussed and evaluated. As a result, some significant changes were made to the alternatives. The planning team then began to analyze the alternatives to determine the potential environmental impacts of their implementation. In February 2003, the planning team reviewed the impact analyses and selected the team’s preferred alternative, which included elements of several of the preliminary alternatives. (State representatives on the planning team did not identify a preferred alternative.)

After reviewing the requirements for Wilderness and Wild and Scenic River reviews, it was determined that conservation planning requirements of Section 304(g) of ANILCA were best satisfied by honoring the Wilderness recommendation of the current Kodiak Conservation Plan and focusing Service efforts on describing the wilderness and river values of the Refuge and providing better direction for managing the Refuge to protect these values.

Wilderness and Wild and Scenic River recommendations were removed from the alternatives for this Conservation Plan, and the number of alternatives being considered was reduced from five to four. Alternative D is the Preferred Alternative.

2.5 Alternatives and Actions Considered But Eliminated from Detailed Study

Many potential actions were eliminated from further consideration because they were impractical, unfeasible, or too expensive to implement in terms of cost or time. Other actions were considered viable and were included in preliminary alternatives formulated by the planning team for early input from the public. Actions and strategies considered in preliminary alternatives, but subsequently eliminated from detailed consideration, included the following:

- **Control of unguided use on the Refuge.** Several variations involving establishment of a “refuge access permit system” for monitoring unguided use on the Refuge were considered. These included requiring permits for those areas where seasonal use limits were proposed; using a permit system only on the Ayakulik River from June 1 through September 30; using a permit system for the more heavily used areas on the Refuge, such as the Ayakulik River, Frazer fish pass, and Uganik Lake outlet and lower river; or requiring all unguided visitors to the Refuge (including subsistence users) to obtain free permits with no limits on numbers. In addition to being impractical and expensive to implement, particularly for a refuge-wide program, a permit system on Kodiak Refuge would be logistically difficult to monitor and enforce.
- **Designation of additional research natural areas.** Two areas of the Refuge, the Kodiak Refugium and the Afognak Island Sitka spruce forest contain unique resources that may be worthy of special designation. It was decided not to pursue additional research natural area designations on the Refuge until further studies of these areas were conducted to determine whether such designations were warranted.
- **Designation of sites for unguided users to view bears.** Although most of the Refuge will remain open for unguided bear viewing, staff thought that identifying specific sites for viewing would result in concentrating human at use these sites resulting in increased impacts (e.g., displacement of bears from feeding areas) and the need for some limited facilities (e.g., wilderness latrines, trails, and viewing pads) and associated maintenance. Potentially limiting user numbers at specific sites could occur more quickly if specific sites are designated as viewing sites.
- **Hunting closure in vicinity of formal bear-viewing program site (O’Malley).** Analysis of data on bear use in the vicinity of

the O'Malley River, bear harvest information, and other data indicated a low probability of population level impacts (Appendix T of the Bear Management Plan [ADF&G 2002]).

- **Freedom-of-Choice O'Malley River Bear-Viewing Program.** Under this system, a lottery would be used to select visitors who would receive permits for bear viewing at O'Malley River. Once selected, visitors would be free to choose any qualified commercial wildlife-viewing guide or to elect a do-it-yourself experience under agency supervision. Given the relatively small number of visitors appropriate for an area such as O'Malley, administering this type of program would be impractical. Guides would have no predictable client base; the Refuge and ADF&G would not be able to predict workloads. Also, guided and unguided clients would be on site at the same time, perhaps seeking different types of experiences. Cost to the agencies would be much greater than other alternatives considered because on-site staffing and administration of special use permits for commercial guides and visitor permits would be required.
- **Restricting the number of bear-viewing clients permitted in some drainages.** More drainage-specific data on bear populations and use levels, the amount of human use occurring, and the interaction between bears and humans is necessary to better evaluate and assess whether there is a need to restrict the number of people viewing bears or otherwise limit bear-viewing activities in some refuge drainages.
- **Recommending rivers for inclusion in the National Wild and Scenic Rivers System.** Alternatives that would have recommended that Congress consider additional rivers for inclusion in the National Wild and Scenic Rivers System were considered but eliminated from detailed consideration. River-related values are discussed in Chapter 3, but recommendations are not included in the alternatives. Current and proposed management direction provides adequate protection for all river-related values.
- **Recommending additional lands for designation as Wilderness.** Alternatives that would have recommended that Congress consider additional areas for inclusion in the National Wilderness Preservation System were considered but eliminated from detailed consideration. The Refuge has a recommendation for Wilderness designation (approximately 1.08 million acres) from the original Conservation Plan. This recommendation will remain in effect unless withdrawn or until such time as a recommendation is submitted to Congress. Wilderness values are discussed in Chapter 3, but recommendations for additional designations are not included in the alternatives. Current and proposed management direction provides adequate protection for all wilderness values.

2.6 Elements Common to All Alternatives

This section identifies some of the key elements that will be included in the Comprehensive Conservation Plan regardless of the alternative selected. Each of the alternatives would do the following:

- Contribute to achieving the purposes for which the Refuge was established, as set forth in Executive Order 8857 (August 19, 1941), Public Land Order 1634 (May 9, 1958), and section 303(5)(B) of ANILCA.
- Ensure local rural residents have access to and priority use of refuge resources for purposes of subsistence, as determined by law.
- Ensure that refuge management complies with all other federal laws and regulations that provide direction for managing units of the National Wildlife Refuge System.
- Protect and maintain fish and wildlife in their natural diversity.
- Maintain opportunities to pursue traditional subsistence activities, scientific research, and hunting, fishing, and other wildlife-dependent recreation activities.
- Maintain most of the Refuge in a relatively undeveloped state.
- Minimize disturbances to fish and wildlife habitats and populations.
- Allow public use of the Refuge using traditional access methods provided use remains compatible with purposes of the Refuge.

Goals and objectives are an integral part of each alternative. Whereas goals describe broad general direction for refuge management, objectives provide specific measurable ways through which the Refuge can move toward achieving its goals and determine how well the intent of individual alternatives is being achieved. Refuge goals (presented in section 2.1) do not vary among alternatives; they are common to all. The objectives, which have been developed for each goal and are also presented in section 2.1, generally apply to all of the alternatives. A few objectives may require modification, or new objectives may be incorporated into one or more alternatives, based on particular issue-driven actions under a specific alternative.

Two specific actions have occurred recently that will affect management of Kodiak Refuge and implementation of this Conservation Plan. These actions will, for the most part, result in the same management direction being applied regardless of the alternative selected for implementation. These actions, and their implications for refuge management, are discussed in the following subsections.

2.6.1 The Kodiak Archipelago Bear Conservation and Management Plan

In response to growing public concern over conservation of the brown bear population and habitats on the Archipelago, the Alaska Department of Fish & Game, in cooperation with Kodiak Refuge and other agencies and organizations, undertook a public planning process to develop a bear management plan for the Archipelago. Beginning in fall 2000, the planning process addressed concerns expressed by the public, including the effects on the bear population of development in and around bear habitat, how increasing demand for diverse recreation opportunities would affect the bear population, and the need to minimize negative bear–human interactions yet increase opportunities for viewing.

Because management responsibility for bears and their habitat is shared by ADF&G (population) and the Refuge (habitat), the agencies pooled their resources to work with the public in developing this management plan (ADF&G 2002). Other governmental agencies and Native tribes and organizations (including Koniag, Inc., Kodiak Island Borough, the City of Kodiak, the U.S. Coast Guard, the Alaska Department of Natural Resources including the Alaska State Park System, and the tribal and/or village governments of the six rural villages on the Archipelago) needed to be involved and committed to the plan in order for full implementation to occur. A group of agencies, tribes, and organizations—the Intergovernmental Planning Group—was formed to select members of the public to serve on the Citizens Advisory Committee that developed the management plan.

The Intergovernmental Planning Group also developed and is coordinating a strategy for implementation of the management plan’s recommendations. The Citizens Advisory Committee recognized the need for an ongoing team of local representatives, to be known as the Kodiak Unified Bear Subcommittee, to work with the Intergovernmental Planning Group in implementing the plan’s recommendations and to provide input consistent with this plan on issues related to bear conservation and management that may arise in the future.

The Kodiak Archipelago Bear Conservation and Management Plan (ADF&G 2002) developed by the Citizens Advisory Committee is comprehensive, addressing human uses of the Archipelago relating to bears, bear–human interactions, potential habitat degradation, the impacts of private land ownership in bear habitat, and other bear-management issues. The Bear Management Plan provides analyses of examples of successful coexistence between people and bears. It attempts to improve the current situation through a series of recommendations developed to accommodate shifts in human uses of bears and to reduce bear–human conflicts in a mutually beneficial manner as increases in human activities and impacts occur within the Archipelago.

The Service, as one of the primary land management agencies on the Archipelago, agreed to incorporate all relevant recommendations from the Bear Management Plan into one or more of the alternatives being evaluated for the Conservation Plan. Appendix C lists all of the recommendations and provides specific information on how they are being addressed in the Conservation Plan. With few exceptions, the relevant recommendations would apply to all alternatives being evaluated.

2.6.2 Master Agreement for Protection of Certain Lands and Resources Between Koniag, Inc., the United States of America, and the State of Alaska (Koniag, Inc. Large Parcel Acquisition, Phase 2).

In 2002, representatives of the Service, Koniag, Inc., and the State of Alaska signed a master agreement that ensures protection of and guarantees public access to nearly 57,000 acres of Koniag-owned land in western Kodiak Refuge. The agreement is very complex and includes a 10-year conservation easement that protects the Karluk and Sturgeon drainages from development with an option to sell the lands to the United States at the end of the initial term, an option to extend the agreement for 10 additional years, or an option to return the lands to full management by Koniag. Easement provisions include the following:

- Unlimited access for Service and ADF&G personnel for fish, wildlife, and habitat monitoring and research
- Free public access to easement lands for all recreation activities permissible on Kodiak Refuge
- Implementation of a free permit system operated by the Service for public use of Koniag lands within one-half mile of Karluk Lake and Karluk River. Permits are initially limited to 70 per day along Karluk River during the period June 10 through July 15, the peak of the King Salmon run. Permits will be split among guided and unguided users. Currently 60 percent of the permits are allocated to Koniag guides and 40 percent to members of the public. This allocation could change in the future.
- Conducting a program of study to evaluate habitat sustainability, resource capabilities, and quality of experience to determine appropriate use levels
- Koniag management of revenue-producing visitor services along the Karluk and Sturgeon rivers with Service management of commercial visitor services on remaining Koniag easement lands
- Koniag's retention of the right to operate a bear-viewing program in the Thumb River drainage of Karluk Lake; Koniag also retains the right to operate one seasonal camp each along the Karluk and Sturgeon rivers.

A three-person management group made up of one representative each from the Service, Koniag, and the state will discuss and coordinate issues relating to management of Koniag easement lands.

A cooperative agreement between Koniag and the Service allows limited public use of Koniag lands downstream of the Refuge.

The parties also signed the Camp Island Limited Development Easement that allows Koniag to develop a lodge and visitor facilities on a six-acre site on Camp Island in Karluk Lake. For additional discussion of this and other land acquisition on Kodiak Refuge, see Appendix H.

2.7 Alternative A— Current Management

This alternative, the “no-action alternative,” describes current management of the Refuge as well as future management assuming present actions and initiatives are carried forward. It provides the baseline against which to compare the other alternatives. It is required by NEPA.

2.7.1 General Management Direction

Management of the Refuge would continue to follow the 1987 Kodiak Refuge Conservation Plan (USFWS 1987a) and Record of Decision (USFWS 1987b) and as amended by the Refuge Public Use Management Plan (USFWS 1993). Public and commercial uses of the Refuge would change only as implementation of current management direction dictates. The Service would take the following actions:

- **Protection of Bear Concentration Areas**—Adopt regulations to seasonally limit public use of nine bear concentration areas; maintain limits on commercial use of these areas until regulations are in place; and close two key bear denning areas to snowmachine use.
- **Public Use Cabins**—Maintain the seven public use cabins that currently exist, construct two additional cabins, and manage cabins on newly acquired lands as needed for public use.
- **Management of Camping Areas**—Camping areas (undeveloped sites where people camp) would not be improved, and equipment or facilities such as food storage containers, latrines, or electric fences would not be provided unless other methods designed to reduce impacts in heavily used camping areas are not effective. Use impacts would be managed by restricting use through regulation. Regulations restricting camping near public use cabins and administrative facilities would be adopted.
- **Management of O’Malley River**—Continue seasonal closure of O’Malley River area to all users. No formal bear-viewing program would be operated on the Refuge.

Management Categories

Kodiak Refuge lands were placed in three management categories with adoption of the original Conservation Plan in 1987. Under this alternative, these management categories would continue to be applied to lands within the Refuge. (See Figure 2-2 and Table 2-3.)

Moderate Management. Approximately 44,100 acres of land located along parts of the Refuge’s coast (from mean high tide line inland one-quarter mile) would be managed in the Moderate Management category.

Minimal Management. Approximately 1.58 million acres of land, the remainder of the Refuge, would be managed in the Minimal Management category.

Special River Management. This category was established to recognize the natural diversity of fish and wildlife populations, high concentrations of fish and wildlife, and important resource values unique to the Karluk, Sturgeon, Ayakulik, and Dog Salmon drainages. This category varies only slightly in management direction from the Minimal Management category. Table 2-4 depicts those differences.

The category's boundaries, intended to extend from the headwaters of each drainage to the refuge boundary and encompassing the adjacent riparian lands, were to be defined in river management plans for each drainage. These plans were to describe specific management direction for these drainages, including specific actions to be taken to maintain the physical, biological, and recreational values of the drainages. These plans were to form the foundation for any future regulations that might be required. These river management plans have not been completed.

Acquired Lands. Most lands acquired after this revised Conservation Plan is adopted would be managed in the Minimal Management category. Exceptions would be (1) any lands where different management direction is specified in conveyance documents and (2) any small parcels located within or adjacent to lands designated in the Moderate Management category, which would also be managed in the Moderate Management category.

Table 2-3 Management category designations in Alternative A

Management Category	Acreage	Percentage of Refuge
Moderate Management	44,100	3
Minimal Management	1,580,174	97
Special River Management ¹	0	0
Total	1,624,274	100

¹ River management plans for the drainages in the Special River Management category have never been completed; no boundaries were ever established.

Activities, Public Uses, Commercial Uses, and Facilities by Management Category

This discussion highlights the significant changes in management direction that applies to Alternatives B, C, and D, and management direction that applies to Alternative A—continuation of current management. Management direction under Alternative A is from the 1987 Kodiak Conservation Plan (USFWS 1987a) and Record of Decision (USFWS 1987b), as modified by subsequent step-down management plans—primarily the Kodiak Public Use Management Plan (USFWS 1993) and Decision Notice (USFWS 1994b).

Direct comparison of the management direction proposed for alternatives B, C, and D in Table 2-2 with a similar table in the 1987 Conservation Plan is difficult because the organization of the tables

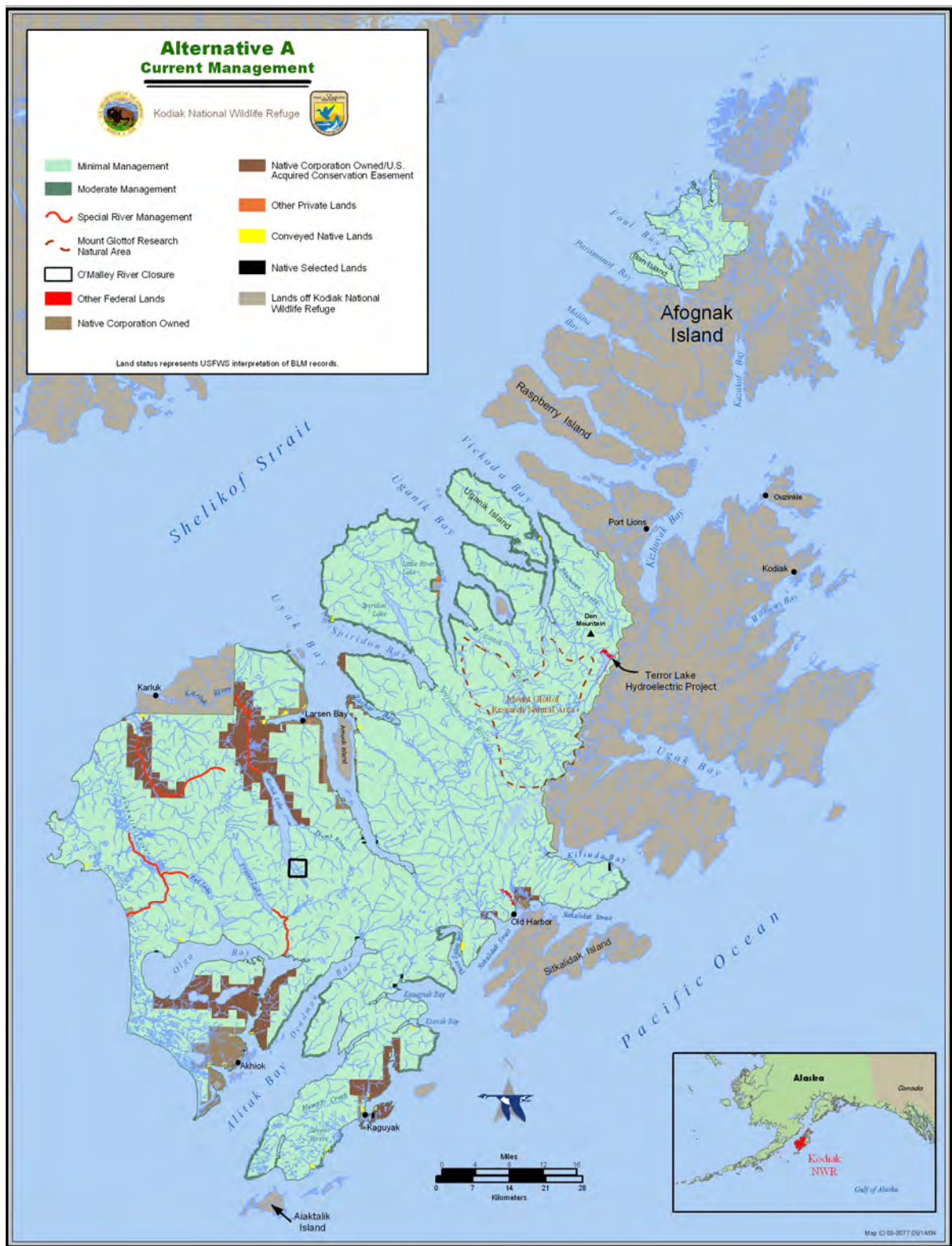


Figure 2-2 Alternative A—Current Management

Table 2-4 Differences between Minimal Management and Special River Management

	Minimal Management	Special River Management
Motorboats ¹	Permitted for traditional activities, subject to reasonable regulation; jet boats not permitted.	Use of motorboats may be restricted for resource protection or public safety purposes; jet boats not permitted.
Float Planes ¹	Permitted on all water areas and saltwater beaches for traditional activities, subject to reasonable regulation.	May be restricted in some areas for resource protection.
Land Planes ¹	Permitted only on ocean beaches and on frozen waterbodies.	Permitted only on frozen waterbodies.
Primitive Camping	Permitted, subject to time limitations.	May be permitted in designated areas, subject to reasonable regulations.
Hydroelectric Power Development	The Hidden Basin diversion may be permitted to expand the Terror Lake Hydroelectric Project if determined to be compatible; other new developments not permitted.	Not permitted.
Guiding, Outfitting, Transporting	Permitted subject to reasonable regulations; use of tents is permitted; new permanent or temporary support facilities are not permitted (subject to the provisions of Section 1316 of ANILCA).	Permitted subject to reasonable regulations; use levels may be limited in specific areas to protect resource values.

¹ To implement these actions would require the promulgation of regulations; no regulations have been completed to date.

and level of detail provided for various categories of actions are quite different. For example, the 1987 plan had detailed descriptions of fisheries management activities and facilities; this document does not. However, the 1987 plan had very little discussion of nonfisheries management facilities, while Table 2-2 has several pages describing such facilities. Table 2-5 displays the major differences. Only wording changes that change management intent are displayed. A detailed comparison of the specific wording from the 1987 Conservation Plan as modified by the new direction in Table 2-2 is included in the planning record maintained by the Service's Alaska Regional Office in Anchorage.

The 1987 Kodiak Conservation Plan included management direction in four management categories, as described in the previous section—Moderate Management, Minimal Management, Wilderness, and Special River—with lands assigned only to Moderate and Minimal Management categories. Lands recommended for Wilderness designation were assigned to the Minimal Management category. As described in the previous section, Special River Management was almost identical to Minimal Management. The Intensive Management and Wild and Scenic Rivers categories were not described in the original Kodiak Conservation Plan because no lands were assigned to these categories.

This document describes management direction for two management categories—Moderate Management and Minimal Management; Alternatives B, C, and D all propose assigning refuge lands only to these categories. The Service could, in the future, designate refuge lands as Intensive Management through a plan amendment. Lands could be assigned to the Wilderness or Wild River categories **only** if Congress designated refuge lands as part of the National Wilderness Preservation System or the Wild and Scenic Rivers System.

2.7.2 Management Direction by Program

The following discussions provide an overview of management direction for major refuge programs as they would be implemented under Alternative A. Only those aspects of management that vary among the alternatives are described in detail.

Fish and Wildlife Management

General fish and wildlife management strategies would not vary among the alternatives. For details on current fish and wildlife population and habitat management direction on Kodiak Refuge, see prior discussions in this chapter (section 2.2.10 and section 2.2.11).

Public Use Management: Access

Management of access to the Refuge would continue as described previously in section 2.2.13, in the Refuge's 1993 public use management plan, and in various easements and agreements associated with land acquisition on the Refuge (Appendix H). The following discussions identify current management direction. This direction, unless otherwise noted, is expected to continue.

Seasonal Use Limits. An area of approximately 2,560 acres at the O'Malley River (Karluk Lake), as described in 50 CFR 36.39(j)(1) and depicted in Figure 2-3, is and would continue to be closed to all public access, occupancy, and use (general and commercial) from June 25 through September 30 annually.

Commercial use of nine bear concentration areas on the Refuge is closed seasonally or restricted to day-use only. These limits are currently implemented through conditions placed on special use permits that all commercial operators using refuge lands are required to obtain. (See the discussion "What Is a Bear Concentration Area?" on page 2-101 for additional information.)

Table 2-5 Comparison of activities, public uses, commercial uses, and facilities by management category—current management from the 1987 Comprehensive Plan (Alternative A) with management proposed in the draft revised Conservation Plan (Alternatives B, C, and D)

Management Topic	Alternative A—1987 Kodiak Conservation Plan	Alternatives B, C, & D—Revised Kodiak Conservation Plan	Comments
Fish and wildlife species introductions	Allows re-introduction (stocking) of native species within their original breeding range.	May allow reintroduction of native species (within their natural range or zone of potential dispersion) to restore natural diversity of fish, wildlife, and habitats (under Moderate and Minimal Management).	Revised plan adopts Service's statewide management direction which reflects current Service policy (Service Manual 601 FW 3) but may allow introduction of native fish species within a refuge drainage into areas where they have not occurred historically. It is more restrictive.
	Allows introduction of species native to North American outside their original range where biologically justified and implemented in accordance with NEPA and a compatibility determination.	May allow introduction of native fish species within a refuge drainage to areas where they have not occurred historically (under Moderate and Minimal Management)	
	Introduction of exotic species not permitted.	Nonnative species introductions not allowed.	
Domestic animals	Pack animals (dogs, horses, mules, llamas, etc.) may be permitted subject to provisions of NEPA and promulgation of appropriate regulations.	Dogs and dog teams allowed; other domestic animals, including horses, mules, and llamas, not allowed. Horseback riding not allowed.	Regulations not promulgated. Domestic animals other than dogs have not been used on the Refuge.
Bicycles	Not included	Allowed	Bicycle use on the Refuge is unlikely because of terrain.
Airplanes	Float planes permitted on all water areas and saltwater beaches for traditional activities, subject to reasonable regulations. Special River Management—may be restricted in some areas for resource protection. Landing of planes (with wheels or skis)—proposed to allow only on frozen waterbodies and ocean beaches.	Fixed wing aircraft such as float planes and wheeled planes are allowed, subject to reasonable regulations.	Regulations limiting wheeled airplane landings were not promulgated. There are very few areas other than beaches and frozen waterbodies where wheeled airplanes could land on the Refuge.

Management Topic	Alternative A—1987 Kodiak Conservation Plan	Alternatives B, C, & D—Revised Kodiak Conservation Plan	Comments
Motorboats	In Moderate Management—permitted for traditional activities, subject to reasonable regulation; jet boats may be restricted in areas for resource protection. Jet boats not permitted in other categories.	Allowed	Regulations restricting use were not promulgated because little jet boat use occurs on the Refuge.
Hiking trails	Trails would not be cleared or maintained.	Could be constructed in all management categories; trail standards dependent on category.	No trails are proposed in the revised plan, but it would allow trail construction and maintenance.
Tent platforms	Allowed in Moderate Management if compatible under the comprehensive plan; the public use management plan determined that new tent platforms would not be compatible.	Same as public use management plan.	
Sand and gravel removal	Not permitted.	May be authorized in Intensive and Moderate categories; not permitted in other categories.	Could occur—including noncommercial use by local, state, and federal governments—in Moderate Management; sources are very limited on the Refuge.
Aquaculture and mariculture support facilities	Moderate Management—Private land based support facilities not permitted for aquaculture; land based support facilities for mariculture may be permitted on a case-by-case basis, subject to NEPA analysis and compatibility determination; other categories not permitted.	May be authorized in Intensive Management; not allowed in other categories.	Revised plan adopts statewide management direction Service is applying to all its refuges in Alaska; it is more restrictive.

The following areas are currently *closed* seasonally to access by all commercial users:

- Connecticut Creek (Red Lake) (July 15–August 31; 2,262 acres)
- Humpy Creek (July 15–September 15; 2,879 acres)
- Seven Rivers (July 15–September 15; 3,796 acres)
- Lower Dog Salmon Falls (Frazer Lake) (June 25–August 31; 960 acres)

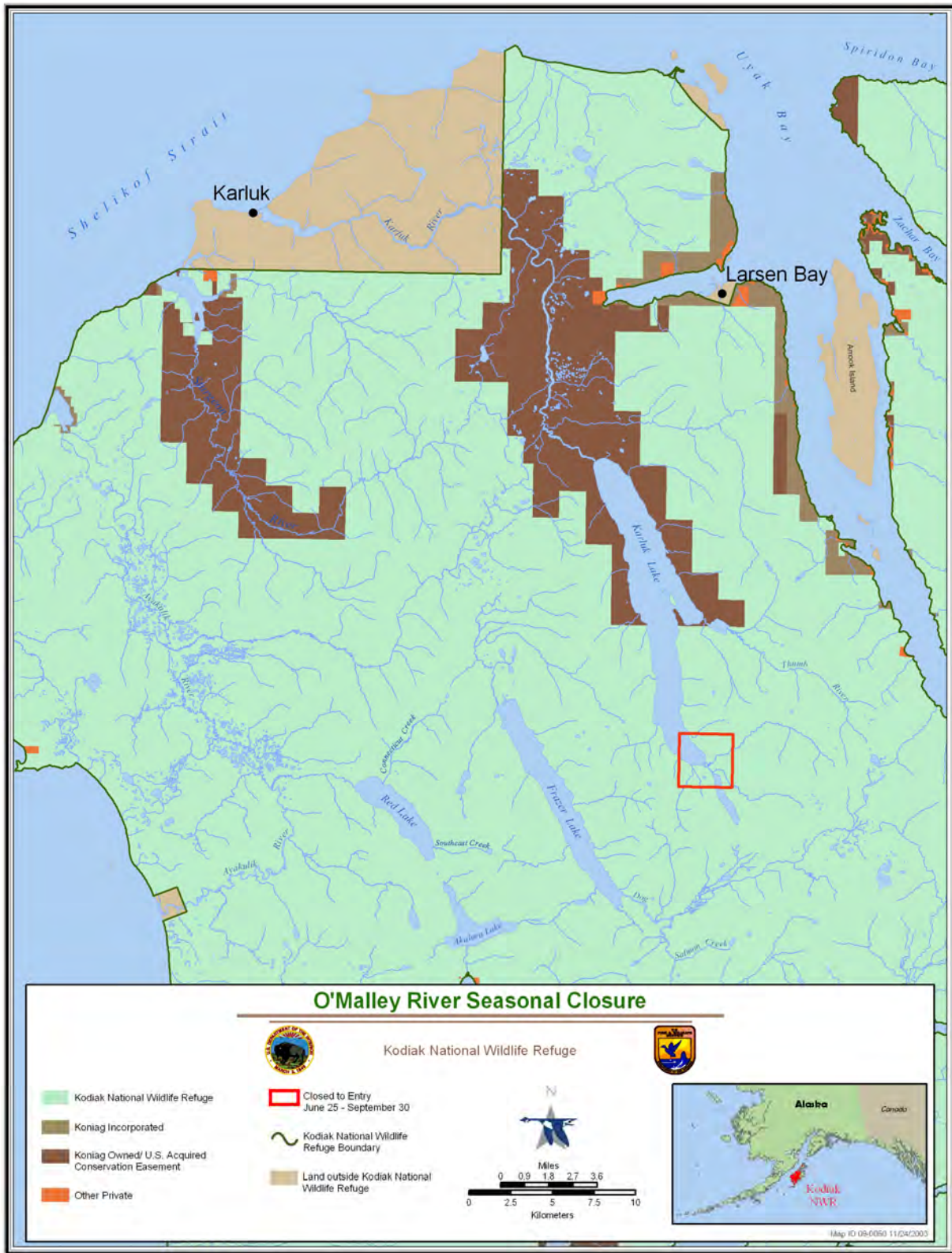


Figure 2-3 O'Malley River seasonal closure

What is a Bear Concentration Area?

A bear concentration area is a place that draws and holds an unusually high density of brown bears because it affords access to an abundant, extensively distributed, high-quality food source or preferred denning habitat during an annually predictable period. In Kodiak Refuge, 27 areas of foraging concentration and three areas of denning concentration have been identified (USFWS n.d.).

Characteristics of concentration areas vary. Most foraging areas consist of stream segments that provide bears ready access to spawning, migrating, or dying salmon. A few others consist of coast, estuaries, and subalpine uplands that supply salmon, new growth of sedges and grasses, or invertebrates such as beach hoppers. During winter, certain mountains or hills consistently support high densities of bears because stable and dry sites suitable for excavation and denning are available (Van Daele Jr. et al. 1990).

Location and extent of bear use has been described for many concentration areas in surveys and studies. At concentration areas used for foraging, maximum seasonal densities usually range from 10 to 30 bears per square mile (USFWS n.d.); a few support as many as 60 bears per square mile (Barnes Jr. and Wilker 1998). Densities fluctuate from year to year in response to variation in supply of salmon in streams and berries in adjacent upland habitats (Barnes Jr. and Wilker 1997). Duration of seasonal concentration ranges from six to 10 weeks (USFWS n.d.). However, one coastal foraging area and all denning areas support bear concentrations for as long as six months.

Availability of concentration areas influences seasonal bear movements. Studies showed that foraging areas are consistently used by all sex and age classes (Barnes Jr. and Wilker 1997), and serve as the primary focal point of summer and fall bear activity and movement (Barnes Jr. 1990), (Barnes Jr. and Smith 1997; Fishbach and Reynolds 2004). Bear use of areas of salmon concentration is particularly extensive in western Kodiak Island. Most of this region's population seasonally uses a network of primary feeding areas June through December. Major seasonal shifts in bear distribution correspond to change in salmon availability among different streams and lakes (Barnes Jr. 1990; Barnes Jr. and Smith 1997, 1998; Troyer and Hensel 1964).

Physical condition, productivity, and population status of bears is influenced by availability of protein-rich foods provided within areas of food concentration. Comparison of North American bear populations reveals that body mass, litter size, and bear density increase with proportion of meat in the diet (Hilderbrand et al. 1999a). Among populations that use meat, salmon is the most important source (Hilderbrand et al. 1999a). In particular, energy supplied in fall bear diets dominated by salmon is mostly converted to fat required to support hibernation, gestation, and lactation (Hilderbrand et al. 1999b). For these reasons, areas with consistent abundance and accessibility of salmon are considered a primary indicator of bear habitat quality (Hilderbrand et al. 1999a; Hilderbrand et al. 1999b; Suring et al. 1998).

Studies of bears of Yellowstone Park reveal potential for population-level impact when access to food concentration areas is disrupted (Craighead et al. 1995). Closure of open-pit garbage dumps removed a primary bear food source in the early 1970s. After dump closure, mortality of subadult and adult males increased, and survival rates of 66 marked bears declined by 10 percent to 40 percent. Increased bear mortality was attributed to dump closure, loss of a high-quality food source, and diminished nutritional condition.

In conclusion, bear concentration areas are considered a conservation priority because of their important contribution to annual productivity and survival of many of the Refuge's bears.

The following areas are currently *restricted* seasonally to day-use only by all commercial users:

- Red Lake River and shoreline (July 1—August 31; 1,746 acres)
- Upper Thumb River (Karluk Lake) (July 1—August 31; 613 acres)
- Southeast Creek (Red Lake) (July 15—August 31; 1,108 acres)
- Little River Lake lakeshore (July 15—August 31; 480 acres)
- Deadman Bay Creek (August 15—September 30; 951 acres)

Unguided public use is not currently limited in these nine areas, but once public use regulations implementing the Refuge's public use management plan are finalized, these limits would apply to all users and all methods of access.

Two areas in the Terror River Highlands (see **Snowmachine Use** in subsequent text) would be closed by regulation to snowmachine use to protect key bear denning areas.

Airplane Landings. Landing of airplanes is allowed throughout the Refuge except for the seasonally closed area at O'Malley River. When regulations seasonally closing the four previously identified areas are adopted, they would apply to all users, not just commercial users, as is now the case.

Snowmachine Use. Snowmachine use is currently allowed throughout the Refuge when adequate snow cover is present and would continue to be allowed except for two areas in the Terror River Highlands—Baumann Creek (approximately 2,240 acres) and Den Mountain (approximately 2,820 acres)—which would be closed by regulation to snowmachine use to protect key bear denning areas.

Boat Use. Use of motorized and nonmotorized boats, including jet boats, is allowed, except for the seasonally closed area at O'Malley River. When regulations seasonally closing or limiting access to day-use only in the nine areas identified previously are adopted, they would apply to all users, not just commercial users, as is now the case.

Public Use Management: Commercial Use of the Refuge

All commercial operators are required to have a refuge special use permit to conduct commercial activities on Kodiak Refuge or to use refuge resources. This authorization includes special conditions (stipulations) under which the permittee must operate. (See Appendix E—Compatibility Determinations—for the special conditions currently applied to use authorizations.) For additional information, see Commercial Use Management in Refuge Management Policies and Guidelines (section 2.2.17). Management of the following commercial uses may vary by alternative.

Commercial Wildlife Viewing (Including Guided Bear Viewing).

All commercial activities authorized by permit on the Refuge are currently subject to the seasonal use limits discussed previously in

this alternative. Except for the seasonal closure of the O'Malley River area, these limits are implemented via conditions included in the special use permits. Regulations applying these limits to all wildlife-viewing activities, guided and unguided, would be adopted.

Commercial Wildlife Photography. A special use permit is required to conduct commercial motion picture and video activities on the Refuge. Photographers under permit are subject to seasonal use limits discussed previously; these limits are implemented via conditions included in the permits. Commercial still photographers, with certain exceptions, are not required to obtain permits, provided they are using Refuge areas otherwise open to the public.

Air Transporters. Air transporters are subject to the same seasonal use limits as are other commercial operators described earlier in this alternative. These limits are implemented via conditions included in the special use permits.

Public Use Management: Unguided Use of the Refuge

Wildlife Viewing (Including Unguided Bear Viewing). All Service lands within the refuge boundaries, with the exception of the seasonal closure of the O'Malley River area, are open to the unguided public for wildlife viewing. When regulations limiting public use are adopted, access by the unguided public to the nine bear concentration areas (see **Seasonal Use Limits** in previous text) would also be restricted seasonally.

Public Use Cabins. Seven cabins are currently available for reservation by the public as part of the Refuge's public use cabin program. These cabins could be relocated if more desirable locations were identified. Two additional cabins could be built to replace public use cabins that were removed from bear concentration areas. Cabins on newly acquired lands could also be considered for management as public use cabins.

Management of Camping Areas.⁴ Although no developed campsites or campgrounds are located on the Refuge, the unguided public is free to camp anywhere at any time with the exception of the seasonally closed area at O'Malley River. Camping areas would not be improved, and equipment or facilities would not be provided unless other methods designed to reduce impacts in heavily used camping areas were not effective, as has occurred on the Ayakulik River. If negative impacts continue, further restrictions such as limiting length of stay may be adopted. Proposed public use regulations, when adopted, would also prohibit camping in those areas identified under **Seasonal Use Limits** (in preceding text) and

⁴Camping areas are undeveloped sites where people camp. Improving camping areas may consist of providing the minimum development, equipment, and facilities necessary for resource protection or public health and safety. These improvements could be minor leveling of tent sites, maintenance of user-developed trails, or provision of outhouses, temporary bear-resistant food storage containers, or temporary solar-powered electric fences.

in areas within one-quarter mile of public use cabins and within 200 yards of federal or state administrative facilities.

Staffing and Budget Needs

In fiscal year 2004, Kodiak Refuge had a staff of 18 permanent full-time, two permanent part-time, and three seasonal employees and 26 volunteers, with a base budget of \$1,545,000. (See Table 2-6.) To maintain this base staff and workload, continuation of present funding, annually adjusted for inflation, would be required. This base budget is adequate to cover salaries and fixed costs, but inadequate to fully cover field-project expenses, especially for biological work. In normal years, only 50 percent of biological field-project expenses are provided through the base budget. The remaining 50 percent (\$104,000) is competed for and acquired through other sources each year. Other sources include grants, challenge cost-share programs, the Comprehensive Conservation Initiative, Bristol Bay/Kodiak ecosystem team, and other agencies. Funding for the Kodiak Summer Science and Salmon Camp and public use program activities is a similar situation. Salmon Camp has been funded annually through the Comprehensive Conservation Initiative, with equal matching funds and services from the private sector. Implementation of the Koniag Conservation Easement agreement is another responsibility the Refuge is obligated to meet.

Projects, studies, facilities, maintenance, and staffing needs in addition to the base have been identified in the Service's Refuge Operations Needs System (RONS) and Maintenance Management System (MMS). These unfunded needs are required for the Refuge to (1) implement projects yet to be completed from the original Comprehensive Conservation Plan, (2) implement approved step-down management plans, (3) implement approved ecosystem goals, (4) implement recovery plans, and (5) meet legal mandates. These needs apply to each alternative.

Table 2-6 Staffing and budget needs for Alternative A¹

Needs	Description
Staff	18 permanent full-time positions 2 permanent part-time positions 3 seasonal positions
Budget	\$1,545,000

¹ Budgets are based on FY 2004 dollars.

Identified RONS needs are to implement 48 new projects and add 15 permanent staff positions at a cost of \$5,217,000. In addition, there are 51 MMS projects, at a cost of \$3,645,000, to maintain or replace existing facilities, vehicles, boats, airplanes, and heavy equipment.

A comparison of the budget and staffing levels required to implement each of the alternatives is included in Table 2-13.

2.8 Alternative B

2.8.1 General Management Direction

Although most of the general management direction described in Alternative A would continue, some specific direction and actions occurring under current management would be altered or not pursued under Alternative B. Management direction in Alternative B that differs from Alternative A is summarized below. In addition, Refuge Goals and Objectives (section 2.1), Management Policies and Guidelines (section 2.2), and Management Categories (section 2.3) apply to this alternative.

- **Protection of Bear Concentration Areas**—Do not promulgate regulations to seasonally limit use at bear concentration areas or to close two key bear denning areas to snowmachine use. Develop voluntary guidelines for public use of bear concentration areas; current seasonal use restrictions placed on commercial operators via their special use permits would be replaced with special conditions mirroring the voluntary guidelines. Regulations would be developed if the use of voluntary guidelines proved ineffective.
- **Public Use Cabins**—Allow the public use cabin program to expand as demand increases, either through construction of new cabins or management of cabins on newly acquired lands as public use cabins. There would be no limit on the number of public use cabins on the Refuge.
- **Management of Camping Areas**—Camping areas (undeveloped sites where people camp) could be improved, and equipment or facilities—such as food storage containers, latrines, or electric fences—would be provided if needed to mitigate public use impacts. Regulations restricting camping near public use cabins or administrative facilities would not be adopted.
- **Management of O'Malley River**—Modify the O'Malley River area closure regulations to allow operation of a bear-viewing program operated by a qualified guide under special use permit awarded through a competitive process.

Management Categories

Two management categories would be applied to lands within Kodiak Refuge under Alternative B. (See Figure 2-4; Table 2-7.)

Moderate Management. Approximately 44,100 acres of land, located along parts of the Refuge's coast (from mean high tide line inland one-quarter mile), would be managed in the Moderate Management category.

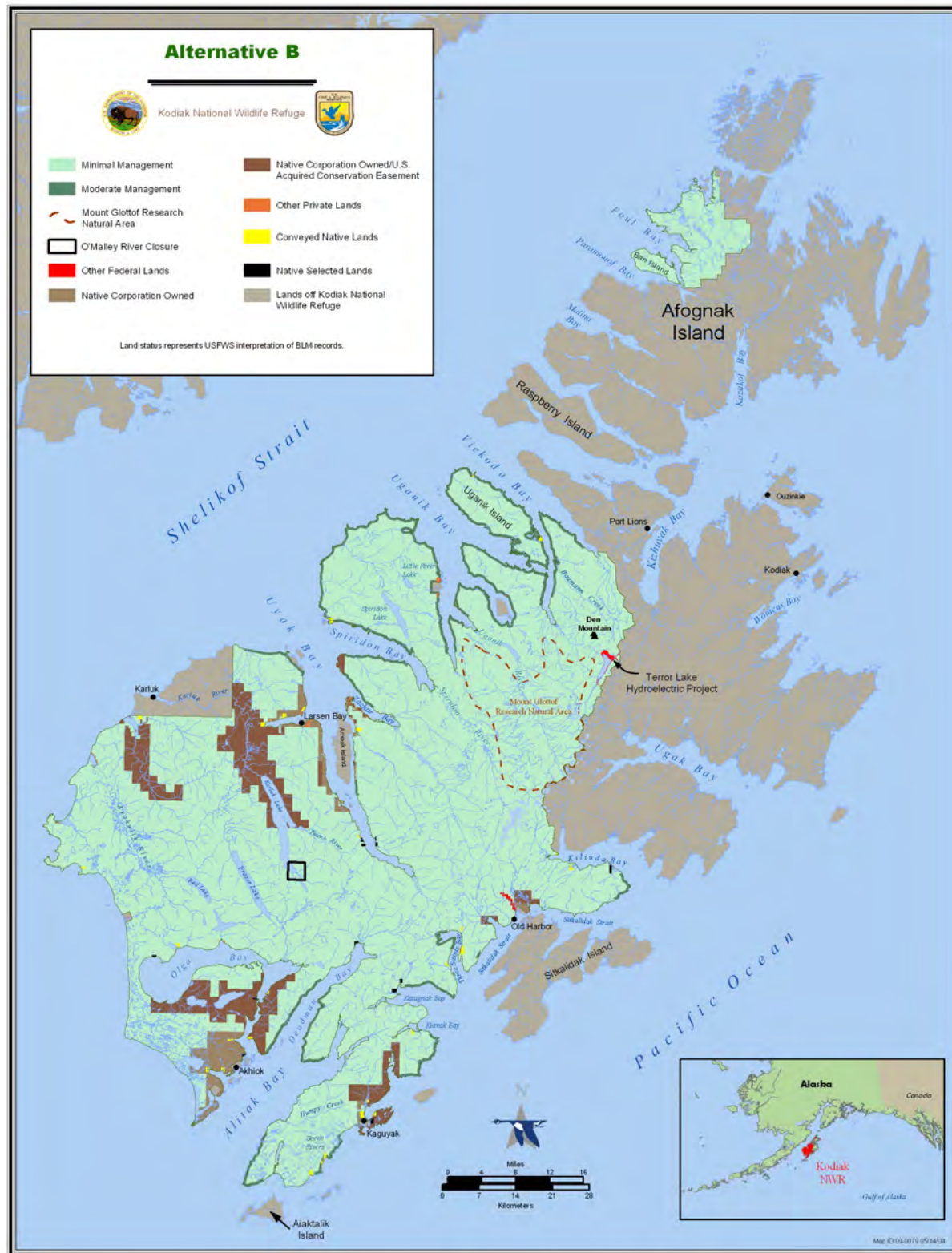


Figure 2-4 Alternative B

Table 2-7 Management category designations in Alternative B

Management Category	Acreage	Percentage of Refuge
Moderate Management	44,100	3
Minimal Management	1,580,174	97
Total	1,624,274	100

Minimal Management. Approximately 1.58 million acres, the remainder of the Refuge, would be managed in the Minimal Management category.

Special River Management. The Special River Management category would be eliminated under this alternative; step-down management plans would be developed if different or additional management direction is necessary for the Karluk, Sturgeon, Ayakulik, or Dog Salmon drainages.

Acquired Lands. Most lands acquired after this revised Conservation Plan is adopted would be managed in the Minimal Management category. Exceptions would be (1) any lands where different management direction is specified in conveyance documents and (2) any small parcels located within or adjacent to lands designated in the Moderate Management category would also be managed in the Moderate Management category.

2.8.2 Management Direction by Program

The following discussions provide an overview of management direction for major refuge programs as they would be implemented under Alternative B. Only those aspects of management that vary among the alternatives are described in detail.

Fish and Wildlife Management

General fish and wildlife management strategies would not vary among the alternatives.

Studies to monitor bear use at O'Malley River and refine management of the bear-viewing program would be conducted as appropriate.

As recommended in the Bear Management Plan (ADF&G 2002), refuge biologists would study bear habitat use, develop site-specific management, and monitor bear and public use at bear concentration areas throughout the Refuge to ensure compatibility of public use and compliance with guidelines for human use of and behavior in bear concentration areas.

Public Use Management: Access

Seasonal Use Limits. In Alternative B, the refuge regulation closing the O'Malley River area to all public access, occupancy, and use each year from June 25 through September 30 would be modified to

allow operation of the commercial bear-viewing program described later in this alternative. (See **Commercial Wildlife Viewing** in subsequent text.) The area would remain closed to all other public use during this period.

Proposed regulations seasonally limiting access to nine bear concentration areas identified in Alternative A would not be adopted. (See the discussion “What Is a Bear Concentration Area?” on page 2-101 for additional information.) Instead, the Refuge, in consultation with ADF&G and stakeholders, would develop voluntary use guidelines such as limits on group size and length of stay, viewing distances, food preparation and consumption, waste disposal, and aircraft landings. These guidelines would apply to all visitor use, guided and unguided, in bear concentration areas. They would be included as new special conditions for use (replacing the current seasonal use restrictions) in refuge special use permits for commercial activities such as guided bear viewing and for air transporters. If these guidelines proved ineffective and it became necessary to formally restrict use by regulation in these areas (to maintain compatibility, protect resource values, or safeguard human health and safety), the guidelines could be used as the basis for these regulations. No closures of refuge lands to snowmachine use would be pursued.

Airplane Landings. Landing of airplanes would be allowed throughout the Refuge except for the seasonally closed area at O’Malley River.

Snowmachine Use. All refuge lands would remain open to unrestricted snowmachine use, when adequate snow cover is present. Two areas of key bear denning habitat in the Terror River Highlands would not be closed to snowmachine use.

Boat Use. Use of motorized and nonmotorized boats, including jet boats, would be allowed throughout the Refuge except for the seasonally closed area at O’Malley River.

Public Use Management: Commercial Use of the Refuge

Each commercial operator is required to have a refuge special use permit to conduct commercial activities on Kodiak Refuge or to use refuge resources. This authorization includes special conditions (stipulations) under which the permittee must operate. See Alternative A for additional details about special use permits.

Commercial Wildlife Viewing (Including Guided Bear Viewing). All of the Refuge would remain open to commercial wildlife-viewing activities except for the O’Malley River area, which would remain closed seasonally except as noted in the following paragraph. Special use permit stipulations currently limiting access to nine other bear concentration areas would be replaced with special conditions mirroring the voluntary use guidelines discussed previously. (See **Seasonal Use Limits** in preceding text for this alternative and for

Alternative A, page 2-97.) If necessary, these guidelines could be used as the basis for future regulations.

A guided bear-viewing program would be allowed at O'Malley River. The current regulation seasonally closing the area to all use would be modified to allow this program. A bear-viewing program prospectus, developed by the Service in consultation with ADF&G and other interested parties, would be offered for competitive bid.⁵ The viewing program would be patterned after the program operated by the Service at O'Malley River in 1992, but could differ in some respects. Applicants would be required to submit a proposed operations plan and other pertinent information requested by the Service and outlined in the prospectus. Applications would be evaluated and a permit awarded for operation of the program. Kodiak Refuge staff, in coordination with ADF&G, would provide management oversight of the program, but the permittee would be responsible for all aspects of operation such as client booking, transportation, and on-site management of clients.

The 1992 program operated between early July and mid-August and included the following elements:

- Maximum of six to eight participants per viewing period, selected by lottery
- Viewing period of four days
- Participants supplied their own transportation to the site, food, clothing, footwear, and bedding
- The Service provided support facilities, including weatherports (large tents with rigid floors), a cooking shelter with cook stoves, utensils and fuel, and an outhouse (all located outside the limited access area)
- Participants escorted to and from the viewing site each day
- Viewing site consisted of a small wooden platform located on an upland bench within 50 yards of O'Malley River
- Participants were required to stay at viewing site during the day
- Participants were allowed, under supervision, to fish, hike, or pursue other activities in designated areas adjacent to the support facilities site, but outside the limited use area

Commercial Wildlife Photography. Special use permit stipulations for commercial motion picture and video photographers that currently limit access to nine bear concentration areas would be replaced with special conditions mirroring the voluntary use guidelines discussed previously (see **Seasonal Use Limits** in

⁵ The preferences for local residents and most directly affected Native corporations, established by Section 1307 of ANILCA, would apply to this guiding opportunity; 50 CFR 36.37 includes detailed information about local and Native corporation preferences for guiding services, other than guiding recreational hunting and recreational fishing.

previous text in this section and in Alternative A, page 2-97); other commercial photographers would be encouraged to comply with these guidelines. The O'Malley River area would remain closed seasonally to all commercial wildlife photographers unless they are participants in the guided bear-viewing program at the site. See Alternative A for additional information about special use permits for commercial photography.

Air Transporters. Special use permit stipulations currently limiting access to nine bear concentration areas would be replaced with special conditions mirroring the voluntary use guidelines discussed previously. (See **Seasonal Use Limits** in previous text in this section and in Alternative A, page 2-97.) The O'Malley River area would remain seasonally closed to all access except for that associated with the guided bear-viewing program.

Public Use Management: Unguided Use of the Refuge

Wildlife Viewing (Including Unguided Bear Viewing). Under Alternative B, opportunities for the unguided public to view bears and other wildlife on the Refuge would not be limited, except for the seasonal closure at O'Malley River. (See **Seasonal Use Limits** in preceding text.) As described previously, voluntary use guidelines would be developed; all users would be encouraged to comply with these guidelines.

Public Use Cabins. Under Alternative B, the Refuge could have more than nine public use cabins, as necessary to meet public demand. Existing cabins could be relocated. Cabins on newly acquired lands could be managed for public use. New cabins would only be added after consultation with stakeholders. Criteria such as the following would be considered in selecting new cabin sites and/or selection of cabins for addition to the public use cabin program:

- Availability of diverse recreation activities such as hunting, fishing, wildlife viewing, kayaking, and hiking
- Solitude and isolation from other users and from facilities such as lodges and setnet sites
- Ease of access both for users and for maintenance
- Protection of refuge resources such as wildlife movement corridors and wildlife concentration areas

Cabins could be constructed in areas designated as Minimal Management, if determined necessary for public health, safety, or resource protection and if no reasonable alternative site exists.

Management of Camping Areas.⁶ Camping would continue to be allowed throughout the Refuge except at the seasonally closed area

⁶Camping areas are undeveloped sites where people camp. Improving camping areas may consist of providing the minimum development, equipment, and facilities necessary for resource protection or public health and safety. These improvements could be minor leveling of tent sites, maintenance of user-developed trails, or provision of outhouses, temporary bear-resistant food storage containers, or temporary solar-powered electric fences.

on O'Malley River. Camping areas (undeveloped sites where people camp) could be improved, and equipment and facilities—such as bear-resistant food storage containers, latrines, or solar-powered electric fences—could be provided if needed to mitigate public use impacts. The Refuge would not propose regulations to restrict camping near public use cabins or administrative facilities.

Staffing and Budget Needs

Additional funding and staff would be required to implement new projects (e.g., expand the public use cabin program, expand management of campsites when necessary, establish a voluntary guideline program for protection of bear concentration areas, and reopen the O'Malley site to bear viewing) proposed in this alternative. (See Table 2-8.) Specific funding and personnel needs by project are listed in the following text.

Expanding the public use cabin program would require construction, replacement, or remodeling of as many as four cabins at a cost of \$120,000 (four cabins at \$30,000 each) for materials and material transport. Annual maintenance costs of \$16,000 per year (four cabins at \$4,000 each) would be required following construction. One permanent, full-time WG-7 maintenance worker, at a cost of \$43,000 per year plus a one-time cost of \$50,000 for moving expenses, would be required for these duties and maintenance of other public use cabins and administrative field facilities.

Expanded campsite management would entail providing minimal facilities such as bear-resistant food containers, an electric fence to provide an area for food and trash storage, and a temporary outhouse at three heavily used areas. Materials and equipment would cost \$45,000 (three sites at \$15,000 each). No additional staff would be required.

Establishing a voluntary guideline program for protection of bear concentration areas would require both a stakeholder process and biological monitoring. Assuming the Refuge would start with one area and then move on to additional areas in subsequent years, the cost of establishing one field-camp project is projected to be \$25,000 per year. Staff would consist of three temporary GS-5 biological technicians and one permanent full-time GS-7 biological technician at a cost of \$121,000 per year plus a one-time cost of \$50,000 for moving expenses for the latter technician. Staff would participate in the stakeholder process and conduct monitoring.

Allowing a bear-viewing program at O'Malley River would require both biological and public use camps. The biological camp would monitor bear behavior in response to human use at a cost of \$25,000 for camp materials and personnel costs of \$103,000 per year (two GS-5 temporary biological technicians and one GS-7 full-time biological technician) plus a one-time cost of \$50,000 for moving expenses for the latter technician. The public use camp to monitor guide and visitor activities would cost \$22,000 for camp materials

and personnel costs of \$27,000 per year for one temporary GS-7 biological technician.

The base funding, personnel, and unfunded needs described for Alternative A would also be required in this alternative. Please refer to the Funding and Personnel Requirements section of Alternative A for a complete description.

Table 2-8 Additional staffing and budget needs for Alternative B¹

Needs	Description
Staff	1 WG-7 maintenance worker; 1.0 permanent full-time position 2 GS-7 biological technicians; 2.0 permanent full-time positions 1 GS-7 biological technician; 0.5 seasonal position 5 GS-5 biological technicians; 2.5 seasonal positions
Budget	\$ 697,000

¹ Budgets are based on FY 2004 dollars.

2.9 Alternative C

2.9.1 General Management Direction

Although most of the general management direction described in Alternative A would continue, some specific direction and actions occurring under current management would be altered or not pursued under Alternative C. Management direction in Alternative C that differs from Alternative A is summarized below. In addition, Refuge Goals and Objectives (section 2.1), Management Policies and Guidelines (section 2.2), and Management Categories (section 2.3) apply to this alternative.

- **Protection of Bear Concentration Areas**—Develop voluntary guidelines for public use of bear concentration areas; current seasonal use restrictions placed on commercial operators via their special use permits would be replaced with special conditions mirroring these guidelines. Regulations implementing seasonal closures or day-use only restrictions could be developed for some key areas based on the ongoing evaluation of these areas and the effectiveness of the voluntary guidelines. Close two key bear denning areas to snowmachine use.
- **Public Use Cabins**—Phase out the public use cabin program by not undertaking major maintenance projects, not constructing new cabins, and not managing cabins on newly acquired lands for public use.
- **Management of Camping Areas**—Camping areas (undeveloped sites where people camp) would be managed as described in Alternative A.
- **Management of O'Malley River**—Modify the O'Malley River area closure regulations to allow operation of a bear-viewing program run by the Service in cooperation with ADF&G. Permits would be allocated by lottery.

Management Categories

Two management categories would be applied to lands within Kodiak Refuge under Alternative C. (See Figure 2-5 and Table 2-9.)

Moderate Management. About 32,700 acres of land, located along parts of the Refuge's western coast between Rocky Point and Viekoda Bay (including Uganik Island) (from mean high tide line inland one-quarter mile) would be managed in the Moderate Management category.

Minimal Management. Approximately 1.59 million acres of land, the remainder of the Refuge, would be managed in the Minimal Management category. This includes coastal areas from Cape Alitak (south of Akhiok) east and north to Left Cape (north of Old Harbor) that were previously managed under Moderate Management.

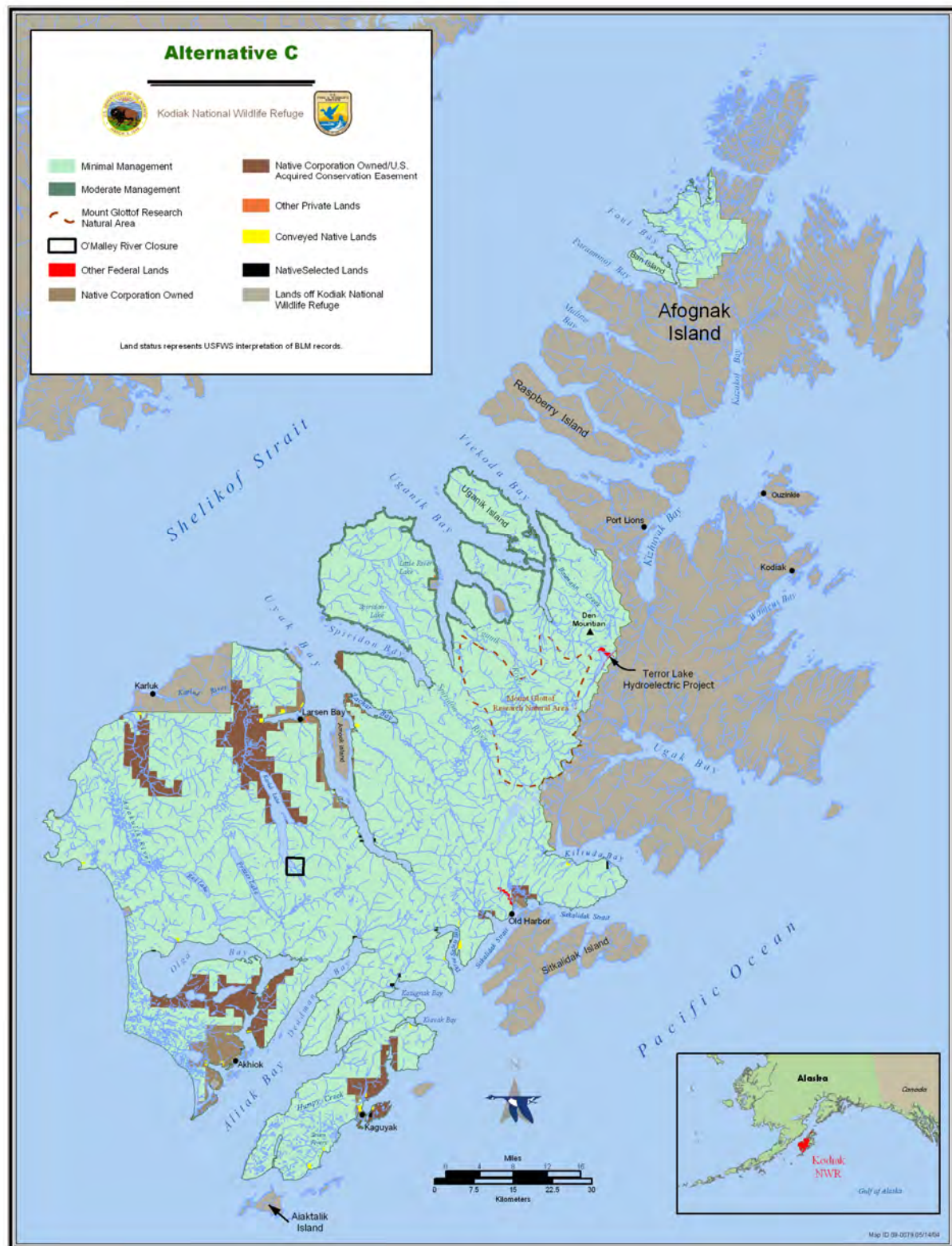


Figure 2-5 Alternative C

Table 2-9 Management category designations in Alternative C

Management Category	Acreage	Percentage of Refuge
Moderate Management	32,738	2
Minimal Management	1,591,536	98
Total	1,624,274	100

Special River Management. As in Alternative B, the Special River Management category would be eliminated; step-down management plans would be developed if different or additional management direction were necessary for the Karluk, Sturgeon, Ayakulik, or Dog Salmon drainages.

Acquired Lands. Most lands acquired after this revised Conservation Plan is adopted would be managed in the Minimal Management category. Exceptions would be (1) any lands where different management direction is specified in conveyance documents and (2) any small parcels located within or adjacent to lands designated in the Moderate Management category, which would also be managed under the Moderate Management category.

2.9.2 Management Direction by Program

The following discussions provide an overview of management direction for major refuge programs as they would be implemented under Alternative C. Only those aspects of management that vary among the alternatives are described in detail.

Fish and Wildlife Management

General fish and wildlife management strategies would not vary among the alternatives.

As in Alternative B, studies to monitor bear use at O'Malley River and to refine management of the bear-viewing program would be conducted as appropriate.

As recommended in the Bear Management Plan (ADF&G 2002), refuge biologists would study bear habitat use, develop site-specific management, and monitor bear and public use at bear concentration areas throughout the Refuge to ensure compatibility of public use and compliance with guidelines for human use of and behavior in bear concentration areas.

Public Use Management: Access

Seasonal Use Limits. In Alternative C, the refuge regulation closing the O'Malley River area to all public access, occupancy, and use June 25 through September 30 annually would be modified to allow operation of the agency-run bear-viewing program described later in this alternative. (See **Commercial Wildlife Viewing** in subsequent text.) The area would remain closed to all other public use during this period.

Proposed regulations seasonally limiting access to nine bear concentration areas identified in Alternative A would be modified. Based on findings of the ongoing evaluation of bear concentration areas, regulations could be implemented limiting access to some areas. Areas could be seasonally closed or limited to day-use only and may differ from those in Alternative A. Two key bear denning areas (see **Snowmachine Use** in subsequent text) would be closed to snowmachine use by regulation. (See the discussion “What Is a Bear Concentration Area?” on page 2-101 for additional information.)

Voluntary guidelines for all visitor use, guided and unguided, would be developed for bear concentration areas. These guidelines would be included as new special conditions for use (replacing the current seasonal use restrictions) in refuge special use permits for commercial activities. Unguided visitors would be strongly encouraged to follow them. If necessary to formally restrict use by regulation, the guidelines could be used as the basis for these regulations. For additional discussion, see **Seasonal Use Limits** in Alternative B, page 2-107.

Airplane Landings. Landing of airplanes would be allowed throughout the Refuge except for the seasonally closed area at O’Malley River and at certain bear concentration areas where seasonal closures could be established by regulation. (See **Seasonal Use Limits** in preceding text of this alternative.)

Snowmachine Use. Snowmachine use would be allowed throughout the Refuge, provided adequate snow cover is present, with the exception of two areas of key bear denning habitat in the Terror River Highlands. Baumann Creek (approximately 2,240 acres) and Den Mountain (approximately 2,820 acres) would be closed by regulation to snowmachine use.

Boat Use. Use of motorized and nonmotorized boats, including jet boats, would be allowed throughout the Refuge except for the seasonally closed area at O’Malley River. Other bear concentration areas could be closed seasonally or limited to day use only. (See **Seasonal Use Limits** in preceding text of this alternative.)

Public Use Management: Commercial Use of the Refuge

Each commercial operator is required to have a refuge special use permit to conduct commercial activities on Kodiak Refuge or to use refuge resources. This authorization includes special conditions (stipulations) under which the permittee must operate. See Alternative A for additional details about special use permits.

Commercial Wildlife Viewing (Including Guided Bear Viewing). Management of commercial wildlife viewing would generally remain as in Alternative A; most of the Refuge would remain open to commercial wildlife-viewing activities. Special use permit stipulations currently limiting access in nine specific bear concentration areas would be replaced with special conditions

mirroring the voluntary use guidelines discussed previously. (See **Seasonal Use Limits** in Alternatives A and B, pages 2-97 and 2-107.) Based on findings of the ongoing evaluation of bear concentration areas, the Service could close by regulation certain areas to all use seasonally. Other areas could be seasonally limited to day-use only. (See **Seasonal Use Limits** in preceding text of this alternative.) If in the future it became necessary to protect resource values, for human health and safety, or to maintain compatibility at these or other bear concentration areas, regulations defining the type and level of use could be adopted.

The Service, in cooperation with ADF&G, would develop and implement an agency-supervised bear-viewing program at O'Malley River. Current regulations closing the area to all use seasonally would be modified to allow this program. Operation of the viewing program would be patterned after the program operated by the Service at O'Malley River in 1992 (described in Alternative B, pages 2-105 through 2-112), but could differ in some respects.

Commercial Wildlife Photography. Special use permit stipulations for commercial motion picture and video photographers that currently limit access to nine bear concentration areas would be replaced with special conditions mirroring the voluntary use guidelines discussed previously (see **Seasonal Use Limits** in Alternative B, page 2-107); other commercial photographers would be encouraged to comply with these guidelines. The O'Malley River area would remain seasonally closed to all commercial photographers unless they are participants in the bear-viewing program. Certain other bear concentration areas could be seasonally closed or restricted to day use only by regulation. (See **Seasonal Use Limits** in preceding text of this alternative.) See Alternative A for additional information about special use permits for commercial photography.

Air Transporters. Special use permit stipulations currently limiting access to nine bear concentration areas would be replaced with special conditions mirroring the voluntary use guidelines discussed previously. The O'Malley River area would remain seasonally closed to all access except for that associated with operation of the bear-viewing program. Certain bear concentration areas could be closed seasonally by regulation; other concentration areas could be restricted to day use only by regulation. (See **Seasonal Use Limits** in preceding text for this alternative.)

Public Use Management: Unguided Use of the Refuge

Wildlife Viewing (Including Unguided Bear Viewing). Under Alternative C, opportunities for the unguided public to view bears and other wildlife on the Refuge would be available throughout most of the Refuge. The seasonal closure at O'Malley River would be modified to allow participation in the agency-run bear-viewing program, but the area would remain closed to general public use during this period. Certain other bear concentration areas could

potentially be closed to unguided users or limited to day-use only based on the findings of the ongoing evaluation of bear concentration areas. (See **Seasonal Use Limits** in preceding text of this alternative.) As described previously, voluntary use guidelines would be developed; all users would be encouraged to comply with these guidelines. Additional regulations, which would affect use of these areas by the unguided public, could be adopted in the future if voluntary use guidelines proved ineffective.

Public Use Cabins. The public use cabin program would be phased out by not undertaking major maintenance projects, not constructing new cabins, and not managing cabins on newly acquired lands for public use.

Management of Camping Areas⁷. Camping would continue to be allowed throughout the Refuge except at the seasonally closed area on O'Malley River and at any other bear concentration areas where seasonal use limits were implemented (see **Seasonal Use Limits** in preceding text of this alternative). Camping areas (undeveloped sites where people camp) would not be improved; equipment or facilities would not be provided unless other methods designed to reduce impacts were not effective. If impacts were to continue, they would be managed by restricting use through regulation. A regulation would be adopted prohibiting camping within one-quarter mile of public use cabins and federal and state administrative facilities.

Staffing and Budget Needs

Additional funding and staff would be required to implement the new projects (e.g., establish regulations and enforce closures to protect bear concentration areas and operate a bear-viewing program at O'Malley) proposed in this alternative (Table 2-10). Specific funding and personnel needs by project are listed below.

Establishing a voluntary guideline program for protection of bear concentration areas would require both a stakeholder process and monitoring. Assuming the Refuge would start with one area and then move on to additional areas in subsequent years, the Service projected costs for establishing one field camp would be \$25,000 per year. Staff would consist of three temporary GS-5 biological technicians and one permanent full-time GS-7 biological technician at a cost of \$121,000 per year plus a one-time cost of \$50,000 for moving expenses for the latter technician. Staff would participate with the stakeholder process and conduct monitoring.

Allowing a bear-viewing program at O'Malley River would require both biological and public use camps. The biological camp would monitor bear behavior in response to human use at a cost of \$25,000

⁷Camping areas are undeveloped sites where people camp. Improving camping areas may consist of providing the minimum development, equipment, and facilities necessary for resource protection or public health and safety. These improvements could be minor leveling of tent sites, maintenance of user-developed trails, or provision of outhouses, temporary bear-resistant food storage containers, or temporary solar-powered electric fences.

for camp materials and personnel costs of \$103,000 per year (two GS-5 temporary biological technicians and one GS-7 full-time biological technician) plus a one-time cost of \$50,000 for moving expenses for the latter technician. This public use camp would include seven weatherports to provide visitors and staff with housing at a cost of \$77,000 for camp materials. Staff would consist of two temporary GS-7 biological technicians and one full-time GS-7 biological technician at a cost of \$122,000 per year plus a one-time cost of \$50,000 for moving expenses for the latter technician. These technicians would operate the bear-viewing program. A full-time GS-6 permit technician would be needed to conduct the lottery process and issue permits at a cost of \$61,000 per year plus a one-time cost of \$50,000 for moving expenses.

The base funding, personnel, and unfunded needs described for Alternative A would also be required in this Alternative. Please refer to the Funding and Personnel Requirements section of Alternative A for a complete description.

Table 2-10 Additional staffing and budget needs for Alternative C¹

Needs	Description
Staff	5 GS-5 biological technicians; 2.5 seasonal positions 2 GS-7 biological technicians; 1.0 seasonal position 3 GS-7 biological technicians; 3.0 permanent full-time positions 1 GS-6 permits administrator; 1.0 permanent full-time position
Budget	\$734,000

¹ Budgets are based on FY 2004 dollars

2.10 Alternative D (Preferred Alternative)

2.10.1 General Management Direction

Although most of the general management direction described in Alternative A would continue, some specific direction and actions occurring under current management would be altered or not pursued under Alternative D. Management direction in Alternative D that differs from Alternative A is summarized below. In addition, Refuge Goals and Objectives (section 2.1), Management Policies and Guidelines (section 2.2), and Management Categories (section 2.3) apply to this alternative.

- **Protection of Bear Concentration Areas**—Develop voluntary guidelines for public use of bear concentration areas; current seasonal use restrictions placed on commercial operators via their special use permits would be replaced with special conditions mirroring these guidelines. Regulations implementing seasonal day-use only limits could be developed for some areas based on the ongoing evaluation of these areas and the effectiveness of the voluntary guidelines. Close one key bear denning area to snowmachine use.
- **Public Use Cabins**—Maintain the seven public use cabins that currently exist, construct two additional cabins, and manage cabins on newly acquired lands, as needed, for public use.
- **Management of Camping Areas**—Camping areas (undeveloped sites where people camp) could be improved and equipment and facilities—such as food storage containers, latrines, or electric fences—could be provided if they are the least-intrusive management needed to mitigate public use impacts. Regulations restricting camping near public use cabins and administrative facilities would be adopted.
- **Management of O'Malley River**—Modify the O'Malley River closure regulations to allow operation of a bear-viewing program combining agency-supervised use with guided use. Unguided and guided visitors would not be present on site at the same time. Permits for agency-supervised use would be allocated to the public by lottery. Qualified bear-viewing guides would apply for the guided-use opportunity, which would then be available to their clients via private bookings.

Management Categories

Two management categories would be applied to lands within Kodiak Refuge under this alternative. (See Figure 2-6 and Table 2-11.)

Moderate Management. About 31,500 acres of land, located along parts of the Refuge's western coast between Spiridon and Viekada bays (including Uganik Island) (from mean high tide line inland one-quarter mile) would be managed in the Moderate Management category.

Minimal Management. Approximately 1.59 million acres of land, the remainder of the Refuge, would be managed in the Minimal Management category. This includes coastal areas from Cape Alitak (south of Akhiok) east and north to Left Cape (north of Old Harbor) and from Rocky Point (Seven Mile Beach) to Spiridon Bay, which was previously managed under Moderate Management.

Special River Management. As in Alternatives B and C, the Special River Management category would be eliminated; step-down management plans would be developed if different or additional management direction is necessary for the Karluk, Sturgeon, Ayakulik, or Dog Salmon drainages.

Acquired Lands. Most lands acquired after this revised Conservation Plan is adopted would be managed in the Minimal Management category. Exceptions would be (1) any lands where different management direction is specified in conveyance documents and (2) any small parcels located within or adjacent to lands designated in the Moderate Management category, which would also be managed under the Moderate Management category.

Table 2-11 Management category designations in Alternative D

Management Category	Acreage	Percentage of Refuge
Moderate Management	31,521	2
Minimal Management	1,592,753	98
Total	1,624,274	100

2.10.2 Management Direction by Program

The following discussions provide an overview of management direction for major refuge programs as they would be implemented under Alternative D. Only those aspects of management that vary among the alternatives are described in detail.

Fish and Wildlife Management

General fish and wildlife management strategies would not vary among the alternatives.

As is the case with Alternatives B and C, studies to monitor bear use at O'Malley River and to refine management of the bear-viewing program would be conducted as appropriate.

As recommended in the Bear Management Plan (ADF&G 2002), refuge biologists would study bear habitat use, develop site-specific management, and monitor bear and public use at bear concentration areas throughout the Refuge to ensure compatibility of public use and compliance with guidelines for human use of and behavior in bear concentration areas.

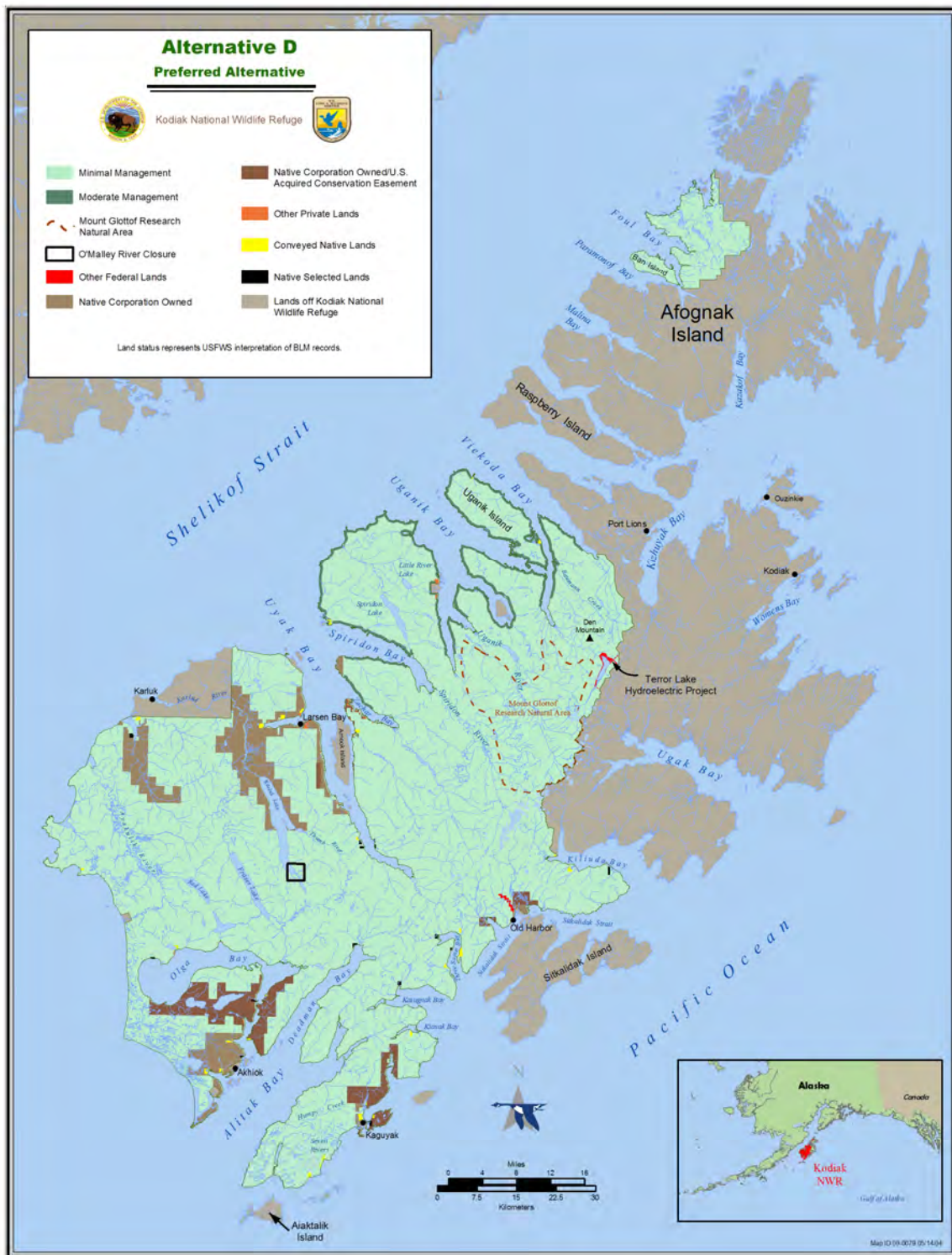


Figure 2-6 Alternative D—Preferred Alternative

Public Use Management: Access

Seasonal Use Limits. In Alternative D, the refuge regulation annually closing the O'Malley River area to all public access, occupancy, and use June 25 through September 30 would be modified to allow operation of the bear-viewing program described later in this alternative. (See **Commercial Wildlife Viewing** in following text.) The area would remain closed to all other public use during this period.

Proposed regulations seasonally limiting access to nine bear concentration areas identified in Alternative A would not be adopted. The Refuge, in consultation with ADF&G and stakeholders, would develop voluntary use guidelines for bear concentration areas under this alternative. These guidelines could include limits on group size and length of stay, viewing distances, food preparation and consumption, waste disposal, and aircraft landings. These guidelines would apply to all visitors, guided and unguided, in bear concentration areas. They would be included as new special conditions for use (replacing the current seasonal use restrictions) in refuge special use permits for commercial activities such as guided bear viewing and for air transporters. If these guidelines proved ineffective and it becomes necessary to formally restrict use by regulation in these areas (to maintain compatibility, protect resource values, or safeguard human health and safety), the guidelines could be used as the basis for these regulations. Future regulations could also consider other options such as requiring permits for visitors to these areas. Based on the ongoing evaluation of human use of bear concentration areas, regulations could potentially be implemented limiting access in some areas to day-use only on a seasonal basis.

One key bear denning area (see **Snowmachine Use** in subsequent text) would be closed to snowmachine use by regulation.

No additional seasonal closures, such as those identified in Alternative A, would be proposed at this time. (See the discussion "What Is a Bear Concentration Area?" on page 2-101 for additional information.)

For further information, see discussion on page 2-124 and **Seasonal Use Limits** in Alternative B, page 2-107.

Airplane Landings. Landing of airplanes would be allowed throughout the Refuge except for the seasonally closed area at O'Malley River.

Snowmachine Use. Snowmachine use on the Refuge would be allowed throughout the Refuge, provided adequate snow cover is present, with the exception of one area of key bear denning habitat in the Terror River Highlands. Den Mountain (approximately 2,820 acres) would be closed by regulation to snowmachine use.

Implementing Management of Bear Concentration Areas under the Preferred Alternative

The Refuge, in consultation with the State of Alaska, would develop management strategies that protect Kodiak bears and facilitate compatible public use of the Refuge. These strategies include potential seasonal access limits in some bear concentration areas.* Areas that could be subject to these limits have not been identified. Development and implementation of site-specific voluntary use guidelines and seasonal use limits, if necessary, would follow the process described below.

Kodiak Refuge, in cooperation with ADF&G and the Kodiak Unified Bear Subcommittee (KUBS—chartered by the local fish and game advisory committee) would use a public process to (1) develop general guidelines for responsible bear viewing, (2) develop site-specific voluntary guidelines for some bear concentration areas, possibly including seasonal use limits and/or day-use only restrictions, and (3) define the area at Den Mountain to be closed seasonally to snowmachine use.

Implementation of voluntary guidelines would initially be tested at one or two sites. Bear use and public use in these trial areas would be monitored. Results would be used to modify voluntary guidelines or, if necessary, to propose regulations limiting access. If voluntary guidelines prove effective, the process would be applied to additional areas as staffing and funding allow. Current administrative restrictions on commercial operators would gradually be replaced through this process.

If regulations became necessary, an additional formal process would be required. Draft regulations would be published in the *Federal Register*. The public would be provided opportunity to review and comment on the proposed regulations (a minimum comment period of 30 days is required) either in writing or at public meetings, which would be held in Kodiak (and other communities near the Refuge, if necessary). Once the review is completed, comments would be addressed, and the proposed regulations would be revised accordingly and published as final regulations in the *Federal Register*. Thirty days after publication, regulations could be implemented. The regulation process can take as little as six months or as long as several years.

Using traditional information sources and venues, the Refuge would notify the public of these guidelines and regulations as they are being implemented. In addition, regional municipal governments, tribal governments, Native corporations, and guiding and outfitting businesses would be notified of management changes. Conditions on special use permits for commercial activities would mirror new guidelines and regulations.

** Bear concentration areas are places that draw an unusually high density of brown bears because of access to a food source or a preferred denning site. For additional detail, see the discussion on page 2-101 and Chapter 3, section 3.2.2.*

Boat Use. Use of motorized and nonmotorized boats, including jet boats, would be allowed throughout the Refuge except for the seasonally closed area at O'Malley River. Other bear concentration areas could be limited to day-use only by regulation. (See **Seasonal Use Limits** in preceding text for this alternative.)

Public Use Management: Commercial Use of the Refuge

Each commercial operator is required to have a refuge special use permit to conduct commercial activities on Kodiak Refuge or to use refuge resources. This authorization includes special conditions

(stipulations) under which the permittee must operate. See Alternative A for additional details about special use permits.

Commercial Wildlife Viewing (Including Guided Bear Viewing).

Management of commercial wildlife viewing would generally remain as in Alternative A; the majority of the Refuge would remain open for commercial viewing activities. Special use permit stipulations currently limiting access to nine bear concentration areas would be replaced with special conditions mirroring the voluntary use guidelines discussed previously. (See **Seasonal Use Limits** in Alternatives A and B, pages 2-97 and 2-107.) Based on findings of the ongoing evaluation of bear concentration areas, some areas could potentially be seasonally limited to day use only.

The Service, in cooperation with ADF&G, would develop and implement a bear-viewing program at O'Malley River. The regulation now seasonally closing the O'Malley River area to all use would be modified to allow this use. The viewing program would combine agency-supervised use with guided use; agency-supervised viewers and commercially guided viewers would not be present at the same time. Permits for agency-supervised visits would be allocated to individuals by lottery. Qualified bear-viewing guides would apply for guided-use opportunities, which would then be available to their clients via private bookings. The viewing program would be patterned after the program operated by the Service at the O'Malley River site in 1992 (described in Alternative B), but would probably differ in some respects.

Qualified bear-viewing guides would be selected through a screening process, possibly similar to the prospectus approach described in Alternative B.⁸ Selected guides could offer a viewing opportunity similar to that being offered by the agency program or could negotiate alternative plans of operations, which would require approval of the refuge manager. Staff operating the agency program would provide management oversight of the guided program, but guides would be responsible for all aspects of operation such as client booking, transportation, and on-site management of clients.

For further discussion, see "Implementing Management of Bear Concentration Areas under the Preferred Alternative" on page 2-124.

Commercial Wildlife Photography. Special use stipulations for commercial motion picture and video photographers that currently limit access in nine bear concentration areas would be replaced with special conditions mirroring the voluntary use guidelines discussed previously (see **Seasonal Use Limits** in Alternatives A and B, pages 2-97 and 2-107); other commercial photographers would be

⁸ The preferences for local residents and most directly affected Native corporations, established by Section 1307 of ANILCA, would apply to this guiding opportunity; 50 CFR 36.37 includes detailed information about local and Native corporation preferences for guiding services, other than guiding recreational hunting and recreational fishing.

encouraged to comply with these guidelines. The O'Malley River area would remain seasonally closed to all commercial photographers unless they are participants in the bear-viewing program. Certain other bear concentration areas could potentially be restricted to day-use only seasonally by regulation if voluntary guidelines proved ineffective. See Alternative A for additional information about special use permits for commercial photography.

Air Transporters. Special use permit stipulations currently limiting access to bear concentration areas would be replaced with special conditions mirroring the voluntary use guidelines discussed previously in this alternative. The O'Malley River area would remain closed seasonally to all access except that associated with the bear-viewing program. Some bear concentration areas could be limited to day-use only by regulation if voluntary guidelines proved ineffective.

Public Use Management: Unguided Use of the Refuge

Wildlife Viewing (Including Unguided Bear Viewing). Under Alternative D, opportunities for the unguided public to view bears and other wildlife would be available throughout most of the Refuge. The seasonal closure at O'Malley River would continue except for those participating in the bear-viewing program. Certain other bear concentration areas could potentially be limited seasonally to day-use only based on findings of the ongoing evaluation of bear concentration areas. (See **Seasonal Use Limits** in preceding text for this alternative.) As described previously, voluntary use guidelines would be developed; all users would be encouraged to comply with these guidelines. Additional regulations, which would affect use of these areas by the unguided public, could be adopted in the future if voluntary use guidelines proved ineffective.

Public Use Cabins. Under Alternative D, the Refuge could have more than nine public use cabins. Seven public use cabins are currently available to the public by reservation. These cabins could be relocated, and two new cabins could be built. Cabins on recently acquired lands could also be considered for management as public use cabins. New cabins would only be added after consultation with stakeholders. Criteria such as those listed in Alternative B would be considered in selecting new cabins sites and cabins for addition to the public use cabin program.

Management of Camping Areas⁹. Camping would continue to be allowed throughout the Refuge, except at the seasonally closed area on O'Malley River. If voluntary guidelines proved ineffective camping could be prohibited seasonally by regulation at other bear concentration areas. (See **Seasonal Use Limits** in preceding text for this alternative.) Camping areas (undeveloped sites where people

⁹Camping areas are undeveloped sites where people camp. Improving camping areas may consist of providing the minimum development, equipment, and facilities necessary for resource protection or public health and safety. These improvements could be minor leveling of tent sites, maintenance of user-developed trails, or provision of outhouses, temporary bear-resistant food storage containers, or temporary solar-powered electric fences.

camp) could be improved, and equipment or facilities—such as bear-resistant food storage containers, latrines, or solar-powered electric fences—could be provided if they are the least-intrusive management needed to mitigate public use impacts. If use impacts continue, they could be managed by restricting use through regulation. A regulation would be adopted prohibiting camping within one-quarter mile of public use cabins and federal and state administrative facilities.

Staffing and Budget Needs

Additional funding and staff would be required to implement the new projects (e.g., expand management of campsites when necessary, construct and convert public use cabins, establish a voluntary guideline program for protection of bear concentration areas, reopen the O'Malley site to bear viewing) proposed in this alternative. (See Table 2-12.) Specific funding and personnel needs by project are listed in the following text.

Expanding the public use cabin program would require construction, replacement, or remodeling of two cabins at a cost of \$60,000 (two cabins at \$30,000 each) for materials and material transport. Annual maintenance costs of \$8,000 per year (two cabins at \$4,000 each) would be required following construction. One permanent, full-time WG-7 maintenance worker, at a cost of \$43,000 per year plus a one-time cost of \$50,000 for moving expenses, would be required for these duties and maintenance of other public use cabins and administrative field facilities.

Expanded campsite management would entail providing minimal facilities such as bear-resistant food containers, an electric fence to provide an area for food and trash storage, and a temporary outhouse at two heavily used areas. Materials and equipment would cost \$30,000 (two sites at \$15,000 each). No additional staff would be required.

Establishing a voluntary guideline program for protection of bear concentration areas would require both a stakeholder process and biological monitoring. Assuming the Refuge would start with one

Table 2-12 Additional budget and staffing needs for Alternative D¹

Needs	Description
Staff	1 WG-7 maintenance worker; 1.0 permanent full-time position 2 GS-7 biological technicians; 1.0 seasonal positions 3 GS-7 biological technicians; 3.0 permanent full-time positions 2 GS-6 permits administrators; 2.0 permanent full-time positions 1 GS-7 refuge officer; 1.0 permanent full-time positions
Budget	\$ 1,063,000

¹ Budgets are based on FY 2004 dollars.

area and then move on to additional areas in subsequent years, establishing one field camp is projected to cost \$25,000 per year. Staff would consist of two temporary, GS-7 biological technicians and one permanent full-time GS-7 biological technician at a cost of \$121,000 per year plus a one-time cost of \$50,000 for moving expenses for the latter technician. Staff would participate with the stakeholder process and perform the biological monitoring. Additional staff would be required if the permit-system option is determined necessary. One full-time GS-6 permit technician to develop and implement a permit system and one full-time GS-7 refuge officer to enforce the permit system would be needed at a cost of \$128,000 per year plus a one-time cost of \$100,000 for moving expenses for both.

Allowing a bear-viewing program at O'Malley River would require both biological and public use camps. The biological camp would monitor bear behavior in response to human use at a cost of \$25,000 for camp materials and personnel costs of \$135,000 per year (two GS-7 full-time biological technicians) plus a one-time cost of \$100,000 for moving expenses for the two. This public use camp would include seven weather ports to provide visitors and staff with housing at a cost of \$77,000 for camp materials. Staff would consist of the two temporary GS-5 biological technicians and one full-time GS-7 biological technician hired for the voluntary guideline program described previously. No costs for these positions were included in this calculation, but would become necessary if the voluntary guidelines program is not implemented. These technicians would operate the bear-viewing program. A full-time GS-6 permit technician would be needed to conduct the lottery process and issue permits at a cost of \$61,000 per year plus a one-time cost of \$50,000 for moving expenses.

The base funding, personnel, and unfunded needs described for Alternative A would also be needed in this alternative. Please refer to the Funding and Personnel Requirements section of Alternative A for a complete description.

2.11 Summary Comparison of the Alternatives

The following tables compare the alternatives by major topic.

Table 2-13 Comparison of the alternatives

Category	Alternative A— Current Management	Alternative B	Alternative C	Alternative D— Preferred Alternative
Protection of Bear Concentration Areas	Implement public use management plan by adopting regulations to seasonally restrict all public access at nine bear concentration areas; continue to restrict commercial operators until regulations are in place. Close two areas of key bear denning habitat, Baumann Creek (2,240 acres) and Den Mountain (2,820 acres), to snowmachine use.	Develop voluntary guidelines for public use of bear concentration areas; current restrictions on commercial operators would be replaced with these guidelines. No regulations to seasonally restrict public access, as recommended in the public use management plan, would be proposed at this time. No denning areas closed to snowmachine use.	Develop voluntary guidelines for public use of bear concentration areas; current restrictions on commercial operators replaced with these guidelines. Seasonal closures and/or day-use-only restrictions may be proposed for some areas based on results of ongoing monitoring of these areas (may not be the same areas as in Alternative A). Close two denning areas to snowmachine use.	Develop voluntary guidelines for public use of bear concentration areas; current restrictions on commercial operators would be replaced with these guidelines. Seasonal day-use-only restrictions may be proposed for some areas based on results of ongoing monitoring of these areas (may not be the same as in Alternative A) Close Den Mountain (2,820 acres) to snowmachine use.
Management of Public Use Cabins	Allow nine public use cabins (seven exist now; could construct two more). Additionally, abandoned cabins or cabins on newly acquired lands could be managed as public use cabins.	Allow more public use cabins as needed to meet demand (more than two new cabins could be constructed or acquired). Consult stakeholders prior to constructing, replacing, or relocating cabins.	Allow natural attrition of public use cabins; eventually phase out cabin program.	Same as Alternative A; consult stakeholders prior to constructing, replacing, or relocating cabins or managing cabins on acquired lands for public use.
Management of Camping Areas¹	Camping areas not improved; no facilities provided. Implement Kodiak public use management plan by adopting regulations prohibiting camping within one-quarter mile of public use cabins and 200 yards of administrative facilities.	Improve camping areas and provide facilities if needed to mitigate impacts. No regulations restricting camping near cabins or administrative facilities.	Same as Alternative A.	Improve camping areas and provide facilities using least intrusive management needed to mitigate impacts. Adopt regulations prohibiting camping within one-quarter mile of public use cabins and administrative facilities.
Management of O'Malley River	Maintain seasonal closure of former bear-viewing site at O'Malley River (2,560 acres).	Reopen O'Malley site to bear viewing for a commercially guided bear-viewing program similar to the 1992 program.	Reopen O'Malley site to bear viewing for a government-run program similar to the 1992 program.	Reopen O'Malley site to bear viewing for a program with both government-run and privately guided viewing opportunities (at different times).

Chapter 2: Management Alternatives: Summary Comparison of the Alternatives

Category	Alternative A— Current Management	Alternative B	Alternative C	Alternative D— Preferred Alternative
Staffing and Budget Needs	Current (FY 2004): 18 permanent full-time 2 permanent part-time 3 seasonal \$1,545,000 (Base Funding)	Additional: 3 permanent full-time 0 permanent part-time 6 seasonal \$697,000 + Base Funding	Additional: 4 permanent full-time 0 permanent part-time 7 seasonal \$734,000 + Base Funding	Additional: 7 permanent 0 permanent part-time 2 seasonal \$1,063,000 + Base Funding
Management Categories (acres)²:				
Moderate	44,100	44,100	32,738	31,521
Minimal	1,580,174	1,580,174	1,591,536	1,592,753
Special River	0	Category eliminated	Category eliminated	Category eliminated

- 1 Camping areas are undeveloped sites where people camp. Improving camping areas may consist of providing the minimum development, equipment, and facilities necessary for resource protection or public health and safety. These improvements could be minor leveling of tent sites, maintenance of user-developed trails, or provision of outhouses, temporary bear-resistant food storage containers, or temporary solar-powered electric fences.
- 2 Acreages were developed by Arc/Info analysis of U.S. Fish & Wildlife Service land status maps. These areas have not been surveyed. Acreage figures may change over time as data sources improve. U.S. Fish & Wildlife Service land status maps were derived from Bureau of Land Management Master Title Plats.

Table 2-14 Comparison of impacts by alternative

Resource or Value	Alternative A	Alternative B	Alternative C	Alternative D
Brown bear populations	No significant effects on size and productivity of bear population.	Negative impacts affecting local population but not sufficient to affect integrity of refuge population in long term.	Same as Alternative A.	Same as Alternative A.
Local economy	Negligible effects overall on Kodiak economy.	Negligible effects overall on Kodiak economy, but slight positive effect from increased bear-viewing and cabins programs.	Negligible effects overall, but slight positive effect from increased bear viewing perhaps offset by slight negative effect from elimination of cabins	Same as Alternative B.
Subsistence	Negligible effects.	Same as Alternative A and increased opportunity for subsistence users to participate in refuge management through stakeholder planning for bear concentration areas.	Same as Alternative B.	Same as Alternative B.
Guides and commercial operators	Negligible effects.	Slight increase in guided bear-viewing opportunities.	Same as Alternative A.	Same as Alternative B.
Bear hunting	Negligible effects; hunting regulated by state and Federal Subsistence Board.	Same as Alternative A.	Negligible effects, although cabins would no longer be available to hunters in the future.	Same as Alternative A.
Deer hunting	No changes to deer-hunting opportunities.	Same as Alternative A.	Negligible effects, although cabins would no longer be available to hunters in the future.	Same as Alternative A.
Recreational fishing	Negligible effects on recreation fishing opportunities.	Same as Alternative A.	Negligible effects, although cabins would no longer be available to anglers in the future.	Same as Alternative A.

Chapter 2: Management Alternatives: Summary Comparison of the Alternatives

Resource or Value	Alternative A	Alternative B	Alternative C	Alternative D
Wildlife viewing	If proposed regulations are implemented, would reduce wildlife-viewing opportunities because of closure of additional areas to general public access during bear-viewing season, plus no O'Malley program.	Greatest potential for providing viewing opportunities because of unregulated use in bear concentration areas, reopening O'Malley, and new public use cabins.	Bear concentration area opportunities similar to Alternative A; O'Malley program may attract more viewers if lower cost than Alternatives B and D. Reduced opportunity for those who would use public use cabins.	Management of bear concentration areas would provide opportunities similar to those in Alternative A; increased viewing opportunity at O'Malley and additional public use cabins would be available.
Wilderness character	Overall impact negligible. Addition of structures and not improving campsites could result in localized negative impacts.	Long-term negative effect due to indefinite expansion of cabin program, improved camping areas, and guided bear viewing at O'Malley. However, lands would still retain overall wilderness character and be eligible for inclusion in the National Wilderness Preservation System.	Over time, elimination of the cabin program could result in localized positive effects on wilderness character; however, the effects on the overall wilderness character of the Refuge would be negligible.	Overall negligible impacts. Addition of structures would have slight local negative effects; improving campsites would be neutral. Negative effects of temporary structures offset by positive effects on physical and biological environment.

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3. Affected Environment

This chapter describes the physical, biological, social, and economic components of the ecosystem that could be affected by actions associated with management of Kodiak Refuge. This chapter is divided into six major headings: 3.1 Geographic and Ecosystem Setting, 3.2 Biological Environment, 3.3 Human Environment, 3.4 Wilderness Values, 3.5 River Values, and 3.6 Refuge Infrastructure and Administration.

3.1 Geographic and Ecosystem Setting

3.1.1 Land Status

Major legislation affecting land ownership in Alaska units of the National Wildlife Refuge System includes the Homestead Act of 1862, as amended (including the Soldier's Additional Homestead); the Trade and Manufacturing Site Act of May 14, 1898; the Native Allotment Act of 1906; the Alaska Native Claims Settlement Act of 1971 (ANCSA), and the Alaska National Interest Lands Conservation Act of 1980 (ANILCA).

Kodiak National Wildlife Refuge (Kodiak Refuge or Refuge) was established on August 19, 1941, by Executive Order (EO) 8857. The EO withdrew nearly two million acres from unreserved public domain, including all lands on Kodiak Island south of the divide running between the heads of Ugak and Kizhuyak bays and all lands on Uganik Island. A one-mile-wide strip along the coastline within the refuge boundary remained open to settlement in accordance with public land laws. With its withdrawal, Kodiak Refuge became part of the National Wildlife Refuge System, managed by the U.S. Fish & Wildlife Service (Service). On May 9, 1958, Public Land Order (PLO) 1634 was signed. It revoked EO 8857 and made important Refuge boundary changes intended to resolve conflicts between livestock grazing and bear use in areas outside the Refuge. The Refuge was reduced in size to approximately 1,820,000 acres. The northeastern boundary of the Refuge was shifted westward to a mountain ridge running between the heads of Viekada and Kiliuda bays, thus removing the Shearwater and Kupreanof peninsulas from the Refuge. The coastal strip was closed to settlement and other excepted purposes. In addition, a one-mile-square area surrounding each of eight Native villages was excepted from the withdrawal. With passage of ANILCA “. . . all public lands on Afognak and Ban islands of approximately fifty thousand acres . . .” were added to the Refuge (Section 303[5][A] of ANILCA).

Kodiak Refuge boundaries encompass approximately 1,775,700 acres¹ of land, in both federal and private ownership. Of this acreage, approximately 148,900 acres are either selected by or conveyed to individual Natives, Alaska Native corporations, or other

¹As of January 3, 2003.

private individuals. The remaining land—approximately 1,635,400 acres or 92 percent of the lands within the refuge boundary—is under the jurisdiction of the Service. Table 3-1 presents a breakdown of the land status within the Refuge; Figure 3-1 depicts the land status.

Table 3-1 Land status within Kodiak Refuge

Category	Conveyed Land ¹	Selected Land ¹	Total ¹
Fish & Wildlife Service-managed lands	—	—	1,624,274
Native corporation lands	142,005	35 ²	142,040
Native allotments	3,391	1,730	4,138
Other federal land ³	—	—	2,487
Other private land	1,727	0	1,727
Koniag, Inc., subsurface ⁴	198	0	198
Total	147,123	1,765	1,775,647

1 All figures are in acres.

2 The Service retains primary management authority over selected lands until conveyance occurs.

3 Lands withdrawn as part of the Terror Lake Hydroelectric Project (FERC License No. 2743); the Service retains secondary management authority.

4 Surface is under the jurisdiction of the Service; not included in totals.

With passage of ANCSA in 1971, five villages (now represented by three corporations; see Table 3-2) were entitled to not more than 345,600 acres of land within the refuge boundary. These villages lie along the coastline of Kodiak Island, outside the refuge boundary. Village corporations for Karluk and Larsen Bay merged with Koniag, Inc., the regional Native corporation, in 1980. The village corporations for Akhiok (Natives of Akhiok, Inc.) and Kaguyak (Kaguyak, Inc.) merged, forming Akhiok-Kaguyak, Inc. All lands conveyed under ANCSA located within the refuge boundaries at the time ANCSA was passed remain subject to the laws and regulations governing use and development of the Refuge, as specified in Section 22(g) of ANCSA. In addition, the United States retained right of first refusal (at the time of the first sale) should the Native village corporations decide to dispose of any of these lands.

The land status of Kodiak Refuge has been undergoing changes over the past decade because of the settlement of civil and criminal charges related to the *Exxon Valdez* oil spill (EVOS). Refuge lands selected by individual Natives and Alaska Native corporations also continue to be adjudicated by the Bureau of Land Management. As of publication of this document, there were 40 Native allotments (less than 1 percent of the total acreage) within the refuge boundary. Of these allotments, 28 have been conveyed, and 12 remain to be

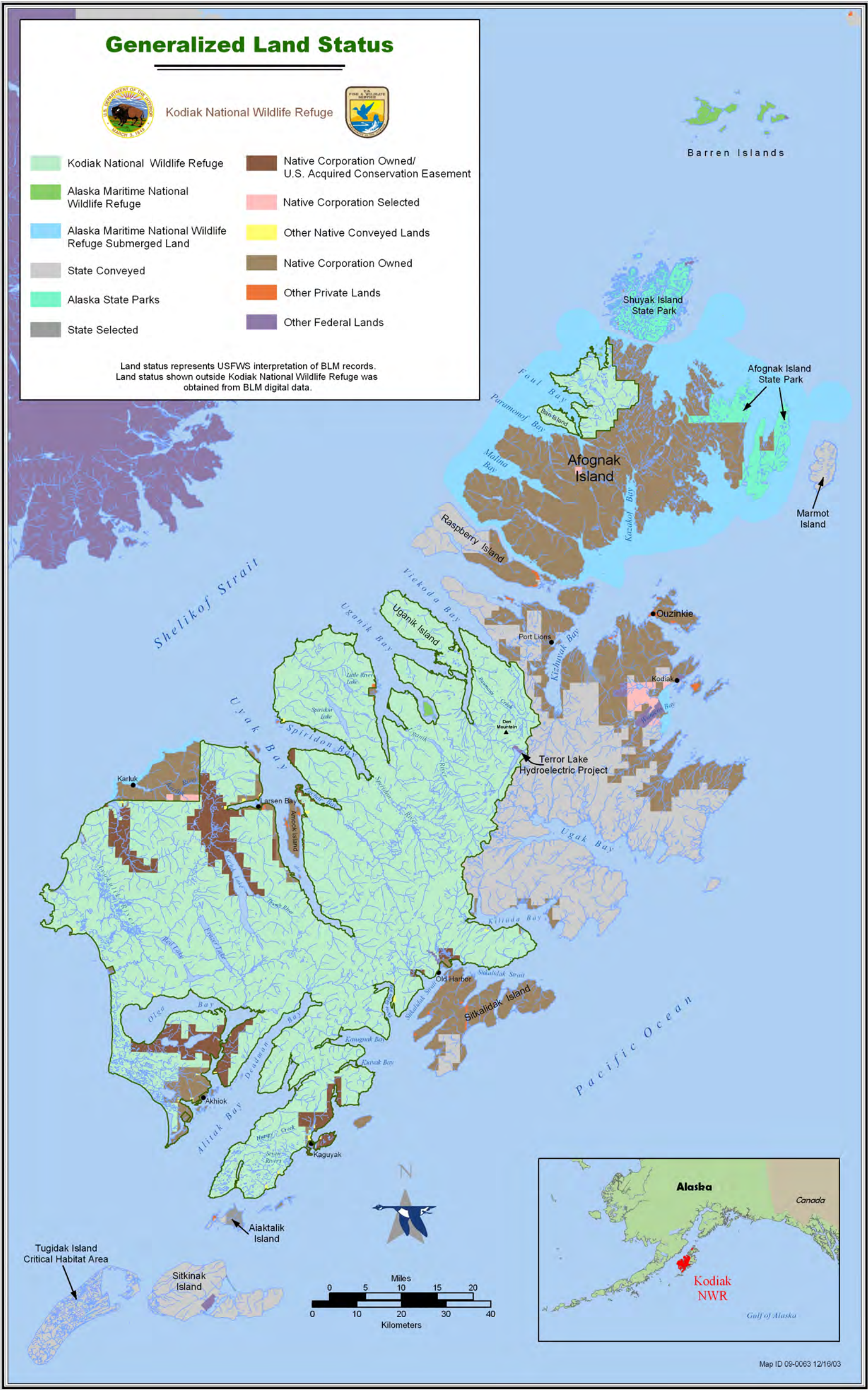


Figure 3-1 Generalized land status—Kodiak Refuge

Table 3-2 ANCSA Native corporations and village relationships

ANCSA Native Regional Corporation	ANCSA Village Corporation	Village
Koniag, Inc.	Karluk Native Corp. ¹	Karluk
	Nu-Nachk Pit, Inc. ¹	Larsen Bay
	Old Harbor Native Corporation	Old Harbor
	Akhiok-Kaguyak Inc. ²	Akhiok Kaguyak

1 Merged with Koniag, Inc., in 1980.

2 Formerly Natives of Akhiok, Inc., and Kaguyak, Inc.

adjudicated. Most of the Native allotments are located along rivers, on lake shores, and on the coastline. Some 142,005 acres (8 percent of the land within refuge boundaries) have been conveyed or interim conveyed to Native corporations. Except for selections under Section 14(h)(1) of ANCSA, no Native regional corporation selection remains to be adjudicated within the Refuge. No State of Alaska selections or conveyances are located within refuge boundaries.

Land status on the Refuge will continue to change in the future. The Service will continue to acquire lands through donation, exchange, or purchase; the Bureau of Land Management will continue to adjudicate the remaining land selections within refuge boundaries; and Congressionally mandated programs—such as those resulting from the Vietnam Veterans Native Allotment Act—will continue to affect the status of lands within refuge boundaries.

3.1.2 Acquisitions and Exchanges

An active land-acquisition program within Kodiak Refuge has been underway for a number of years. This program, as described in the following discussion, is summarized in Table 3-3 and Table 3-4 and depicted on Figure 3-2; for more detailed information on the conservation easements, see Appendix F.

While negotiations to acquire large parcels of land from the Native corporations have been ongoing for many years, the civil and criminal settlements resulting from the EVOS in 1989 provided funding to finalize these acquisitions. In 1995, negotiations were completed by the EVOS Trustee Council (Trustee Council) with Akhiok-Kaguyak, Incorporated, and Old Harbor Native Corporation to purchase lands in fee from these corporations, returning approximately 99,400 acres to refuge status. Both corporations also included additional lands in protective conservation easements.

Also in 1995, negotiations between the Trustee Council and Koniag, Inc., resulted in the purchase in fee of 59,426 acres; an additional 56,860 acres were protected by a temporary nondevelopment easement that expired in 2001. Although it provided no right of

Table 3-3 Summary of land-acquisition program on Kodiak Refuge

Acquired Lands	Number of Parcels	Acreage
From Koniag, Inc.	4	59,426
From Old Harbor Native Corp.	3	28,591
From Akhiok-Kaguyak, Inc.	6	70,865
From Afognak Joint Venture	2	5,491
Native allotments	66	8,781
Other small parcels	~65	~953
Total	~146	~174,107

Table 3-4 Summary of easements acquired by the Service on Kodiak Refuge

Source of Easement Acquired	Easement Type	Acreage
Koniag, Inc.	Temporary Conservation Easement	56,683
	Limited-Development Easement	38
Old Harbor Native Corp.	Permanent Conservation Easement	3,107
Akhiok-Kaguyak, Inc.	Permanent Conservation Easement	44,863
Total		104,691

public access, this temporary easement allowed the parties additional time to negotiate a more permanent protection agreement for these lands, located primarily within the Karluk and Sturgeon river drainages. In 2002, a new temporary conservation easement for these lands replaced the nondevelopment easement. The new conservation easement runs until 2012 and may be extended (at Koniag's option) for an additional 10 years. A limited development easement covering lands on Camp Island was established at the same time and runs concurrent with the conservation easement. An agreement between Koniag and the United States, via the Service, provides funding for purchase of the Koniag lands at the conclusion of the term of the existing conservation easement should Koniag wish to sell.

The Trustee Council purchased lands and interests in lands owned by Afognak Joint Venture and Koniag, Inc., primarily for inclusion into the Alaska State Park System, but approximately 5,500 acres located adjacent to the Red Peaks–Ban Island Unit of Kodiak Refuge were incorporated into the Refuge.

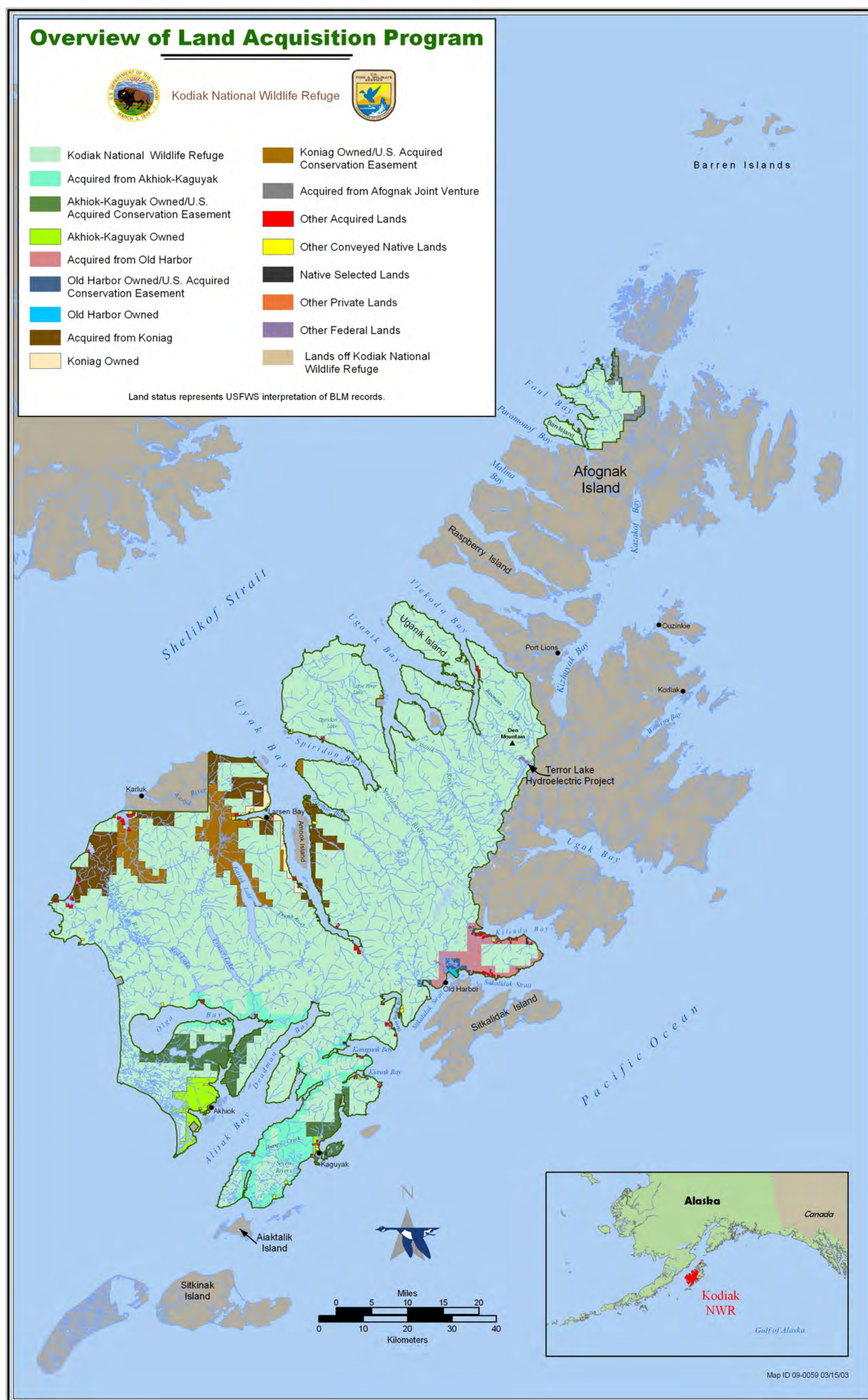


Figure 3-2 Overview of land-acquisition program—Kodiak Refuge

The Native corporations relinquished all their remaining village selections within the Refuge as a result of these agreements.

Small-parcel acquisition has also been occurring concurrently with the large-parcel acquisitions just described. Using a combination of funding received from EVOS settlements (criminal and civil) and Land and Water Conservation Fund appropriations as well as from donations from private parties, the United States has purchased numerous small parcels from landowners wanting to sell their lands. The majority of the lands acquired in the small-parcel program were Native allotments, conveyed to individual Alaska Natives pursuant to the Alaska Native Allotment Act of 1906. The Service has completed acquisition of 66 allotments comprising about 8,800 acres. The acquisition of these allotments is critical to completing the habitat protection accomplished in the large-parcel acquisitions because the allotments were generally located at strategic points at the mouths of rivers, heads of bays, and along important wildlife migration routes.

Other small parcels were also acquired as part of the small-parcel program. The greatest number of these, some 65, were parcels about 10 acres in size that were conveyed to members of Nu-Nachk-Pit, Inc., the village corporation of Larsen Bay by the tribal council following Nu-Nachk-Pit's merger with Koniag, the regional Native corporation. These parcels, totaling approximately 650 acres, were acquired from the Kodiak Island Borough, The Conservation Fund, and individual property owners.

Donations of land, and money to purchase land, have also been a factor in acquiring private lands within the Refuge. Numerous conservation organizations—including The Conservation Fund, the Kodiak Brown Bear Trust, and Wildlife Forever—provided acquisition funds or purchased land for donation to the United States.

A total of about 9,700 acres has been acquired through the small-parcel program. Although the pace of acquisition has slowed, and many of the private lands with high habitat values have been purchased, the Service remains ready to make offers to interested sellers for high-quality wildlife habitat.

Land exchanges within Kodiak Refuge have had limited effect on land ownership, although proposed exchanges could transfer several thousand acres between the United States and corporations formed under the ANCSA. To date, only two small exchanges have returned about 10 acres to the protection of the Refuge, in exchange for about 3 acres of land formerly within the Refuge and another 2 acres formerly within Alaska Maritime National Wildlife Refuge.

3.1.3 Environmental Contaminants

Portions of Kodiak, Afognak, and some smaller islands in the Kodiak Archipelago have been the sites of Department of Defense and U.S. Coast Guard activities since the 1940s. Kodiak experienced an intensive military buildup during World War II, the remains of

which are still being investigated and remediated by the U.S. Army Corps of Engineers at a number of locations. The U.S. Coast Guard has also performed site investigations at its base in Kodiak Harbor. Most of these sites are located a considerable distance from the Refuge, and any associated environmental contamination is not expected have any significant impact on the Refuge.

One military site from the 1940s—the 7,650-acre Lazy Bay Air Warning Station—is located on private lands within the Refuge at the southwestern end of Kodiak Island. Originally withdrawn from the Refuge in 1942 for use by the Department of War, the withdrawal was revoked in 1961. These lands were subsequently selected by and conveyed to Akhiok-Kaguyak, Inc., under ANCSA. Without further investigation, it is not known whether there are any environmental contaminants issues associated with this site.

Contaminants investigations have been performed by the Service, or Service contractors, at two locations on the Refuge. In 1996, the Service investigated and remediated petroleum contamination and debris associated with an abandoned boat-repair facility located at Uganik Bay. In 1994, a fish-processing plant in operation from the 1890s to the 1930s and located on private lands on the northern shore of Olga Bay was investigated to determine if the site was suitable for acquisition by the Service. A number of contaminants sources were observed along with considerable debris. It was not acquired by the Service because of the cost of cleanup.

Since 1994, the Service has acquired approximately 174,000 acres within Kodiak Refuge. Each acquisition was inspected for potential sources of contaminants; none was observed.

The threat of spills is one of the most significant contaminant issues for Kodiak Refuge. The 1989 *Exxon Valdez* oil spill affected Kodiak and Afognak islands, including portions of the Refuge. The Refuge has also experienced smaller marine spills in the past. It is likely that marine oil or fuel spills will continue to occur in the future; the frequency, timing, and magnitude of these events are unpredictable.

3.1.4 Ecosystems

An ecosystem is made up of three things:

- The species that live in an area
- The environment in which those species live
- The relationships and linkages between those species and their environments

To understand how the alternatives in this plan will affect the ecosystem, it is necessary to understand these components.

Ecological units can be viewed from many different scales, ranging from the continental to the microscopic. From a refuge planning standpoint, the scale needs to be larger than the refuge but not so large that the refuge is so dwarfed by the ecological unit that it is impossible to determine the refuge's relevance to the surrounding

land. In a hierarchy of ecosystems, the ecoregion level is an appropriate level for refuge planning.

Alaska Ecosystems

The Service has identified ten ecosystems in Alaska. Each of these ecosystems is a dynamic and interrelated complex of plant and animal communities and their associated nonliving environment. The Kodiak National Wildlife Refuge is part of the Service's Bristol Bay/Kodiak Ecosystem, which encompasses most of the Alaska Peninsula, Bristol Bay Lowlands, and Kodiak Archipelago—approximately 60,600 square miles of southwestern Alaska.

The Bristol Bay/Kodiak Ecosystem is arguably Alaska's most productive region for fish and wildlife. The ecosystem's large, diverse, and productive fishery resources are its driving force. Salmon are the principal mode by which nutrients from the ocean are transported to this system. As salmon return to spawn and die, their bodies provide the critical nutrients to support the primary producers in the food chain (e.g., micro-invertebrates, insects, and vegetation), which in turn provide food and shelter for the next generation of young salmon. At the same time, salmon supply food for animals much higher in the food chain (e.g., bears, fox, birds, and people).

Salmon are also of primary importance to the region's economy and culture. Local residents have relied on, and continue to rely on, this ecosystem to provide not only food and income but a way of life. The commercial and recreational fisheries provide millions of dollars in income and thousands of jobs for the regional and state economies, as do hunting and wildlife-viewing.

The management of Kodiak Refuge plays an important role in the continuing function of the Bristol Bay/Kodiak Ecosystem by providing a healthy environment for fish, wildlife, and people. A number of other federal lands also contribute to the importance and productivity of this ecosystem, including Katmai National Park and Preserve, Aniakchak National Monument and Preserve, and Alaska Maritime, Alaska Peninsula, Becharof, Izembek, and Togiak national wildlife refuges.

3.1.5 Physical Environment

Kodiak Island (Island) is one of a group of islands that lie at the western border of the Gulf of Alaska between 56 degrees 30 minutes and 58 degrees 40 minutes north latitude and 150 degrees 40 minutes and 154 degrees 50 minutes west longitude. The Kodiak Archipelago extends 177 miles by 67 miles to encompass about 5,000 square miles. The Refuge's interior lands and waters are linked to the Pacific Ocean by several rivers.

The Refuge's area of influence encompasses the entire Archipelago, including the City of Kodiak and seven Island villages. Portions of the Alaska Maritime National Wildlife Refuge are adjacent to or near Kodiak Refuge.

3.1.6 Climate

Kodiak Refuge is within the maritime climatic zone. Temperature variations are generally small (except at higher elevations); humidity and precipitation are high; fog and clouds are frequent. The overall mean annual temperature is about 40 degrees Fahrenheit (°F).

Because of the warming effect of the Alaska Current (a northern eddy of the Japanese Current), the climate is more temperate than is normal for the latitude. Summer air temperatures are seldom higher than 75° F, and winter rarely below 0° F. Periods of subfreezing temperatures regularly occur from October through April; at higher elevations subfreezing temperatures can occur throughout the year.

Moist air is always present over the Kodiak Archipelago, brought in by the Aleutian low in the winter and by the continental low in the summer; precipitation occurs year-round. Rain is generally light, but of long duration. More than 100 wet days (days on which 0.1 inch or more precipitation occurs) are expected per year, whereas most of Alaska, including Anchorage, has fewer than 50 wet days per year. At Kodiak, the driest times are late winter and mid-summer; even then the probability of a wet day remains high (Johnson and Hartman 1969). Average precipitation on Kodiak Island varies with location and period of record. Average precipitation at Kodiak Airport is 76.27 inches (1973 to 2004) and at the Kodiak Navy Air Station was 59.12 inches (1931–1972). It is wetter along the eastern side of the Island, which is open to the Pacific, than on the western side.

Maximum precipitation, falling around the high peaks above Kiliuda Bay (Karlstrom and Ball 1969), is about 115 inches, five times as much as the 23 inches on the Shelikof Strait side, at Karluk River, and Larsen Bay (Jones *et al.* 1978). The Archipelago's cool, wet climate means that lightning occurrences and natural fires are rare.

3.1.7 Landforms

Kodiak Island is approximately 100 miles long by 60 miles wide and covers an area of about 3,600 square miles. This makes it the second largest island in the United States.

Kodiak Island has a rugged 930-mile coastline. The northern portion of the Island is very rocky and irregular and is characterized by numerous glacially scoured straits, inlets, and fjords with branching arms. Sea bluffs are generally steep and rocky. Numerous offshore rocks and islets occur along the coast. The southwestern coastline is relatively smooth and has few indentations.

Islands of the Kodiak Archipelago were intensely scoured and eroded by at least three glaciations bringing ice down Cook Inlet and across Shelikof Strait as well as from local mountains. Accordingly, the islands are entirely mountainous from interior to shoreline, the only exceptions being the flat bottoms of glacial valleys and moderate relief on some glacial deposit aprons forming lowland shores, capes, and peninsulas. More subdued mountain topography characterizes the lowlands of southwestern Kodiak Island. Commonly called the Kodiak Refugium, this area was the only area of the Island not covered by

glaciers during the Pleistocene Era, about 12,000 to 20,000 years ago (Karlstrom and Ball 1969). The highest peaks in the Refuge are Koniag Peak and Mount Glottof, both more than 4,000 feet high. On the Afognak Unit of the Refuge, ten or more individual glacial horns reach elevations greater than 2,000 feet.

Drainages flow predominately northwest and southeast, following valleys deepened and straightened by glacial ice. The straits and elongated bays are fjords, representing former valleys over-deepened by ice to below present sea level. The Refuge's many elongated lakes occupy ice-scoured trenches, which are dammed by moraines. Except for the Ayakulik-Red and Karluk rivers, which drain large glacial lakes, the Island's rivers are small, short, and steep. They flow in valleys straightened by glaciers and end quickly in bays. The Island's bays are indented to such an extent that no place on the Island is more than 15 miles from the sea. Valleys are generally steep-walled, U-shaped, and have hanging tributaries. V-shaped and terraced canyons may be found where moraines have been breached or in areas where stream piracy or lateral diversion has occurred (as is common in a glacial landscape).

3.1.8 Geology

Geologically, the Kodiak Archipelago is an appendage of the Kenai Peninsula; they share the same rock types and structures and are separated by only 40 miles of salt water. Before glacial times, the two were probably connected by an unbroken chain of mountains; they then separated when Cook Inlet ice, spilling through a low divide in the vicinity of the Barren Islands, eroded the rock in that area to below sea level (Capps 1937). Karlstrom and Ball (1969) suggest that the preglacial Kodiak Islands and the Alaska Peninsula also may have been connected above sea level, with Shelikof Strait—like all of Cook Inlet—then being either a broad alluvial valley or an interior basin.

As is the Kenai Peninsula and indeed is true in many other parts of Alaska, the Kodiak Islands are “accreted” continental parts. Simply put, they are mostly wedges of original mud collected in ocean trenches at the margins of convergent crustal plates. The mud was scraped off onto bending edges of the continental plate or subducted with oceanic crust as the oceanic plate was underthrust. Kodiak Island rocks are in belts showing several episodes of such accretion in the geologic past, which are successively younger from northwest to southeast. Most rocks are shales—representing original mud deposited in ocean trenches—and also graywackes representing turbidity current deposits that included coarser rock fragments. Other rocks represent deep ocean siliceous ooze and clay mixed with blocks of subcrust brought upward against the downward-moving accretions.

A summary of information on bedrock geology, surficial deposits, glacial geology, earthquakes and volcanic eruptions was provided in the original *Kodiak National Wildlife Refuge Final Comprehensive*

Conservation Plan/Environmental Impact Statement/Wilderness Review (Kodiak Conservation Plan or Conservation Plan, USFWS 1987).

3.1.9 Soils

Volcanic ash of various thicknesses covers most of the lower elevations and furnishes most of the parent material for soil development on Kodiak Refuge. Ash is absent from bare-rock slopes and from the higher-elevation peaks that form the islands of the Kodiak Archipelago. The Archipelago is a continuation of the nonvolcanic coastal mountains that border the Gulf of Alaska and displays features typical of glaciated landscapes.

Ash commonly overlies permeable glacial drift such as moraine deposits and gravelly outwash. A characteristic component of soils formed from these parent materials and in this environment is thixotropic clay, a gel-like material that exhibits fluidity under stress—such as an earthquake—but that may harden quickly to its normal solid state once the stress is removed.

Organic soils occur in western areas along lowland rivers or valley bottoms and in depressions in the underlying moraine deposits. These soils consist of undecomposed sedge peat, fibrous peat, and other organic materials often containing deposits of volcanic ash.

The soils on the Kodiak Archipelago have been field-mapped at an exploratory scale of 1:500,000. Their distribution, as soil subgroups or associations of subgroups, is shown by Rieger *et al.* (1979) at a published scale of 1:1,000,000; a map can be found in the original Kodiak Refuge Conservation Plan (USFWS 1987).

3.1.10 Oil and Gas Occurrences and Potential

The Kodiak Islands onshore bedrocks are about 90 percent Mesozoic, with no petroleum potential, and 10 percent Tertiary, with very slight petroleum potential in certain sections. All the Mesozoic rocks and the Paleocene rocks (Ghost Rocks Formation) are deformed, indurated (*i.e.*, hardened by heat, pressure, or cementing material), and lack porosity. Some Eocene and lower Oligocene rocks (Sitkalidak Formation) have sandstones, but these are likely unsorted or cemented and thus have only slight oil and gas potential. Middle Oligocene to lower Miocene rocks (Sitkinak and Narrow Cape formations) have better reservoir characteristics, but they occur only in a narrow fringe at points along Kodiak Island's southeastern shore. These rocks, being close to the fault zone, also may be deformed at depth.

Offshore, in middle and upper Tertiary rocks, petroleum prospects are favorable along the southeastern side of Shelikof Strait (Magoon *et al.* 1979) and along the Kodiak Shelf (Ehm 1983; Plafker 1971; von Huene *et al.* 1971). The present Kodiak shelf edge appears to coincide with an arch, which may have formed to allow basin deposition of upper Tertiary sediments behind it (landward). Southeast of Kodiak Island, the upper Tertiary section is about

13,000 feet thick. Below this, lower and middle Tertiary rocks may contain hydrocarbon source beds as at Yakataga and other districts in the Gulf of Alaska. Favorable structures are likely in the arch, which is about 50 feet deep and 70 miles long over Albatross Bank. In the Shelikof Strait, the southeastern side has Tertiary rocks that overlie middle Jurassic rocks—the hydrocarbon source of the upper Cook Inlet and Kenai Refuge oil fields. The U.S. Minerals Management Service estimates that the Cook Inlet–Shelikof Strait Lease Sale 88 area has 120 million barrels of oil and 680 billion cubic feet of gas (DOI/MMS 1984).

3.1.11 Minerals

There are no active mining claims on Kodiak Refuge. Public Land Order 1634 (May 9, 1958) withdrew all refuge lands from location, entry, and patent under the mining laws; under Section 304(c) of ANILCA this withdrawal was applied to those lands on Afognak and Ban islands added to the Refuge by ANILCA and any subsequent refuge land acquisitions. Thus, no new mining claims will be allowed in the future. However, some subsurface within the Refuge is privately owned and could be developed for mineral extraction

3.1.12 Water Resources

One of the four specific purposes of Kodiak Refuge, as articulated in ANILCA, is to ensure the conservation of water resources, specifically, “to ensure . . . water quality and necessary water quantity within the Refuge” for the conservation of fish and wildlife populations and habitats in their natural diversity. The mostly pristine waters of the Refuge are habitat for an abundant salmon population, which in turn supports the Kodiak brown bear population. In addition to providing spawning grounds for five species of Pacific salmon, the waters on the Refuge provide essential habitat for a host of other fish and wildlife, for hydroelectric power, for municipal water supplies, and for subsistence, commercial, and recreational hunting and fishing activities.

Three major glaciations affected the topography of Kodiak Island. Remnant glaciers still remain along the mountain crest from Mount Glottof to Grayback Mountain. The valleys, freshly deepened and straightened by ice, are still unfilled with alluvium. Their rivers and streams are comparatively small. Drainages generally trend northwest toward Shelikof Strait or southeast toward the Pacific Ocean. Drainages on the southeastern side of the Island tend to be short and high-gradient and with small drainage areas. Drainages on the northwestern side generally have larger drainage basins with considerably more flow. The lengths of all streams are abbreviated by deep bays resulting from hundreds of feet of sea-level rise since glaciation. Afognak Island lacks well-defined watershed boundaries—because the granite trend is absent—and drainages head at broad saddles in less resistant rock (USFWS 1987).

Most lakes on the Refuge are the result of glaciation. Small rock-basin lakes at higher elevations—known as cirque lakes, paternoster lakes, glint lakes, or tarns—are ice-scoured depressions. The large valley-filling lakes, such as Karluk and Akalura lakes, are dammed by moraines (USFWS 1987).

Water Quantity. Although water is a fundamental and essential habitat that all fish and wildlife resources require, hydrologic information is limited. Wiley and Curran (2003) and Curran et al. (2003) calculated statistics on runoff rates, stream-flow duration, and recurrence intervals based on basin characteristics. Mean annual runoff is estimated to be from four to eight cubic feet per second per square mile (cfs/mi²). Lowest flows occur during the coldest weather, with flows decreasing in December and beginning to rise again in April. Winter flows may be sustained by lake discharge or by groundwater in larger alluvium-floored valleys. High flows occur in late May or June during snowmelt; in late summer and fall with increased rain fall, during midwinter thaws, or during rain-on-snow events. The highest discharge peaks occur in October and November. Plows in streams heading at glaciers may be augmented in summer by glacial melt.

Table 3-5 is a list of existing stream discharge data, primarily from the U.S. Geological Survey (USGS). The USGS data are available through its Web site.

The Service initiated a five-year water resource inventory and assessment (USFWS 1998) on the Refuge in 2002. As part of this assessment, stream-gauging stations were installed on the Akalura River, Ayakulik River, Sturgeon River, Karluk River, South Olga Creek, Dog Salmon Creek and East Fork tributary, and East Fork Uganik River. At the conclusion of the inventory and assessment, stream discharge data will be available.

Water Quality. The USGS (1989) provides an index of USGS water quality—monitoring sites in Alaska. About 115 sites are located in the Kodiak area; most are located off-refuge in the vicinity of the City of Kodiak and have a period of record of one to three years. On-refuge sites are located on the mainstem and tributaries to the Akalura, Karluk, and Ayakulik rivers and on an unnamed stream near Old Harbor. The Alaska Department of Fish & Game's (ADF&G) Division of Commercial Fisheries has been involved in the enhancement and rehabilitation of salmon stocks in the Kodiak Commercial Fisheries Management Area since the early 1900s (Schrof and Honnold 2003).

Ongoing studies and monitoring of the limnology and water quality of lakes have been a key component of the enhancement effort since the 1980s. Specific information related to water quality of lakes can be obtained through the ADF&G's Division of Commercial Fisheries. In general, streams and lake waters probably contain less than 60 milligrams per liter of dissolved solids. Extrapolations of suspended sediment measurements of the Uganik River, from lowest through highest flows ever recorded, are less than 10 milligrams per

Table 3-5 Existing stream-discharge data on or near Kodiak Refuge

Watershed	Period of Record	Drainage Area (mi ²)	Mean Discharge(cfs)	Collected By
Akalura Creek at Olga Bay	1975–1976	18.4	60.8	USGS ¹
Canyon Creek near Larsen Bay	1974–1975	8.82	41.4	USGS ¹
Dog Salmon near Ayakulik	1960–1961	72.9	252	USGS ¹
Falls Creek near Larsen Bay	1974–1975	5.67	18.7	USGS ¹
Falls Creek near Port Lions	1980–1983	4.3	NA	USGS ¹
Hidden Basin Creek near mouth	1983–1984	11.92	NA	USGS ¹
Hidden Basin Creek near Port Lions	1982–1984	3.01	NA	USGS ¹
Karluk River at outlet of Karluk Lake	1975–1976; 1979–1982	100	359	USGS ¹
Kizhugiak River near Port Lions	1986–1994	42.5	267	USGS ¹
Kizhugiak River near Port Lions	1980–1986	42.5	221	USGS ¹
Larsen Bay Creek near Larsen Bay	1980–1984	3.92	NA	USGS ¹
Little Kitoi Creek near Afognak	1960–1961	2.63	8.04	USGS ¹
Middle Fork Pillar Creek near Kodiak	1969–1970	2.02	11.9	USGS ¹
Monashka Creek near Kodiak	1972–1976	5.51	42.6	USGS ¹
Myrtle Creek near Kodiak	1964–1970	4.74	43.7	USGS ¹
Spiridon Lake outlet near Larsen Bay	1962–1965	23.3	50.6	USGS ¹
Terror River near Kodiak	1963–1968	15	132	USGS ¹
Terror River at mouth near Kodiak	1964–1968; 1981–present	46	263	USGS ¹
Uganik River near Kodiak	1951–1970	123	660	USGS ¹
Upper Thumb River near Larsen Bay	1974–1982	18.8	78.2	USGS ¹
Hydro Creek near Old Harbor	1993–1996	4.6	47	DNR ²
East Fork Hydro Creek near Old Harbor	1995–1996	1.96	NA	DNR ²
Humpy Creek, near Larsen Bay	1986–1987	NA	NA	DNR ²

¹ USGS (1989); also <http://ak.water.usgs.gov/>

² Unpublished data, Alaska Department of Natural Resources

liter. Winter dissolved oxygen and pH in 22 lakes surrounding the City of Kodiak were measured by the Alaska Department of Fish & Game (Jones *et al.* 1978). The most frequent measurements were 12 and 16 milligrams per liter of dissolved oxygen; the pH ranged from 5.8 to 6.5.

Unique Refuge-Specific Water Resources

Habitat. The waters on Kodiak Island provide a unique habitat for five species of Pacific salmon. The glacially formed lakes and drainages located in or near the Kodiak Refugium were identified as being of special value. (See Chapter 1.) Karluk River and Lake, Frazer Lake and Dog Salmon Creek, Ayakulik-Red River, Sturgeon River, and Uganik River and Lake are of particular value for their large salmon runs. The abundance of salmon in these waters supports high concentrations of brown bears, bald eagles, and other wildlife. In addition, the waters of Kodiak provide the opportunity for subsistence, commercial, and recreation activities.

Impounded Waters. Two hydropower sites exist within the boundaries of Kodiak Refuge, a third is anticipated, and others have been considered. The City of Kodiak, with a population of approximately 7,000, is supplied with power primarily from the Terror Lake Hydroelectric Project (20 megawatt capacity). This hydropower project is unique, being the largest such project on Kodiak Island and, at the time of its construction, the only federally licensed hydroelectric project on national wildlife refuge lands in Alaska.

Terror Lake dam is situated on the Terror River approximately eight miles upstream from its mouth at Terror Bay. The dam is 195 feet high, 2,300 feet long, and contains a reservoir with a surface area of 1,000 acres and a normal storage volume of 108,000 acre-feet. The controlled release of water from the dam has a mandated minimum discharge range of 60 to 150 cubic feet per second for instream flow requirements for the maintenance of fish habitat. An 11-foot-diameter tunnel at the reservoir bottom routes water out of the Terror Lake watershed to penstock and generating plants located off-refuge in the Kizhuyak River basin. In 1993, the Kodiak Electric Association proposed enhancing the site with a release-water project that would necessitate constructing a new penstock, transmission line, and generating station 1.8 miles downstream of the dam. The release-water project is dormant at this time. The community of Larsen Bay has a small (400 kilowatt) hydroelectric plant powered by Humpy Creek (AEIDC 1979, Chatto 2000, DCED 2000a, DNR 2000, Hosking 1984).

Small, low-head hydropower projects affecting refuge watersheds have been considered for the communities of Ahkiok, Karluk, and Old Harbor.

Three villages adjacent to Kodiak Refuge use impounded surface water as their primary public water supply sources. Larsen Bay is

supplied by Humpy Creek impoundments and is alternatively supplied from the penstock of the hydroelectric plant. Dammed streams with small reservoirs on Lagoon Creek and an unnamed stream supply water to the villages of Old Harbor and Ahkiok, respectively (DCED 2000b).

The Alaska Department of Fish & Game operates and maintains (under long-term leases) three fish weir sites and one fishway on waters on Kodiak Refuge: on the Ayakulik River, on Akalura Creek, and on Dog Salmon Creek. The seasonal period of operation for weirs runs from May through September. The weirs span waters ranging from 25 feet to 190 feet wide. Fluctuating levels of backwater occur immediately upstream of the weir sites during periods of operation and maintenance. The fishway at the Frazer Lake outlet waterfalls is a piling-supported aqueduct allowing salmon passage around the 100-foot high falls (ADF&G 2000).

3.2 Biological Environment

3.2.1 Vegetation

Kodiak National Wildlife Refuge lies exclusively within the Kodiak Archipelago Ecoregion, one of 32 ecoregions in Alaska (Nowacki *et al.* 2001). The Kodiak Archipelago Ecoregion is considered one of the coastal rainforest ecoregions, yet is unique in that it is composed completely of islands, has a unique climate due to its location within the Gulf of Alaska, and has experienced repeated, extensive glaciation with the occurrence of one glacial refugium. The Kodiak Archipelago is also unique in that it has undergone constant changes because of the effects of major physical events, including glaciation and the 1912 Katmai ash fall; major biological events, including the spread of Sitka spruce and the recent introduction of several species of plants and animals not native to the Archipelago (e.g., browsers and grazers such as Sitka black-tailed deer, Roosevelt elk, snowshoe hare, and mountain goat [Fleming and Spencer 2005]).

Through a vegetative mapping effort initiated in 2001, six main land cover groups have been identified. These land cover groups have then been separated into detailed vegetation types and communities. Table 3-6 defines each of the vegetation communities; Figure 3-3 (Fleming and Spencer 2005) depicts the distribution of these communities.

Refuge lands are located on Kodiak, Uganik, Afognak, and Ban islands. Afognak Island is northeast of Kodiak Island and is home to stands of old growth Sitka spruce trees. On Afognak, the refuge manages more than 48,000 acres of closed Sitka spruce forest, forb meadows, and alpine habitats with scattered birch stands. Much of the rest of Afognak, which is in private holdings, has been logged and is in various stages of regeneration. West of Afognak lies the much smaller Ban Island. Ban Island has alder and forb meadows on the southern side, rising to an alpine zone along its crest. Lower slopes on the northern and eastern sides include Sitka spruce forest.

Table 3-6 Kodiak Archipelago vegetation communities¹

Spruce Krumholtz	A low-growing form of Sitka spruce (<i>Picea sitchensis</i>) at the upper limits of spruce growth. Most stands are on north-facing slopes, on ridge tops, and along the northern coasts of the islands north of Kodiak Island. These trees are stunted by wind and snow scouring and have multiple trunks. One 1.5-inch stem was 26 yr old. Grasses and forbs grow in the shelter of the branches, with alpine heath or alpine forb meadow in unprotected areas.
Sitka Spruce Regeneration	Logged areas generally 15–30 years post-logging, which are regrowing with Sitka spruce. Some areas have been replanted with aerial re-seeding, while others are regenerating from nearby unlogged stands. Spruce cover is in the 20% to 50% range. These are vigorous young trees, usually less than 20 yr old, with bluejoint grass and salmonberry-elderberry-devil's club between trees. Dense alder often grows along logging roads and yarding areas.
Open Spruce Forest	Sitka spruce in slightly more open stands, generally 20% to 60% cover. Openings in these stands support alder and salmonberry where sunlight reaches the floor. Shaded areas have feathermoss and devil's club ground cover.
Closed Spruce Forest	Sitka spruce in dense stands of 70% to 100% crown closure. Much less shrub understory. Under the densest stands, ground cover is a continuous moss cover, usually feathermoss. In slightly more open stands that have gaps between the crowns, low devil's club and scattered ferns are found. In stands closer to 70% crown closure, elderberry, alder, and salmonberry occur in openings. Trees range from 60 to 250 yr old. Dense stands are primarily on the northern islands and on the northeastern ends of peninsulas south of the City of Kodiak.
Open Birch Forest	Kenai birch (<i>Betula kenaica</i>) in open stands, also on gentle lower hillslopes from Olga Bay to the northern end of Kodiak Island. Often old trees with little regrowth. Understory in open stands is often scattered alder, grass, and ferns or elderberry. Birch tend to grow slightly further uphill and are probably drier than cottonwood.
Dense Birch Forest	Kenai birch in dense stands on gentle lower hillslopes and old riparian terraces. These closed stands (generally >70% cover) tend to have old trees, no shrub understory, no regrowth, and a ground cover of grasses and ferns.
Mixed Deciduous: Cottonwood, Birch and Alder	A mixed species community with varying proportions of cottonwood (<i>Populus balsamifera</i>), birch and alder (<i>Alnus viridis</i>), and occasional tall willow.
Sparse-Open Cottonwood Forest	Riparian and gentle hillside stands of cottonwood with densities from 10% to 60%. In riparian areas, these stands often have understory of tall willows with grasses, some alder, ferns, and assorted forbs. Trees tend to be old, with minimal regrowth in understory. The only younger trees tend to be on recently exposed ground such as abandoned river channels. Hillside stands often have alder understory and associated elderberry, bluejoint reedgrass, and ferns.
Dense Cottonwood Forest	Scattered stands of riparian cottonwood with cover generally >70%. These stands are primarily from Karluk Lake and the head of Deadman Bay to the northern part of Kodiak Island. Stands tend to be dominated by mature and decadent cottonwood. Tree understory cover is frequently dominated by bluejoint reedgrass, ferns and scattered forbs.

Open Alder	<p>Alder forming patches of 20% to 50% cover. Elderberry and salmonberry fringe these patches, with ferns and forb meadow between the shrub patches. Occasionally alder forms windblown prostrate patches at upper limits of growth, but generally there doesn't seem to be obvious environmental control on alder density. This class has been subdivided into four association types, named according to the types associated with the open alder clumps:</p> <p>Open alder with forb meadow</p> <p>Open alder-scattered Sitka spruce</p> <p>Open alder-scattered cottonwood and/or birch</p> <p>Open alder-salmonberry-elderberry</p>
Dense Alder	<p>Alder stands forming dense thickets of 60% to 100% closure. Elderberry and salmonberry usually are woven in among and around the edges of the alder patches. Beneath the alder, ground cover is litter, with scattered maidenhair fern, grasses, and spindly salmonberry.</p>
Low Willow	<p>Open to closed thickets of low willows (<i>Salix pulchra</i>, <i>S. barclayi</i>). Low willow stands often occur above the alder limits in mountain valleys, growing along the streams and up gentle slopes where they grade into alpine forb or moss/sedge wetland types. In the Refugium area of southwestern Kodiak, a low, wet community is typically found in broad valley floors and side slopes, in similar physiographic position to alder stands throughout the glaciated portion of Kodiak Island.</p>
Tall Willow	<p>Occasional stands of tall willows (<i>Salix sitchensis</i>, <i>S. alexensis</i>) growing outside of cottonwood stands along floodplains of larger rivers.</p>
Alder and Willow Mix	<p>Low willows mix into alder stands, particularly along streams and at upper limits of alder growth. These stands may have slightly moister soils than do pure alder stands. Seems to be limited to hills and mountain valleys of central and southwestern Kodiak Island.</p>
Salmonberry-Elderberry	<p>This type, dominated by salmonberry (<i>Rubus spectabilis</i>) and elderberry (<i>Sambucus racemosa</i>), grows primarily around and in alder thickets, but may occasionally form larger patches. Proportions vary, although cover of salmonberry is usually higher. Ferns, grasses, and some forbs may coexist with the shrubs, but these are generally dense communities.</p>
Salmonberry-Devil's Club-Elderberry	<p>This community occurs primarily in recently logged areas, where it appears the original devil's club (<i>Oplopanax horridus</i>) flourishes with sunlight, and elderberry and salmonberry move into previously forested stands.</p>
Alpine Tundra	<p>Variety of small alpine communities, often a mosaic of prostrate shrub tundra, alpine heath, and alpine forb. Mixture of bedrock, snowbank accumulation, and exposed surfaces. Sometimes, very prostrate spruce or alder form as much as 10% of cover.</p>

Alpine Heath	High-altitude crowberry (<i>Empetrum nigrum</i>) and leutkea (<i>Leutkea pectinata</i>) heath with blueberry and other mat shrubs. Cover often as much as 70% of unit, with moss on rock, scattered fruticose lichens, and sparse forbs such as lupine and anemone.
Prostrate Shrub Tundra	Sparsely vegetated bedrock with prostrate ericaceous shrubs, generally at high altitudes. Usually dominated by crowberry and leutkea, with blueberry, alpine azalea, and other mat-forming shrubs. Rock generally 50% to 70% of unit cover.
Heath	Crowberry-dominated cover with scattered dwarf willows, blueberry, cranberry, Labrador tea, and bearberry. The moss <i>Racomitrium lanuginosum</i> is a dominant ground cover and gives the areas a dusty appearance. Heath grows over large areas of flat to gentle slopes of southern Kodiak Island and in stringers and patches on higher parts of alpine areas and dry stringers in forb meadows on steep slopes. A subtype—Heath Bedrock—grows on bedrock knobs in breaks in the spruce forest on Shuyak Island.
Heath Hummocks	Crowberry forming nearly continuous mats over hummocks 4–10 inches tall. Blueberries, cranberries, and scattered forbs often present. Primarily in valley floors in southwestern and southern portions of Kodiak Island and on Sitkinak Island.
Heath Hummocks with Forbs	Crowberry hummocks with dense forbs growing between them, giving appearance of forb meadow. Dominant forbs are fireweed, goldenrod, lupine, and Jacob's ladder. Occurs primarily on the Aliulik Peninsula of southern Kodiak Island.
Heath with Forbs	Crowberry dominated heath with moderate forb cover. Forbs are primarily lupine, Jacobs ladder, short fireweed, grasses. Similar to hummocks with forbs, except heath has no hummocky form.
Alpine Forb Meadow	Similar to general forb meadow, but grows on steeper slopes above the alder zone. Very diverse collection of forbs with grasses and ferns. Growth is seldom more than 2 feet deep. Woody plants are sparse—maybe a few salmonberry in low spots. Heath stringers often run down dry micro-ridges.
Fern Forb Meadow	Forb meadows dominated by lady fern (<i>Athyrium filix-femina</i>) with fireweed, pushki, and bluejoint reedgrass. Grows in slightly cooler, moister environments, forming whole hillsides with scattered patches of alder or in swales of steeper hills.
Fireweed Forb Meadow	Forb meadow as described previously, dominated by fireweed (<i>Chamerion angustifolium</i>) usually with ferns, bluejoint grass, and often pushki. Large expanses on gentle slopes from Raspberry Island south to Karluk Lake.
Forb Meadow-Mixed	Varied and widespread type throughout the Archipelago. Rich mixture of forbs, grasses, and ferns forms continuous cover in meadows, often with salmonberry in swales. Stands are 3 feet or more deep. Groundcover is scattered mosses with litter. Forb meadows grow on all slopes and aspects with mesic moisture regime. Windswept coastal headlands, old beach ridges, hillside slopes, woven thickly throughout alder stands, and regrowth in logged areas.
Salmonberry-Forb Meadow	Forb meadows dominated by salmonberry mixed with grasses, lady fern, and a diversity of forb species. These meadows are often in openings of open alder or subalpine hill slopes. The salmonberry bushes are the same height as the herbaceous species, generally 1.5–3 feet deep.
Elymus Forb	Grasslands near marine waters with <i>Elymus arenarius</i> and mix of forbs, often pushki, goldenrod, fireweed, paintbrush, and lupine.
Elymus Grasslands	Grasslands dominated by <i>Elymus arenarius</i> , beachpea, and beach fleabane generally narrow beach ridges, often subject to salt spray or storm tides.

Bluejoint Reedgrass/Forb Meadow	Forb meadows dominated by bluejoint reedgrass (<i>Calanogrostis canadensis</i>), usually with ferns and scattered forbs. In recent logging, these areas tend to be areas where groundcover was disturbed. On upper hillsides, grasses dominate on slightly drier, higher ground, often with salmonberry and ferns in moister swales.
Mixed Grasslands	Stands often dominated by bluejoint grass but mixed with other grasses, sedges, and forbs. Occurs in several environments: just higher and inland of sedge marshes, fringes of wetlands, recently logged areas, and patches in forb meadows.
Dwarf Shrub/Moss Wetlands	Wetland areas with sparse cover (approximately 10%) of dwarf birch and/or low willows and moss groundcover. Wetland forbs, sedges, and crowberry heath grow under the shrubs. Common species include marsh five-finger, cloudberry, sedges, and cottongrass. This type occurs in the refugium area of southwestern Kodiak Island and the Trinity Islands south of Kodiak Island.
Sweet Gale Wetlands	Wetland areas dominated by sweet gale (<i>Myrica gale</i>) and sedges, often cottongrass, with moss ground cover. Wetter than wetlands with dwarf birch. Located in draining or drying ponds and gentle deltas.
Sweet Gale-Dwarf Birch Wetlands	Some areas of wetlands and drained beaver ponds support moderate cover of sweet gale and dwarf birch (<i>Betula nana</i>) along with the moss/sedge type described earlier. Not common, but scattered throughout Archipelago.
Ericaceous Lichen Bog	Hummocky wetlands dominated by evergreen shrubs, such as dwarf birch, and blueberry with fruticose lichens on upper surfaces of the hummocks. Occurs mostly in Refugium area of southwestern Kodiak Island.
Graminoid Wetland	Wetland type dominated by grasses and sedges. Wetter than sedge/moss wetlands and having no moss ground cover. Primarily occurs in refugium area in southwestern Kodiak Island.
Sedge/Moss Wetlands	A wide variety of mosses and various sedges grow on wetlands and drained lake beds throughout the Archipelago. Many valleys have multiple generations of beaver ponds that often support sedge/moss wetlands. <i>Sphagnum</i> s predominate moss cover, with sedges, cottongrass, and rushes and scattered forbs such as marsh five-finger, sundews, and cloudberry. Crowberry and blueberry may grow on higher hummocks.
Sedge Marsh	Pure stands of Lyngbye's sedge (<i>Carex lyngbyei</i>), flooded by tides on daily to monthly basis, along tidal sloughs and slightly inland. Heads of long fjords.
Aquatic Emergents	Common in shallow ponds and wetlands throughout the Archipelago. Shallow lakes are often covered with water lilies and horsetails with bog buckbean and mare's tail (<i>Hippuris</i> sp.) in shallow slow streams or standing water.
Eelgrass	Dense eelgrass (<i>Zostera marina</i>) beds grow in shallow protected tidal lagoons at mouths of streams around all Archipelago islands.
Kelp Beds	Some tidal mudflats have moderate cover of popweed (<i>Fucus distichus</i>) and other algae.
Bull Kelp	Thick communities of bull kelp (<i>Nereocystis leutkeana</i>) grow just offshore of rugged rocks and islands north of Shuyak Island.
Clear Fresh Water	Areas of fresh water lakes where water depth generally exceeds one meter.
Marine Water	Offshore waters of Gulf of Alaska and Shelikof Strait.

Shallow or Sedimented Fresh Water	Fresh water lakes with shallow, generally mud bottoms.
Shallow or Sedimented Marine Water	Generally tidal lagoons; depends on tide stage.
Snow and Permanent Ice	Persistent, late-lying snowbanks and small glaciers on north-facing exposures of highest mountains.
Sand, Asphalt and Gravel Roads	Areas of human development around City of Kodiak, villages, and logging areas.
Bedrock	Mountaintops down spine of Kodiak Island, generally granite, some bedrock knobs on Shuyak Island and offshore rocks. Often has snowbanks and stringers of prostrate shrub tundra or talus.
Talus	Mostly broken bedrock below outcrops of bedrock on steep slopes and cliffs. Also includes scree slopes of various pitch where ultramafic sedimentary outcrops occur in the Kodiak Island Refugium.
Mud Flats	Tidal mud or sand flats subject to daily flooding; scattered kelp.
Sand and Gravel-Beaches	Large marine beaches along coast; driftwood and floats.
Sand and Gravel-River Bars	Annual flooded gravel bars in large rivers and in flashy rivers of Shearwater Peninsula.

¹ Complete descriptions and photographs can be found in Fleming and Spencer (2005)

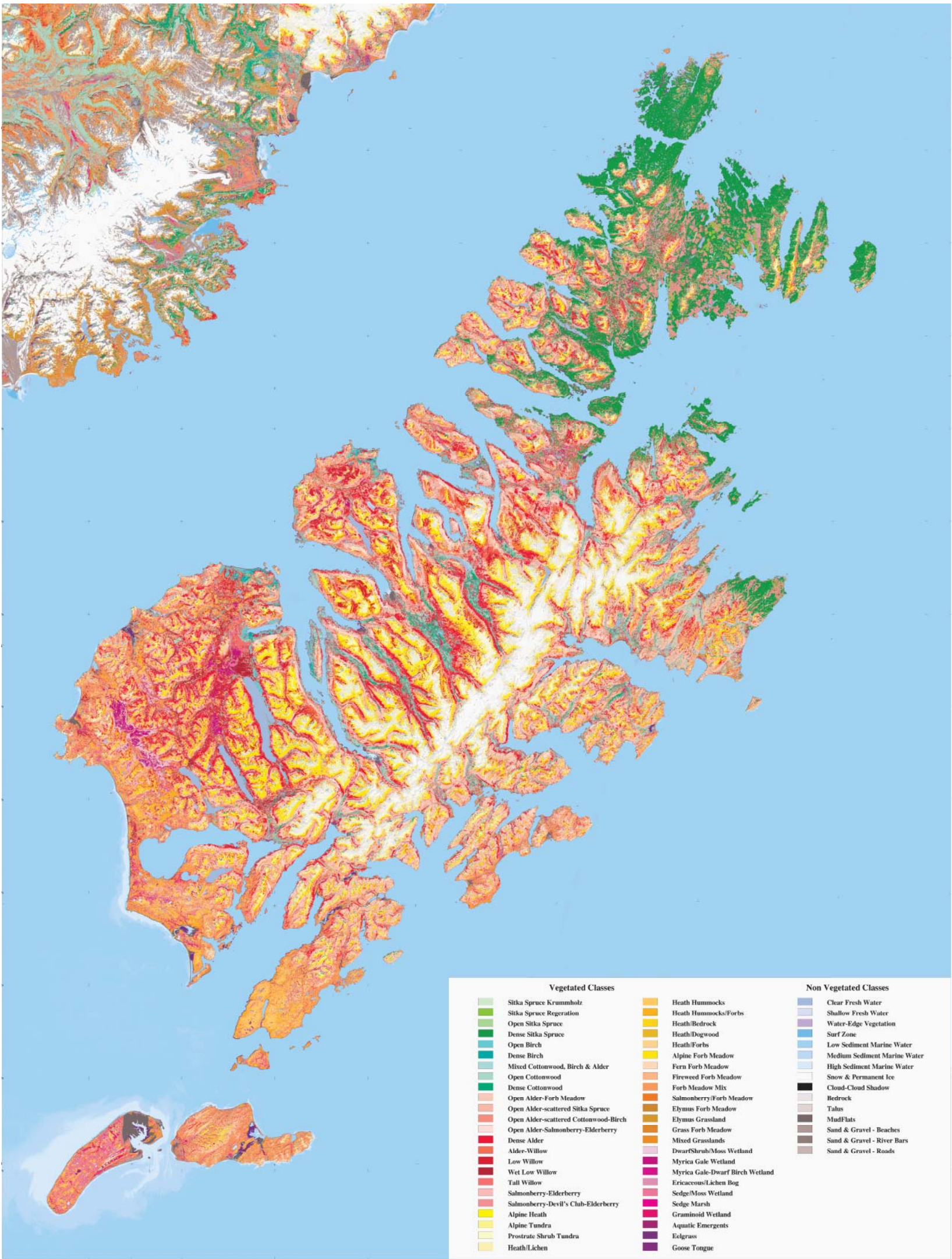


Figure 3-3 Distribution of vegetation communities on the Kodiak Archipelago

The majority of refuge lands are on Kodiak and Uganik islands. These lands are very different from the forested lands of Afognak Island. Although less dominant over the landscape, spruce forests are present south to a line extending roughly from Viekada Bay southeast to Narrow Cape. To the south is a series of long fjords, river valleys, and intervening ridges reaching northwest off the granite spine of Kodiak Island and with short, steep valleys to the southeast. Deciduous forests grow along the rivers, with alder and forb meadow blanketing the side hills, and alpine or barren types above 2,500 feet. Kodiak Island's remnant glaciers perch in steep mountains found in this area.

The lowland area of southwestern Kodiak Island, commonly referred to as the Kodiak Refugium, is the only area of Kodiak Island that was not covered by glaciers during the Pleistocene Era, about 12,000 to 20,000 years ago. Large proglacial lakes, which formed in valleys, are now large wetlands on the valley floors. This area is considered unique to Kodiak Island, with heath-dominated vegetation similar to that found on Arctic and Bering sea coasts. South of Olga Bay and on the lower Aliulik Peninsula, the landscape is similar to that of the Aleutian Islands and Alaska Peninsula and has rolling, subdued terrain covered by crowberry (*Empetrum*) heath and forb meadows.

Cover Mapping. The first Kodiak Archipelago vegetative mapping effort was completed in 1984. Land cover classes that were recorded represented units of land with minimum areas of 500 acres. Names applied to cover classes were derived from the categories developed by Viereck, Dyrness, and Batten (1982). A new mapping effort was completed in 2005 by the U.S. Geological Survey's Alaska Geographic Science Center, using Landsat 7 ETM+ satellite images. (See Figure 3-3.) One of the project objectives is to develop, test, and select the best analysis procedure(s) for interpretation, delineation, and classification of a vegetative and land cover map for the entire Kodiak Archipelago. By using images from different portions of the growing season, more detail in mapping categories is achieved.

From this latest mapping effort, information has been collected about occurrence and aerial extent of land cover classes. With this information, community composition within and outside the refuge boundaries may be compared. Figure 3-4 lists vegetation communities and their level of abundance within Kodiak Refuge and on the Kodiak Archipelago.

Although parts of the Refuge, especially Afognak Island, are covered in Sitka spruce forest, it is easy to see that the majority of this forest is outside the refuge boundary. On the other hand, the Refuge includes large tracts of shrub, dwarf shrub, and meadow lands, which are highly productive areas for migratory birds, salmon, and many mammals. Other specialized habitats occur within the Refugium area of southwestern Kodiak Island. For example, the area harbors a unique assemblage of low-growing forb species whose distribution

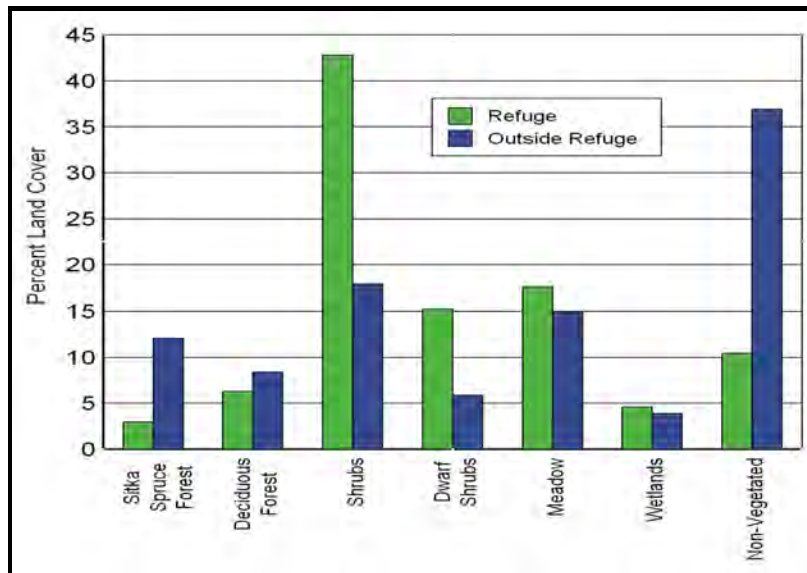


Figure 3-4 Percentage cover of terrestrial and fresh water vegetation types within Kodiak Refuge and the Kodiak Archipelago

on Kodiak Island is restricted alpine settings or in the case of the Refugium, ridges and mountain slopes composed of ultramafic sedimentary rock scree. Wetland types—including dwarf shrub/moss wetlands, ericaceous lichen bog, sedge moss wetlands, and graminoid wetlands—are limited to the Refugium and are found in no other areas of the Archipelago. Other wetland types—including sweet gale wetlands and areas of aquatic emergents—are concentrated in the Refugium.

Nonnative Invasive Plants and Influence of Introduced Fauna.

Numerous invasive nonnative plants have been introduced into the City of Kodiak and likely into the villages, canneries, and old ranches around the islands. To date, exotic plants do not seem to be having serious ecosystem impacts, although the Service is working to eradicate a population of orange hawkweed that has invaded Camp Island in Karluk Lake. Invasive plants have high potential, however, to cause major impacts as they have done in many areas of the country outside Alaska.

Native fauna of the Archipelago is limited to six land mammals: brown bear, river otter, red fox, short-tailed weasel, tundra vole, and the little brown bat. We surmise that none of these species, except perhaps the tundra vole, exerted much influence on the historical development and composition of vegetation communities. This context likely changed after many non-native herbivorous mammals were introduced to the Archipelago.

In the past 80 years, humans have introduced mammal species that have established viable populations on the Archipelago: beaver,

mountain goat, Roosevelt elk, muskrat, red squirrel, reindeer, Sitka black-tailed deer, and snowshoe hare. Except for marten, all these species are grazers or browsers that could have unintended effects on the vegetation communities and ecosystem dynamics of the Archipelago. For example, some species such as beaver and red squirrel, could affect plant communities directly by damming streams or building large spruce-cone caches. Goats could impact alpine tundra areas and could overgraze some alpine forb habitats. The deer population, which fluctuates significantly depending on winter weather, may be affecting localized stands of vegetation. When populations are high and during period of deep winter snow, they browse heavily on available vegetation, including sprouts and seedlings. On Kodiak Island, refuge staff have seen some severely hedged stands of deciduous shrubs as well as shrub and tree stands dominated by oldest age classes. Prevalence of hedging and old age classes could be associated with single or combined affects of browsing by vole, hare, and deer. Studies, such as those proposed under the objectives of Chapter 2, are needed to ascertain the influence of, and recommend management strategies for, non-native fauna in Kodiak Refuge.

Influence of Fire. Although naturally ignited fires on the Refuge are rare, human-caused fires do occur more frequently. Table 3-7 represents the fire history of Kodiak Refuge from 1984 through 2002. Most fires on the Refuge occur in early spring or late fall when dried grasses are easily ignited. Little is known about effects of fire on the vegetation communities of the Archipelago.

Table 3-7 Fire history on Kodiak Refuge, 1984–2002

Year	Refuge acres burned	Cause
1984	146	Human
	2	Natural
1989	6	Human
1992	5	Human
1996	1,750	Human
1997	8,900	Unknown
1999	5	Human
2000	700	Human
2002	310	Human
Total	11,824	

3.2.2 Fish and Wildlife

As of 2004, 286 species of fish and wildlife have been recorded on Kodiak Refuge and adjacent areas: 13 freshwater and anadromous fish, 242 bird, and 30 mammal species. Appendix G is a list of fish and wildlife species found on the Refuge.

Fish

Refuge lands include some of the most pristine and productive salmon habitat in the Kodiak Archipelago. There are 348 streams in the Archipelago that are identified by ADF&G as having salmon returning to them annually, and 117 (34 percent) of these streams flow within the refuge boundary. These watersheds range in size from the 236-square-mile Karluk River drainage to small ones of less than five square miles (USFWS 1987). Drainages located on the southwestern portion of the Refuge (Kodiak Refugium) provide one of the highest diversities of freshwater habitat and species abundance per unit area found anywhere in Alaska or the Pacific Northwest. It is estimated that, in 1989 during the *Exxon Valdez* oil spill, when there was a very limited commercial salmon fishery, the total numbers of spawning salmon in refuge streams exceeded 26 million fish (ADF&G 2002a, USFWS 1989).

These large salmon runs play a key role in maintaining the health and productivity of the Kodiak Archipelago ecosystem. Beyond their intrinsic and economic values, spawning salmon and their decomposing carcasses offer a vital source of energy and nutrients for many other species. A report by Cederholm et al. (2000) summarizes research conducted by a variety of agencies over the years and demonstrates the interdependence of salmon, wildlife, plants, and their habitats.

Salmon also support many people through subsistence, recreation, and commercial activities and indirectly through service and support industries to the fishers. The average commercial salmon harvest in the Kodiak Archipelago from 1982 through 2004 was approximately 18.7 million fish worth an ex-vessel value to fishermen of approximately 35.4 million dollars (range 13.6 to 103.8 million dollars). Refuge-based salmon stocks consisted of approximately 78 percent (14.6 million fish) of this total harvest (Brennan 2005). Further information on the economic values of salmon is presented later in this chapter.

Generally, Kodiak salmon are managed for wild production. Salmon restoration and enhancement are fishery management tools. Currently there are three enhancement projects operating within refuge boundaries: Frazer Lake fish pass on southwestern Kodiak Island, Hidden Lake on northwestern Afognak Island, and Spiridon Lake on the western side of Kodiak Island. These projects are authorized by the Refuge, managed by ADF&G, and funded by the Kodiak Regional Aquaculture Association.

The intent of these enhancement projects is to increase the amount of salmon available for commercial harvest. Fishery monitoring data for these projects indicate successful enhancement projects and has provided for an effective commercial fishery. Environmental assessments and findings of no significant impact were completed in 1991 for Spiridon Lake and in 1992 for Hidden Lake. Special use

permits have been issued and are valid only as long as the project goals and operations do not change significantly. A report on each lake by ADF&G is due to the Refuge by the beginning of each March.

Fish Diversity. Five species of Pacific salmon are native to the streams on the Refuge: Chinook (king), sockeye (red), pink (humpback), chum (dog), and coho (silver). In addition, resident rainbow trout, steelhead trout, Dolly Varden, and Arctic char are found on the Refuge.

Of the 117 streams on the Refuge, many support more than one species of salmon. Two of these streams, the Ayakulik and Karluk, support large (>10,000) runs of Chinook, 10 support sockeye, 62 have coho, all 117 have pink salmon depending on the year, 46 have chum, eight have steelhead, seven have populations of resident rainbow trout, and most support Dolly Varden. Arctic char have only been documented in Karluk Lake. Table 3-8 displays the various salmonid species found on the Refuge and basic life history information (ADF&G 1985).

Table 3-8 General information on fish species of Kodiak Refuge

Species	Immigration	Spawning	Years in Fresh Water	Years at Sea	Age at Return	Size at Return (lbs)
Sockeye	Late-May–September	Late-July–October	1–3	2–3	4–6	4–8
Pink	July–August	August–September	0.5	1–1.5	2	3–4
Chum	June–August	Mid-July–September	0.5	1–4	2–5	7–18
Coho	August–September	October–December	1–3	1–2	2–5	7–20
Chinook	Late-May–June	July–August	1–2	2–4	4–6	15–40
Steelhead	August–January	Late-April–May	1–4	2–3	5–8	8–25
Rainbow	N/A	April–May	0–9	0	N/A	< 8
Dolly Varden	July–November	September–December	3–4	0.3–1	4.5–6	< 10

There are approximately 450 miles of freshwater streams within the refuge boundary. Approximately 73 percent of these stream miles are used by salmon for spawning or rearing. In addition, there are 16 lakes ranging in size from approximately 0.4 to 15.2 square miles that are used by spawning or rearing salmon and Arctic char. The freshwater salmon habitats on the Refuge are some of most productive within the ADF&G Kodiak Management Area.

Sockeye Salmon. The commercial value and economic importance of sockeye make it an extremely important fish species on the Refuge. Sockeye normally start entering refuge freshwater systems in late May. Early-run sockeye spawn in late July through mid-August, while late-run sockeye spawn in mid-September through October. Spawning habitat consists of gravel-bottomed streams and lake beaches. Sockeye fry emerge from the gravel in late spring (March through June) and migrate to lakes where they remain for one to three years feeding mainly on zooplankton. Sockeye smolt migrate to saltwater mid-May through early July, peaking in late May or early June. Smolt emigration from Afognak Island systems peaks about a week later than on Kodiak Island systems. Most smolt emigrate from the Upper Station system from mid-May through June, with an age 0 component emigrating from late July through August. Sockeye spend two to three years in the northern Pacific Ocean before returning to their natal streams to spawn. Sockeye populations in the Karluk, Upper Station, and Akalura drainages include both early and late run fish.

Pink Salmon. Pink salmon are the second key commercial species on the Refuge. The size of the pinks returning to each drainage varies depending upon even or odd year strength of the individual stock. The even-year cycle dominates total refuge returns with the largest spawning populations occurring in the Ayakulik and Karluk drainages. Spawning typically occurs from intertidal waters upstream to headwater areas. Returning pinks arrive in large numbers by mid-July and are abundant through mid-August. Pinks usually do not spawn until August and September. Eggs develop in the gravel during winter, and juveniles emerge from mid-March into May (later emergence on Afognak Island). Pink salmon fry migrate almost immediately to saltwater. There they spend the next one to one and one-half years maturing; at age two they return to spawn.

Chum Salmon. Chum salmon are the third most abundant salmon species occurring on the Refuge. Chum salmon returning to the Sturgeon River in early June constitute one of the earliest and most important runs for brown bear on the Refuge (Chatto 1998, Price 2001). Throughout Kodiak, returning chums arrive in large numbers by mid-July and are abundant through mid-August. Chum salmon rarely spawn before mid to late July. Spawning typically occurs from the intertidal waters upstream to headwater areas and can occur up through the end of September in some streams. Eggs develop in the gravel during the winter, and emergence usually occurs in April and May when fry move immediately downstream to saltwater. Chums return to spawn after spending one to four years in the ocean.

Coho Salmon. Coho spend considerable time in freshwater before spawning; they enter streams in August and September after one year in the ocean and spawn from October through December. Spawning habitat is usually small- to medium-sized gravel at the head of riffles in shallow tributaries and narrow channels, but some coho also select mainstream areas for spawning. Coho fry emerge from the gravel in

late spring and spend one to three years in freshwater before migrating to the sea as smolts in May through mid-July.

Chinook Salmon. Chinook salmon on the Refuge are found in the Karluk, the Ayakulik-Red, and the Dog Salmon river drainages. Chinook start entering river systems in late May, and runs usually peak during mid-June. Preliminary data from recent studies have shown that populations of Chinook in the Karluk and Ayakulik rivers may be genetically distinct, both between and within drainages (Spearman 2004). Spawning takes place in July and August; adults select medium to large gravels in mainstream river areas and some tributaries. Chinook fry emerge from the gravel in the spring and typically remain in freshwater one to two years. Chinook smolts enter the ocean and spend two to four years at sea prior to returning to freshwater streams to spawn.

Steelhead and Rainbow Trout. Major populations of native steelhead occur on the Karluk and Ayakulik drainages. Steelhead production in these rivers is one of the highest in Alaska. Other systems where steelhead are present include Dog Salmon, Sturgeon, Uganik, Upper Station, Akalura, and Little river drainages. Recent studies have shown the populations of steelhead in the Karluk, Ayakulik, and Sturgeon rivers are genetically distinct (Krueger *et al.* 1999).

Adult steelhead normally enter freshwater systems August through January; peak migration periods are unknown. Spawning usually occurs late April through May in riffle areas having small gravel substrate. After spawning, steelhead adults return to the ocean. Steelhead fry emerge from the gravel in late summer and may spend one to four years in freshwater prior to migrating to the sea as smolts. Ocean residence for steelhead is two to three years; some fish may return to spawn as many as three times.

The distribution of rainbow trout is nearly identical to that of steelhead. The major rainbow trout areas are the Dog Salmon, Upper Station, Little River, Karluk, Ayakulik, and Uganik drainages.

Dolly Varden and Arctic Char. The Refuge supports anadromous and resident populations of Dolly Varden. These are the most widely distributed sport fish on the Refuge. Dolly Varden are fall spawners, returning to streams from midsummer through late fall. Spawning occurs from September through the end of December. After spawning, anadromous Dolly Varden seek lake or river systems in which to overwinter. Dolly Varden return to their natal stream to spawn. Kodiak Refuge lakes known to be important Dolly Varden overwintering areas include Uganik, Little River, Ayakulik, Karluk, Akalura, and Upper Station. Dolly Varden fry emerge in the spring and remain in the streams for three to four years before migrating to sea. They may remain at sea only six to eight weeks before returning to freshwater lakes for overwintering.

Little is known about Arctic char. We do know there is a population in Karluk Lake and that these char are not anadromous. A population estimate study was initiated in Karluk Lake in the summer of 2001 and it is expected to run through 2006.

Birds

Kodiak Refuge's coastline—including cliffs, inlets and bays, interior valleys, alpine, and tundra areas—provide abundant habitat for a variety of birds. A total of 242 bird species have been observed on the Kodiak Archipelago with more than 160 species recorded on the Refuge (see Appendix G). The Refuge provides nesting habitat for more than 100 bird species, of which the bald eagle is the most prominent. About 600 nesting pairs use the Refuge—likely one of the highest densities in North America for a resident population of nesting bald eagles. Some 2,500 to 3,000 bald eagles also winter here. More than 1.5 million pelagic seabirds and sea ducks winter in bays and estuaries adjacent to the Refuge.

Waterfowl. Annual production is estimated to be approximately 200 to 400 broods within the four surveyed production areas (Ayakulik, Spiridon, Olga Flats, and Karluk). Because of the scattered distribution and the unknown status of refuge wetland habitats, expanding waterfowl production estimates to the entire Refuge would not provide accurate estimates. Species, listed in descending order of estimated relative abundance, include: mallard, green-winged teal, American widgeon, Barrow's goldeneye, common and red-breasted merganser, greater scaup, northern pintail, gadwall, and harlequin ducks.

Refuge staff annually monitor the presence, abundance, and distribution of harlequin ducks on Kodiak Refuge's major watersheds relative to changes and increases in public use patterns. Harlequin ducks' need for pristine, fast-water habitats has strengthened the species image as an indicator of high quality and productive riparian areas. Increased awareness of the susceptibility of harlequin duck to human disturbance (Cassirer *et al.* 1996, Hunt 1994, Rinkelberg 1997, Wallen 1987) and the inclusion of the harlequin duck as a Bristol Bay–Kodiak Island ecoregion monitoring species has enhanced the duck's regional management status and focused local data collection efforts on Kodiak Refuge's major riparian areas.

More than 1,172 harlequin duck observations have been made on the Refuge, including a minimum of 54 broods containing 172 young that were found on interior freshwater habitats. Harlequin duck broods have been documented in eight major watersheds and one minor watershed of Kodiak Refuge since 1994 (Zwiefelhofer 2002b). Results of genetic testing found no genetic differences among wintering populations of harlequin duck in the Northern Gulf of Alaska (Lanctot *et al.* 1999).

From 1996 through 2002, a total of 585 (430 males, 155 females) harlequin ducks was banded. Thirty-two hunter-kills of Kodiak banded harlequin ducks (30 males, two females) occurred on the Kodiak Archipelago from September 1, 1996, through December 31, 2002. Mortality from recreational hunting of banded male harlequin ducks was approximately 7 percent (30 of 430) during this period. Kodiak Archipelago has the highest recreation harvest of sea ducks of any hunting area in Alaska. During the 2002-2003 hunting season, 21 individuals were registered to guide sea-duck hunters on Kodiak Island. The majority of the recreation harvest centers on acquisition of sea ducks for taxidermy trophies and not as food.

Winter seabird and sea duck surveys conducted since 1979 estimate the winter population of sea ducks at 150,000 to 200,000 ducks in the nearshore waters surrounding Kodiak Island (Forsell and Gould 1981). Population increases have been seen in Barrow's goldeneye, harlequin ducks, common mergansers, and red-breasted mergansers. Relatively stable populations were found for surf scoters, black scoters, and long-tailed ducks (oldsquaw). White-winged scoters have shown a small decline over the past 20 years. Following the *Exxon Valdez* oil spill, declines were seen in Barrow's goldeneye, long-tailed ducks, and all scoters but not in harlequin ducks or mergansers.

Winter aerial surveys have been conducted on Kodiak Island for Steller's eiders (1992, 1993, 1994, and 2001) and emperor geese (1987–1988). Steller's eider counts along the eastern coast of Kodiak Island ranged from 2,900 to 5,300 (Larned 1994, 2001); emperor geese numbers on Tugidak, Sitkinak, and southern Kodiak islands ranged from a low of 300 (in 1988) to a high of 2,000 (in 1987) birds. The North American breeding population of Steller's eiders is considered threatened under the Endangered Species Act. Due to extensive population declines, king eider, black scoter, and long-tailed duck are listed as species of concern (Gotthardt *et al.* 2002).

Marsh and Waterbirds. Red-necked grebe, common loon, and red-throated loon are known to nest on Kodiak Refuge; they occur in low densities scattered throughout a variety of wetlands around the Archipelago. An estimated 2,500 to 3,000 loons and 3,600 to 4,000 grebes made up of four loon species (Pacific, common, red-throated, and yellow-billed) and two grebe species (horned and red-necked) overwinter in Kodiak marine waters. Population increases were seen over the past 20 years in horned grebe, red-necked grebe, and the assemblage of loon species. Combined estimates of loon winter populations from four winter survey areas (Uyak and Uganik bays, eastern and western Sitkalidak Island) included 2,000 to 2,200 Pacific loons, 400 to 500 common loons, and 150 to 200 each of red-throated and yellow-billed loons. Yellow-billed loon is designated a State of Alaska Species of Special Concern.

Shorebirds. While Kodiak Refuge has only minimal shorebird habitat, at least 42 species of shorebirds have been observed on the

Archipelago. While no estimate of relative shorebird abundance on Kodiak Refuge exists, species known to nest on the Refuge include semipalmated plover, greater yellowlegs, wandering tattler, spotted sandpiper, common snipe, least sandpiper, surfbird, rock sandpiper, short-billed dowitcher, and red-necked phalarope.

Marine birds. More than 140 seabird colonies, occupied by 350,000 breeding birds, are found along the Kodiak Archipelago's rugged coastline (Sowls *et al.* 1978). Tufted puffin and black-legged kittiwake make up about 57 percent and 30 percent of these breeding seabirds, respectively. Other breeding seabirds found along the Refuge coastline include glaucous-winged gull; mew gull; pigeon guillemot; pelagic, red-faced, and double-crested cormorants; horned puffin; marbled and Kittlitz's (nests in high alpine areas of the Refuge) murrelets; common and thick-billed murres; Leach's and fork-tailed storm petrels; and Arctic and Aleutian terns.

Results from winter seabird surveys conducted in Uyak and Uganik bays and eastern and western Sitkalidak Island since 1979 indicated that more than 1,500,000 birds winter in the nearshore waters surrounding Kodiak Island (Forsell and Gould 1981). Common murre is the most abundant seabird, making up about 65 percent of the total wintering population. Other prominent wintering species include glaucous-winged and mew gulls; crested auklet; pelagic, red-faced, and double-crested cormorants; pigeon guillemot; marbled and Kittlitz's murrelets; and northern fulmar. Kittlitz's murrelet is under consideration for listing under the Endangered Species Act (see Threatened and Endangered Species). Overall combined density of marine birds in four study areas showed considerable variation, but no discernable trend, over the 20-year period of surveys. Among individual species, relatively stable populations were found for cormorants, common murre, and marbled murrelet. Contrastingly, pigeon guillemots have declined by more than 50 percent.

Raptors. Eighteen raptor species are found on the Refuge. Bald eagle is the most common and abundant raptor to be found along the Kodiak coastline and major drainages. Other raptors nesting on the Refuge include rough-legged hawk, northern goshawk, golden eagle, northern hawk owl, Peale's peregrine falcon, and short-eared and boreal owls. Raptor migrants and accidental visitors to the Refuge include northern harrier (marsh hawk), gyrfalcon, merlin, snowy owl, Steller's sea eagle, and American kestrel. In 1921, a type specimen confirming the presence of Steller's sea eagles in North America as casual visitors was taken for the Smithsonian Institution at Karluk Lake on the Refuge (Bent 1961).

During 2002, a total of 1,133 bald eagle nests was located on the Refuge; 628 nests were active or occupied. Of those nests determined to be active or occupied in May, 598 (95 percent) were rechecked. A total of 319 of the 598 nests checked were successful in producing a total of 520 young (Zwiefelhofer 2002a). Since aerial surveys began on the Refuge in 1963, bald eagle nesting activity has

increased nearly 248 percent, with an estimated 160 percent increase in total nest production. A total of 154 color markers were attached to Kodiak bald eagle nestlings prior to fledging (1982–1987) with 54 of the nestlings also fitted with radio transmitters to determine juvenile and subadult bald eagle migration and movement patterns. Based on the collected telemetry and banding data (unpublished), bald eagles hatched on Kodiak Refuge appear essentially resident. A winter influx of Kenai Peninsula bald eagles (unpublished banding and telemetry data) does occur and probably depends on annual mainland weather conditions. Kodiak Archipelago's wintering bald eagle population is conservatively estimated at 2,500 to 3,000 birds.

Upland Game Birds. The only upland game birds occurring on the Refuge are rock ptarmigan and willow ptarmigan. These species are distributed throughout the Refuge in suitable habitat. Rock ptarmigan are mainly limited to high, rocky subalpine and alpine terrain, while willow ptarmigan occupy wetter tundra and low shrub habitats of lower elevations, especially in western Kodiak Island. Ptarmigan populations are considered to be abundant over the entire Refuge; in local areas, however, population numbers tend to be highly cyclic.

Passerines. Sixty-eight passerine species have been identified on the Kodiak Archipelago. Among these, 44 species have been observed on the Refuge. Common (northern) raven, downy woodpecker, black-billed magpie, belted kingfisher, black-capped chickadee, northwestern crow, red-breasted nuthatch, brown creeper, American dipper, winter wren, northern shrike, pine grosbeak, common redpoll, pine siskin, red crossbill, song sparrow, and snow bunting have been documented as year-round residents of the Refuge. Additionally, 19 less common species of passerines are known to nest on the Refuge. Gray-cheeked thrush, golden-crowned sparrow, Wilson's warbler, varied thrush, and American dipper are species that nest on Kodiak Refuge and are considered priority for conservation in the Western and Southwestern Alaska Region because of threats on their winter or migratory ranges, or because of their limited distribution in Alaska (Boreal Partners in Flight Working Group 1999). The Kodiak subspecies of winter wren is a listed as a species of concern (Gotthardt *et al.* 2002)

Native Land Mammals

Only six species of land mammals occurred naturally on Kodiak Island: brown bear (*Ursus arctos middendorffi*), red fox (*Vulpes vulpes*), river otter (*Lutra canadensis*), short-tailed weasel (*Mustela erminea*), tundra vole (*Microtus oeconomus operarius*), and little brown bat (*Myotis lucifugus*). These species are common throughout the Refuge in suitable habitats.

Kodiak Brown Bear. The Kodiak brown bear flourishes throughout the Kodiak Archipelago. The Kodiak brown bear has been recognized as an endemic subspecies (*Ursus arctos middendorffi*)

based on morphometrics (Hall 1984, Kurten 1973, Rausch 1963); preliminary genetic analysis, however, has not supported this endemic subspecies status (Talbot and Shields 1996). Conservation efforts continue to treat the Kodiak brown bear as a distinct subspecies and population of special conservation value (Miller and Schoen 1999) because it holds a special symbolic value for the public, possesses a distinctly unique skull shape, and apparently has unique genetic characteristics.

The Kodiak brown bear has been isolated from mainland brown bears for some 12,000 years and has survived several historical periods of intense exploitation and ecological disruption (Van Daele 2003b), including overfishing of salmon streams, unregulated hunting, and commercial fur trade exploitation. Collectively, these factors may have limited genetic diversity of Kodiak brown bears (Paetkau *et al.* 1998, Waits *et al.* 1998). Because of potential conservation implications, such as resistance to introduced wildlife diseases, the Service and ADF&G are cooperating on a study to determine genetic diversity of Kodiak brown bears.

Habitat alteration and associated human activities may also influence bear populations (ADF&G 2002b, Van Daele 2003b). On Afognak Island, the second-largest island in the Archipelago, bear habitat differs substantially from habitat on Kodiak Island. On Afognak, a large portion of private forest lands outside the Refuge has been logged. Population data for Afognak bears is limited, bear habitat requirements are poorly understood, and influence of different land uses has not been ascertained. To address these gaps and to improve bear conservation, the Refuge expects to support collaborative research on Afognak Island's bears over the next 15 years (ADF&G 2002b).

Today, the refuge brown bear population is considered healthy and its habitat secure. This status is attributed largely to joint conservation and management efforts by the Refuge and ADF&G (Van Daele 2003b). The refuge bear population is estimated at 2,200 animals (Van Daele 2001a). High regional bear densities have been documented seasonally in the Terror River drainage (Smith and Van Daele 1990), Uganik alpine area (Atwell *et al.* 1980), and Karluk Lake drainage (Barnes Jr. and Smith 1997a, 1998, Troyer and Hensel 1964). The density estimated for the Karluk Lake area, 1.48 bears per square mile, is the highest reported concentration of brown bears in North America (Barnes Jr. and Smith 1998). Apparently, Kodiak brown bears have smaller home ranges, averaging 4 to 19 square miles for females and 9 to 54 square miles for males, compared to brown bears elsewhere in North America (Ballard *et al.* 1982, Barnes Jr. and Smith 1990, Barnes Jr. and Wilker 1998, Berns *et al.* 1980, Smith and Van Daele 1990). The small size of bear home ranges is indicative of the high quality of Archipelago bear habitat.

Brown bears of the Refuge usually emerge from winter dens between early March and late May. Adult males and single adult females generally are the first to emerge, followed by females with one- to three-year-old juveniles, subadults, and females with cubs (Smith 1981, Smith and Van Daele 1990, Van Daele and Barnes Jr. 1990). Females with cubs often remain near their dens for a few weeks before they move to feeding areas (Barnes Jr. and Wilker 1998).

After bears emerge from dens in spring, they disperse widely to forage on succulent emerging forbs, sedges, and grasses on mountain slopes (Clark 1957). Some animals also descend to near sea level to feed on herbaceous vegetation, amphipods, kelp, and carrion (Barnes Jr. and Wilker 1998, Clark 1957). The arrival of salmon in streams and lakes causes an abrupt change in bear distribution and feeding habits. Bear use increasingly focuses in places along lowland streams and lake shores where salmon can be easily caught (Barnes Jr. 1990). Primary areas where foraging bear concentrations occur include Karluk Lake, Red Lake, Dog Salmon River, Aliulik Peninsula, and heads of bays (Barnes Jr. 1990, Barnes Jr. and Wilker 1998, Smith and Van Daele 1990, Troyer and Hensel 1969, USFWS 1993a, Wilker and Barnes 1998). Depending on the area, salmon are available to bears from mid-June through about mid-December. During a brief period between late June and early August, bears also congregate in alpine areas in the central and northern portions of the Refuge. There they feed primarily on nutrient-rich sedges and forbs newly emerged after the snow melts (Atwell et al. 1980, Smith and Van Daele 1990).

Berries are integral seasonal components of bear diets (Clark 1957, Troyer and Hensel 1969). On Kodiak Island, bears begin foraging on salmonberries in late June. During mid July, use gradually shifts to elderberries—even before the crop ripens (Troyer and Hensel 1969). By early August, elderberry foraging tends to dominate daytime bear activity (Troyer and Hensel 1969), evidence of which can be readily observed on brushy mountain slopes. In late summer and fall, bears also feed on lowbush cranberry, highbush cranberry, blueberry, bearberry, crowberry, and devilsclub (ADF&G 2002b, Clark 1957, Troyer and Hensel 1969). Failure of berry crops can affect bear productivity, alter bear distribution, and promote confrontations with people (ADF&G 2002b). As local supplies of berries wane, bear foraging increasingly reverts to fall-run salmon and other food sources. Sockeye and coho salmon contribute importantly to bear diets prior to hibernation (Barnes Jr. 1984, 1990, Berns et al. 1980, Berns and Hensel 1972, Clark 1957, Smith and Van Daele 1990).

Brown bears on the Refuge begin entering winter dens in late October, but some animals may not start denning until late December or early January (Van Daele *et al.* 1990). Dens have been found over a wide elevation range, although most occur at elevations above 1,000 ft. Apparently, denning bears usually seek dry and cold sites characterized by prolonged freezing temperatures and minimal surface water; snow depth and directional orientation are relatively

unimportant. Additionally, elevation, slope grade, and duration of denning differ between regions of the Refuge. In the Terror River region, denning averages 205 days, and most sites occur in steep alpine habitat. In contrast, denning averages 162 days in the Karluk Lake region, where most sites occur on moderate to steep mid-elevation mountain slopes. Remarkably, some bears in the southwestern portion of the Refuge may not den at all (Barnes Jr. and Smith 1997b). Areas that appear to be particularly important for denning have been identified in the Terror, Uganik, Sturgeon, and Ayakulik-Red river drainages; in the Karluk Lake area; and at the headwaters of Dog Salmon Creek, Deadman Bay, and Uyak Bay (Barnes Jr. 1990, Barnes Jr. and Smith 1997b, Berns et al. 1980, Lentfer *et al.* 1972, Smith and Van Daele 1990, Troyer and Hensel 1969, Van Daele and Barnes Jr. 1990).

Kodiak brown bears have a relatively low reproductive rate, as do brown bears throughout the world. Females usually produce and wean their first litters when the sows are 6 years and 10 years, respectively. The average reproductive cycle is four years (Barnes Jr. and Smith 1992, Troyer and Hensel 1969). Breeding activity has been observed on Kodiak Island between May 1 and July 15; most cubs are born in late January or early February (Hensel *et al.* 1969). Litter size averages 2.3 cubs (Barnes Jr. and Smith 1990, Hensel et al. 1969, Smith and Van Daele 1990, Troyer and Hensel 1964). About 45 percent of the offspring survive to weaning (Barnes Jr. and Smith 1992).

Management of recreational hunting is a principal component of bear population management. ADF&G takes the lead, in accordance with a 1982 memorandum of agreement with the Service. (See Appendix B.) ADF&G coordinates closely with the Refuge on decisions affecting hunting opportunities. ADF&G bear population objectives provide reasonable targets for sustaining a healthy bear population, maintaining hunting opportunities, and regulating bear mortality rates. These objectives include the following (ADF&G 2002b):

- Maintain a stable brown bear population that will sustain an annual harvest of 150 bears composed of at least 60 percent males.
- Maintain diversity in sex and age composition of the brown bear population, with adult bears of all ages represented in the population and in the harvest.
- Limit human-caused mortality of female brown bears to a level consistent with maintaining productivity.

Regarding the last objective, ADF&G applies a guideline to maintain annual female mortality at or below 6 percent of bear population size (ADF&G 2002b).

Recreational hunting for brown bears has been a major activity in the Kodiak Archipelago since the late 1940s (Van Daele 2003b) (See

Table 3-9). Since the 1960s, the bear population has increased, management of recreational hunting has been refined, and harvest opportunities have been expanded (ADF&G 2002b). Annual recreation harvest in Game Management Unit (GMU) 8 (Kodiak Archipelago) averaged 160 bears between fall 1990 and spring 2000 (ADF&G 2002b). Approximately 70 to 75 percent of the harvested bears in GMU 8 were taken on the Refuge. Males account for more than 68 percent of the total recreation harvest in the unit.

A federal subsistence bear hunt, instituted in 1997, is administered by the Refuge. This hunt occurs on refuge lands and has afforded residents of six remote communities opportunities to harvest as many as 11 bears per year. Actual harvest has averaged two bears per year since hunt inception.

Defense-of-life-or-property incidents constitute a third source of human-caused bear mortality in the Kodiak Archipelago. Number of

Table 3-9 Summary of documented level and sources of brown bear mortality averaged by time period, Kodiak Archipelago, July 1, 1960–June 30, 2003¹

Category	Period (average) ²				
	1960/61– 1969/70	1970/71– 1979/80	1980/81– 1989/90	1990/91– 1999/2000	2000/01– 2002/03
Recreational Hunting					
Males	77.0	82.8	107.0	111.1	133.5
Females	48.7	52.9	57.8	48.2	43.5
Unknown	1.9	1.1	0.6	0.7	0.0
Total	127.6	136.8	165.4	160.0	177.0
Males (%)	60.0	61.0	65.0	69.0	75.0
Non-recreation Related ³					
Males	5.3	2.0	5.1	6.2	4.0
Females	4.4	3.1	8.9	7.2	3.5
Unknown	0.0	1.0	2.5	4.8	7.5
Total	9.7	6.1	16.5	18.2	15.0
All sources					
Males	82.3	84.8	112.1	117.3	137.5
Females	53.1	56.0	66.7	55.4	47.0
Unknown	1.9	2.1	3.1	5.5	7.5
Total	137.3	142.9	181.9	178.2	192.0

1 Data source: Alaska Department of Fish & Game, Division of Wildlife Conservation, Kodiak, Alaska

2 Values averaged for ADF&G's regulatory year (e.g., 2002-2003), defined as an annual period between July 1 and June 1. Recreational and subsistence bear hunts occur in fall and spring of each regulatory year.

3 Includes death attributed to defense of life or property, federal subsistence hunting, research, and illegal take.

defense-of-life-or-property kills, the primary source of non-recreational mortality reported in Table 3-9, increased markedly from the 1960s through the 1990s. This trend was attributed to increased backcountry use by recreationists, especially deer hunters (Smith *et al.* 1989). Since the early 1990s, defense-of-life-or-property mortalities attributed to hunting declined by more than 50 percent, mainly in response to hunter education efforts, a diminished deer population, and reduction in deer hunting (ADF&G 2002b). From 1986 through 2000, defense-of-life-or-property mortalities averaged 11 bears per year (ADF&G 2002b), with approximately 60 percent occurring on the Refuge. None of these defense-of-life-or-property mortalities was associated with bear-viewing, which became an important visitor activity during the same period (Allen and Collins 2002).

To monitor status of Kodiak brown bears, understand their habitat needs, and clarify management concerns, the Refuge has a history of collaboration with ADF&G and the Alaska Science Center. The primary means of monitoring bear population status on the Refuge has been intensive aerial surveys, which were collaboratively developed by the Refuge, the Alaska Science Center, and ADF&G (Barnes Jr. and Smith 1998). The surveys are flown over six survey units, which were selected through knowledge of bear distribution and movements based on observations, harvest records, and radiotelemetry. Each year the Refuge works with ADF&G to complete a survey of one of the survey units. Units are surveyed on a rotating basis, which may be altered to accommodate special management concerns. Survey results are used to guide ADF&G harvest allocations and refuge land management decisions. The secondary means of monitoring the Kodiak brown bear population is monitoring of harvest and defense-of-life-or-property mortality. The Refuge works with ADF&G to monitor all recreation, subsistence, defense-of-life-or-property mortalities, and illegal harvest of bears.

Since 1983, the Refuge has annually monitored summer bear use along a standard set of streams on southwestern Kodiak Island. Data, collected via repeated aerial surveys, are used to estimate regional bear population composition (percentage of singles, maternal females, cub by age class). Evaluation of composition trends provides a basis for understanding trends in reproductive success and cub survival (Barnes Jr. and Smith 1990). A persistent and major change in these parameters, potentially triggered by major change in food supply, could affect population size and potentially require adjustment in hunter harvest rates. In recent years, a modified survey of selected areas of the Karluk Lake Basin (Barnes Jr. and Wilker 1998) has provided site-specific monitoring of bear abundance. Results have been used to determine how changes in visitor management influence bear abundance (Barnes Jr. and Wilker 2000).

River Otter. River otter are found throughout the Refuge in suitable habitat, which includes coastal areas from Bluefox Bay on Afognak Island to Olga Bay on the southern and eastern sides of Kodiak

Island. The Refuge's population density is known only from trapping records; this does not constitute a complete census for all possible habitat types. Areas with good access near saltwater bays have the greatest reported abundance. Because they are highly sought after for their pelts, river otter are the furbearer on the Refuge most susceptible to trapping pressure.

Red Fox. Found in all its color phases, this species is common throughout the Refuge. Observations in the field and reports indicate stable fox populations. Red fox is sought on the Island for its durable pelts and may be taken by both traps and gun on Kodiak Island.

Little Brown Bat. The little brown bat enjoys one of the widest distributions of land mammals in North America, ranging from Fairbanks to central Quebec, and south into central Mexico. Throughout their range, little brown bats play an important ecological role because they eat their own weight in insects (primarily mosquitoes, small flies, and moths) nightly. Little brown bats, unlike similarly sized mammals, have a very low reproductive rate because adult females typically produce a single pup each summer. Although little brown bats are known to inhabit lowland coniferous and deciduous forest and woodlands on major islands in the Archipelago, essentially nothing is known of their habits, and no efforts have been made to monitor their distribution or status. Colonies of little brown bats use cabins and abandoned structures on the Refuge.

Nonnative Land Mammals

Thirteen species of nonnative land mammals were deliberately introduced to the Kodiak Archipelago during the 20th century. Nine species established populations, including: Sitka black-tailed deer (*Odocoileus hemionus sitkensis*), mountain goats (*Oreamnos americanus*), Roosevelt elk (*Cervus canadensis roosevelti*), reindeer (*Rangifer tarandus*), beaver (*Castor canadensis*), red squirrel (*Tamiasciurus hudsonicus*), snowshoe hare (*Lepus americanus*), muskrat (*Ondatra zibethica*), and marten (*Martes americana*) (see Table 3-10). Limited populations of arctic ground squirrel (*Spermophilus parryi*) and Norway rat (*Rattus norvegicus*) also were established during the historic period. Ground squirrels are known to occur on Ugak Island and in the vicinity of the state airport in Kodiak. Rats are known to occur in the City of Kodiak.

Among introduced game species, seven established substantial populations that occupy large portions of the Archipelago. In particular, Sitka black-tailed deer, Roosevelt elk, mountain goat, and snowshoe hare are highly valued by recreation and subsistence hunters. Because of their cultural and traditional use among rural residents of the Archipelago, Sitka black-tailed deer (ADF&G 1992), Roosevelt elk (USFWS 1997a), and snowshoe hare have been determined to be subsistence species by the Federal Subsistence Board and ADF&G. All goat hunting occurs under state regulations, recently modified by the Alaska Board of Game in response to

Table 3-10 History of mammal species introduction to Kodiak Archipelago

Species	Year Introduced	Release Location	Population Status
Beaver	1925, 1929	Northeastern Kodiak and Raspberry islands	Widespread and common
Roosevelt elk	1929	Afognak Island	740–860 in 2002
Marten	1924	Afognak Island	Small population
Mountain goat	1952, 1953	Kodiak Island	Estimated at more than 1,500 in 2003
Muskrat	1929	Long Island	Not known on refuge lands
Red squirrel	1952	Afognak and Kodiak islands	Common in forested areas
Reindeer	1924	Kodiak Island	250–300 limited to the southern end of Kodiak Island
Sitka black-tailed deer	1924, 1930, 1934	Long and Kodiak islands	Widespread and common
Snowshoe hare	1934	Afognak and Kodiak islands	Widespread and common

Sources: Burris and McKnight (1973, pp. 52–57); Stovall (2000a); Van Daele and Crye (2002); Van Daele (2003c)

recommendations crafted by the local state and federal advisory groups working together (USFWS 2003). Maintaining sustainable populations of these species is important to residents of the Archipelago and the Refuge.

Sitka Black-tailed Deer. Sitka black-tailed deer were first introduced in the Kodiak Island area in 1924 when a small release was made on Long Island (four miles east of the City of Kodiak). The highly successful spread of deer on Kodiak Island apparently started with the introduction of nine deer to the Broad Point area in 1934 (Burris and McKnight 1973). Until the early 1960s, deer were found mainly in the Sitka spruce forest areas on the northeastern portion of the Island (Batchelor 1968); since then, however, deer have expanded their range throughout the Kodiak Archipelago.

Major declines in the deer population, the result of a high incidence of starvation due to severe cold weather and heavy snows, have occurred approximately every 10 years since the winter of 1969–1970. The most recent die-off occurred during the winter of 1998–

1999. In contrast, intervening periods were characterized by moderate to high winter survival and population increases. During the 1980s, shortly after deer colonized all of Kodiak Island, the population apparently peaked at more than 100,000 animals (Smith 1989). Current population is estimated at 60,000 deer for the Archipelago (Van Daele 2004b).

Deer seasonally occupy virtually all habitats, from sea level to alpine areas. The highest densities of deer on the Refuge occur in grass-brush vegetation because of the variety and abundance of food and cover found in these areas (Smith 1979). Deer are primarily found at low elevations during the fall, winter, and spring. A large portion of the population uses the higher-elevation subalpine areas during mid-summer and early fall. Southerly exposed hillsides, bluffs, capes, and beaches that receive winter sun are favored feeding and foraging sites for deer during winter (Schoen and Kirchhoff 1990).

Deer feeding in alpine and subalpine areas probably use fireweed as their primary food and browse red elderberry, Nootka rose, salmonberry, cow parsnip, reedgrass, and hairgrass to a lesser extent (Merriam 1964). Smith (1979) and Selinger (1995) observed that red elderberry and highbush cranberry were preferred foods of deer on Kodiak Island. A decline in highbush cranberry has been reported by local residents in the vicinity of Uganik Bay after deer moved into the area. During the 1980s and 1990s, highbush cranberry apparently disappeared throughout much of its range on Kodiak (USFWS 2000). This has been attributed to deer and other nonnative browsers such as snowshoe hares (USFWS 2000).

Deer hunting for subsistence and recreation on Kodiak Island is very popular. Most hunting is limited to a one- to two-mile coastal band because of easier access. Public use cabins provide other centers of hunting. Journal entries written by cabin users indicate that deer observations tend to increase or decrease depending on hunting pressure. Deer harvest is thought to decrease the number of deer that succumb to winter starvation (Van Daele 2001b). Average estimated annual deer harvest from 1989 through 1999 was 8,340 animals on the Kodiak Archipelago (Van Daele 2001b). As deer populations fluctuate over time, changes in harvest levels, introduction or removal of gender hunts, or other management techniques may be adopted by the Alaska Board of Game to maintain the deer population.

Bear predation is not believed to be a significant limiting factor on deer. There are few recorded incidents of brown bear predation on deer in the Kodiak area, although some predation undoubtedly occurs.

Annual deer mortality surveys have been completed within key wintering areas since 1992. Primary survey areas included Chief Cove, Olga Bay, and Sitkalidak Strait on Kodiak Island. These areas were chosen based on deer concentrations observed during winter

aerial coastal surveys (Stovall 2000b). These surveys along with monitoring winter weather conditions do not provide direct estimates of deer population trends, but do provide basic understanding on extent and pattern of winter mortality. Between 1997 and 2001, deer browse surveys were conducted within these same wintering areas. Survey results indicated deer browse preferences for elderberry, blueberry, and willow. Fluctuation in intensity of browsing apparently corresponded with regional winter conditions and size of the wintering deer population (Stovall 2000b).

Reindeer. Thirty-two reindeer were introduced to Kodiak Island in 1924 for husbandry purposes. The animals were actively herded until the late 1930s, when they escaped and were never rounded up. That herd was approximately 1,500 animals. The herd has now declined to an estimated 200 to 400 animals distributed in heathland, muskeg, and grassland on southwestern Kodiak Island. Although the population declined, perhaps because of disease or poor range conditions, they are presently considered stable. The state has a year-round, no-bag-limit hunt for these feral reindeer. Hunting pressure is very light, however, primarily due to problems with access to the scattered reindeer herds. Reindeer harvest averages five to 10 animals per year.

Roosevelt Elk. Roosevelt elk were transplanted to Afognak Island in 1929, and hunting for this species began in 1950 (Burris and McKnight 1973). The present population on Afognak and surrounding islands has averaged from 900 to 1,500 animals over the last 10 years. The number of elk harvested annually ranges between 80 and 120 animals (Van Daele and Crye 2002). The Waterfall Herd, which averages 180 to 250 animals, uses the Afognak (Red Peaks) portion of the Refuge, primarily in summer. The average number of elk harvested from the Waterfall Herd is eight to 12 animals. Currently, ADF&G biologists are conducting studies of elk to assess population composition, seasonal movements, and habitat use. Elk are occasionally sighted on Kodiak Island; however, no wild herds have become established.

Mountain Goat. Originally introduced outside the refuge boundary in the early 1950s, mountain goat populations have gradually expanded into suitable refuge habitats (Burris and McKnight 1973). Small bands have been seen as far west and south as Ayakulik River and the Aliulik Peninsula. The total population for Kodiak Island is currently estimated at 1,500 animals (Van Daele 2004b), with about 50 percent occurring within the Refuge. Most of these animals inhabit the mountainous northeastern half of the Island; however, the population of goats found on the southern half of Kodiak Island is increasing. Aerial surveys of alpine goat composition are done annually by ADF&G both on and off the Refuge.

Beaver. Originally introduced in 1925, beaver are now common throughout the Kodiak Archipelago (Burris and McKnight 1973). Beaver impoundments have significantly modified some aquatic and

riparian habitats on southwestern Kodiak Island by flooding. These impoundments apparently provide additional waterfowl and coho salmon rearing habitat, but some beaver dams may disrupt movements of adult salmon into small tributary streams. Though the net effect of this change is unknown, it is not believed to be significant in most areas.

Marine Mammals

Productive marine environments provide important habitat to marine mammals in the Kodiak Archipelago. The refuge land base contributes to this productivity by supplying nutrients to rivers, estuaries, and the ocean. In turn, these nutrients form a foundation for the marine food web. Nutrients used by marine-dwelling plankton, invertebrates, and forage fish transfer up the food chain, ultimately sustaining a diversity of marine mammals, including sea otters, seals, porpoises, and whales.

The Refuge's specific responsibilities for marine mammals are limited primarily to sea otters. Kodiak Refuge has no jurisdiction over sea otter habitat, which typically occurs in exposed, nearshore ocean environments. However, the Service is charged to manage sea otter populations, as directed in the Marine Mammal Protection Act of 1973. Consequently, the Service established a Marine Mammal Management division to direct sea otter management in Alaska. Kodiak Refuge contributes to management by providing staff and logistical support for outreach, monitoring, and research.

Sea Otters. Sea otters were hunted to near extinction throughout their range during the commercial fur harvests of the 1700s to early 1900s. In 1911, sea otters were protected from further commercial harvest under the International Fur Seal Treaty. A remnant colony of sea otters was located in the Kodiak Archipelago near Shuyak Island and Latex Rocks. The sea otter population in this region slowly expanded; currently all waters around major islands in the Archipelago are occupied. Range expansion is still occurring around Kodiak Island.

Today, sea otters occur primarily around Shuyak, Afognak, and Raspberry islands and near northern and western portions of Kodiak Island. Large numbers of otters use Paramanof and Foul bays adjacent to the Afognak Island unit of the Refuge. Service surveys have shown that sea otters have reoccupied portions of their former range along the northwestern side of Kodiak Island as far south as Uyak Bay. Approximately 200 sea otters have been observed in each major bay in this area. Sea otter population trend data from Uyak and Uganik bays have been collected (incidental to sea bird surveys) by the Refuge since the 1980s. The trend data are complicated by factors such as active population range expansion into the study area in the early 1980s and by unquantified Native subsistence harvest of sea otters in the study area. Marking, tagging, and reporting of subsistence harvest of sea otters was not initiated until fall 1989.

In the mid-1980s, the sea otter population in the area of northern Kodiak Island was rapidly expanding and exhibited high survival and recruitment rates. Extensive food resources, predominately bivalves, were present throughout the region. Population range expansion was expected to continue in waters around Kodiak Island. Systematic surveys conducted since the late 1980s indicated that the Archipelago sea otter population declined 56 percent, from a peak of 13,526 animals counted in 1989 to 5,893 animals counted in 2001. During the same period, population surveys indicated severe decline of sea otter populations in the western Alaska Peninsula and Aleutians (USFWS 2002). Consequently, the southwestern Alaska population of the northern sea otter, which includes the Kodiak Archipelago population, was listed as a threatened species under the Endangered Species Act (*Federal Register*, 70:46365–46385, August 9, 2005; effective on September 8, 2005).

Seals. Harbor seals are common throughout Kodiak Archipelago with most of the major bay systems supporting resident harbor seal colonies of 80 to 100 seals year-round. They seasonally use a limited amount of lagoon and estuary habitat included within the refuge boundary.

Threatened and Endangered Species—Plants and Animals

Endangered humpback, sei, northern right, and fin whales occur in marine waters off the Refuge. In 1998, Steller sea lions were classified as threatened under the Endangered Species Act. Several known Steller sea lion haulouts are located along the Refuge's coastline. Endangered short-tailed albatross are occasionally observed in offshore marine waters adjacent to the Refuge. Steller's eider, a federally threatened sea duck species, is commonly found in nearshore coastal waters adjacent to the Refuge. In 2005, the southwestern Alaska population of the northern sea otter was listed as a threatened species under the Endangered Species Act. Kittlitz's murrelet, a small seabird that breeds along the coastline and nests at very low densities in the high alpine regions of the Refuge, is identified as a candidate species² for protection under the Endangered Species Act (*Federal Register*, 69:24876–24904, May 4, 2004). No other endangered, threatened, or candidate species are known to occur on the Refuge.

3.2.3 Concerns Regarding Fish and Wildlife Populations and Habitats

The fish and wildlife populations and habitats discussed in this section have been identified by the public or by refuge staff as being of particular concern to the continued health of the Refuge and the resources it supports.

²A candidate species is one for which the Service has on file sufficient information on biological vulnerability and threats to support a proposal to list as endangered or threatened, but for which preparation and publication of a proposal is precluded by higher priority listing actions.

Bear Concentration Areas

Bears use areas where they are best able to meet their basic requirements of feeding and reproduction. For management purposes, the Refuge defines “bear concentration areas” as discrete places where substantial numbers of brown bears seasonally congregate (USFWS 1993b). These areas vary in location, size, and seasonal use. Denning areas are used from October through late-May (Van Daele and Barnes Jr. 1990). Berry, forb, and sedge feeding areas—ranging from coastal flats to alpine slopes—are used during their prime growing seasons (ADF&G 2002b, Atwell *et al.* 1980). Streams, rivers, lakes, and estuaries are used during salmon runs (Barnes Jr. 1990, Smith and Van Daele 1990). Seaside beaches are used when deer congregate near them (when beach-cast kelp is plentiful) or when marine mammal carcasses are present (Barnes Jr. and Smith 1997b).

The need to protect bear concentration areas varies by the degree to which human access and use of these areas coincides with bear use. On Kodiak Refuge, managers are most concerned about bear concentration areas that can be readily accessed by floatplane, boat, or snowmachine (ADF&G 2002b, USFWS 1993b). While accessible feeding-concentration areas occur in several places, accessible denning areas are presently limited to highlands in the Terror River vicinity.

Areas used by feeding bears could potentially provide refuge visitors with outstanding opportunities for wildlife observation and photography. These recreation uses, however, may occur at the expense of a concentration area’s bears if not carefully managed (ADF&G 2002b, Wilker and Barnes 1998). Primary management concerns consist of the potential for unrestricted public use to diminish quality of bear habitat by persistently displacing bears, reducing bear use levels, and diminishing bear foraging efficiency (USFWS 1993b).

This concern is based on the collective role these areas apparently play in bear survival (Craighead *et al.* 1995, Hilderbrand *et al.* 1999) and on studies that describe relative impact of different visitor management strategies (Aumiller and Matt 1994, Sellers and Aumiller 1994, Wilker and Barnes 1998). For example, Wilker and Barnes (1998) evaluated response of bears to two management strategies (unrestricted public access and managed bear-viewing) at O’Malley River on the Refuge from 1991 through 1994. Unrestricted public access—consisting of a mixture of hiking, viewing, photography, and fishing occurring at different times and places—displaced bears. In contrast, bear use recovered after methods, timing, and distribution of visitor activity were limited under managed bear-viewing. A similar response was documented at McNeil River, Alaska (Aumiller and Matt 1994, Sellers and Aumiller 1994). Use of the McNeil area by single adult bears

progressively increased after management limited methods, timing, and distribution of camping, hiking, and viewing in the early 1970s.

Visitor activity newly introduced to a concentration area can initially disturb and displace bears unaccustomed to it (Barnes Jr. 2004). Bears that encounter such activity stop their normal activity pattern and move away from the disturbance source (Wilker and Barnes 1998). Gradually, most bears resume normal activity upon habituating to a routine, predictable pattern of visitor activity (Barnes Jr. and Wilker 1998, Sellers and Aumiller 1994). Conversely, most bears will not habituate to irregularly timed and inconsistently distributed visitor activity (Wilker and Barnes 1998). Instead, they are displaced, which leads to localized reduction in bear use and abundance (Wilker and Barnes 1998).

Apparently, some bears inherently avoid people—regardless of their experience with them. This is especially true of adult males, who may be intolerant of other bears during the nonbreeding season (Mattson *et al.* 1987; Olson *et al.* 1997). Such intolerant bears apparently shift their activity to times when visitors are absent or move to another feeding area (Olson *et al.* 1997; Sellers and Aumiller 1994; Warner 1987). Bears driven away from preferred feeding areas can incur nutritional stress, increased competition, reduced productivity, and diminished survival (Craighead *et al.* 1995; Hilderbrand *et al.* 1999).

Overnight camping can be particularly problematic in bear concentration areas. Occurrence of moderate to high bear densities vastly increases probability of bear–human encounters and the potential for conflict. Curious bears may seek the source of food and garbage smells around camps. Any human food, garbage, or harvested fish and game obtained by curious bears act as a reward to the bear and compels it to actively seek additional camps and further rewards. When this happens, a bear may exhibit persistent aggressive behavior, which is especially difficult to deter, poses potential danger to visitors, and often results in death of the offending animal (Herrero 2002). Consequently, managers of accessible concentration areas often prohibit camping in order to lower the risk to bears, humans, and their property (Herrero 2002, Walker 2002).

Visitor activity in areas of concentrated denning can harm bears. Jonkel (1980) attributed den abandonment to snowmachine disturbance and foot traffic. Reynolds *et al.* (1987) reported abandonment of dens and newborn cubs due to operation of seismic equipment and helicopters near dens.

On Kodiak Island, studies documented concentrated denning, primarily by adult females, in two areas in the Terror Lake vicinity (Van Daele and Barnes Jr. 1990). In response to concern about accessibility to snowmachines and vulnerability to impact, the Refuge recommended seasonal closure of these areas in the 1990s

(USFWS 1993b). Further analysis suggests that accessibility and vulnerability differ between areas (Van Daele 2004a).

At Den Mountain, most bears excavate dens on relatively open and steep upper mountain slopes (Van Daele and V.G. Barnes Jr. 1990). This area is vulnerable to disturbance for the following reasons (Van Daele 2004a):

- It occurs close to places traditionally accessed by snowmachine operators along western Kizhuyak Bay.
- Gentle and moderate terrain affords operators a relatively unfettered opportunity to travel between the bay and mountain when suitable snow cover exists.
- Operators can, once they reach the mountain, readily access open, moderate slopes immediately below prime denning habitat.
- Operators interested in high-marking can penetrate this habitat.

In contrast, denning habitat at Baumann Creek is situated mainly on steep, rocky canyon slopes. This habitat is relatively impervious to snowmachine access because of surrounding physical barriers such as cliffs.

Bear Viewing

Bear-viewing—observing wild bears in their natural habitat—is an increasingly important recreation activity on the Refuge. Viewing of Kodiak brown bears ranges from distant viewing of unhabituated bears to close-range viewing of habituated bears. Guided, short-duration (three-hour observation time), close-range viewing is the primary venue (Allen and Collins 2002). However, some people prefer extended trips where they camp off-site and spend several days viewing bears for six to eight hours per day (Walker 2002). Bear-viewing was the subject that commanded the greatest interest and debate in the development of the *Kodiak Archipelago Bear Conservation and Management Plan* (ADF&G 2002b). This debate focused on the means of managing accessible bear concentration areas for viewing and other wildlife-dependent recreation uses.

The Refuge has several concerns with bear-viewing. First, it is concerned with bear disturbance and displacement. Evidence indicates that bears are least disturbed and displaced in concentration areas where they gradually habituate to routine, predictable human activity (Wilker and Barnes 1998). Conversely, an uncoordinated mixture of human activities (e.g., viewing, hiking, fishing, and camping occurring at different times and places) can cause bear disturbance, displacement, and localized reduction in bear use and abundance (Sellers and Aumiller 1994, Wilker and Barnes 1998). To minimize these impacts, land-management agencies and commercial guides have in some places successfully applied a combination of guidelines and restrictions to promote responsible conduct and to limit type, timing, and distribution of visitor activity (ADF&G and

NPS 2003; Walker 2002). This is not to imply, however, that people and bear-viewing can be successfully managed everywhere.

Second, the Refuge is concerned about the safety of visitors and bears (USFWS 1993b). Some concentration areas of the Refuge support 50 to 80 bears per square mile of river bottom (USFWS n.d.). Anyone traveling in such areas would likely encounter numerous bears. Consequently, safe maneuvering would require careful advance planning and preparation; knowledge of terrain, cover, bear habits, and bear behavior; and acute awareness, good judgment, and honed skill to avoid surprise bear encounters and to deter curious or aggressive bears (ADF&G and NPS 2003, Brown 1996, Shelton 1994). Some unguided visitors may have the appropriate experience and attitude to safely navigate a bear concentration area; most, however, may not.

The mere presence of humans in this type of area is likely to displace some bears, and ill-advised, inexperienced, or uninformed actions by an individual or group can also displace bears (Wilker and Barnes 1998). In the most extreme case, it may result in human injury or death of a bear (Smith et al. 1989, Wilker and Barnes 1998). Thus, the Refuge's challenge is to determine which standard and site-specific management measures would best promote consistently responsible, safe, and compatible conduct by guided and unguided users of accessible concentration areas—all of which differ in local geography and bear distribution. While human use may be possible in some areas at some times, it may not be compatible in other areas.

Third, the Refuge is concerned about bear habituation. Habituation behavior tends to develop in coastal brown bears where they regularly and predictably encounter non-threatening human activity (ADF&G 2002b). Such neutrally habituated bears, accustomed as they are to interaction with other bears at feeding sites, tend to ignore close-range human activity so long as it conforms to their previous non-threatening experience and does not violate their personal space. Development and maintenance of this type of behavior consistently requires that bears are neither rewarded nor threatened by visitor encounters. In contrast, bears that inadvertently acquire human food or garbage learn to associate people, their facilities, or activities as sources of food. Repeated acquisition success re-enforces learning and promotes aggressive behavior, which can be hazardous to people.

Occurrence of neutral habituation enables people to routinely view bears from a 10-yard range at Frazer fish pass, located on the Dog Salmon River. It also enables people and bears to share estuaries and rivers for fishing. Many more bears would be persistently displaced by human activities on the Refuge if they did not neutrally habituate to them. Whereas offspring of habituated females are prone to habituate (Barnes Jr. and Wilker 1998), adult males apparently are not (Mattson *et al.* 1987, Olson *et al.* 1997). Consequently, some adult males could be displaced from places they frequent to travel,

feed, and rest if bear-viewing and other visitor activities become established in these places. This potential impact could possibly be mitigated by (1) identifying places and time periods used by adult male bears, and (2) instituting management practices geared to prevent, minimize, or eliminate human activity in these areas.

Presently, harvest risk to habituated bears is considered low because relatively few bears are habituated at a few refuge locations, most bears shift habitat use between seasons, hunting harvest policy is highly conservative, mostly adult males are harvested, and females accompanied by young cannot be harvested (Barnes Jr. and Wilker 2002).

The Service expects future increase in recreational fishing and bear-viewing use would increase levels of bear habituation on the Refuge. Presently, the level of bear habituation in most bear concentration areas is considered low due to access restrictions on commercial operators and limited demand for bear-viewing (Allen and Collins 2002). However, the public has requested changing access restrictions (ADF&G 2002b), and public use may expand in other areas where it has not been restricted. Should access rules change or level of human activity increase in some of these areas, most bears would habituate after initial disturbance and displacement (Barnes Jr. and Wilker 2002), while a few others would not (Sellers and Aumiller 1994). Scope of disturbance, displacement, and habituation would correspond to the scope and consistency of human activity within the concentration area. Such tradeoffs are being carefully weighed to determine which strategies best comply with bear life-cycle requirements, refuge purposes, and public interest.

Effects of Introduced Species on Kodiak Refuge Habitats

The Kodiak Archipelago is considered by some to be the largest intact island ecosystem in the United States. Native habitats dominate the landscape. Native salmon, bear, and other wildlife of cultural importance are relatively abundant, and ecosystem processes are assumed to be functioning within the historic range of variability. Nonetheless, the Archipelago has a long history of plant and animal introductions. Nine mammal species were successfully introduced to the Kodiak Archipelago in the 1900s to enhance subsistence and recreation opportunities.

In the past 80 years, humans have introduced mammal species that have established viable populations in the Kodiak Archipelago, including Kodiak Refuge. Successfully established species include beaver, muskrat, red squirrel, pine marten, mountain goat, Roosevelt elk, reindeer, snowshoe hare, and Sitka black-tailed deer. Today, deer, elk, goat, and hare are extensively harvested by local subsistence hunters. These species also attract recreational hunters from around the region. Combined subsistence and recreational hunting activities constitute a primary seasonal use of the Refuge by

the public. We acknowledge the importance of these uses and plan to provide for their continued occurrence.

At the same time, we have serious concerns. As most of the species introduced to the Refuge subsist on native vegetation, concentrated and consistent foraging by them could have unintended effects. For instance, beaver could extensively affect aquatic and streamside habitat composition through damming of low gradient streams and removal of adjacent streamside shrubs for food. Concentrated grazing and wallowing by mountain goats could influence erosion potential and composition of native plant communities on lowland winter and highland summer ranges (Schreiner and Woodward 1994, Spencer 2005). Grazing or browsing by one or more species, such as deer, elk, and snowshoe hare could affect recruitment, abundance, and distribution of preferred forb, graminoid, shrub, and tree species in upland and riparian areas of lower elevations (USFWS 2000). Red elderberry, a native shrub widely distributed on Kodiak Island, apparently is a preferred food of deer (Selinger 1995, Stovall 2000a). Extensive deer use of elderberry could reduce habitat quality for Kodiak brown bears because they also prefer and rely on it (Troyer and Hensel 1969). To address our concerns, additional studies are proposed under the goals and objectives (Chapter 2, Section 2.1) to ascertain the potential impacts and recommend management strategies for selected non-native fauna of the Refuge.

Expansion of Introduced Elk to Kodiak Island

Biologists and managers are concerned that Roosevelt elk from Afognak Island may eventually become established on Kodiak Island and on the Refuge. Such establishment would conflict with the Service's biological integrity policy, possibly increase forage competition with bears, and potentially increase conflicts between elk hunters and bears. The biological integrity policy requires the Refuge to maintain natural processes, which does not include the influence of elk on Kodiak Island.

Sustained extensive browsing by large deer and elk populations could reduce availability of berry-producing shrubs preferred by bears. Anecdotal information suggests that highbush cranberry has already been eliminated from much of the Refuge because of overbrowsing by deer. For example, this has been reported in the Zachar drainage as having occurred since 1973 (Braendel 2003).

Hunter-bear conflicts could increase, primarily because some hunters may contest bears that lay claim on a harvested elk or elk meat cached near their camps. Such confrontations are a cause of defense-of-life-or-property bear kills in the Kodiak Archipelago (Smith *et al.* 1989). For example, of 25 defense-of-life-or-property kills recorded on Afognak Island since 1980, 17 (68 percent) were hunter-related and five of these involved elk hunters (Van Daele 2003a).

Current policies of ADF&G reduce the possibility of elk establishment on Kodiak Island. Specifically, it is not encouraging

establishment of and has no plan to introduce elk on Kodiak Island; further, by maintaining a highly liberal elk hunting regulation to minimize elk survival should they attempt colonization, ADF&G is not managing for sustained yield (Van Daele 2004a).

Invasive Plants and Invertebrates

Although concerns regarding introduced mammals on the Kodiak Archipelago have taken center stage in the last few years, there is also growing concern that invasive plants and invertebrates may colonize the Archipelago. Orange hawkweed (*Hieracium aurantiacum*), which is native to Europe, commonly occurs in the vicinity of Port Lions and the City of Kodiak. Recently, orange hawkweed was found on Camp Island, a frequently visited place in the refuge interior. In response, the Refuge initiated inventory and eradication efforts at Camp Island. Hawkweed and other invasive plants pose the same type of threat at other frequently visited uplands used for recreation, subsistence, and refuge administration. Because accidental introduction of invasive plants is highly probable, the Refuge needs to institute surveillance efforts and take appropriate control action when they are found.

Invasive invertebrates are not known to occur on Kodiak Refuge. However, they could wreak ecological and economic havoc if they colonized salmon-bearing streams, rivers, and lakes. Examples of problems encountered elsewhere include the zebra mussel in the Great Lakes and the New Zealand mud snail in Yellowstone National Park. Apparently mud snails were inadvertently introduced via imported mud dried on a visiting angler's waders. This same invasive transport mechanism could occur at Kodiak Refuge. Consequently, the Refuge and its partners need to advise visitors of the threat and recommend practices to prevent accidental invertebrate introductions.

Coastal Resource Management

Coastal areas of the Kodiak Archipelago provide key habitat to a range of culturally valued, economically important, and environmentally sensitive fish and wildlife species. Sustaining healthy coastal habitat in the Kodiak Archipelago is a goal of many organizations including the Service. The Service's concern, as framed here, regards the potential influence of future development on important functions, values, and services afforded by coastal fish and wildlife populations and their habitats. Potential for future impact is greatest for (1) animals such as salmon, sea otters, eagles, and bears whose survival depends on healthy nearshore marine, intertidal, and adjacent upland habitats; and (2) habitats such as estuaries and reefs that provide essential food and shelter for many fish and wildlife species.

Since Euro-American settlement, potential for impact has increased because industrial, commercial, and residential uses continue to expand along the Kodiak coast. Species may be indirectly affected

by cumulative effects of increased human activity and small-scale development such as boat harbors or lodge development. Species also may be directly affected, as exemplified by results of the 1989 *Exxon Valdez* oil spill. This spill had significant impacts on populations and habitat of culturally valued and environmentally sensitive species, including pink salmon, chum salmon, harlequin duck, common murre, marbled murrelet, pigeon guillemot, black oystercatcher, bald eagle, sea otter, and river otter. Because pre-spill values were documented, funds for mitigating oil spill damage were obtained from the *Exxon Valdez* Oil Spill Trustee Council. This important, positive outcome is attributed to ongoing documentation and monitoring of resources by the Refuge and other organizations. Consequently, continued documentation and monitoring will provide an effective basis for future conservation and management of coastal resources.

Sea Otters

One of the purposes for establishment of the Kodiak Refuge is to conserve and protect fish and wildlife populations, including sea otters. Sea otter populations in the Kodiak Archipelago have declined substantially since 1989. The cause(s) of the downward trend are unknown. In the Aleutian Islands and elsewhere, there has been an increase in observations of killer whales (orcas) near sea otters. A current hypothesis is that predation by killer whales is a major contributing factor to the observed sea otter declines. Presumably, killer whales have switched from their more common prey to sea otters following large-scale decreases of harbor seal and Steller sea lion populations. Other contributing factors—such as sea otter habitat quality, contaminants, health, and additive sources of mortality—need to be assessed in the Kodiak Archipelago.

Under the Marine Mammal Protection Act, the Service is required to prepare population assessment reports on population status and trend, to estimate annual human-caused mortality and to describe commercial fishery interactions with marine mammals. In the 2002 assessments for the northern sea otter, the Service identified three population stocks in Alaska (southeast, southcentral, and southwest). The southwest population includes Kodiak Archipelago, Alaska Peninsula, and Aleutian Islands. Population surveys of sea otters conducted in 2000 and 2001 indicate drastic declines in sea otter abundance in the majority of the southwest Alaska population. In 2000, the Service designated sea otters in the Aleutian Islands as a candidate species under the Endangered Species Act; the designation was revised in June 2002 to include all of the southwest Alaska population. The Service published a final rule in the *Federal Register* (70:46,365–46,385, August 9, 2005; effective on September 8, 2005) listing the southwest Alaska sea otter population as a threatened species under the Endangered Species Act. The Service continues to work with partners to evaluate the impacts of human activity and development on sea otters in order to mitigate stress on the southwest Alaska population.

Karluk Habitat Protection Agreement

In 2002, Koniag, Inc., the Service, and the State of Alaska signed a Master Agreement for the Protection of Certain Lands and Resources that will govern use of nearly 57,000 acres of land owned by Koniag, Inc., in the Karluk and Sturgeon river drainages. These lands support essential habitat for world-class populations of salmonids and Kodiak brown bear, and they provide for important recreational, economic, and cultural uses. The Master Agreement provides the Refuge with a 10-year easement to manage the land and a 10-year extension option. It also limits development by Koniag, Inc., increases opportunities for wildlife-dependent public uses, and strengthens collaboration among Koniag, Inc., the Service, and ADF&G.

Under the Master Agreement—which is funded by the *Exxon Valdez* Oil Spill Trustee Council—Koniag, Inc., is paid to refrain from developing most of the easement lands and to permit regulated cost-free public access. Additionally, Koniag, Inc., will continue to manage commercial uses (e.g., cabin rentals and guiding) on the easement lands within one-half mile of the Karluk River and lakeshore. Koniag, Inc., also retains its right to manage most public use, including bear-viewing, adjacent to Thumb River, and to expand an existing lodge on Camp Island.

Primary concerns related to the Master Agreement include the importance of resource values and public uses, potential for significant increase in public use, and uncertainty associated with the types of management practices that sustain resource values while compatibly accommodating increased public use. To address these concerns, the Master Agreement directs the Refuge to initiate cooperative studies. Study proposals submitted in winter 2002 involved evaluating economic, recreation, wildlife, and fishery values and uses of easement lands. Findings from these studies would be applied in public use guidelines and operating standards for a permit system.

3.3 Human Environment

This section describes social, cultural, and economic conditions on lands and waters affected by management of the Kodiak National Wildlife Refuge. The purpose is twofold: to acquaint readers with human uses and values associated with the Refuge; and to provide baseline information from which the impacts of management alternatives can be assessed.

3.3.1 History

With its long history of human habitation, Kodiak Island was home to most likely the densest human population in Alaska prior to European contact (Diters 1999). Archaeologists divide Kodiak's

history into five cultural traditions, each reflecting a distinct way of life.³

Ocean Bay Tradition (7,500 to 3,800 years ago). Kodiak's oldest sites stem from the Ocean Bay tradition, a cultural period stretching more than 4,000 years. During the early Ocean Bay, Kodiak's climate was warmer and drier; people probably lived in skin tents. Site locations, stone tools, and animal remains suggest they were skilled mariners who harvested the full range of marine resources. By about 6,000 years ago, tents were replaced by sod houses, constructed by building a wooden frame in a shallow pit and covering it with sod blocks.

Kachemak Tradition (3,800 to 800 years ago). On Kodiak, cultural materials dating between 3,800 and 2,500 years ago are rare. It may be that the Archipelago was sparsely populated at this time or that sites have been lost to changes in sea level. Kodiak people began to live in large coastal sod-house villages and to hunt and fish in new ways by about 2,500 years ago. They developed nets to harvest large quantities of salmon, slate ulus to process larger catches, and a more efficient sea mammal harpoon. These trends suggest a growing population and the need to feed larger groups of people. Changes in subsistence were accompanied by extensive interregional trade. Antler, ivory, coal, and volcanic rocks from the Alaska mainland are found in large quantities, suggesting that travel and trade were common practices. Such exchanges probably created social ties and helped people gain access to resources in different ecological settings. Many of these rare materials were made into jewelry or small pieces of art.

Koniag Tradition (800 years ago to AD 1763). About 800 years ago, Kodiak's climate began to change dramatically in response to the Little Ice Age. Temperatures cooled, the weather worsened, and sea mammals became more difficult to catch. Alutiiq people responded by relocating their villages to the banks of productive salmon streams and reorganized subsistence practices. Related families pooled resources and labor, living together in larger, multiple-roomed sod houses. Strong community leaders emerged, as did the practice of ceremonies to display their power and wealth. The rise of an elaborate ceremonial culture is preserved in spectacular assemblages of wooden artifacts that include masks, mask attachments, fragments of drums and dance rattles, decorated feasting bowls, gaming pieces, and shaman's dolls. Other artifacts illustrate increases in long-distance trade and warfare. During the Koniag Tradition, the Alutiiq built fort sites on remote islands, where families fled to protect themselves from raids. At one of these forts, Awa'uq, the Kodiak Alutiiq lost sovereignty of their homeland in a battle with the Russian military in 1784.

³The following discussion is based primarily on information found on the Kodiak Chamber of Commerce web site: http://www.kodiak.org/cultural_traditions.html.

Russian (1763 to 1867). The first European sighting of the Island occurred in 1741, when ships in the Vitus Bering expedition passed by without landing (Diters 1999). By the late 1700s, Russian fur traders seeking sea otter pelts worked their way into the central Gulf of Alaska and colonized the Alutiiq Nation. A Russian settlement established at Three Saints Bay in 1784 was wiped out by a tidal wave. The center of Russian activity then moved to the present site of the City of Kodiak, which then became the Russian capital of Alaska. Russian clergy introduced the Orthodox faith, which remains a strong force in many Native communities. The Alutiiq were quickly compelled to adopt new economic, social, and religious practices; many people died from infectious diseases. Historians estimate that the Native population plummeted from about 9,000 people at contact to just 3,000 by the middle of the 19th century. During the Russian period, Alutiiq people were forced to work in *artels*—camps dedicated to sea otter hunting, salmon fishing, and whaling. Archaeologically, this period is marked by the presence of trade goods—European ceramics, glass beads, flint lock rifles—and the consolidation of more than 60 Alutiiq communities into a small number of regional settlements.

According to the *Dictionary of Alaska Place Names* (Orth 1967), Russian explorer Stephen Glotov was the first non-Native to, in 1763, land on Kodiak Island. He reported the inhabitants of the Island called their home Kadyak or Kikhtak, which simply meant island. A *Conversational Dictionary of Kodiak Alutiiq* (Leer 1978) records the Alutiiq word for island as *qikertaq*—a very similar sounding word to Kikhtak. The name Kodiak was first used by Capt. James Cook on October 20, 1778. From 1890 until 1901, the official spelling was Kadiak, but that was changed to the present spelling in 1901 because of popular usage (Kodiak Chamber of Commerce 2004).

American (1867 to present). With the sale of Alaska to the United States in 1867, life on Kodiak changed again. The American period is characterized by development of the modern fishing industry. Many Alutiiq people worked for wages in the canneries, moving gradually from a subsistence lifestyle into the Western market economy. At the turn of the 20th century, wood-framed houses began to replace sod structures, and government schools forbade Native children to speak the Alutiiq language. Today, elders are encouraged to return to the schools, this time to teach the Alutiiq language to children.

In 1971, the Alutiiq participated in the Alaska Native Claims Settlement Act, regaining ownership of traditional lands and forming for-profit corporations. Although Western influences have dramatically altered Alutiiq culture, Kodiak's Native people have combined Western traditions with their own world views to produce a lifestyle that is still uniquely Native. At present, about 2,500 Alutiiq people live in the Kodiak Archipelago.

The City of Kodiak became a major staging area for North Pacific operations during World War II, when the population soared to more than 25,000. A submarine base and air station were constructed at Womens Bay and an army outpost was established near the Buskin River. Bunkers and gun emplacements were built at Chiniak, Long Island, and Fort Abercrombie. Japanese forces occupied Kiska and Attu in the Aleutians, but were turned back by American and Canadian forces. After the war, the U.S. Navy maintained a significant presence near the City of Kodiak until 1972, when operations were turned over to the U.S. Coast Guard. At present, the Kodiak Coast Guard Station is the largest in the nation.

After the war, the fishing industry continued to flourish. On March 27, 1964, the massive earthquake that rocked Southcentral Alaska triggered a series of tsunamis. The largest wave crested at 35 feet above mean low tide. Residents evacuated, but Kodiak's waterfront and business district were nearly destroyed, and villages suffered extensive damage. Today, there is an extensive tsunami warning system and evacuation plan in place for the Island.

3.3.2 Transportation and Access

Kodiak Island is on the western side of the Gulf of Alaska about 250 miles south of Anchorage. Kodiak is accessible only by air and sea. Airports and seaplane facilities serve air traffic Islandwide; daily service is available from Anchorage, taking about 50 minutes by jet. Air travel to and from the Island or between communities can be delayed any time of year by fog, low clouds, wind, rain, or snow.

The Alaska Marine Highway (ferry system) provides passenger, vehicle, and cargo service, connecting Kodiak to the mainland road system via Homer, Seward, and Valdez. The ferry makes monthly trips to Dutch Harbor (from April through December), stopping at Chignik, Sand Point, King Cove, Cold Bay, False Pass, Akutan, and Unalaska. Two boat harbors serve commercial and other vessels. There are about 83 miles of state roads on the northeastern side of the Island but no road access to the Refuge. The major roadway in the Kodiak Island area follows the coastline from Cape Chiniak north through the City of Kodiak to Monashka Bay.

The Port of Kodiak is home to Alaska's largest and most diverse fishing fleet. It has more than 600 boat slips and three commercial piers that can handle vessels as long as 650 feet. Kodiak is also a vital link in the regional transportation network. As the hub of the Gulf of Alaska container logistics system, Kodiak serves Southwestern Alaska communities with consumer goods and provides outbound access to world fish markets. Regularly scheduled container ships operate between Kodiak and the Pacific Northwest and between Kodiak and the Far East. Kodiak is a key link for Alaska's coastal communities.

When Kodiak National Wildlife Refuge was established in 1941, little public use was occurring on refuge lands. The population of Kodiak Island at the time of the 1939 census was just more than 2,000 people, with less than half of the population in the town of Kodiak. During World War II, the number of civilian and military personnel on Kodiak increased rapidly; wartime activities had little impact, however, on the remote portions of the Island, including the Refuge. Most human activities during the 1940s that affected refuge lands were related to commercial fishing or use by residents of the remote villages of Karluk, Larsen Bay, Akhiok-Kaguyak (two separate villages until 1964), and Old Harbor. The vast majority of this use was concentrated along the coastline of the Island.

3.3.3 Local Government and Institutions

Several government and quasi-government structures exist in rural Alaska: cities and boroughs, which are the local government structures authorized under the state constitution; tribal councils, which are administrative bodies of Native communities (tribes) recognized under federal law; Regional Education Attendance Areas; regional school districts funded by the state but operated by local school boards; and Native (for-profit) corporations formed under the Alaska Native Claims Settlement Act (ANCSA). Native corporations do not have government powers, but they carry substantial influence in rural areas.

Alaska's boroughs are the equivalent of counties in most other states. Large areas of rural Alaska with very small tax bases have never established borough governments; these areas are known as the "unorganized borough." The Kodiak Island Borough encompasses the entire geological formation known as the Kodiak Archipelago, from the Barren Islands in the north to Chirikof Island in the south. It also includes currently uninhabited parts of the Alaska Peninsula that drain into the Pacific Ocean. The estimated size of the Kodiak Island Borough is 15,265 square miles of water and 7,130 square miles of land. Lands within the borough include four national wildlife refuges (Kodiak, Alaska Maritime, Becharof, and Alaska Peninsula), Katmai National Park, and Shuyak Island and Northern Afognak state parks.

Koniag, Inc., is the regional Native corporation for Kodiak Island, many smaller islands in the Kodiak Archipelago, and a portion of the Alaska Peninsula. Koniag, Inc. is a for-profit corporation, stating that its basic function is to provide dividends to all shareholders. Koniag, Inc. has nine directors, each serving a three-year term. In 1998, Koniag, Inc. formed the Karluk–Sturgeon River Land Use Planning Committee to bring together Kodiak Island user groups to provide suggestions to Koniag, Inc. in its efforts to develop a long-range management plan for the Karluk River and Sturgeon River watersheds and surrounding areas.

Under ANCSA, a community was determined to be a Native village if its population was at least 50 percent Native, or it had a population

of at least 25 Native residents, and it wasn't modern or urban in character. Originally, 16 village corporations were established in the Kodiak region. The City of Kodiak is one of four urban centers in Alaska subject to a special ANCSA provision. Shareholders who live in Kodiak, a historic Native community but no longer a village, are considered at-large shareholders in the region.

Native organizations established nonprofit associations in the 1960s and early 1970s to advocate the interests of their members at the state and federal levels. These organizations were instrumental in obtaining a claim settlement, and they established social programs to serve members with funding from government agencies or foundations. Generally, their present activities encompass health, education, housing, and employment assistance. Natives living in the Kodiak area established the Kodiak Area Native Association, generally known as KANA.

Ten communities are located within the borough: Akhiok, Larsen Bay, Ouzinkie, Port Lions, and Old Harbor are second-class cities; Karluk, Chiniak, Kodiak Station (U.S. Coast Guard Station), and Womens Bay are unincorporated. Kodiak is a home-rule city. Uganik is currently an unpopulated community.⁴ These communities are discussed in more detail in the following section.

3.3.4 Local Population and Economy

Population

The population of Kodiak Island Borough in 2002 was 13,852, which compares to 13,913 two years earlier and 13,309 in 1990. Residents live primarily in 10 communities across the Island, with about half the population living in the City of Kodiak and several thousand more on the road system. These numbers increase greatly with the influx of people during the summer and fishing season; more than 40 percent of Kodiak's workforce are nonresidents working primarily in the seafood industry (Fried and Windisch-Cole 1999).

The communities on the Island have experienced varying rates of growth and decline over the years, with some (such as Kodiak, Ouzinkie, and Port Lions) showing trends of increasing in population and some (such as Karluk) showing declines; others exhibit fluctuations (Table 3-11).

The Alaska Department of Labor and Workforce Development estimates future population growth only at the borough level, not the community level. The most recent estimates for Kodiak Island Borough predict an increase in population of 0.17 to 0.19 percent annually during the next 15 years (until 2018). This compares to a statewide projected increase of just more than 1 percent annually and

⁴Uganik is located on Uganik Bay on the northern coast of Kodiak Island. It was originally a Native village reported as "Oohanick" in 1805 and as "Oogashik" in 1880. A summer subsistence fish camp, the site is presently not occupied year-round.

an annual increase of about 1.4 percent for the Kenai Peninsula Borough. The result for the Kodiak Island Borough is a projected slight population increase, from 13,852 in 2002 (the most recent estimate) to about 14,500 in 2018. The original Kodiak Conservation Plan contained an “unofficial” projection that the population of the Island, listed as 9,945 in 1980, would swell to 19,556 by 2000; obviously that level of anticipated growth has not taken place.

Population changes depend on two separate processes: natural increase in population (births minus deaths) and net migration (number of people moving in minus number of people moving out). For all the projections for Kodiak Island Borough, the population increase is due to natural increases; net migration is projected to be negative in each time period, with more people leaving the borough than moving into it. For example, the increase of 182 people that was predicted to occur by 2003 resulted from a natural increase of 882 coupled with a net migration of minus 700. For the state as a whole, in comparison, nearly all of the projected changes are due to natural increases; net migration is extremely small (about the same number of people expected to move in as move out). According to data from the 2000 U.S. census, the Kodiak population resembles that of the state as a whole on several characteristics. The median age of Kodiak residents is just under 32, slightly less than the statewide average, and contains about 112 men per 100 women, which is similar to the statewide proportion. A slightly higher proportion of Kodiak residents are children under five (8.9 percent compared to 7.6 percent statewide). The proportion of unemployed workers in the Borough (about 5 percent) is also similar to the statewide proportion (5.8 percent).

Communities located on the road system (Kodiak, Kodiak Station, Womens Bay, and Chiniak) have the lowest proportion of Natives in the population, while the remote communities have much higher proportions of Native residents (Table 3-11). Kodiak’s population is one of the most diverse in Alaska. In the 2000 U.S. census, almost 18 percent of Kodiak respondents identified themselves as all or part Alaska Native, 17 percent indicated that they were Asian-Pacific Islander (the largest concentration of this group in the state), six percent claimed Hispanic origin, and one percent identified themselves as black.

A review of the Island’s communities illustrates the rural, isolated nature of Island life and residents’ dependence on natural resources, especially the marine life.⁵

Akhiok is located at the southern end of Kodiak Island at Alitak Bay. The original village of Kashukugniut was occupied by Russians in the early 19th century. The community was a sea otter-hunting settlement located at Humpy Cove. The name Akhiok was reported

⁵Descriptions of communities are from the Department of Community and Economic Development, Community Profiles, available on the World Wide Web at <http://www.dced.state.ak.us>.

in the 1880 census. In 1881, residents relocated to the present site at Alitak Bay. Residents of Kaguyak relocated to Akhiok after the village was destroyed by the tsunami following the 1964 earthquake. Public sector employment and seasonal work provide cash flow in the community, and five residents hold commercial fishing permits. Almost all of Akhiok's residents depend heavily on subsistence fishing and hunting for food supplies, including salmon, crab, shrimp, clams, ducks, seal, deer, rabbit, and bear. The community is interested in developing a fish smokery and cold-storage facility. The city is accessible only by air and water. A state-owned 3,320-foot gravel runway and a seaplane base, owned by Columbia Ward Fisheries, are located at Moser Bay. Barge services are sporadic. A breakwater and boat launch are available, but the existing dock is a temporary structure.

Chiniak is located 45 miles southeast of the City of Kodiak on the easternmost point of Kodiak Island and accessible by road. Chiniak is an Alutiiq (Russian-Aleut) name first reported in 1888 by Lt.

Commander Tanner, U.S. Navy, of the steamer *Albatross*. Chiniak was originally named "Cape Greville" in 1778 by Capt. Cook. During the mid-1950s, a U.S. Air Force White Alice Communications System radar-tracking station was constructed in Chiniak. The school, post office, and local roadhouses are the primary year-round employers. Chiniak has no stores or gas stations. Several residents commute to Kodiak for employment. Many work in construction, fishing, or other seasonal industries outside of the community; one resident holds a commercial fishing permit. Local boat owners anchor in Thumb's Up Bay. An old airstrip may be used for emergency landings.

Karluk is located on the western coast of Kodiak Island on the Karluk River 88 air miles southwest of Kodiak. The mouth of the Karluk River is thought to have been populated by Natives for more than 7,000 years; 36 archaeological sites are known to exist in the area. Russian hunters established a trading post here in 1786 when the village was located on both sides of the Karluk River near Karluk Lagoon. Between 1790 and 1850, many tanneries, salteries, and canneries were established in the area; by 1800, Karluk was known for having the largest cannery and the greatest salmon stream in the world. Overfishing of the area forced the canneries to close in the late 1930s. Following a severe storm in January 1978, the village council decided to relocate the community to the present site, upstream on the southern side of the lagoon. The Department of Housing and Urban Development constructed 23 houses at the new community location. The school was closed for the 1999-2000 year because of insufficient students. A few high school students attend Mount Edgecumbe School in Sitka.

Table 3-11 Population characteristics, Kodiak Island Borough

Community	Pop. 2002	Pop. 2000	Pop. 1990	Pop. 1980	Pop. 1970	Pop. 1960	Percentage Alaska Native	Median Household Income	Percentage Unemploy- ment	Percentage Older Than 16 yrs. Not in Labor Force ¹	Percentage Below Poverty Line
Akhiok	48	80	77	105	115	84	94	33,438	14	47	10
Karluk	23	27	71	96	98	129	96	19,167	0	48	0
Larsen Bay	107	115	147	168	109	72	79	40,833	10	42	21
Old Harbor	229	237	284	340	290	193	86	32,500	23	58	30
Ouzinkie	189	225	209	173	160	214	88	52,500	12	48	6
Port Lions	251	256	222	215	227	0	64	39,107	4	52	12
Chiniak	56	50	69	0	0	0	4	14,167	0	16	20
Kodiak Station	1,473	1,840	2,025	1,370	3,052	0	3	46,189	6	23	0
Womens Bay	750	690	620	0	0	0	12	72,083	5	21	0
Kodiak City	6,544	6,334	6,365	4,756	3,798	2,628	13	55,142	5	30	7
Kodiak Island Borough	13,852	13,913	13,309	9,939	6,357	7,174	18	54,636	5	29	7

¹ Unemployed or not seeking work

Source: Alaska Department of Community and Economic Development (DCED) Community Database 2002, accessible on the Internet at:
http://www.dced.state.ak.us/dca/commdb/CF_CUSTM.htm

Fish processing is the primary livelihood. The village corporation shares ownership of a cannery with the corporations of Larsen Bay and Old Harbor, but operations have remained idle in recent years. Residents actively participate in subsistence hunting and fishing activities. Salmon, trout, ducks, seals, and deer are harvested. Karluk is accessible by air and water, including via a state-owned 2,000 foot gravel airstrip and a seaplane base at Karluk Lake. Barge service is available twice a month from Kodiak and goods are ferried to shore by skiff. Funds have been requested to construct a dock.

Kodiak is located near the eastern tip of Kodiak Island on the Gulf of Alaska. The City of Kodiak was incorporated in 1940. During the Aleutian Campaign of World War II, the Navy and the Army built bases on the Island. Fort Abercrombie was constructed in 1939; it later became the first secret radar installation in Alaska. The 1960s brought growth in commercial fisheries and fish processing. The 1964 earthquake and subsequent tsunami virtually leveled downtown Kodiak. The fishing fleet, processing plant, canneries, and 158 homes were destroyed, resulting in \$30 million in damage. The infrastructure was rebuilt and by 1968 Kodiak had become the largest fishing port in the United States in terms of dollar value. The Magnusson Act in 1976 extended the U.S. jurisdiction over marine resources to 200 miles offshore, which reduced competition from the foreign fleet and, over time, allowed Kodiak to develop a groundfish-processing industry.

The local culture surrounds commercial and subsistence fishing activities. The Coast Guard makes up a significant portion of the community, and there is a large seasonal population. Kodiak is primarily non-Native, and the majority of the Native population are Alutiiq. Filipinos are a large subculture in Kodiak because of their work in the canneries. A Russian Orthodox seminary is based in Kodiak, one of two Orthodox seminaries in the United States. The Kodiak economy is based on fishing, seafood processing, retail services, and government. Adaptability and diversification in a variety of fisheries has enabled the Kodiak economy to develop and stabilize.

Kodiak has consistently been among the top three fishing ports in the United States, both in terms of dollar value and quantity of fish caught. In 2000, 924 commercial permits were fished by an estimated 3,200 area residents. An additional 1,678 people were employed by the shore-based seafood processing industry (Kodiak Chamber of Commerce 2001). The largest processors include International Seafoods, Trident, Ocean Beauty, and North Pacific. The hospital and city also rank among top employers.

Kodiak is accessible by air and sea. The state-owned Kodiak Airport provides a 7,500-foot paved runway. Kodiak Municipal Airport offers a 2,475-foot asphalt airstrip. Scheduled airlines serve Kodiak with several daily flights, and a number of air-taxi services provide flights to other communities on the Island. City-owned seaplane bases at Trident Basin and Lily Lake serve floatplane traffic. The Alaska Marine Highway connects Kodiak to the statewide road system via Valdez, Seward, and Homer. Travel time to Homer by ferry is 12 hours. Two boat harbors

with boat ramps provide moorage for 600 commercial and transient vessels. A new \$20 million breakwater on Near Island provides another 60 acres of mooring space at St. Herman Harbor; float expansion began in 2002. Approximately 83 miles of state roads connect Island communities on the eastern side of the Island.

Kodiak Station is located on the eastern shore of Kodiak Island, south and adjacent to the City of Kodiak. This large tract of military property on Kodiak Island has been occupied since the World War II Aleutian Campaign. Originally an Army Base, it was then a Naval Base; in 1972, it became a Coast Guard Station. The Air Force has also been active on Kodiak, building a tracking station at Chiniak after World War II. Kodiak Station is the nation's largest U.S. Coast Guard Station. The station is self-contained, providing its own water and sewer systems. However, many Coast Guard families live off-station in the surrounding area. Kodiak Station residents are Coast Guard or civilian support personnel and their families. The Coast Guard uses the state-operated Kodiak Airport for transportation of personnel and materials. The station has docking facilities for large cutters and fishing vessels.

Larsen Bay is located on a bay by the same name on the western coast of Kodiak Island 60 miles southwest of the City of Kodiak. The area is thought to have been inhabited for at least 2,000 years, and hundreds of artifacts have been uncovered in the area. Russian fur traders frequented the Island in the mid-1700s. The bay was named for Peter Larsen, an Unga Island furrier, hunter, and guide. In the early 1800s, there was a tannery in Uyak Bay. Larsen Bay is a traditional Alutiiq settlement practicing a commercial fishing and subsistence lifestyle. The economy of Larsen Bay is primarily based on fishing and work at Kodiak Salmon Packers; 17 residents hold commercial fishing permits. Very few year-round jobs exist. Most of the population depends on subsistence activities, taking salmon, halibut, seal, sea lion, clams, crab, and deer are used. Larsen Bay is accessible by air and by water. Scheduled and charter flights are available from the City of Kodiak via a state-owned, lighted, 2,700-foot gravel airstrip and a seaplane base. Docking facilities are available. The U.S. Army Corps of Engineers recently completed construction of a breakwater and boat harbor. A cargo barge arrives every six weeks from Seattle.

Old Harbor is located on the southeastern coast of Kodiak Island, 70 miles southwest of the City of Kodiak. The area around Old Harbor is thought to have been inhabited for as long as 7,500 years. The area was visited by the Russian Grigori Shelikov and his *Three Saints* flagship in 1784. Three Saints Bay became the first Russian colony in Alaska. In 1788, a tsunami destroyed the settlement, and in 1793 it was relocated on the northeastern coast to Saint Paul's, now known as Kodiak. A settlement was re-established at Three Saints Harbor in 1884. The town was recorded as "Staruigavan," meaning "old harbor" in Russian. The present-day Natives are Alutiiq. In 1964, the Good Friday earthquake and resulting tsunami destroyed the community; only two homes and the church remained standing. The community has since been rebuilt in the same location.

Old Harbor practices its traditional Alutiiq culture and subsistence lifestyle. Fishing provides income to the community. A summer fish camp at Kaguyak is used by residents of Old Harbor. Many residents are commercial fishermen; 39 residents hold commercial fishing permits. Tourism is an increasing part of the economy. Most residents depend to some extent on subsistence activities for food sources such as salmon, halibut, crab, deer, seal, rabbit, and bear. Old Harbor is accessible only by air and water. A new state-owned 2,750-foot gravel runway and a seaplane base serve air traffic with both scheduled and charter flights available from the City of Kodiak. There is a harbor and docking facilities for 55 boats.

Ouzinkie is located on the western coast of Spruce Island adjacent to Kodiak Island. Ouzinkie became a retirement community for the Russian American Company. The Russians referred to the settlement in 1849 as “Uzenkiy,” meaning “village of Russians and Creoles.” In 1889, the Royal Packing Company constructed a cannery at Ouzinkie. Shortly afterward, the American Packing Company built another. In 1890, a Russian Orthodox church was built, and a post office was established in 1927. Cattle ranching was popular in the early 1900s. In 1964, the Good Friday earthquake and resulting tsunami destroyed the Ouzinkie Packing Company cannery. Following the disaster, Columbia Ward bought the remains and rebuilt the store and dock, but not the cannery. In the late 1960s, the Ouzinkie Seafoods cannery was constructed. The operation was sold to Glacier Bay and burned down in 1976 shortly after the sale. No canneries have operated since.

Ouzinkie is an Alutiiq village supported by commercial fishing and subsistence activities. Ouzinkie’s economic base is primarily commercial salmon fishing; 25 residents hold commercial fishing permits. Almost all of the population depends to some extent on subsistence activities for various food sources, including salmon, crab, halibut, shrimp, clams, ducks, deer, and rabbit are used. The village is accessible by air and water. A state-owned, 2,085-foot gravel airstrip and a float plane landing area are located at Ouzinkie Harbor; facilities include a breakwater, small boat harbor, and dock. A new breakwater and small boat harbor are currently under design by the U.S. Army Corps of Engineers.

Port Lions is located in Settler Cove on the northern coast of Kodiak Island. The town was founded in 1964 by the displaced inhabitants of Afognak, which was destroyed by the tsunami after the Good Friday Earthquake. The community was named in honor of the Lions Club for its support in rebuilding and relocating the village. For many years, Port Lions was the site of the large Wakefield Cannery on Peregrebni Point. The cannery burned down in March 1975. Soon thereafter, the village corporation purchased a 149-foot floating processor, the *Smokwa*. Although sold in 1978, the *Smokwa* processed crab in the area intermittently between 1975 and 1980. A small sawmill, located south of town, operated until 1976.

The majority of the population are Alutiit. Most residents lead a fishing and subsistence lifestyle. The economy of Port Lions is based primarily

on commercial fishing, fish processing, and tourism; 18 residents hold commercial fishing permits. All residents depend to some extent on subsistence activities for food sources such as salmon, crab, halibut, shrimp, clams, duck, seal, deer, and rabbit. Port Lions is accessible by air and water via a state-owned, 2,200-foot gravel airstrip, or a city dock that may be used by seaplanes. The boat harbor with breakwater and dock provide 82 boat slips. The state ferry operates bi-monthly from Kodiak between May and October.

Womens Bay is on the eastern coast of Kodiak Island, eight miles south of Kodiak. Originally inhabited by homesteaders, the property in this area was transferred to the state and then to the borough. The community was named for the bay it overlooks. Because of the community's close proximity to Kodiak Station, many residents are Coast Guard families. A community association advocates for local concerns. Residents are employed in a variety of positions in Kodiak or at the Coast Guard Station.

Economy

Commercial fishing and seafood processing, logging, recreational hunting and fishing, tourism, and U.S. Coast Guard expenditures make up the bulk of the economy of Kodiak. Fried and Windisch-Cole (1999), writing for the Alaska Department of Labor and Workforce Development, summarized Kodiak's economy as follows:

Although one or more fisheries are often experiencing some sort of stress, the incredible diversity of Kodiak's fishery—the harvesting, subsistence, and processing—continues to sustain the area's economy at healthy levels. This should continue into the foreseeable future. The Coast Guard's massive presence helps to even out the seasonality in the area's economy and provides Kodiak with additional stability. The visitor industry not only supplements the economy but also is a source of growth. And the new rocket launch facility could steer Kodiak's economy in a whole new direction (Fried and Windisch-Cole 1999, p. 13).

Fish Harvesting and Processing.⁶ The marine waters around Kodiak are known to be among the richest in the world. Offshore upwelling combines with abundant freshwater runoff to make nearshore waters rich in nutrients. As a result, Kodiak is the center of fishing activities for the Gulf of Alaska, and it has consistently been one of the top fishing ports in the United States both in terms of dollar value generated and quantity caught (Table 3-12). Commercial fishing and processing account for about 55 percent of the Kodiak private sector workforce. In 2000, 924 commercial permits were fished by an estimated 3,200 area residents, and an additional 1,678 people were employed by the shore-based seafood processing industry (Kodiak Chamber of Commerce 2001).

⁶Except where otherwise noted, this section is from Fried and Windisch-Cole (1999).

Groundfish Harvests: The Kodiak groundfishery started to become important during the mid-1980s as Kodiak processing plants declined economically because of increased competition. Major efforts were made to develop the groundfishery during that period, and it has now surpassed salmon as the main source of fishing income. The wholesale value of groundfish landings increased from less than \$4 million to more than \$45 million throughout the 1980s.

Among groundfish species, pollock and Pacific cod are the most economically important. In 1997, the groundfish fleet unloaded more than 156 million pounds of these two species at the Port of Kodiak, and local residents earned roughly \$36 million. From 1997 through 2000, the Pacific cod harvest—the largest component of the fishery—totaled nearly \$11 million dollars (Jackson and Ruccio 2001). The Pacific cod harvest rose throughout the latter portion of the 1990s in terms of number of vessels registered and number of landings, although it has shown signs of declining in recent years. (See Table 3-13.)

Halibut: The halibut fishery has become an important component of fishing income for Kodiak, ranking second in income generated in 1997.

Table 3-12 Commercial fishery landings and dollar value at Kodiak

Year	Dollars (millions)	Pounds (millions)	National Rank (value/pounds)
2001	74.4	285.5	3/6
2000	94.7	289.6	3/6
1999	100.8	331.6	3/6
1998	78.7	357.6	3/3
1997	88.6	277.5	3/6
1996	82.3	202.7	3/5
1995	105.4	362.4	2/2
1994	107.6	307.7	2/5
1993	81.5	374.2	3/2
1992	90.0	274.0	3/2

Source: National Marine Fisheries Service (2003)

Salmon Harvests: Salmon migration or spawning has been documented in approximately 800 anadromous streams within the Kodiak Management Area (KMA)⁷. Of these, 440 streams have significant salmon production. Commercial salmon fisheries on Kodiak Island are among the oldest in the state, with harvest records dating back to 1882. In 1974, a limited-entry program was adopted by the State of Alaska; this program restricted the number of individuals allowed to participate in commercial salmon fisheries. In 2002, 604 commercial salmon permits were available for the KMA in the purse seine, beach seine, and set-gillnet fisheries. Seventy-seven percent of the permits were owned by

⁷The Kodiak Management Area includes both mainland and island sections.

Table 3-13 Kodiak state water Pacific cod fishery results

Year	Number of Vessels	Number of Landings	Guideline Harvest Levels (millions of pounds)	Pounds Harvested (millions of pounds)
1997	113	712	8.5	7.6
1998	143	980	8.1	8.5
1999	200	1,259	11.7	10.7
2000	215	1,709	12.0	8.6
2001	106	672	10.6	4.9
2002	84	552	8.7	8.8
2003	144	838	8.0	8.2
2004	171	1,122	9.9	10.0

Source: Sagalkin and Spalinger 2005

Alaska state residents, and 60 percent were owned by Kodiak Island residents (ADF&G 2002a). As many as 15 salmon buyers participate annually in KMA salmon fisheries, with processing plants located in the City of Kodiak, Port Bailey, Uganik Bay, Larsen Bay, and Alitak Bay.

Records indicate that between 1887 and 1928 sockeye harvest ranged from 1,004,500 (in 1887) to 4,826,200 fish (in 1901) (Kodiak Chamber of Commerce 2001). Intense competition eventually led to the expansion of commercial fishing into other species of salmon. During the past decade, the increase in foreign-farmed salmon and a prolonged economic crisis in Asia have made an impact on Alaska's salmon industry. Oversupply and poor prices have negatively affected Kodiak's salmon fishers. The average ex-vessel value of salmon harvested from 1993 through 2004 was about \$28.2 million, with a high of nearly \$54 million in 1995 and a low of \$13.6 million in 2002. (See Table 3-14.) In 2004, the number of boats fishing was unchanged from 2003, with 304 permits fished out of 595 permits issued (from a low of 242 permits fished out of 604 permits issued in 2002) (ADF&G 2005).

Crab Harvests: Before 1950, most Kodiak processing facilities were devoted to salmon. In 1950, some 60,000 pounds of king crab was landed, and processing capacity was added by building new plants and expanding older ones. The king crab fishery became a major force in Kodiak's economy from 1950 through 1959 as the catch increased from 60,000 pounds to 21 million pounds.

Table 3-14 Salmon harvest permits issued, permits fished, and ex-vessel value in millions of dollars

Year	Number of Permits Issued	Number of Permits Fished	Dollars (millions)
2004	595	304	23.5
2003	598	304	18.7
2002	604	242	13.6
2001	606	354	22.1
2000	605	397	23.1
1999	605	397	34.0
1998	606	390	34.8
1997	606	440	21.0
1996	607	439	27.6
1995	609	493	53.9
1994	611	459	27.1
1993	611	509	38.6

Source: ADF&G 2005, fishing statistics and activities accessible on the Internet at: <http://www.cfec.state.ak.us/bit/mnusalm.htm>

In the late 1960s and early 1970s, when harvest levels began to fall, several processors relocated to Unalaska and Dutch Harbor, closer to the crab supply. This diverted part of the Bering Sea and Aleutian Island harvest away from Kodiak. The 1982-1983 king crab harvest of 8.7 million pounds, the lowest in 24 years, was followed by closure of the fishery by ADF&G due to poor stock condition. Although crab do not play the role they used to in the Kodiak fishery, it's still home to the largest crab fleet in Alaska. In 1997, 197 boats from Kodiak participated in the harvest which generated more than \$18 million. In 2000, more than 900,000 pounds of King Crab was landed at the Port of Kodiak (Kodiak Chamber of Commerce 2001).

Shrimp Harvests: The 1950s also marked the beginning of the Kodiak shrimp fishery, with a harvest of 31,886 pounds in 1958. The fishery grew rapidly to an annual catch of 10 to 12 million pounds in the early 1960s. The fishery slowed when shore plants and the fishing fleet were badly damaged by the 1964 earthquake and tsunami, but then grew to a peak of 82.2 million pounds in 1971. As Kodiak shrimp catches declined in the late 1970s, much of the vessel effort shifted to the Chignik and South Peninsula areas until those areas demonstrated similar declines in the late 1970s. In 1999, only 6,035 pounds of shrimp was landed at the Port of Kodiak (Kodiak Chamber of Commerce 2001).

Tourism.⁸ Tourism, like many other Kodiak industries, is based on natural resources. Tourists come to Kodiak to hunt, fish, view and photograph

⁸ Except where otherwise noted, information in this section is from the Alaska Economic Information System (AEIS) Web page, accessed in May 2003 and available at <http://www.dced.state.ak.us/dca/AEIS/>.

wildlife, view the scenic beauty, hike, camp, and visit historical and cultural sites. As is true elsewhere in Alaska, Kodiak's visitor industry is seasonal, with about 75 percent of all visitors arriving during summer months. Although tourism is an important industry in all regions of Alaska, its economic significance in the southwestern region is small in comparison to that of commercial fish harvesting and processing. Total spending by visitors to Kodiak in 2001 was estimated at \$19.6 million.

At present, Kodiak's share of the Southwestern Alaska visitor market is approximately 31 percent. According to data gathered in 1993 for the Alaska Visitor Statistics Program, visitors to Southwestern Alaska destinations, including Kodiak, tend to stay longer than the average visitor to the state and are significantly more likely to be repeat visitors. In addition, visitors to Southwestern Alaska typically spend more than twice as much as the average visitor to other regions of the state. The average per-person or per-trip expenditure by visitors to Southwestern Alaska during summer 1993 was \$1,367. Approximately 84 percent of this was spent on tours and recreation. In 2001, visitor expenditure data were again gathered as part of the Alaska Visitor Statistics Program. Because of differences in the studies, direct comparisons of 1993 and 2001 Kodiak visitors' expenditures are not recommended. However, it is worth noting that, even after adjustments for inflation, average visitor expenditures for all regions of Alaska were much higher in 2001 than in 1993.

The tourism industry has experienced steady growth across much of Alaska, but there are several factors that may limit future growth in the southwestern region and on Kodiak Island in particular. The cost for visitors to access Kodiak is substantial, especially when combined with the additional cost of travel on the Island (most of which is only accessible by boat or aircraft). In addition, outside of the City of Kodiak, there is a lack of basic infrastructure to support tourism development (e.g., water, sewer, and power generation) and the cost of establishing and maintaining a local tourism business is high. There is some evidence indicating that high costs may influence visitors' overall trip evaluations. Data gathered for the Alaska Visitor Statistics Program in both 1993 and 2001 show that visitors' ratings of "value for money" were lower in Southwestern Alaska than in any other region of Alaska.

While there are real constraints on Kodiak tourism growth, there is also reason to believe that tourism will play an increasing role in the area economy. Unique wildlife-viewing opportunities may be expected to draw a growing share of tourist dollars. In particular, high-density brown bear populations represent a significant tourist resource. According to Miller and McCollum (1999), nationwide demand for wildlife-viewing is expected to increase, and people are willing to pay more to view brown bears than other Alaska animals. Improvements in basic Island infrastructure and marketing efforts that highlight Kodiak's wildlife-viewing potential may ultimately expand the economic contribution of the tourism industry.

Coast Guard. The largest U.S. Coast Guard station in the United States is located in Kodiak. The Coast Guard is an integral part of the fishing

industry, providing search and rescue, maintenance of navigational aids, enforcement of international fishing laws, and other services. The Coast Guard contributes substantially to the local economy, with a payroll of \$41 million for 2,294 personnel (including dependents) in 1998. This was second only to the fishing industry in the borough, although the multiplier effect of the payroll is smaller because the base is a largely self-contained community. In 1999, the Coast Guard also spent some \$15 million on construction that benefited the local economy.

Kodiak Launch Complex. The Alaska Aerospace Development Corporation, a public corporation created in 1991 to develop Alaska-based economic and technical opportunities in the aerospace industry, initiated construction of the launch complex in January 1998. The 27-acre, low-earth-orbit complex is located 25 miles southwest of the City of Kodiak at Narrow Cape.

On November 5, 1998, the U.S. Air Force conducted the launch of the *ait-I*, a suborbital atmospheric interceptor rocket. It was the first launch from a Federal Aviation Administration–licensed launch site not located within the boundaries of a federal facility. The inaugural launch from the complex generated \$1.3 million and represented a significant economic impact to the State of Alaska (Alaska Aerospace Development Corporation 2000). Additional service contracts have been negotiated with Lockheed Martin Corporation, the U.S. Air Force Space and Missile Center, and the U.S. Army Space and Missile Defense Command.

Employment and Income⁹

Commercial fishing, seafood processing, and the Coast Guard are the main sectors supporting the Kodiak Island Borough economy. During the 1990s, these sectors accounted for 45 percent to 50 percent of earned income in the borough (Fried and Windisch-Cole 1999). Approximately one in three jobs in the borough is in commercial fish harvesting and seafood processing. The importance of the seafood industry is magnified because many businesses in the nonfishing sector of the borough, such as trade and services, provide support to the fishing industry. Many of the workers in the fish-harvesting and -processing industries are not borough residents, and this reduces the amount of their income that is spent in the borough economy. However, compared to other seafood-processing centers in Alaska, Kodiak has a large resident workforce. In 1998, 60 percent of seafood processors were residents. In contrast, residents of Bristol Bay made up just 22 percent of the seafood-processing workforce in that area.

The Coast Guard also makes significant contributions to the Kodiak economy. The base accounts for about one in 10 jobs and about one in six dollars of earned income. As is the case with the fishing industry, many Coast Guard personnel are not borough residents. In addition, the base provides many services that would normally be purchased in the local economy. Therefore, the Coast Guard's impact is somewhat less than might be expected from its share of jobs and payroll.

⁹Except where otherwise noted, this section is from Goldsmith et al. (2003), a report that was commissioned specifically in support development of this planning document.

Local, state, and federal government civilian jobs total 12 percent of borough employment, but account for one in six earned dollars. Government also supports the borough economy through transfers to individuals—the Permanent Fund dividend, welfare and medical payments, and retirement payments being the largest categories. In total, transfers added about the same amount as fish processing to borough residents' income in 2000.

Trends in Kodiak's wage and salary employment show that seafood processing, government, and services have all been steady, long-time contributors. (See Table 3-15.)¹⁰ Timber jobs, provided by logging on Native corporation lands on Afognak Island and near Chiniak, dropped in the late 1990s because of the recession in Asia (Fried and Windisch-Cole 1999).

*Economic Significance of the Refuge*¹¹

The economic significance of the Refuge is a measure of the total number of jobs and the total household income generated by expenditures associated with management of the Refuge, by expenditures of refuge visitors, and by expenditures for harvest and other uses of refuge resources. In Alaska, these expenditures directly create jobs for Service employees, for people employed in businesses serving the recreation industry, and for commercial fisherman and fish-processing workers. Additional jobs are created by expenditures of the Service and by businesses for procuring supplies and services. Because these government and private sector workers spend their incomes, job in other sectors of the economy are created through a process known as the multiplier effect. The total number of jobs created by management and use of the Refuge is consequently greater than just the number directly created.

The estimates of jobs and income creation included in this section may be of particular interest to local Kodiak businesses and governments. Jobs and household income generated by the Refuge are usually viewed as beneficial to the regional economy. According to an analysis by the Institute for Social and Economic Research (ISER) at the University of Alaska, the Refuge sustains more than 1,300 jobs and \$61 million in annual payroll within the Kodiak Island Borough. These figures are even larger when the bounds of the analysis are expanded to include the entire state of Alaska. (See Table 3-16.) The figures should be interpreted with caution, however, because they are almost entirely attributable to commercial fish harvesting and processing. Commercial salmon fishing is considered to be a refuge-dependent activity (salmon depend on lakes and rivers on the Refuge for breeding habitat) rather than an on-site

¹⁰ Because of the State of Alaska's method of collecting employment data, it is difficult to determine the exact size of the Kodiak Island Borough workforce. The Alaska Department of Labor's main source of employment data is the state's unemployment insurance program, collected through Employment Security Contributions. Self-employed workers (fishermen) and military employees (Coast Guard) do not participate in this program, so no data are collected for these two sectors.

¹¹ This section is derived from Goldsmith *et al.* 2003.

Table 3-15 Kodiak Island Borough annual average monthly employment by industry, 1990–2001

	2001	2000	1999	1998	1997	1996	1995	1994	1993	1992	1991	1990
Total Employment	6,091	5,701	5,801	5,733	6,193	6,308	6,090	5,811	5,320	5,318	5,711	5,742
Construction	167	137	127	154	139	158	186	154	142	164	161	158
Manufacturing	2,102	1,774	1,871	1,964	2,509	2,584	2,350	2,260	1,885	1,810	2,091	2,062
Transportation/Communications/ Utilities	288	266	279	297	299	303	343	301	323	339	320	319
Trade	934	928	998	840	842	883	960	841	828	851	931	921
Wholesale Trade	54	51	50	69	69	68	91	72	68	45	41	36
Retail Trade	880	877	948	771	773	815	870	769	759	806	890	886
Finance/Insurance/Real Estate	169	179	162	162	155	145	141	148	1,351	136	112	111
Services	1,142	1,185	1,161	1,126	1,028	999	934	894	828	845	958	1,021
Agriculture/Forestry/Fishing	60	86	80	69	70	95	85	99	62	52	21	30
Government	1,229	1,145	1,120	1,121	1,150	1,140	1,092	1,117	1,115	1,120	1,116	1,120
Federal	208	208	182	170	172	158	162	166	171	174	165	162
State	240	225	226	242	252	251	248	252	263	277	275	285
Local	781	713	712	709	726	731	682	695	681	669	677	673

Source: Alaska Department of Labor and Workforce Development, Research and Analysis Section. Available on the World Wide Web at <http://www.labor.state.ak.us/research/ee/eeekod.pdf>

Note: Data for 1990 through 2000 are based on the Standard Industrial Coding System (SIC). Beginning with January 2001, employment data are published under the North American Industrial Classification System (NAICS). The NAICS includes some new and reorganized employment categories so that data prior to 2001 may not be comparable.

refuge activity (such as hunting or wildlife-viewing, which actually occurs within refuge boundaries). The ISER analysis includes the full value of commercially caught fish even though part of that value depends on off-refuge ocean resources.

Neither the replacement value of subsistence resources nor expenditures generated by subsistence activities are included in this analysis of economic significance. Subsistence activities can generate significant expenditures (e.g., money spent for gasoline, firearms, and ammunition); but few good data available to quantify refuge-dependent subsistence expenditures. Also not included in this analysis are the contributions of the Refuge with respect to broad ecological services such as the maintenance of biodiversity. It is important to note that economic significance is not the same as economic value. Total economic value may be estimated by considering the annual amount of money that people would be willing to pay to maintain the existence of the Refuge or any of its component parts or characteristics for all purposes, including subsistence, recreation, habitat, and non-use values. Non-use values are notoriously difficult to estimate because they include the value of the Refuge's existence to people far from the Refuge who may never see or visit it.

3.3.5 Cultural Resources

The earliest evidence of human occupation in the Kodiak Archipelago comes from the Tanginak Spring site on Sitkalidak Island. Here archaeologists uncovered stone tools as many as 7,500 years old. These tools are similar to those found at Anangula, the oldest known site in the Aleutian Chain. This may indicate that Kodiak was colonized from the west, perhaps by people living on the Alaska Peninsula. Wherever they came from, Kodiak's first settlers must have arrived by boat, because geological evidence shows that the region was surrounded by ocean thousands of years before human settlement. Moreover, a substantial proportion of the foods and raw materials available in the Kodiak environment come from the sea. To establish an enduring population, people must have been able to efficiently harvest sea mammals, fish, and birds from boats.

Alaska is one of the most culturally diverse regions of North America. There are three racially distinct Native populations in the state—Aleut, Eskimo, and Indian—each with a unique history. This diversity reflects Alaska's position at the crossroads between Asia and the Americas. Archaeologists believe that modern Native Americans are descended from Asiatic peoples that walked or paddled into Alaska at the end of the last great ice age. This gradual migration began about 12,000 years ago. Some settlers made Alaska their home; others spread south and east, rapidly populating all of North and South America, from the northernmost reaches of the Canadian archipelago to the southern tip of Chile.

Table 3-16 Employment and payroll attributable to on site and refuge-dependent activities

Activity	Alaska Statewide Employment ¹	Kodiak Island Borough Employment ¹	Alaska Income ²	Kodiak Borough Income ²
Refuge Spending	34.7	24.4	\$1,430,243	\$1,090,472
Recreational Hunting	25.4	19.3	\$677,657	\$505,961
Recreational Fishing	14.4	10.4	\$339,001	\$231,532
Nonconsump- tive Uses ³	6.3	4.5	\$150,098	\$100,965
Commercial Fish Harvesting	562.4	452.0	\$41,986,307	\$38,720,592
Commercial Fish Processing	866.0	798.5	\$22,806,308	\$20,559,321
TOTAL	1,509.2	1,309.1	\$67,389,614	\$61,208,843

1 average annual jobs supported

2 in 2000 dollars

3 including wildlife-viewing

Source: Goldsmith *et al.* (2003)

Over thousands of years, Alaska's Native people adapted to the range of unique environments in the large and ecologically diverse state. Today there are six major Native Alaska groups: the Aleut, Alutiiq, Yup'ik, Inupiat, Athabascan, and Northwest Coast Indians. The Kodiak Archipelago and the surrounding regions of Prince William Sound, the outer Kenai Peninsula, and the Alaska Peninsula are home to the Alutiiq.

Anthropologists classify the Alutiiq as an Eskimo people because their culture and language are most closely related to those of the Yup'ik and Inupiat. In prehistoric times, the Alutiiq shared many items of technology with other northern coastal peoples. They built sod houses that were lit by stone oil lamps; they hunted sea mammals from skin-covered kayaks equipped with sophisticated harpoons; they wore waterproof clothing stitched from seal intestines, beach grass, and sinew. Additionally, the Alutiiq speak Alutiiq, one of six Eskimo languages.

Archaeologists have located more than 850 sites in the Archipelago, or about 4 percent of all known archaeological sites in Alaska; more than 200 of these are located on Kodiak Refuge. Kodiak's prehistoric sites include the ancient shell-filled villages that dot the coast, burial caves in secluded mountain settings, stone weirs built to trap salmon, petroglyphs pecked into cliff faces, ridge-top cairns, stone quarries,

and even ancient trails. The City of Kodiak also holds historic sites. The Holy Resurrection Russian Orthodox Church, the Erskine House—home of the Kodiak Historical Society’s Baranov Museum—and the concrete bunkers at Fort Abercrombie are all listed on the Alaska Heritage Resources Survey (the state’s list of cultural sites) because they reflect significant events in Alaska history.

In the Kodiak Archipelago, dense prehistoric populations left large accumulations of cultural debris that have resisted decay in the region’s persistently cool, wet environment. Besides having the stone tools commonly found in Alaska archaeological sites, many of Kodiak’s ancient middens contain shell, bone, antler, and ivory objects. A few hold spectacular assemblages of wood and fiber artifacts. Kodiak’s sites are also rich with features. Houses, hearths, clay-lined storage pits, slate boxes, and burials add to the wealth of buried information on past ways of life.

Archaeologists have long been attracted to Kodiak’s well-preserved sites, making the Archipelago one of the more extensively studied regions of Alaska. Archaeological research began in the 1930s with the work of Smithsonian anthropologist Ales Hrdlicka. Over succeeding years, archaeologists developed a cultural chronology for the Island, describing the sequence of indigenous societies. This led to more detailed studies of past lifeways in each prehistoric era and ultimately to a better understanding of the origins and evolution of Kodiak’s Native people. Despite extensive research, there is still much to learn, and Kodiak archaeology continues at a rapid pace. Through efforts such as the Afognak Native Corporation’s Dig Afognak! and the Alutiiq Museum’s Community Archaeology program, Native people and scientists are working together to explore questions of mutual interest (Kodiak Chamber of Commerce 2000).

The Refuge’s Guide for Managing Cultural Resources (Diters 1999) assists refuge staff in meeting legal requirements to protect and manage cultural resources of the Refuge. It contains a list of relevant laws and guidelines and lists projects that are considered priorities for inventory, evaluation, protection, and dissemination of information.

3.3.6 Subsistence

One of the purposes of the Refuge is to provide the opportunity for continued subsistence uses by local residents in a manner consistent with the purposes of conserving fish and wildlife populations and habitats and fulfilling international treaty obligations with respect to fish and wildlife.

This section summarizes local subsistence uses, especially as related to the Refuge. Subsistence use by residents of Kodiak Archipelago is described in a number of reports by ADF&G. Readers are encouraged to go directly to the reports cited for additional information. Data on subsistence use by Kodiak Archipelago residents is available from the State of Alaska’s Community Profile

Data Base available from ADF&G and on its subsistence publication web page at <http://www.subsistence.adfg.state.ak.us/geninfo/publctns/techpap.cfm>.

Subsistence activities are not just a way of obtaining food; they are an important mechanism for maintaining cultural values such as kinship, community, respect for elders, hospitality, sharing resources, and the passing of values to younger generations. These aspects of subsistence have been explored in several Kodiak communities (Larsen Bay, Old Harbor, and Ouzinkie) as part of research on the effects of the *Exxon Valdez* oil spill on coastal communities (Fall 1991, Fall and Utermohle 1991, Fall 1999). The 1999 report concluded that while subsistence activities had dropped dramatically in the years immediately following the oil spill, subsistence uses 10 years later had rebounded to pre-spill levels.

Subsistence uses are defined in Section 803 of ANILCA as “the customary and traditional uses by rural Alaska residents of wild, renewable resources for direct personal or family consumption as food, shelter, fuel, clothing; byproducts of fish and wildlife resources taken for personal or family consumption, for barter, or sharing for personal or family consumption; and for customary trade.”

ANILCA recognizes that continued opportunity for subsistence uses of public lands is critical to physical, economic, traditional, social, and cultural existence of rural Native and non-Native residents of Alaska. Recognizing multiple threats to subsistence lifestyles, ANILCA established a preference for subsistence users, stating that the taking of fish and wildlife on public lands for nonwasteful subsistence use is given priority over other consumptive uses. In times of scarcity, recreation use is limited first.

ANILCA authorized regional advisory councils to provide opportunities for discussion of subsistence regulations and for development and review of proposals. The councils make recommendations to the Federal Subsistence Board, which establishes regulations on federal lands. The Kodiak-Aleutian Islands Federal Subsistence Regional Advisory Council makes recommendations to the Federal Subsistence Board for Kodiak Archipelago. ANILCA contains many other provisions supporting continued opportunity for subsistence. Section 811, for example, ensures that subsistence users can access—subject to reasonable regulation—public lands by snowmachine, motorboat, and other traditionally used means of transportation.

Residents of Kodiak Island rely on and harvest an abundance and diversity of fish, game, invertebrates, and plants for subsistence purposes. (See Table 3-17 and Table 3-18.) Most subsistence activities occur near communities, along the coast, and on the lower reaches of major rivers where lands are often primarily in private ownership. Access to interior areas of the Refuge is often difficult and expensive when compared to access to coastal areas.

Table 3-17 Estimated annual amount of wild food harvest by community

Community	Survey Year	Wild Food Harvest ¹	Per Wild Food Harvest ²	Wild Food Harvest ³
All Communities		1,900,708	932	272
Akhiok	1992	25,735	1,072	322
Karluk	1991	18,603	1,240	269
Kodiak City	1993	915,070	459	151
Kodiak Road	1991	672,909	580	168
Larsen Bay	1997	46,154	1,126	371
Old Harbor	1997	88,851	1,111	300
Ouzinkie	1997	55,015	887	264
Port Lions	1993	78,371	980	332

1 estimated pounds per community

2 estimated pounds per household

3 estimated pounds per person

Source: Scott *et al.* (2001)

Table 3-18 Wild food harvests per individual for all Kodiak Island communities by resource¹

Community and Year of Data	Salmon	Other Fish	Land Mammals	Marine Mammals	Birds and Eggs	Shellfish	Plants	All Resources
Akhiok 1992	200	24	28	19	3	42	5	322
Karluk 1991	192	30	30	1	1	4	10	269
City of Kodiak 1993	48	60	23	0	1	10	10	151
Larsen Bay 1997	213	79	55	2	1	13	6	370
Old Harbor 1997	110	52	59	43	11	19	6	300
Ouzinkie 1997	127	65	29	14	12	7	10	264
Port Lions 1993	158	64	56	4	4	30	15	331
Average	150	53	40	12	5	18	9	287
Percentage of Total Wild Food Harvest	52%	19%	14%	4%	2%	6%	3%	100%

1 pounds per person per year Source: (Scott et al. 2001)

Of the total pounds of wild foods harvested, more than half is salmon (52 percent). Almost three quarters (71 percent) of the total pounds of resources harvested are fish. In villages outside the Kodiak road system, salmon are by far the most used wild food resource, with average per person annual harvests ranging from 110 pounds in Old Harbor to 213 pounds in Larsen Bay. Only along the Kodiak road system do residents harvest more fish of other species (i.e., halibut, Pacific cod, Dolly Varden, and sablefish) than they do salmon during the year (DCED 2004, Scott et al. 2001).

Table 3-19 demonstrates the importance of subsistence food harvest in terms of meeting nutritional needs of local residents. Subsistence harvest meets almost all the recommended dietary protein allowance and from 14 percent to 36 percent of the recommended calorie allowance.

Since 1962, permits have been required to harvest salmon for subsistence uses in the KMA. ADF&G's Division of Commercial Fisheries runs the subsistence salmon harvest assessment program out of the Kodiak office. In 2001, 2,006 subsistence permits were returned to ADF&G, 77 percent of which were held by Kodiak Island Borough residents (not including the Coast Guard station). Estimated harvest was 41,611 fish, nearly 80 percent of which were sockeye salmon, which is very close to the recent five-year average for the Kodiak area. ADF&G believes that actual subsistence harvests are not well-documented by the permit system and that harvest is substantially higher (Shaker 2003).

Land mammals such as deer and elk are also important wild food resources, contributing an average of 40 pounds per person each year. Subsistence deer hunters are thought to make extensive use of the Refuge from November through January, although no refuge-specific data on subsistence harvest exist. The assumption of extensive use is based on surveys of subsistence use for villages where most deer hunting occurs on lands adjacent to the Refuge and on field observations from refuge staff patrols during hunting season. There is also a subsistence harvest season for elk on refuge lands on Afognak Island; to date, no elk have been harvested under these regulations. A federal subsistence hunt initiated in 1997 allows 11 bears to be harvested per year by residents of six Kodiak Island villages. Since this hunt was initiated, harvest has averaged two bears per year (Wilker 2003). Other important resources include shellfish such as crabs and clams (18 pounds per person per year) and marine mammals such as harbor seals and sea lions (12 pounds per person per year).

Table 3-19 Nutritional contribution of annual subsistence food harvests by community

Community	Survey Year	Subsistence Food Harvest (pounds per person)	Protein Percentage of Recommended Dietary Allowance	Calorie Percentage of Recommended Dietary Allowance
Akhiok	1992	322	208	29
Karluk	1991	268	174	24
Kodiak City	1993	141	98	14
Kodiak Road	1991	168	109	15
Larsen Bay	1993	451	291	41
Old Harbor	1991	391	253	36
Ouzinkie	1993	218	141	20
Port Lions	1993	332	214	30

Source: Alaska Department of Commerce, Community and Economic Development, Division of Community Advocacy, available on the World Wide Web at <http://www.commerce.state.ak.us/dca/AEIS/AEISMainFrame.cfm?CensusArea=Kodiak&Industry=Subsistence&IndexItem=SubsistenceOverview>

The preceding data identify the importance of subsistence resources to local residents. Specific data on subsistence use of the Refuge are generally lacking. However, use and trends of use compiled through State and Refuge efforts provide adequate information to identify the importance of subsistence resources on refuge and other lands to local area residents. Additionally, much of the data presented makes no distinction between harvests taking place under differing regulatory systems. For example, many local residents might characterize harvest for personal consumption as subsistence regardless of the regulations under which an animal was harvested. Most subsistence fishing probably occurs off the Refuge and under state regulations. Deer, elk, goat, and bear hunting occurs both on and off refuge lands. As noted previously, there are federal subsistence hunting regulations for deer, elk, and brown bear. All goat hunting occurs under state regulations, which were recently modified by the Alaska Board of Game in response to recommendations crafted by the local state and federal advisory groups (USFWS 2003).

3.3.7 Recreation Opportunities on Kodiak Refuge

The main recreation activities pursued by visitors on the Refuge are hunting for bear, deer, goat and elk; fishing; and wildlife-viewing. Other activities include duck hunting, ptarmigan hunting, hiking,

trapping¹², berry picking, beachcombing, sightseeing, photography, and snowmachining. Most of these latter activities are secondary to big-game hunting or fishing trips; there is, however, anecdotal evidence that an increasing proportion of visitors is participating exclusively in nonconsumptive activities. A little more than one-half of refuge visitors pursue their activities with the help of guides who hold permits issued by the Refuge.

The Refuge tabulates visitor use annually, reporting use-days by activity. A use-day is defined as one person using the Refuge for any portion of a day. Reports from permitted hunting and fishing guides, field observations by refuge staff, and information from visitor surveys are used as supplementary means to monitor use-days on the Refuge. Air-taxi reports, however, are the primary means of measuring public use. Since 1997, when all reporting was standardized, air-taxi reports have provided reliable and consistent estimates of overall refuge use. Use estimates from before 1997, such as those that appear in the refuge public use management plan, may be helpful for assessing long-term trends, but data-collection methods and accuracy of those estimates are variable, so they should not be directly compared to more recent (i.e., post-1997) numbers. Also, because current use estimates are based solely on air-taxi reports, actual use numbers are likely to be somewhat higher.

Visitors who access the Refuge by other means are not counted by this method. Based on air-taxi reports, total annual recreation use of the Refuge since 1997 has been stable or declining. (See Table 3-20.) The sharp drop in use after 1999 is directly related to a crash in the Kodiak deer population as a result of an extremely cold and snowy winter in 1998-1999. Since that time, use has been steadily rebounding.

Table 3-20 Recreation use-days on Kodiak Refuge,
1997–2003

Refugewide Use-Days	1997	1998	1999	2000	2001	2002	2003	7-Year Average
Guided Activities	3,608	3,535	4,042	3,516	3,185	2,722	3,633	3,463
Unguided Activities	5,536	5,589	5,177	3,568	3,728	5,278	4,714	4,799
Total Recreation Use	9,144	9,124	9,219	7,084	6,913	8,000	8,347	8,262

¹² Trapping requires a special use permit from the Refuge; from 1994 through 1999, an average of nine permits a year were issued.

This section includes an expanded discussion of the most popular wildlife-dependent recreation activities on the Refuge.

Public Use Cabins

There are no developed camping areas on the Refuge, and extreme weather conditions can sometimes make tent-camping difficult. Many recreation visitors base their activities out of lodges, temporary guide camps, and public use cabins. The Refuge maintains seven public use cabins that provide good all-weather camping. (See Figure 3-6.) These cabins have a single room; in some cases, the living space is divided to form a sleeping area. The cabins are available for a small daily fee, and they can be reserved in advance.

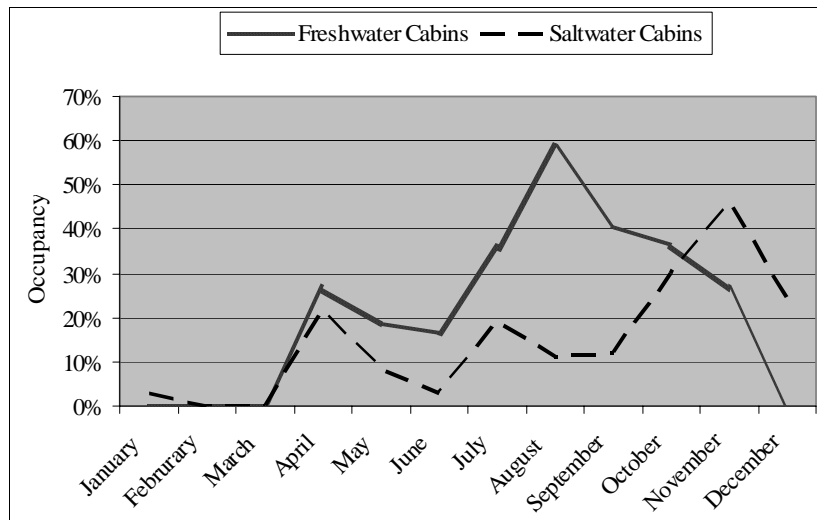
There is high demand for some cabins during the deer- and fall bear-hunting seasons (Uganik Lake, Uganik Island, and Viekoda Bay cabins), recreational fishing season (Uganik Lake cabin), and the peak period for bear photography (North and South Frazer cabins). Overall use of the cabin system is usually highest from mid-August through November and lowest in mid-winter from January through March.

Use records maintained by the Refuge show substantial variability in demand among cabins. (See Table 3-21.) The most popular cabins (typically South Frazer and Uganik Lake) receive two to four times as many annual use-days as the least popular cabins (Blue Fox and Viekoda Bay). Although Blue Fox and Viekoda Bay receive less overall use, they do – in combination with Uganik Island – serve an important function. These three cabins, located adjacent to salt water, provide for winter use. Cabins on freshwater are unavailable in winter because of freeze-up. (See Figure 3-5.)

Table 3-21 Total use-days by year at Kodiak Refuge public use cabins

Cabin Name	1993	1995	1999	2000	2001	2002	2003
Blue Fox	—	288	55	165	130	149	139
Little River	272	269	136	129	80	152	168
North Frazer	221	286	220	74	132	157	93
South Frazer	460	572	380	400	240	293	248
Uganik Island	314	282	332	183	237	139	256
Uganik Lake	505	496	269	357	326	421	290
Viekoda Bay	278	243	157	94	92	116	109
TOTAL		2,436	1,549	1,402	1,237	1,427	1,303

Note: Information from odd years prior to 1999 is provided for comparison purposes, but missing data precludes a summary for every year since 1993. The Blue Fox cabin was added to the system in 1995.



1 Occupancy is calculated as the percentage of nights in a given month that a cabin is in use.

Figure 3-5 Average monthly occupancy of freshwater and saltwater cabins, 1999-2003¹

During peak periods, some cabins may be occupied as much as 90 percent of the time. However, on average, maximum occupancy does not exceed 70 percent. Data from recent years show that even during peak periods, the cabin system as a whole operates at less than 40 percent occupancy. (See Figure 3-7.)

Annual fluctuations in cabin use are primarily related to weather, deer populations, and economic conditions. The drop in cabin use after 1995 may be largely attributable to declines in the deer population, especially following the harsh winter in 1998-1999. The increased cost and hassle of air travel following the September 11, 2001, terrorist attacks may also have affected recent use numbers. Since 1999, cabin use numbers have been relatively stable.

Karluk Habitat Protection Agreement

On July 31, 2002, a Master Agreement for the Protection of Certain Lands and Resources was signed by the Service, Koniag, Inc., and the State of Alaska. (See Chapter 2, Section 2.6.2 for additional information on management of these lands.) The agreement ensures, among other things, the protection of and guaranteed public access to Koniag lands around Sturgeon River, Karluk Lake, and Karluk River. A free permit system was implemented to limit use between June 10 and July 15. The initial limit is set at a maximum of 70 people per day, with at least 40 percent of use guaranteed each to both guided and nonguided river users. Studies to evaluate habitat sustainability, resource capabilities, and quality of visitors' experiences will guide decisions about future permit limits.

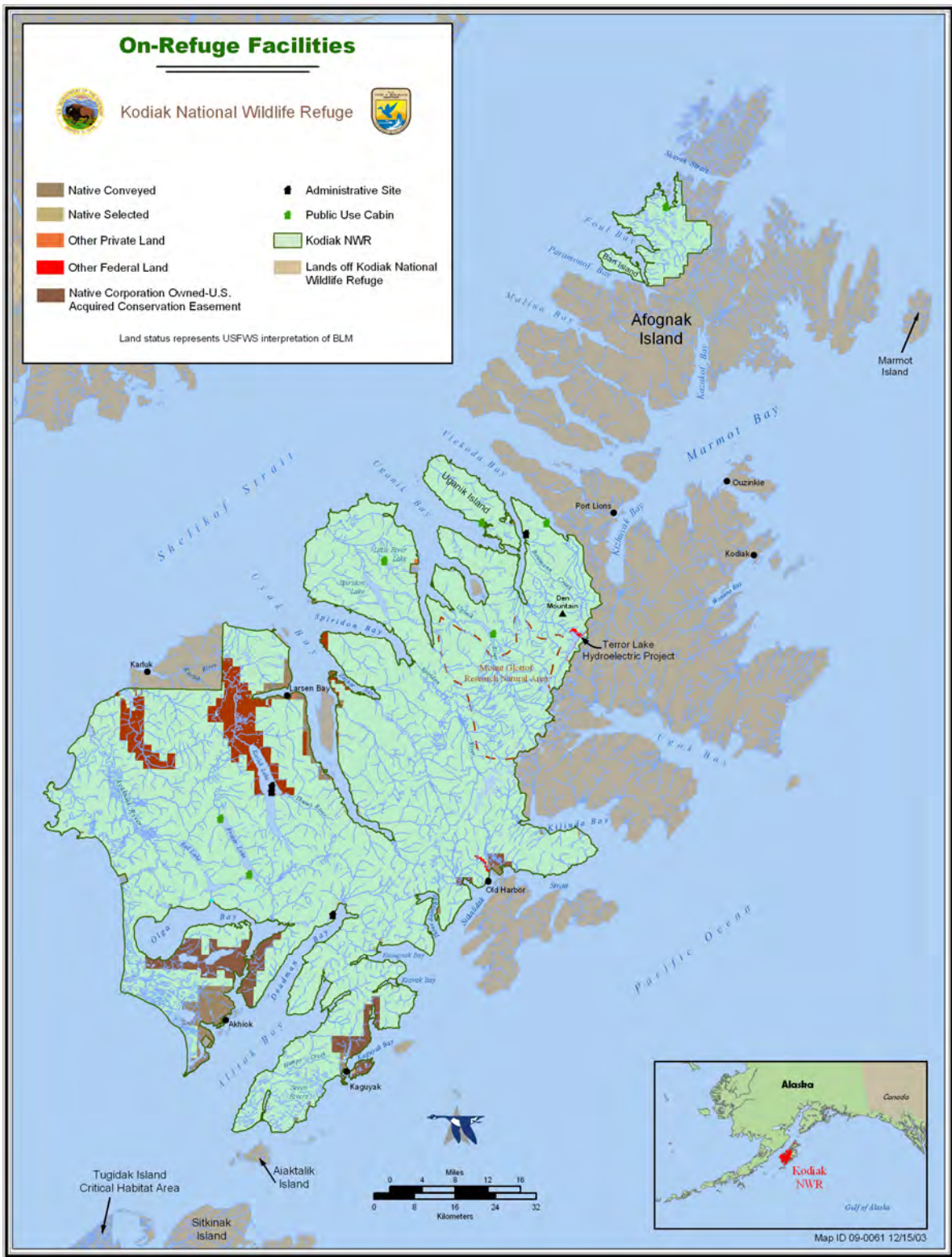
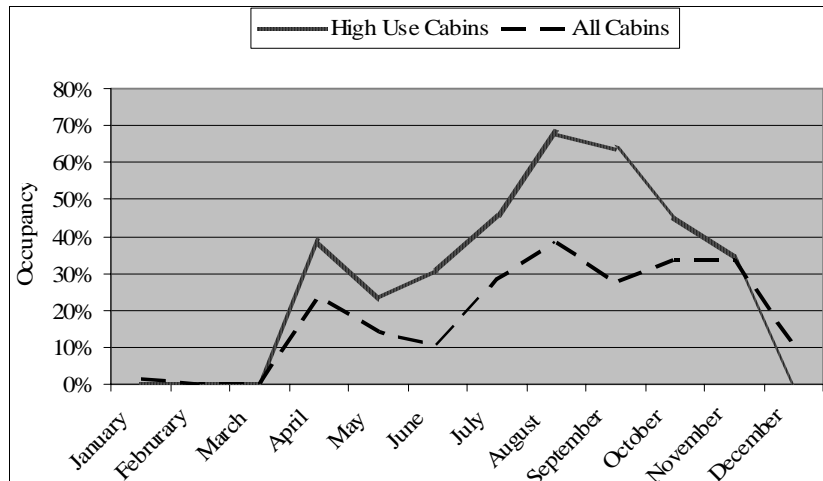


Figure 3-6 Public use cabins and administrative facilities on Kodiak Refuge



1 Occupancy is calculated as the percentage of nights in a given month that a cabin is in use.

Figure 3-7 Average monthly occupancy of high-use cabins (South Frazer and Uganik Lake) compared to average occupancy for all cabins, 1999–2003¹

The agreement also stipulates that Koniag, Inc., will continue to manage five existing cabins it owns and will issue permits for all revenue-producing visitor services related to fish and wildlife recreation along the Karluk River. According to the agreement, Koniag will build no additional cabins on these lands unless corresponding numbers of existing Koniag cabins are removed.

The Camp Island Limited Development Easement allows Koniag, Inc. to develop a lodge and visitor facilities on a six-acre site on Camp Island in Karluk Lake. The lodge and other facilities will be limited to not more than 30,000 square feet in aggregate and will be limited to not more than 28 clients, plus necessary staff, per day. Client uses of the property will be limited to fish, wildlife, archaeological, or other wildlands-oriented activities.

Hunting

In most years, hunting of bear, deer, goat, elk, and other species accounts for more than half of all recreation use on the Refuge. Large and abundant brown bears have attracted hunters to Kodiak since well before the Refuge was established in 1941. Sitka black-tailed deer, first introduced into the Kodiak Archipelago in 1924, have spread throughout the Refuge and now occupy virtually all habitats from sea level to alpine areas. Roosevelt elk were transplanted to Afognak Island in 1929; about 300 animals now use the Afognak portion of the Refuge—the only place in any national wildlife refuge in Alaska where this species occurs. Mountain goats also were introduced on Kodiak Island. The current goat population is estimated at about 1,500 animals.

Prior to 1999, overall hunting use had remained constant for several years. The winter of 1998-1999 was extremely cold and very hard on the deer population, leading to higher than normal deer mortality. As a result, there were less than one-quarter as many deer hunting use-days in 2000 as there were in 1998. The following sections describe hunting use and harvest patterns for deer, bear, and goat. The Refuge does not measure use for guided or unguided elk hunting.

Deer. In 1953, a deer-hunting season opened for the first time on Kodiak Island. The first report of deer occurring as far south as the present day refuge boundary was in 1952, when deer were reported in the Terror and Kiliuda bay areas. About 200 deer were harvested on Kodiak in 1959, but only one was reported as having been harvested on the Refuge (Uganik Island). During the 1960s and early 1970s, deer rapidly populated the southern end of Kodiak Island. Some increases in deer-hunting pressure were also noted, particularly on Uganik Island, where it is estimated that about 100 deer were harvested by hunters in 1967. In 1971, an estimated 18 percent of Islandwide deer harvest occurred on the Refuge; that proportion had risen to 40 percent by 1974.

During the 1970s and 1980s, the popularity of deer hunting increased rapidly; reported harvest in the 1984-1985 season was about 9,000 deer. A survey completed during the 1987-1988 deer-hunting season estimated that more than 5,000 hunters harvested about 13,000 deer on the Kodiak Archipelago. Reports of air-taxi operators, marine transporters, and hunting outfitters in 1987 indicated that about 65 percent of deer hunting on the Refuge occurred on the western side of the Island from Uganik Bay to Uyak Bay. According to estimates, the proportion of Islandwide deer harvest that occurs on the Refuge has remained at about 40 percent into the present.

The public use management plan reported an average of 1,435 deer-hunting visits per year between 1984 and 1990, with a high of 1,661 in 1988 and a low of 1,246 in 1990. A *visit* is one person visiting the Refuge for any length of time. More recent use estimates have been calculated in terms of *use-days* (one person visiting the Refuge for a day or a portion of a day); therefore, those estimates may appear substantially higher than previous ones. Deer-hunting use was relatively stable through the 1990s until the winter of 1998-1999 substantially reduced the Island's deer population. Since 1999, the deer population has been recovering, and hunting use appears to be recovering as well. (See Table 3-22.)

Bear. Nearly 50 years of brown-bear recreation harvest data show that approximately three-quarters of the bears harvested on the Kodiak Archipelago have been taken on refuge lands. In the 1970s and 1980s, annual harvest was relatively stable at about 140 bears. In the 1990s, annual Kodiak Archipelago harvest grew slightly, and it has averaged about 180 bears per year since 1996. The increased harvest was likely due in part to an increasing bear population and in part to

Table 3-22 Deer hunting use-days on Kodiak Refuge, 1997–2003

Refugewide Use-Days	1997	1998	1999	2000	2001	2002	2003	7-Year Average
Guided Deer Hunting	182	368	152	37	58	48	141	141
Unguided Deer Hunting	3,105	2,591	1,812	675	744	1,180	1,114	1,603
Total Deer Hunting	3,287	2,959	1,964	712	802	1,228	1,255	1,744

implementation of an Archipelago-wide permit system, which increased the efficiency of the harvest.

The public use management plan reported an average of 330 brown bear hunting visits per year (one person visiting the Refuge for any length of time) between 1984 and 1990, with a high of 380 in 1990 and a low of 220 in 1984. More recent use estimates have been calculated in terms of use-days (one person visiting the Refuge for a day or a portion of a day); therefore, the more-recent estimates may appear substantially higher than previous ones. Apparent differences are primarily a function of these different reporting methods rather than actual substantial changes in use. (See Table 3-23.)

Most bear hunters who are not Alaska residents are required by law to hunt with a registered big-game guide. There are 25 exclusive guide areas defined on the Refuge; the Refuge issues special use permits to the guides. Some guides have more than one area. Guided bear hunting use, which is limited in part by the number of available guides, has been highly stable in the latter half of the 1990s. Annual differences in overall use are primarily related to fluctuations in the amount of unguided use.

Table 3-23 Bear hunting use-days on Kodiak Refuge, 1997–2003

Refugewide Use-Days	1997	1998	1999	2000	2001	2002	2003	7-Year Average
Guided Bear Hunting	746	900	787	742	739	468	733	731
Unguided Bear Hunting	583	1,112	1,299	671	1,087	1,482	1,290	1,075
Total Bear Hunting	1,329	2,012	2,086	1,413	1,826	1,950	2,023	1,806

Goat. Goat hunting on the Refuge occurs primarily in alpine habitat areas between Terror Lake and Olga Bay. Historically, goat hunting has only attracted a small proportion of refuge visitors. Past and

present use is generally low, and the activity is typically pursued by hunters without guides. Since 1996, the annual harvest on Kodiak Island has averaged just over 60 goats. During roughly the same time period (1997 through 2003), an annual average of 266 goat hunting use-days has occurred on the Refuge. (See Table 3-24.)

Table 3-24 Goat hunting use-days on Kodiak Refuge, 1997–2003

Refugewide Use-Days	1997	1998	1999	2000	2001	2002	2003	7-Year Average
Guided Goat Hunting	12	43	3	1	23	30	0	16
Unguided Goat Hunting	241	239	238	206	280	251	293	250
Total Goat Hunting	253	282	241	207	303	281	293	266

Fishing

The Kodiak area offers diverse opportunities for recreational fishing. Recreational anglers can target five species of Pacific salmon, steelhead and resident rainbow trout, Dolly Varden, and Arctic char. With the exception of the road-accessible rivers near the City of Kodiak on the northeastern portion of Kodiak Island, all river systems within the Archipelago are remote.

Access to remote rivers and lakes for recreational fishing is by aircraft or by boat along the coastal areas. The recreational fishery in the Kodiak area is managed by the ADF&G Division of Sport Fish under regulations adopted by the Alaska Board of Fisheries. Of the 117 drainages on the Refuge, 11 could be classified as having excellent recreational fishing opportunities, based on reasonable accessibility by float plane or boat and populations of anadromous and/or resident fish. (See Table 3-25.) Although all these drainages provide opportunities for day use and overnight primitive camping, cost of traveling to these areas for day use fishing is prohibitive for most visitors unless they are staying at a remote lodge providing this service. All 11 drainages provide opportunities for coho salmon fishing; however, the Ayakulik and Karluk are the only ones that support Chinook and substantial numbers of steelhead. Although smaller populations of steelhead exist on some of the other rivers, very little fishing effort has occurred on these rivers.

Chinook salmon fishing usually starts in late May, and the run is typically over by July 10. Although fish are present in the systems through mid-August or later, there is a general closure, by regulation, to recreational fishing for Chinook on July 25 to protect spawners. Steelhead usually start entering river systems in late August, and their numbers peak in late October, although it is suspected that some fish continue to enter the rivers into early spring of the next

year. Fishing for steelhead and resident rainbow in flowing freshwater has historically been closed by regulation from April 1 through June 14 to protect spawners. The Board of Fisheries recently opened a catch-and-release steelhead season on portions of the Karluk and Ayakulik rivers during this time period. Coho enter the drainages from mid-to-late August and usually peak near the end of September. Fishing for coho is usually good through early October in most systems. Fishing for Dolly Varden and Arctic char can be found year-round, depending on which river system is targeted.

Both guided and unguided anglers visit refuge river systems. Unguided anglers tend to visit a specific river and either camp in one location or float the river and get picked up at saltwater. Recreational fishing guides, under permit from the Refuge, may operate from a temporary camp on a river or from one of the remote lodges located on private lands adjacent to the Refuge.

Traditionally, 24 fishing guides—the maximum number allowed since the 1980s—operated under special use permit on the Refuge, offering both day and overnight trips for clients. The number of people applying for recreational fishing guiding permits first exceeded the limit of 24 in 1987 and has continued to increase through the present. In 2001, the number of recreational fishing guiding permits peaked at 36.

Table 3-25 Drainages within the boundary of Kodiak Refuge having good-to-fair access that attract recreational anglers

Drainage	Size (miles²)	Associated Fish Species
Uganik River	129	sockeye, pink, chum, coho, rainbow, char
Little River	41	sockeye, pink, coho, steelhead, rainbow, char
Spiridon River	123	chum, pink, coho, char
Zachar River	70	chum, pink, coho, char
Browns Lagoon	51	pink, coho
Ayakulik	166	sockeye, pink, Chinook, coho, steelhead, char
Dog Salmon	100	sockeye, pink, Chinook, coho, chum, steelhead, char
Horse Marine	6	sockeye, pink, coho
Deadman	39	chum, pink, coho, char
Karluk	236	sockeye, pink, Chinook, coho, steelhead, rainbow, char
Akalura	10	sockeye, pink, coho, rainbow, char

In 2001, the Refuge implemented a prospectus system for awarding permits to guiding businesses in four drainages: the Dog Salmon, Ayakulik, Uganik, and Little rivers. Outside of these four drainages,

there is no limit on the number of fishing guides. Each fishing guide can have overnight camps on only two river systems. Guides are authorized to use any refuge drainage not under prospectus, but are restricted to a group number of six for each trip (including guide and cook, if any). Each guide must submit a year-end report to the Refuge identifying the number of clients guided, the location(s) of fishing activities, and the number of fish caught by species.

Due to the variety of methods that have been used to measure public use on the Refuge, caution is warranted when comparing past fishing-use figures with modern estimates. Although the accuracy of estimates is variable from year to year, it is still possible to assess general trends. As early as 1952, refuge narrative reports documented fly-in steelhead fishing trips to Karluk River. Because of the expense and difficulty of getting to remote locations, early recreational fishing primarily occurred off the Refuge, close to the City of Kodiak. During the 1960s, the popularity of fishing on the Refuge began increasing. By the 1980s, the Refuge was receiving an average of more than 2,000 fishing visits per year. A visit is one person visiting the Refuge for any length of time. The public use management plan reported an average of 2,115 visits per year between 1984 and 1990, with a high of 2,740 in 1987 and a low of 1,445 in 1984.

In the early 1990s, the Refuge estimated that about 90 percent of refuge recreational fishing use occurred on three river systems: Uganik Lake and River (25 percent), Karluk Lake and River (35 percent), and the Ayakulik River and Red Lake (30 percent). Aerial surveys during 1993 and 1994 found that Chinook season on the Karluk and Ayakulik attracted far more visitors than any recreational fishery within the Refuge.

Since 1997, standardized reporting and collection of visitor-use data from permitted guides and air-taxi operators has produced reliable and comparable estimates of recreational fishing use on the Refuge. Table 3-26 shows annual fishing use-days for the period 1997 through 2003. It is important to note that estimates for this period are in terms of *use days* (one person visiting the Refuge for one day) rather than *visits* (one person visiting the Refuge for any length of time). Recreational fishing, both guided and unguided, currently accounts for slightly more than one-third of overall annual public use on the Refuge. Despite anecdotal evidence of fishing-use increases in selected areas, it appears that total use has been relatively stable for some time. According to Schwarz and Clapsadl (2000), estimated overall (including off-refuge lands) Kodiak recreational fishing effort in 1997 was similar to the previous 10-year average.

Social Conditions in Popular Fishing Areas. Since the mid-1990s, several studies have been conducted to measure and record visitors' perceptions of their fishing experiences and their opinions about management practices in popular refuge rivers. Visitors to the Karluk and Ayakulik rivers have been the focus of the most recent studies.

Table 3-26 Recreational fishing use-days on Kodiak Refuge, 1997–2003

Refugewide Use-Days	1997	1998	1999	2000	2001	2002	2003	7-Year Average
Guided Recreational Fishing	1,709	1,383	2,272	1,798	1,632	1,380	2,028	1,743
Unguided Recreational Fishing	1,355	1,339	1,470	1,661	1,445	2,151	1,801	1,603
Total Recreational Fishing	3,064	2,722	3,742	3,459	3,077	3,531	3,829	3,346

Karluk River. On the Karluk River, a two-year survey project was recently conducted by Alaska Pacific University with assistance and funding from the Service (Lewis 2004). The purpose of the study was to assess visitors' preferences for setting conditions, the nature of their experiences, and the effects of two different permit systems in place during Chinook fishing seasons in 2002 and 2003, respectively. In 2002, all visitors to the Karluk were required to obtain a \$125 permit from Koniag, Inc. In 2003, in accordance with stipulations of a Master Agreement¹³, the Service eliminated that permit fee and began managing an interim limit of 70 permits per day from June 10 through July 15.

Each angler who obtained a permit from Koniag, Inc., and visited the Karluk during the 2002 Chinook season (June 10 through July 15) was mailed a questionnaire in the fall of that year. With respect to crowding and other social conditions, respondents to the 2002 questionnaire offered generally positive evaluations. About half (50.6 percent) reported that they did not feel crowded during their visits; the average crowding response was 3.3 ("slightly crowded") on a nine-point scale. Nearly two-thirds (66 percent) of respondents suggested that current use on the Karluk (experienced in 2002) was "about right." In addition, most respondents (65 percent) supported the existing fee-based, unlimited permit system. When asked about potential management actions to address overcrowding, 26 percent of respondents strongly supported limiting use during certain periods each season. Complete results from the 2002 questionnaire are available in a separate project report (Lewis 2004).

In 2003, a slightly modified questionnaire was mailed to anglers who obtained a permit and visited the Karluk River during Chinook

¹³ The *Master Agreement for Protection of Certain Lands and Resources Between Koniag, Inc., the United States of America, and the State of Alaska*, signed on July 31, 2002, requires the Service to (among other things) design, implement, maintain, and enforce a permit system that limits the amount of recreational use within one-half mile on either side of the Karluk River and one-half mile of the shoreline of Karluk Lake. The agreement sets an interim limit of 70 people per day from June 10 through July 15, the peak Chinook season, and directs the Service to conduct a study to investigate the appropriateness and effectiveness of that number.

season. Changes were made to the questionnaire to reflect the new permit system. Visitors in 2003 reported slightly less crowding than did those in 2002, most likely related to reduced overall visitor use. Otherwise, 2003 visitors' opinions regarding social conditions were similar to those expressed in 2002.

A creel census conducted by ADF&G (Schwarz and Schmidt 2003) calculated total Karluk River¹⁴ use to be 1,560 visitor days from June 10 through July 15, 2002. Peak use was 60 visitor days, which occurred on June 25. On most days, total use was well below the interim limit of 70 users, which was implemented in 2003. Preliminary visitor counts indicate that total use in 2003 was considerably lower than in 2002, and peak use was less than 40 visitor days. Schwarz and Schmidt (2003) speculate that Karluk visitor use in 2002 may have been negatively affected by poor Chinook runs in 2001 and 2002. In 2003, the Chinook run was also poor—and late to arrive—resulting in a short-term emergency closure of the fishery for one week near the end of June.

At present, crowding and other social impacts do not appear to be significant issues for most Karluk River visitors, and the interim 70 permits-per-day limit is not the primary constraining factor on overall use or use patterns. Instead, overall use appears to be most influenced by the size and timing of the annual Chinook run and by weather, which affects fly-in access.

Ayakulik River. Like the Karluk, the Ayakulik River draws seasonal concentrations of visitors who primarily target Chinook salmon during June. In response to visitor comments and mounting anecdotal evidence of declining social conditions during the Chinook fishery, ADF&G, with cooperation and support from Kodiak Refuge, conducted a creel census and visitor survey on the Ayakulik in 2003 (Tracy and Schmidt 2004). The primary objectives of the survey were to (1) document daily visitor use between June 1 and July 7; (2) document individual angler catch and effort; (3) evaluate effectiveness of voluntary camping closures designed to prevent anglers from monopolizing prime fishing holes; and (4) identify users' preferences regarding aspects of their experiences and potential management actions.

A total of 341 visitors (accounting for 1,705 visitor days) were contacted during the study period. Peak use was 85 visitors, occurring on June 18, and the average daily number of users on the river was 45. Based on analysis of responses to the visitor survey, Tracy and Schmidt (2004) concluded that most Ayakulik users did not feel crowded during their visits, and those users generally supported the continuation of voluntary camping restrictions. The least preferred potential management action among survey respondents was a return to no camping restrictions. It appears that,

¹⁴Between Karluk Lake and the ADF&G salmon counting weir located one-half mile upstream from Karluk Lagoon.

similar to use at the Karluk River, 2003 Ayakulik use may have been affected by several factors, including a relatively poor Chinook run and the nationwide economic downturn. As with the Karluk, it also appears crowding and competition for fishing sites are not currently causing significant negative impacts on most visitors' experiences.

Wildlife Viewing

Nearly all wildlife viewing centers on the Kodiak brown bear. Because the reliable presence of bears is so closely related to the timing and location of salmon runs, a good bear-viewing location can be ever-changing. People interested in self-guided viewing may plan an extended trip to the Refuge, stage from a public use cabin or wilderness camp, and target viewing opportunities by hiking, kayaking, boating, or rafting through Kodiak wildlands. Although opportunities for self-guided adventure abound, they require careful planning, a working knowledge of wilderness travel, and special attention to bear safety guidelines.

The total number of wildlife-viewing use-days has been fairly stable recently, ranging from a low of 865 in 2001 to a high of 1,207 in 2000. (See Table 3-27.) The mix of guided and unguided use within this total has varied substantially, with guided use being two to five times the volume of unguided use. The number of permits issued for wildlife-viewing and photography guides is not limited and has increased steadily from five in 1990 to 20 in 2000 and 25 in 2001. Most of the permits issued are for day use. Not all of these permits are used. Recent interest may have been spurred by the Conservation Plan revision process, with some businesses wanting to get a "foot in the door" in case permits were limited in the future.

Currently there is no competitive bidding for a wildlife-viewing permit. An applicant submits an operations plan, and it is reviewed by the staff for potential conflicts with refuge purposes or other users. If there is no apparent problem, the operations plan is made part of the special conditions, and the permit is issued. The public use management plan reported an average of 467 visits per year

Table 3-27 Wildlife viewing use-days on Kodiak Refuge, 1997–2003

Refugewide Use-Days	1997	1998	1999	2000	2001	2002	2003	7-Year Average
Guided Wildlife-Viewing	959	841	828	991	718	786	731	836
Unguided Wildlife-Viewing	187	304	279	216	147	140	174	207
Total Wildlife-Viewing	1,146	1,145	1,107	1,207	865	926	905	1,043

between 1984 and 1990, with a high of 640 in 1990 and a low of 225 in 1984. A visit is one person visiting the Refuge for any length of time. In the past, commercial photographers who visited the Refuge to photograph bears and other wildlife were required to obtain a special use permit. Refuge records show that the number issued has been low in recent years, only one or two permits a year – except 1999, when four permits were issued.

Guided viewing is offered by a range of air-taxi, lodge, and marine transport services. Air-taxi operators offer single-day trips that may combine aerial viewing, landing, and hiking to a viewing site; lodge operators offer a multi-day, multi-purpose venue that often includes guided bear-viewing. Most guided, walk-in viewing is a site- and time-specific group venture where bears are typically within a 50- to 300-yard range of viewers, and bears are often aware of viewer presence.

Many lodges on Kodiak Island conduct bear-viewing as part of their operations, but usually in conjunction with other activities such as recreational fishing or other wildlife-viewing. Some lodges offer bear-viewing exclusively during times of the year when other activities such as hunting are not available. Guides typically seek to provide small groups of clients (two to six people) a wilderness experience in which they have the opportunity to go unnoticed by bears as they watch and photograph them in their natural habitat. Most viewing is done at locations relatively close to the lodge and accessible by boat (usually a skiff, although some operators use sea kayaks) and possibly a one- or two-mile hike. Viewing at these areas is usually dictated by timing of fish migrations, which cause the bears to gather at predictable locations, and the huge tidal fluctuations in the long narrow bays of Kodiak Island, which determine when and for how long an outing can last.

Some operators do not limit their bear-viewing to Kodiak Island, but use areas of the Katmai coast to provide additional viewing opportunities, especially earlier in the season. Lodges provide a range of wildlife-viewing opportunities over the course of several days. Lodge visits may involve a short hike up one of Kodiak's coastal rivers, a boat ride to one of the numerous bays, a float plane ride to Frazer Lake, and/or an outing to watch marine mammals and other marine wildlife over the course of three to five days. Most visitors to Kodiak Island want to see a brown bear; no matter what type of trip they come for, a bear sighting is almost always an added benefit. Lodge stays typically range from \$223 to \$500 per person per day, depending on the type of trip and transportation provided.

Air charters typically take clients to different areas during different times of year depending on where bears are congregated. Information from other pilots can be a critical decision-making factor when the weather is flyable to more than one location. Viewing is typically better along the Katmai coast during May and June when

bears are feeding in sedge meadows and along mud flats before the annual salmon migration begins.

Once salmon start to arrive, viewing improves on Kodiak Island. From late July into September, bears congregate at places such as Karluk Lake and Frazer fish pass, which are easily accessible (by float plane and a short hike). One guide said it was nice to have an “ace in the hole” like Frazer where bears can be dependably seen. While these operators take small groups of two to six people, it is common to see other groups at these locations. A limited number of locations are readily accessible by float plane, unaffected by tides, and provide consistent chances of seeing bears.

Many people interviewed as part of a bear-viewing assessment conducted by the Service (Allen and Collins 2002) believed that people who have experience with intensively managed bear-viewing areas—such as Brooks Camp in Katmai National Park, McNeil River on the Alaska Peninsula, and Pack Creek in Admiralty Island National Monument—tend to seek out and prefer more primitive experiences offered at other areas such as the Katmai coast and Kodiak Island. Several operators on Kodiak commented that people who do not know what to expect or who have preconceptions of an experience similar to McNeil River or Brooks Camp are very satisfied with the experience they do have and appreciate the fact that it is not the same type of bear-viewing they might find elsewhere.

Two operators pointed out that not only do people seek a more primitive experience, but many people who want to see Kodiak bears are willing to give up the opportunity to see several bears along the Katmai coast in order to have the chance to see one Kodiak bear. These same opinions have been pointed out in various research papers, publications, and newspaper articles (Matz 2000, USFWS 1993b).

Interpretation and Environmental Education

Interpretation and environmental education programs are critical to success of the public use program. Public awareness and understanding of refuge resources and management activities help keep the public informed, generate interest and support for refuge management, and avoid potential problems and misunderstandings.

The existing Comprehensive Conservation Plan recognizes the importance of interpretive and educational programs. It encourages continued use of existing facilities such as the visitor center and public use cabins for the dissemination of materials and knowledge.

The refuge visitor center consists of about 1,500 square feet located in the refuge headquarters building just outside the City of Kodiak. Plans are underway for a new facility, to be built in downtown Kodiak, with completion planned for the summer of 2007. Attracting 4,038 visitors in 2001, the existing center provides the public an opportunity to learn from exhibits, attend educational programs and

community events, acquire information about the Refuge and its resources (including information focused on preventing problem encounters between people and bears), and ask questions of refuge rangers. The Audubon Buskin View Trail, a one-third-mile self-guided nature trail adopted by the Kodiak Audubon Chapter, winds through forests adjacent to the center.

Interpretation and education efforts include environmental education for home-schooled children and public and private school students, programs at the refuge visitor center and on refuge land, and events held in villages and the City of Kodiak. During the school year, education is focused on school programs within classrooms and making the visitor center a classroom for visiting school groups. When special community, Refuge System, or Service events occur, programs and activities surrounding and supporting the event are offered. Summer is dedicated to running an environmental education camp—the Kodiak Summer Science and Salmon Camp .

The Refuge has a large and increasing presence in the Kodiak community through a variety of programs and events. The Whale Festival, held annually in April, celebrates the return of gray whales passing near the Island on their long migrations. The Refuge has participated by running the opening event, the fun run, an art show, whale-watching programs, and a naturalist program on the state ferry system. Crab Festival, ComFish, Pink Salmon Derby, parades, and even some impromptu events have all involved annual refuge participation. The Refuge is an active participant in all of Kodiak's events.

In addition to community functions, the Refuge offers its own programs. Families Understanding Nature (FUN Program) is a weekly program targeting families and home-schooled children of all ages. The program is structured to allow families the opportunity to explore nature through a variety of hands-on activities. In 2001, 17 FUN programs, serving 446 children, were given at the refuge visitor center. Two off-refuge programs served another 96 students. During National Wildlife Refuge Week, the Refuge has conducted evening slide shows and hosted theatrical productions. The Junior Duck Stamp program increases students' awareness of waterfowl and wetlands through an art contest sponsored by the Service. In 2001, refuge staff visited 23 classrooms to promote the contest. All villages received information packets on the contest.

Perhaps the most widely known Kodiak Refuge program is the Kodiak Summer Science and Salmon Camp (Salmon Camp). Salmon Camp is the largest science-based camp in Alaska. In 2002, Salmon Camp was identified as one of the Service's top five environmental education programs. Since 1996, Kodiak Refuge, the Alaska Natural History Association, and many community partners have made Salmon Camp possible. The goal of Salmon Camp is to provide a hands-on, science-based camp that instills leadership in environmental stewardship and conservation by learning about one

of the most valuable of all Kodiak resources, salmon. Each week for seven weeks the camp targets different age groups, from preschool to junior high. In 1999, 160 children attended camp, with waiting lists in every age group. In 2002, almost 200 children attended camp. One measure of the camp's success is through pre- and post-tests of campers. In 1999, overall scores increased 40 points, from a pre-test score of 35 percent correct to a post-test score of 75 percent across all age groups. In 2001 a 32 percent score increase was found.

Increasing efforts and emphasis have been made by the Refuge to offer environmental education training to local educators. Environmental education programs are offered annually to village schools. In conjunction, a variety of video programs on Island natural history and refuge management topics were developed and made available to the public. The Refuge also cooperates with other agencies and groups to provide natural resource displays at the Kodiak airport, U.S. Coast Guard Station, local units of the Alaska State Park System, and the Alaska Marine Highway (ferry) terminal.

Trends in Recreation Uses

The 1987 Refuge Conservation Plan predicted a doubling of recreation use between 1985 and 1995. Variations in data collection and reporting methods make precise analyses of trends nearly impossible. However, it does seem clear that recreation use of the Refuge has not increased as rapidly as predicted. At least since 1997, when the Refuge standardized its visitor-use estimation methods, overall recreation use has been relatively stable¹⁵.

For the three to five years, no substantial changes in use are expected. Following the decline in 2000, use numbers appeared to be gradually rebounding toward the historic highs achieved during 1997 through 1999; that trend is expected to continue. There are plans for a new visitor center, which could attract additional in-town visitors, but that use would not occur on the Refuge. No other large-scale travel or visitor infrastructure projects that might affect visitor use are planned.

Throughout the life of this plan (approximately 15 years), overall visitor use is expected to increase 20 to 30 percent, and some shifts in type of use and users may also occur. This projection is based on information from the 2001 National Survey of Fishing, Hunting, and Wildlife-Associated Recreation (USDH and USDC 2002); The National Survey on Recreation and the Environment (NSRE 2002); and a report published by the U.S. Forest Service (Bowker 2001). Based on recent recreation use, a 20 percent to 30 percent increase

¹⁵The Refuge estimates use based on air-taxi reports. Visitors who access the Refuge in private boats or planes are not counted, so actual use is somewhat higher. The observation of relatively stable use since 1997 assumes that the proportion of private-access visitors has remained stable over that time as well.

would mean that the Refuge would receive between 9,914 and 10,740 recreation use-days by 2020¹⁶.

Most of the projected increase in use will be due to population growth in Alaska and the rest of the nation. In addition, overall participation in wildlife-associated recreation is expected to increase more rapidly in Alaska than in the rest of the nation. Point estimates of participation for specific activities are highly variable. For example, according to a large-scale national survey, nationwide participation in fishing did not increase between 1991 and 2001; in Alaska, however, participation in fishing may have increased by as much as 36 percent during this same period (USDI and USDC 2002). In comparison, data from ADF&G's statewide harvest-survey program suggest that fishing participation increased only slightly, 10 percent or less, during the same period. Taking these variable estimates into account, overall participation in hunting and fishing in Alaska is projected to grow by roughly 20 percent between 2000 and 2020, and wildlife-viewing is projected to grow by about 30 percent (Bowker 2001).

Because of differential population growth, nonresident wildlife viewers are projected to outnumber resident viewers by 10 to 1, and the ratio of nonresident to resident anglers will be about one to one, by 2020 (Bowker 2001). For Kodiak Refuge, this means that wildlife-viewing is likely to increase as a proportion of total recreation use-days, and nonresidents will constitute a larger proportion of the visitor population.

3.4 Wilderness Values

Section 304(g) of ANILCA requires the Service to identify and describe certain values of the Refuge, including wilderness values. The term "values" is often viewed synonymously with a range of similar terms, from subjective beliefs and preferences (e.g. family values) to more objective functions, services, and benefits (e.g. ecological values). Of interest here are the objective kinds of values, specifically those related to the condition and character of the natural environment.

The 1964 Wilderness Act provides a framework for identifying and describing wilderness values. The act recognized wilderness as a resource in and of itself and also established a mechanism for preserving that resource in a national system of lands. Thus, wilderness values can be grouped into two basic categories: those that are associated generally with wild, natural settings (the "wilderness resource," which may or may not be legally protected) and those that are derived specifically from the long-term protections associated with formal Wilderness designation. There is no designated Wilderness on Kodiak Refuge. Therefore, only the values

¹⁶Estimated "recent" recreation use is based on the seven-year average for 1997–2003. This projection does not include subsistence use or use by visitors who access the Refuge by private boat or plane.

associated with the generally wild, natural condition of the refuge environment are described here.

The fundamental attributes of the wilderness resource, described in the Wilderness Act, are *size*, *naturalness*, *wildness* (“untrammeledness”), and *opportunities for primitive recreation* (including solitude). In addition, wilderness values may be enhanced by special or unique biophysical or cultural features (e.g., wildlife concentrations, rare or dramatic landforms, cultural sites).

The Wilderness Act states that a wilderness should be at least 5,000 acres in size, or be large enough to “make practicable its preservation and use in an unimpaired condition” (Section 2[c][3]). Presumably, while any area of land may have wilderness values, a larger area has greater wilderness value than does a smaller area (all other things being equal).

The significance of size is closely linked to the second fundamental attribute of the wilderness resource: naturalness. According to the Wilderness Act, naturalness refers to both the appearance and the functional integrity of an area. Wilderness should be largely free of visible human intrusions or alterations (e.g., structures, roads), and it should support ecological processes (the “community of life,” Section 2[c]) that are whole and functional. In most cases, larger areas are more likely than small areas to maintain their natural integrity.

In addition to exhibiting naturalness, the wilderness resource should be predominantly wild—that is, untrammeled (uncontrolled) by people. In Alaska, naturalness and wildness frequently go hand in hand, but that is not always the case in other places. For example, a large private forest carefully manipulated for maximum timber production may appear natural; without the free play of natural forces (such as forest succession), however, it lacks wildness. For the purpose of identifying and describing wilderness values on Kodiak Refuge, naturalness and wildness are grouped into a single category.

The fourth fundamental attribute of the wilderness resource, opportunity for primitive recreation, is facilitated and enhanced by the other attributes. Primitive recreation—a kind of use that is dispersed, undeveloped, and does not require mechanized equipment or facilities on site—is characterized by dimensions such as challenge and self-reliance. Dispersed use patterns, which frequently occur where there are no facilities to concentrate use, enhance the need for self-reliance and also provide opportunities for solitude. Remoteness and isolation can further enhance primitive recreation opportunities.

In Alaska, wilderness can be a living, working area where subsistence and other traditional activities continue. ANILCA allows for the use of certain methods of motorized and non-motorized access in association with these activities and allows for the presence

of cabins for administration of the area, for public safety, and for traditional and customary uses. As a result, visitors to some areas of the Refuge may encounter evidence of these activities.

As directed by Sections 304(g) and 1317 of ANILCA, all Kodiak Refuge lands were reviewed during the first refuge planning process in the early 1980s “as to their suitability or unsuitability for preservation as wilderness.” Since that time, approximately 175,000 acres have been added to the Refuge. The new lands fall within the boundaries of the four wilderness review units identified during the 1980s review; those boundaries are used once again for the following identification and description of refuge wilderness values, including values on the newly acquired lands. (See Figure 3-8.)

In general, all four areas share similar attributes of large size, a high degree of naturalness and wildness, and abundant opportunities for primitive recreation.

3.4.1 Ayakulik-Uyak Unit

Size

This unit encompasses approximately 800,000 acres. It consists of all refuge lands west and south of Uyak Bay, including the Kodiak Refugium and four associated glacial lakes: Karluk, Frazer, Red, and Akalura. The largest proportion of new lands added since the 1980s review are located within this unit.

Naturalness and Wildness

The unit has a distinctive flora composition and a rolling landscape that contrasts with the rugged mountains in the rest of the Refuge. The Ayakulik-Red River drainage is the largest watershed and one of the two most productive salmon streams on Kodiak Island. The Karluk River drainage, second largest on the Island, is also located in this unit, although much of Karluk Lake and the lower Karluk are in private ownership (managed by the Refuge according to the terms of a conservation easement agreement). Primarily treeless tundra, the area’s vegetation consists of a mixture of grass-sedge and shrub types.

Many fish and wildlife species occur in densities that are not found elsewhere on the island. The Karluk and Ayakulik rivers have, by far, the largest Chinook and steelhead runs found on Kodiak. Several other very important anadromous fish streams are found in the unit. A variety of berries are found in the extensive shrub types that occur in proximity to these streams, while higher subalpine habitats provide extensive brown bear denning habitat. As a result, this unit contains some of the best brown bear habitat known. The area also contains key summer and fall feeding habitat for hundreds of bald eagles, and prime eagle nesting habitat.

Private cabins, lodges, and other facilities, primarily associated with tourism and commercial fishing activities, occur on private

inholdings located along the coastline and the Karluk River. The Refuge maintains administrative facilities at Karluk Lake and Deadman Bay and leases some sites to the Alaska Department of Fish & Game to facilitate its administrative activities. The Refuge also maintains two public use cabins at Frazer Lake. The impacts from these facilities are localized. In general, lands in this unit remain highly natural in appearance and are free of human control. The impacts to naturalness and wildness from recreational hunting and fishing and associated fish and wildlife management activities are considered to be minor.

Opportunities for Primitive Recreation

Most human use in this unit consists of short-term recreation visits mid-April through late November. Some of the best bear-viewing, recreational fishing, and wildlife observation and photography opportunities on Kodiak Island are found here. Seasonally concentrated use can occur on portions of the Karluk and Ayakulik rivers and at public use cabins. At times, opportunities for solitude may be compromised. However, access is limited to floatplane and boat; overall use is relatively low; and visitors can expect challenging conditions that require a high degree of self-reliance.

3.4.2 Zachar-Uganik Unit

Size

This unit encompasses the remaining refuge lands on Kodiak Island, except for the Spiridon Peninsula (approximately 618,000 acres). Most of the remaining new lands added since the 1980s are also located in this area.

Naturalness and Wildness

Much of the rugged mountainous terrain of Kodiak Island is in this unit. Short, swift streams flowing through steep-walled valleys empty into fjordlike bays that indent the shoreline. Several small cirque and hanging glaciers are found in the area's highest elevations—the only glaciers on the Kodiak Archipelago.

Many of the area's streams provide extensive spawning habitat for large runs of pink and coho salmon. The Uganik River system also provides spawning habitat for a sockeye salmon run. Prime denning and feeding habitats for brown bear are found in the area. Most of the mountain goat population on the Refuge is found here as well.

Significant numbers of deer and bear hunters and recreational anglers use the area, although most activities are concentrated along the coastline and around Uganik Lake. The Refuge maintains a public use cabin at Uganik Lake and one additional cabin on Viekada Bay. A number of onshore facilities for commercial setnetters are located along the coastline. Impacts to naturalness and wildness from these facilities and uses are highly localized.

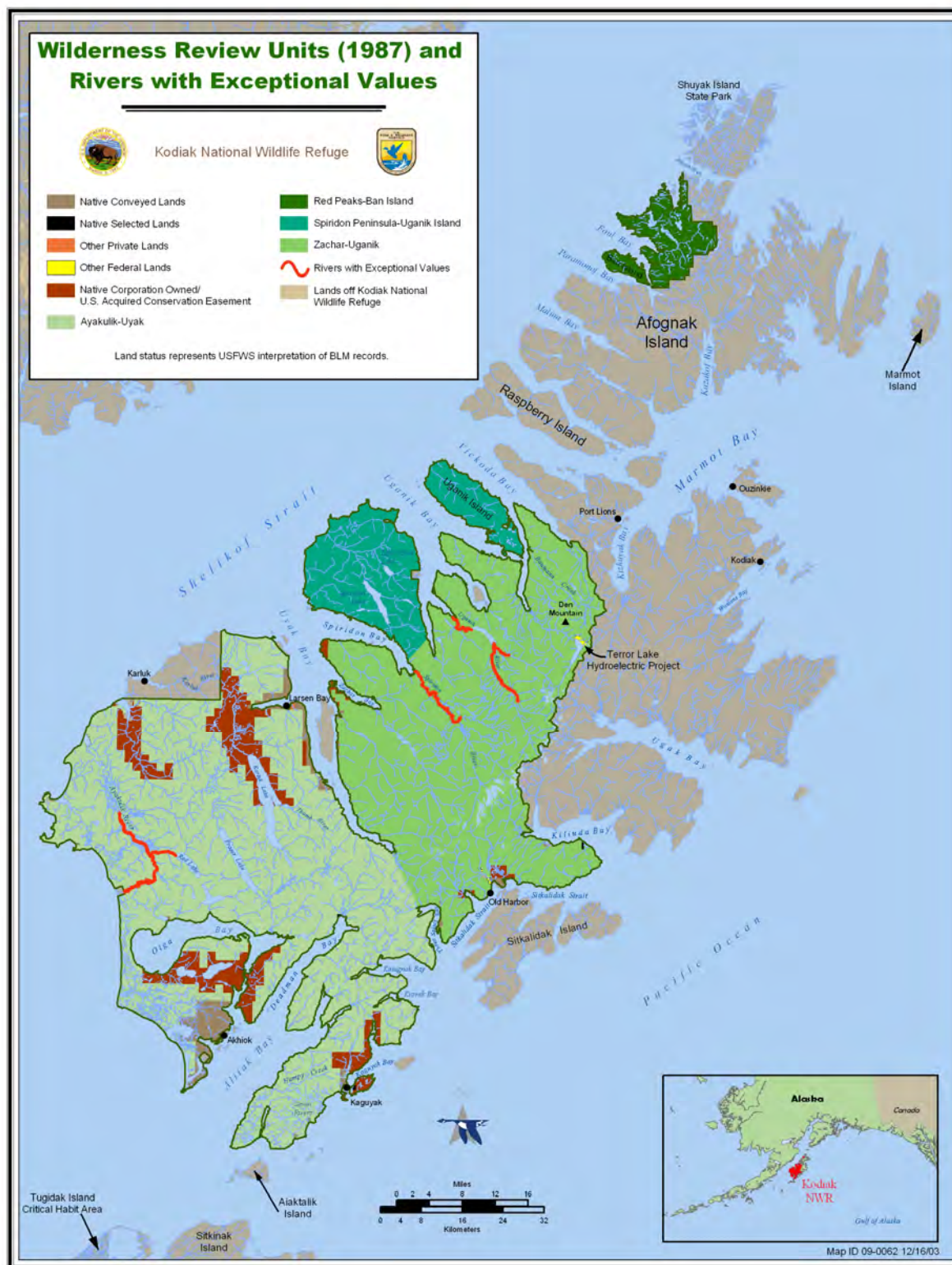


Figure 3-8 Wilderness review units (1987 Conservation Plan) and rivers with exceptional values

The Terror Lake Hydroelectric Project, located within the unit near the eastern boundary, has an impact on the natural integrity, apparent naturalness, and wildness of the Terror River watershed, especially in the immediate vicinity of the project. However, impacts to apparent naturalness are limited by the steep topography of the area, which helps hide the dam and access road except from the air and all but a few high points. Impacts to natural integrity and wildness are difficult to assess; on the scale of the whole unit, however, they are considered to be minor.

Opportunities for Primitive Recreation

Rugged terrain, salmon runs, and bear, deer, and mountain goat populations provide abundant primitive recreation opportunities. As is the case with the Ayakulik-Uyak Unit, in the Zachar-Uganik Unit, seasonal concentrations of visitors near cabins and primary access points may occasionally reduce opportunities for solitude; however, overall use is low, and most visitors can easily avoid the sights and sounds of others if they choose.

3.4.3 Spiridon Peninsula-Uganik Island Unit

Size

This unit encompasses approximately 151,000 acres of refuge land on the Spiridon Peninsula and Uganik Island, extending into Shelikof Strait.

Naturalness and Wildness

The high winds and severe weather of the Shelikof Strait are a significant influence on the Spiridon Peninsula and Uganik Island. Although they share some of the same attributes as the previously described units, vegetation in this unit is generally more open with less shrub and brush habitats and more grasslands. The terrain, although generally steep-walled along the coastline, consists of rolling hills and less-rugged mountains.

Little River is the primary salmon stream on the Spiridon Peninsula, providing spawning habitat for large runs of sockeye, pink, and coho salmon. It also supports populations of rainbow trout, steelhead, and Dolly Varden. Large numbers of Sitka black-tailed deer winter on the outer capes of the Peninsula and on Uganik Island.

Two public use cabins are located in this unit: one at Little River Lake and one on the Uganik Island coast, along with onshore facilities for commercial setnetters. As in the other units, the impacts from these facilities and associated uses are highly localized.

Opportunities for Primitive Recreation

Severe weather, rather than rugged terrain, represents the primary challenge in this unit. The major human activity is deer hunting, which is facilitated by open vegetation and high densities of deer.

Seasonal concentrations of visitors can occur at the two public use cabins, and the open terrain provides only limited screening from other users. However, ample primitive recreation and solitude opportunities exist at most times and in most places within this unit.

3.4.4 Red Peaks–Ban Island Unit

Size

This unit encompasses approximately 54,000 acres facing Shelikof Strait on the northwestern side of Afognak Island and all of Ban Island.

Naturalness and Wildness

The lands within this unit are extremely rugged, with jagged mountain peaks and pinnacles, steep talus slopes, and a very broken shoreline. Except for the highest elevations, the area is completely covered with stands of Sitka spruce. Brown bear, Roosevelt elk, bald eagle, Sitka black-tailed deer, a variety of marine mammals, and other wildlife use this area extensively throughout the year. One public use cabin is located at Blue Fox Bay.

This area was added to the Refuge with the passage of ANILCA in 1980; prior to that, it was part of the Chugach National Forest. The Forest Service recommended the area for Wilderness designation as part of the Roadless Area Review and Evaluation II process during the 1970s. This area remains highly natural and wild.

Opportunities for Primitive Recreation

This is the most remote and isolated of the refuge units. Human use is sparse, with most activities limited to the coastline. Use of the cabin at Blue Fox Bay is highest during the winter months when other public use cabins located on freshwater become unavailable because of freeze-up. Extremely rugged terrain, coupled with low visitor numbers, provides excellent opportunities to experience the challenge of primitive recreation and to practice self-reliance in relative solitude.

3.4.5 Existing Wilderness Recommendation

Several recommendations for designating refuge lands as Wilderness were evaluated in the Final Kodiak Conservation Plan and Environmental Impact Statement (USFWS 1987). The record of decision for the final plan included a recommendation that approximately 1.08 million acres of the Refuge be designated as part of the National Wilderness Preservation System. This recommendation includes most of the lands within the Zachar-Uganik Unit and lands north of Olga bay in the Ayakulik-Uyak unit. (See Figure 3-9.)

3.5 River Values

Rivers are among the most important features of the refuge environment: they both influence and reveal the Refuge's topography. In the rugged refuge landscape, rivers serve as important transportation corridors for people and wildlife. They provide essential spawning and rearing habitat for resident and anadromous fish, which in turn support wildlife concentrations. Collectively, these resources have long supported human subsistence users, and they attract modern recreation visitors as well.

Based on the general attributes described previously—topography and geology, fish and wildlife populations, recreation opportunities, and cultural history—three river segments have been identified as exceptional examples of Kodiak Refuge rivers. (See Figure 3-8.) The outstanding values of these rivers are described in the following text.

3.5.1 Ayakulik River

The Ayakulik River is located in the southwestern portion of the Refuge, in an area known as the Kodiak Refugium. The segment of the river described here begins at the refuge boundary near the river's mouth, and extends upstream approximately 25 miles on the main stem to the confluence of the east fork of the Ayakulik. The segment also includes the Red River from the outlet of Red Lake downstream for five miles to the confluence with the main stem. The entire segment corridor is on federal public lands.

Topography and Geology

The topography of the Ayakulik drainage is significantly different than other areas on the Refuge. The ridges and mountains are not as rugged as those in the rest of the Refuge, and the area is almost entirely treeless. The river itself meanders across a broad, marshy floodplain bordered by low rolling mountains, then the plain narrows and enters a more constricted, mountain-lined valley. The river empties into a small marine estuary. The distinctive topography reflects a longer period of landform weathering than in adjacent regions of the archipelago. Geologists believe that the Ayakulik River area has been free of glaciation for 45,000 to 100,000 years, which is why it is referred to as the Refugium (Saltonstall 2003).

Fish and Wildlife Populations

Although similar wildlife and fishery values occur on other river systems within the exterior boundaries of the Refuge, the Ayakulik is one of only two systems that have all five species of Pacific salmon naturally occurring. The river also has rainbow trout, a large steelhead population, and a very large Dolly Varden population. The Ayakulik drainage hosts concentrations of bears feeding on salmon that are some of the highest on Kodiak; 200–300 bears use the drainage for feeding and denning.

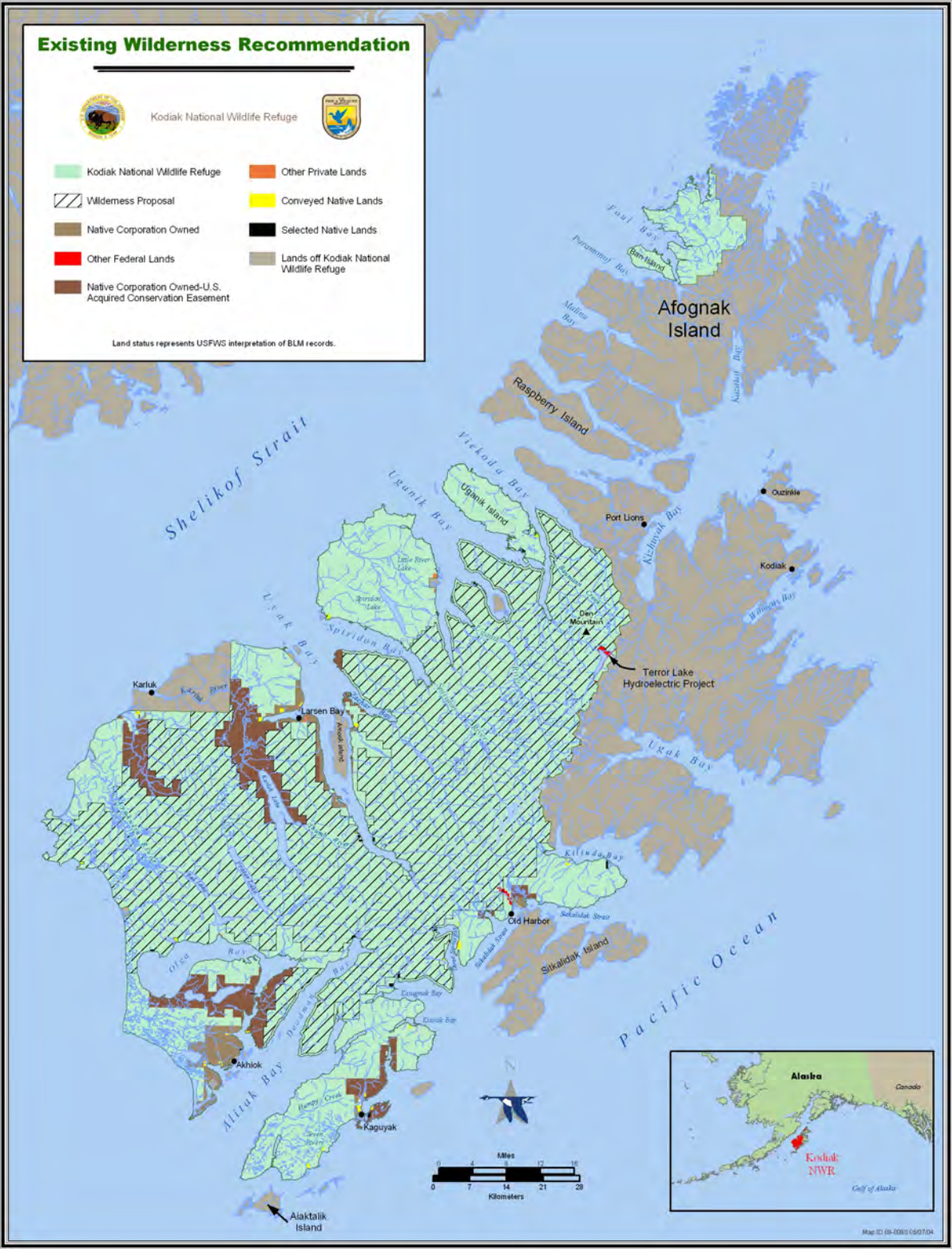


Figure 3-9 Existing Wilderness recommendation

The virtually treeless drainage is the central part of the largest expanse of maritime tundra in the Kodiak Archipelago and supports a great diversity and density of nesting waterfowl and shorebirds, including the highest density of nesting tundra swans and the highest harlequin breeding counts observed on the Refuge (USFWS 1997b). Between 40 and 200 eagles use the Ayakulik from July through August, and about 50 to 80 use it in October and November for feeding (USFWS 1987).

Recreation Opportunities

Outstanding fishery resources support world-class recreational fishing as well as hunting for deer and brown bear. Wildlife-viewing opportunities are also excellent. These opportunities consistently attract the largest concentrations of visitors anywhere on the Refuge.

Cultural History

Recent surveys have confirmed the locations of at least 20 archaeological sites, some of which may be as old as 7,500 years. One particular site below the confluence of Bear Creek is at least three-quarters of a mile long and contains approximately 20 outlines of old structures (Saltonstall 2003).

3.5.2 Spiridon River

The Spiridon River segment begins at the river's mouth in Spiridon Bay, extends upstream for approximately 13 river miles to the confluence with a tributary locally known as Munsey's Creek, and then up the creek for approximately one mile—for a total segment length of approximately 14 miles. The whole of the segment corridor is on federal public lands.

Topography and Geology

The river has its headwaters in a series of small feeder tributaries originating from the mountain glaciers around Koniag peak, the highest mountain in the Kodiak Archipelago. The river flows through deep canyons at a moderate to low gradient, often heavily braided, until it reaches a small canyon just above Spiridon Bay, where it becomes a single channel with numerous rapids. From the river, there are scenic vistas of steep terrain rising above the valley floor and spectacular views of mountain glaciers that are visible from Munsey's Lake and other locations within the corridor. The glacial character of the drainage is highly evident, which makes the Spiridon River significantly different from other refuge rivers.

Fish and Wildlife Populations

The river supports populations of Dolly Varden and runs of pink, chum, coho, and sockeye salmon. Excellent denning and browsing habitat supports local brown bear, and there is also habitat for harlequin ducks and other waterfowl and shorebirds.

Recreation Opportunities

The river provides good to excellent recreational fishing opportunities, wildlife-viewing, and deer and bear hunting. Opportunities in this area are dominated by the remote and nearly inaccessible nature of the river. Because of tidal conditions, the river mouth may only be accessed at high tide with a small skiff. Conditions sometimes allow float planes to land at Munsey's Lake, where visitors can float to the ocean. Due to rapids near the river's mouth, floating is challenging.

Cultural History

There is a site with four house pits at the mouth of the river that may be 1,000 years old. This area was surveyed in 1977, and the river has not been surveyed since because of its inaccessibility.

3.5.3 Uganik River

The segment described here covers approximately 17 miles of the Uganik River, including approximately five miles of the Lower Uganik from its mouth in the East Arm of Uganik bay to the outlet of Uganik Lake, approximately nine and a half miles of the Upper Uganik upstream from its inlet to Uganik Lake, and approximately two and a half miles of the Upper East Fork from its confluence with the main stem. The entire segment corridor is on federal public land.

Topography and Geology

The Uganik River area has the most rugged and scenic mountain terrain on Kodiak Island. Uganik Lake is surrounded by steep-sided ridges, which make it significantly different from other refuge lakes. The glacial-fed river, with headwaters near Mt. Glottof, flows through deep canyons at a fairly steep gradient initially; about 10 miles above Uganik Lake, it becomes more braided, with frequent gravel bars, as it flows through a broad valley.

Fish and Wildlife Populations

The drainage supports resident populations of rainbow trout and Dolly Varden as well as anadromous runs of sockeye, pink, chum, and coho salmon and occasional steelhead. The combination of salmon runs and the diversity of forage provided by berry crops and sedge meadows supports a high density of brown bears. The estuary at the river mouth supports a June concentration of bears that are attracted to the area to feed on new shoots of tidal vegetation and an early run of sockeye. Bears also return to this area in the fall to feed on pink and chum salmon runs (Rohrer 2002). From late July to early August, large numbers of bears feed almost exclusively on the newly emerging shoots of longawn sedge (*Carex macrochaeta*)—a unique behavior to this region—in the high mountain tundra where the Uganik headwaters are located. Sitka black-tailed deer, red fox, and beaver are found throughout the drainage. Bald eagles use the corridor for nesting and feeding. Habitat for harlequin ducks and other waterfowl is also present.

Cultural History

In 1896, Alaska Packers Association built a cannery at Mush Bay, which is where the lower Uganik River empties into the ocean. This cannery was built specifically to take advantage of the unusually large sockeye salmon that return to this river each year. In the 1920s and 1930s, two other canneries were built for packing and salting salmon. Commercial fish traps were installed in Mush Bay and the East Arm of the Uganik to support the canneries. None of these canneries are still operating. Some known archaeological sites are located along the lower Uganik and its mouth (Saltonstall 2003).

3.6 Refuge Infrastructure and Administration

3.6.1 Administrative Facilities

Administrative facilities described in this section include offices, residences (quarters), bunkhouses, maintenance shops, warehouse space, vehicle storage, aircraft hangar or airport leases and tie-down space or float ponds or docks, storage sites for fuel and other hazardous materials, and remote administrative sites.

The Service's primary Kodiak Refuge administrative facilities are located five miles west of the City of Kodiak. These facilities, including the aircraft hangar near Kodiak airport, are on lands withdrawn for the U.S. Coast Guard. Coast Guard Land Use Permit DOT-CG17-55087-flp authorizes the use by Kodiak Refuge of 35 acres at the administrative site and one acre at the hangar. This 5-year lease was last renewed on July 24, 1999; it is currently in the process of being renewed. A triplex located within the City of Kodiak is owned by the U.S. Forest Service; use by Kodiak Refuge is authorized through Memorandum of Agreement 14-16-007-81-5530 signed in 1981. Use of the float-plane base on Lily Lake is authorized through a lease with the City of Kodiak. In addition, the Refuge maintains remote administrative facilities or sites at Camp Island on Karluk Lake, at Terror Bay, and at Deadman's Bay. These are all located on lands administered by Kodiak Refuge.

Table 3-28 is a comprehensive list of all current administrative facilities used and maintained by the Refuge, including pertinent information on the adequacy of the facilities to meet current and projected refuge needs.

Additional administrative facilities necessary for implementation of the Refuge's current program of work are identified in Table 3-29. If additional facilities are required to implement a specific alternative, these facilities and associated costs are identified in the discussion of that alternative.

3.6.2 Refuge Staffing

The Kodiak Refuge staff presently consists of 20 permanent positions. The following are permanent positions unless otherwise noted:

- Refuge manager
- Deputy refuge manager
- Supervisory wildlife biologist
- Wildlife biologist (Refuge Operating Needs System)
- Wildlife biologist (boat operator)
- Wildlife biologist (permanent part-time)
- Wildlife biologist (subsistence)
- Refuge information technician (subsistence—permanent part-time)
- Marine machinery mechanic
- Fisheries biologist (pilot)
- Biological science technician (fisheries)
- Supervisory park ranger
- Refuge operations specialist
- Park ranger (law enforcement)—two positions
- Maintenance worker
- Airplane pilot
- Administrative technician
- Administrative technician (permits)
- Office automation clerk

In addition, three to 10 positions are filled on a seasonal basis.

To effectively manage the Refuge's current program of work, six additional permanent full-time positions are needed:

- Outdoor recreation specialist for the visitor center
- Park ranger for Salmon Camp
- Refuge operations specialist for permits
- Refuge operations specialist for administration and facilities
- Maintenance worker
- Ecologist

Table 3-28 Existing administrative facilities for Kodiak Refuge

Facility	Size (sq. ft.)	Description
Headquarters Office and Visitor Center	4,000	Good condition, inadequate space for existing staff, meetings, and storage
Residence #2	1,944	Good condition, employee housing
Residence #3	1,944	Good condition, employee housing
Residence #4	1,944	Good condition, employee housing
Residence #5	1,944	Good condition, employee housing
Bunkhouse	1,704	Good condition, housing for summer employees, volunteers, and other employees on assignment
Shop	2,400	Good condition, inadequate space and heating system
Aircraft Hangar	3,600	Good condition, located on Coast Guard Station near Kodiak airport
Float Plane Base		Good conditions, located at Lily Lake
Triplex Residence	2,949	Good condition, located in City of Kodiak, employee housing
Headquarters Office Annex	576	Poor condition, staff office space
Pan-Abode Storage Shed	300	Poor condition, unheated storage
Container Storage Shed	1,120	Poor condition, unheated storage
Administrative Bunkhouse	630	Good condition, southwest Camp Island
Administrative Fuel Shed	288	Good condition, southwest Camp Island
Administrative Pan-Abode	850	Fair condition, northeast Camp Island
Administrative Bunkhouse	1,410	Fair condition, northeast Camp Island
Administrative Boathouse/Shop	825	Fair condition, northeast Camp Island
Administrative Bunkhouse	1,600	Poor condition, Terror Bay
Administrative Bunkhouse	750	Poor condition, Deadman Bay

Note: Unless otherwise noted, all facilities are located at the headquarters site.

Table 3-29 Additional facilities needed to support current refuge programs

Facility	Size (sq. ft)	Description
Visitor Center	10,000	Need larger facility for visitor services
Equipment Storage Building	4,000	Need building for equipment and vehicle storage
Bunkhouse	4,200	Need additional housing for seasonal employees and volunteers
Office Space	6,800	Need additional office, storage, meeting, and computer space
Residence	1,944	Need additional employee housing

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4. Environmental Consequences

The purpose of this chapter is to identify, describe, and compare the effects of four alternatives (including current management) on the physical, biological, and socioeconomic environment proposed in this final Kodiak National Wildlife Refuge (Refuge) Comprehensive Conservation Plan (Plan). Current management (Alternative A) provides the basis for comparing the effects of three action alternatives (Alternatives B, C, and D). The effects on Refuge resources of various management actions proposed by each alternative were assessed. The following topics were analyzed in this assessment:

- Access to bear concentration areas
- Public use cabins
- Camping areas
- Bear-viewing programs

An analysis of the effects of management actions on the physical environment has been conducted for aquatic habitats. Although all species on the Refuge are important, many species are not expected to experience any change as a result of implementing any of the alternatives. For that reason, not all Refuge species are discussed in this chapter. An analysis of the effects of management actions on the biological environment has been conducted for the following:

- Vegetation
- Fish populations
- Bird populations
- Brown bear populations
- Nonnative mammal populations
- Marine mammal populations

An analysis of effects on the human environment has been conducted for the following:

- Local population and economy
- Subsistence
- Guides and commercial operators
- Bear and deer hunting
- Recreational fishing
- Wildlife viewing
- Wilderness and river values

Cultural resources would be protected under all alternatives; none of the alternatives would be expected to adversely affect cultural resources. For this reason, there is not a separate section on cultural resource impacts.

Site-specific environmental effects of activities that would require National Environmental Policy Act (NEPA) documentation will be addressed in subsequent environmental assessments or environmental impact statements.

4.1 Analyses

4.1.1 Physical Environment

Aquatic Habitats

The effects of all alternatives on aquatic habitat are anticipated to be of short duration and very localized, thereby causing no measurable degradation of aquatic habitats.

Increased public use of aquatic habitats within bear concentration areas is possible under Alternatives B and D, which could cause some localized trampling of aquatic vegetation.

No changes to aquatic habitats are anticipated from the continued use of public use cabins under Alternatives A, B, and D. A detailed analysis of the potential effects of adding additional cabins is not possible with the existing information because the number and locations of possible future cabins are not known. Additional site-specific analysis would be conducted prior to constructing any new cabins.

Camping area management is not expected to cause adverse effects on aquatic habitats. Camping area improvements could provide additional protection of aquatic habitats by keeping human waste away from waterbodies and directing some activities away from shorelines.

Cumulative Effects. None of the proposed management actions or combinations of actions, under any of the alternatives, is likely to have measurable effects on aquatic habitats within the Refuge.

4.1.2 Biological Environment

Vegetation

Adverse impacts to vegetation could occur through direct damage such as trampling or removal and through the introduction of invasive plants. Under all alternatives, the introduction of invasive plants to Refuge lands is possible. Orange hawkweed has become established on Refuge and adjacent private lands at Camp Island, an area where several facilities are located. Seeds and plant parts of invasive species that can be transported in gear and clothing and on vehicles used to access the Refuge (e.g., float planes and boats) are difficult to protect against. If visitation to other areas of the Refuge

increases, the likelihood of an invasive plant being accidentally brought to an area would also increase. Invasive plants are most likely to become established in areas where native vegetation has been disturbed (e.g., cabin sites).

Alternative A. Currently less than five acres of the Refuge's vegetation cover has been displaced by cabins and other structures. Seasonally some vegetation adjacent to popular fishing areas is trampled. Staff observations (Getman 2004) suggest that the native grasses recover quickly, and bare ground areas are not developing with current use.

Under Alternative A, public use cabins would continue to be available, and additional cabins could be added to the program. Construction of new cabins would result in removal of native vegetation from the footprint of the cabin and any associated facilities. Given the amount of vegetation that would be removed compared to the size of the Refuge, this effect would be negligible. Invasive plants could become established at cabin sites because of the frequent presence of visitors and existing vegetation and soil disturbance. Cabin sites would be relatively easy to monitor for the presence of invasive plants, and eradication efforts could be undertaken prior to invasive plants spreading beyond the immediate vicinity.

Alternative B. The effects of proposed camping area management would be similar to the effects of public use cabin management. In Alternative B, improvement of camping areas with facilities such as latrines and food caches would be done to mitigate effects of visitor use. These facilities might concentrate recreation activities. In those cases, social trails would likely develop and cause increased trampling of vegetation. The opportunity for the spread of invasive plants to these highly used areas would be slightly increased, although monitoring for invasive plants and any necessary treatment would be easier than at dispersed camping areas.

Reopening the O'Malley area to bear viewing would slightly increase the possibility of invasive plants becoming established in the area. Refuge staff could monitor changes in vegetation while monitoring compliance with special use permit conditions.

Alternative C. Cabins would be phased out under Alternative C, eventually returning the footprints of the cabins and related structures (estimated at less than five acres) to native vegetation. Displaced cabin users may choose to camp on the Refuge and could potentially trample vegetation on larger areas than those currently occupied by cabins and related structures.

As in Alternative B, reopening the O'Malley area to bear viewing would slightly increase the possibility of invasive plants coming into the area. Monitoring would be facilitated by the intensive management presence on site.

Alternative D. The effects of cabin management under Alternative D would be similar to those under Alternatives A and B. Effects of campsite management would be the same as under Alternative B. Effects of reopening the O'Malley area to bear viewing would be the same as under Alternative C.

Cumulative Effects. Monitoring proposed under Alternatives B, C, and D should ensure that damage to vegetation is detected prior to becoming even locally widespread and that invasive plants are detected in high-use areas prior to becoming well established. The possibility of invasive plants becoming established in other areas of the Refuge exists under all alternatives, but the probability would be low.

Fish Populations

Any management that affects public use levels, locations, and distribution could have some influence on fishery resources. Most Refuge visitors fish as a primary or incidental activity. Public use cabins attract anglers. Many bear viewers also engage in angling. Angling impacts to fish populations are generally addressed by State of Alaska's fishing regulations. Effects to fish habitats on the Refuge are considered in siting facilities. Measurable impacts to fish populations are not expected. However, if adverse effects were to occur, the state and the Refuge would make necessary management changes to keep the public use compatible with Refuge purposes and to ensure protection of fishery resources.

Cumulative Effects. None of the alternatives is likely to have a measurable effect on fish populations within the Refuge.

Bird Populations

Riparian areas and wetlands are usually considered the most sensitive habitats and receive primary impacts from habitat alterations and disturbance made by humans. The majority of human activities taking place on Kodiak Refuge occur on or adjacent to some type of water. When assessing the potential for impacts to drainages or watersheds, estuarine and intertidal habitats must be included. Estuaries often contain the greatest avian biodiversity and are focal points of local productivity. Some tidal areas are also the focus for human access to riparian areas and watersheds; others, however, are not because they are difficult to access.

In localized areas of concentrated public use, such as near public use cabins, at bear-viewing sites (e.g. Frazer fish pass), and on certain rivers (e.g. Ayakulik and Karluk during the Chinook salmon run), some displacement would likely occur and there could be a minor effect on local breeding if use occurs during the nesting season. The degree of impact would depend on the tolerance of each species to stress or disturbance and the capability of populations to return to their original state after the disturbance. Threshold responses would vary within a species and between species groups. The effects of

human presence in an area on various bird species vary in relation to time and location (Furness and Greenwood 1993).

Alternative A. The seasonal limits on public use of bear concentration areas under regulations proposed in Alternative A would probably have negligible effects on bird populations. Any limits on human presence in an area could, however, generally be considered beneficial and should have beneficial effects on Refuge bird species in the area.

Under Alternative A, opportunities for Refuge visitors to use cabins could be expanded. Increased human presence at the additional public use cabins would affect birds, as previously described.

Alternative B. Effects of increasing the number of public use cabins would be as previously described. Because more cabins would be allowed under Alternative B than under the other alternatives, this alternative has the greatest potential to adversely affect bird populations in the immediate vicinity of cabins. Improving camping areas with facilities such as latrines and food caches might concentrate or increase public use in the areas of these improvements. Management that increases or prolongs human presence—such as providing bear-viewing opportunities at O'Malley River—also increases the potential for impacts to birds.

Alternative C. Phasing out the public use cabin program may slightly reduce impacts in cabin areas if the amount of use at former cabin sites is reduced. Seasonal closures of some bear concentration areas would serve to protect bird species in those areas. To the extent that nesting and fledging occur during the times of these closures, effects on bird populations would be positive. Effects from bear viewing at O'Malley River would be the same as under Alternative B.

Alternative D. Effects of public use cabin management under Alternative D are the same as under Alternative A. As under Alternative B, improving camping areas with facilities such as latrines and food caches may concentrate or increase public use in areas of improvements. Effects of bear viewing at O'Malley River would be the same as under Alternatives B and C.

Cumulative Effects. Recent studies (Broseth and Pedersen 2000, Fraser and Sweetapple 1992, Lyon and Burham 1998, Marks 1994, Rempel *et al.* 1997) conclude that human-induced impacts are directly related to access, with decreasing effects as distance increases from the source location (trail, road, cabin, etc.) of human access. Low-level or chronic impacts can normally be characterized as localized and of short duration. However, some of these impacts can become cumulative on more sensitive bird species such as harlequin ducks (Clarkson 1992).

The primary causes of impacts to bird population are disturbance, habitat alterations and trampling, direct take, or human-induced mortality. Access sites, historic camping areas, public use cabins,

and other areas with human use are predictable focal points for impacts. Impacts to birds from bear and wildlife viewing, as described under all alternatives, would depend on distribution, frequency, and numbers of people engaged in this activity. Overall, negligible impacts would be expected. Yet, at some areas, adverse impacts could occur and affect the survival, reproduction, distribution, or behavior of a specific group of individuals in a localized area for one generation or less without affecting the regional population. Habitat composition and structure would remain unchanged; habitat quality, however, may be affected by indirect actions (e.g., disturbance or displacement affecting a specific group of individuals that may result in altered use of an area). Impacts to bird populations or habitat quality and composition in localized areas are possible at popular viewing locations when high numbers of viewers use an area over long periods of time. These impacts would be sufficient to cause a change in abundance or distribution for more than one generation but would be unlikely to affect the integrity of the regional population over the long term.

Brown Bear Populations

In salmon-spawning areas where bears concentrate to feed, new or increased human use would disrupt and displace bears in areas where they were unaccustomed to close human activity. Bears that encounter human activity would likely stop their normal activity pattern and move away from the source of the disturbance (Wilker and Barnes 1998). Repeated, nonthreatening human encounters would result in a variety of responses by bears. Some bears would become habituated to routine human activity, continuing their regular daily activity and patterns of habitat use at normal levels in the presence of humans (Barnes Jr. and Wilker 1997, Olson *et al.* 1997). Other bears would respond by avoiding humans. This is especially true of adult males, which may be intolerant of other bears during the nonbreeding season (Mattson *et al.* 1987, Olson *et al.* 1997).

Intolerant bears would respond to human activity by reducing their use of the concentration areas to times when humans are gone, shifting their activity to areas further from humans, or abandoning the area altogether (Olson *et al.* 1997, Warner 1987). This temporal or spatial shift in activity may affect bear survival and productivity if it results in nutritional stress, injury, or death of bears driven away from prime feeding areas or into territorial conflicts with other bears. If human activity in bear concentration areas increases or becomes unpredictable, bear use of the concentration areas would decrease (Wilker and Barnes 1998). The level of impact would be greater where these changes occurred in or adjacent to prime bear foraging habitat having high local bear densities (Mattson *et al.* 1987, Warner 1987).

Alternative A. The current regulatory proposal (see Alternative A, section 2.7 in Chapter 2) grew out of the 1993 Kodiak Refuge public use management plan (USFWS 1993). Selection of these areas of

concern was based on data from ongoing bear stream surveys. Biologists continue to believe that these are the most important areas to be addressed. Some minor updates to the proposed closures have been made as a result of new information. For example, the proposed closure dates for the Lower Dog Salmon area have been adjusted as better information has been obtained through ongoing surveys.

Day use restrictions, proposed for five areas of concern, would prevent future impacts to bears that are associated with overnight camping in these areas. All public use of these areas during the period of bear concentration would be limited to daytime hours only. Camping by guided viewers, the largest percentage of the bear-viewing public, has been prohibited in these areas by administrative restrictions since the regulations were proposed in the late 1990s. Day use restriction may also be an appropriate tool to protect bears at other accessible concentration areas not addressed by this alternative. Bears in these areas would continue to be disturbed, displaced, and moderately affected by inconsistent timing and distribution of human activity.

Provisions could be made for developing additional general and area-specific guidelines to facilitate safe and compatible day use. Such guidelines or restrictions could influence the type and location of daytime public access and use (ADF&G and NPS 2003, Walker 2002). For example, bear viewers could be encouraged to use a specific trail or route to reach a viewing site, as currently occurs at Frazer fish pass. Such standards would minimize impacts to bears because human activities would be focused, consistent, and predictable (Walker 2002, Wilker and Barnes 1998).

Bear-viewing opportunities could increase and public use could become more consistent in areas managed under seasonal day use restrictions. Bear habituation could increase, and disturbance and displacement could decrease as public use became more frequent, consistent, and predictable (Barnes Jr. and Wilker 2002, Wilker and Barnes 1998). However, no information is currently available on movements of habituated bears nor on possible long-term consequences to the bear populations of habituation. These topics would need further study.

Seasonal closures would afford bears a high level of protection in four areas targeted for such restrictions. Bears would continue to exhibit natural, wild patterns of activity and habitat use. Positive effects of the closures on bears would be greatest at areas where public use would become established absent closure regulations. The positive effects of closures would be fewest at less accessible areas.

Seasonal closure of two denning areas would increase security of the areas for bears. The two areas targeted for closure, Den Mountain and Baumann Creek, differ somewhat in terms of accessibility for wintertime human activity. Den Mountain is more accessible and thus more vulnerable to snowmachine use. Because of its terrain,

Baumann Creek is less accessible to snowmachine use. However, snowmachine tracks have been observed entering the Refuge near Viekoda River and traversing parts of Baumann Creek (Wilker 2004). Closure of these areas would prevent adverse impact to bears sufficient to cause a change in abundance or distribution for more than one generation.

Continuing current management of camping areas could result in highly localized, negligible, short-term adverse impacts to bears, specifically related to the absence of government-provided temporary garbage and food storage facilities at sites commonly used by campers. Absence of these facilities could increase incidents of bears obtaining food and garbage at campsites. The number of incidents would likely increase as public use increases. Successful bear raids would condition bears to consider human camps as food sources and could cause adverse bear–human interactions. However, the public is increasingly aware of the benefits of using personally owned electric fences and bear-resistant storage containers. In high-use areas where public and bear safety problems have been documented, the Refuge could implement on-site management to minimize impacts, as has been demonstrated at the Bare Creek camping area along the Ayakulik River. Negative bear–human interactions were substantially reduced after the Refuge established a temporary electric fence enclosing bear-resistant storage containers that the public could use to store food and garbage.

Use of public use cabins has a generally positive impact on bears. Refuge cabins afford relatively secure temporary storage of food, garbage, and game meat. Cabin permits require proper use of these facilities, including removal of all food and garbage at the end of each trip. Effectiveness is indicated by the absence of historical records of adverse bear–human incidents attributed to the cabin program. Adverse bear–human interactions occasionally occur in the Refuge back country and are associated with temporary tent camps, especially those with game meat stored nearby (Smith *et al.* 1989).

Another positive impact of the cabin program is related to visitor experience. Cabins provide the most secure option for overnight use by visitors with limited experience camping in bear country. The combination of secure facilities and cabin-permit requirements serve to educate visitors in appropriate back country “bear-aware” practices.

The cabin program could have serious adverse impacts on bears if cabins were sited in bear concentration areas. None of the seven current cabins is located in such an area, and no new cabins would be constructed in concentration areas. Cabins at O’Malley River and Red Lake were removed in the past because they were located in bear concentration areas.

The continued closure of the O’Malley River area could have positive effects on bears. During summer, disturbance would be

limited primarily to that caused by low-flying aircraft, which can cause disturbance such as displacement from feeding areas; separation of sows and their cubs that could lead to cub mortality; and physiological stress to individual bears that overheat while fleeing from disturbance. However, aircraft use that results in harassment of wildlife (generally less than 800 feet above ground level) could result in a citation under the Airborne Hunting Act (16 U.S.C. 742j-1) and lead to prosecution and possible forfeiture of the offending aircraft (50 CFR 19.11[a][2]). Minor adverse effects due to disturbance, displacement, and habituation are anticipated if public use increases during June and October, when the O'Malley area is open to public use.

Cumulative Effects. Alternative A would result in generally positive effects to bears. Bears would be positively affected by seasonal access restrictions at five areas (including O'Malley River) and continued effective operation of the public use cabin program. Effects of seasonal day use restrictions would be generally positive, assuming the restrictions would be accompanied by carefully designed public-use guidelines. While use by commercial operators and their clients at these sites would be allowed once regulations were in place, unguided users who are currently free to visit any and all areas would also be required to adhere to the access regulations. Management of camping areas would continue to be reactive to situations with increased concern about public and bear safety. None of the actions identified in this alternative would significantly influence the size and productivity of the Refuge's bear population.

Alternative B. Under Alternative B, no regulations seasonally restricting or limiting public access to bear concentration areas would be adopted. The Refuge would use a stakeholder process to identify one or more areas where voluntary use guidelines would be developed and tested. Some areas currently closed to guided use by administrative restriction likely would be opened to use by commercial operators and their clients. Increased commitment to successful implementation would be expected from citizens because of their involvement in crafting the voluntary use guidelines. Continuing dialogue among the Refuge and stakeholders during implementation would ideally enable rapid modification of guidelines to correct problems and to refine management. Additional bear concentration areas could be addressed through the same process if voluntary guidelines proved effective.

Several factors would determine the overall impact of Alternative B on bears, including the specific areas for which guidelines would be developed, level of guideline detail, availability of Refuge staff to monitor use by bears and people, and compliance by unguided visitors. No day use only restrictions, voluntary or otherwise, are contemplated for this alternative.

Guidelines that increase consistency and pattern of human activity would increase neutral bear habituation and correspondingly reduce

disturbance and displacement. The conservative implementation strategy—first testing development and application of voluntary guidelines in a single or limited number of areas—would minimize adverse bear impacts because the limited resources of the Refuge for education of users and monitoring of resources would be focused most efficiently, and evaluation of management results would be improved.

Effectiveness of guidelines would be related to the level of guideline detail, the extent to which users were informed of guidelines, and the Refuge's field staffing capability. For example, guidelines could suggest how people should plan and act to avoid surprising a bear at close range and how to respond if they do (ADF&G and NPS 2003). Area-specific guidelines could encourage establishment of routine patterns of visitor access and use adapted to unique cover, terrain, and bear-distribution characteristics of each concentration area (Barnes Jr. and Wilker 2002, Sellers and Aumiller 1994).

Effectiveness of guidelines would likely differ between guided and unguided visitors. Guides would be required to comply with guidelines as conditions of their special use permits. Additionally, guided visitors would have least impact on bears because guides would presumably augment application of the guidelines with their experience, skill, and attitude. Many unguided visitors would have appropriate experience, but some would not. Ill-advised or inexperienced use by one individual could displace some bears (Wilker 2004). In the most extreme case, this behavior could provoke human injury or result in death of a bear.

A voluntary guideline could also be developed and seasonally applied to protect denning bears in areas such as Den Mountain. Upper slopes of this mountain consistently support concentrated denning activity by adult female bears (Van Daele *et al.* 1990). The area can be readily reached by snowmachines when snow cover is sufficient at lower elevations. Although most snowmachine users would likely adhere to a guideline discouraging use of this area, some would not. Ill-advised or uninformed snowmachine use that disturbs denning bears, even by a single individual, could cause bears to abandon dens and newborn cubs incapable of travel (Jonkel 1980).

Ultimately the efficacy of an experimental guideline-only strategy is uncertain. Total compliance by unguided visitors would not be expected, especially if the scope of the initial program exceeds the Refuge's field patrol capability. Although the Service is not aware of any documented cases where guidelines were exclusively used to effectively manage human activity in bear concentration areas, Kodiak Refuge is currently assessing the effectiveness of voluntary guidelines for managing human activities on the Ayakulik River. The preliminary assessment of this program indicates that the voluntary guidelines are accomplishing the management objectives. Management of these types of areas has typically involved a

combination of guidelines and restrictions geared to encourage responsible visitor conduct while restricting type, location, and period of visitor activity (Walker 2002). The success of guidelines, measured in the effects of human activity on bears and the quality of visitor experience, would depend on three primary factors: careful design; effective administration, including dissemination of program information; and complete compliance by all visitors.

Alternative B would allow development of temporary facilities in camping areas to minimize impacts to bears. Specifically, impacts to bears such as food conditioning would be prevented because some campers would have a place to securely store garbage and food. The storage place would consist of bear-resistant containers enclosed by a small, temporary electric fence. Once established, such a facility would require periodic in-season maintenance by Refuge staff, commitment by the public, and cooperation of air transporters to haul garbage back to town. Such minor facilities, on-site management, and public commitment have collectively minimized adverse bear impacts resulting from food conditioning at the Bare Creek camping area along the lower Ayakulik River.

Under Alternative B, new cabins could be added to the public use cabin program. Impacts to bears would not be expected to differ markedly from those expected under Alternative A. Both alternatives would similarly minimize impacts of back-country use by making the location of such use predictable to bears, making secure the storage of bear attractants (food, garbage, and game meat), and requiring cabin users to comply with the terms of their cabin permits.

The Service would expect minor impacts to bears from the commercial bear-viewing program being established at O'Malley River under Alternative B. These noticeable but minor impacts would be limited mainly to unhabituated animals that traditionally use the access trail and the area near the viewing site in July and August. Some affected bears would gradually habituate to this activity; others would shift their daily activity patterns to avoid it (Sellers and Aumiller 1994). Yet other bears would probably move to and remain at different foraging sites. Although these animals may encounter increased competition with other bears, their survival would not be jeopardized.

Initial declines in summer bear use would be followed by a gradual increase in use to preprogram levels as displacement decreased and habituation increased (Barnes Jr. and Wilker 2002, Wilker and Barnes 1998). Bear use would be unlikely to differ significantly from preprogram levels after year four of program operation (Barnes Jr. 2004).

Bears would be minimally disturbed by viewing-program activities because the type, level, timing, and distribution of human activity would be carefully managed. Access to and from the viewing site and activity at the viewing site would be managed similarly to the

agency-run viewing program conducted in 1992. However, some additional impacts to individual bears would be expected because of the realities of monitoring a commercial operation. Those could likely be alleviated only through presence of an on-site agency monitor and strict penalties for noncompliance.

The camp adjacent to the concentration area would have negligible effects on bears (Wilker and Barnes 1998). Careful camp management would ensure safety and prevent problems. Curious bears approaching camp would be deterred. Although other activities such as fishing could occur in the camp vicinity, effects on bears would be negligible because these activities would occur outside the bear concentration area.

Viewing-program characteristics could change if fall bear viewing were authorized. Because of changes in distribution of food resources, bears increasingly use the lake shore area for travel and foraging in fall. Despite this need, adult males might tend to avoid the lake shore or shift activity patterns in response to human activity. If fall viewing were allowed, social conflicts between bear viewers and bear hunters could develop.

The annual seasonal closure currently in effect extends from June 25 through September 30. This allows unrestricted public access for a month before the start of hunting season. Habituated bears in the O'Malley area would be somewhat at risk of harvest, although the risk to individual bears is reduced by several factors (Barnes Jr. and Wilker 2000). The bears most likely to become habituated include females accompanied by cubs, which are protected from harvest by regulation, and subadults whose small size makes them less attractive as trophy animals. Harvest levels under current management are, in general, conservative. Consequently, natural mortality is a more significant factor on the local bear population using the O'Malley River site during the viewing period than is recreational and subsistence harvest. Few bears are present in the O'Malley area during the spring bear-hunting season because of the absence of spring forage in the area. Bears do not begin to congregate here in large numbers until the salmon runs start.

In summary, a commercial viewing program would have minor short- and long-term effects on bears, assuming strict adherence to program requirements. Impacts would be minor mainly because the type, distribution, and level of human activity would be consistent and carefully regulated; human use would be limited to the access trail and vicinity of the viewing site, a relatively small portion of the concentration area; and most bears initially disturbed by humans would gradually habituate to them and resume traditional habitat use patterns.

Cumulative Effects. Implementation of Alternative B would result in moderate negative impacts to bears—changes affecting a local population sufficient to cause a change in abundance or distribution

for more than one generation but unlikely to affect the integrity of the regional population over the long term. Impacts would be mainly due to effectiveness, or lack thereof, of management of public use in concentration areas other than O'Malley River. Specifically, bears could be persistently displaced by repeated noncompliance with voluntary use guidelines by unguided visitors and the fact that the guidelines would not contain any camping provisions.

In contrast, restrictions in effect at O'Malley River would result in only minor negative effects due to occasional displacement and minor habituation of bears, assuming strict adherence to viewing requirements. Management of the public use cabin program would continue much as under Alternative A, resulting in generally positive impacts to bears. Active management of camping areas to avoid bear and human safety problems using the least intrusive methods would also have generally positive effects.

Although there likely would be more impacts to bears than under Alternatives A, C, and D, none of the actions identified in this alternative would significantly influence the size and productivity of the Refuge's bear population.

Alternative C. As with Alternative B, a stakeholder planning process would be used to select foraging concentration areas for management focus with Alternative C. Access restrictions would be targeted to areas of greatest current agency concern and public interest. Voluntary guidelines would be a component of planning and management. See the description of effects for Alternative B for a more complete discussion of the manner in which voluntary use guidelines would be developed and implemented. The major difference is that this alternative assumes that regulations would be the eventual outcome. While guidelines would be used to field test public use management actions, they would likely be turned into regulations, and some areas would likely be limited to day use only by regulation.

As with Alternative A, two denning areas would be closed to snowmachine use by regulation. See Alternative A for a discussion of the likely effects of these proposed closures. As in Alternative A, campsite management would be reactive, potentially leading to highly localized adverse impacts to individual bears.

This alternative would cause minor negative impacts to bears because public use cabins would gradually be eliminated. Increased impact would likely result from increased confrontations between bears and those visitors who fail to use "bear-aware" camping practices such as proper storage of food and garbage. Camp-related bear confrontations occur every year on Kodiak Island (Van Daele 2004). Most are prompted when bears are attracted to the smell of food, garbage, or harvested fish and game. While most confrontations result in successful bear deterrence and no long-term impact to bears, others do not. Bears that successfully procure camp

food, garbage, or harvested fish and game would likely provoke future confrontations because they were conditioned to human camps as potential food sources. Ultimately, such bears could die in defense of life or property (DLP) incidents (Smith *et al.* 1989).

Impacts to bears at the O'Malley River bear-viewing area would be generally the same as those described for Alternative B. Any viewing program would be managed in a manner similar to that described in Alternative B and modeled on the program run at this location by the Refuge in 1992. However, this alternative would potentially have the least impact of the bear-viewing options because of the control inherent in a purely agency-run viewing program.

Cumulative Effects. Overall impacts associated with Alternative C would be positive. With respect to bear concentration areas, impacts would be similar to those anticipated for Alternative A, assuming the stakeholder process was effective and because regulations, potentially, including day use only restrictions, would be adopted.

As with Alternatives B and D, a viewing program at O'Malley River would result in minor adverse effects due to negligible displacement and minor habituation of bears. However, this alternative would potentially have the least impact of the viewing options because of the control inherent in a purely agency-run viewing program.

Positive effects are somewhat countered by some likely negative effects. Elimination of the public use cabin program would have minor negative impacts, and an increase in DLP incidents could be expected. Reactive management of camping areas would also have minor negative effects.

None of the actions identified in Alternative C would significantly influence the size and/or productivity of the Refuge bear population.

Alternative D. Consistent with Alternatives B and C, Alternative D would use a stakeholder planning process to evaluate areas warranting increased management attention. Some of these priority areas are highlighted in the Kodiak Archipelago Bear Conservation and Management Plan (ADF&G 2002). Voluntary guidelines for use of selected areas would be developed, possibly including some day use only restrictions. This would be similar to Alternatives B and C in terms of overall process. However, unlike Alternative B, regulations under Alternative D would be one possible implementation tool. If guidelines proved ineffective because of their voluntary nature, they would become the basis for permanent regulations. Meantime, all parties would have had the opportunity to field test and refine proposed management. Unlike under Alternative C, regulations under Alternative D would be seen as a last resort, not the assumed outcome.

Alternative D would result in minor impacts to bears due to short-term displacement and long-term habituation. Displacement would mainly result from newly occurring visitor activity in areas where

current administrative restrictions were replaced by voluntary guidelines, an active education effort by field staff, and possible restrictions by regulation (e.g., a prohibition on overnight camping). Over time, bear use would increase to current levels as management measures took force and bears neutrally habituated to nonthreatening, consistent, and predictable human activity (Sellers and Aumiller 1994).

Alternative D would also affect bears in some foraging concentration areas where public use currently occurs but is unmanaged. Although some bears are habituated to humans in these areas, others are not, primarily because of irregular timing, type, and distribution of human activity. Bear displacement would decrease and habituation would increase in response to restrictions and guidelines. Specifically, possible camping restrictions would limit activity type and timing while other guidelines or restrictions could control activity distribution. The option of adopting regulations would increase compliance by unguided visitors.

In sum, the management intent under Alternative D would be to minimize bear displacement by encouraging or requiring limited, routine, and consistent human activity in compliance with voluntary guidelines and restrictions applied to foraging concentration areas of priority concern. Such an outcome would be consistent with successful, compatible practices of visitor management applied to foraging concentration areas in coastal Alaska (Walker 2002, Wilker and Barnes 1998). It would also be consistent with the Kodiak Archipelago Bear Conservation and Management Plan (ADF&G 2002), which recommended “[m]anaging critical bear habitat to prevent adverse impacts” and “encourag[ing] only those bear–human interactions that are compatible with maintaining the natural behavior of wild bears and protection of their wilderness habitat” (ADF&G 2002).

Only the Den Mountain denning area would be closed by regulation where denning females are thought to be most vulnerable to snowmachine disturbance (Van Daele 2004). See Alternative A for additional discussion of potential effects.

Effects of campsite management under Alternative D would be the same as those discussed for Alternative B. Active management, using the least intrusive methods, would be allowed. Effects of the public use cabin program under Alternative D would be the same as those described under Alternative A. Generally, positive impacts to bears would be expected because visitor use would be safely managed and occur in locations predictable to bears.

The effects of a bear-viewing program at the O’Malley River area would be expected to be generally the same as those identified under Alternatives B and C. Because some viewing opportunities would be allocated to commercial guides, this alternative would be expected to have slightly more impact than Alternative C, but less impact than

Alternative B. The presence of agency staff on site would be expected to provide a margin of assurance that individual bears would not be disturbed because of careless interpretation or implementation of the viewing program.

Cumulative Effects. Alternative D would result in minor negative impacts—more impact than Alternative A, but less than Alternative B. In comparison with Alternative C, the actions in this alternative for management of bear concentration areas in general would result in approximately the same impact, but the proposed management of the O'Malley River area would result in slightly more impact.

Implementation of access and bear-viewing management would initially affect bears at concentration areas newly opened to managed bear viewing and other public uses. This use would disturb and displace unhabituated bears, resulting in a measurable short-term decline in bear use levels despite application of seasonal area use guidelines and restrictions. Recovery to current bear use levels would be expected possibly by year two or three and probably by year four (Barnes Jr. 2004) because most bears would be habituated to nonthreatening, consistent, and predictable visitor activity. The strategy for management of O'Malley River would have more adverse impact than Alternatives A and C but less than Alternative B.

Public use cabin and campsite management under Alternative D would have generally positive effects on bears.

None of the actions identified in Alternative D would significantly influence the size and/or productivity of the Refuge's bear population.

Nonnative Mammal Populations (Sitka Black-Tailed Deer, Roosevelt Elk, and Mountain Goat)

Under all alternatives, management of bear concentration areas, including management of bear viewing, would have no measurable effects on deer, goat, or elk populations. Bear concentration areas are generally not favored places to hunt deer, so it is very unlikely that the seasonal limits on access to bear concentration areas would change deer hunting pressure. Mountain goat and elk do not occur in these bear concentration areas; therefore, no effects are expected to these populations.

Alternative A. Under Alternative A, opportunities for Refuge visitors to use cabins could be expanded. More cabins, or cabins placed in areas of higher deer and elk densities, could result in greater harvests of animals. Anecdotal reports from hunters using public use cabins indicate that deer populations experience temporary local declines around some cabins during hunting season. If deer or elk populations declined because of hunting pressure, the state could change hunting regulations and negate effects from increased hunter access.

Alternative B. Alternative B allows the potential of the greatest number of public use cabins. Effects on deer and elk populations would be as described under Alternative A. Any declines in populations associated with hunting would be mitigated through changes in hunting regulations. As stated previously, climatic factors are the main influence on fluctuating ungulate populations within the Refuge. Improving camping areas with facilities such as latrines and food caches might concentrate or slightly redistribute hunting. If these improvements were made in areas where deer, elk, or mountain goats congregate, local, temporary declines in populations could be similar to those predicted for areas near cabins. Again, changes in hunting regulations would mitigate any adverse effects from greater hunter density caused by improved camping areas.

Alternative C. Over time, phasing out public use cabins, as called for under Alternative C, could affect deer and elk populations by slightly decreasing hunter access and therefore hunting pressure, although the expected effect would be negligible. Mountain goats are not located in areas near cabins; therefore, no effect is expected on this species.

Alternative D. Effects on deer and elk populations from the Refuge's public use cabin program would be as described under Alternative A. Again, any declines in populations associated with hunting would be mitigated through changes in hunting regulations. As stated previously, climatic factors are the main influence on fluctuating ungulate populations within the Refuge. The effects of proposed camping-area improvements would be similar to the effects of public use cabins.

Cumulative Effects. None of the alternatives is likely to have a measurable cumulative effect on deer, elk, or mountain goat populations within the Refuge.

Marine Mammal Populations

Although marine mammals occur in the coastal waters surrounding Kodiak Refuge, marine mammals do not occur within its boundaries. Habitats within Kodiak Refuge support myriad natural resources, including salmon and other fish, that support marine mammals living within the waters surrounding the archipelago. Under Alternatives A, B, and D, opportunities for Refuge visitors to use cabins could be expanded. Currently Blue Fox Bay, Viekoda Bay, and Uganik Island cabins are located along the coast, offering visitors a base from which to possibly interact with sea otters or other marine mammals. Any new cabins along the coast could increase the possibility of human–marine mammal interactions. Despite this, any effects on sea otters or other marine mammals are expected to be negligible. Alternative C calls for phasing out the public use cabin program. Over time, Alternative C would likely decrease the number of visitors to these areas and thus the number of human–marine mammal interactions, although only negligible effects are expected.

Cumulative Effects. None of the proposed management actions or combinations of actions, under any of the alternatives, is likely to have any effect on marine mammal populations.

4.1.3 Human Environment

Local Population and Economy

No proposed Refuge management actions are likely to affect the Kodiak Island Borough population or the populations of individual communities within the borough. The economy of the borough is dominated by commercial fish harvesting and processing. Commercial salmon fishing may be regarded as Refuge-dependent in that Refuge designation ensures protection of the lakes and rivers that provide the habitat necessary to support the salmon fisheries. Commercial fishing, other than setnet sites and related facilities authorized on the Refuge, is not an on-site Refuge activity. Commercial fishing is not likely to be affected by any proposed Refuge management actions.

The primary mechanisms by which the proposed alternatives could affect the economy are direct spending by the Refuge to accomplish management objectives and the manipulation of on-site recreation and tourism opportunities for both visitors and commercial service providers. Because Refuge spending does not vary significantly among the proposed alternatives, the effects of that spending are not analyzed here. Opportunities for recreation and tourism do vary among the alternatives, and the effects of those variations are analyzed in the following text. It is important, however, to note that on-site Refuge recreation and tourism activities represent only a small fraction of the overall Kodiak Island Borough economy. Any effects on recreation and tourism caused by Refuge management actions are certain to be correspondingly small, localized, and insignificant when considered in the larger context of the borough economy.

The proposed alternatives for camping area management would have negligible effects on the economy, whether viewed locally or in the context of the larger borough.

Cabins contribute to the economy in several ways. Cabin users pay a fee that is used by the Refuge for cabin maintenance and related activities. Cabins may attract some users who would not choose to visit the Refuge if they were not available. Travel to cabins usually requires hiring a commercial air taxi, and air-taxi operators spend part of the revenues from transporting cabin users on fuel and other business-related items in the Kodiak area. Because so many Refuge activities involve the use of cabins, it is extremely difficult (and of questionable utility) to estimate the proportion of economic activity that is attributable solely to the presence of cabins themselves. Therefore, only the relative differences among the proposed cabin management alternatives are analyzed here. Similarly, the potential economic impacts of a bear-viewing program at O'Malley River are

difficult to evaluate because they depend on the specific design of a given program; thus, these impacts are only discussed in general terms and in contrast to the larger Refuge economy.

Alternative A. Under Alternative A, as many as two new cabins could be built, and cabins on acquired lands could be managed for public use. Because the number of suitable private cabins likely to be acquired is small, the overall change in the number of public use cabins would also be small, and the subsequent effect on the economy would be negligible.

Under Alternative A, current and potential future access limits, especially those aimed solely at commercial use, could affect the potential economic significance of Refuge bear-viewing activities. However, only the seasonal closures constitute practical limits; areas limited to day use are still available for use, and it is unlikely that commercial guides or well-informed private visitors would want to camp within known bear concentration areas.

At present, it appears that there is little demand among unguided or commercial users for access to seasonally closed and limited use areas other than O'Malley River. According to an assessment conducted by Allen and Collins (2002), there is sufficient demand to consider revising the O'Malley River closure to allow a bear-viewing program there. Therefore, continued seasonal closure of the O'Malley River site under Alternative A could limit the potential economic significance of bear viewing on the Refuge. However, because the area is already closed, continued closure cannot represent a significant impact.

Alternative B. Alternative B would allow more public use cabins as needed to meet demand. Currently the cabin system is not occupied to capacity, even during peak use periods, and visitor use is only expected to increase around 1 percent per year. Over time, small annual increases could result in substantially increased visitation and cabin demand. However, it would still likely be many years (beyond the 15-year life of this plan) before cabin numbers could increase to where the practical economic effects of this alternative would be greater than those associated with Alternatives A and D.

Alternative B calls for reopening the O'Malley River area for a commercial bear-viewing program. According to a report by the Institute for Social and Economic Research at the University of Alaska (Goldsmith *et al.* 2003), wildlife viewing on the Refuge (of which bear viewing is a subset) currently supports an average of 4.5 annual jobs (because many tourism jobs are seasonal, they are converted to annual jobs for comparison with other industries). A substantial increase in viewing demand could conceivably support several additional jobs. However, when considered in the context of other Refuge-dependent activities, including commercial fish harvesting and processing, wildlife viewing represents only a fraction of one percent of overall employment impact; even a

severalfold increase in jobs would not be significant in this larger context. (For comparison, commercial fish harvesting and processing support an estimated average of 1,200 annual jobs in the Kodiak Island Borough.)

Assuming that demand is sufficient to support a commercial viewing program at O'Malley River, a localized positive effect is possible under Alternative B. In 1994, the most recent year that a commercial viewing service was offered at O'Malley, 51 clients paid approximately \$1,400 each for a multiday experience—representing a 50 percent booking rate (Allen and Collins 2002). Assuming a 100 percent booking-rate, a similar operation could generate as much as \$142,800 in gross revenue (in 1994 dollars). According to Allen and Collins (2002). However, the 1994 operator needed to operate at near capacity just to break even. Moreover, Alternative B would only provide the opportunity for one guide business to operate at O'Malley. Any positive effects would primarily apply to the few individuals engaged in that business (and, to a lesser extent, air taxis and other providers of support services and equipment); in the larger context of the Kodiak economy, the positive economic effects would be negligible.

Alternative C. Under Alternative C, public use cabins would be phased out entirely. If all the activities currently associated with cabins (including use of air taxis) were subsequently eliminated, this alternative could have a negative impact on the Refuge-area economy. However, it is unlikely that such a scenario would develop. It is much more likely that many activities formerly associated with cabins would simply shift to tent camps or private facilities.

Effects of management of bear concentration areas, other than O'Malley River would be very similar to those identified under Alternative A. Only seasonal closures would limit bear-viewing opportunities. Day use only limits should not hinder opportunities for wildlife viewing.

Economic effects of establishing a government-run bear-viewing program at O'Malley River would be similar to those identified under Alternative B, except that any jobs created would be in the public rather than private sector. Because they would likely be seasonal positions, the rate of pay for these government jobs would probably be similar to pay in the private sector for similar work. Fees would likely be collected under a program in which they could be returned to site management. Unlike a private program, a government-run program would not have to recover full costs, with additional funds coming from appropriated moneys to cover operating expenses. As under Alternative B, overall economic effects from bear viewing would be negligible for the borough at large.

Alternative D. Under Alternative D, public use cabins would have the same negligible effects on the economy as under Alternative A.

Effects of management of bear concentration areas, other than O'Malley River, would be very similar to those identified under the other alternatives. As with the other alternatives, demand for access to O'Malley River and other bear concentration areas could expand in the future under Alternative D. A substantial increase in bear-viewing demand could conceivably support several additional jobs. Alternative D management of the O'Malley River bear-viewing program would provide opportunities for a few new seasonal jobs in the private and public sectors. Yet, once again, any positive effects would apply primarily to a few individuals; in the larger context of the Kodiak economy the effects would be negligible.

Cumulative Effects. Individually, none of the alternatives is likely to have more than a minor, localized effect on economic conditions. Camping, cabin use, and bear viewing, although important activities on the Refuge, generate only a small fraction of income and jobs in the Kodiak Island Borough; the economic effects of any related changes will be proportionally small as well. In short, the cumulative effects of management actions proposed under Alternatives A through D are likely to be negligible.

Subsistence

None of the proposed alternatives is likely to significantly restrict subsistence resources, uses, or access to resources. Effects on subsistence resources are described elsewhere in this chapter (e.g., bear, deer, mountain goat, fish populations). This section describes effects on subsistence uses and access. Management of camping areas under all of the alternatives would have no effects on subsistence uses or access.

Alternative A. Under Alternative A, commercial use of nine bear concentration areas would continue to be seasonally closed or limited to day use only, and these and other areas could be seasonally limited for all users when the Refuge public use management plan (USFWS 1993) is fully implemented. Because there is some overlap between seasonal closures and the start of the subsistence deer-hunting season in August, it is possible that seasonal closures could reduce hunting opportunities.

Alternative A would close two bear denning areas to snowmachine use. Although one area is close to the village of Port Lions and bears may be taken for subsistence use during December, use of snowmachines for subsistence hunting is not known on Kodiak Refuge. In a typical Kodiak Island winter, snow depth is inadequate to support snowmachine use at low elevations. No effects on subsistence use from closing these areas are expected.

Under Alternative A, opportunities for Refuge visitors to use cabins could be expanded through adding two new cabins to the public use cabin system. Most subsistence activities occur along the coast near island communities. Currently Bluefox Bay, Viekoda Bay, and Uganik Island cabins are located along the coast, although well away

from communities where subsistence use is concentrated. In 2000 and 2001, about 10 percent of Refuge cabin reservations were held by residents of the City of Kodiak; no residents of other Refuge communities reserved cabins. Under this alternative, cabins would remain available for use for subsistence or other activities. Any effects on subsistence from new cabins would be evaluated as cabin proposals are evaluated.

Under Alternative A, the area near the O'Malley River outlet would continue to be closed seasonally to all public use. Opportunities for subsistence use of this area would not change.

Alternative B. Under Alternative B, opening bear concentration areas to commercial use and adopting voluntary guidelines for public use is not likely to have any effects on subsistence use. There would be some potential for interaction with subsistence deer hunters in the early fall if any subsistence hunting occurs in these areas. Having no snowmachine access closures would ensure that snowmachines could be used for access to hunt during winter subsistence seasons.

Under Alternative B, the public use cabin program could be expanded to meet demand. Stakeholders would be consulted prior to adding new cabins to the program, and any effects on subsistence would be evaluated prior to adding new cabins to the system.

Establishing a bear-viewing program at O'Malley River would have no effect on subsistence use of the area because it would remain closed to other uses, including subsistence, until September 30. There is a remote possibility of bear viewers and subsistence hunters both being in the area during October.

Alternative C. Under Alternative C, the effects on subsistence of managing bear concentration areas would be similar to those under Alternative A. However, because stakeholders would be involved in developing and testing guidelines prior to their adoption as regulations, effects on subsistence could be considered in detail during the stakeholder process. The effects of snowmachine closures to two bear denning areas would be as described under Alternative A.

Alternative C calls for phasing out the public use cabin program by not undertaking major construction, maintenance, or acquisition projects. People who have used Refuge public use cabins to support subsistence activities would have to camp or to relocate subsistence activities to other areas. However, the opportunity to conduct subsistence activities would not be changed. There may be less general public use of cabins sites when cabins are removed because visitors who are not comfortable camping on the Refuge would be displaced; also, other camping may be more dispersed without cabins to attract visitors to specific locations.

The effects from proposed bear viewing at O'Malley River would be the same as described under Alternative B.

Alternative D. The effects of the public use cabin program under Alternative D would be similar to those described for Alternative A. Because of stakeholder involvement in siting new cabins, there would be even less potential for any conflicts between subsistence use and the cabin program.

The effect of closing one bear denning area to snowmachine access would be negligible for the reasons described previously under Alternative A.

The effects of the public use cabin program under Alternative D would be the same as described under Alternative A. However, there may be greater opportunity for stakeholder participation in recommending and evaluating new cabins for the public use cabin system. Based on stakeholder input, cabins could be sited to facilitate subsistence activities or to channel other public use away from popular subsistence areas, depending upon public input and evaluation of effects.

The effects from proposed bear viewing at O'Malley River would be the same as described under Alternative B.

Cumulative Effects. Those alternatives with stakeholder planning processes—Alternatives B, C, and D—would provide subsistence users greater opportunities for involvement in day-to-day Refuge management. Input about subsistence activities and existing or potential conflicts would be considered as guidelines are developed for management and prior to development of new facilities. However, none of the proposed alternatives is likely to restrict subsistence use of the Refuge nor access to subsistence resources.

Guides and other Commercial Service Providers

Under all alternatives, management of camping areas, cabins, and most bear concentration areas would have negligible effects on commercial service providers. Under Alternatives B and D, some new opportunities could be created for commercial bear-viewing services through reopening the currently closed O'Malley River site and as many as nine other bear concentration areas. Reopening the O'Malley site would constitute the most immediate and direct change, proposed under any of the alternatives, in opportunity for commercial service providers. However, the positive impacts of such a change would be limited in scope and scale; the opportunity to actually operate at the O'Malley site would be limited to a very few individuals or businesses, and the gross revenues from commercially run viewing would likely be less than \$200,000 (estimate derived from reported revenues in 1994, the most recent year a commercial viewing service was offered at O'Malley).

Alternative A. Under current management (Alternative A), a proposed regulation (if adopted) would limit camping within one-quarter mile of public use cabins and within 200 yards of federal or state administrative facilities. This regulation would be unlikely to

affect guides or their clients because guided groups do not typically choose to camp near cabins or administrative facilities. There are no provisions for improvements or facilities at camping areas.

As many as two new public use cabins could be constructed and added to the seven currently in use, and acquired cabins could be converted to public use. The number of public use cabins is unlikely to affect commercial operators because they are not permitted to use public cabins in their operations.

Alternative A maintains the current seasonal closure of the O'Malley River area, and guide access to nine bear concentration areas is seasonally limited through special conditions on special use permits for commercial operators.

Alternative B. Unlike Alternative A, Alternative B would not restrict camping near public use cabins or federal or state administrative facilities. However, no effect on commercial service providers or their clients is likely for two reasons: (1) there is not currently a camping restriction in place (although a regulation has been proposed) and (2) guided groups, as noted previously, are unlikely to camp near cabins or administrative facilities. Camping areas could receive some improvements to mitigate impacts as needed. These improvements would have no effects on opportunities for commercial operators or their clients.

Additional public use cabins could be added to meet demand (through building or acquisition) under this alternative. Adding cabins to meet demand would have no effect on commercial operators because they are not permitted to use public use cabins as part of their operations.

Under Alternative B, proposed regulations to seasonally restrict all public access at nine bear concentration areas would be replaced with voluntary guidelines for public use. Current special use permit conditions for commercial use would be replaced by conditions mirroring the new voluntary public-use guidelines. Because commercial operators would be required to comply with the guidelines as a condition of their special use permits, there would be few practical effects from this change. Some concentration areas that are currently closed altogether to commercial users could be reopened, but challenging access and lack of facilities may limit their commercial viability. Overall, the effects of replacing proposed regulations with guidelines would likely be negligible.

Under Alternative B, the seasonal closure at O'Malley River would be modified to allow operation of a commercial bear-viewing program. Such a change would create a new business opportunity for one commercial operator, including one or more guides and associated support services (e.g., air-taxi services). Reopening the O'Malley River site to commercial use would clearly have a positive effect on opportunities for commercial operators and their clients. In

practical terms, however, the magnitude of the effect (increased commercial opportunities) would be small because only one operator would eventually be selected to guide visitors at O'Malley.

Alternative C. Under Alternative C, a regulation restricting camping within one-quarter mile of public use cabins or federal or state administrative facilities would be adopted. As described previously under Alternative A, the effects of this regulation on commercial operators would be negligible.

In contrast to Alternative B, Alternative C calls for phasing out the public use cabin program by allowing natural attrition of cabins. Because commercial operators are not allowed to use public cabins in their operations, this alternative would have no direct effect on opportunities for them or their clients. A small positive effect on commercial operators is possible if some would-be cabin users are displaced to commercial camping or private lodge facilities. However, any cabin phase-out would occur slowly and extend well beyond the life of this plan. The likely positive impacts for commercial operators would be negligible.

Regulations similar to those proposed in Alternative A would be adopted to seasonally restrict all public access to selected bear concentration areas. The regulations could differ slightly from those proposed under Alternative A, based on the latest resource information; the effects on commercial operators, however, are expected to be the same.

Alternative C calls for reopening the O'Malley River site to allow for a government-run bear-viewing program. This alternative could result in increased opportunities for commercial support services (such as air taxis), but it would not directly affect opportunities for private wildlife-viewing guides. Relatively speaking, this alternative provides more commercial operator opportunities than does Alternative A, but fewer than does Alternative B.

Alternative D. The effects of Alternative D management of camping areas are the same as those described under Alternatives A and C.

The effects of public use cabin management under this alternative would be the same as those associated with Alternative A.

As would Alternative B, this alternative would replace proposed public-use regulations at bear concentration areas with voluntary guidelines. Additionally, some bear concentration areas could be limited by regulation to day use only. Whether public-use restrictions are voluntary or mandatory (i.e., based on regulations) is largely irrelevant for commercial operators because they are required to comply with all restrictions through special conditions included in their special use permits. Some concentration areas that are currently closed altogether to commercial users could be reopened, but challenging access and lack of facilities would likely limit the commercial viability of at least some of them. Moreover, the areas

that are currently closed to commercial use represent only a fraction of the known bear concentration areas across the Refuge (most are currently open to commercial operators). Overall, the effects of replacing proposed regulations with guidelines would be negligible (the same as with Alternative B).

Alternative D would reopen the O'Malley River site to public use with a mixture of government-run and commercial bear-viewing opportunities. Alternative D would allow more commercial opportunities compared to current management (Alternative A) and the strictly government-run program proposed in Alternative C and fewer opportunities compared to Alternative B. Overall, the positive effect on commercial operators would be relatively small for the same reasons described previously under Alternative B.

Cumulative Effects. The only proposed change under any of the alternatives that is likely to have immediate, direct effects on commercial service providers is reopening the O'Malley River bear-viewing site. Alternative D would also allow for new commercial opportunity at O'Malley, but only Alternative B calls for a wholly commercially run viewing operation. In addition, Alternatives B and D could allow some areas currently closed to commercial use to be reopened (according to strict guidelines). Cumulatively, of all alternatives, Alternative B would have the greatest positive effect on commercial opportunities. The magnitude of this effect would depend on the specific nature of the reopened bear concentration areas (access, viewing locations, etc.) and the design of the O'Malley River viewing program.

Bear Hunting

The State of Alaska has primary responsibility for managing bear hunting throughout the Kodiak Archipelago. For areas away from the road system (including all of the Refuge), the state issues a limited number of bear hunting permits for both spring and fall hunts to both resident and nonresident hunters who are selected in a lottery. A limited number of permits are also available to nonresident clients of guides with exclusive use areas on the Refuge. Compared to the effects of this limited permit system, most effects of the various Refuge management alternatives would be negligible.

Improving camping areas through facilities such as outhouses and food caches would not likely affect bear hunting, nor would changes to the public use cabin system.

Access restrictions associated with bear-viewing opportunities at O'Malley River, and restrictions at other bear concentration areas, whether they are adopted through voluntary guidelines or formal regulations, would not affect bear hunting because the timing of limits would not overlap with either spring or fall hunting seasons. Similarly, the various alternative approaches to establishing a bear-viewing program at O'Malley would not affect bear hunting because

the proposed programs would only operate during summer when no bear hunting occurs.

Alternative A. Under Alternative A, a regulation restricting camping near public use cabins and administrative facilities would eventually be adopted. This regulation would not likely affect bear hunters because most Refuge visitors do not choose to camp near such facilities, and bear hunters in particular are not likely to camp near other people.

Many Refuge visitors base their activities out of public use cabins. Bear hunters may use these cabins, but they may also base their activities out of privately operated lodges, temporary guide camps, or private tent camps. Under Alternative A, opportunities for bear hunters to use cabins could be expanded through the addition of as many as two new cabins and through adding formerly private cabins to the public use cabin system. However, because the limiting factor for bear hunting is the drawing permit system, cabin availability would not directly affect opportunities for bear hunting.

Under Alternative A, the area near the outlet of O'Malley River would continue to be closed seasonally to all public use. Commercially guided use of nine other areas would continue to be seasonally closed or limited to day use only. None of these seasonal limits, nor others proposed in the Refuge public use management plan (USFWS 1993), would directly impact bear-hunting opportunities because the limited-use and hunting seasons do not overlap. The spring hunting season runs from April 1 through May 15; the fall season runs from October 25 through November 30.

Alternative B. Under Alternative B, regulations restricting camping near cabins and administrative facilities would not be adopted. This approach is not likely to affect opportunities for bear hunting or the nature of bear hunters' experiences.

The effects of the public use cabin program under Alternative B would be similar to those described previously under Alternative A. Although under Alternative B there would be potentially more cabins available than under the other alternatives, the state drawing permit system would remain the dominant limiting influence on bear hunting.

The voluntary guidelines proposed under Alternative B for access to bear concentration areas would have no direct or indirect negative effects on bear hunting activities or opportunities because they do not overlap with bear hunting seasons. Similarly, reopening the O'Malley River site to bear viewing would not affect bear hunting because the opening would not overlap with the spring or fall hunting seasons. See the section on bear populations in this chapter (page 4-6) for a discussion of the effects of hunting on O'Malley area brown bears.

Alternative C. Under Alternative C, a regulation restricting camping near public cabins and administrative facilities would eventually be adopted. As is the case under Alternative A, this regulation would not have any effects on bear-hunting opportunities under Alternative C.

Alternative C calls for phasing out the public use cabin program by not undertaking major construction, maintenance, or acquisition projects. Over time, this alternative could reduce and eventually eliminate the opportunity for hunters to base their activities out of public cabins. Hunters would be forced to rely on commercial services or private, temporary tent camps as bases for their activities. However, the permit drawing system would continue to be the primary limiting factor on bear-hunting opportunities.

Even if cabins were completely eliminated, the total number of bear hunters visiting the Refuge probably would not change. The nature of available bear-hunting experiences, however, could change. Hunters who enjoy staying in a cabin as part of their experience would be negatively affected. Because no data regarding the importance of cabins in bear hunting experiences are available, it is difficult to estimate the magnitude of this impact. The basic prerequisite for any Refuge bear hunting experience is still, however, the availability of limited permits; compared to the permit system, the effects of any changes in cabin availability on bear hunting would be negligible.

The seasonal access limits proposed under Alternative C for bear concentration areas would have no effects on bear-hunting effort or opportunities because they do not overlap with bear-hunting seasons. Similarly, the proposed reopening of O'Malley River for bear viewing would also not occur during the bear-hunting seasons.

Alternative D. Under Alternative D, a regulation restricting camping near public cabins and administrative facilities would eventually be adopted. As under Alternatives A and C, this regulation would have no effects on bear hunting.

Cabin management under Alternative D would similarly have negligible effects on bear hunting as is the case under Alternatives A and B. The drawing permit system would remain the dominant influence on bear hunting.

Guidelines for use of bear concentration areas and the proposed reopening of O'Malley River for bear viewing would have the same effects as those described in Alternatives B and C.

Cumulative Effects. Bear hunting on the Refuge is managed within the larger context of the entire Kodiak Archipelago. None of the alternatives would have much cumulative effect on bear hunting within the Archipelago. Within the smaller Refuge context, Alternative C could have a minor negative effect on some bear hunters' experiences by phasing out cabins. This effect is difficult to

quantify, even in relative terms, but is likely to be far outweighed (in terms of influence) by the simple availability of permits. Overall, none of the alternatives would have a significant cumulative effect on bear hunting.

Deer Hunting

The State of Alaska has primary responsibility for managing deer hunting throughout the Kodiak Archipelago, although the federal government plays an important role in managing the federal subsistence hunt on Refuge lands. No limits exist on the number of deer hunters allowed each year, but there are limits (which may differ for state and federal hunts) on the number of deer each hunter may take. These limits are based primarily on the health and size of the deer population. Harsh winters periodically cause significant reductions in the deer population and subsequent reductions in hunting opportunity and participation. Weather-induced population fluctuations are the dominant influence on deer hunting on the Refuge. Compared to population fluctuations, the effects of the proposed alternative management actions on deer hunting would be negligible.

Alternative A. Under Alternative A, camping areas would not be improved, no facilities would be provided, and regulations restricting camping near public cabins and administrative facilities would eventually be adopted. These regulations could limit camping opportunities for some hunters, but hunters generally do not choose to camp near other people or facilities; overall, the effect would be negligible.

Under Alternative A, opportunities for deer hunters to use cabins could be expanded through addition to the public use cabin program of as many as two new cabins plus former private cabins. When there is unmet demand for cabin space among deer hunters, construction or addition by other means of cabins near prime hunting locations could mean expanded opportunities for deer hunting. However, Refuge records show that public cabins tend to operate at well below capacity. The health and size of the deer population is likely to remain the primary determinant of deer hunting opportunity and participation.

The area near the outlet of O'Malley River would continue to be closed seasonally to all public use under Alternative A. Commercial use of nine other bear concentration areas would continue to be seasonally closed or limited to day use only, and these and other areas could be seasonally limited for all users when the Refuge public use management plan (USFWS 1993) is fully implemented. Because there is some overlap between the seasonal closures and the start of the deer-hunting season in August, seasonal closures could reduce hunting opportunities. Because not all bear concentration areas are necessarily good places to hunt, and because the proposed

closures represent less than two percent of the land area of the Refuge, the magnitude of this effect would be small.

Alternative B. Alternative B calls for improving camping areas with facilities such as latrines and food caches, which could slightly improve the safety and convenience of deer-hunting experiences—but only for hunters who stay at improved sites. Under this alternative, regulations restricting camping near cabins and administrative facilities would not be adopted. Because deer hunters are unlikely to camp near cabins (especially if they are occupied) or other facilities, they would only be affected if other people camped near a cabin the hunters themselves were occupying. Given the low likelihood of such a scenario, the effects of this approach are expected to be negligible.

With respect to public use cabin management, the effects of Alternative B would be similar to those described under Alternative A. Building or acquiring additional cabins could expand opportunities for deer hunters in cases of unmet cabin demand, but the limiting factor would continue to be the deer population itself.

Under Alternative B, proposed regulatory use restrictions in bear concentration areas would be replaced with voluntary guidelines. Commercial operators would be required to comply with the guidelines. Private deer hunters might choose to ignore the guidelines and access restricted areas, but most of them would likely comply with the guidelines. Therefore, effects of this approach would be similar to those described under Alternative A.

Reopening the O'Malley River site for a bear-viewing program, regardless of whether that program is government-run or privately run, would not affect deer hunting. The site is currently seasonally closed to deer hunters (and all other public users), and under all action alternatives it would remain seasonally closed to all users except those participating in a sanctioned bear-viewing program.

Alternative C. The effects of camping area management under Alternative C would be the same as those described under Alternative A.

Alternative C calls for phasing out the public use cabin program by not undertaking major construction, maintenance, or acquisition projects. Over time, this alternative could affect deer hunting by reducing and eventually eliminating the opportunity for hunters to base their activities out of public use cabins. Hunters would be forced to rely on commercial services or private, temporary tent-camps as bases for their activities. However, the size of the deer population would continue to be the primary limiting factor on hunting opportunities.

Even if cabins were completely eliminated, the total number of deer hunters visiting the Refuge probably would not change. The nature of available deer-hunting experiences, however, could change.

Hunters who enjoy staying in a cabin as part of their experience would be negatively affected. Because no data regarding the importance of cabins in Refuge deer hunting experiences are available, it is difficult to estimate the magnitude of this impact. However, the basic prerequisite for any Refuge deer-hunting experience is the availability of deer. Compared to the size of the deer population in a given year, the effects of any changes in cabin availability on deer hunting would likely be negligible.

With respect to management of bear concentration areas and bear viewing at O'Malley River, Alternative C would have effects similar to those of Alternative B.

Alternative D. The effects of camping area management under Alternative D would be the same as those described under Alternative B.

The effects of management of the public use cabin program under Alternative D would be the same as those described under Alternative A.

The effects of managing bear concentration areas, and O'Malley River bear-viewing management, under Alternative D would be the same as those described under Alternative B.

Cumulative Effects. Access restrictions in bear concentration areas, whether they are enforced by regulation or involve voluntary guidelines, could have a minor negative effect on deer-hunting opportunities. As previously noted, the eventual elimination of public cabins as proposed under Alternative C could lead to changes in the nature of available deer-hunting experiences. This effect is difficult to quantify, even in relative terms, but it is likely to be far outweighed (in terms of influence) by fluctuations in the size of the deer population. Overall, none of the proposed alternatives would have a significant cumulative effect on Refuge deer hunting.

Recreational Fishing

Recreational fishing on the Refuge is managed by the State of Alaska. Recreational fishing guides are managed by the Refuge through the special use permitting process. No changes to the permitting process are proposed under any of the alternatives. Similar to bear and deer hunting, the dominant influences on fishing opportunities and experiences are likely to be the health and size of fish stocks, the timing of runs, and related management actions by the state (e.g., determining seasons and bag limits).

Alternative A. Under Alternative A (current management), camping areas would not be improved, no facilities would be provided, and regulations restricting camping near public cabins and administrative facilities would eventually be adopted. This approach to camping area management would have negligible impacts on fishing opportunities or experiences.

Current management also allows construction of as many as two new public cabins and conversion of acquired cabins to public use. Fishing is a popular activity for many cabin users, but cabin availability does not appear to be a significant limiting factor in fishing participation. Even the most heavily used cabins are rarely occupied at full capacity. Adding cabins to the seven that are currently available could provide a small increase in fishing opportunities, especially in popular areas and during peak use periods. The overall effects on fishing, however, would be negligible.

If regulations proposed under Alternative A were adopted, portions of four drainages (Connecticut Creek, Humpy Creek, Seven Rivers, and Lower Dog Salmon Falls) would be seasonally closed to all public use, and five other drainages (Red Lake River and shoreline, Upper Thumb, Southeast Creek, Little River Lake lakeshore, and Deadman Bay Creek) would be seasonally limited to day use only. The proposed regulations would seasonally preclude all fishing in selected areas of the Refuge.

Few opportunities for fishing would be lost because of the proposed regulations. Most of the areas proposed for closure are not popular fishing areas; timing of the closures may not necessarily overlap with the best fishing periods; and the areas that attract bears for feeding on fish (shallows and falls) often make them poor sites for anglers. The proposed day use restrictions would not likely affect fishing; anglers would be prevented from camping in restricted areas, but they could still fish during the day. Overall, the effects of the proposed closures would be negligible.

Under Alternative A, the former bear-viewing site at O'Malley River would remain seasonally closed to all public use.

Alternative B. Under alternative B, campsites could be improved and facilities provided if needed to mitigate use impacts. These actions could have a small positive effect on fishing experiences by helping to maintain the aesthetic and ecological integrity of popular fishing areas. The overall effects on fishing, however, would be negligible. Similarly, the effects of not restricting camping near cabins and administrative facilities would be negligible. The primary purpose of such a regulation would be protection of facilities, and few anglers choose to camp near them anyway.

Alternative B would allow additional public use cabins to be built or acquired as needed to meet demand. Because state regulations and fish stocks—not cabin availability—are the primary limiting factors on fishing opportunities, the overall effects of adding new public use cabins would be negligible.

This alternative calls for replacing regulatory access restrictions with voluntary guidelines in bear concentration areas. Commercial operators would be required to comply with guidelines. Compared to

Alternative A, Alternative B would have relatively less impact on private anglers because no areas would be outright closed to use. With respect to recreational fishing opportunities and experiences, this approach does not differ significantly from current management, and would have negligible effects. Similarly, reopening the O'Malley River site for a commercial bear-viewing program would have no effect on fishing. The area is seasonally closed to all public use now, and it would remain closed to all use other than the sanctioned viewing program.

Alternative C. The effects of camping area management under Alternative C would be the same as those described under Alternative A.

Alternative C calls for phasing out the public use cabin program by not undertaking major construction, maintenance, or acquisition projects. Over time, this alternative could affect recreational fishing by reducing and eventually eliminating the opportunity for anglers to base their activities out of public use cabins. However, fish stocks and state regulations would continue to be the primary limiting factors on fishing opportunities. Even if cabins were completely eliminated, total recreational fishing effort on the Refuge probably would not change.

The nature of available fishing experiences, however, could change. Anglers who enjoy staying in a cabin as part of their experience would be negatively affected. Because no data regarding the importance of cabins in fishing experiences on the Refuge are available, it is difficult to estimate the magnitude of this impact. Compared to the size and timing of fish stocks, and related state regulations, however, the effects on recreational fishing of any changes in cabin availability would be negligible.

The effects of bear concentration area management would be similar to those described in Alternative A, except that regulatory proposals could be modified after considering the latest resource information.

Reopening the O'Malley River site for a government-run bear-viewing program would have the same effects as those described in Alternative B.

Alternative D. Campsite management under this alternative would have the same effects as those described in Alternative B.

Cabin management under Alternative D would have the same effects as those described in Alternative A.

Management of bear concentration areas would have the same effects as those described in Alternative B.

Reopening the O'Malley River site for a mixture of government- and privately run bear-viewing opportunities would have the same effects as those described in Alternative B.

Cumulative Effects. None of the alternatives is likely to have a significant cumulative effect on Refuge recreational fishing opportunities or experiences.

Wildlife-Viewing Opportunities

Wildlife viewing on the Refuge would be affected by the various proposed management actions in much the same way as fishing and hunting. That is, the most important influence will be the availability (presence) of viewable wildlife rather than any specific management action taken by the Refuge. Campsite and cabin management actions would not have significant effects on wildlife viewing. Proposed access restrictions could limit valuable viewing opportunities in selected areas. Also, the decision about if and how to reopen the O'Malley River site to bear viewing would clearly have a direct impact on Refuge wildlife-viewing opportunities and experiences, with the potential for increased participation (measured in use-days) by as much as 50 percent.

Alternative A. Camping area management practices under Alternative A (current management) would not have any significant effects on wildlife-viewing opportunities or experiences.

The effects of constructing or acquiring new public use cabins under Alternative A would depend largely on where new cabins are located. Cabins located near prime viewing locations could expand opportunities and attract additional wildlife-viewing participants. It is not likely, however, that cabins would be located very near to wildlife concentration areas because of concerns about impacts (especially with respect to bears). Therefore, the effects of adding public use cabins are likely to be negligible.

Under Alternative A, regulations to seasonally restrict all public access at nine bear concentration areas would eventually be adopted; commercial access to these areas would continue to be restricted through special conditions applied to use permits until the regulations are in place. Because bear concentration areas potentially represent prime viewing areas, adopting regulations could adversely affect unguided (noncommercial) wildlife-viewing opportunities. Challenging access and lack of facilities may limit current use of these areas, but regulations would eliminate all use (seasonally) and also prevent future opportunities for use. These effects would be limited to the nine identified concentration areas.

Overall, the regulations proposed in Alternative A would likely have a major, but localized, effect on bear-viewing opportunities on the Refuge. This effect might not be reflected in the total number of viewing participants because wildlife viewing often occurs in conjunction with other activities that would be minimally affected by the area closures (e.g., recreational fishing).

Alternative A calls for maintaining the seasonal closure of a former bear-viewing site at O'Malley River. Because that area is currently

closed and no change is proposed, this (in)action would have no effect on wildlife viewing.

Alternative B. Camping area management actions proposed in Alternative B would not affect wildlife-viewing opportunities or experiences on the Refuge.

The effects of cabin management would be the same as those described in Alternative A.

Under Alternative B, proposed regulations would be replaced by voluntary guidelines for access and use in bear concentration areas. Commercial users would be required to comply with the guidelines. Depending on the specific language of the guidelines, this approach would have relatively less impact on wildlife-viewing opportunities than would Alternative A. For commercial users who are currently prevented from accessing some concentration areas, this alternative would expand viewing opportunities. This approach would have a positive effect on wildlife-viewing opportunities; however, as with Alternative A, the effect would be localized (limited to the identified concentration areas) and somewhat muted by challenging access and lack of facilities, which function as natural constraints on viewing in some concentration areas.

Alternative B calls for a limited reopening of the O'Malley River bear-viewing site. Bears are the most popular wildlife-viewing attraction on the Refuge. In recent years, the Refuge has received an average of about 900 guided wildlife-viewing use-days per year (based on air-taxi reports). A commercial bear-viewing program at O'Malley River, modeled after the 1992 program could support approximately 400 bear-viewing use-days if operated at full capacity. The last year a commercially guided viewing program was offered at the O'Malley site, it operated at about 50 percent capacity, hosting 51 viewers for four days each. Therefore, reopening the O'Malley River bear-viewing site for operation of a commercial viewing program could clearly have a substantial positive effect on wildlife viewing opportunities, leading to 100 percent increase in participation. However, unguided visitors or those who would prefer not to participate in a commercial viewing program would not be affected. They would still be seasonally precluded from visiting the site.

Alternative C. Camping area management actions proposed in Alternative C would not affect wildlife-viewing opportunities or experiences on the Refuge.

Alternative C would allow natural attrition of public cabins, eventually phasing out the public cabin system altogether. Although many wildlife-viewing participants base their activities out of public cabins, the availability of cabins is not likely to be a significant limiting factor for wildlife viewing. If cabins were unavailable, Refuge visitors could still base their activities out of tent-camps or

private facilities. The absence of cabins might discourage a few potential viewers from visiting the Refuge, but the effects of this action would be negligible.

The effects of managing bear concentration areas under Alternative C would be essentially the same as those described in Alternative A.

The effects of reopening the O'Malley River site for a government-run bear-viewing program would be similar to those described in Alternative B. However, if the government program were not run on a full-cost-recovery basis, it might attract some users who would be unable to afford a commercial viewing experience. In this way, Alternative C could expand viewing opportunities for a larger segment of the general public than could Alternative B.

Alternative D. As with the other alternatives, camping area management actions proposed in Alternative D would not affect wildlife-viewing opportunities or experiences on the Refuge.

The effects of cabin management would be the same as those described in Alternative A.

The effects of managing bear concentration areas under Alternative D would be the same as those described in Alternative B.

The effects of reopening the O'Malley River site for a mixture of government-run and commercially run bear-viewing programs would be essentially the same as those described in Alternatives B and C.

Cumulative Effects. Alternative A provides the fewest wildlife-viewing opportunities. Nine bear concentration areas (potential viewing areas) would be seasonally closed (four areas) or limited to day use only (five areas) during prime bear use periods, and the former bear-viewing site at O'Malley River would remain closed. In contrast, the cumulative effects of actions proposed in each of Alternatives B, C, and D would provide for significantly expanded viewing opportunities. Relative to the other alternatives, Alternative D would have the greatest positive effect by replacing most access restrictions with guidelines and reopening the O'Malley River viewing site for both government and private viewing programs.

Wilderness Values

By definition, management actions that permanently alter the naturalness and wildness of the landscape or reduce opportunities for visitors to experience primitive recreation constitute negative impacts on wilderness values. None of the proposed management alternatives are likely to result in large-scale changes to the overall wilderness values of the Refuge, but some management actions could result in localized negative effects.

Alternative A. Not improving camping areas, as proposed under Alternative A, would retain naturalness and wildness of the Refuge

yet could lead to more diffuse negative effects if camping area impacts and informal social trails proliferate. Given current and projected low public use levels, the overall effect of such impacts is likely to be negligible.

By definition, the presence of human-made structures such as cabins reduces the wilderness values of an area. However, negative impacts associated with cabins are extremely local in nature, and individual cabins do not constitute a significant threat to the overall wilderness values of the Refuge. Under Alternative A, the current seven public use cabins could be expanded through the construction of two new cabins or addition of acquired private cabins to the public use cabin system. Changing private cabins to public use would not affect current wilderness values of the Refuge because those structures are already in place. The addition of two new cabins could result in local impacts to wilderness values in the areas immediately surrounding the cabins, but the impacts to the overall wilderness values of the Refuge would be negligible.

Adopting regulations to seasonally limit access to 10 bear concentration areas (including O'Malley River) would not affect the physical wilderness values of the Refuge. However, slight negative effects on visitors' perceptions of primitive recreation opportunities are possible.

Alternative B. Improving camping areas with primitive facilities such as food storage areas and latrines, as proposed under Alternative B, would have localized negative effects on wilderness values but negligible effects overall. Encouraging visitors to camp near one another at improved areas could reduce opportunities for the solitude component of primitive recreation. However, absent a Refuge requirement to use improved areas, visitors who value solitude would still be free to use other areas.

Under Alternative B, new cabins could be constructed as needed to meet demand. Existing public use cabins are not used at capacity at this time, and little increase in public use is anticipated for the next five years; after that, a fairly gradual increase is predicted for the next 10 years, the life of this plan. Also, the number of sites that would be suitable for public use cabins—considering reasonable access, attractive activities, and compatibility with refuge purposes—is fairly limited (USFWS 2003). Anticipated effects would be similar to those described for Alternative A: a decrease in wilderness and naturalness and primitive recreation experience in the areas immediately surrounding cabins.

Under Alternative B, management of bear concentration areas, other than O'Malley River, would have no effect on the wilderness values of these areas. Opportunities for primitive recreation would be preserved. Under Alternative B, the seasonal closure at O'Malley would be modified to allow a bear-viewing program. If the program involved construction of new permanent facilities, localized impacts

to wildness and naturalness could occur. Increased air-taxi traffic and habituation of bears could further affect wilderness values. The behavior of wildlife is sometimes used as a measure of naturalness.

Cumulatively, the impacts associated with an intensely managed bear-viewing operation could result in negative effects on wilderness values, even beyond the immediate area of O'Malley. However, given the Refuge's general minimal management approach and mandates to protect bears and other resources, it is very unlikely that such a scenario would develop. Management of bear viewing at O'Malley River under Alternative B would be expected to have some minor localized adverse impacts, but overall would have negligible effects on the wilderness values of the Refuge.

Alternative C. The effects of not improving camping areas under Alternative C are the same as described for Alternative A: the possibility for diffuse negative effects if camping-area impacts and informal social trails proliferate.

Under Alternative C, existing public use cabins would be allowed to deteriorate and eventually disappear through natural weathering. Over time, this could result in localized positive effects on wilderness values, yet the effects on the overall wilderness values of the Refuge would be negligible.

As described for Alternative A, Alternative C management of bear concentration areas would have no effect on wilderness values of the Refuge. Effects of management of a bear-viewing program at the O'Malley River would have the same effects described under Alternative B.

Alternative D. As under Alternative B, Alternative D's proposal for improving camping areas with primitive facilities such as food-storage areas and latrines could have localized negative effects on wilderness values but negligible effects overall.

Public use cabins under Alternative D would have the same effects as described for Alternative A: local impacts to the wilderness values of areas immediately surrounding two new cabins, but these impacts would be negligible on the overall wilderness values of Refuge lands.

Management of bear concentration areas under Alternative D would have no adverse effects on wilderness values because management intent is to manage the landscape and wildlife in a natural condition. Some additional regulation of visitors could affect the experience of primitive recreation, but most of the Refuge would remain open to primitive recreation with minimal restrictions designed to protect refuge resources that coincide with wilderness values. Effects of management of a bear-viewing program under Alternative D would be essentially the same as under Alternatives B and C, although there could be slightly more air traffic with the presence of private guides and government guides.

Cumulative Effects. Individually, none of the actions proposed under any of the alternatives would have significant effects on the wilderness values of Kodiak Refuge lands. However, in combination, the actions proposed under Alternative B could have a long-term negative effect. Indefinite expansion of the cabin program, improved camping areas, and a privately guided bear-viewing operation at O'Malley River would all result in increased evidence of human use and subsequent reductions in naturalness and wildness. Standard minimal management practices would mitigate some of these effects; over time, however, and if public use were to increase, some local changes to wilderness values at areas where there are facilities and concentrated public use would occur. These lands would still possess outstanding wilderness values and be eligible for inclusion in the National Wilderness Preservation System should such a designation be pursued in the future.

River Values

This section describes the potential effects of the alternatives on the river-related values inventoried for the Ayakulik, Spiridon, and Uganik rivers described in section 3.5 of Chapter 3. Management actions that alter the free-flowing nature of river segments would constitute significant negative impacts on river values. None of the alternatives would alter the free-flowing nature of river segments. Generally, management proposed under all alternatives would continue to protect river values found in the three drainages.

Alternative A. If regulations proposed under Alternative A were implemented, public access to the Red Lake River and shoreline would be limited to day use for two months annually. Visitors would not be allowed to camp within the area during July and August but could still view bears and engage in other activities. This closure could be viewed as a negative effect on the recreation values but a positive effect on the fish and wildlife values of the river corridor.

New cabins could be constructed within river corridors under Alternative A. It is likely that cabins would be constructed adjacent to saltwater or lakes where access would be easier. Effects would be analyzed when specific locations are identified.

Alternative B. Under Alternative B, public access, including access by wildlife viewing guides, would be allowed to the river corridors. Voluntary guidelines adopted would be designed to protect all river values.

Alternative B public use cabin management would have no effect on identified river values unless new cabins were constructed in river corridors. As under Alternative A, it is likely that cabins would be constructed adjacent to saltwater or lakes where access would be easier. Effects would be analyzed when specific locations are identified.

Alternative C. Alternative C management would affect identified recreation and fish and wildlife values if re-evaluation of bear

concentration areas led to seasonal closures on the Ayakulik River. Closures could impede public access at specific locations, limiting visitors' abilities to fish, hunt, camp, and view wildlife. Closures would help to protect identified fish and wildlife values, including bears. Effects associated with management under this alternative are expected to be locally notable if bear concentration areas are seasonally closed to public access but negligible when looking at the entire drainage's characteristics.

The Uganik River is the only identified river with a public use cabin located nearby. Average annual use at this cabin from 1999 through 2002 was 343 use-days. Some recreation-related opportunities could be lost if the Uganik Lake cabin is phased out because those visitors who would not come to the area without a cabin would be displaced. Other visitors would continue to come and camp in the area, and some people might come to the area because it would offer a more primitive experience without a cabin. Removal of the cabin could provide some protection for identified fish and wildlife values, including bears, because fewer people may be staying overnight at the cabin location; however, the positive benefits of public use cabins—such as fewer confrontations between bears and humans—would be lost. Effects associated with management of public use cabins under this alternative are expected to be negligible when looking at the entire drainage's characteristics.

Camping area management under Alternative C would have no effect on the three rivers because management is not expected to affect identified river values.

Alternative D. Although Alternative D could potentially limit access to bear concentration areas to day use only, the effects of such actions are expected to be negligible to identified values on all rivers. Visitors could still camp nearby and continue to engage in hunting, fishing, wildlife viewing, and other activities during daylight hours.

As with Alternative B, management of public use cabins under Alternative D would have no effect on the three rivers unless new cabins were constructed in river corridors, which is unlikely because of access and resource management considerations. Under Alternative D, as under Alternatives A and B, public use cabins could be constructed adjacent to saltwater or lakes where access would be easier. Effects would be analyzed when specific locations were identified.

Camping area management under Alternative D is expected to protect and enhance identified values within river corridors by directing human occupancy away from the rivers' banks and out of movement corridors that bears use.

Cumulative Effects. Generally, management proposed under all alternatives would continue to protect river values found in the three drainages. None of the alternatives would alter the free-flowing nature of river segments. Changes in identified river values would be localized and minor. Negative effects to one value (e.g., recreation)

would be offset by positive effects to another value (e.g., fish and wildlife). No significant changes in river values are likely under any of the alternatives.

4.2 Relationship Between Short-Term Use of the Environment and Long-Term Productivity

Under all alternatives, the primary on-site short-term uses of Kodiak Refuge and its resources would be subsistence and recreation. The primary off-site short-term use of resources originating on Kodiak Refuge is commercial fishing in waters adjacent to the Archipelago. Monitoring and regulation of harvested fish and wildlife populations by ADF&G and the Service would ensure the long-term productivity of fish and wildlife populations. None of the short-term uses described in any of the alternatives would affect the long-term productivity of the ecosystem.

4.3 Irreversible and Irretrievable Commitment of Resources

The *irreversible* commitment of resources means that nonrenewable resources are consumed or destroyed. Examples include the destruction of cultural resources by other management activities and mineral extraction that consumes nonrenewable minerals.

The *irretrievable* commitment of resources represents trade-offs (opportunities forgone) in the use and management of natural resources. Irretrievable commitment of resources includes the expenditure of funds, loss of production, or restriction on resource use.

Decisions made in a comprehensive conservation plan do not represent actual irreversible or irretrievable commitment of resources. A conservation plan determines the kinds and levels of activities appropriate within the laws establishing the refuge. A decision to irreversibly or irretrievably commit resources occurs in the following circumstances:

- When the Service makes a project or site-specific decision
- At the time Congress acts on a recommendation to establish a new conservation system unit such as Wilderness or to include a river in the Wild and Scenic River System

Mineral leasing and development would not be allowed within the Refuge under any of the management categories proposed. Therefore, these resources could not be irreversibly committed unless the Plan was amended. Future decisions on the location or development of any new public use cabin or administrative facility within the Refuge would take into account the cultural resources and could minimize or eliminate the possibility of losing those resources.

Wilderness and river-related values are protected by the management categories applied to the Refuge and would not be irreversibly lost or committed under any of the alternatives.

Limits on the level of guided use with the Refuge would be an example of an irretrievable commitment of resources. None of the alternatives propose any change in the level of big-game guided use being provided on the Refuge.

4.4 Environmental Justice

A federal agency is required to identify and address, as appropriate, any disproportionately high and adverse human health or environmental effects of its programs, policies, and activities on minority populations and low-income populations (Executive Order 12898, February 11, 1994; amended January 30, 1995, by Executive Order 12948). This includes health risks and other impacts for people who rely principally on fish or wildlife for subsistence.

As described in Chapter 3, communities associated with Kodiak Refuge are rural, contain many low-income households, and maintain subsistence lifestyles. The nature of the proposed action—revision of the conservation plan for the Refuge—is very different from the proposals often associated with environmental justice issues (such as siting of pollution-causing facilities). None of the alternatives evaluated in the final environmental impact statement (EIS) would place a disproportionate weight of any adverse effects on low-income and/or minority populations. Maintaining high-quality habitat and healthy populations of fish and wildlife, maintaining water quality, and providing opportunities for subsistence are legislated purposes of the Refuge; the Service cannot compromise these values and their associated uses under any management alternative. While the alternatives contain slightly different approaches to meeting the purposes, none favor activities or projects that would direct negative impacts toward low-income and/or minority populations.

4.5 Section 810 Evaluation

Section 810 of the Alaska National Interest Lands Conservation Act (ANILCA) requires an evaluation of the effects on subsistence uses for any action to withdraw, reserve, lease, or otherwise permit the use, occupancy, or disposition of public lands. The evaluation consists of three parts:

- A finding of whether or not a proposed action would have a significant restriction on subsistence uses
- A notice and hearing if an action is found to have a significant restriction on subsistence uses
- A three-part determination prior to authorization of any action if there is a significant restriction on subsistence uses

Chapter 3 of this document describes current uses of the Refuge for subsistence, whereas this chapter describes anticipated effects of each alternative on those subsistence uses. Because this is a long-range programmatic plan that describes possible changes in management direction for Kodiak Refuge, it does not propose any site-specific development or allow any new types of uses or development that would pose risks to subsistence uses of the Refuge.

The preferred alternative (Alternative D) does not contain actions that would reduce subsistence uses because of direct effects on wildlife or habitat resources or that would increase competition for resources.

The preferred alternative similarly would not change the availability of resources by altering their distribution or location. The general goal is to maintain habitat and wildlife populations currently occurring on the Refuge.

Finally, the preferred alternative would not reduce subsistence uses because of limitations on access, by physical or legal barriers, to harvestable resources. This evaluation concludes that the action would not result in a significant restriction of subsistence uses.

4.6 Summary Comparison of Environmental Effects

Table 4-1 provides a summary of the environmental effects described in this chapter. The following definitions (as they relate to biological resources) are important to understand the effects described in the table:

Short-Term Effects: Anticipated to occur within five years from implementation of this Plan.

Long-Term Effects: Anticipated to occur after or last longer than five years after this Plan has been implemented.

Negligible Effects: Temporary effects that do not result in a change in survival, reproduction, distribution, or behavior for individuals.

The ability of the habitat to support populations would remain unchanged (e.g., temporary disturbance of a specific group of individuals that does not result in a change in use of an area).

Table 4-1 Summary comparison of effects of implementing the alternatives

Resource/ Value	Alternative A	Alternative B	Alternative C	Alternative D
Aquatic habitats	Negligible effects	Same as Alternative A	Same as Alternative A	Same as Alternative A
Vegetation	Negligible effects; potential for introduction or expansion of invasive plants	Same as Alternative A	Same as Alternative A	Same as Alternative A
Fish populations	A detailed analysis of effects on fish populations cannot be conducted until site-specific actions are developed. No measurable impacts to fish populations expected	Same as Alternative A	Same as Alternative A	Same as Alternative A
Bird populations	Overall negligible effects; some adverse impacts affecting survival, reproduction, distribution, or behavior in a localized areas are possible; however, the adverse impacts are unlikely to adversely affect integrity of regional population over long term	Same as Alternative A	Same as Alternative A	Same as Alternative A
Brown bear populations	No significant effects on size and productivity of bear population	Negative impacts affecting local population but not sufficient to affect integrity of Refuge population in long term	Same as Alternative A	Same as Alternative A
Deer, elk, goats	No measurable long-term effects on populations within the Refuge	Same as Alternative A	Same as Alternative A	Same as Alternative A
Marine mammals	Not likely to have any effect on marine mammals	Same as Alternative A	Same as Alternative A	Same as Alternative A

Resource/ Value	Alternative A	Alternative B	Alternative C	Alternative D
Local population	No effects on Kodiak Island Borough population or populations of individual communities	Same as Alternative A	Same as Alternative A	Same as Alternative A
Local economy	Negligible effects overall on Kodiak economy	Negligible effects overall on Kodiak economy but slight positive effect from increased bear viewing and cabin program	Negligible effects overall but slight positive effect from increased bear viewing, perhaps offset by slight negative effect from elimination of cabins	Same as Alternative B
Subsistence	Negligible effects	Same as Alternative A and increased opportunity for subsistence users to participate in Refuge management through stakeholder planning for bear concentration areas.	Same as Alternative B	Same as Alternative B
Guides and commercial operators	Negligible effects	Slight increase in guided bear-viewing opportunities	Same as Alternative A	Same as Alternative B
Bear hunting	Negligible effects; hunting regulated by state and by Federal Subsistence Board	Same as Alternative A	Negligible effects, although cabins would no longer be available to hunters in the future	Same as Alternative A
Deer hunting	No changes to deer -hunting opportunities	Same as Alternative A	Negligible effects, although cabins would no longer be available to hunters in the future	Same as Alternative A
Recreational fishing	Negligible effects on recreational fishing opportunities	Same as Alternative A	Negligible effects, although cabins would no longer be available to anglers in the future	Same as Alternative A

Resource/ Value	Alternative A	Alternative B	Alternative C	Alternative D
Wildlife viewing	If proposed regulations are implemented, they would reduce wildlife-viewing opportunities because of closure of additional areas to general public access during bear-viewing season and no O'Malley bear-viewing program	Greatest potential for providing viewing opportunities because of unregulated use in bear concentration areas, reopening O'Malley and new public use cabins	Bear concentration area opportunities similar to Alternative A; O'Malley program may attract more viewers if lower cost than under Alternatives B and D; reduced opportunity for those who would use public use cabins.	Management of bear concentration areas would provide similar opportunities to current situation; increased viewing opportunity at O'Malley and additional public use cabins would be available.
Wilderness values	Overall impact negligible. Addition of structures and not improving campsites could result in localized negative impacts.	Long-term negative effect due to expansion of cabin program, improved camping areas, and guided bear viewing at O'Malley. However, lands would still retain overall wilderness values and be eligible for inclusion in the National Wilderness Preservation System.	Over time, elimination of the cabin program could result in localized positive effects on wilderness values; however, the effects on the overall wilderness values of the Refuge would be negligible.	Overall impacts negligible. Addition of structures would have slight local negative effects; improving campsites would be neutral–negative effects of temporary structures offset by positive effects on physical and biological environment.
River values	No effect	Same as Alternative A	Same as Alternative A	Same as Alternative A

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5. Evaluation of the Alternatives

5.1 Evaluation Criteria

The alternatives described in Chapter 2 were evaluated against six criteria based on existing law and policy. These criteria were selected as being the most important factors to be used in selecting the preferred alternative. Following are these criteria, in order of importance:

1. How well does the alternative satisfy the purposes of Kodiak National Wildlife Refuge (Kodiak Refuge, Refuge) and other provisions of the Alaska National Interest Lands Conservation Act (ANILCA)?
2. How well does the alternative satisfy the mission of the National Wildlife Refuge System?
3. How well does the alternative contribute to meeting the goals of the Refuge?
4. How does the alternative address the issues and concerns identified during scoping?
5. How well does the alternative maintain biological integrity, diversity, and environmental health at the Refuge and ecosystem scales and contribute to managing the Refuge as part of an ecosystem?
6. How well does the alternative agree with Alaska Department of Fish and Game (ADF&G) management plans for the area?

The differences among the alternatives are relatively small. Each action alternative (Alternatives B, C, and D) varies only slightly from the current management direction; therefore, differences in meeting the evaluation criteria are slight. Alternatives that would clearly not meet the purposes of the Refuge or System mission were not developed. Scoping did not identify any major issues that would result in significant changes in management direction for the Refuge.

The most important criterion used in evaluating the alternatives is the degree to which the alternatives achieve the purposes of the Refuge as mandated by ANILCA. Chapter 4 describes the physical, biological, and socioeconomic impacts of each of the alternatives and provides a summary of the projected changes.

5.2 Response to Refuge Purposes

All alternatives conserve fish and wildlife populations and habitats in their natural diversity; preserve water quality and quantity; meet international treaty obligations; and provide opportunities for continued subsistence uses. Alternatives C and D provide a slightly higher level of conservation of natural habitats and wildland values on the Refuge by increasing the amount of land in the Minimal Management category. Alternative C adds 11,362 acres to this

category, while Alternative D adds the most: 12,579 acres. The Refuge would continue to provide quality wildlife-dependent recreation opportunities.

5.3 Response to National Wildlife Refuge System Mission

All alternatives were developed with the refuge system mission in mind, and all contribute to meeting that mission. The Refuge plays a part in supporting migratory birds, salmon, waterfowl, shorebirds, and marine mammals that migrate to other areas seasonally. Many other species—such as brown bear, elk, mountain goat, and bald eagle—use the Refuge year-round.

5.4 Response to Refuge Goals

Refuge goals reflect the purposes of the Refuge and the missions of the National Wildlife Refuge System and the U.S. Fish & Wildlife Service (Service).

Alternatives B, C, and D provide management direction to achieve refuge goals. Although the alternatives may differ in management strategies and tools used to ensure that fish and wildlife populations, their habitats, and other resources on the Refuge are properly cared for, they are all in conformance with law and policy. Common to all alternatives is the promotion of close working relationships with the State of Alaska, local communities, and other public and private partners.

Each alternative provides opportunities for compatible uses on the Refuge, including subsistence, wildlife-dependent recreation, and commercial activities. Although all the alternatives would meet resource needs and satisfy public interests, Alternatives B, C, and D provide better options for meeting refuge goals than does Alternative A. This is shown through the additional direction for monitoring and evaluation of resources on and public uses of the Refuge. (Goals and objectives for the Refuge are found in Chapter 2, section 2.1.)

5.5 Response to Issues

This section summarizes the potential management actions that directly address the central planning issues identified in Chapter 1 of this document (see Table 5-1).

5.5.1 Management of Public Use

Under all alternatives, guided use and other commercial activities on the Refuge would continue to be managed via special conditions attached to special use permits. Voluntary use guidelines for all users would be developed under Alternatives B, C, and D; the success of the guidelines would determine whether regulatory restrictions would be necessary in the future. The Refuge would manage other

Table 5-1. Evaluation of alternatives based on significant issues

Issue/Concern	Alternative A (Current Management)	Alternative B	Alternative C	Alternative D (Preferred Alternative)
Protection of Bear Concentration Areas	Adopt regulations to seasonally restrict all public access at 9 bear concentration areas. Continue restrictions on commercial operators until regulations are in place. Close 2 denning areas to snowmachine use.	Develop voluntary guidelines for public use of bear concentration areas. Commercial operators would be required to comply with guidelines. No areas closed to snowmachine use.	Develop voluntary guidelines for public use. Reevaluate regulatory proposal based on current resource information; seasonal closures or day-use only restrictions could be proposed for some areas. Close 2 denning areas to snowmachine use.	Develop voluntary guidelines for public use. Commercial operators would be required to comply with guidelines. Some areas would be limited to day-use-only by regulation. Close 1 denning area to snowmachine use.
Management of Public Use Cabins	Allow 9 public use cabins (7 exist now; could construct 2 more); abandoned cabins or cabins on newly acquired lands could be managed as public use cabins.	Allow more public use cabins as needed to meet demand; stakeholder input would be sought prior to constructing, replacing, or relocating cabins.	Allow natural attrition of public use cabins; eventually phase out cabin program.	Same as Alternative A; stakeholder input would be sought prior to constructing, replacing, or relocating cabins.
Management of Camping Areas	Camping areas not improved; no facilities provided.	Could improve camping areas; provide facilities if needed to mitigate impacts.	Same as Alternative A	Same as Alternative B; use least intrusive management necessary to mitigate impacts.
Management of O'Malley River	Maintain seasonal closure of former bear-viewing site at O'Malley River.	Reopen O'Malley site to bear viewing for guided viewing program (1 operator) similar to 1992 program.	Reopen O'Malley site to bear viewing with a government-run program similar to that offered in 1992.	Reopen O'Malley site to bear viewing with a mixture of government-run and privately guided viewing opportunities.

general public uses via two primary mechanisms: management of camping areas and administration of the public use cabin program.

Management of Camping Areas¹

Under current management (Alternative A), no additional improvement of camping areas or installation of facilities such as food caches or primitive toilets would occur unless all other methods

¹ Camping areas are undeveloped sites where people camp. Improving camping areas may consist of providing the minimum development, equipment, and facilities necessary for resource protection or public health and safety. These improvements could be minor leveling of tent sites, maintenance of user-developed trails, or provision of outhouses, temporary bear-resistant food storage containers, or temporary solar-powered electric fences.

of reducing impacts were ineffective; however, regulations to restrict camping near public use cabins and administrative facilities would be adopted. This alternative would reduce the potential for conflicts between cabin users and campers, but it would do little to address potential campsite impacts to soil, vegetation, and wildlife.

Alternative C would continue the current management direction. Under Alternative B, improving camping areas and installing appropriate facilities could occur, but regulations restricting camping near cabins would not be adopted. This alternative could mitigate impacts to camping areas, but it would not address the potential for conflicts between cabin users and other visitors who choose to camp very near occupied public use cabins. Under Alternative D, improvements could be undertaken and regulations restricting camping near cabins and administrative facilities would be adopted. This alternative would mitigate impacts to resources (soil, vegetation, and wildlife) and also mitigate potential conflicts between cabin users and tent campers.

Public Use Cabins

Public use cabins serve as important focal points for many unguided refuge visitors. Therefore, the cabin program represents an important mechanism for managing the amount and distribution of public use. Three of the four alternatives allow for relocation of existing cabins and some increases in their numbers; Alternative C would allow natural attrition of existing cabins and eventually result in elimination of the program. Alternative B would allow relocation of existing cabins and expansion of cabin numbers (through new construction or through management for public use of cabins on newly acquired lands). This alternative could conceivably result in a significant increase in the current total of seven public cabins. Alternatives A and D would allow for relocation of existing cabins, construction of as many as two new cabins, and management of a limited number of cabins on newly acquired lands for public use.

5.5.2 Protection of Bear Concentration Areas

Access by commercial users to selected bear concentration areas is currently restricted via special conditions attached to special use permits. Under Alternative A, regulations would be adopted restricting noncommercial public access to these same areas. In addition, regulations would be adopted to close two bear denning areas to snowmachine use. Under Alternative B, voluntary guidelines for use of bear concentration areas would be developed; they would apply to both commercial users (as special conditions on their permits) and noncommercial users. No snowmachine closures would occur. Alternative C would include elements of both Alternatives A and B. Voluntary guidelines would be developed and applied to all users, regulatory proposals would be reevaluated based on current resource information, and possible closures or day-use-only limits could be adopted for some areas. Two areas would be closed to snowmachine use. Finally, Alternative D would include voluntary

guidelines for all users and some regulations restricting certain areas to day-use only; only one area would be closed by regulation to snowmachine use.

5.5.3 Management of O'Malley River

Under all alternatives except A, the regulation seasonally closing O'Malley River to public use would be modified to allow the operation of a bear-viewing program at that site. The three action alternatives differ only in the type of program favored. Alternative B would allow development of a commercially guided (single concessionaire) viewing program structured similarly to the viewing program in place in 1992. Alternative C would allow a similar program run by the government instead of a private operator. Alternative D would allow the development of both private- and government-run viewing programs (although they would not operate simultaneously).

5.6 Biological Integrity and Ecosystem Management

Service policy on maintaining biological integrity, diversity, and environmental health of the Refuge System provides refuge managers with direction to follow while achieving refuge purposes. The policy also provides an evaluation process for analyzing refuges and—through resource assessment, planning, and compatibility processes—for setting appropriate management direction to maintain and, where appropriate, restore biological integrity, diversity, and environmental health.

Consistent with this policy and refuge purposes, each alternative evaluated in this Comprehensive Conservation Plan provides management direction that maintains the biotic and abiotic conditions on Kodiak Refuge within historic ranges. Natural processes are the dominant force at work within the Refuge. Prompted by agency policy and public concerns, all action alternatives, including the preferred alternative (Alternative D), would continue, for the most part, long-standing refuge management practices. Additionally, new objectives designed to improve conservation of biological integrity, diversity, and environmental health would be implemented.

Hunting, fishing, and wildlife observation would continue to dominate public use of the Refuge. Continued compatibility of these activities would be ensured through effective use of education and management by state and federal regulatory actions.

Ecosystem management is more a way of thinking than an end product. It embodies the concepts of a constantly changing landscape in which humans play a part, influence the ecosystem, and have a role in decisions affecting the land. It compels the manager to examine local, refuge, and regional scales to improve understanding of the effects of their conservation actions. It also requires the

manager to consider long-term and cumulative effects of actions over an extended period of time.

Ecosystem goals have not been developed for the ecoregion encompassing the Refuge. When they are developed, it will be possible to show how the Refuge contributes to meeting those ecosystem goals. In the meantime, the Service would continue to apply an ecosystem approach to management of the Refuge.

All alternatives maintain the biological integrity, diversity, and environmental health of the Refuge and integrate scientific knowledge into its management. Alternatives B, C, and D provide for obtaining a higher level of scientific knowledge and understanding than does Alternative A.

5.7 Agreement with ADF&G Management Plans

This Conservation Plan was developed in consultation with the Alaska Department of Fish and Game (ADF&G). The Service routinely consulted with ADF&G personnel during the planning process. ADF&G personnel participated in all planning team meetings. The Conservation Plan attempts to achieve a high level of consistency with ADF&G management plans and objectives for fish and wildlife, as discussed in Chapter 2, section 2.1 (Refuge Goals and Objectives), and in Chapter 3, section 3.2 (Biological Environment). All alternatives acknowledge ADF&G's role in managing fish and wildlife on national wildlife refuges, consistent with the Master Memorandum of Understanding (Appendix B).

Effectiveness of interagency collaboration is exemplified in planning processes undertaken by ADF&G and the Refuge in the last three years. The Service worked extensively with ADF&G and stakeholders to develop the *Kodiak Archipelago Bear Conservation and Management Plan* (Bear Plan) (ADF&G 2002). In turn, ADF&G worked extensively with the Service to evaluate and adopt many of that plan's recommendations that pertained to the Refuge. Consequently, this Conservation Plan directs the Refuge to continue time-proven bear management actions supported by the Bear Plan. Additionally, it establishes new objectives and strategies to address new bear management needs, as recommended in the Bear Plan (Appendix C).

5.8 References Cited

ADF&G. 2002. *Kodiak Archipelago Bear Conservation and Management Plan*. Anchorage, Alaska: Alaska Department of Fish & Game, Division of Wildlife Conservation. 240 pp.

6. Implementation and Monitoring

Implementation of the Kodiak National Wildlife Refuge (Kodiak Refuge, Refuge) Comprehensive Conservation Plan (Conservation Plan) will be accomplished, in part, by means of various step-down plans (section 6.1). Each step-down plan has its own program focus, identifying and directing the implementation of strategies (actions, techniques, and tools) designed to achieve programmatic objectives outlined in the Conservation Plan (Chapter 2, section 2.1).

Part of the implementation process also includes identifying partnership opportunities that result in implementing strategies and that accomplish refuge objectives, as discussed in section 6.2.

Monitoring the progress of plan implementation is accomplished by a variety of methods, including surveys, inventories, and creel censuses (section 6.3). Evaluation of monitoring results may lead to amendment or revision of the Conservation Plan (section 6.4).

6.1 Step-Down Plans

Step-down management plans are plans that deal with specific management subjects. They describe management strategies and implementation schedules and provide details necessary to implement management strategies identified in the Comprehensive Conservation Plan (Service Manual 602 FW 1.5). Step-down plans for the Refuge include the following:

Commercial Fishing Activities. This plan addresses the management of facilities used at commercial setnet salmon fishing sites on the Refuge. It established limits to the number, size, and types of facilities and a season-of-use period from May 15 through September 15. It prohibits the development of new facility sites and limits the use of these facilities to commercial fishing activities only. It also describes procedures for replacing or maintaining existing facilities. This plan was written in 1987 and is scheduled to be updated in 2007.

Comprehensive Inventory and Monitoring Plan. This plan will direct wildlife and habitat inventory and monitoring actions by refuge biologists and cooperators. It will include priorities and methods for conducting inventories and monitoring. It also will guide mapping of vegetation types and modeling of habitat suitability for brown bear, Sitka black-tailed deer, mountain goat, Roosevelt elk, and other species. It will incorporate strategies for reconnaissance of invasive plants. It is expected to be completed within two years after approval of the Conservation Plan.

Cultural Resource Guide. The cultural resource guide assists the refuge staff in meeting legal requirements to protect and manage the cultural resources of the Refuge. It provides a reference to the cultural resource guidance provided by law and regulation, the Service Manual, and the Cultural Resource Management Handbook.

It outlines roles and responsibilities, summarizes legislation governing management of cultural resources, and contains information of potential use to the refuge manager. It describes the current state of knowledge of the prehistory and history of the region. It includes a list of projects that would fill in gaps in knowledge or complete existing work. This guide was completed in 1999 and is scheduled to be updated in 2009.

Environmental Education Plan. An environmental education plan gives direction to the education and outreach programs conducted by refuge staff. Programs are primarily directed at children, but include all age groups. Refuge staff are involved with formal and informal programs that focus on teaching people about fish and wildlife and the ecosystems of which they are a part. Emphasis is on national directives of the Service, refuge purposes, and special programs such as International Migratory Bird Day, Junior Duck Stamp, National Wildlife Refuge Week, and National Fishing Week. Education programs are promoted by contacting teachers, visiting classrooms, providing environmental education materials, and lending education materials. The plan is scheduled to be completed in 2008.

Fire Management Plan. A fire management plan describes how a refuge manages wildland fire suppression, hazard fuel reduction, prevention, education, fire use, and other fire related activities. Kodiak Refuge currently operates under the Alaska Interagency Wildland Fire Management Plan. The AIWFMP is currently being revised. A Fire Management Plan for Kodiak Refuge will be developed following completion of this revision.

Fisheries Management Plan. The fisheries management plan describes the fishery resources on Kodiak Refuge and provides management direction the Service will take to support the conservation of refuge fishery resources and habitat. The plan is designed to remain consistent with the Service's Master Memorandum of Understanding with the Alaska Department of Fish and Game and provides for continued use of fishery resources for subsistence, commercial, and recreation purposes. The plan identifies concerns and describes objectives and tasks to address these concerns. Eleven priority tasks were identified in the plan: six of the tasks are ongoing, three have been completed and two were dropped because of funding limits or changes in priorities. The plan was published in 1987 and is scheduled to be revised in 2007.

Land Protection Plan. The Kodiak Refuge Land Protection Plan, prepared in 1992, focuses on private lands within the refuge boundaries with the goal of identifying and conserving high-quality habitat on those lands. It guides the Refuge's land-conservation activities and provides a framework for Refuge and private landowner cooperation. Land-conservation measures will be pursued only with landowners who are willing to work with the Service. The plan does not obligate the Refuge or landowners to undertake any of the land-conservation measures identified. The Refuge must consider

management goals, priorities, and availability of funds when approached by private landowners with land-conservation proposals. The current land protection plan is scheduled to be updated in 2012.

Mount Glottof Research Natural Area Plan. The Mount Glottof Research Natural Area was designated in 1975 to highlight important alpine habitat values for bears and to provide a focal point for research activity. Studies and research have been conducted in the area, but there has been no coordinated approach to management and use of the area. Developing a step-down management plan will ensure that the unique habitat and wildlife values of this research natural area are preserved and appropriate research opportunities are identified. This plan is scheduled to be completed in 2010.

Public Use Cabin Management Plan. The Refuge maintains a limited number of cabins for visitors. People may reserve cabins through quarterly drawings or on a first-come, first-served basis after the drawing has been completed for that quarter. This plan contains a description of the cabins, rules for use, application procedures, and the cabin reservation system. This plan was written in 1993 and is scheduled to be updated in 2012.

Public Use Management Plan. Completed in 1993, this plan guides the management of public use on the Refuge. Public use encompasses both recreation and subsistence uses, including hunting, trapping, fishing, guiding, camping, photography, viewing scenery, hiking, and wildlife viewing. Changes proposed in public use management in this revised Comprehensive Conservation Plan will necessitate revising the public use plan. The revision is scheduled for 2009.

Station Safety Plan, Fire Emergency Evacuation Plan, and Station Security Plan. These plans focus on providing a safe and healthful environment for employees and visitors. They aim to minimize the potential for injury to employees and the public and to prevent property damage. The safety plan describes programs needed to train personnel to deal with the environment, materials, and machines that may pose hazards and has the goal of making safety and environmental health integral parts of every task. All plans are revised annually.

Water Resources Study Plan. This plan is guiding a six-year inventory and assessment of the water resources of Kodiak Refuge. Field work will end in 2007. Results of the study will be used to quantify in-stream-flow water rights for the maintenance and protection of fish and wildlife habitat. It was prepared in 1998; field implementation began in 2002.

6.2 Partnership Opportunities

Partnerships with other organizations are among the ways in which the Service fulfills its mission: “Working with others to conserve, protect and enhance fish, wildlife, and plants and their habitats for

the continuing benefit of the American people.” Partnership opportunities would be consistent throughout all alternatives.

The Refuge exists within a dynamic ecosystem. Many of the resources within the Refuge are of national and international importance. The Service recognizes that the public, organizations, and other governmental agencies have interests in the Refuge. Implementation of many refuge programs requires community involvement, support, and assistance.

The refuge staff looks for opportunities to coordinate activities with the following (among others):

- Koniag, Inc. (the regional Native corporation)
- Local village corporations
- Local village councils
- Kodiak Island Borough
- City of Kodiak
- State of Alaska
- Other federal agencies
- Universities and museums
- Nongovernmental organizations (e.g., Alaska Natural History Association, Kodiak Brown Bear Trust)
- Local businesses
- Kodiak/Aleutian Islands Federal Subsistence Regional Advisory Council

Existing and potential partnerships are described in the following text. Biologists of Kodiak Refuge and the Alaska Department of Fish & Game (ADF&G) routinely collaborate to assess status and trends of brown bear, Sitka black-tailed deer, mountain goat, and Roosevelt elk populations.

A Kodiak Archipelago Vegetation Cover Map, database, and report were completed in 2005. This information will be used as the basis for evaluating wildlife–habitat relationships and long-term, landscape-level monitoring of vegetation resources and human development. The project was initiated by Kodiak Refuge and the Alaska Geographic Science Center, U.S. Geological Survey. Partners who contributed funds necessary to complete the project included ADF&G, Kodiak Brown Bear Trust, Koniag, Inc., Rocky Mountain Elk Foundation, Bureau of Land Management, and National Park Service.

The Kodiak Archipelago Bear Conservation and Management Plan, completed in winter 2002, was led by ADF&G and instrumentally supported by citizens of the Kodiak vicinity and by the Service. The plan recommends refuge leadership and cooperation in a wide range of education, management, and research initiatives to benefit bears of the Archipelago. Because the Refuge supports many of the new

initiatives, it incorporated them as objectives in the Conservation Plan. Refer to section 2.6.1 of Chapter 2 and Appendix C for further discussion of cooperation related to the *Kodiak Archipelago Bear Conservation and Management Plan*.

Proposals to initiate Canada goose hunting in Game Management Unit 8 (Kodiak Island and vicinity) prompted population and genetic assessments. Objectives included determining the size of the winter resident goose population and subspecies type of birds using the Old Harbor vicinity for breeding and fall migration. Assessment results will guide decisions about goose hunting. Partners in the project include ADF&G, Alaska Maritime Refuge, Kodiak Refuge, Old Harbor citizens, and Alaska Biological Science Center, U.S. Geological Survey.

The Refuge, in cooperation with the Alutiiq Museum and Archaeological Repository, supports an active archaeological inventory program as well as a highly successful and expanding stewardship monitoring program to protect archaeological sites on Kodiak Refuge. The contributions of the Alutiiq Museum make these projects happen.

Refuge staff regularly assist with the annual Audubon Christmas Bird Count.

Refuge staff work with U.S. Coast Guard helicopters and crews to complete FLIR (forward-looking infrared radar) deer surveys.

The Refuge coordinates fisheries activities with ADF&G, several universities, National Marine Fisheries Service, and local Native village corporations. These activities range from management and research to gathering baseline data on fishery use on waters within the Refuge.

Wildlife research is expected to increase on the Refuge over the next 10 years. Public and private partners will be routinely sought where mutual interests exist in research topics and objectives. Such collaboration would be consistent with the tradition and pattern of cooperative research established by the Refuge during the last 15 years.

The refuge visitor center provides information and education services highlighting natural and cultural resources and recreation opportunities on Kodiak Archipelago. It is operated in conjunction with the Alaska Natural History Association (ANHA).

Kodiak Summer Science and Salmon Camp offers week-long summer science camps. Camp sessions run throughout the summer and give local youth the opportunity to learn about Kodiak's most valuable resource—salmon. This camp is supported by a unique blend of public and private partners. A challenge cost-share agreement is made among the Service, the Alaska Natural History Association, and many private Kodiak contributors.

Environmental education and outreach programs are conducted in coordination with the Kodiak School District; village schools, councils, and elders; ANHA; Alaska Audubon; other state and federal agencies; and local museums.

6.3 Monitoring and Evaluation

Monitoring helps the refuge staff track the progress of plan implementation. Results of monitoring show how objectives are being achieved and measure progress towards accomplishing goals. Table 6-1 displays proposed inventory and monitoring projects that would concern wildlife, fisheries, and their habitats. Table 6-2 displays proposed monitoring indicators for public use. Proposed monitoring will be refined as the wildlife and habitat inventory and monitoring, fisheries management, and public use management step-down plans are prepared or revised.

6.4 Plan Amendment and Revision

Periodic review and change of this comprehensive conservation plan will be necessary. As knowledge of refuge resources, users, and uses improves, changes in management may be identified. Fish and wildlife populations, user groups, adjacent land users, and other management considerations change with time, often in unforeseen ways. Challenges also may be encountered in trying to implement the plan.

Revisions are a necessary part of the adaptive management approach used by the Service. This means that objectives and strategies to reach goals can be adjusted. Most of the resulting changes will fine-tune the plan. These changes will not require modification of this document because minor changes will be addressed in the more detailed refuge step-down and annual work plans. Only if a major change is required in management of the Refuge will it be necessary to revise this Conservation Plan with a new environmental document.

To enable refuge users; adjacent landowners; local, state, and federal agencies; and other interested parties to express their views on how the Refuge is being managed, the Refuge will periodically hold meetings or use other techniques such as comment cards and surveys to solicit comments for evaluation purposes. By encouraging continuing public input, the Refuge will be better able to serve the public, to determine potential problems before they occur, and to take immediate action to resolve existing problems.

Every three to five years, refuge staff will review public comments, local and state government recommendations, staff recommendations, research studies, and other sources to determine if revisions to the plan are necessary. If major changes are proposed, public meetings may be held, and new environmental assessments and environmental impact statements may be necessary. Full review and updating of the conservation plan will occur every 15 years.

Table 6-1. Monitoring indicators, standards, and possible actions for wildlife, fisheries, and habitat

Monitoring Question	Measured Action or Effect Key Indicator(s)	Management Standard(s) to Be Used	Possible Management Actions Triggered if Standard(s) Not Met	Sampling Procedure and Frequency
What is the trend in regional bear density?	Evaluate variation in observation rates (bears per hour) and densities (bears per 1,000 km ²) among years within each of 5 survey areas	Statistically significant ($P < 0.05$) change in observation rates or density between years of survey	Repeat survey of same area following year; change recreational harvest regulations; research potential cause	Replicated (≥ 3) annual aerial surveys within 1 of 5 survey areas between May 15 and June 1
What is the trend in regional bear population composition?	Evaluate variation in composition (percentage singles, maternal females, cubs by age class)	Statistically significant ($P < 0.05$) unidirectional change persisting for more than 3 years	Research potential cause; conduct regional population survey	Replicated (≥ 3) annual aerial surveys of 6 concentration areas during peak bear use period
What is the trend in bear use of selected summer concentration areas?	Evaluate variation in density (bears per km ²)	Statistically significant ($P < 0.05$) unidirectional change persisting for more than 3 years	Research potential cause; increase precision of estimates by increasing sampling intensity	Replicated (≥ 3) annual aerial surveys of 8 concentration areas on southwestern Kodiak Island during peak bear-use period
What are the trends in Roosevelt elk composition and distribution?	Evaluate variation in herd composition (calves per 100 cows, bulls per 100 cows) and distribution	Progressive unidirectional change among surveys	Change subsistence and recreational harvest regulations; research cause	Annually locate and assess composition of radio-marked herds from mid-August through early September via aerial surveys
What are the trends in mountain goat composition and distribution?	Evaluate variation in herd composition (kids per 100 adults) and distribution	Progressive unidirectional change among surveys	Change recreational harvest regulations; research cause	Annually locate and assess composition of herds from mid-August through early September via systematic aerial survey of goat summer range

Monitoring Question	Measured Action or Effect Key Indicator(s)	Management Standard(s) to Be Used	Possible Management Actions Triggered if Standard(s) Not Met	Sampling Procedure and Frequency
What is the abundance and distribution of harlequin ducks in refuge coastal and riparian habitats?	Location and number of breeding pairs Location and number of broods Location and number of molting harlequins Changes in distribution or numbers within specific drainages or coastal areas	To have sufficient baseline data to detect >40% decrease in local breeding distribution or numbers over 3 years To have sufficient baseline data to detect >40% decrease in local molting numbers or distribution of flocks over 3 years	Limit access (if not limited) to known breeding areas Work cooperatively with ADF&G to reduce Game Management Unit 8 harlequin duck bag limits	Annual spring and late summer surveys of major refuge drainages and coastal areas Distribution and number of ducks per mile habitat
How many bald eagles are nesting on the Refuge, and how many young are produced?	Location and status of refuge bald eagle nests Nest success and production of young	To have sufficient baseline data to detect >35% decrease in bald eagle nesting effort and/or production of young over 3 years	Initiate research into Kodiak bald eagle population and nesting ecology	Annual aerial spring nesting and late summer production random plot surveys Refugewide surveys every 5 years
Which and how many marine bird and mammal species winter in Kodiak bays?	Baseline mean species density and frequency of occurrence over survey area	To have sufficient baseline data to detect >50% decrease in species density or frequency of occurrence over 5 years	Initiate species-specific intensive surveys and natural history research	Annual winter (Feb.) boat (233) transects in 4 selected bay areas
Which waterfowl species are nesting and producing young on the Refuge?	Number, species, age, and association of duck broods and adults	Collect sufficient baseline data to detect >50% reduction in observed waterfowl broods and adults over 3 years	Initiate intensive wetland waterfowl nesting surveys	1 square-mile random plots Ground survey Minimum of 3 years per production area
What are contaminant levels of resident bird species?	Baseline contaminant (heavy metal or pesticide) levels in resident bird muscle and organ tissues	Significant levels (parts per million) of contaminants found in resident bird tissues	Increase sampling and sample areas Investigate potential contamination sources	Contaminants inventory of resident avian species

Monitoring Question	Measured Action or Effect Key Indicator(s)	Management Standard(s) to Be Used	Possible Management Actions Triggered if Standard(s) Not Met	Sampling Procedure and Frequency
What is the trend in sea otter population size and distribution?	Evaluate variation in population size and distribution	Progressive unidirectional change among surveys; evaluate relation to trend of other southwestern stock populations	Research cause	Periodic (3–5 years) low-level aerial surveys of entire sea otter range in the Kodiak Archipelago
Is amount of aquatic or riparian habitat decreasing with human use or development?	Water quality and quantity; spawning, rearing and riparian habitat; lake productivity; human development	Not applicable; baseline data	Minimize impacts from human development or direct development to less critical spawning, rearing, and riparian habitat	Monitor human development such as roads and dams Establish a baseline for optimum spawning and rearing habitat, along with water quality and quantity
What are the optimum levels of fish populations to maintain productivity?	Habitat supports optimum spawning levels; population status of resident species; numbers of anadromous fish	Specific standard to be negotiated with ADF&G	Recommend changes in fishing regulations to state Board of Fisheries and the Federal Subsistence Board	Salmon stream surveys; monitor populations of Arctic char, Dolly Varden, and rainbow trout
Are subsistence fishing needs of Refuge communities being met?	Subsistence fishing locations, fishing pressure, fish population conditions and trends, conflicts	Specific standards to be determined	Recommend changes in fishing regulations to state Board of Fisheries and the Federal Subsistence Board; take in-season management actions	Periodic surveys of subsistence fishers
Does the Refuge have any aquatic nuisance species?	Number of aquatic nuisance species	Not applicable; baseline data	Take steps to eradicate problems; education and prevention	Periodic surveys of rivers and lakes
Are there invasive plants on Kodiak Refuge?	Presence of invasive plants	Presence of invasive plants	Eradication	Opportunistic; conducted as part of other field work

Table 6-2. Monitoring indicators, standards, and possible actions for public use activities

Measured Action/Effect Key Indicator(s)	Management Standard(s) to Be Used	Monitoring Question	Possible Management Actions Triggered if Standard(s) Not Met	Sampling Procedure and Frequency
Bear incidents Defense-of-life-or-property (DLP) kills Change in distribution or numbers of bears in specific stream reaches, sedge meadows, etc.	Increase in number of incidents at specific locations Increase in one season or over several seasons Decrease in local distribution or numbers correlated to increase in public use	Is recreational use of sensitive wildlife areas affecting brown bears?	Increase visitor education efforts; close specific areas to camping or visitation during critical bear use periods; additional regulation of visitors viewing bears; work cooperatively with ADF&G	Reports of incidents; compiled annually Reports of DLP kills; compiled annually Distribution of and number of bears per mile of habitat; inventoried locally
Indicators of viewing experiences and outcomes will be selected based on final design of the viewing program(s). Indicators may include visitors' perceptions of crowding, safety, viewing accessibility and availability, and other setting conditions; and changes in visitors' knowledge or appreciation with respect to brown bears	To be determined Examples: minimum thresholds for proportion of visitors who report feeling uncrowded and safe (e.g., 90% of visitors feel uncrowded, 100% of visitors feel safe) Positive change in pre- and post-visit evaluations of visitors' knowledge of brown bears	Are structured bear-viewing programs and/or other bear-viewing opportunities meeting their stated purposes?	Reevaluation of group size limits and spatial or temporal distribution of visitor use Increased and improved visitor education and interpretation	Annual questionnaire distributed to program participants; periodic formal participant interviews or focus groups; periodic random survey of program applicants
Soil and vegetation condition	Visible or measurable damage to ground cover over more than some percentage of site; >1 m ² of bare ground or compacted (puddled) soils; other(s) to be developed	Are dispersed campsites affecting soils and vegetation?	Increased visitor education efforts; designated or hardened campsites	Campsite inventory and re-inventory of ground cover disturbance; frequency to be determined
Number of visitors, number of parties, length of stay, sites visited, activities occurring on the Refuge	Not applicable; baseline data	What is the current level of visitor use of key areas of the Refuge and what are the trends?	This monitoring is to collect baseline information; would trigger visitor use study at specific sites as needed	Guide reports, air-taxi reports, staff observations; compiled annually

Measured Action/Effect Key Indicator(s)	Management Standard(s) to Be Used	Monitoring Question	Possible Management Actions Triggered if Standard(s) Not Met	Sampling Procedure and Frequency
Recreational fishing locations, fishing pressure, fish population conditions and trends, conflicts	To be developed (see subsequent text for one component)	What is the current amount and distribution of recreational fishing activities on the Refuge, and what are the effects of this use?	Recommend changes in fishing regulations to state Board of Fisheries; limit recreational fishing access to key sites where there are problems; allocate recreational fishing access between guided and unguided visitors	Guide reports, air-taxi reports, visitor contacts, creel surveys, mail-in surveys
Visitor perceptions of key quality elements (e.g., safety, crowding, harvest opportunities) and other resource and social conditions	Specific standards to be determined; in general, a negative trend in visitors' evaluations will trigger management actions.	Is recreation quality being maintained at key recreational fishing sites?	Develop site objectives; work with users and visitor services industry to voluntarily meet objectives; work with State of Alaska to regulate access (only if objectives cannot be met through other methods)	Periodic surveys of visitors at key sites
Proportion of total annual visitor nights accounted for by each cabin	Proportional distribution of use among all cabins (e.g., with current system of seven cabins, no cabin receives less than 10% or more than 20% of use)	Is the public use cabin system being managed efficiently?	Consider relocating existing cabins or acquiring or building new cabins	Annual cabin reservation and use records, air-taxi reports
Compliance with special conditions on use permits	100% compliance	Are guides following procedures outlined in special use permits?	Modifications to procedures; standard disciplinary actions that can be taken under existing regulations	Field check of each permit holder in the field once or more annually

7. Consultation and Coordination with Others

7.1 Consistency with the Alaska Coastal Management Program

Section 307(c) of the Coastal Zone Management Act of 1972, as amended (PL 92-583), states that “each Federal agency conducting or supporting activities directly affecting the coastal zone shall conduct or support those activities in a manner which is, to the maximum extent practicable, consistent with approved State coastal management programs.”

The Alaska Coastal Management Act of 1977, as amended, and the Alaska Coastal Management Program set forth general policies to be used for the review of projects. As this revised Kodiak Refuge Comprehensive Conservation Plan (Comprehensive Conservation Plan, Conservation Plan) was being prepared, the State of Alaska was updating the Alaska Coastal Management Program to comply with recent state legislation. The new standards will not apply to consistency reviews until they are approved by the federal Office of Ocean and Coastal Resource Management. Therefore, this consistency evaluation uses the standards existing as of May 10, 2004.

The U.S. Fish & Wildlife Service (Service) finds the Kodiak National Wildlife Refuge Comprehensive Conservation Plan to be fully consistent with policies of the Alaska Coastal Management Program, and the Kodiak Island Coastal Management Program as they existed on May 10, 2004.

The Alaska Coastal Management Program identifies 12 primary categories that are to be used in consistency evaluations. Following are the categories applicable to this plan:

- Coastal development
- Recreation
- Subsistence
- Habitats
- Air, land, and water quality

Relevant Alaska Coastal Management Program standards are presented in the following text, with comments about consistency with these standards followed by similar discussion of relevant policies from other Coastal Management plans or programs.

7.1.1 Alaska Coastal Management Program Policies (Condensed)

(Headings reference those sections of the program that pertain to the Conservation Plan.)

Coastal Development (6 AAC 80.040)

In planning for and developing coastal areas, priority is given to (1) water-dependent uses and activities, (2) water-related uses and activities, and (3) nonwater-related or -dependent uses or activities.

The Conservation Plan proposes no developments in the coastal zone.

Recreation (6 AAC 80.060)

In designating areas for recreation use, priority is given to areas that (1) receive significant use by persons engaging in recreational pursuits or is a major tourist destination, or (2) has potential for high quality recreational use because of physical, biological, or cultural features.

The Conservation Plan addresses areas that have high-quality recreation opportunities. Access is provided to the public for recreation use of the Refuges under all alternatives.

Subsistence (6 AAC 80.120)

Opportunities for subsistence use of coastal areas and resources shall be recognized and ensured. Before a potentially conflicting use or activity may be authorized in subsistence zones, a study of the possible adverse impacts on subsistence use must be prepared and safeguards provided to ensure subsistence use.

The Conservation Plan addresses subsistence uses and finds that it will ensure opportunities for subsistence use of Refuge resources.

Habitats (6 AAC 80.130)

Habitats must be managed to maintain or enhance the biological, physical, and chemical characteristics of the habitat that would contribute to its capacity to support living resources.

The Conservation Plan addresses habitats for fish and wildlife and provides their continued protection, maintenance, and/or enhancement.

Air, Land, and Water Quality (6 AAC 80.140)

Regulations and procedures of the Alaska Department of Environmental Conservation pertaining to the protection of air, land, and water quality are components of the Alaska Coastal Management Program.

The Conservation Plan would not affect land or air quality. Soil and vegetation monitoring is included. Should significant problems be detected, corrective actions will occur.

7.1.2 Kodiak Island Borough Coastal Management Program

In 1984, the State of Alaska approved the Kodiak Island Borough's coastal management program. Chapter 5 of the concept-approved draft sets forth specific policies on activities and uses of coastal land

and water resources. These policies formed the basis for the Service's consistency determination.

The Comprehensive Conservation Plan is a general land use plan that provides broad policy guidance for managing the Refuge. The following consistency determination for the Kodiak Refuge management alternatives was based on the management directions for each alternative that relate to coastal land and water uses and the effects on environment of each alternative. Specific management actions may require more detailed environmental assessments, and site-specific coastal zone consistency determinations would be prepared at that time.

Industrial Development

Several policies apply to the siting and design of industrial developments in the coastal zone. These policies include minimizing disturbance to natural features, protecting the natural setting and views, providing for public access, disposing of dredge and excavation material, designing facilities in or over water to prevent adverse impacts, establishing buffer zones to minimize conflicts, locating accessory development away from the shoreline where possible, and protecting wetlands.

Plan Alternatives: Alternatives in this Conservation Plan are consistent to the maximum extent practicable. In general, industrial developments are not provided for on national wildlife refuges because they are not compatible with refuge purposes or consistent with refuge management objectives. Private lands provide sites for these developments.

Commercial Development

The same policies described for industrial development (see preceding) also apply to commercial development.

Plan Alternatives: Alternatives in this Conservation Plan are consistent to the maximum extent practicable. In general, commercial developments are not provided for on national wildlife refuges because they are not compatible with refuge purposes or consistent with refuge management objectives. The only commercial developments permitted on Refuge lands would be support facilities for commercial fishermen and for guides and outfitters. The Service would attach stipulations in the permits it grants to the operators to ensure that new facilities are sited, designed, and operated to protect fish and wildlife resources and environmental quality.

Residential Development

Several policies apply to the siting and design of residential developments in the coastal zone. These policies include construction of suitable methods for treatment of sewage to avoid pollution of water, retaining open space to the extent possible, providing for access, and avoiding development in hazardous areas such as floodplains, avalanche zones, or other unstable sites.

Plan Alternatives: Alternatives in this Conservation Plan are consistent to the maximum extent practicable. Residential developments are not provided for on national wildlife refuges because they are not compatible with refuge purposes or consistent with refuge management objectives.

Recreation, Tourism, and Natural Setting

Policies regarding recreation facilities include providing for a balanced choice of recreation experiences, locating only water-dependent recreation facilities near the shoreline, siting and designing facilities to minimize conflicts with other uses and activities, protecting scenic views, and coordinating plans and activities with the Kodiak Island Borough Community Development Department.

Plan Alternatives: Alternatives in this Conservation Plan are consistent. All of the undeveloped shoreline areas in the Refuge are needed for conservation of fish and wildlife in their natural diversity. These areas may be used for recreation purposes in all of the alternatives if compatible with Refuge purposes and consistent with Refuge management objectives. The Service would site and design all new facilities to protect Refuge resources and to minimize conflicts with other uses. The Service would coordinate construction of new facilities with the borough.

Energy Facilities

The coastal management plan has 13 policies regarding energy facilities; these cover compatibility, siting, expansion, use of existing facilities, facility consolidation, habitat alteration, navigational hazards, oil spill containment, emissions, effluents, resource protection, commercial fishing, and oil spill contingency plans.

Plan Alternatives: Alternatives in this Conservation Plan are consistent to the maximum extent practicable.

Transportation and Utility Routes

Policies encourage siting transportation and utility routes away from shorelines, minimizing alteration to water courses and wetlands, and avoiding crossing anadromous streams.

Plan Alternatives: Alternatives in this Conservation Plan are consistent. No transportation or utility systems are proposed in the alternatives (although, under the provisions of Title XI of the Alaska National Interest Lands Conservation Act [ANILCA]), they could be built across the Refuge under all of the alternatives).

Fisheries and Seafood Processing

The coastal management plan supports local development of hatcheries and aquaculture programs and fisheries enhancement programs to maintain or restore anadromous streams and lakes in the coastal zone.

Plan Alternatives: Alternatives in this Conservation Plan are consistent to the maximum extent practicable. Under all of the alternatives, the Service may permit a wide range of fishery development projects, including the installation of permanent facilities, provided the projects are compatible with Refuge purposes and consistent with Refuge management objectives.

Timber and Timber Processing

The coastal management plan states that timber harvesting be managed to ensure sustained yield and to minimize damage to habitat.

Plan Alternatives: Alternatives in this Conservation Plan are consistent. Timber harvesting would not be permitted in the Refuge in any of the alternatives because of the potential for adversely affecting Refuge fish and wildlife populations.

Agriculture

Plan Alternatives: This policy is not applicable; Refuge land is not suitable for agriculture.

Mining and Mineral Processing

Extraction of gravel and other materials is to be regulated to minimize impacts to fish and wildlife.

Plan Alternatives: Alternatives in this Conservation Plan are consistent. Sand and gravel extraction could be permitted on Refuge lands designated Intensive Management or Moderate Management. Because these activities would be required to be compatible with Refuge purposes, they would be designed and carried out to protect fish and wildlife habitat from adverse effects.

Subsistence

Subsistence is recognized as a primary resource use. The coastal management plan states that subsistence use shall be protected when coastal development occurs and that habitats shall be managed to ensure subsistence use continues as a primary use.

Plan Alternatives: Alternatives in this Conservation Plan are consistent. ANILCA states that subsistence use is one of the primary purposes for which Kodiak Refuge was established and shall be managed. All of the alternatives maintain subsistence use opportunities and habitats for important subsistence species. (See also the Section 810[a] evaluations included in section 4.5 of Chapter 4 of this document.)

Geophysical Hazards

Eight policies are included on this topic; they cover use of potentially hazardous lands, governmental coordination, coastal erosion, seismic events, coastal or seiche flooding, landslides and mass wasting hazards, avalanche hazards, and riverine flooding.

Plan Alternatives: Alternatives in this Conservation Plan are consistent. The Service would take into account the aforementioned policies in locating new facilities on Refuge lands. The Service would also take the listed hazards into account when it grants permits for new commercial developments on Refuge lands.

Coastal Access

The coastal management plan states that new development shall provide access to shorelines when possible, developed access shall be provided when possible, and marine and air access for hunting and fishing shall be provided to the extent feasible and prudent.

Plan Alternatives: Alternatives in this Conservation Plan are consistent to the maximum extent practicable. Access could be limited in some areas if resource conflicts occur.

Resource Enhancement and Protection

The coastal management plan states that the maintenance and enhancement of fish and wildlife resources are priorities of the borough; that sensitive areas must be protected; that developments must be designed, located, and built to preserve to the extent feasible and prudent natural features; and that wetland and upland habitats must be managed to maintain natural hydrologic processes.

Plan Alternatives: Alternatives in this Conservation Plan are consistent to the maximum extent practicable. ANILCA states that conservation of fish and wildlife habitats is one of the primary purposes for which the refuge was established and shall be managed. All of the alternatives would protect sensitive fish and wildlife habitats and include stipulations for new developments to preserve natural features and to maintain natural hydrologic processes in the Refuge. Enhancement programs on Kodiak Refuge generally would not be consistent with the intent of ANILCA. As noted earlier, however, all of the alternatives may permit fisheries enhancement if compatible with Refuge purposes and consistent with Refuge goals and objectives.

Air and Water Quality

Policies are included on use of state-of-the-art technology, discharge of wastewater, siting of industrial facilities, and minimizing adverse impacts of dredge and fill activities.

Plan Alternatives: Alternatives in this Conservation Plan are consistent. In all of the alternatives, all Refuge facilities and commercial support facilities under permit will comply with state and federal air- and water-quality regulations.

Archaeological and Historical Resources

The coastal management plan states that prehistoric archaeological sites not already protected be identified and preserved to the extent feasible and prudent and that the coastal management program's cultural resource distribution map be used as a guide to evaluate the siting of proposed developments.

Plan Alternatives: Alternatives in this Conservation Plan are consistent. Under all of the alternatives, the Service will identify significant historic and cultural resources on the Refuge and protect them, as required under federal law.

7.2 Section 7 Compliance (Endangered Species Act)

The planned actions found in the Kodiak National Wildlife Refuge Comprehensive Conservation Plan are unlikely to adversely affect species listed under the Endangered Species Act or designated critical habitat. Therefore, the Service and the National Marine Fisheries Service find the plan to be fully consistent with Section 7 of the Endangered Species Act of 1973 (16 U.S.C. 1531 et seq., 87 Stat. 884), as amended (USDC NOAA National Marine Fisheries Service 2003; USFWS, Anchorage Fish and Wildlife Field Office 2003).

7.3 References Cited

- USDC NOAA National Marine Fisheries Service. 2003. Letter regarding U.S. Endangered Species Act consultation. Juneau, Alaska: U.S. Department of Commerce, National Oceanic and Atmospheric Administration, National Marine Fisheries Service. May 5, 2003. 1 page.
- USFWS, Anchorage Fish and Wildlife Field Office. 2003. Intra-Service Section 7 Biological Evaluation Form. Anchorage, Alaska: U.S. Fish & Wildlife Service, Anchorage Fish and Wildlife Field Office. July 9, 2003. 4 pages.

Appendix A

Legal Guidance and Planning Coordination

1. Legal Guidance and Planning Coordination

1.1 Legal Guidance

The U.S. Fish & Wildlife Service (Service) manages national wildlife refuges pursuant to various legal and administrative requirements. Management of Kodiak National Wildlife Refuge (Kodiak Refuge, Refuge) is dictated, in large part, by the Alaska National Interest Lands Conservation Act of 1980 (ANILCA), which redesignated the Refuge and identified the purposes for which it was established. However, operation and management of Kodiak Refuge is also influenced by a wide array of other laws, treaties, and executive orders and the regulations and policies developed to implement them. Among the most important are the National Wildlife Refuge System Administration Act as amended by the National Wildlife Refuge System Improvement Act; the Refuge Recreation Act; the Alaska Native Claims Settlement Act (ANCSA); and the Endangered Species Act. A brief description of these and other pertinent legal documents that influence management of Kodiak Refuge is found in the following subsections.

1.1.1 International Treaties

Several treaties affect how the Service manages Kodiak Refuge. Among these are migratory bird treaties with Canada, Mexico, Japan, and Russia and the Convention on Nature Protection and Wildlife Conservation in the Western Hemisphere. These treaties differ in emphasis and species of primary concern, but collectively provide clear mandates for identifying and protecting important habitats and ecosystems and for protecting and managing individual species.

Treaties for migratory bird protection include management provisions such as (1) prohibiting disturbance of nesting colonies; (2) allowing the Secretary of the Interior to establish seasons for the taking of birds and the collection of their eggs by “indigenous inhabitants” of Alaska for their own nutritional and other essential needs; (3) directing each nation to undertake, to the maximum extent possible, measures necessary to protect and enhance migratory bird environments and to prevent and abate pollution or detrimental alteration of their habitats; and (4) providing that protective measures under the treaty may be applied to species and subspecies not listed in the specific convention, but which belong to one of the families containing listed species. Of the migratory bird species of concern in the treaties, those that use Kodiak Refuge include loons, swans, geese, ducks, hawks, eagles, harriers, ospreys, falcons, cranes, plovers, sandpipers, jaegers, gulls, terns, owls, and passerines.

1.1.2 National Guidance

Alaska National Interest Lands Conservation Act of 1980 as amended, 16 U.S.C. 140hh-3233, 43 U.S.C. 1602-1784

ANILCA—in addition to amending the Alaska Native Claims Settlement Act, the Alaska Statehood Act, and the Wild and Scenic Rivers Act, and modifying portions of the Wilderness Act as it applies to Alaska lands—expanded the federal conservation system in Alaska (including national parks, refuges, forests, Wilderness areas, and Wild and Scenic Rivers). Specifically, Title III of ANILCA established new refuges and added to and redesignated existing refuges, identified the purposes of each refuge, and provided administrative guidance for management of refuges in Alaska, including requiring the preparation, and periodic updating, of a comprehensive conservation plan for each refuge.

In addition, ANILCA provided comprehensive management guidance for all federal public lands in Alaska, including provisions regarding wilderness; subsistence; transportation and utility corridors; oil and gas leasing; mining; public access; and hunting, fishing, and trapping. No Wilderness or Wild and Scenic Rivers were designated on Kodiak Refuge by ANILCA. Section 1317 required that all refuge lands not designated as Wilderness be reviewed for their suitability for Wilderness designation, in accordance with the provisions of the Wilderness Act. The 1987 Kodiak Refuge Conservation Plan recommended, under Section 1317 of ANILCA, 1.08 million acres for Wilderness designation. That recommendation remains in effect. Section 1317(c) provides that a recommendation or proposal for Wilderness designation does not affect the normal administration and management of the affected areas of the refuge.

Title VIII of ANILCA authorizes the State of Alaska to regulate subsistence uses on Federal public lands if several requirements are met. The State of Alaska managed statewide subsistence harvests until late 1989, at which time the Alaska Supreme Court ruled that the rural residency preference required by Federal law violated the Alaska Constitution. Shortly thereafter, the Federal government established the Federal Subsistence Board (Board) to manage hunting fishing, and trapping on Federal public lands (including nonnavigable waters on these lands). On October 1, 1999, management authority of the Board was extended to include navigable waters within and adjacent to exterior boundaries of Federal conservation units, in which the United States has an interest by virtue of the reserved water rights doctrine.

The Board establishes regulations for the harvest, on Federal public lands in Alaska by qualified rural residents, of fish and wildlife for subsistence purposes. The Federal process involves substantial public input; individuals and organizations submit proposals for regulations to the Board and are reviewed by the Federal Subsistence Regional Advisory Councils (RACs)—e.g., the Kodiak/Aleutians Islands RAC. The RACs, which are composed of local citizens,

make recommendations of the proposals to the Board. The Federal subsistence staff also advises the Board on regulation proposals, providing data and analysis from local Federal managers as well as from the Alaska Department of Fish and Game.

The state's recreational, commercial, personal use, and subsistence regulations continue to apply on all Federal lands unless superseded by Federal subsistence regulations. However, the Board may establish Federal regulations to provide for use only by eligible rural residents in order to protect the ANILCA Title VIII preference for local rural users or to protect a wildlife population of fishery.

Alaska Native Claims Settlement Act of 1971 as amended, 43 U.S.C. 1601-1624

The purpose of this act was to provide for "... settlement of all claims by Natives and Native groups of Alaska, based on aboriginal land claims." It provided for grants of land and money and the establishment of Native corporations to maintain the economic affairs of Native organizations. In exchange, all aboriginal titles and claims, including any fishing and hunting rights, were extinguished. Section 12(a) allowed village corporations to select lands, with several stipulations, in national wildlife refuges. Section 22(g), however, stated that these lands were to "... remain subject to the laws and regulations governing use and development of such refuge." Other refuge lands were selected under Section 14(h)(1), which allowed regional corporations to select cemetery sites and historical places. Section 17(b) provided for public easement across Native lands for access to federal lands. Section 17(d)(2)(A) provided the basis for the enactment of ANILCA.

National Wildlife Refuge System Administration Act of 1966 as amended by the National Wildlife Refuge System Improvement Act of 1997, 16 U.S.C. 668dd-668ee

This act establishes a unifying mission for the National Wildlife Refuge System (System), a mission that, first and foremost, focuses on the conservation of fish, wildlife, plants, and their habitats for the continuing benefit of the American people. It requires the preparation of a comprehensive conservation plan for each unit of the System. Furthermore, it reinforces and expands the "compatibility standard" of the Refuge Recreation Act, which requires that public uses must be determined to be compatible with refuge and agency missions and purposes before they can be allowed and establishes a process for determining compatibility. The act also identifies six priority wildlife-dependent recreation uses, clarifies the authority of the Secretary of the Interior to accept donations of money for land acquisition, and places restrictions on the transfer, exchange, or other disposal of lands with the System.

The Refuge Recreation Act of 1962 as amended, 16 U.S.C. 460k-460k-4

This act requires that any recreation use on areas of the System be “compatible” with the primary purpose(s) for which the area was acquired or established. It also requires that sufficient funding be available for the development, operation, and maintenance of recreation uses that are not directly related to the area’s primary purpose(s).

National Environmental Policy Act of 1969 as amended, 42 U.S.C. 4321-4347 (NEPA)

This act and the implementing regulations developed by the Council on Environmental Quality (40 CFR 1500-1508) require federal agencies to integrate the National Environmental Policy Act (NEPA) process with other planning at the earliest possible time to provide a systematic interdisciplinary approach to decision-making; to identify and analyze the environmental effects of their actions; to describe appropriate alternatives to the proposed actions; and to involve the affected state and federal agencies, tribal governments, and public in the planning and decision-making process.

Endangered Species Act of 1973 as amended, 16 U.S.C. 1531-1544

The Endangered Species Act provides for the conservation of threatened and endangered species of fish, wildlife, plants, and their critical habitats by federal action and by encouraging the establishment of state programs. Although not specifically addressing the System, it does directly affect management activities on national wildlife refuges. It directs federal agencies to take actions that would further the purposes of the act and to ensure that actions they carry out, authorize, or fund do not jeopardize endangered species or their critical habitat (Section 7).

The Wilderness Act of 1964, 16 U.S.C. 1131-1136

This act (P.L. 88-577) defined the wilderness resource and established the National Wilderness Preservation System. It provides the framework for designation by Congress of new units to the System and prescribes for their management. The Wilderness review required by Section 1317 of ANILCA and included in the 1987 Kodiak Refuge Conservation Plan was undertaken following the framework and guidance provided by the Wilderness Act. The recommendation for Wilderness designation included in the record of decision (ROD) for the 1987 conservation plan is a preliminary administrative determination that will receive further review and possible modification prior to being forwarded to Congress for final action on Wilderness designation. No Wilderness has been designated on Kodiak Refuge.

The Wild and Scenic Rivers Act of 1968, 16 USC 1271-1287

This act establishes a National Wild and Scenic Rivers System and prescribes the methods and standards through which additional rivers may be identified and added to the system. Section 5(d)(1) requires that in all planning by federal agencies—for the use and development of water and related land resources—consideration be given to potential wild, scenic, and recreation rivers. Rivers are added to the National Wild and Scenic Rivers System based on their free-flowing character and their outstanding scenic, recreation, geologic, fish and wildlife, historic, cultural, ecological, or other values. Rivers in the system are managed to maintain and to protect these outstandingly remarkable values for present and future generations. For Wild and Scenic Rivers in Alaska, ANILCA also provided direction for management of designated rivers. No Wild and Scenic Rivers have been designated on Kodiak Refuge.

The Federal Water Pollution Control Act of 1972, as amended by The Clean Water Act of 1977, (33 USC s/s 1251 et seq.)

This act regulates the discharge of pollutants into waters of the United States. The act protects fish and wildlife, establishes operation permits for all major sources of water pollution, and limits the discharge of pollutants or toxins into water and makes it unlawful for any person to discharge any pollutant from a point source into navigable waters unless a permit is obtained under the Clean Water Act.

Other Laws

Laws that affect mineral leasing, recreation use, commercial fishing, preservation and protection of cultural and historic resources, and other activities on federal lands are also considered in the comprehensive conservation planning process.

1.2 Planning Coordination

Nature is not constrained by government boundaries that are used to determine ownership or management of specific areas of land. Without physical barriers, and with available habitat, fish and wildlife will freely roam through lands and waters regardless of ownership or management. To ensure the conservation of the many species that migrate across legal and political boundaries, a number of efforts—at scales ranging from local community and regional plans to national and international conservation programs—have been designed to monitor and protect these species. These plans were reviewed during the revision of the Kodiak Refuge Conservation Plan to ensure that the revised management direction is consistent with these national conservation plans. The following list is not intended to be comprehensive, but demonstrates the range of documents reviewed. When applicable, specific information from these plans has been incorporated into this document.

North American Waterfowl Management Plan

This conservation plan seeks to restore waterfowl populations in Canada, the United States, and Mexico to the levels recorded in the 1970s. The international partnership has worked to identify priority habitats for waterfowl and has established goals and objectives for the waterfowl populations and habitats (USFWS 1998). Estuaries, lagoons, bays, and nearshore waters on and adjacent to the Refuge provide wintering habitat for an estimated 12,000 dabbling ducks and 150,000 sea ducks. Breeding waterfowl use of the Refuge is comparatively low because the area supports limited wetland breeding habitat.

Partners in Flight

Partners in Flight is a cooperative effort involving partnerships among federal, state, and local government agencies; philanthropic foundations; professional organizations; conservation groups; industry; the academic community; and private individuals. Partners in Flight was created in 1990 in response to growing concerns about declines in the populations of many land bird species and in order to emphasize the conservation of birds not covered by existing conservation initiatives. Bird conservation plans, including the *Landbird Conservation Plan for Alaska Biogeographic Regions* (Boreal Partners in Flight Working Group 1999), are developed in each region to identify species and habitats most in need of conservation, to establish objectives and strategies to provide needed conservation activities, and to implement and monitor progress on the plans.

U.S. Shorebird Conservation Plan (Brown et al. 2000)

This conservation plan seeks to stabilize populations of all shorebirds that are in decline because of factors affecting habitat in the United States. At a regional level, the plan's goal is to ensure that shorebird habitat is available in adequate quantity and quality to support shorebird populations in each region. Ultimately, the goal of the Conservation Plan is to restore and maintain shorebird populations throughout the western hemisphere through an international partnership.

1.2.1 Regional Management Plans

In addition to the national conservation plans, this Comprehensive Conservation Plan must consider the conservation plans and management goals of neighboring lands of the region. Regional plans, as well as goals and objectives from other programs, were reviewed to understand how the Kodiak Refuge can contribute to the goals for conservation within the state or local region. This list is not intended to be comprehensive, but demonstrates some of the major regional plans that were reviewed during the development of this draft. When applicable, specific information from these plans has been incorporated into the plan.

Kodiak Area Plan for State Lands (Final) (DNR 2004)

This State of Alaska plan determines management intent, land-use designations, and management guidelines that apply to all state lands in the Kodiak Archipelago. The plan provides goals and specific guidelines that apply to state land- and water-management decisions. Detailed land-use designations describe intended uses for state lands and waters. The Final Kodiak Area Plan was adopted by the Commissioner of Alaska Department of Natural Resources on December 20, 2004. The Service worked closely with DNR staff on relevant portions of this plan and provided detailed comments on the draft, especially about management of state lands on the Shearwater Peninsula, which is covered under the cooperative management agreement for the Terror Lake Hydroelectric Project (see Appendix D).

Kodiak Island Borough Coastal Zone Management Plan (Kodiak Island Borough 1983)

This plan describes goals and objectives for resources within the coastal zone (which includes all lands within the Refuge boundaries). The focus of the plan is to maintain the functions and values of coastal resources, including its socio-economic values. The objectives of the plan were reviewed to look for opportunities to make progress on mutual goals. A full review of the consistency of the Kodiak Refuge Conservation Plan with the Coastal Zone Management Plan can be found in Chapter 7.

A Conservation Plan for Alaska Shorebirds (Alaska Shorebird Working Group 2000)

This plan identifies shorebird species of concern in Alaska and provides goals and objectives for shorebird conservation throughout the state. Although nine shorebird species are known to nest on Kodiak Refuge, and at least 20 others have been found on the Refuge, habitat is limited and numbers are minimal.

Landbird Conservation Plan for Alaska Biogeographic Regions (Boreal Partners in Flight Working Group 1999)

This plan, developed through the Partners in Flight national initiative, identifies by region those species and habitats most in need of conservation and establishes objectives and strategies to provide needed conservation activities and for monitoring progress in implementing the plan. Kodiak Refuge contributes to this plan through a variety of monitoring and inventory studies of land birds on the Refuge.

Yukon-Kuskokwim Delta Goose Management Plan (USFWS 1989)

This plan directed the Service to develop comprehensive management plans for four species of geese nesting in western Alaska: cackling Canada geese, brant, white-fronted geese, and

emperor geese. A small population of emperor geese winter on and near Kodiak Refuge.

Alaska Natural Heritage Program

The mission of the Alaska Natural Heritage Program is “to document the distribution and abundance of ecologically significant plant and animal species, ecological communities, and natural features and to assist in maintaining an ecologically healthy environment, while promoting the development of a sustainable economy in Alaska” (Source: http://www.uaa.alaska.edu/enri/aknhp_web, March 26, 2004). The program has developed a biological conservation database that provides information on species distribution, trends, and habitats for species in need for more than 1,300 plants and animal species in Alaska. These data were used to assess the status of species on Kodiak Refuge.

Alaska Department of Fish and Game (ADF&G)

The Service shares management responsibility for fish and wildlife on refuge lands with the ADF&G as identified in the Master Memorandum of Understanding (Appendix B). In accordance with this policy directive, ADF&G has primary responsibility for managing fish and resident wildlife populations. Part of this management includes setting objectives for populations and harvest within management areas, called game management units (GMUs). Kodiak Refuge is within GMU 8. During the development of this Conservation Plan, the state’s management objectives for fish and wildlife were important considerations for establishing and evaluating management direction on the Refuge. Information on key management objectives that address fish and wildlife populations found on the Refuge can be found in Chapter 3.

Kodiak Archipelago Bear Conservation and Management Plan (ADF&G 2002)

In response to growing public concern over development in and around bear habitat, an increasing demand for diverse recreation opportunities, and the need to minimize bear-human interactions, ADF&G undertook a public planning process to develop a bear management plan for the Archipelago. Because the Service shares management responsibility of the Kodiak brown bear with ADF&G and because the Refuge includes a large part of the Archipelago, the Service pooled its resources with ADF&G to work with the public in developing the state plan. The plan was developed by an advisory committee of members of the public selected by an intergovernmental planning group that included ADF&G, the Service, and other federal, state, and local government agencies. The plan addresses human uses of the Archipelago relating to bears, bear-human interactions, potential habitat degradation, the impact of private land ownership in bear habitat, and other bear-management issues. It includes nearly 300 recommendations that reflect the public’s desires and concerns related to bear conservation and

management. Recommendations from the plan that affect refuge management have been integrated into this Comprehensive Conservation Plan as part of the revision process. See Appendix C for the Service's evaluation of these recommendations.

1.3 References Cited

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Appendix B

Coordination with the State of Alaska

1. Coordination with the State of Alaska, Including the Master Memorandum of Understanding with the Department of Fish and Game

Consistent with the principles of ecosystem management and the laws and policies described in Appendix A, effective management of the Kodiak National Wildlife Refuge (Refuge) must be done in close coordination with the State of Alaska. This appendix is not intended to be a comprehensive list of state agencies, but rather describes the primary state agencies that share concern and responsibilities for fish, wildlife, and other natural resources.

1.1 Alaska Department of Fish and Game

The Alaska Department of Fish and Game (ADF&G) has the primary responsibility for managing fish and resident wildlife populations. On refuge lands, the U.S. Fish & Wildlife Service (Service) and ADF&G share a mutual concern for all fish and wildlife resources and their habitats, and both are engaged in extensive fish and wildlife conservation, management, and protection programs. In 1982, the Service and ADF&G signed a Master Memorandum of Understanding (dated March 13, 1982) that defines the cooperative management roles of each agency. This memorandum sets the framework for cooperation between the two agencies.

Through the direction of the Boards of Fisheries and Game, the State of Alaska establishes fishing, hunting, and trapping regulations throughout the state. These regulations apply to federal public lands unless superseded by federal subsistence regulations. The state is divided into 26 game management units (GMUs); most of these are further divided into subunits. State management objectives are developed for wildlife populations within the GMUs. All Kodiak Refuge lands lie within GMU 8. Management objectives for wildlife and fish populations on the Refuge are discussed in Chapter 3.

The state process for developing regulations involves substantial public input to the Alaska Boards of Fisheries and Game concerning changes in regulations and allocations. Input may be directly to the boards through testimony and proposals or indirectly through participation in local fish and game advisory committees. For the areas including the Refuge, these include Kodiak Fish and Game Advisory Committee. The advisory committees assist the boards in assessing local fish and wildlife issues and proposed regulations. Biological staff from ADF&G also provides data and analysis of proposals to the boards. Regulations may be changed by the boards at regular meetings, by emergency regulation, or by emergency order (Schwarz 1995).

Although many biologists within ADF&G have law enforcement authority, most enforcement of fishing and hunting regulations is carried out by Refuge law enforcement officers and officers of the Alaska Department of Public Safety, Bureau of Wildlife Enforcement.

ADF&G's Division of Wildlife Conservation works to conserve and enhance Alaska's wildlife and to provide for a wide range of uses for the greatest benefit of current and future generations of the people through management of wildlife populations and habitat, research, information transfer, regulatory activities, and public service. Wildlife Conservation is responsible for overseeing development of management plans for a variety of wildlife populations throughout the state; the *Kodiak Archipelago Bear Conservation and Management Plan* (ADF&G 2002) is one such plan.

ADF&G's Division of Commercial Fisheries manages, protects, rehabilitates, enhances, and develops fisheries and aquatic plant resources in the interest of the economy and general well-being of the state, consistent with the sustained-yield principle and subject to allocations established through public regulatory processes. It is responsible for management of the state's commercial, subsistence, and personal-use fisheries.

ADF&G's Division of Sport Fish is responsible for the state's recreational fishery resource: the conservation of self-perpetuating populations of fish; management of sport fisheries in both salt and fresh water; and hatchery production and release of fish for recreational fishing. The goals of the division are to conserve naturally reproducing populations of sport fish species, provide a diverse mix of recreational fishing opportunities, and optimize the social and economic benefits of Alaska's recreational fisheries.

ADF&G's Division of Subsistence is the research branch of the department responsible for providing comprehensive information on the customary and traditional use of wild resources. Information is provided to meet management goals, aid in regulation development, facilitate collaborative agreements, assess environmental impacts, and describe the unique role of wild resources in Alaska.

1.2 Alaska Department of Natural Resources

The Alaska Department of Natural Resources (DNR) and its divisions also key management partners, coordinating with the Service and other federal and state agencies in managing the public lands (federal and state) in Alaska. DNR manages all state-owned land, water, and surface and subsurface resources except for fish and game. DNR's Division of Mining, Land, and Water manages the state's water and land interests within national wildlife refuges. These interests will become increasingly significant in the next 10 to 15 years, especially in regard to water rights, navigable waters, ownership of submerged lands, and rights-of-way over Refuge lands.

The division is responsible for development of plans for management of state lands; this includes the *Kodiak Area Plan for State Lands* (DNR 2004) that was adopted by the Commissioner of DNR on December 20, 2004. Coordination with adjacent landowners, including the Fish and Wildlife Service, was an important part of developing the Kodiak Area Plan. The plan establishes land use designations, management intent, and management guidelines for state uplands and tidelands within the Kodiak Borough.

2. References Cited

- ADF&G. 2002. "Kodiak Archipelago Bear Conservation and Management Plan." Anchorage, Alaska: Alaska Department of Fish & Game, Division of Wildlife Conservation. 240 pp.
- DNR. 2004. "Kodiak Area Plan for State Lands." At <http://www.dnr.state.ak.us/mlw/planning/areaplans/kodiak/index/cfm>
- Schwarz, L. 1995. "1994 area management report for the recreational fisheries of the Kodiak and Alaska Peninsula/Aleutian Islands regulatory areas." Fishery Management Report. No. 95-3. Anchorage, Alaska: Alaska Department of Fish & Game.

**Master Memorandum of Understanding
Between the Alaska Department of Fish and Game
Juneau, Alaska
and
the U.S. Fish and Wildlife Service, Department of the Interior
Anchorage, Alaska**

This Master Memorandum of Understanding between the State of Alaska, Department of Fish and Game, hereinafter referred to as the Department, and the U.S. Fish and Wildlife Service, hereinafter referred to as the Service, reflects the general policy guidelines within which the two agencies agree to operate.

WHEREAS, the Department, under the Constitution, laws and regulations of the State of Alaska (Appendix I), is responsible for the management, protection, maintenance, enhancement, rehabilitation, and extension of the fish and wildlife resources of the State on the sustained yield principle, subject to preferences among beneficial uses; and

WHEREAS, the Service, by authority of the Constitution, laws of Congress and regulations of the U.S. Department of Interior [Appendix II] has a mandated management responsibility for certain species or classes of wildlife and is responsible for the management of Service lands in Alaska, and the conservation of fish and wildlife resources on these lands; and

WHEREAS, the Department and the Service share a mutual concern for fish and wildlife resources and their habitats and both are engaged in extensive fish and wildlife conservation, management, and protection programs and desire to develop and maintain a cooperative relationship which will be in the best interests of both parties, the concerned fish and wildlife resources and their habitats, and produce the greatest public benefit; and

WHEREAS, it has been recognized in the Alaska National Interest Lands Conservation Act and subsequent implementing Federal regulations that the resources and use of Service lands in Alaska are substantially different than those of other states; and

WHEREAS, the Department and the Service recognize the increasing need to coordinate resource planning and policy development;

NOW, THEREFORE, the parties hereto do hereby agree as follows:

THE DEPARTMENT OF FISH AND GAME AGREES:

1. To recognize the Service as the agency with the responsibility to manage migratory birds, endangered species, and other species mandated by Federal law, and on Service lands in Alaska to conserve fish and wildlife and their habitats and regulate human use.
2. To manage fish and resident wildlife populations in their natural species diversity on Service lands.
3. To consult with the Regional Director in a timely manner and comply with applicable Federal laws and regulations before embarking on enhancement or construction activities on Service lands.

THE FISH AND WILDLIFE SERVICE AGREES:

1. To recognize the Department as the agency with the primary responsibility to manage fish and resident wildlife within the State of Alaska.
2. To recognize the right of the Department to enter onto Service lands at any time to conduct routine management activities which do not involve construction, disturbance to the land, or alterations of ecosystems.
3. To cooperate with the Department in planning for enhancement or development activities on Service lands which require permits, environmental assessments, compatibility assessments, or similar regulatory documents by responding to the Department in a timely manner with requirements, time tables, and any other necessary input.
4. To manage the fish and wildlife habitat on Service lands so as to insure conservation of fish and wildlife, populations and their habitats in their natural diversity.
5. To consider carefully the impact of any proposed treaties or international agreements relating to fish and wildlife resources on the State of Alaska which could diminish the jurisdictional authority of the State and to consult freely with the State when these treaties or agreements have a primary impact on the State.
6. To review present U.S. Fish and Wildlife Service policies and any future proposed changes in those policies in consultation with the Department to determine if modified or special policies are needed for Alaska.
7. To adopt refuge management plans whose provisions—including provision for animal damage control—are in substantial agreement with the Department's fish and wildlife management plans, unless such plans are determined formally to be incompatible with the purposes for which the respective refuges were established.
8. To utilize the State's regulatory process to maximum in extent allowed by Federal law in developing new or

modifying existing Federal regulations or proposing changes in existing State regulations governing or affecting the taking of fish and wildlife on Service lands in Alaska.

THE DEPARTMENT OF FISH AND GAME AND THE FISH AND WILDLIFE SERVICE MUTUALLY AGREE:

1. To coordinate planning for management of fish and wildlife resources on Service lands so that conflicts arising from differing legal mandates, objectives, and policies either do not arise or are minimized.
2. To consult with each other when developing policy and legislation which affects the attainment of wildlife resource management goals and objectives, or management plans.
3. To recognize that the taking of fish and wildlife by hunting, trapping, or fishing on Service lands in Alaska is authorized in accordance with applicable State and Federal law unless State regulations are found to be incompatible with documented Refuge goals, objectives, or management plans.
4. To develop such supplemental memoranda of understanding between the Commissioner and the Regional Director as may be required to implement the policies contained herein.
5. That this Master Memorandum of Understanding shall become effective when signed by the Commissioner of the Alaska Department of Fish and Game and the Alaska Regional Director of the U.S. Fish and Wildlife Service and shall continue in force until terminated by either party by providing notice in writing 120 days in advance of the intended date of termination.
6. That amendments to this Master Memorandum of Understanding may be proposed by either party and shall become effective upon approval by both parties.

STATE OF ALASKA
Department of Fish and Game

/signed/ Ronald O. Skoog
Commissioner

March 13, 1982
Date

U.S. DEPARTMENT OF THE INTERIOR
Fish and Wildlife Service

/signed/ Keith M. Schreiner
Regional Director, Alaska

March 13, 1982
Date

Appendix C

Kodiak Archipelago Bear Conservation and Management Plan Recommendations

Kodiak Archipelago Bear Conservation and Management Plan Recommendations

Index No.	Recommendation	Refuge Management Direction
Chapter 3: Kodiak Bear Habitat		
Introduced Species		
1	Identify funding sources to study effects of introduced species on bear habitat.	The Kodiak National Wildlife Refuge (Refuge) would establish several objectives (under Goals 2 and 3) related to management and effects of introduced species. Proposals would be submitted to increase Service support for this work. Cooperative funding also would be pursued once individual projects are initiated.
2	Conduct research to determine if a problem exists with introduced species depleting bears' food resources or otherwise damaging bear habitat. When evaluating the results of research on introduced species, social issues (e.g., subsistence hunting) should be considered. Research should be subject to peer review.	The Refuge has established several new objectives (3.2, 3.4, and 3.6) geared to assess effects of introduced species on bear habitat. The U.S. Fish & Wildlife Service (Service) would ensure that this research conforms to high scientific standards.
3	Federal and state governments should work with villages and other landowners to maintain the species that currently exist on the Kodiak archipelago.	Consistent with Service policy, Refuge purposes, and Refuge Goal 3, the Service would work with stakeholders to minimize impact to native resources, while continuing to provide opportunities for harvest of non-native species.
4	Guard against the introduction of additional non-native species that could prove harmful to bears and their habitat.	The Service would cooperate with state and other entities to prevent introduction of new diseases, plants, and animals, as directed by Objectives 1.4, 1.5, and 6.1.
Salmon as a Part of Bear Habitat		
5	Endorse the Kodiak Area Salmon Management plans that regulate commercial fishing on and around the archipelago.	Refuge Fisheries Management Plan and Conservation Plan Goal 7 are geared to conserve native salmon populations and habitat consistent with the Kodiak Area Salmon Management Plan.
6	Continue to collect salmon escapement data to ensure the sustainability of salmon stocks.	Refuge would continue to collaborate with Alaska Department of Fish & Game (ADF&G) in collection of escapement data, as directed by fisheries Objective 7.1.
7	Support operation of essential weirs islandwide and acquire weir sites where appropriate.	The Service would continue to support ADF&G's operation of existing weirs on the Refuge. Acquisition of weir sites is not a Refuge responsibility.
8	Ensure that easements for access to weir sites be restricted to use by essential personnel.	The Service leases weir sites to ADF&G. It is that agency's responsibility to establish public access policy at weir sites.

Appendix C: Kodiak Archipelago Bear Conservation and Management Plan Recommendations

Index No.	Recommendation	Refuge Management Direction
9	Continue to design all salmon enhancement and rehabilitation projects to minimize disturbance of bears and to avoid unnecessary damage to their wild habitats.	Designing enhancement projects is an ADF&G responsibility. However, restoration projects may be designed by the Refuge. Potential impacts to bears of new projects would be evaluated by the Refuge during design and implementation stages.
10	Recognize that the protection of riverine and coastal habitats for bears will help sustain the annual Kodiak salmon commercial harvest, which generates an average ex-vessel value of \$35 million and provides as many as 5,000 associated jobs.	Implementation of this plan would ensure continued protection of native habitat for bears and salmon. Therefore, benefits to off-refuge commercial fisheries would be maintained.
	Regarding Afognak Island	
11	Establish an education plan and explore economic incentives aimed at encouraging public and private landowners to consider the effects of motorized access to bears.	This recommendation does not apply to the Refuge.
12	Establish an education plan and explore economic incentives aimed at encouraging private landowners to continue land-management programs that are consistent with wildlife conservation.	This recommendation does not apply to the Refuge.
13	Teach outdoor recreationists to be bear-aware.	This recommendation is consistent with Objectives 10.6, 11.2, 12.2, 12.7, 12.8, 15.4, and 15.6.
14	Urge ADF&G, sports enthusiasts, and wildlife conservation groups to cooperate with private landowners to help make their forest practices as compatible as possible with conservation of bears (e.g., continued adherence to the Forest Practices Act and continued use of responsible garbage-management practices).	This recommendation does not apply to the Refuge.
15	Respect private property rights, while recognizing private landowner's responsibilities to adhere to applicable laws in the conservation of bears and their habitats.	This recommendation does not apply to the Refuge.
	Human Activities in Bear Habitat	
16	Maintain or enhance the current high-quality bear habitat on the Kodiak Archipelago by protecting riparian areas, including water quality and salmon resources; protecting healthy and contiguous upland areas; and continuing the type of human uses of the area that fosters coexistence.	This recommendation is consistent with Goals 6, 7, 9, and 10.

Appendix C: Kodiak Archipelago Bear Conservation and Management Plan Recommendations

Index No.	Recommendation	Refuge Management Direction
17	Strongly encourage education of outdoor recreationists about bear behavior, impacts to bear habitat, bear-human interactions (e.g., resulting from improperly handled food and trash), field safety practices, and use of bear-resistant containers and electric fences, etc.	This recommendation is consistent with Goal 12 and Objectives 10.2 and 11.2.
18	Distribute to refuge users educational materials on building safe campfires.	This recommendation is consistent with Objectives 11.2, 12.2, and 12.3.
	Land Use, Land Acquisition, and Planning	
19	Continue acquiring small parcels of high-priority bear and salmon habitat from informed, willing sellers.	This recommendation is consistent with Service policy. Refuge would continue to implement its land-acquisition plan, which directs purchase of important habitat from willing sellers of private parcels within approved Refuge boundary.
20	Consider bear habitat when evaluating lands for acquisition.	Bear habitat value is a prime factor considered by the Refuge in its acquisition program.
21	In any land transfer, recognize subsistence activity, consistent with state and federal laws.	Maintenance of traditional subsistence use is a purpose of Kodiak Refuge. Therefore, subsistence uses would continue on newly acquired land, subject to federal and state subsistence regulations.
22	When their lands are affected, involve village representatives and individuals associated with remote camps in land-acquisition planning.	The Service would continue to involve stakeholders in land-acquisition planning and transactions.
23	Consider bear habitat when conducting land disposals on state land.	This recommendation does not apply to the Refuge.
24	Pursue the acquisition of high-priority bear and salmon habitat on Afognak and Shuyak islands to complete the planned state park units there.	This recommendation does not apply to the Refuge. No private land occurs within the Refuge on Afognak Island.
25	Through land-use planning, maintain contiguous bear and salmon habitat (i.e., avoid patchwork development).	Kodiak Refuge purposes dictate maintenance of bear and salmon habitat. Land-use planning is a tool the Service uses to design and implement actions geared to achieve refuge purposes.

Appendix C: Kodiak Archipelago Bear Conservation and Management Plan Recommendations

Index No.	Recommendation	Refuge Management Direction
26	Retain state and federal agency access to salmon populations to allow monitoring of stock status. Retain historical salmon rehabilitation and enhancement options identified in Kodiak's comprehensive salmon plan (i.e., lake fertilization, stocking of barren lakes, hydroacoustic surveys of smolt and presmolt populations, use of barrier nets in terminal harvest areas, monitoring of weir sites and fish passes, lake monitoring through limnology assessment, smolt enumeration through mark and recapture, and conducting egg-takes for out-stocking programs).	Kodiak Refuge purposes require conservation of salmon populations and habitats in their natural diversity. Access to salmon populations within Refuge boundaries for monitoring of stock status will continue to be allowed. The Service will continue to allow historical rehabilitation and enhancement options on the Refuge, where appropriate.
27	Encourage private landowners (e.g., via the use of conservation easements, economic incentives, and education) to consider bear habitat when making land-management decisions.	The Service would continue to use a variety of approaches to encourage stewardship of bear habitat by private landowners in the Refuge.
28	Encourage a high level of cooperation among various landowners to achieve ecosystem management objectives for bears.	The Conservation Plan would establish several new objectives (e.g., 2.6, 3.5, 6.1, 10.2, 15.4, 15.5, and 15.6) which explicitly increase scope of collaboration on bear conservation actions.
29	Urge all parties to work cooperatively to ensure successful implementation of the conservation easement agreement on the Karluk and Sturgeon rivers watersheds.	The Service intends to successfully implement the easement agreement by maintaining productive relationships with Koniag, Inc., and the State of Alaska (Objective 10.2).
30	Urge ADF&G, in cooperation with USFWS, to identify key habitat linkages to ensure free movement of bears throughout their natural ranges and to avoid habitat fragmentation.	The Service would gain new understanding of bear habitat linkages through implementation of Objectives 2.4 and 2.6.
31	Encourage Bureau of Land Management, USFWS, the public, and landowners to together review controversial 17(b) easements and corridors, renegotiate terms and conditions if proved necessary to prevent resource damage, and consider relocating or relinquishing easements that adversely impact important bear habitat. The Citizens Advisory Committee (CAC) strongly recommends discouraging off-road vehicle (ORV) use on easements not currently used by ORVs.	The Service intends to manage 17(b) site and trail easements reserved to the Service through implementation of Objective 10.7, which would assist in accomplishing this recommendation.
	Minimize Habitat Degradation	
32	Urge ADF&G, in close cooperation with USFWS, to identify and monitor threats to bears and their habitats and take effective actions to alleviate these threats.	The Service would work with ADF&G to identify and monitor threats, as indicated in the Refuge's newly established bear objectives (Goal 2).

Index No.	Recommendation	Refuge Management Direction
33	Encourage appropriate agencies to mitigate damage to bear habitat.	Once damage is identified, the Service would apply appropriate mitigation mechanisms and solutions as required by federal law and Service policy.
34	Urge ADF&G, in close cooperation with USFWS, Kodiak Island Borough, and private landowners, to identify and map all important brown-bear habitats in the archipelago and design action strategies to protect them.	As indicated in bear Objectives 2.4, 2.5, and 2.8, the Service would continue to spearhead inventory and research actions geared to identify important bear habitat of the Refuge.
	Shearwater Peninsula	
35	State lands should continue to be managed consistent with terms of the 1981 Terror Lake Agreement.	The Refuge will continue to work with the state to ensure Shearwater Peninsula lands are managed consistent with the Cooperative Management Agreement for the Terror Lake Hydroelectric Project.
36	Alaska Department of Natural Resources should work with ADF&G and USFWS to identify important bear habitat within the Shearwater Peninsula that should be classified as wildlife habitat and protected from land disposal.	The Service looks forward to participating in this State-directed planning action.
37	Support fair and timely consummation of the proposed Old Harbor Village Corporation land exchange of Sitkalidak Island for lands on Kiliuda Bay on the Shearwater Peninsula.	This recommendation does not apply to the Refuge.
	Bear-Use Areas (i.e., bear concentration areas)	
38	USFWS should work with ADF&G and the Kodiak Unified Bear Subcommittee (KUBS) when reexamining refuge areas that are closed or proposed to be closed to the public and commercial operators.	In coordination with ADF&G, we have begun the process of re-evaluating key bear concentration areas in order to identify which areas should be subject to site-specific voluntary guidelines, possibly including seasonal use limits and/or day use only restrictions; conditions on special-use permits for commercial activities would mirror new guidelines and regulations. This evaluation will be ongoing as guidelines are put in place and monitoring of use occurs. Public input, including coordination with KUBS, would be sought during this process. For additional details, see the description of Alternative D, the Preferred Alternative, in Chapter II.

Appendix C: Kodiak Archipelago Bear Conservation and Management Plan Recommendations

Index No.	Recommendation	Refuge Management Direction
39	On USFWS land, restrict back-country use (e.g., require permits) before resorting to total closure to use (USFWS must be equipped to do so).	The Preferred Alternative recommends that general guidelines facilitating safe and conscientious viewing of bears be developed and made available to all refuge users; that voluntary site-specific guidelines—possibly including seasonal use limits and/or day use restrictions—be developed for use of certain bear concentration areas; and that regulatory restrictions on use be implemented only if voluntary guidelines prove ineffective. A need for a permit system was not identified, but could be considered in the future. One denning area is recommended for closure to snowmachine use. For additional details, see the description of Alternative D, the Preferred Alternative, in Chapter 2.
40	Continue to seek enhanced funding for identification and study of important and critical bear habitat.	The Refuge would implement new objectives (e.g., 2.4, 2.6, and 2.8) to further understanding of bear habitat. Proposals would be submitted to increase Service support for this work. The Service would harness additional funding support from cooperators once individual projects were initiated.
41	Manage critical bear habitat to prevent adverse impacts.	The Service would prevent and minimize impacts in bear concentration areas through implementation of the Preferred Alternative.
42	Consider restricting human use on important streams if there are documented adverse impacts on salmon stocks, bears, or both.	See discussion for Recommendation 38. The Refuge, in cooperation with ADF&G and KUBS, would determine site-specific needs for guidelines and restrictions if the Service adopts the Preferred Alternative of this Conservation Plan.
43	Mandate an open public process prior to restrictions and ensure that nothing in these recommendations will conflict with federal and state subsistence laws.	The Service is required by law to involve the public in land-use planning actions on Kodiak Refuge. Further, the Conservation Plan explicitly calls for increased coordination and public involvement (e.g., Goal 15).
	Motorized Access	
44	Create baseline information regarding ORV use throughout the archipelago in order to evaluate areas of problems.	We would document baseline data for the Refuge by implementing Objective 10.8.
45	The Citizens Advisory Committee (CAC) strongly recommends discouraging ORV use on easements not currently used by ORVs.	Site and trail easements identified under Section 17(b) of ANCSA would be managed as indicated in Objective 10.7. The Refuge manages several conservation easements where snowmachines, considered a traditional means of access, would be allowed. ORVs are allowed on 17(b) trail easements, but not on refuge lands.

Appendix C: Kodiak Archipelago Bear Conservation and Management Plan Recommendations

Index No.	Recommendation	Refuge Management Direction
46	Limit ORV use in important bear habitat areas (i.e., restrict recreational use of ORVs to designated-use areas [e.g., corridors] near villages).	The Service has legal authority (50 CFR 27.31 and 36.12) to limit ORV use of refuge lands. Use of ORVs is not allowed on Kodiak Refuge lands. Under the Preferred Alternative, snowmachine uses would be allowed throughout the Refuge except for one key bear denning area.
47	Develop statewide legislation to require the licensing and registration of ORVs.	This recommendation does not apply to the Refuge.
48	Kodiak Island Borough (KIB) coordinate efforts among ADF&G, USFWS, private landowners, ORV users, and other interested parties to initiate an ORV planning process.	A stakeholder planning process was initiated in 2002. The Service will participate in future planning efforts.
49	Commend private property owner' existing policies restricting motorized public access and encourage continuation of these policies.	This recommendation does not apply to the Refuge.
50	Formally recognize the Kodiak Snow Bruins for its policies regarding responsible snowmachine use.	This recommendation does not apply to the Refuge.
51	To minimize snowmachine impact on bears, additional research is needed to provide the facts necessary to identify highly sensitive areas of brown-bear habitat (e.g., denning areas).	The Service expects to study, in cooperation with ADF&G, winter distribution of bears on Afognak Island (Objective 2.6). Need for further research would be evaluated when the Refuge updates its wildlife inventory and monitoring plan two years after approval of the revised Conservation Plan (Objective 1.1).
52	Develop snowmachine limitations (e.g., closures) for sensitive denning areas.	Consistent with this recommendation, the Service's Preferred Alternative calls for seasonally closing one bear-denning area to public use.
53	Develop an education and enforcement plan for responsible use of ORVs to minimize negative impacts on bear habitat.	This recommendation is consistent with Goals 10 and 12. The Service would address this recommendation though collective implementation of Objectives 10.2, 10.3, and 10.8.
54	The CAC objects to ORV manufacturers and retailers whose advertising (commercials) encourage unethical and damaging use of ORVs on public lands.	This recommendation does not apply to the Refuge.
55	Seek the cooperation of ORV user groups to encourage more responsible use of ORVs while in bear habitat.	The Service will work with ORV user groups to ensure responsible use of ORVs where allowed on 17(b) easements.
56	Prohibit air boats and personal watercraft (e.g., jet skis) in important bear habitat.	This is current Service policy.
	Road Building in Bear Habitat	

Appendix C: Kodiak Archipelago Bear Conservation and Management Plan Recommendations

Index No.	Recommendation	Refuge Management Direction
57	Explore alternatives to building new roads in important bear habitat areas.	This recommendation does not apply to the Refuge.
58	Support closure (i.e., decommissioning) of obsolete logging roads on public and privately owned lands.	This recommendation does not apply to the Refuge.
59	Continue existing practices to limit motorized public access to logging roads.	This recommendation does not apply to the Refuge.
Chapter 4: Harvest Issues		
Management of Bear-Harvesting Activities		
60	Endorse ADF&G's current bear-management objectives, as modified by recommendations made by the CAC in this management plan.	The Service endorses ADF&G's bear-management objectives and incorporated many of the CAC's recommendations into this Conservation Plan as objectives.
61	Continue to prohibit the baiting of bears throughout the Kodiak archipelago.	State regulations prohibit bear baiting on and off the Refuge.
62	Manage bear populations on carrying capacity and density as well as on harvest objectives.	From the outset, the Service has worked closely with ADF&G to develop and implement state-of-the-art methods to evaluate population status and monitor population trends. The Service's continued support is specifically addressed in Objectives 2.1, 2.2, and 2.6.
63	Recommend that ADF&G refine population estimates in order to maintain a bear population that can sustain a 6 percent annual sport harvest.	We address collaboration on refinement of population and mortality estimates in bear Objectives 2.1, 2.2, and 2.6.
64	Develop a co-management agreement with villages to reduce defense of life or property [bear] mortalities (DLPs) in and around villages and to provide economic incentives to conserve bears; this would include expansion of bear-safety practices, solid-waste management, encouraging Natives to become registered big-game guides, and consideration of bear-hunting permits in areas adjacent to villages.	This recommendation does not apply to the Refuge.

Index No.	Recommendation	Refuge Management Direction
65	<p>ADF&G, USFWS, and other appropriate groups should develop informational and educational materials to help minimize bear-human conflicts and thereby improve hunter image. These materials should be developed for multimedia use and include the following subjects (also see chapter 8, “Education” in the Kodiak Archipelago Bear Conservation and Management Plan [KABCMP]):</p> <ul style="list-style-type: none"> ▪ trip planning and physical condition; ▪ meat handling and storage skills; ▪ bear behavior and safety, and; ▪ a safety-in-bear-country video for wide distribution and use. 	This recommendation is consistent with Goals 10 and 12; specifically to Objectives 10.3, 11.2, 12.2, and 12.8.
	Village Subsistence Use of Kodiak Bears	
66	Continue to provide opportunities for subsistence uses of bears by local residents, consistent with conservation provisions essential to sustain the resource.	The Service would continue to provide opportunities for subsistence use of Refuge lands as directed by Refuge purposes.
	Sport Hunting of Kodiak Bears	
67	Maintain the tradition of bear hunting, consistent with the conservation management and regulatory regime that avoid overharvest of the resource.	Bear hunting is a legitimate, compatible public use of Refuge lands. Management of bear hunting on the Refuge is carefully regulated by ADF&G, in cooperation with the Refuge.
68	Maintain the tradition of bear hunting, consistent with the highest ethical standards of safety and fair chase.	Bear hunters are required to adhere to state law on the Refuge. State and Refuge leaflets discourage unethical practices.
69	Ensure that all hunters are provided with the Boone & Crockett Fair-chase statement and that it is printed on all ADF&G and USFWS materials relating to hunting, as appropriate.	This statement would be included on future hunting leaflets developed by the Refuge.
70	If reductions in harvest are necessary, consider ways of reducing the female harvest prior to reducing permit numbers (i.e., skull-sex minimums in southwestern Kodiak).	As indicated in Objectives 2.1, 2.2, 2.3, and 2.6, the Service would continue to work closely with ADF&G to collect essential population data used to support harvest management decisions.
71	To better achieve wildlife-acceptance capacity (see section 5.3 in KABCMP) along the Kodiak road system, increase bear harvest by extending the spring bear-hunting season to May 31.	This recommendation does not apply to the Refuge.
	Guiding	

Appendix C: Kodiak Archipelago Bear Conservation and Management Plan Recommendations

Index No.	Recommendation	Refuge Management Direction
72	Strongly support the restrictive guide system currently in use on federal lands of the Kodiak archipelago and encourage reinstatement of this system on other lands.	The guide system currently in effect would continue under the Preferred Alternative; implementation would continue as described in 50 CFR 36.41 unless changed through the regulatory process, which requires public notification and provides for public input.
73	Support the Alaska Board of Game resolution 98.127, 1998 (see Appendix R in KABCMP), requesting reinstatement of the Big-Game Commercial Services board.	Re-establishment of regulatory authority over big-game guide-outfitters and transporters by the State of Alaska would be supported by the Service.
74	Guides/outfitters and transporters should make bear-safety educational materials available to elk hunters.	Objective 11.2 address this issue.
	Other Resource-Extraction Activities—Sport Hunting	
75	Urge ADF&G to continue to track the number of bears killed by deer, elk, and goat hunters to minimize such bear mortality and make a serious effort to mitigate this problem through education of big-game hunters on how to avoid dangerous situations involving bears.	The Refuge strongly supports ADF&G's systematic monitoring of all human-caused bear mortality. The Service would augment the Refuge's effort by implementing Objective 2.1.
76	Require mandatory hunter education, which should include bear-safety instruction, before entering the field in GMU 8.	This would apply to refuge lands if adopted by the state.
77	Encourage hunters to quickly remove kill meat to a safe distance from the kill site.	We would continue to provide subsistence hunters with ADF&G and Refuge leaflets describing specific measures they can adopt to avoid bear conflicts. ADF&G is responsible for disseminating information to sport hunters.
78	Using the ADF&G Web site and brochures, educate hunters about terrain issues.	This recommendation does not apply to the Refuge.
79	Urge ADF&G to develop other educational tools (e.g., videos using local people) to educate hunters about hunting in bear country.	This Refuge would use these tools in its educational programs if they become available from the state.
80	Submit an article about hunting on Kodiak (written by Hank Pennington) to a sporting magazine.	This recommendation does not apply to the Refuge.

Index No.	Recommendation	Refuge Management Direction
81	Place educational materials in places (and with people) where they can be readily accessed (e.g., Web site, airport, magazines, tourism offices, USCG base, villages, guide/outfitters, public libraries, schools, museums, ferries, tribal council offices, Fish and Wildlife Protection offices, Alaska State Park offices and state parks staff, public radio, and television).	This recommendation is consistent with Objective 11.2 and Goal 12.
82	Recommend strongly that elk hunters hunt in groups or teams.	The Service would continue to provide subsistence elk hunters with ADF&G and Refuge leaflets describing specific measures they can adopt to avoid bear conflicts. ADF&G is responsible for disseminating information to sport hunters.
83	Limit the harvest of deer to the number of animals the hunter can handle.	The Service would continue to provide subsistence deer hunters with ADF&G and Refuge leaflets describing measures they can adopt to avoid bear conflicts. ADF&G is responsible for disseminating information to sport hunters.
84	Encourage hunters to promptly gut the harvested animal and move it to a safe, visible location.	The Service would continue to provide subsistence hunters with ADF&G and Refuge leaflets describing specific measures they can adopt to avoid bear conflicts. ADF&G is responsible for disseminating information to sport hunters.
85	Encourage hunters to store meat responsibly so it won't attract bears (e.g., high in trees, within electric fences); use of mini-electric fences is advised.	The Service would continue to provide subsistence hunters with ADF&G and Refuge leaflets describing specific measures they can adopt to avoid bear conflicts. ADF&G is responsible for disseminating information to sport hunters.
86	Encourage hunters to be aware of carcasses or gut piles from animals harvested by others.	the Service would continue to provide subsistence hunters with ADF&G and Refuge leaflets describing specific measures they can adopt to avoid bear conflicts. ADF&G is responsible for disseminating information to sport hunters.
87	Urge ADF&G, USFWS, and other appropriate groups to develop educational materials to eliminate conflicts between deer hunters and bears (e.g., how to handle meat, safety, location, bear posture).	This recommendation is consistent with Objective 11.2 and Goal 12.
	Other Resource-Extraction Activities—Commercial Fishing	

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Index No.	Recommendation	Refuge Management Direction
88	Salmon escapement goals should continue to allow for natural predation by bears and other wildlife.	This recommendation is consistent with Objective 7.2. In addition, the Service would continue to support existing ADF&G policy that acknowledges and accepts bear predation on salmon.
89	Continue evaluating species-specific salmon escapement levels against drainage-specific bear use of salmon; investigations should emphasize an ecosystem overview (e.g., salmon biological escapement goal [BEG] rather than bear densities).	This recommendation is consistent with Objective 7.2. Presently, escapement estimates for Dog Salmon River specifically account for bear use of salmon. The Service would work with ADF&G and stakeholders to apply this same model to planning escapement levels on other Refuge drainages.
90	Continue monitoring salmon escapement trend data and subsequent species-specific productivity; evaluate salmon harvest strategies for all human user groups.	The Service would continue to routinely evaluate salmon escapement, productivity, and harvest strategies potentially affecting status and trend of salmonid stocks that use the Refuge (see Goal 7).
	Other Resource-Extraction Activities—Sport Fishing	
91	Urge ADF&G to evaluate whether increased human activity will lead to increased negative bear-human encounters in areas of especially high bear use.	The Service would continue, in cooperation with ADF&G, to research bear-human interactions at bear concentration areas easily accessed by the public, as directed by Refuge Objective 2.4.
92	Identify areas where hardened fishing campsites would minimize bear-human conflicts.	The Service would continue to monitor public use in drainages intensively used by the public for recreational activities to evaluate whether camping area management is needed (see Objective 10.1). The Preferred Alternative and the conservation easement agreement with Koniag, Inc., allow for improvement of camping areas where deemed appropriate.
93	Encourage KUBS, ADF&G, and USFWS to work together to identify areas where there may need to be restrictions on camping and other activities because of the potential displacement of bears.	In coordination with ADF&G, the Service has begun the process of re-examining bear concentration areas to determine which areas should be subject to site-specific guidelines and, potentially, regulatory restrictions. This evaluation will continue over time. Public input, including coordination with KUBS, will be sought during this process.
94	Designate food-storage areas, especially at Bare Creek.	Since 2000, the Service has provided the public with a temporary, fortified food and waste storage facility near the confluence of Bare Creek and the Ayakulik River. This action, or its replacement, would be continued under the Preferred Alternative.
95	Continue use of electric fences or other practical means of excluding bears from anglers' food caches on Kodiak National Wildlife Refuge (KNWR) and in other areas and jurisdictions of the Kodiak archipelago.	The Refuge will continue to provide air-taxi operators with bear-resistant storage containers and to provide the fortified storage facility at Bare Creek.

Index No.	Recommendation	Refuge Management Direction
96	Develop an educational program for anglers in cooperation with professional organizations, agencies, and sportsmen's groups to include information about proper food and fish storage and cleaning of fish.	This recommendation is consistent with Objective 11.2 and Goal 12.
97	Encourage the use of bear-resistant food containers and require their use in areas of high bear concentrations (e.g., along prime sport fishing streams).	This recommendation is consistent with Objective 11.2 and Goal 12. The Refuge will continue to provide air-taxi operators with bear-proof storage containers. This could be included in site-specific voluntary guidelines and could be incorporated into potential regulatory actions, if necessary, under the Preferred Alternative.
98	In certain bear-feeding areas, there is a predictable, seasonal increase in potential bear-human conflicts related to sport fishing activities. The CAC recognizes that ADF&G Division of Sport Fish biologists are not authorized to write emergency orders to manage a sport fishery to address bear conservation. The CAC recommends that ADF&G Divisions of Sport Fish and of Wildlife Conservation cooperatively prepare an integrated management plan for approval by the combined Board of Fisheries and Board of Game, with the prime purpose of the management plan being to reduce bear-human conflicts associated with sport fishing. This plan should determine the carrying capacity for anglers and guide operations at favored fishing sites and the setting of limits necessary to maintain a high-quality wilderness sport fishing experience.	The Refuge would support such a plan and would provide assistance with its preparation, if requested.
	Other Resource-Extraction Activities—Harvest of Plants and Berries	
99	Develop methods to objectively document annual abundance and availability to bears of vegetation in representative habitats on the Kodiak archipelago.	The Service would implement Objectives 2.8 and 3.6 to specifically address this recommendation.
100	Research the impact on bears of commercial use of salmonberries and blueberries.	Although gathering of resources—such as berries, mushrooms, and antlers—for commercial purposes may be authorized on the Refuge, the importance of berries as a food source for bears would be considered before authorizing such use. Objectives 2.8 and 3.6 address the use of berries and berry-producing shrubs as a food source for both bears and deer on the Refuge.
	Regulations and Enforcement	

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Index No.	Recommendation	Refuge Management Direction
101	Ensure a level of cooperative state and federal law enforcement deemed essential to achieve compliance with conservation laws, rules, and regulations; preventive education should be the first priority in this regard.	This recommendation is consistent with Objectives 10.3, 11.2, 15.2, 15.4, and 15.5.
102	Provide better funding and staffing of the state Division of Fish and Wildlife Protection [now Bureau of Wildlife Enforcement] to achieve the optimum level of law enforcement presence on the Kodiak archipelago.	This recommendation does not apply to the Refuge.
103	Urge state and federal wildlife protection and enforcement agencies to take appropriate actions under existing law to prevent trade in Kodiak bear parts.	Service law enforcement officers (Refuge staff, special agents, wildlife inspectors) would continue working with state officers to enforce pertinent federal and state laws (e.g., Lacey Act, National Wildlife Refuge Act) that prohibit commerce in bear parts.
104	Identify appropriate elders and leaders to work with village public safety officers (VPSOs) to help educate residents about conservation laws, rules, and regulations.	The Refuge would facilitate this effort by directing its information technician to provide VPSOs with information on laws and policies that pertain to the Refuge. Such action is consistent with Objective 15.4.
105	To foster cooperation, request that the Alaska Department of Public Safety, Division of Fish and Wildlife Protection [now Bureau of Wildlife Enforcement], and the U.S. Fish and Wildlife Service conduct annual outreach programs, explaining regulations and enforcement issues (including DLPs) in communities throughout the Kodiak archipelago.	This recommendation is consistent with Objectives 10.3, 11.2, and 15.6.
106	ADF&G and USFWS work with the USCG to identify those areas and seasons in which bears and hunters are particularly vulnerable to harassment by overflying and to encourage reinforcing USCG policy minimizing low overflight in these areas.	This recommendation is consistent with Goal 15. This recommendation was implemented on April 30, 2002, when the Refuge, ADF&G, and USCG signed a memorandum of agreement. This agreement directs the Refuge and ADF&G to increase communication with USCG Air Station officers and staff and to provide them with information they can use to prevent displacement of wildlife and interference with human hunting activities.
107	Continue education cooperation among the agencies annually, or more often as required, to alert new air crews to these concerns and policies and to continue good relations within the communities.	This recommendation was implemented. See response to recommendation 105.
108	Encourage USFWS to make enforcement of ORV regulations a priority on the Kodiak National Wildlife Refuge.	This recommendation is consistent with Objective 10.3, 10.7, and 11.2.

Index No.	Recommendation	Refuge Management Direction
109	Cross-deputize Division of Fish and Wildlife Protection [now Bureau of Wildlife Enforcement] officers and Kodiak National Wildlife Refuge officers to provide authority for enforcing pertinent state and federal sport fish, wildlife, and refuge laws.	Presently, one Refuge officer is cross-deputized. The Service's goal is to cross-deputize all Refuge officers.
	Chapter 5: Redefining Kodiak Bear-Management Strategy	
	Redefining Kodiak Bear-Management Strategy	
110	ADF&G manage bear populations based on carrying capacity and density as well as on harvest objectives.	The Refuge has worked closely with ADF&G to develop and implement state-of-the-art methods to evaluate population status and monitor population trend. The Service's continued support is specifically addressed in Refuge Objectives 2.1, 2.2, and 2.6.
111	ADF&G reduce the bear population on northeastern Kodiak Island (i.e., along the road system; area 30 of management subunit #2 in Figure 5-1 of KABCMP) by 10-20 percent below the current estimated level through liberalized sport hunting seasons in the spring and issuance of appropriate depredation permits.	This recommendation does not apply to the Refuge.
112	Urge ADF&G and USFWS to dedicate funds to survey Afognak Island and the Kodiak road system (management subunit #1 and area 30 of management subunit #2) as soon as possible to determine accurate bear populations.	The Service would implement Objective 2.6 to specifically address Afognak bear research. Presently, the Refuge and ADF&G are seeking cooperative funding to support this research. The Service would address the need, role, and priority of research of road system bears in a wildlife inventory and monitoring plan scheduled for completion two years after completion of the revised Conservation Plan (Objective 1.1).
113	Encourage ADF&G, USFWS, and village tribal councils to work together to gather data on bear populations and carrying capacity for management purposes.	The Service would implement Objectives 2.2 and 2.3 to address this recommendation.
	Chapter 6: Bear-Human Interactions	
	Habituation and Food-Conditioning of Kodiak Bears	
114	To understand human habituation and its effects on bears, the CAC recommends that ADF&G and USFWS conduct long-term research into the effects of sport fishing and bear viewing on Kodiak bears.	The Service would continue, in cooperation with ADF&G, to research bear-human interactions at bear concentration areas easily accessed by the public, as directed by Objective 2.4.
115	Enforce regulations prohibiting the feeding of food, garbage, or fish to bears.	If the Preferred Alternative were implemented, the Service would expand its capability to enforce pertinent federal and state regulations by increasing law enforcement staff.

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Index No.	Recommendation	Refuge Management Direction
116	Provide education to prevent food conditioning of bears by humans.	This recommendation is consistent with Goal 12 and Objectives 11.2, 12.2, and 15.4.
	Defense of Life or Property Kills	
117	Continue to follow state regulations regarding bears killed in DLP.	If the Preferred Alternative were implemented, the Service would expand its capability to enforce pertinent federal and state regulations by increasing law enforcement staff.
118	The Kodiak Fish and Game Advisory Committee should propose a change in state hunting regulations to establish and authorize use of depredation permits.	This recommendation does not apply to the Refuge.
119	ADF&G should develop strict criteria for issuance of depredation permits for problem bears. These permits should be issued only after reasonable, nonlethal methods to deal with problem bears have been exhausted.	This recommendation does not apply to the Refuge.
120	Conduct research and monitoring to evaluate the effectiveness of depredation permits.	This recommendation does not apply to the Refuge.
121	Encourage village residents, VPSOs, and appropriate agencies to work together to develop information and education materials and strategies to reduce bear-human conflicts in the villages.	The Refuge and ADF&G share interests in this recommendation. For its part, the Refuge would implement Objectives 12.2, 15.4, and 15.6 to improve harmony between bears and residents of village communities.
122	State troopers and USFWS should provide information to rural residents about the laws, rights, and duties regarding DLPs.	The Service would address this recommendation when we implement Objectives 10.3 and 12.2, and 15.4.
123	Through a co-management agreement with the state, use village committees and VPSOs to take responsibility for working on DLP issues in villages, including solid-waste management issues; this should include a significant educational component (e.g., school, videos, and employing elders).	This recommendation does not apply to the Refuge.
	Solid-Waste Management and Storage of Human and Pet Food	
124	Encourage the KIB and individual communities to develop community-specific waste-management plans that include implementation and funding strategies.	This recommendation does not apply to the Refuge.

Index No.	Recommendation	Refuge Management Direction
125	Encourage village governments to seek federal, state, and local funding such that village landfills can meet federal standards and Alaska Department of Environmental Conservation (DEC) regulations and such that those regulations can be enforced at solid-waste disposal sites, thereby reducing their attractiveness to bears.	This recommendation does not apply to the Refuge.
126	Request the State of Alaska to increase funding for the Revenue Sharing/Safe Communities programs, which would provide additional funding to small city governments.	This recommendation does not apply to the Refuge.
127	Encourage cities to utilize additional funding for employment of electric fencing, incineration, and bulldozers for regular and frequent covering of garbage at landfills.	This recommendation does not apply to the Refuge.
128	Enforce DEC regulations at dump sites, thereby reducing their attractiveness to bears.	This recommendation does not apply to the Refuge.
129	Enforce existing landfill regulations from the federal government and for DEC.	This recommendation does not apply to the Refuge.
130	Distribute the ADF&G Policy on Solid Waste Management and Bears in Alaska to agencies and communities and ensure that it is adhered to.	This recommendation does not apply to the Refuge.
131	Encourage owners of remote cabins and lodges to use properly managed public landfills whenever possible; when private solid-waste disposal sites are necessary, encourage landowners to work with wildlife managers to devise appropriate ways to minimize bear encounters.	The Service would continue to apply the special use permitting process to encourage appropriate solid waste management by Refuge permit holders.
132	Prohibit, by borough or other local ordinance, bear viewing at solid-waste disposal sites.	This recommendation does not apply to the Refuge.
133	Clear areas adjacent to landfills of trees, brush, and tall grass that can serve as cover for bears (e.g., the distance to be cleared depends on the terrain and habitat of the area and should be determined with assistance of wildlife managers).	This recommendation does not apply to the Refuge.

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Index No.	Recommendation	Refuge Management Direction
134	Cover landfills often and thoroughly, keeping the active area of waste deposition minimal (e.g., at sites where bears are frequent visitors, increased covering and/or compaction of garbage will reduce the area in which bears can search for food; as that active area of garbage gets smaller, competition among bears increases, and subdominant bears opt to find other food sources).	This recommendation does not apply to the Refuge.
135	Encourage recycling programs to reduce the amount of waste deposited in landfills.	This recommendation does not apply to the Refuge.
136	If possible, use incineration to reduce space necessary for landfills and to reduce odors and food sources.	This recommendation does not apply to the Refuge.
137	Install electric fencing around a landfill after the site has been cleared and bear numbers have declined through reduction of active areas. (Electric fences should be well-designed to suit the needs of individual sites and maintained by qualified personnel. Periodic inspections should be scheduled to look for damaged portions of the fences, to remove debris from the fences, and to look for places where bears have tried to burrow under the fences. The fences should remain electrified at all times except during maintenance.)	This recommendation does not apply to the Refuge.
138	Install safe, effective, and easy-to-operate gates (e.g., self-closing, if possible) at each landfill and make specific individuals responsible for ensuring that gates remain closed.	This recommendation does not apply to the Refuge.
139	Prior to erecting an electric fence, and immediately after it is up and running, inform residents of the program and the fact that some bears will be displaced. (Note that an increase in bear-human encounters can be expected for the first couple of years the fence is operating.)	This recommendation does not apply to the Refuge.
140	Encourage wildlife managers, residents, and civil officials to work together to devise improvements to keep bears out if they continue to gain access to properly designed landfills.	This recommendation does not apply to the Refuge.
	Solid-Waste Management and Storage of Human and Pet Food—Larsen Bay Solid-Waste Disposal Site	

Index No.	Recommendation	Refuge Management Direction
141	Remediate the Larsen Bay solid-waste site situation in a stair-step approach: <ul style="list-style-type: none"> ▪ Clear the area around the waste site of alders and brush to create a barren zone to make the bears uncomfortable. ▪ Quickly bury the garbage. ▪ Construct an electric fence around the site, restricting bear access to the site. 	This recommendation does not apply to the Refuge.
142	Seek funding for the necessary measures to reduce food-conditioning and habituation by humans of bears at the Larsen Bay solid-waste disposal site.	This recommendation does not apply to the Refuge.
143	The CAC recognizes the Larsen Bay waste site is a high-priority area for remediation and should be addressed as quickly as possible.	This recommendation does not apply to the Refuge.
144	Prohibit, by borough or other local ordinance, bear viewing at solid-waste disposal sites.	This recommendation does not apply to the Refuge.
	Solid-Waste Management and Storage of Human and Pet Food—Food Storage and Solid-Waste Management	
145	Strictly enforce regulations prohibiting feeding of bears.	If the Preferred Alternative were implemented, the Service would expand its capability to enforce pertinent federal and state regulations by increasing law enforcement staff.
146	Develop better regulations and enforcement regarding food, garbage, and fish-handling in bear areas.	The Service would improve its capability to reduce bear-human conflicts via education and regulation approaches by implementing Objectives 10.1, 10.2, and 10.3.
147	Vigorously enforce littering laws and laws that prohibit feeding bears. Encourage residents to work within their neighborhoods to identify and correct potential problem areas.	The Service would increase our capability to enforce littering laws and prohibit feeding of bears through implementation of Objective 10.3.
148	Encourage residents to keep garbage in enclosed areas and to empty garbage often during the summer months. Plastic trash bags should be used to line garbage cans, and cans should be washed periodically.	This recommendation does not apply to the Refuge.
149	Encourage residents to store pet and domestic livestock food indoors. (If pets are fed outdoors, care should be taken to only provide the amount of food that can be eaten within an hour).	This recommendation does not apply to the Refuge.

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Index No.	Recommendation	Refuge Management Direction
150	Encourage residents to house pets and domestic livestock in bear-resistant enclosures when not attended. (Electric fencing has been proved as an effective and inexpensive tool for separating bears and livestock).	This recommendation does not apply to the Refuge.
151	Remove trees, brush, and grass that can serve as cover for bears near residences, bus stops, playgrounds, garbage-storage areas, and pet or livestock pens.	This recommendation does not apply to the Refuge.
152	Ensure that residents have access to information on how to use noise-makers and lighting to chase bears from their yards; rubber bullets, bean-bag shells, and pepper spray are also effective, but should only be used by trained operators (prior to using any deterrents, all potential food sources should be removed from the area).	This recommendation does not apply to the Refuge.
153	Use bear-resistant dumpsters (e.g., all metal, designed in a manner that is compatible with existing collection equipment, relatively easy to use by most people, and preferably with self-closing lids) wherever there is dumpster service on Kodiak Island; close coordination with waste-management contractors is essential.	This recommendation does not apply to the Refuge.
154	Locate dumpsters as far as possible from school bus stops and other places where children congregate; do not place dumpsters near natural food sources (such as salmon streams) or domestic livestock; brush-clearing and lighting near dumpsters are desirable.	This recommendation does not apply to the Refuge.
155	Establish appropriate collection schedules to ensure that dumpsters do not become overly full.	This recommendation does not apply to the Refuge.
156	Encourage KIB to monitor waste-collection schedules and take appropriate action, as needed.	This recommendation does not apply to the Refuge.
157	If there are persistent bear problems in an area, temporarily remove the dumpster; if it is removed, a sign should be placed at the site to inform residents of when it was removed, why it was removed, where it was taken, and when it is expected to be returned.	This recommendation does not apply to the Refuge.

Index No.	Recommendation	Refuge Management Direction
158	In villages, assign specific individuals to provide collection services (e.g., emptying dumpsters, if appropriate); these individuals should receive adequate compensation for their duties and should be held accountable for their performance.	This recommendation does not apply to the Refuge.
159	Encourage everyone using remote areas to remove all solid waste from the area (i.e., pack it in and pack it out).	Consistent with Goals 10, 11, 12, and 15, the Service would expand its education and outreach efforts to further encourage and require proper practices for disposal of solid waste.
160	As soon as possible, seek funding from local, state, and federal sources to implement appropriate solid-waste management improvements. (The KIB program should be developed as a blueprint example of how to keep bears from getting food or garbage from areas of human habitat).	This recommendation does not apply to the Refuge.
161	<p>Recognize the following groups for their efforts to reduce bear-human encounters around Kodiak and encourage continuation and expansion of these activities:</p> <ul style="list-style-type: none"> ▪ Fish processors for collecting garbage from setnet sites ▪ Air-taxi operators for taking out garbage for campers, hunters, and anglers ▪ Logging camps on Afognak and remote cannery operators for developing effective waste-management techniques ▪ Alaska State Parks and Kodiak National Wildlife Refuge for developing and enforcing waste-management techniques ▪ Kodiak Island Borough and the U.S. Coast Guard for taking leadership roles in establishing effective solid-waste management techniques on the Kodiak Road system 	The Refuge will continue efforts to reduce bear-human encounters. Thank you for the compliment.
162	To minimize bear problems, educate people about handling personal property, including chicken pens, drying sheds, food-storage areas, and pet food.	This recommendation does not apply to the Refuge.

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Index No.	Recommendation	Refuge Management Direction
163	Develop an intergovernmental working group composed of representatives from wildlife management agencies (ADF&G, USFWS), the Kodiak Fish and Game Advisory Committee, public safety agencies (Alaska State Troopers, local and military police departments), local governments (city, village, and borough), and Alaska State Parks. The working group should meet at least once each spring to review current policies to reduce bear-human encounters and to coordinate efforts for the upcoming year.	This recommendation is consistent with Goal 15.
164	Establish lines of communication among agencies with various areas of responsibility.	The Refuge fully supports efforts to improve collaboration among agencies (Goal 15).
165	Provide public information on actions planned by the intergovernmental working group and encourage public input and questions on those actions.	This recommendation is consistent with Goal 15.
166	Make available public information in a variety of media, including print, radio, public television, and personal appearances; attempt to meet the special needs of various cultures and ethnic groups.	This recommendation is consistent with Goal 15.
167	Make the public outreach program ongoing, with emphasis on bear behavior and suggestions on how to minimize negative bear-human interactions. (Comparisons of bear behavior around food and garbage to dog behavior in similar situations can be helpful in improving understanding).	This recommendation is consistent with Goal 12.
168	Advertise laws and regulations relating to leaving food or garbage in a manner that attracts wildlife.	This recommendation is consistent with Objectives 10.2, 10.3, and 11.2.
169	Encourage agencies to disclose management actions such as moving dumpsters, citing individuals for littering, aversive conditioning of bears, and lethal actions against problem bears. (All actions relating to bear-human interactions are matters of public record).	This recommendation does not apply to the Refuge.

Index No.	Recommendation	Refuge Management Direction
170	Encourage the public to report to authorities observations of bears near human habitations (these observations can help to track the activities of individual bears and allow managers to alert school principals and residents of areas in which to be especially cautious; observations should not be advertised to the general public, however, to avoid encouraging peoples' seeking out bears).	Holders of refuge special-use and public-use-cabin permits are required to report bear problems to the Refuge.
171	Disseminate to the public information about ADF&G's policy regarding relocation of nuisance bears, which the CAC endorses.	Refuge staff would advise public who encounter nuisance bears on Refuge of ADF&G policy.
172	Locate on-site bear safety reminders on dumpsters (e.g., "Be Bear Aware") and at collections sites (i.e., public landfills).	This recommendation does not apply to the Refuge.
173	Ensure that visitors are made aware of the efforts to keep bears away from human food and garbage; individual responsibilities of visitors should be outlined and disseminated so that they recognize their role in preventing problems.	This recommendation is consistent with Objectives 10.1, 10.2, 10.3, 11.2, and 12.2.
	Livestock Ranching	
174	Support the KIB Commercial Grazing and Conservation Zoning Plan.	The Service contributed to development of this plan and supports its implementation.
175	Encourage ranchers to continue practices that minimize bear predation.	This recommendation does not apply to the Refuge.
176	Recognizing the seriousness of foot and mouth disease and chronic wasting disease, the state should continue research about them and develop strategies to prevent their occurrence in Alaska.	The Service acknowledges this concern and would support collective guarding action to prevent problems, as directed in Objective 1.4.

Index No.	Recommendation	Refuge Management Direction
	Bear-Viewing Activities—Public-Use Restrictions on the Kodiak National Wildlife Refuge	
177	Recommend that KNWR initiate a step-down re-evaluation process for the Public Use Management Plan (PUMP) area closures in light of the fact that new data are needed (research data are 12 yr old) and that the public-use potential, on which some of the closures were based, has not been fulfilled and likely won't be.	In coordination with ADF&G, the Service has begun the process of re-evaluating key bear concentration areas in order to identify which areas should be subject to site-specific voluntary guidelines, possibly including seasonal use limits and/or day use only restrictions; conditions on special-use permits for commercial activities would mirror new guidelines and regulations. This evaluation will be ongoing as guidelines are put in place and monitoring of use occurs. Public input, including coordination with KUBS, will be sought during this process. For additional details, see the description of Alternative D, the Preferred Alternative, in Chapter II.
	Bear-Viewing Activities—Frazer Fish Pass	
178	Recognizing the practical benefits of the solution implemented by USFWS for guided sport fishing, and in order to keep the rules fair and consistent for guided and unguided anglers, the following change should be made to State of Alaska sport fishing regulations: modify waters closed to sport fishing on the Dog Salmon River to prohibit fishing within 200 yd downstream of the Frazer fish pass from June 1 through August 31. (By recommending this closure, the CAC does not imply support for sport-fishing closures in other systems on the Kodiak archipelago to create bear-viewing opportunities.)	This recommendation was instituted by the state in 2002.
	Bear-Viewing Activities—Bear Viewing	
179	Evaluate bear-viewing sites around the archipelago using a set of important criteria such as private or public land ownership, number of human users and timing of bear use, accessibility to visitors, existing viewing use, proximity to local communities or dwellings, competing uses, and compatible uses.	The Service assessed status and trend of bear viewing {Allen, 2002 #456} and has begun the process of re-evaluating status of bear concentration areas, some of which are used for bear viewing (or have potential to support viewing) (see recommendation 176). The Service would continue to apply these findings, and information from other sources, to guide management of public use in bear concentration areas on the Refuge.

Index No.	Recommendation	Refuge Management Direction
180	Develop a general set of operational guidelines relating to bear-viewing sites that protect all natural resources.	If the Preferred Alternative were implemented, the Service would work closely with ADF&G and stakeholders to identify and institute appropriate guidelines for management of bear viewing at O'Malley River. General guidelines promoting safe and conscientious viewing of bears would be developed for refugewide use (possibly adoption of <i>Best Practices for Viewing Bears</i> by ADF&G and NPS {ADF&G, 2003 #686}) and voluntary site-specific guidelines, possibly including seasonal use limits and/or day use restrictions, would be developed for management of public use at certain accessible concentration areas.

Index No.	Recommendation	Refuge Management Direction
181	<p>Review the following lands within the borders of KNWR to consider suitability for re-opening (access to some of the following public and private lands is restricted or closed to the public, to commercial operators, or to both):</p> <ul style="list-style-type: none"> ▪ Area closed by regulation to all entry: <ul style="list-style-type: none"> - O'Malley River, June 25–September 30 (2,560 acres) ▪ Areas administratively closed to all commercial users and their clients: <ul style="list-style-type: none"> - Connecticut Creek, July 15–August 31 (2,262 acres) - Dog Salmon River, June 25–August 31 (960 acres) - Humpy Creek, July 15–September 15 (2,879 acres) - Seven Rivers, July 15–September 15 (3,796 acres) ▪ Areas administratively restricted to day-use only by all commercial users and their clients: <ul style="list-style-type: none"> - Red Lake River/Lakeshore, July 1–August 31 (1,746 acres) - Upper Thumb River, July 1–August 31 (613 acres) - Southeast Creek, July 15–August 31 (1,108 acres) - Little River Lake/Lakeshore, July 15–August 31 (480 acres) - Deadman Bay Creek, July 15–August 31 (951 acres) ▪ Access restrictions imposed by private landowner (permit required): <ul style="list-style-type: none"> - Karluk Lake and River 	<p>The Service reviewed and identified several management strategies for application at O'Malley River, including the Preferred Alternative, which would re-establish a formal viewing program at the site with both agency-operated and commercially guided viewing opportunities. The Service also identified a number of management strategies for other bear concentration areas, including the Preferred Alternative, which is discussed under recommendations 38 and 176. For additional details, see the description of Alternative D, the Preferred Alternative, in Chapter 2.</p>

Index No.	Recommendation	Refuge Management Direction
182	<p>Review the following areas, which may also have restrictions or closures to public access, to commercial operators, or to both:</p> <ul style="list-style-type: none"> ▪ Frazer fish pass- Lower Dog Salmon Falls ▪ Red Lake ▪ Southeast Creek ▪ Ayakulik river at its confluence with the Red River 	<p>See the Service's response to recommendation number 180. Public discussions between 2000 and 2003 resulted in new management actions at Frazer fish pass and Ayakulik River areas. In 2001, the state changed sport fishing regulations in the vicinity of the Frazer fish pass. In 2003, a cooperative working group formulated and established guidelines for public occupancy and use of the lower Ayakulik River, including its confluence with Red Lake River.</p>
183	<p>If sites are selected for formal regulation as bear-viewing sites, formulate rules and guidelines for the use of viewing areas to address the following:</p> <ul style="list-style-type: none"> ▪ access ▪ camping ▪ education ▪ bear safety ▪ group size limits ▪ firearm possession and use by viewers ▪ food and garbage handling and storage ▪ sport fishing 	<p>If the Preferred Alternative were implemented, a formal bear-viewing program would be developed at O'Malley River. This program would be based on a framework of operational guidelines formulated as part of a collaborative public process that would address the areas identified in this recommendation. The Preferred Alternative also calls for establishment of voluntary guidelines and day-use restrictions at other easily accessible bear concentration areas, as discussed previously (see recommendations 38, 176, and 179).</p>
184	<p>Investigate sites on the northern archipelago for possible bear-viewing locations (e.g., Paul's Lake, Litnik, Portage, Foul Bay, Hidden Lake).</p>	<p>Hidden Lake occurs in the Afognak Unit of Kodiak Refuge. the Service considers it to have low potential for bear viewing; it was not included in the site potential assessment completed in 1990, and the ongoing re-evaluation of key bear concentration areas continues to support this finding..</p>
185	<p>Determine the optimum number of people who can use any area at any one time and that will best meet the public demand and still be compatible with refuge purposes and conservation. In the case of Frazer fish pass, this determination should be made soon.</p>	<p>If the Preferred Alternative were implemented, it would make this determination at O'Malley River. Implementation of Objectives 2.4, 10.1, 10.2, 10.4, and 10.5 would provide data that could be used to support allocation decisions for other areas. Frazer fish pass would receive assessment priority.</p>
186	<p>USFWS monitor human activities in areas that have come to its attention as being of high interest or use; the amount of total use and the types of users (e.g., guided, unguided, viewers, anglers) should be recorded.</p>	<p>Implementation of Objectives 2.4, 10.1, 10.2, 10.4, and 10.5 would address this recommendation. Also see ***** Table 6-3, "Monitoring Indicators for Public Use, Standards, and Possible Actions."</p>

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Index No.	Recommendation	Refuge Management Direction
187	USFWS encourage only those bear-human interactions that are compatible with maintaining the natural behavior of wild bears and protection of their wilderness habitat.	This recommendation is consistent with Refuge purposes and goals.
188	<p>Recommend that, if use of an area is found to consistently exceed an acceptable human saturation level or begins to consistently displace bears, the following controls, in descending order of implementation as needed, be implemented:</p> <ol style="list-style-type: none"> 1) a site-specific set of use regulations that applies to all users 2) limitations on group sizes 3) required back-country permits for unguided users and a prospectus process for commercial operators 	If the Preferred Alternative were implemented, some of these controls would be incorporated into the operational framework for management of seasonal bear-viewing use at O'Malley River. Additionally, the Service recommends that site-specific voluntary guidelines, including possible seasonal use limits and/or day use only restrictions, be developed for certain bear concentration areas based on the re-evaluation of these areas, particularly areas that are easily accessible.
189	<p>If sites are selected for formal regulation as bear-viewing sites, develop a set of recommended allocation levels for guided and unguided use visitations that is designed to avoid conflict with the following:</p> <ul style="list-style-type: none"> ▪ sport fishing- hunting ▪ agriculture and livestock ranching- commercial fishing ▪ weirs ▪ setnet sites ▪ public-use cabins ▪ adjacent private land owners ▪ human habitations 	If implemented, the Preferred Alternative would limit summer use of O'Malley River to bear viewing only, consistent with KABCMP recommendation 191. The ongoing evaluation and assessment of other concentration areas could identify areas where voluntary seasonal use limits and/or day-use-only restrictions or possible regulatory restrictions could be instituted, based on the finding of monitoring activities in these areas.
190	Develop requirements for levels of use, allocation of use, public and commercial access, and permitting based on experience and history of similar existing federal and state programs; these requirements should minimize conflicts between bear viewing and other wildland-recreation interest groups.	See response to recommendation number 188.

Index No.	Recommendation	Refuge Management Direction
191	<p>Recommend USFWS conduct a needs assessment for bear-viewing opportunities on public land, and, when conditions warrant, establish a unique viewing area, on public land, with the following attributes and conditions:</p> <ul style="list-style-type: none"> ▪ use by tightly controlled small groups (i.e., no more than 12 persons per day) and supervised on-site activities ▪ permits issued by drawing for off-site overnight stays of no more than three days ▪ remainder of permits available for day use by guides, air taxi operators, and individuals ▪ unsuccessful applicants and visitors provided with comprehensive information about alternative bear-viewing opportunities on the archipelago 	<p>The assessment of bear-viewing opportunities and needs was completed in 2002{ Allen, 2002 #456}. Further, the Service would establish a formal viewing program at O'Malley River. This program would be based on a framework of operational guidelines formulated as part of a collaborative public planning process.</p>
192	<p>Recommend USFWS reopen O'Malley Creek area to bear viewers June through September employing a management strategy that allows guided day-use bear viewing.</p>	<p>If the Preferred Alternative were adopted, this recommendation would be implemented; that alternative recommends a program providing both agency-supervised and commercially guided viewing opportunities during different periods of the viewing season.</p>
193	<p>Manage any bear-viewing sites on KNWR lands consistent with refuge purposes.</p>	<p>Any formal bear-viewing program or other opportunities for viewing bears or other wildlife on Kodiak Refuge would be allowed only if compatible with refuge purposes.</p>
194	<p>Prohibit establishing industrial tourism viewing with infrastructure such as that at Brooks Camp.</p>	<p>Allowing "industrial tourism" with extensive infrastructure would not be compatible with refuge purposes and would not be allowed on Kodiak Refuge.</p>
195	<p>Disseminate bear-viewing guidelines for the public and private sector that reflect safety while viewing bears from the ground or by walking, and procedures to alert bears to human presence. These guidelines should stress low-impact bear viewing by all users in all locations and should be similar to those of the North American Nature Photographers Association.</p>	<p>This recommendation is consistent with Objective 11.2 and Goal 12. General guidelines would be developed, or existing ones would be adopted (e.g., <i>Best Practices for Viewing Bears</i>; A{ADF&G, 2003 #686} to facilitate safe and conscientious viewing of bears. Based on results of the evaluation of bear concentration areas, site-specific voluntary guidelines for bear viewing and other public uses would be developed and distributed for some easily accessible areas. Public input would be sought during the development of these guidelines.</p>
196	<p>Require ADF&G and USFWS training, and oversight of pertinent regulations, for all guided bear-viewing programs.</p>	<p>This recommendation would apply to guided bear-viewing programs on the Refuge.</p>

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Index No.	Recommendation	Refuge Management Direction
197	Recommend that ADF&G and USFWS conduct annual bear-viewing guide clinics.	This recommendation is consistent with Objective 11.2.
198	Encourage private landowners that develop bear-viewing opportunities on private land to do so within accepted state and commercial guidelines.	The Service would continue to consult with and advise landowners with whom it has easement agreements with regard to best management practices for bear viewing. When requested, the Service would partner with community members to address bear management concerns at villages, remote cabins, and lodges (Objective 15.6).
199	Create economic incentives for bear management, including bear viewing, in the villages.	This recommendation does not apply to the Refuge.
200	Investigate road-accessible wildlife- and bear-education opportunities that would minimize negative bear-human conflicts (e.g., a suggested area is along Buskin Lake near the golf course). The area could include interpretive signs dealing with wildlife management, habitat, track identification, realistic bear-viewing opportunities, and safety. Small spotting scopes, such as those at Fort Abercrombie, could be installed so that visitors can get a close-up view of habitat areas for bears, goats, ducks, eagle, etc. Other areas suggested for bear education/interpretive signing/viewing possibility on the road system are Buskin River State Recreation Site and Fort Abercrombie State Historical Park.	This recommendation does not apply to the Refuge.
201	Seek funding for islandwide education and regulation of bear-viewing businesses through, but not limited to, the following: <ul style="list-style-type: none"> ▪ reasonable permit fees ▪ sale of Kodiak Wildlife Viewing stamps ▪ Wildlife Restoration funds ▪ Land and Water Conservation Fund 	The Service's Preferred Alternative calls for increased funding to support education and regulation of bear-viewing services on the Refuge. The Service also supports development of cooperative education initiatives targeted at islandwide businesses.
202	Recommend the statewide sale of Wildlife Stamps, similar to Duck Stamps or Colorado Wildlife stamps, to both Alaska residents and nonresidents. Sales should be broad-based and aimed at nonconsumptive users of wildlife rather than at commercial operators.	This recommendation does not apply to the Refuge.

Index No.	Recommendation	Refuge Management Direction
203	Encourage bear-viewing visitors to constantly attend food and garbage or store food in bear-resistant containers and to not display or consume food in a manner that may attract bears.	This recommendation is consistent with Objective 11.2 and Goal 12.
204	Recommend that USFWS make its policies concerning wildlife photographers consistent with those to USDA Forest Service, National Park Service, Bureau of Land Management, and Alaska State Parks.	Refuge policies concerning wildlife photography are in compliance with Title 16 USC Section 4601-6d (Commercial Filming). The Refuge requires a special-use permit and charges a reasonable fee for commercial filming activities or similar projects on the Refuge. With certain exceptions, no permit is required and no fee is assessed for still photography (commercial or private) on the Refuge if such photography takes place where members of the public are generally allowed. A permit, fee, or both may be required if such photography takes place at other locations where the public is generally not allowed. This is standard for all Department of the Interior land management agencies.
205	Recommend that USFWS and ADF&G continue to research bear viewing on KNWR.	Objective 2.4 addresses this recommendation. Further, the Service's Preferred Alternative calls for studying bear viewing at O'Malley River during initial years of program operation.
206	<p>Recommend that USFWS implement practical, site-specific, and biologically based objectives and compatibility standards for wildlife viewing in bear concentration areas using the best technical information and a stakeholder planning process. Guidelines for development of objectives and standards include the following:</p> <ul style="list-style-type: none"> ▪ sites with established viewing use—based on existing amount and pattern of bear use and public use ▪ sites with no established viewing use—based on amount and pattern of bear use before public use introduced 	The Service would implement this recommendation by adopting Objective 2.4. The Service would develop site-specific technical understanding of bear use and bear-human interactions in concentration areas through continued application of the cooperative research process.
	Use of Aircraft on the Kodiak Archipelago	
207	Enforce federal and state laws and regulations that prohibit disturbance of wildlife with an aircraft.	Service law enforcement officers (Refuge staff, special agents) would continue to work with state officers to enforce pertinent federal and state regulations prohibiting disturbance to wildlife by aircraft.

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Index No.	Recommendation	Refuge Management Direction
208	<p>Manage aircraft use in wildlife-viewing operations: Develop—through the cooperation among appropriate regulatory agencies, private landowners, and commercial service groups—guidelines describing minimum altitudes, flight paths, horizontal distances, and access points.</p> <p>Following are suggested guidelines:</p> <ul style="list-style-type: none"> ▪ When viewing from an airplane while in the air, remain more than 800 feet from the bear or bears. ▪ Prohibit intentional bear viewing by helicopter. ▪ While flying near viewing areas, transit the area quickly, avoid circling or directly overflying the viewing area, and be considerate of viewers on the ground. ▪ Do not take off or land within 300 feet of visible bears. 	Guidelines developed in the 1990s are included as conditions on special-use permits issued to air-taxi services operating on the Refuge.
209	Encourage commercial providers of bear-viewing services to adopt standards of operation.	Commercial providers of viewing services are required to obtain approval of an operations plan from the Refuge. The Service would encourage providers to adopt <i>Best Practices for Viewing Bears</i> {ADF&G, 2003 #686} or other voluntary guidelines developed for application across the Refuge as standards in operational plans submitted to the Refuge. Further operational standards would be included as conditions by the Refuge on special-use permits (e.g., site-specific guidelines and restrictions).
210	Urge commercial operators to ensure that all equipment, guides, pilots, and boat operators meet all federal, state, and local requirements that apply to their operations.	The Service would continue to apply conditions to special-use permits, for commercial activities on the Refuge, requiring that all guides, pilots, boat operators, and equipment meet federal and state requirements.
211	Enforce state and federal laws regarding the intentional harassment of bears with aircraft.	Service law enforcement officers (Refuge staff, special agents) would continue to work with state officers to enforce pertinent federal and state regulations prohibiting disturbance of bears by aircraft.
212	To minimize disturbance to bears, develop guidelines for overflying by helicopters for recreational purposes.	Helicopter landings for recreational purposes are not permitted on the Refuge. The Refuge would develop guidelines for recreational overflights by commercial and private operators of helicopters
213	To minimize disturbance to bears, develop guidelines for overflying by fixed-wing aircraft for recreational purposes.	Guidelines developed in the 1990s are included as conditions on special-use permits issued to air-taxi services operating on the Refuge.
	Public-Use Cabins	

Index No.	Recommendation	Refuge Management Direction
214	Proposed new public-use cabins, or those acquired through land acquisition, on KNWR that cause serious adverse impact on important bear habitat or serious conflicts with guides or other user groups should be reevaluated for relocation to more suitable sites.	Public-use cabin management prescriptions in Alternatives B and D (Preferred Alternative) would allow for relocation of cabins. These prescriptions would be conducted using a stakeholder process to obtain input from the public. This recommendation is consistent with Objective 10.6.
	Other Remote Cabins	
215	All new remote cabins, or land disposals for the purpose of building new remote cabins, that cause serious adverse impacts on important bear habitat or serious conflicts with guides or other user groups should be re-evaluated for location at more suitable sites.	The Service would not build new public-use cabins, or relocate existing cabins, in or adjacent to bear concentration areas on the Refuge.
	Chapter 7: Research and Monitoring	
	Monitoring (in priority order)	
216	Maintain the current bear-harvest monitoring regime, including permit reports, specimen requirements, and on-island bear sealing.	The Service would implement Objective 2.1 in support of this recommendation and ADF&G's management of sport harvest. Also, the Service anticipates no changes in management of subsistence harvest of bears.
217	Continue monitoring bear density on Kodiak Island and increase survey frequency to at least once every five years for the Aliulik Peninsula, Karluk Lake, Terror Lake, Kiliuda, and Spiridon survey areas.	The Service would implement Objective 2.2 in support of this recommendation.
218	Continue monitoring salmon escapement trend data and subsequent species-specific productivity; evaluate salmon harvest strategies for all human user groups.	The Service would continue to routinely evaluate salmon escapement, productivity, and harvest strategies in accordance with Objectives 7.1 through 7.4.
219	Develop methods to objectively document annual abundance and availability to bears of vegetation in representative habitats on the Kodiak archipelago.	The Service would implement Objective 2.8 and Goal 6 to address this recommendation.
220	Monitor the bear population carefully on an annual basis to ensure survival of the optimum sex and age distribution of bears.	The Service would implement Objectives 2.1, through 2.4 and 2.6 to monitor the bear population in conjunction with ADF&G.
	Future Research—Density and Harvest	
221	Research and monitoring should be done to evaluate the effectiveness of depredation permits in terms of density and harvest calculations.	The Service would implement Objective 2.1 to augment ADF&G's effort to address this recommendation.

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Index No.	Recommendation	Refuge Management Direction
222	Assess bear density on Afognak Island and the Kodiak road system with the goal of establishing routine density monitoring in these areas by 2005.	The Service would implement Objective 2.6 to specifically address Afognak bear research needs. Presently, the Refuge and ADF&G are seeking cooperative funding to support this research. The Service would address the need, role, and priority of research of road system bears in a wildlife inventory and monitoring plan scheduled for completion two years after completion of the revised Conservation Plan (Objective 1.1).
223	Determine the optimum percent of adult male bears that should be harvested by hunters in order to maintain genetic diversity and vigor (i.e., fitness) in the population, and evaluate existing survival, productivity, harvest, and population data to determine appropriate harvest rates by area, by sex, and by age.	The Service would implement Objectives 2.1, 2.2, 2.3, 2.6, and 2.7, which would increase collaboration with ADF&G, target assessment of age- and sex-specific sources of bear mortality, and increase knowledge of genetic diversity of Kodiak bears.
224	Work with villagers, remote cabin and lodge residents and owners, and hunters to refine population estimates and to refine unreported bear-kill data on in order to maintain a bear population that can sustain a 6 percent annual sport harvest. Include revised estimates in harvest analyses.	The Service would implement Objectives 2.1, 2.2, and 8.1 to augment ADF&G's effort to address this recommendation.
225	Explore methods to estimate subadult (i.e., from weaning to maturity) mortality and dispersal and apply results to existing survival estimates.	The Service would specifically address feasibility of research on subadult bear mortality in a revised wildlife inventory and monitoring plan scheduled for completion two years after completion of the revised Conservation Plan (Objective 1.1).
226	Continue to track the number of bears killed by deer, elk, and goat hunters to minimize such bear mortality and make a serious effort to mitigate this problem through education of big-game hunters on how to avoid dangerous situations involving bears.	The Refuge strongly supports ADF&G's systematic monitoring of all human-caused bear mortality. The Service would augment the department's effort through implementation of Objective 2.1.
	Future Research—Habitat	
227	KNWR should detail its management intent for the Mt. Glottof Research Natural Area (RNA), especially with regard to uses by the public. While the CAC recognizes the importance to bears of the Mt. Glottof RNA, USFWS is urged to continue to allow existing human uses of the area, including hunting, hiking, and trekking. Any future management plans for the area should include substantial public input.	This recommendation is consistent with Objective 14.1.

Index No.	Recommendation	Refuge Management Direction
228	Delineate types and extent of bear habitat on the Kodiak archipelago using remote-sensing technology and ground-truthing.	In 2001, the Service initiated cooperative research to develop a vegetation cover map for the archipelago. This project is scheduled to be completed in 2004. Research results will be used for many purposes, including modeling of bear habitat on Afognak Island (e.g., Objective 2.6).
229	Use radiotelemetry data from previous studies to examine habitat preferences by bears on various parts of Kodiak Island (by season and by reproductive status).	In 2004, the Refuge established a cooperative agreement with ADF&G that specifically supports implementation of this recommendation.
230	Examine bear use of spruce forests and adjacent habitats by conducting a radiotelemetry study on Afognak Island. Include documentation of bear use of newly cut and regenerating forests.	The Service would implement Objective 2.6 to specifically address Afognak bear research needs. Presently, the Refuge and ADF&G are seeking cooperative funding to support this research. Area harvest history would be included as a factor in study design and data analysis.
231	Conduct baseline research on Sitka black-tailed deer and mountain goat habitat use and movements using radiotelemetry. Data collected from these investigations, and data already collected on elk, will be used to focus future research on impacts of these species on bears.	The Service would implement Objectives 3.2 and 3.4 to specifically address the research needs identified in this recommendation.
232	Develop methods to objectively document annual vegetative abundance and availability to bears in representative habitats on the Kodiak archipelago.	The Service e would implement Objective 2.8 to specifically address this recommendation.
233	To minimize snowmachine impact on bears, additional research is needed to provide the facts necessary to identify highly sensitive areas of brown-bear habitat (e.g., denning areas).	The Service expects to study, in cooperation with ADF&G, winter distribution of bears on Afognak Island (Objective 2.6). Need for further research would be evaluated when the Refuge updates its wildlife inventory and monitoring plan two years after approval of the revised Conservation Plan (Objective 1.1).
234	Identify funding sources to study effects of introduced species on bear habitat and conduct research to determine if a problem exists with introduced species depleting bears' food resources or otherwise damaging bear habitat. When evaluating the results of research on introduced species, social issues (e.g., subsistence hunting) should be considered. Research should be subject to peer review.	If the Preferred Alternative were adopted, the Service would establish several new goals and objectives (2.8, 3.2, 3.4, 3.6) related to management and research of introduced species. Proposals would be formulated and submitted for funding to increase Service support for this work. Cooperative funding would be pursued once individual projects were initiated. Hunting would be addressed as needed if the study topic had potential implications on hunting. The Service would encourage peer review of study plans and results.

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235	Research the impact on bears of commercial use of salmonberries and blueberries.	Although gathering of resources—such as berries, mushrooms, and antlers—for commercial purposes may be authorized on the Refuge, the importance of berries as a food source for bears would be considered before authorizing such use. Objectives 2.8 and 3.6 address the use of berries and berry-producing shrubs as a food source for both bears and deer on the Refuge.
236	Continue evaluating species-specific salmon escapement levels against drainage-specific bear use of salmon; investigations should emphasize an ecosystem overview (e.g., salmon biological escapement goal [BEG] rather than bear densities).	Escapement estimates for Dog Salmon River specifically account for bear use of salmon. The Service would work with ADF&G and stakeholders to apply this same model to planning escapement levels on other Refuge drainages in accordance with Objective 7.2.
	Future Research—Bear-Human Interactions	
237	Examine bear use, human use, and bear-human interactions in areas of high bear concentration where public use has been established and where regulations limiting public use and access may be considered.	This recommendation corresponds with Objective 2.4.
238	Compare survival rates, including vulnerability to hunters, of bears that frequent structured bear-viewing sites with those that do not.	Presently the Service does not think that bear hunting jeopardizes survival of bears habituated to routine bear viewing at Frazer fish pass and a handful of other locations on the Refuge. However, the Service acknowledges the potential for increased risk posed by increased bear viewing and other public use at Karluk Lake. If future monitoring, described in Objectives 2.1 and 2.4, identifies a problem the Service would determine the need for research, and potentially apply strategies described in Appendix T of the KABCMP to solve the problem.
239	Delineate the movements and survival rates of bears that frequent solid-waste sites and other human-use areas.	The Service interprets this recommendation to mean that research would target food-conditioned bears that use the Larsen Bay landfill. The Refuge would assess the specific need and priority for this research when it updates its wildlife inventory and monitoring plan two year after approval of the revised Conservation Plan (Objective 1.1).
240	Assess the relationship between quality of visitor experience and different types of bear-viewing operations.	Allen and Collins {Allen, 2002 #456} assessed the general relationship pertaining to the Refuge and other bear-viewing sites in Alaska. We would address site-specific relationship by implementing Objectives 10.4 and 10.5.

Index No.	Recommendation	Refuge Management Direction
241	Evaluate the effectiveness of landfill and on-site human food and garbage management strategies, including public education efforts, and refine efforts to improve their effectiveness.	The Service would continue to monitor effectiveness of food and garbage management in Refuge areas subject to intensive human use. If implemented, the Preferred Alternative would allow development of temporary, fortified food and waste facilities—such as occurs near the confluence of Bare Creek and the Ayakulik River—to minimize problems.
242	Evaluate the effectiveness of bear-safety public education efforts and refine to improve effectiveness.	This recommendation is consistent with Objectives 11.2 and 12.2.
243	Identify areas where hardened fishing campsites would minimize bear-human conflicts.	This recommendation is consistent with Objective 10.1.
244	Research and monitoring should be done to evaluate the effectiveness, in reduction of bear-human interactions, of depredation permits.	The Refuge strongly supports ADF&G's systematic monitoring of all human-caused bear mortality. The Service would augment the department's effort through implementation of Objective 2.1.
Chapter 8: Education		
Bear-Education—User Education-General		
245	Develop an intergovernmental working group composed of representatives from wildlife management agencies (ADF&G, USFWS), public safety agencies (Alaska State Troopers, local and military police departments), local governments (city, village, and borough), the Kodiak Fish & Game Advisory Committee, and Alaska State Parks. The working group should meet at least once each spring to review current policies to reduce bear-human encounters and to coordinate efforts for the upcoming year.	This recommendation is consistent with Goal 15.
246	Develop a bear education kit, similar to that developed on the Kenai Peninsula (see section 8.2.1 in KABCMP), for Kodiak archipelago communities. It would include locally relevant materials that either already exist or need to be developed. A group of educators and biologists, similar to the one working on the Kenai kit, would work together to finalize and field test the Kodiak kit. Upon completion of the kit, ADF&G Project WILD staff and facilitators would develop and facilitate training sessions for teachers in each Kodiak archipelago community.	This recommendation is consistent with Goal 15.

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247	Ensure a level of cooperative state and federal law enforcement deemed essential to achieve compliance with conservation laws and regulations; preventive education should be the first priority in this regard.	This recommendation is consistent with Objectives 10.3, 11.2, 15.2, and 15.5.
248	Establish lines of communication among agencies with various areas of responsibility.	This recommendation is consistent with Goal 15.
249	Strongly encourage education of outdoor recreationists about bear behavior, impacts to bear habitat, bear-human interactions (e.g., resulting from improperly handled food and trash), field safety practices, and use of bear-resistant containers and electric fences, etc.	This recommendation is consistent with Objectives 10.3 and 11.2, and Goal 12.
250	To minimize bear problems, educate people about handling personal property, including chicken pens, fish-drying sheds, food-storage areas, and pet food.	This recommendation is consistent with Objectives 10.3 and 11.2, and Goal 12.
251	Ensure that visitors are made aware of the efforts to keep bears away from human food and garbage; individual responsibilities of visitors should be outlined and disseminated so that they recognize their role in preventing problems.	The Service would implement Objectives 10.3 and 11.2 and Goal 12 to increase the awareness of visitors and guides of their responsibilities.
	Bear Education—User Education-Hunters	
252	Urge ADF&G, USFWS, and other appropriate groups to develop informational and educational materials to help minimize bear-human conflicts and thereby improve hunter image. These materials should be developed for multimedia use and include the following subjects: <ul style="list-style-type: none"> ▪ trip planning and physical conditioning ▪ meat handling and storage skills ▪ bear behavior and safety ▪ a safety-in-bear-country video for wide distribution and use 	This recommendation is consistent with Objectives 11.2 and 12.2.
253	Encourage guide/outfitters and transporters to make bear-safety educational materials available to all hunters.	Refuge-permitted hunting guides are encouraged to provide bear safety information to their clients (Objective 11.2).

Index No.	Recommendation	Refuge Management Direction
254	Encourage ADF&G to continue to track the number of bears killed by deer, elk, and goat hunters to minimize such bear mortality. ADF&G should make a serious effort to mitigate this problem through education of big-game hunters on how to avoid dangerous situations involving bears.	The Refuge strongly supports ADF&G's systematic monitoring of all human-caused bear mortality. The Service would augment the department's effort through implementation of Objective 2.1.
255	Require a mandatory hunter-safety course, which should include bear-safety instruction, before going afield to hunt in GMU 8.	This would apply to Refuge lands if adopted by the state.
256	Encourage ADF&G to develop other educational tools (e.g., videos using local people to educate hunters about hunting in bear country).	The Refuge would use these tools in its educational programs if made available from the state.
257	Submit an article (written by Hank Pennington) about hunting on Kodiak to a sporting magazine.	This recommendation does not apply to the Refuge.
	Bear Education—User Education-Off-Road Vehicles	
258	Create educational program to encourage responsible use of ORVs to minimize negative impacts on bear habitat.	This recommendation is consistent with Goals 10 and 12. The Service would address this recommendation through collective implementation of Objectives 10.2, 10.7, 10.8, and 11.2.
	Bear Education—User Education-Anglers	
259	Develop an educational program for anglers in cooperation with professional organizations, agencies, and sportsmen's groups to include information about proper food and fish storage and cleaning of fish.	This recommendation is consistent with Objective 11.2 and Goal 12.
260	Include bear biology, behavior, and safety information in the KNWR salmon camp curriculum.	This recommendation is consistent with Goal 12. The Service would continue to provide salmon campers with bear biology and safety information.
	Bear Education—User Education—USCG	
261	Continue education cooperation between ADF&G and the USCG annually, or more often as required, to alert air crews to their wildlife-conservation responsibilities and to promote good relations within the community.	This recommendation was implemented on April 30, 2002, when the Refuge, ADF&G, and USCG signed a memorandum of agreement. This agreement directs the Refuge and ADF&G to increase communication with USCG Air Station officers and staff and to provide them with information they can use to prevent displacement of wildlife and interference with human hunting activities.
	Economic Incentives and Land Management	

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262	Establish an education plan and explore economic incentives aimed at encouraging public and private landowners to consider the effects on bears of motorized access and to continue land-management programs that are consistent with wildlife conservation.	This recommendation does not apply to the Refuge.
263	Encourage private landowners (e.g., via the use of conservation easements, economic incentives, and education) to consider bear habitat when making land-management decisions.	The Service would continue to use a variety of approaches to encourage stewardship of bear habitat by private landowners in the Refuge, in accordance with Objective 10.2.
	Villages and Rural Residents	
264	Identify appropriate elders and leaders to work with VPSOs to help educate residents about conservation laws, rules and regulations.	The Refuge would facilitate this effort by directing its information technician to provide VPSOs with information on laws and policies that pertain to the Refuge. Such action is consistent with Refuge Objective 15.4.
265	Encourage village residents, VPSOs, and appropriate agencies to work together to develop information and education materials and strategies to reduce bear-human conflicts in the villages.	The Service would implement Objectives 15.4, 15.5, and 15.6 to encourage information exchange, interagency cooperation, and reduction of bear-human conflicts in village communities.
266	Encourage state troopers and USFWS to provide information to rural residents about the laws, rights, and duties regarding killing bears in defense of life or property (DLP).	The Service would address this recommendation when it implements Objectives 10.3, 12.2, and 15.4.
267	Through a co-management agreement with the state, use village committees and VPSOs to take responsibility for working on DLP issues in villages, including solid-waste management issues; this should include a significant educational component (e.g., schools, videos, and employing elders).	This recommendation does not apply to the Refuge.
	Outreach	
268	Place educational materials in places (or with people) where they can be readily accessed (Web site, airport, magazines, tourism offices, USCG base, villages, guide/outfitters, public libraries, schools, museums, ferries, tribal council offices, Fish & Wildlife Protection officers, Alaska State Park offices and state parks staff, public radio, and television).	This recommendation is consistent with Objective 12.2.

Index No.	Recommendation	Refuge Management Direction
269	To foster cooperation, the Alaska Department of Public Safety, Division of Fish and Wildlife Protection [now Bureau of Wildlife Enforcement], and the USFWS conduct annual outreach programs, explaining regulations and enforcement issues (including DLPs) in communities throughout the Kodiak archipelago.	This recommendation is consistent with Goal 12 and Objectives 10.3 and 15.6.
270	Provide public information on actions planned by the intergovernmental working group and encourage public input and questions on those actions.	This working group was established in 2000. Composed of seven agencies, including the Service, its primary purpose was to facilitate KABCMP development. The Service welcomes further involvement to address KABCMP implementation issues should they arise.
271	Make available public information in a variety of media, including print, radio, public television, and personal appearances; attempt to meet the special needs of various cultures and ethnic groups.	This recommendation is consistent with Objective 12.2.
272	Make the public outreach program ongoing, with emphasis on bear behavior and suggestions on how to minimize negative bear-human interactions (comparisons of bear behavior around food and garbage to dog behavior in similar situations can be helpful in improving understanding).	This recommendation is consistent with Goal 12.
273	Encourage agencies to disclose management actions such as moving dumpsters, citing individuals for littering, aversive conditioning of bears, and lethal actions against problem bears. (All actions relating to bear-human interactions are matters of public record).	This recommendation does not apply to the Refuge.
274	Encourage the public to report to authorities observations of bears near human habitations. (These observations can help to track the activities of individual bears and allow managers to alert school principals and residents of areas in which to be especially cautious; observations should not be advertised to the general public, however, to avoid encouraging people seeking out bears).	Holders of Refuge special-use and public-use-cabin permits are required to report bear problems to the Refuge.
275	Locate on-site bear safety reminders on dumpsters (e.g., “Be Bear Aware”) and at collections sites (i.e., public landfills).	This recommendation does not apply to the Refuge.

Appendix C: Kodiak Archipelago Bear Conservation and Management Plan Recommendations

Index No.	Recommendation	Refuge Management Direction
276	Work with service providers to make available to all visitors educational materials emphasizing bear safety, realistic expectations for bear viewing (including cost of access), Kodiak bear life history, and proper wildlife management. These materials should include ADF&G and KNWR bear-safety brochures and all materials specific to bear viewing.	This recommendation is consistent with Objective 11.2.
277	Disseminate bear-viewing guidelines for the public and private sector that reflect safety while viewing bears from the ground or by walking, and procedures to alert bears to human presence. These guidelines should stress low-impact bear viewing by all users in all locations and should be similar to those of the North American Nature Photographers Association.	This recommendation is consistent with Objective 11.2 and Goal 12.
278	Investigate road-accessible wildlife- and bear-education opportunities that would minimize negative bear-human conflicts. A suggested area is along Buskin Lake near the golf course. The area could include interpretive signs dealing with wildlife management, habitat, track identification, realistic bear-viewing opportunities, and safety. Small spotting scopes such as those at Fort Abercrombie could be installed so that visitors could get a close-up view of habitat areas for bears, goats, ducks, eagles, etc. Other areas suggested for bear education/interpretive signing/viewing possibility on the road system are Buskin River State Recreation Site and Fort Abercrombie State Historical Park.	This recommendation does not apply to the Refuge.
	Funding	
279	Seek funding for islandwide education and regulation of bear-viewing businesses through, but not limited to, the following: <ul style="list-style-type: none"> ▪ reasonable permit fees ▪ sale of Kodiak Wildlife Viewing stamps ▪ Wildlife Restoration funds ▪ Land and Water Conservation Fund 	Although this recommendation does not apply to the Refuge, it is consistent with the intent of Goal 12.

Index No.	Recommendation	Refuge Management Direction
280	Recommend the statewide sale of Wildlife Stamps (similar to Duck Stamps or Colorado Wildlife stamps) to both Alaska residents and nonresidents. Sales should be broad-based and aimed at nonconsumptive users of wildlife rather than at commercial operators.	This recommendation does not apply to the Refuge.

Appendix D

Co-operative Management Agreement for the Terror Lake Hydroelectric Project

AGREEMENT AMONG KODIAK ELECTRIC ASSOCIATION, INC.,
THE DEPARTMENT OF THE INTERIOR, THE STATE OF ALASKA,
THE SIERRA CLUB, THE NATIONAL AUDUBON SOCIETY,
AND THE NATIONAL WILDLIFE FEDERATION
RELATIVE TO TERROR LAKE PROJECT

On June 16, 1981 representatives of the parties to this agreement met in Juneau, Alaska, in the office of the Commissioner of Natural Resources, State of Alaska. On that date the parties made and entered into this agreement, with Keith D. Bayha, Assistant Regional Director for Environment, United States Fish and Wildlife Service, representing the United States Secretary of the Interior and Ronald O. Skoog, Commissioner of Fish and Game, and Geoffrey Haynes, Deputy Commissioner of Natural Resources, representing the State of Alaska.

THIS AGREEMENT is confirmed this 26 day of June, 1981, by, between and among Kodiak Electric Association, Inc. (KEA), the United States Department of the Interior (Interior), the State of Alaska (State), the Sierra Club (Sierra), the National Audubon Society (Audubon), and the National Wildlife Federation (NWF).

In explanation the parties recite the following:

A. KEA has applied to the Federal Energy Regulatory Commission (FERC) for a license pursuant to the Federal Power Act, 16 U.S.C. §797, to construct and operate the Terror Lake Hydroelectric Project (Project No. 2743). Interior, the State, Sierra, Audubon and NWF are intervenors in the proceeding by which FERC is considering KEA's application.

B. Project No. 2743 will be partially located on lands within the Kodiak National Wildlife Refuge, Alaska (Refuge).

C. The construction of the Terror Lake Hydroelectric Project will be in the interest of the people of the State of Alaska.

D. Construction and operation of Project No. 2743 will impact interests of State and Interior and will affect fish and wildlife resources and their habitats. Interior, State, KEA, Sierra, Audubon and NWF have differed as to the extent to which Project No. 2743 will have significant adverse effects upon fish and wildlife resources and their habitat, as to appropriate mitigation measures, and as to jurisdictional matters.

E. KEA, State, Interior, Sierra, Audubon and NWF desire to settle all of their outstanding differences. Interior and State, in order to facilitate settlement and to achieve mutual objectives of conservation and management of fish and wildlife resources within their respective jurisdictions, are willing to enter into a cooperative agreement for the protection of Kodiak brown bear and other wildlife species.

NOW THEREFORE, the parties hereto agree as follows:

1. Replacement Habitat

In recognition of the need to mitigate adverse environmental effects of the project, the State of Alaska Departments of Natural Resources and of Fish and Game, and the United States Department of the Interior, Fish and Wildlife Service, have entered into a Cooperative Management Agreement, a copy of which is attached hereto as Attachment I and incorporated herein by reference.

2. Height of Dam

2.01 To the end of minimizing adverse construction impacts and facilitating the maintenance of instream flows in salmon spawning habitat in the Terror River, KEA will, as a part of the original construction of

Terror Lake Dam, provide increased storage capacity in Terror Lake Reservoir. The increased capacity will be that ordered by FERC based upon the Instream Flow Mitigation Plan, the discussion contained in Paragraph 5.8 of the DEIS (attached as II-A to Attachment II), and further engineering studies currently being conducted by KEA and which will be filed with FERC, and the intervenors will not object to such construction.

2.02 The Instream Flow Mitigation Plan, attached hereto as Attachment II and incorporated herein by reference, will be incorporated into the project license as a license condition and it is so recommended to FERC.

3. Mitigation

3.01 The mitigation measures provided for in this agreement (a) satisfy all requirements imposed by or pursuant to applicable federal law for the mitigation of any and all adverse effects of Project No. 2743 on fish and wildlife resources and their habitats; and (b) constitute the conditions prescribed by the Secretary of the Interior pursuant to Section 4(e) of the Federal Power Act (16 U.S.C. §797[e]) as necessary for the adequate protection and utilization of the Refuge.

3.02 This agreement satisfies any and all applicable requirements of the Fish and Wildlife Coordination Act (16 U.S.C. §661), the National Wildlife Refuge Systems Administration Act (16 U.S.C. §668dd), the Federal Land Policy and Management Act (43 U.S.C. §1701) and of the first proviso in Section 4(e) of the Federal Power Act (16 U.S.C. §797[e]).

3.03 No party will challenge the adequacy of the Final Environmental Impact Statement on any of the grounds settled by this agreement nor attempt to impose

upon KEA in respect of Project No. 2743 any requirement in addition to those imposed by this agreement and the license issued by FERC. However, nothing herein shall prevent the State from discharging any of its responsibilities under State laws or regulations or preclude a party from petitioning FERC to enforce or interpret any provisions of the license.

3.04 The parties understand that the Kodiak Island Borough will agree to prohibit grazing on any Borough lands in the area covered by the Cooperative Management Agreement (Attachment I). This agreement is contingent upon the enactment of Borough regulations to that effect.

4. Miscellaneous Provisions

4.01 KEA, Sierra, Audubon and NWF will jointly recommend to the Alaska Legislature that it enact legislation to authorize, and to provide adequate funding for, a Kodiak Island alternate energy study.

4.02 KEA, as soon as practicable, will establish a trust fund with a capital contribution of \$500,000 for the purpose of funding, out of net income from the trust fund, programs approved by the trustees of the fund for Kodiak brown bear research and other activities, including acquisition of land or rights therein, determined by the trustees of the fund to be of benefit to the Kodiak brown bear. The trustees shall be governed by the following:

a. There shall be four trustees, one to be named by KEA; one to be named jointly by the Sierra Club Legal Defense Fund, Inc., Audubon and NWF; one to be named by the Governor of Alaska; and one to be named by the Regional Director of the U.S. Fish & Wildlife Service unless otherwise prohibited by law.

b. The trust must be so established as to qualify and function as an entity exempt from federal income tax under the Internal Revenue Code of 1954, as amended.

c. The principal of the trust must not be invaded except by the unanimous vote of the trustees and subject to other limitations to be provided in the trust declaration.

d. KEA shall consult with the other parties hereto in preparing the trust declaration.

4.03 In order to minimize bear-human conflict and otherwise to avoid adverse impact on the Kodiak brown bear and its habitat, the parties agree that no recreation facilities should be required in the license and so recommend to FERC.

4.04 The stipulations set out in Attachment III (attached hereto and incorporated herein by reference) will be incorporated into the license and so recommend to FERC.

5. Effectuation of Settlement

5.01 This agreement and the Offer of Settlement referred to in Paragraph 5.02, when approved by FERC, settles and adjusts all disputes between and among any and all of the parties relative to the Terror Lake Hydroelectric Project. It does not constitute a waiver of the position of any of the parties with respect to Mt. Glottof, Hidden Basin or Uganik diversions or any other project, proposal or circumstance; nor does it constitute approval or precedent for application of the provisions of this agreement, or of any matter dealt with herein, to any other project, proposal or circumstance.

5.02 This agreement constitutes a stipulated Offer of Settlement executed by Interior, KEA, the

State, Sierra, Audubon and NWF to be filed with FERC as provided in 18 C.F.R. §1.18 as an Offer of Settlement in the license proceedings now pending for Project No. 2743. Each party withdraws any objection to issuance of a license for Project No. 2743 to KEA conforming to the Offer of Settlement.

5.03 This agreement terminates and is of no force and effect if FERC fails to approve the Offer of Settlement referred to in Paragraph 5.02 or in the event that FERC rejects KEA's application for license and the rejection becomes final.

6. Section Headings

Section headings are intended for reference purposes only and form no substantive part of, nor do they interpret, any provision of this agreement.

IN WITNESS WHEREOF, the parties hereto have executed this agreement as of the day and year first above written.

ATTEST:

THE DEPARTMENT OF THE INTERIOR

By: William P. How

ATTEST:

THE STATE OF ALASKA

By: Arnold O. Seery

ATTEST:

KODIAK ELECTRIC ASSOCIATION, INC.

By: John Hession

ATTEST:

THE SIERRA CLUB

By: Marcus Wilson

ATTEST:

THE NATIONAL AUDUBON SOCIETY

By: N. Clifton Emery

ATTEST:

THE NATIONAL WILDLIFE FEDERATION

COOPERATIVE MANAGEMENT AGREEMENT

BETWEEN

THE STATE OF ALASKA, DEPARTMENTS OF
NATURAL RESOURCES AND OF FISH AND GAME

AND

THE UNITED STATES FISH AND WILDLIFE SERVICE

This Cooperative Agreement is made and entered into this 16th day of June, 1981, between the State of Alaska, Departments of Natural Resources and of Fish and Game ("the State"), and the United States Fish and Wildlife Service ("USFWS"), Department of the Interior, under the authority of the Fish and Wildlife Coordination Act, 16 U.S.C. § 661, et seq.; the Refuge Administration Act, 16 U.S.C. § 668dd; Policies and Procedures of USFWS, 16 U.S.C. § 742f; Titles III, XI, XII, and XIV of the Alaska National Interest Lands Conservation Act, 94 Stat. 2371; and Alaska Statutes 16.05.050 (powers and duties of the Commissioner of Fish and Game) and 38.05.027 (cooperative resource management or development agreements by the Commissioner of Natural Resources).

The State and USFWS recite their joint understanding of facts and agreements as follows:

The Kodiak Electric Association ("KEA") has applied to the Federal Energy Regulatory Commission, U.S. Department of Energy ("FERC"), for a license to construct and operate the Terror Lake hydroelectric project No. 2743, ("the project") pursuant to the Federal Power Act, 16 U.S.C. § 797.

Because it has been determined that construction and operation of the project will have adverse effects upon fish and wildlife resources and their habitats, KEA has consulted with USFWS and the State concerning appropriate mitigation of ad-

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verse effects, in accordance with the Fish and Wildlife Coordination Act, 16 U.S.C. § 661, et seq.

The project will be partially located on lands within the Kodiak National Wildlife Refuge, Alaska ("Refuge"). The Refuge Administration Act requires that use of Refuge lands be compatible with the purposes for which the Refuge was established. In this instance, the purposes of the Refuge are principally the protection and perpetuation of the brown bear population and its habitat, which includes other fish and wildlife species, vegetation, terrain features, and territorial space. Consequently, full mitigation of the on-Refuge impacts must be achieved to attain compatibility.

Accordingly, the State and USFWS hereby agree as follows:

1. (a) In recognition of the need to mitigate adverse effects of the project according to the Refuge Administration Act and the Fish and Wildlife Coordination Act, and in recognition of the benefits of the project and the values of fish and wildlife and their habitat, the State agrees that certain state lands in the Kodiak Island Borough will be designated as replacement land to replace habitat lost to fish and wildlife within the Refuge because of the project, as further described in Paragraph 2 below.

(b) The Alaska Department of Natural Resources ("DNR") and the Alaska Department of Fish and Game ("ADFG") recognize the desirability of establishing consensus between them on fish and wildlife habitat management and management of other resources on the Shearwater Peninsula generally, in conjunc-

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tion with the analysis undertaken to mitigate the impacts of the project, as further described in Paragraph 3 below.

(c) The State and USFWS agree that USFWS may take notice of a management agreement between DNR and ADFG regarding management of fish and wildlife habitat and other resources on the Shearwater Peninsula for purposes of determining whether there has been appropriate mitigation of the adverse effects of the proposed Terror Lake hydroelectric project on the Refuge, in accordance with 16 U.S.C. § 661, et seq. and 16 U.S.C. § 668dd, as further described in Paragraphs 7 and 8 below.

2. In recognition of losses occurring within the Refuge, the State will manage and administer the replacement lands contiguous to the Refuge, designated as the Kiliuda Bay Unit on the map attached as Exhibit A to this Cooperative Agreement, in accordance with the following provisions:

(a) DNR will, under authority of AS 38.05.300, initiate classification of the Kiliuda Bay Unit as "wildlife habitat" under 11 AAC 55.230. If DNR fails to classify all of this Unit as "wildlife habitat," this Cooperative Agreement is null and void.

(b) DNR will manage the Kiliuda Bay Unit, subject to valid existing rights and uses, in a manner compatible with the purposes of the Refuge as long as the project is in operation and the adverse impacts to fish and wildlife resulting from the project remain. Specifically, DNR will manage the lands, in consultation with ADFG and USFWS, consistent with

the Refuge Administration Act, which defines and governs the National Wildlife Refuge System, applicable regulations in Title 50 CFR adopted under 16 U.S.C., and any requirements of the Alaska National Interest Lands Conservation Act ("ANILCA") which are applicable to determine necessary mitigation. Any proposed use found by USFWS to be incompatible with the Refuge purposes will not be permitted. ADFG will manage the fish and wildlife in conformity with AS 16.

3. DNR and ADFG agree that the lands designated the Shearwater Unit on the map attached as Exhibit A to this Cooperative Agreement will be managed by DNR in accordance with the following provisions:

(a) DNR agrees to propose under AS 38.05.300 that the majority of the land in the Unit will be classified as "wildlife habitat".

(b) The land classified as "wildlife habitat" will be in a manageable unit. Its primary resource value will be habitat for brown bear, other wild mammals, birds, fish or other animals. The primary management goal will be the maintenance of the habitat's productivity, with provision for human use of the fish and wildlife resources present. DNR will manage the lands of the Shearwater Unit in a manner determined by the commissioner in consultation with ADFG to be compatible with the primary management goal, subject to valid existing rights and uses, for the life of the project and any associated adverse impacts to fish or wildlife. ADFG will manage the fish and wildlife in conformity with AS 16.

(c) If a major economic use is determined by DNR to be a higher and better use of any portion of lands within the Unit classified as "wildlife habitat," DNR will consult ADFG as to the habitat protection or mitigation measures necessary. DNR agrees to institute necessary habitat protection or mitigation measures on the lands after a written review by an interdisciplinary team using the best data practicably available. DNR further agrees to consult with USFWS on such matters because of its expertise on wildlife management in the area.

(d) The land disposal brochure for sale of land on the Shearwater Peninsula under the state land disposal program will include a copy of the version of the ADFG regulation 5AAC 81.375 in effect on the date of this agreement and attached as Exhibit B.

4. USFWS, DNR and ADFG agree that, with respect to lands managed under this Cooperative Agreement as "replacement lands" under Paragraph 2 or lands classified as "wildlife habitat" under Paragraph 3, any determination made by DNR regarding authorization of grazing will require application of the criteria contained in Exhibit C to this Cooperative Agreement.

5. This Cooperative Agreement is contingent upon KEA's obtaining project approval from FERC for the project and will come into effect upon licensing of the project by FERC. This Cooperative Agreement will remain in effect for so long as the Terror Lake hydroelectric project remains in operation and the adverse impacts to the wildlife resources remain.

However, if the project is not constructed within four years after final approval of the project by FERC, this Cooperative Agreement is null and void.

6. The parties understand that the terms of this Cooperative Agreement, if acceptable to FERC, will be incorporated into the licensing conditions for the project and are binding and enforceable to the same extent as are any licensing conditions under 16 U.S.C. § 797, et seq. (the Federal Power Act) and applicable regulations thereunder.

7. Subject to paragraph 8, it is agreed by USFWS that the terms of this Cooperative Agreement appropriately mitigate the adverse effects of the proposed Terror Lake hydroelectric project on the Kodiak National Wildlife Refuge, in accordance with 16 U.S.C. § 661, et seq. and 16 U.S.C. § 668dd.

8. After completion of the classification process by DNR under Paragraph 3, USFWS may redetermine its agreement made under Paragraph 7. If USFWS does not reconfirm its agreement under Paragraph 7, this Cooperative Agreement is null and void.

DATED: 6-26-81 By: Keith M. Schemin
Director, United States Fish
and Wildlife Service

DATED: 8-26-81 By: [Signature]
Commissioner, Alaska Department
of Natural Resources

DATED: 20 June 81 By: Ronald Q. Long
Commissioner, Alaska Department
of Fish and Game

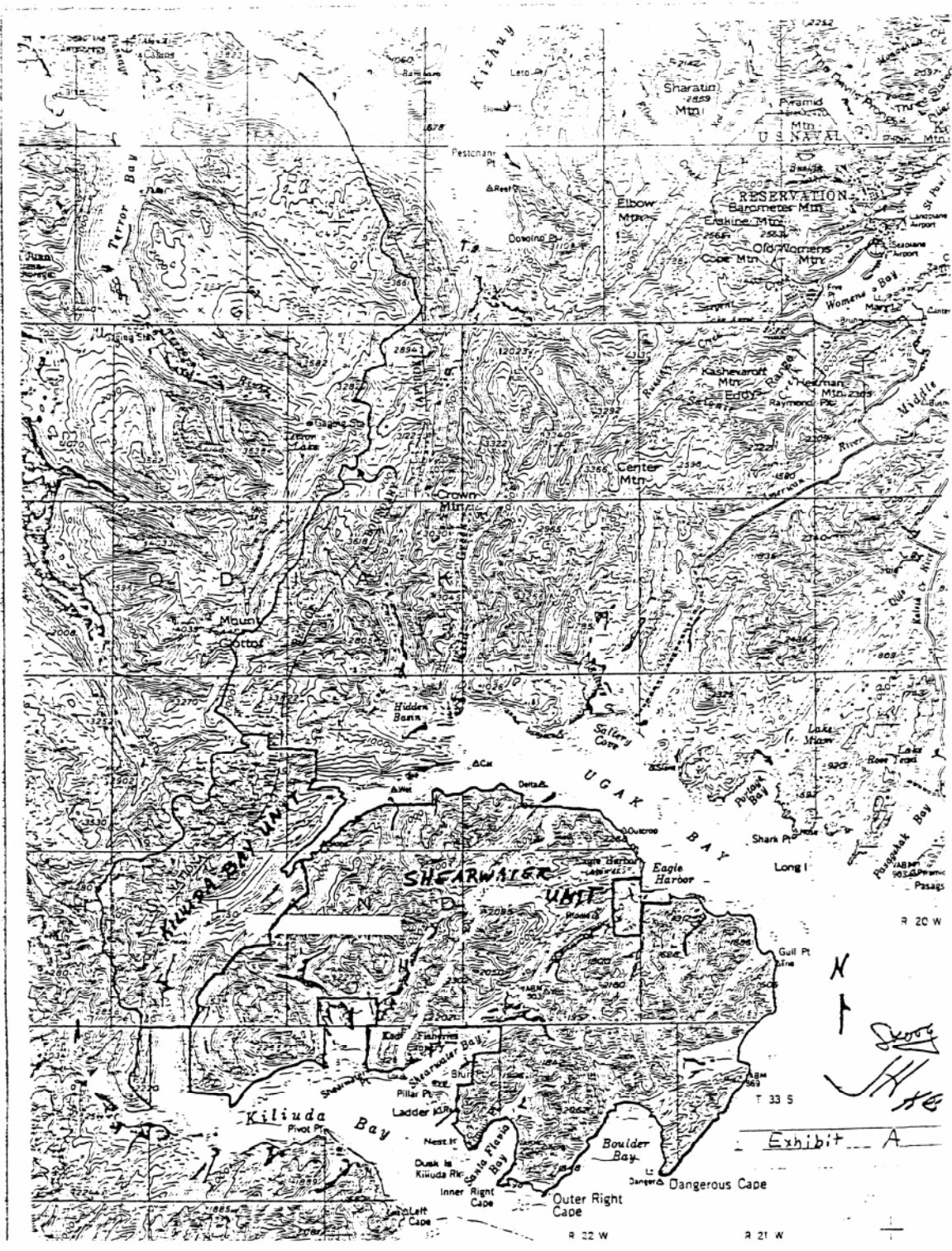


EXHIBIT B

5 AAC 81.375. TAKING OF GAME IN DEFENSE OF LIFE OR PROPERTY. (a) Nothing in this chapter prohibits a person from taking game in defense of life or property provided that

(1) the necessity for the taking is not brought about by harassment or provocation of the animal or an unreasonable invasion of the animal's habitat;

(2) the necessity for the taking is not brought about by the improper disposal of garbage or a similar attractive nuisance; and

(3) all other practicable means to protect life and property are exhausted before the game is taken.

(b) Game taken in defense of life or property is the property of the state. Persons taking such game are required to salvage immediately the meat, or in the case of black bear, wolf, wolverine and coyote, the hide must be salvaged and immediately surrendered to the state. In the case of brown, grizzly or polar bear, the hide and skull must be salvaged and surrendered to the state immediately. The department must be notified of such taking immediately and a written report giving the circumstances of the taking of game in defense of life or property must be made to the department within 15 days of such taking.

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- (c) As used in this section, "property" is limited to
- (1) dwellings, whether permanent or temporary;
 - (2) aircraft, boats, automobiles, or other means of conveyance;
 - (3) domesticated animals; and
 - (4) other property of substantial value necessary for the livelihood or survival of the owner.

EXHIBIT C

Wildlife habitat land may be leased for grazing only if such leasing

(1) does not create undesirable competition with resident wildlife and forage;

(2) does not create a serious possibility of disease transmission between livestock and wildlife;

(3) does not require or increase the need for predator control;

(4) does not require the erection of fences or other barricades that would impair the movement of wildlife; and

(5) does not result in a demand for water that would adversely affect the existing quality and quantity of water in lakes and streams.

ATTACHMENT II

INSTREAM FLOWS

The proposed Terror Lake Project would have an adverse effect on spawning salmon and their habitat during low-flow period unless appropriate mitigative measures are taken. Therefore, Kodiak Electric Association (KEA), Alaska Department of Fish and Game (ADF&G), U.S. Fish and Wildlife Service (USFWS), and the National Marine Fisheries Service (NMFS), in accordance with the Fish and Wildlife Coordination Act (16 U.S.C. § 661 et seq.), National Environmental Policy Act (NEPA), Refuge Administration Act and the Federal Power Act, enter into this agreement as a vehicle for full mitigation for this adverse impact. It is our intent that this agreement become a part of the project license issued by the Federal Energy Regulatory Commission (FERC). Furthermore, KEA will provide an annual report to the FERC, with copies to all signatories, providing evidence that KEA has performed in compliance with this agreement.

Accordingly, the KEA, ADF&G, USFWS, NMFS hereby agree as follows:

1. To reactivate the Terror River Gage #15295700 as a means of monitoring KEA's compliance with the instream flow regime identified in item 2.
2. To protect existing pink and chum salmon resources of the Terror River, KEA will make the necessary releases from Terror Lake reservoir to ensure that

instantaneous streamflows at the Terror River Gage #15295700 do not fall below the following values during reservoir filling and thereafter during project operation:

January	60 cfs,	incubation
February	60 cfs,	incubation
March	60 cfs,	incubation
April	100 cfs,	outmigration
May	150 cfs,	outmigration
June	150 cfs,	outmigration
July	150 cfs,	spawning pink salmon, chum salmon
August	150 cfs,	spawning pink salmon, chum salmon
September	150 cfs,	spawning pink salmon, chum salmon, coho salmon, Dolly Varden
October	150 cfs,	spawning chum salmon, coho salmon, Dolly Varden
November 1-15	100 cfs,	spawning coho salmon, Dolly Varden
November 16-30	60 cfs,	incubation
December	60 cfs,	incubation

3. Natural streamflows in the Terror and Kizhuyak rivers will be maintained during project construction.
4. KEA will collect supplemental streamflow and water temperature data during the period October 1981 through May 1982 to refine the predictive capability of the existing thermal model for the lower Terror River. Data collection will include thermal profiles of

Terror Lake and water temperature and streamflow data for Terror River tributaries, Terror Lake outlet, and lower Terror River gage. Additional thermal analysis will determine the necessity of a multiple level outlet structure in the Terror Lake Dam for releases to the Terror River.

5. KEA will establish a monitoring program in cooperation with USFWS and ADF&G and other appropriate agencies to assess project effects during construction and operation on terrestrial and aquatic habitats. A study plan detailing the scope of work, method and frequency of data collection, and reporting schedule will be developed by KEA in cooperation with USFWS and ADF&G prior to initiation of construction activity.
6. Six years after initiation of project operation, the operational history and project effects on the fishery will be reviewed and if it is determined that additional water is available, a dual-phase flow regime will be implemented to best accommodate fish and power production. If the analysis determines that insufficient water exists to provide a dual-phase flow regime, the regime presented in item 2 above will remain in effect unless otherwise agreed to in writing by all parties signatory to this agreement.
7. KEA will establish snow courses in the headwaters of the project area as soon as practical after licensing, and

initiate a data collection program by the winter of 1981-82. The data collection program will be used to implement a runoff forecasting program. The runoff forecasting program will in turn be used to determine whether additional water is available to establish a dual-phase flow regime as outlined in paragraph 6 of this Attachment.

ATTACHMENT II-A

5.8 INCREASED STORAGE AT TERROR LAKE

As proposed, the Terror Lake Reservoir would be capable of storing almost 50 percent of the total annual runoff of the Terror Lake basin and the proposed Upper Kizhuyak basin diversions. Applicant's studies show that the proposed project's storage capacity is adequate to prevent spill in about 30 percent of the water years studied. In the other water years, limited spill would occur during the summer floods. It appears that the amount of storage is adequate for the presently proposed level of development. If, in the future, non-dependable generation were added to the system, additional storage at Terror Lake would be highly desirable. For example, if wind turbines were installed, the energy they would provide could be made firm by off-loading the hydroelectric generation during windy periods and maintaining the energy equivalent in storage in the reservoir. The project reservoir could function as storage for wind-generated energy. Increasing the storage capacity in Terror Lake by raising the elevation of the dam and spillway crest would make the future development of non-firm generation sources such as wind much more economical. If the dam were constructed to store more water than currently proposed, the major environmental effects would be those associated with increasing the reservoir size by about 60 acres, the use of larger quantities of rock and fill materials for the dam, and a somewhat longer construction period for the dam structure. If the dam's elevation were raised at a later date, it would produce most of the short-term construction effects of the initial dam construction and those associated with

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an enlarged reservoir. The cost of raising the elevation of the dam at a later date would be many times more expensive than the cost of initially constructing the dam to the ultimately desired elevation. Thus, KEA should investigate the economic feasibility and desirability of increasing the storage capacity of the Terror Reservoir.

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ATTACHMENT III

Stipulations Recommended for Inclusion in the FERC
License for the Terror Lake Hydroelectric Project

1. KEA will provide a locked gate or other means to effectively block vehicular access past the powerhouse, and will prohibit unauthorized vehicular access beyond that point within its legal authority.

2. KEA will restrict travel on the access road to that necessary to accomplish construction and operation requirements, and this travel will be restricted to that required by the project plan submitted to FERC.

3. KEA will restrict helicopter traffic in the vicinity of bears and goats to prevent harassment as defined in the Airborne Hunting Act. The U.S. Fish and Wildlife Service and the Alaska Department of Fish and Game will specifically identify flight corridors to and from construction sites within the project to avoid areas known to be critical to wildlife.

4. KEA agrees that reasonable mitigation measures include the design of the 138KV transmission line to prevent entanglement and electrocution of raptors, and that the design will be subject to review and approval by FERC.

5. KEA will conduct construction and post-construction monitoring and impact assessment in accordance with a monitoring plan developed by KEA or its representative, subject to the approval of the U.S. Fish and Wildlife Service,

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and will make all resulting information available to any interested parties.

6. KEA will enforce a policy of collecting and incinerating all food-related refuse in a timely manner to prevent garbage accumulation and attraction of bears.

7. As part of KEA's erosion and sedimentation control plan on file with FERC, KEA will rehabilitate all disturbed sites where necessary to minimize erosion and sedimentation problems. Native plant species are to be used where practical. Non-native plants are to be approved by the U.S. Fish and Wildlife Service.

8. KEA agrees that project material and disposal sites be subjected to appropriate interagency review and methods and locations be approved in advance of project development.

9. KEA intends to fully comply with all Alaska statutes and will post appropriate notices for construction personnel. This includes prohibiting feeding of wild animals.

10. KEA agrees that no road should be constructed along the transmission corridor.

11. KEA will not permit human disturbance or construction activity within 1,000 feet of raptor nests and agrees that helicopter departure and approach patterns likely to occur in the vicinity of known nest sites will be prescribed on a case-by-case basis.

12. KEA will require all construction personnel

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Appendix E

Compatibility Determinations

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COMPATIBILITY DETERMINATION

Use: Commercial Fishing

Primary Use: Fishing (commercial)

Supporting Uses: Boating (electric and wind-driven), boating (human-powered), boating (motorized), fishing (general), fishing (other), hunting (big game), hunting (other migratory birds), hunting (upland game), hunting (waterfowl), hunting (other), plant gathering, natural resource collecting, camping, hiking and backpacking, pets, photography, swimming and beach use, outdoor recreation (other), fishing (subsistence), gathering (subsistence), hunting (subsistence), subsistence (other), photography (wildlife), wildlife observation, fixed-wing aircraft, tree harvest (firewood).

Refuge Name: Kodiak National Wildlife Refuge

Establishing and Acquisition Authorities

Original authority was Executive Order 8857 (1941); modified by Public Land Order 1634 (1958), Alaska Native Claims Settlement Act (1971), and Alaska National Interest Lands Conservation Act (1980).

Refuge Purposes

Executive Order 8857 established Kodiak National Wildlife Refuge “. . . for the purpose of protecting the natural feeding and breeding ranges of the brown bears and other wildlife on Uganik and Kodiak Islands . . .”

Section 303(5)(B) of ANILCA states the following:

“The purposes for which the Kodiak National Wildlife Refuge is established and shall be managed include

- (i) to conserve fish and wildlife populations and habitats in their natural diversity including, but not limited, to Kodiak brown bears, salmonids, sea otters, sea lions, and other marine mammals and migratory birds;
- (ii) to fulfill the international treaty obligations of the United States with respect to fish and wildlife and their habitats;
- (iii) to provide, in a manner consistent with purposes set forth in subparagraphs (i) and (ii), the opportunity for continued subsistence uses by local residents; and
- (iv) to ensure, to the maximum extent practicable and in a manner consistent with the purposes set forth in subparagraph (i), water quality and necessary water quantity within the refuge.”

National Wildlife Refuge System Mission

The mission of the National Wildlife Refuge System is to administer a national network of lands and waters for the conservation, management, and, where appropriate, restoration of the fish, wildlife, and plant resources and their habitats within the United States for the benefit of present and future generations of Americans (National Wildlife Refuge System Administration Act of 1966, as amended [16 U.S.C.668dd-668ee]).

Description of Use(s)

This determination re-evaluates commercial fishing and facilities related to commercial fishing on the Refuge as described in the 1987 Kodiak Refuge Management Plan for Commercial Fishing Activities. Section 304(d) of the Alaska National Interest Lands Conservation Act allows the exercise of valid commercial fishing rights and the use of Refuge lands for structures and activities incident to the fishing rights as long as they are compatible with Refuge purposes and not a significant expansion of the level of such commercial fishing activities within the Refuge during 1979. The uses evaluated in the previously mentioned plan consisted of 25 setnet site special use permits that authorized the following types of facilities and uses:

- Primary type of facilities authorized per site:
 - One primary cabin for living quarters, cooking, food and dry goods storage, laundry, shower stall, and area for wet clothes
 - One structure for off-season gear storage and in-season overflow living quarters and workspace
 - One outhouse
 - One banya, if there is an inadequate fresh-water supply at the site
 - A small water storage tank (if necessary to build head for water supply)
- Size of facilities
 - Primary cabin—600 square feet
 - Utility cabin—400 square feet (for holders of 1–3 limited entry permits); 500 square feet (for holders of 4 limited entry permits), and 600 square feet (for holders of 5 limited entry permits)
 - Banya—64 square feet (if freshwater source is not adequate for shower)

Facilities may be occupied from May 15 through September 15 annually. Occupancy at other times of the year must be authorized by the Refuge Manager. Commercial fisheries are managed by the State of Alaska to maintain healthy fish populations; one of the purposes of Kodiak Refuge. Therefore, facilitating continued commercial fishing directly contributes to achieving Refuge purposes.

Availability of Resources

Adequate Refuge personnel and base operational funds are available to manage the commercial fishing special use permit program. Administrative staff time is used to prepare the permits. Field staff visit sites and conduct inspections for compliance with the terms and conditions of the special use permits.

Anticipated Impacts of the Use

With the levels of use and related facilities described in the Management Plan for Commercial Fishing Activities, no long-term significant adverse effects on Refuge resources are anticipated. Most of the facilities have been in place for a number of years. The potential for adverse human-bear encounters always exists on Kodiak Refuge, especially where people congregate and especially associated with fishing. Special conditions in special use permits are designed to minimize this danger.

Reported defense-of-life-or-property bear kills are considered when the State of Alaska is establishing the number of brown bear hunting permits to be issued so no long-term adverse impacts would occur even if there are bear kills associated with these permits.

Invasive plants could become established at these sites because of the continued presence of visitors and existing vegetation and soil disturbance. These sites would be relatively easy to monitor for the presence of invasive plants, and eradication efforts could be undertaken prior to invasive plants spreading beyond the immediate vicinity.

Public Review and Comment

Public comment was solicited concurrently with the revision of the Refuge's comprehensive conservation plan. The State of Alaska commented about allocation of setnet fishing permits. The justification section of the compatibility determination was changed to clarify that the service was discussing special use permits issued by the Refuge for setnet site facilities; not limited entry permits issued by the State of Alaska for commercial fishing. There were no other public comments about this compatibility determination.

Determination

☐ Use is Not Compatible

☒ Use is Compatible With the Following Stipulations

Stipulations Necessary to Ensure Compatibility

- Primary facilities permitted per site are one cabin (600 square feet), one utility structure (400 square feet), one outhouse, and one banya (64 square feet) if a fresh water source is not adequate for a shower.
- Buildings must be single story, and the exterior must be a dull color that blends with the surroundings.
- If existing facilities contain less square footage than allowed in the cabin management plan, the size of facilities may be increased up to the maximum. However, the increase will only be allowed if the total number of structures on site is brought into conformance with the cabin management plan.
- If existing facilities contain more square footage than allowed in the cabin management plan and these facilities are removed, replacement facilities must conform to specifications of the plan.
- New garden plots are not allowed.
- A special use permit is required

The management direction provided in the revised comprehensive conservation plan for the Refuge will be implemented. The step-down plan for commercial fisheries activities will be revised as necessary to identify specific management to ensure that this activity continues to remain compatible with Refuge purposes. This includes monitoring of these and other compatible activities. Findings from monitoring would be used to determine what additional management actions, if any, were needed to ensure compatibility. Continuing law enforcement and administrative monitoring of permits will be carried out to ensure compliance with the

following conditions that are incorporated into all permits to minimize impacts on Refuge lands and resources.

The following permit special conditions will be updated, if necessary, when the Kodiak Refuge Management Plan for Commercial Fishing Activities is revised.

Regional Special Conditions

- Failure to abide by any part of this special use permit; violation of any Refuge-related provision in Titles 43 or 50, Code of Federal Regulations; or violation of any pertinent state regulation (e.g., fish or game violation) will be considered grounds for immediate revocation of this permit and could result in denial of future permit requests for lands administered by the U.S. Fish and Wildlife Service. This provision applies to all persons working under the authority of this permit (e.g., assistants or contractors). Appeals of decisions relative to permits are handled in accordance with 50 Code of Federal Regulations 36.41.
- The permittee is responsible for ensuring that all employees, party members, contractors, aircraft pilots, and any other persons working for the permittee and conducting activities allowed by this permit are familiar with and adhere to the conditions of this permit.
- Any problems with wildlife and/or animals taken in defense-of-life-or-property must be reported immediately to the Refuge Manager, the Alaska Department of Fish and Game, and the Alaska State Troopers. Animals taken must be salvaged in accordance with state regulations.
- The permittee and permittee's employees do not have the exclusive use of the site(s) or lands covered by the permit.
- This permit may be cancelled or revised at any time by the Refuge Manager for noncompliance or in case of emergency (e.g., public safety, unusual resource problems).
- The permittee or party chief shall notify the Refuge Manager during Refuge working hours in person or by telephone before beginning and upon completion of activities allowed by this permit.
- Prior to beginning any activities allowed by this permit, the permittee shall provide the Refuge Manager with: (1) name and method of contact for the field party chief/supervisor; aircraft and other vehicle types to be used, identification information for these vehicles; and names of crew members, and (2) any changes in information provided in the original permit application.
- In accordance with the Archaeological Resources Protection Act (16 U.S.C. 470aa), the disturbance of archaeological or historical sites, and the removal of artifacts are prohibited. The excavation, disturbance, collection, or purchase of historical, ethnological, or archaeological specimens or artifacts is prohibited.
- Permittees shall maintain their use areas in a neat and sanitary condition. Latrines must be located at least 150 feet from springs, lakes, and streams. All property of the permittee except for cabins and tent frames is to be removed from Refuge lands upon completion of permitted activities.
- The construction of landing strips or pads is prohibited.
- The use of motorized vehicles is prohibited on all Refuge lands.
- Unauthorized caches of fuel are prohibited. Fuel storage, if any, will be in compliance with regional Service fuel storage policy.

- Subject to available suppression resources, all permitted cabins will be protected from wildfire to the extent possible. Human safety will receive the highest priority consideration by land managers and fire-suppression personnel.

Kodiak Refuge Conditions

- Visitors will be required to comply with any temporary restrictions, emergency orders or other types of regulatory actions promulgated by the Refuge Manager to prevent resource problems or conflicts, in cases of emergency, public safety, or unusual resource problems.
- The use of Native or State lands that have been conveyed (patented) is not authorized by this permit.
- Use of Native or State lands that have been selected but not yet conveyed is prohibited unless a letter of concurrence is submitted to the Refuge Manager prior to beginning any activities allowed by this permit.
- A copy of this special use permit must be in the permittee's possession at all times while exercising the privileges of the permit.
- Food or garbage attractive to bears or other wildlife will be immediately disposed of. No attractive nuisance for bears or other wildlife shall be created by food storage, improper disposal of garbage (includes of burying of garbage), fish smoking, salting, drying, or other uses.
- Combustibles (paper, wood, etc.) may be burned, but all other debris, including cans, bottles, fuel containers, and any other noncombustible material shall be removed and disposed of off Refuge when departing camps.
- Additions or alterations to existing structures and construction of new facilities must have the Refuge Manager's prior approval in writing.
- The discharge of firearms is prohibited, except in conjunction with authorized hunting seasons or for protection of life or property.
- This is a permit for the specific approved commercial use from a designated site. No permitted cabin (site) may be used for recreational purposes, and no cabin may be sublet or rented.

Justification

Analysis conducted as part of the Refuge's original comprehensive conservation planning process found that commercial fishing-related activities on Kodiak Refuge had expanded beyond the 1979 level and that any further expansion of facilities would not be compatible with Refuge purposes. Since 1979, some facilities on selected Refuge lands were conveyed to private ownership. Commercial fishing activities continue on these sites, but are no longer administered by the Refuge. Other new facility sites include several recently constructed on private land and on islands administered by Alaska Maritime Refuge. The Kodiak Refuge, with substantial input from commercial fishing setnet permit holders and others, prepared the 1987 plan to address concerns that had been raised relative to adverse effects of facilities on Refuge resources. The plan was crafted to ensure that commercial fishing activities could continue without materially interfering with or detracting from the purposes of Kodiak Refuge. The 1994 public use management plan also concluded that no new permits for commercial fishing support facilities should be issued on the Refuge. Comments received from Refuge setnet site

operators during revision of the comprehensive conservation plan indicated they strongly support this decision to not issue additional Refuge special use permits for commercial fishing support facilities.

Because most sites have been occupied for many years, adverse impacts on habitat have already occurred. Very little other Refuge habitat has been affected by human activities. The small footprint of facilities minimizes habitat damage and concentrates physical and biological impacts. Special conditions contained in special use permits are intended to protect bears and other Refuge resources from adverse impacts; especially defense-of-life-or-property kills of bears.

Monitoring conducted by Refuge personnel ensures compliance with permit conditions and rapid resolution of problems before they become serious.

Supporting Documents

- U.S. Fish and Wildlife Service. 1987. Kodiak National Wildlife Refuge Management Plan for Commercial Fishing Activities. Kodiak, Alaska. 23 pp.
- U.S. Fish and Wildlife Service. 1987. Kodiak National Wildlife Refuge Final Comprehensive Conservation Plan, Wilderness Review, and Environmental Impact Statement. U.S. Fish and Wildlife Service. Anchorage, Alaska. 533 pp.
- U.S. Fish and Wildlife Service. 1993. Kodiak National Wildlife Refuge, Final Public Use Management Plan and Environmental Assessment. U.S. Fish and Wildlife Service. Kodiak, Alaska. 202 pp.
- U.S. Fish and Wildlife Service. 2004. Draft Revised Comprehensive Conservation Plan and Environmental Impact Statement Kodiak National Wildlife Refuge. U.S. Fish and Wildlife Service. Anchorage, Alaska.

Refuge Determination

Refuge Manager /
Project Leader Approval: UBSMB KSMK 2-17-2006
(Signature) (Date)

Concurrence

Regional Chief,
National Wildlife
Refuge System: [Signature] 2/17/06
(Signature) (Date)

Mandatory 10-Year Re-Evaluation Date: January 2016

NEPA Compliance for Refuge Use Decision

- ☐ Categorical Exclusion without Environmental Action Memorandum
- ☐ Categorical Exclusions and Environmental Action Memorandum
- ☐ Environmental Assessment and Finding of No Significant Impact
- ☒ Environmental Impact Statement and Record of Decision

COMPATIBILITY DETERMINATION

Use: Commercially Guided and Outfitted Hunting Services

Primary Use: Hunting (big-game guiding, small game and waterfowl guiding and outfitting)

Supporting Uses: Boating (electric and wind-driven), boating (human-powered), boating (motorized), interpretation (not conducted by refuge staff or authorized agents), fishing (guiding and outfitting), hunting (upland-game—guiding or outfitting), hunting (waterfowl—guiding or outfitting), hunting (other—guiding or outfitting), plant gathering, natural resource collecting, camping, hiking and backpacking, pets, photography, swimming and beach use, outdoor recreation (other), photography (wildlife), wildlife observation (guiding or outfitting), fixed-wing aircraft, tree harvest (firewood).

Refuge Name: Kodiak National Wildlife Refuge

Establishing and Acquisition Authorities

Original authority was Executive Order 8857 (1941); modified by Public Land Order 1634 (1958), Alaska Native Claims Settlement Act (1971), and Alaska National Interest Lands Conservation Act (1980)

Refuge Purposes

Executive Order 8857 established Kodiak National Wildlife Refuge “. . . for the purpose of protecting the natural feeding and breeding ranges of the brown bears and other wildlife on Uganik and Kodiak Islands . . .”

Section 303(5)(B) of ANILCA states the following:

“The purposes for which the Kodiak National Wildlife Refuge is established and shall be managed include

- (i) to conserve fish and wildlife populations and habitats in their natural diversity including, but not limited, to Kodiak brown bears, salmonids, sea otters, sea lions, and other marine mammals and migratory birds;
- (ii) to fulfill the international treaty obligations of the United States with respect to fish and wildlife and their habitats;
- (iii) to provide, in a manner consistent with purposes set forth in subparagraphs (i) and (ii), the opportunity for continued subsistence uses by local residents; and
- (iv) to ensure, to the maximum extent practicable and in a manner consistent with the purposes set forth in subparagraph (i), water quality and necessary water quantity within the refuge.”

National Wildlife Refuge System Mission

The mission of the National Wildlife Refuge System is to administer a national network of lands and waters for the conservation, management, and, where appropriate, restoration of the fish, wildlife, and plant resources and their habitats within the United

States for the benefit of present and future generations of Americans (National Wildlife Refuge System Administration Act of 1966, as amended [16 U.S.C.668dd-668ee]).

Description of Use

This determination re-evaluates commercial guiding and outfitting services for recreational hunting on Kodiak Refuge. Although big game species, brown bear, deer, mountain goat, and elk are the primary species hunted, waterfowl, ptarmigan, fox, and other species are also hunted by clients of guides and outfitters. The compatibility of recreational hunting is evaluated separately. Guided hunting of brown bear predates Refuge establishment in 1941. Other commercial uses conducted concurrently and incidentally to big-game guiding activities are routinely authorized. These include wildlife viewing, photography, guided small-game and waterfowl hunting, hiking, river floating, other related activities, and boat and aircraft access. Commercially guided hunting and related services contribute to fulfillment of Refuge purposes and to the National Wildlife Refuge System mission by facilitating priority public use and management of healthy wildlife populations through controlled hunting.

Big-game guides are competitively selected to operate on Refuge lands through a formal process established by regional policy in 1992. This policy manages commercial guiding activities at a level that is compatible with Refuge purposes and that ensures high-quality guiding services are available for the public. There are 25 big-game guide use areas on the Refuge. All the guide areas are designated as sole-use areas and are limited to one authorized guide. Individual guides are limited to special use permits for no more than three use areas on Refuge lands in Alaska.

Currently, there are 17 guides operating on the Refuge. Guides must be qualified and licensed by the State of Alaska and are required to follow their written operations plans, which are evaluated by Service personnel during the competitive selection process. Operations plans include (1) dates of operation, (2) species to be hunted, (3) maximum and expected number of clients for each species, (4) number and type of existing or new camps (i.e., tent, temporary platform with tent, cabin, boat), including other needed facilities such as caches, (5) access points and mode(s) of transportation (i.e., airplanes, boats, and other nonmotorized means), (6) fuel storage needs, and (7) services provided by others (contracts for transportation, food services, etc.).

In addition to the competitively awarded permits for big game guiding, permits are issued for guided hunting of other than big game. This type of permit allows for the guiding of small game and waterfowl hunters. From one to three permits are issued annually.

This compatibility determination addresses the full spectrum of uses associated with the overall activity of commercially guided hunting, including all means of access, lodging and facilities, and other elements identified in the guides' operations plans. Authorized means of access for areas on the Refuge include fixed-wing aircraft, motorboats, nonpowered boats, hiking, snowshoeing, and cross-country skiing. Lodging and facilities include tents, tent frames, temporary platforms, existing cabins, and caches. Use of off-road vehicles by hunting guides and their clients is prohibited on the Refuge.

Hunting guides operate on the Refuge from early spring through late fall, in accordance with seasons established by State of Alaska hunting regulations. Guiding occurs during the various hunting seasons. Guides are in the field before and after seasons, preparing

for hunting season and removing any temporary facilities established under their special use permits. Guides report their activities annually as required under the terms of their special use permits.

From 1997 through 2002, guided recreational hunting averaged about 760 client use days per year, with a high of 1,311 use days in 1998 and a low of 546 use days in 2002. Most guided hunting is brown bear hunting. There is also guided goat and deer hunting. Under state law, most hunters who are not Alaska residents must use the services of a licensed big game guide to hunt brown bears and mountain goats. There are occasional guided elk hunts, and guided hunters may also harvest reindeer. For other-than-big-game hunts, waterfowl, small upland game are the target species.

Availability of Resources

Adequate Refuge personnel and base operational funds are available to manage guided big-game hunting activities at existing and projected levels. Administrative staff time primarily involves issuing and renewing special use permits every five years; ensuring licenses and certifications are current; collecting client use day fees; and reporting data on an annual basis. Fieldwork associated with administering the program primarily involves monitoring the permittees' compliance with permit terms.

Permits are issued competitively for a five-year term, with provision for automatic renewal for a second five-year term. The competitive process requires a significant level of time and effort for the applicants as well as for Refuge and agency staff.

Refuge staff participation includes the following: Refuge Manager—five months, full time, for the competitive process, possibly including additional time for dealing with appeals that result in litigation; Refuge staff members who served on ranking panels (three panel members for five weeks each) equal 3.75 months staff time; administrative staff assistance provided by this Refuge—two people for two weeks each (1.0 months). Total minimum staff time by Kodiak Refuge staff members is 9.75 months to issue 25 permits.

Refuge staff time to annually administer and monitor these permits is 9.0 months. Transportation and other operational costs for monitoring is about \$25,000 per year. A nonrefundable administrative fee is assessed when each permit is issued. In addition, client use fees are assessed for each day a guide has a client on the Refuge. Current client use fees are \$16.70 for bear hunters, with \$100.00 per-client minimum, and \$5.60 for deer and goat hunters. Fees collected are deposited into the general fund and are not returned to the Refuge.

Adequate Refuge personnel and base operational funds are also available to manage other than big-game guiding activities at existing and projected levels. Currently, there is a nonrefundable administrative fee for this annual permit and a client use fee of \$5.60 per day is assessed each day a guide has a client on the Refuge.

Anticipated Impacts of the Use

Criteria in the competitive scoring and selection process used to select big-game guide permittees address minimizing impacts to Refuge resources and to other visitors. These criteria include impacts on wildlife resources; other Refuge resources such as water

quality, soil and vegetation disturbance, and other Refuge users, especially subsistence. The criteria address such factors as target species, number of clients, transportation modes, number of and amount of aircraft use, fuel storage, garbage and human waste management, methods to protect wildlife and habitat, type and location of lodging, and location of access points. These selection criteria are used to rank or score applicants and provide a strong incentive to maintain a low-impact guide service. Permit conditions and stipulations noted in a following section also contribute to minimizing potential impacts.

Commercial big-game guide operations have limited competition with other recreational or subsistence harvest. Brown bear hunting on Kodiak is tightly regulated by the State of Alaska's drawing permit system. A specific number of permits are available each season for resident and nonresident hunters. A limited number of federal permits (11) are available for subsistence use, with an average harvest of three bears each year. Guides use a variety of strategies to minimize conflicts with other hunters, including basing their operations on private land, using less desirable camping locations, or backpacking camps into more remote parts of hunt areas. Guided hunts for waterfowl, ptarmigan, and small game have similar patterns of Refuge use.

Big-game guides also may target deer and mountain goats, the latter being an introduced species that is rapidly expanding its range on Kodiak Island. Maximum harvest quotas are established for each hunt area for mountain goats and brown bears to maintain population objectives. State hunting regulations favor harvest of male bears to protect breeding females. No harvest quotas are established for deer by the Service because weather, not hunting, is the primary limiting factor on deer populations.

Refuge officers and State Troopers routinely patrol the Refuge during the relatively short big-game hunting seasons.

A majority of the guides access the Refuge by landing on saltwater, lakes, and rivers with float-equipped aircraft or by boats, thus minimizing impacts on Refuge habitat. A potential impact or threat associated with floatplane access is the introduction of invasive species carried on the aircraft floats, although it is not known to have occurred on the Kodiak Archipelago to date. Temporary displacement and/or disturbance to wildlife can occur during takeoffs and approaches to landings. There may be occasional disturbance of wildlife along coastal areas used by boats. There are no known long-term impacts to Refuge wildlife populations from this disturbance.

Public Review and Comment

Public comment was solicited concurrently with the revision of the Refuge's comprehensive conservation plan. No comments were received on this compatibility determination. However, the State of Alaska noted during a meeting that there were inconsistencies in some of the special conditions for special use permits. These inconsistencies were corrected.

Determination

_____ Use is Not Compatible

X Use is Compatible With the Following Stipulations

Stipulations Necessary to Ensure Compatibility

A special use permit is required.

The management direction provided in the revised comprehensive conservation plan for the Refuge will be implemented. Revision of the public use management plan will be used to identify specific management to ensure that this activity continues to remain compatible with Refuge purposes. This includes monitoring of wildlife-dependent recreation and other compatible activities. Findings from monitoring would be used to determine what additional management actions, if any, were needed to ensure compatibility. Continuing law enforcement and administrative monitoring of permits will be carried out to ensure compliance with the following conditions that are incorporated into all permits to minimize impacts on Refuge lands and resources.

Permit special conditions currently limiting access to nine bear concentration areas will be replaced by special conditions developed through the step-down planning process outlined in the final revised Kodiak National Wildlife Refuge Comprehensive Conservation Plan.

Regional Special Conditions

- Failure to abide by any part of this special use permit; violation of any Refuge-related provision in Titles 43 or 50, Code of Federal Regulations; or violation of any pertinent state regulation (e.g., fish or game violation) will be considered grounds for immediate revocation of this permit and could result in denial of future permit requests for lands administered by the U.S. Fish and Wildlife Service. This provision applies to all persons working under the authority of this permit (e.g., assistants or contractors). Appeals of decisions relative to permits are handled in accordance with 50 Code of Federal Regulations 36.41.
- The permittee is responsible for ensuring that all employees, party members, contractors, aircraft pilots, and any other persons working for the permittee and conducting activities allowed by this permit are familiar with and adhere to the conditions of this permit.
- Any problems with wildlife and/or animals taken in defense-of-life-or-property must be reported immediately to the Refuge Manager, the Alaska Department of Fish and Game, and the Alaska State Troopers. Animals taken must be salvaged in accordance with state regulations.
- The permittee and permittee's employees do not have the exclusive use of the site(s) or lands covered by the permit.
- This permit may be cancelled or revised at any time by the Refuge Manager for noncompliance or in case of emergency (e.g., public safety, unusual resource problems).
- The permittee or party chief shall notify the Refuge Manager during Refuge working hours in person or by telephone before beginning and upon completion of activities allowed by this permit.
- Prior to beginning any activities allowed by this permit, the permittee shall provide the Refuge Manager with: (1) name and method of contact for the field party chief/supervisor; aircraft and other vehicle types to be used, identification information for these vehicles; and names of crew members, and (2) any changes in information provided in the original permit application.
- Prior to beginning any activities allowed by this permit, the permittee shall provide the Refuge with (1) a copy of current business license and guide-outfitter license; (2) proof of comprehensive general liability insurance, listing Kodiak National Wildlife Refuge as additionally insured, (\$300,000 each occurrence, \$500,000 aggregate for guides/outfitters) covering all aspects of operations throughout the annual use period; (3) changes in names of assistant guides and other employees; (4) copies of CPR and First Aid cards for permittee and all

personnel that will operate on the Refuge; and (5) any changes in information provided for the original special use permit proposed operations plan.

- The permittee is responsible for accurate record keeping and shall provide the Refuge Manager with a comprehensive summary report of the number of clients, number of client days per activity type and locations by December 31 for all uses during that calendar year, unless stated otherwise in the permit. The permittee shall provide this information on a Hunting Activity Report form provided with the special use permit. A legible copy of the state's "Hunt Record" for each client will be required in addition to the summary report.
- A nonrefundable administrative fee will be assessed prior to issuing this permit. The permittee shall provide the Refuge Manager client-use information on a form provided with the special use permit at the end of the calendar year. Client use day fee for bear hunters, deer hunters and goat hunters will be assessed. Client use fees are adjusted by the Regional Office every three years based on the Implicit Price Deflator Index (PDI). A client use day is defined as one calendar day (24 hours), or portion thereof, for each client using the Refuge.
- Failure to report the actual number of client use days per type of authorized activity by December 31 of each calendar year and annually paying the Service's established fees (client use day and reserved land site) within 30 days after receiving a bill for collection will be grounds for revocation of this permit.
- In accordance with the Archaeological Resources Protection Act (16 U.S.C. 470aa), the disturbance of archaeological or historical sites, and the removal of artifacts are prohibited. The excavation, disturbance, collection, or purchase of historical, ethnological, or archaeological specimens or artifacts is prohibited.
- Permittees shall maintain their use areas in a neat and sanitary condition. Latrines must be located at least 150 feet from springs, lakes, and streams. All property of the permittee except for cabins and tent frames is to be removed from Refuge lands upon completion of permitted activities.
- The construction of landing strips or pads is prohibited.
- The use of motorized vehicles is prohibited on all Refuge lands.
- The operation of aircraft at altitudes and in flight paths resulting in the herding, harassment, hazing, or driving of wildlife is prohibited. It is recommended that all aircraft, except for takeoff and landing, maintain a minimum altitude of 2,000 feet above ground level.
- The use of helicopters is prohibited.
- Unauthorized caches of fuel or other supplies are prohibited. Fuel storage, if any, will be as outlined in the operations plan and in compliance with regional Service fuel storage policy.
- Construction of cabins or other permanent structures is prohibited.

Kodiak Refuge Conditions

- Visitors will be required to comply with any temporary restrictions, emergency orders or other types of regulatory actions promulgated by the Refuge Manager to prevent resource problems or conflicts, in cases of emergency, public safety, or unusual resource problems.
- The use of Native or State lands that have been conveyed (patented) is not authorized by this permit.
- Use of Native or State lands that have been selected but not yet conveyed is prohibited unless a letter of concurrence is submitted to the Refuge Manager prior to beginning any activities allowed by this permit.
- A copy of this special use permit must be in the party leader's possession at all times while exercising the privileges of the permit.

- Cabins on Refuge lands shall not be used by the permittee without the permission of the Refuge Manager except in cases of dire emergency for survival purposes.
- Food or garbage attractive to bears or other wildlife will be immediately disposed of. No attractive nuisance for bears or other wildlife shall be created by food storage, improper disposal of garbage (includes of burying of garbage), fish smoking, salting, drying, or other uses.
- Combustibles (paper, wood, etc.) may be burned, but all other debris, including cans, bottles, fuel containers, and any other noncombustible material shall be removed and disposed of off Refuge when departing camps.
- The permittee or his or her designated assistant must accompany clients while on the Refuge. Permittee or assistant must be present within the permit area while clients are engaged in activities authorized under this permit. Permittees with more than one permit area must be present within one of the Kodiak National Wildlife Refuge areas in which they are authorized to operate.
- Closed and Limited Access Areas—An area approximately 2,560 acres near the outlet of the O'Malley River, as described in 50 CFR 36.39 (j)(1), is closed to all public access, occupancy, and use (general and commercial) from June 25 through September 30 annually.
- The following areas are currently closed seasonally to commercial use:
 - Connecticut Creek (July 15–August 31)
 - Humpy Creek (July 15–September 15)
 - Seven Rivers (July 15–September 15)
 - Lower Dog Salmon Falls (June 25–August 31)
- The following areas are currently restricted seasonally to day use only by commercial users:
 - Red Lake River and shoreline (July 1–August 31)
 - Upper Thumb River (July 1–August 31)
 - Southeast Creek (Red Lake) (July 15–August 31)
 - Little River Lakeshore (July 15–August 31)
 - Deadman Bay Creek (August 15–September 30)
- Following are the special conditions for operations on the Ayakulik River effective May 25 through July 15:
 - Over fly the area of intended landing to check for floaters and other aircraft.
 - Announce your position and intention, for takeoff/landing or transit of the area, on CTAF 122.8.
 - Slow (displacement) taxi only, no step taxi.
 - No takeoff or landing on the four designated corners. (See attached map.)
 - Unless the wind creates a safety hazard or makes operations impossible, the area downstream from easternmost designated corner is restricted to landings and displacement taxi only. Avoid the lower area for takeoff or landing.
 - Please advise your clients that airplanes are necessary for the Ayakulik recreational fishery, but there are hazards to both anglers and airplanes. Everyone involved needs to be cautious, courteous, and respectful of other users on the river and the resource.
- All aircraft being used in commercial operations must have 12-inch identification numbers in contrasting colors, which are readily visible.
- Motorboat operators must possess U.S. Coast Guard (USCG) licenses for all passenger-carrying operations, if required by USCG regulations.

- Any action by a permittee or the permittee's employees that unduly interferes with or harasses other Refuge visitors or impedes access to any site is strictly prohibited. Examples of prohibited acts include, but are not limited to, low flights over camps or persons at less than 500 feet (unless landing) and parking aircraft or placing other objects on any landable area to restrict use by other aircraft or persons.
- The permittee's operations plan and the attached synopsis, as amended and accepted by the U.S. Fish and Wildlife Service, are hereby incorporated in their entirety as a special condition. All deviations from the operations plan and synopsis must receive prior written approval by the Refuge Manager or his/her designee.
- No long-term tent camps are permitted on Refuge lands without permission of the Refuge Manager. Overnight hunting camps may be maintained in one location for not more than 15 days during any 30-day period and must be completely removed at the end of each camping period. All commercial tent camps must be located at least three miles from other commercial camps and must be moved at least three miles following each use period. All camps must be located at least one mile from any Refuge public use cabin.
- Fixed tent platforms are prohibited. Wall tents with floors that are completely removed from the Refuge at the end of the permit period are allowed.
- Maximum overnight camp size will be six people, including guides and assistants. The Refuge Manager may restrict use and duration of some sites for overnight camping to prevent resource problems or conflicts.
- The permittee may not sublet any part of the authorized use area and is prohibited from subcontracting clients with any other guide.
- Access on Alaska Maritime NWR islands, rocks, and spires adjacent to Kodiak NWR is allowed for glassing or scoping of game and wildlife viewing. Access is restricted to day use only, colonies of nesting birds must be avoided, and any foot travel must be performed in a manner to avoid damage of ground-nest sites.
- This special use permit specifically does not authorize the following:
 - Construction of blinds, stands or any other structures
 - Baiting, feeding, harassing, herding, or any other activity that changes, or attempts to change, normal behavior, this includes but is not limited to bears, fox, deer, and eagles
 - Any other types of commercially guided activities as described in attachment (a) Refuge Guide and Other Visitor Service Definitions.
- Additions or alterations to existing structures and construction of new facilities must have the Refuge Manager's prior approval in writing.
- The discharge of firearms is prohibited, except in conjunction with authorized hunting seasons or for protection of life or property.

Justification

Recreational hunting has been found to be compatible with the purposes of Kodiak Refuge and with the National Wildlife Refuge System mission. Commercial big-game guiding and outfitting services are a form of traditional activity that Congress intended to preserve with enactment of the Alaska National Interest Lands Conservation Act, which redesignated the Refuge. These services support not only hunting, but also other activities, including wildlife observation and photography; these are three of the priority public uses of national wildlife refuges. Most non-Alaska residents would not be able to hunt brown bears on Kodiak Refuge if guiding were not allowed.

Commercial hunting guides also provide the public with high-quality, safe, and unique recreational hunting opportunities found few places in the world. These visitor services are a valuable benefit to a segment of the American public that is not physically able to, not comfortable with, or for other reasons chooses not to participate in unguided hunts on the Refuge.

Requirements placed on recreational hunting guides by the Service through the original selection process and the terms of their special use permits and regulations of the State of Alaska ensure that these commercial operators provide safe, high-quality experiences for their clients. These operations can help the Refuge achieve its purposes of protecting fish and wildlife resources of the Refuge and meeting legal requirements to provide compatible opportunities for the public to use and enjoy these resources.

"According to a 2003 analysis conducted by the Institute for Social and Economic Research at the University of Alaska Anchorage, recreational hunting on Kodiak Refuge contributes about \$678,000 in payroll and 25 average annual jobs to the Alaska economy each year. Average annual jobs are calculated by dividing payroll by the average annual pay for a job related to the hunting industry (guiding and support services). Due to the seasonal nature of hunting, the number of jobs during peak periods is much greater than the annual average. Payroll figures are based on Refuge visitor numbers and estimated expenditures; they do not include hunting activities that occur outside the Refuge, although those activities may partially depend on Refuge wildlife and habitat resources."

Supporting Documents

- U.S. Fish and Wildlife Service. 1987. Kodiak National Wildlife Refuge Final Comprehensive Conservation Plan, Wilderness Review, and Environmental Impact Statement. U.S. Fish and Wildlife Service. Anchorage, Alaska. 533 pp.
- U.S. Fish and Wildlife Service. 1993. Kodiak National Wildlife Refuge, Final Public Use Management Plan and Environmental Assessment. U.S. Fish and Wildlife Service. Kodiak, Alaska. 202 pp.
- U.S. Fish and Wildlife Service. 2004. Draft Revised Comprehensive Conservation Plan and Environmental Impact Statement Kodiak National Wildlife Refuge. U.S. Fish and Wildlife Service. Anchorage, Alaska.

Refuge Determination

Refuge Manager /

Project Leader Approval:

LESLIE KERN

(Signature)

2-17-2006

(Date)

Concurrence

Regional Chief,
National Wildlife
Refuge System:

[Signature]

(Signature)

2/17/06

(Date)

Mandatory 10-Year Re-Evaluation Date: January 2016

NEPA Compliance for Refuge Use Decision

- ☐ Categorical Exclusion without Environmental Action Memorandum
- ☐ Categorical Exclusions and Environmental Action Memorandum
- ☐ Environmental Assessment and Finding of No Significant Impact
- ☒ Environmental Impact Statement and Record of Decision

COMPATIBILITY DETERMINATION

Use: Commercially Guided Recreational Fishing Services

Primary Use: Fishing (guiding and outfitting)

Supporting Uses: Boating (electric and wind-driven), boating (human-powered), boating (motorized), interpretation (not conducted by refuge staff or authorized agents), hunting (upland-game), hunting (waterfowl), hunting (other), plant gathering, rock collecting, natural resource collecting, camping, hiking and backpacking, pets, photography, video, filming, or audio recording (nonwildlife-dependent, recreational—other), swimming and beach use, outdoor recreation (other), photography (wildlife), wildlife observation (guiding or outfitting), fixed-wing aircraft, tree harvest (firewood)

Refuge Name: Kodiak National Wildlife Refuge

Establishing and Acquisition Authorities

Original authority was Executive Order 8857 (1941); modified by Public Land Order 1634 (1958), Alaska Native Claims Settlement Act (1971), and Alaska National Interest Lands Conservation Act (1980)

Refuge Purposes

Executive Order 8857 established Kodiak National Wildlife Refuge “. . . for the purpose of protecting the natural feeding and breeding ranges of the brown bears and other wildlife on Uganik and Kodiak Islands . . .”

Section 303(5)(B) of ANILCA states the following:

“The purposes for which the Kodiak National Wildlife Refuge is established and shall be managed include

- (i) to conserve fish and wildlife populations and habitats in their natural diversity including, but not limited, to Kodiak brown bears, salmonids, sea otters, sea lions, and other marine mammals and migratory birds;
- (ii) to fulfill the international treaty obligations of the United States with respect to fish and wildlife and their habitats;
- (iii) to provide, in a manner consistent with purposes set forth in subparagraphs (i) and (ii), the opportunity for continued subsistence uses by local residents; and
- (iv) to ensure, to the maximum extent practicable and in a manner consistent with the purposes set forth in subparagraph (i), water quality and necessary water quantity within the refuge.”

National Wildlife Refuge System Mission

The mission of the National Wildlife Refuge System is to administer a national network of lands and waters for the conservation, management, and, where appropriate, restoration of the fish, wildlife, and plant resources and their habitats within the United States for the benefit of present and future generations of Americans (National Wildlife Refuge System Administration Act of 1966, as amended [16 U.S.C.668dd-668ee]).

Description of Use

This compatibility determination addresses the full spectrum of uses associated with commercially guided recreational fishing. This includes all means of access, lodging and facilities, and other elements identified in the guides' operations plans. Commercial fishing guides target five species of Pacific salmon, rainbow trout, steelhead, Dolly Varden, and Arctic char on the Refuge. This activity predates Refuge establishment and has been authorized on the Refuge since it was established in 1941. Other commercial uses conducted concurrently and incidental to guided recreational fishing are routinely authorized. These include wildlife viewing, photography, guided small game and waterfowl hunting, hiking, river floating, camping, and related activities. Commercially guided recreational fishing and related services contribute to fulfillment of Refuge purposes and the National Wildlife Refuge System mission by facilitating priority public use and management of healthy fish populations through managed fishing.

The compatibility of recreational fishing on Kodiak Refuge is evaluated in a separate compatibility determination. Means of authorized access include fixed-wing airplanes, motorboats, nonpowered boats, and hiking. Guided recreational fishing occurs spring through fall. Recreational fishing is managed under State of Alaska fishing regulations on the Refuge.

Of the 117 drainages on the Refuge, 11 could be classified as having excellent recreational fishing opportunities, based on reasonable accessibility by float plane or boat, and populations of anadromous and/or resident fish. Although all these drainages provide opportunities for day use and overnight primitive camping, cost of traveling to these areas for day use fishing is prohibitive for most visitors unless they are staying at a remote lodge providing this service. All 11 drainages provide opportunities for coho salmon fishing; however, only the Ayakulik and Karluk rivers support chinook and substantial numbers of steelhead. Although smaller populations of steelhead exist on some of the other rivers, very little fishing effort has occurred on these rivers.

Chinook salmon fishing usually starts in late May, and the run is typically over by July 10. Although fish are present in the systems through mid-August or later, there is a general closure to angling for chinook by regulation on July 25 to protect spawners. Steelhead usually start entering river systems in late August, and their numbers peak in late October, although it is suspected that some fish continue to enter the rivers into early spring of the next year. Fishing for steelhead and resident rainbow in flowing fresh water has historically been closed by regulation from April 1 through June 14 to protect spawners. The Board of Fisheries recently opened a catch-and-release steelhead season on portions of the Karluk and Ayakulik rivers during this time period. Coho enter the drainages from mid- to late-August and usually peak near the end of September. Recreational fishing for coho is usually good through early October in most systems. Fishing for Dolly Varden and Arctic char can be found year-round, depending on which river system is targeted.

Recreational fishing guides under permit from the Refuge may operate from a temporary camp on a river or from one of the remote lodges located on private lands adjacent to the Refuge. Until 2001, 24 recreational fishing guides—the maximum number allowed since the 1980s—operated under special use permits on the Refuge, offering both day and

overnight trips for clients. In 2001, the number of recreational fishing guiding permits issued peaked when 36 were awarded.

In 2001, the Refuge implemented a prospectus system for awarding permits to recreational fishing guiding businesses in four drainages: the Dog Salmon, Ayakulik, Uganik, and Little River. Outside of these four drainages, there is no limit on the number of recreational fishing guides. Each fishing guide can have overnight camps on only two river systems, and no more than two overnight camps are allowed per drainage for all commercial activities by all guides. Guides are authorized to use any Refuge drainage not under prospectus, but are restricted to a group of six people for each trip (including guide and cook, if any). Each guide must submit a year-end report to the Refuge identifying the number of clients guided, the location(s) of fishing activities, and the number of fish caught by species.

Recreational fishing, both guided and unguided, currently accounts for slightly more than one-third of overall annual public use on the Refuge. Guided recreational fishing is about half that use. From 1997 through 2003, an average of 1,743 guided recreational fishing use days annually occurred, with peak use of 2,272 guided use days in 1999 and a seven-year low of 1,380 guided use days in 2002. Despite anecdotal evidence of fishing-use increases in selected areas, it appears that total use has been relatively stable for some time. According to Schwarz and Clapsadl, estimated overall (including off-Refuge lands) Kodiak recreational fishing effort in 1997 was similar to the previous 10-year average (Schwarz and Clapsadl 2000).

Availability of Resources

Adequate Refuge personnel and base operational funds are available to manage recreational fish commercial guiding activities at current and projected levels. Administrative staff time primarily involves issuing permits, ensuring that licenses and certifications are current, collecting client use day fees, and entering activity data into a database for analysis. Fieldwork associated with administering the program primarily involves monitoring the permittees' compliance with the terms of the permits.

Refuge staff time to annually administer and monitor these permits is 9.0 months. Transportation and other operational costs, including a field camp on the Ayakulik River for monitoring, is about \$30,000 per year. A nonrefundable administrative fee is assessed when each permit is issued. In addition, a client use fee is assessed for each day a guide has a client on the Refuge. Fees collected are deposited into the general fund and are not returned to the Refuge.

Anticipated Impacts of the Use

Both the Federal Subsistence Board and State Board of Fisheries regularly adopt regulations in response to fish population levels and to address issues of fishery allocation. The opportunity for continued subsistence uses of fishery resources by local residents receives the highest priority from the Federal Subsistence Board. Regulations have been implemented in recent years to address resource concerns at specific locations on or near the Refuge.

The estimated guided recreational harvest of these fish is well within the limits established in various management plans. Past impact evaluations have focused on

impacts to the brown bear population. There has been one documented defense-of-life-or-property bear kill by a sport fish guide on the Refuge.

A majority of the guides access the Refuge by landing on lakes and rivers with float-equipped aircraft, thus minimizing impacts on Refuge habitat. A potential impact or threat associated with floatplane access is the introduction of invasive species carried on the aircraft floats, although it is not known to have occurred on the Kodiak Archipelago to date. Temporary displacement and/or disturbance to wildlife can occur during take-offs and approaches to landings. There are no known long-term impacts to Refuge wildlife populations from this disturbance.

Refuge officers and State Troopers routinely patrol the Refuge to monitor compliance with state regulations and permit conditions.

Public Review and Comment

Public comment was solicited concurrently with revision of the Refuge's comprehensive conservation plan. No comments were received on this compatibility determination. However, the State of Alaska noted during a meeting that there were inconsistencies in some of the special conditions for special use permits. These inconsistencies were corrected.

Determination

_____ Use is Not Compatible

X Use is Compatible With the Following Stipulations

Stipulations Necessary to Ensure Compatibility

A special use permit is required.

The management direction provided in the revised comprehensive conservation plan for the Refuge will be implemented. Revision of the public use management plan will be used to identify specific management to ensure that this activity continues to remain compatible with Refuge purposes. This includes monitoring of wildlife-dependent recreation and other compatible activities. Findings from monitoring would be used to determine what additional management actions, if any, were needed to ensure compatibility. Continuing law enforcement and administrative monitoring of permits will be carried out to ensure compliance with the following conditions that are incorporated into all permits to minimize impacts on Refuge lands and resources.

Permit special conditions currently limiting access to nine bear concentration areas will be replaced by special conditions developed through the step-down planning process outlined in the final revised Kodiak National Wildlife Refuge Comprehensive Conservation Plan.

Regional conditions

- Failure to abide by any part of this special use permit; violation of any Refuge-related provision in Titles 43 or 50, Code of Federal Regulations; or violation of any pertinent state regulation (e.g., fish or game violation) will be considered grounds for immediate revocation of this permit and could result in denial of future permit requests for lands administered by the U.S. Fish and Wildlife Service. This provision applies to all persons

working under the authority of this permit (e.g., assistants or contractors). Appeals of decisions relative to permits are handled in accordance with 50 Code of Federal Regulations 36.41.

- The permittee is responsible for ensuring that all employees, party members, contractors, aircraft pilots, and any other persons working for the permittee and conducting activities allowed by this permit are familiar with and adhere to the conditions of this permit.
- Any problems with wildlife and/or animals taken in defense-of-life-or-property must be reported immediately to the Refuge Manager, the Alaska Department of Fish and Game, and the Alaska State Troopers. Animals taken must be salvaged in accordance with state regulations.
- The permittee and permittee's employees do not have the exclusive use of the site(s) or lands covered by the permit.
- This permit may be cancelled or revised at any time by the Refuge Manager for noncompliance or in case of emergency (e.g., public safety, unusual resource problems).
- The permittee or party chief shall notify the Refuge Manager during Refuge working hours in person or by telephone before beginning and upon completion of activities allowed by this permit.
- Prior to beginning any activities allowed by this permit, the permittee shall provide the Refuge Manager with: (1) name and method of contact for the field party chief/supervisor; aircraft and other vehicle types to be used, identification information for these vehicles; and names of crew members, and (2) any changes in information provided in the original permit application.
- Prior to beginning any activities allowed by this permit, the permittee shall provide the Refuge with (1) a copy of current business license; (2) proof of comprehensive general liability insurance, listing Kodiak National Wildlife Refuge as additionally insured, (\$300,000 each occurrence, \$500,000 aggregate for guides/outfitters) covering all aspects of operations throughout the annual use period; (3) changes in names of assistant guides and other employees; (4) copies of CPR and First Aid cards for permittee and all personnel that will operate on the Refuge; and (5) any changes in information provided for the original special use permit proposed operations plan.
- The permittee is responsible for accurate record keeping and shall provide the Refuge Manager with a comprehensive summary report of location, numbers of clients, dates, and numbers of fish caught (released and kept) by January 15 for all uses during that calendar year, unless stated otherwise in the permit. An annual nonrefundable administrative fee will be assessed prior issuing this permit. In addition, a client use day fee will be assessed at the end of the calendar year based on the permittee's use report. Client use fees are adjusted by the Regional Office every three years based on the Implicit Price Deflator Index (PDI). The permittee shall provide this information on a Fishing Activity Report form provided with the special use permit. A legible copy of the state's "Fishing Log" for each client may be required in addition to the summary report. For law enforcement purposes, the permittee may be required to provide names and addresses of clients. Failure to submit required reports and payments could result in the issuance of citations and revocation of the permit.
- In accordance with the Archaeological Resources Protection Act (16 U.S.C. 470aa), the disturbance of archaeological or historical sites, and the removal of artifacts are

prohibited. The excavation, disturbance, collection, or purchase of historical, ethnological, or archaeological specimens or artifacts is prohibited.

- Permittees shall maintain their use areas in a neat and sanitary condition. Latrines must be located at least 150 feet from springs, lakes, and streams. All property of the permittee except for cabins and tent frames is to be removed from Refuge lands upon completion of permitted activities.
- The construction of landing strips or pads is prohibited.
- The use of motorized vehicles is prohibited on all Refuge lands.
- The operation of aircraft at altitudes and in flight paths resulting in the herding, harassment, hazing, or driving of wildlife is prohibited. It is recommended that all aircraft, except for takeoff and landing, maintain a minimum altitude of 2,000 feet above ground level.
- The use of helicopters is prohibited.
- Unauthorized caches of fuel or other supplies are prohibited. Fuel storage, if any, will be as outlined in the operations plan and in compliance with regional Service fuel storage policy.
- Construction of cabins or other permanent structures is prohibited.

Kodiak Refuge Conditions

- Visitors will be required to comply with any temporary restrictions, emergency orders or other types of regulatory actions promulgated by the Refuge Manager to prevent resource problems or conflicts, in cases of emergency, public safety, or unusual resource problems.
- The use of Native or State lands that have been conveyed (patented) is not authorized by this permit.
- Use of Native or State lands that have been selected but not yet conveyed is prohibited unless a letter of concurrence is submitted to the Refuge Manager prior to beginning any activities allowed by this permit.
- A copy of this special use permit must be in the party leader's possession at all times while exercising the privileges of the permit.
- Cabins on Refuge lands shall not be used by the permittee without the permission of the Refuge Manager except in cases of dire emergency for survival purposes.
- Food or garbage attractive to bears or other wildlife will be immediately disposed of. No attractive nuisance for bears or other wildlife shall be created by food storage, improper disposal of garbage (includes of burying of garbage), fish smoking, salting, drying, or other uses.
- Combustibles (paper, wood, etc.) may be burned, but all other debris, including cans, bottles, fuel containers, and any other noncombustible material shall be removed and disposed of off Refuge when departing camps.
- The permittee or his or her designated assistant must accompany clients while on the Refuge. Permittee or assistant must be present within the permit area while clients are engaged in activities authorized under this permit. Permittees with more than one permit area must be present within one of the Kodiak National Wildlife Refuge areas in which they are authorized to operate.

- Closed and Limited Access Areas—An area approximately 2,560 acres near the outlet of the O'Malley River, as described in 50 CFR 36.39 (j)(1), is closed to all public access, occupancy, and use (general and commercial) from June 25 through September 30 annually.
- The following areas are currently closed seasonally to commercial use:
 - Connecticut Creek (July 15–August 31)
 - Humpy Creek (July 15–September 15)
 - Seven Rivers (July 15–September 15)
 - Lower Dog Salmon Falls (June 25–August 31)
- The following areas are currently restricted seasonally to day use only by commercial users:
 - Red Lake River and shoreline (July 1–August 31)
 - Upper Thumb River (July 1–August 31)
 - Southeast Creek (Red Lake) (July 15–August 31)
 - Little River Lakeshore (July 15–August 31)
 - Deadman Bay Creek (August 15–September 30)
- Following are the special conditions for operations on the Ayakulik River effective May 25 through July 15:
 - Over fly the area of intended landing to check for floaters and other aircraft.
 - Announce your position and intention, for takeoff/landing or transit of the area, on CTAF 122.8.
 - Slow (displacement) taxi only, no step taxi.
 - No takeoff or landing on the four designated corners. (See attached map.)
 - Unless the wind creates a safety hazard or makes operations impossible, the area downstream from easternmost designated corner is restricted to landings and displacement taxi only. Avoid the lower area for takeoff or landing.
 - Please advise your clients that airplanes are necessary for the Ayakulik recreational fishery, but there are hazards to both anglers and airplanes. Everyone involved needs to be cautious, courteous, and respectful of other users on the river and the resource.
- All aircraft being used in commercial operations must have 12-inch identification numbers in contrasting colors, which are readily visible.
- Motorboat operators must possess U.S. Coast Guard (USCG) licenses for all passenger-carrying operations, if required by USCG regulations.
- The permittee's operations plan and the attached synopsis, as amended and accepted by the U.S. Fish and Wildlife Service, are hereby incorporated in their entirety as a special condition. All deviations from the operations plan and synopsis must receive prior written approval by the Refuge Manager or his/her designee. OR
- The permittee's operations plan, as amended and accepted by the U.S. Fish and Wildlife Service, are hereby incorporated in their entirety as a special condition. All deviations from the operations plan must receive prior written approval by the Refuge Manager or his/her designee.
- Any action by a permittee or the permittee's employees that unduly interferes with or

harasses other Refuge visitors or impedes access to any site is strictly prohibited. Examples of prohibited acts include, but are not limited to, low flights over camps or persons at less than 500 feet (unless landing) and parking aircraft or placing other objects on any landable area to restrict use by other aircraft or persons.

- Fixed tent platforms are prohibited. Wall tents with floors that are completely removed from the Refuge at the end of the permit period are allowed.
- Permittee is limited to one (1) overnight guide camp in each of a maximum of two (2) drainages specified for overnight use on the face of the permit. Concurrent possession of more than one Refuge recreational fishing permit does not increase this limit. Any additional overnight camping must be approved in writing by the Refuge Manager. All guide camps must be located at least one (1) mile from other guide camps or Refuge public use cabins and must be completely removed after use. No more than two operators will be permitted to set up overnight camps on a given drainage at a given time.
- The permittee may not sublet any part of the authorized use area and is prohibited from subcontracting clients with any other guide.
- Maximum overnight camp size will be six people, including guides and assistants. The Refuge Manager may restrict use and duration of some sites for overnight camping to prevent resource problems or conflicts.
- The discharge of firearms is prohibited, except in conjunction with authorized hunting seasons or for protection of life or property.
- This special use permit specifically does not authorize the following:
 - Construction of blinds, stands or any other structures
 - Baiting, feeding, harassing, herding, or any other activity that changes, or attempts to change, normal behavior, this includes but is not limited to bears, fox, deer, and eagles
 - Any other types of commercially guided activities as described in attachment (a) Refuge Guide and Other Visitor Service Definitions.
- Operations are allowed on the Ayakulik River, Little River, Frazer lake/Dog Salmon River and the Uganik Lake/Lower Uganik drainages only by guides awarded permits through the prospectus system.

Justification

Commercially guided fishing services are a form of traditional activity that Congress intended to preserve with enactment of the Alaska National Interest Lands Conservation Act, which redesignated the Refuge. Guides support not only angling, but also other activities, including wildlife observation and photography, all of which the National Wildlife Refuge System Administration Act of 1966 (as amended by the Refuge Improvement Act) identifies as priority public uses. Recreational fishing guiding operations on the Refuge provide the public with high-quality, safe, and unique recreational fishing opportunities found few places in the world. These visitor services are a valuable benefit to a segment of the public that is either not physically able to, not comfortable with, or for other reasons chooses not to participate in unguided fishing trips on the Refuge.

Recreational fishing has been found compatible with Refuge purposes and is one of the priority public uses of national wildlife refuges. Guides help facilitate public participation

in this activity. Guides and their clients are much more tightly regulated and monitored than unguided anglers. Therefore, their activities are even less likely to cause problems with Refuge resources and other visitors than those of the general, unguided public visiting the Refuge.

Supporting Documents

- Schwarz, L., and M. Clapsdahl. 2000. "1997 and 1998 area management report for the recreational fisheries of the Kodiak and Alaska Peninsula/Aleutian Islands regulatory areas." Fishery Management Report. No. 00-1. Anchorage, Alaska: Alaska Department of Fish and Game Division of Sport Fish.
- U.S. Fish and Wildlife Service. 1987. Kodiak National Wildlife Refuge Final Comprehensive Conservation Plan, Wilderness Review, and Environmental Impact Statement. U.S. Fish and Wildlife Service. Anchorage, Alaska. 533 pp.
- U.S. Fish and Wildlife Service. 1993. Kodiak National Wildlife Refuge, Final Public Use Management Plan and Environmental Assessment. U.S. Fish and Wildlife Service. Kodiak, Alaska. 202 pp.
- U.S. Fish and Wildlife Service. 2004. Draft Revised Comprehensive Conservation Plan and Environmental Impact Statement Kodiak National Wildlife Refuge. U.S. Fish and Wildlife Service. Anchorage, Alaska.

Refuge Determination

Refuge Manager /

Project Leader Approval:

UBSUS KBYM

(Signature)

2-17-2006

(Date)

Concurrence

Regional Chief,
National Wildlife
Refuge System:

[Signature]

(Signature)

2/17/06

(Date)

Mandatory 10-Year Re-Evaluation Date: January 2016

NEPA Compliance for Refuge Use Decision

- ☐ Categorical Exclusion without Environmental Action Memorandum
- ☐ Categorical Exclusions and Environmental Action Memorandum
- ☐ Environmental Assessment and Finding of No Significant Impact
- ☒ Environmental Impact Statement and Record of Decision

COMPATIBILITY DETERMINATION

Use: Commercially Guided Wildlife Viewing, Photography, Environmental Education, and Interpretation.

Primary Use: Environmental education (not conducted by refuge staff or authorized agents), interpretation (not conducted by refuge staff or authorized agents), photography (wildlife), and wildlife observation (guiding or outfitting).

Supporting Uses: Boating (electric and wind-driven), boating (human-powered), boating (motorized), plant gathering, natural resource collecting, camping, cross-country skiing, dog training (including field trials), dog sledding and ski touring, hiking and backpacking, pets, photography, snowshoeing, swimming and beach use, outdoor recreation (other), fixed-wing aircraft, tree harvest (firewood).

Refuge Name: Kodiak National Wildlife Refuge

Establishing and Acquisition Authorities

Original authority was Executive Order 8857 (1941); modified by Public Land Order 1634 (1958), Alaska Native Claims Settlement Act (1971), and Alaska National Interest Lands Conservation Act (1980)

Refuge Purposes

Executive Order 8857 established Kodiak National Wildlife Refuge “. . . for the purpose of protecting the natural feeding and breeding ranges of the brown bears and other wildlife on Uganik and Kodiak Islands . . .”

Section 303(5)(B) of ANILCA states the following:

“The purposes for which the Kodiak National Wildlife Refuge is established and shall be managed include

- (i) to conserve fish and wildlife populations and habitats in their natural diversity including, but not limited, to Kodiak brown bears, salmonids, sea otters, sea lions, and other marine mammals and migratory birds;
- (ii) to fulfill the international treaty obligations of the United States with respect to fish and wildlife and their habitats;
- (iii) to provide, in a manner consistent with purposes set forth in subparagraphs (i) and (ii), the opportunity for continued subsistence uses by local residents; and
- (iv) to ensure, to the maximum extent practicable and in a manner consistent with the purposes set forth in subparagraph (i), water quality and necessary water quantity within the refuge.”

National Wildlife Refuge System Mission

The mission of the National Wildlife Refuge System is to administer a national network of lands and waters for the conservation, management, and, where appropriate, restoration of the fish, wildlife, and plant resources and their habitats within the United

States for the benefit of present and future generations of Americans (National Wildlife Refuge System Administration Act of 1966, as amended [16 U.S.C.668dd-668ee]).

Description of Use

This determination re-evaluates the following commercially guided wildlife-dependent activities: wildlife viewing, wildlife photography, environmental education, and interpretation when they are provided as separate services from guided hunting or recreational fishing. Compatibility of guided hunting and fishing is evaluated separately. Associated activities such as camping, backpacking, hiking, and other incidental uses are considered part of these wildlife-dependent activities for the purposes of this evaluation. These activities primarily occur during summer and early fall.

Over the last several years, the total number of wildlife viewing use days has been fairly stable, ranging from 1,207 in 2000 to 865 in 2001. The mix of guided and unguided use within this total has varied substantially, with guided use being two to five times the amount of unguided use. The number of permits issued for wildlife viewing and photography guides is not limited and has increased steadily from five in 1990 to 20 in 2000 and 25 in 2001. There is no upper limit on the number of permits that can be issued. Most of the permits that are issued are for day use. Not all of these permits are used; recent interest may have been spurred by the plan revision process, with some businesses wanting to get a “foot in the door” in case permits became limited later.

Currently, an applicant submits an operations plan, and it is reviewed by the staff for potential conflicts with Refuge purposes or other users. If there is no apparent problem, the operations plan is made part of the special conditions, and the permit is issued.

Commercially guided viewing is offered by a range of air-taxi, lodge, and marine transport services. Air-taxi operators offer single-day trips—which may combine aerial viewing, landing, and hiking to a viewing site—while lodge operators offer a multi-day, multi-purpose venue, which often includes guided bear viewing. Most guided, walk-in viewing is a site- and time-specific group venture.

Many of the lodges on Kodiak Island conduct bear viewing as part of their operations, but usually in conjunction with other activities such as recreational fishing or other wildlife viewing. Some lodges offer bear viewing exclusively during times of the year when other activities such as hunting are not available. Guides typically seek to provide small groups of clients (two to six people) a wildland experience in which the clients have the opportunity to go unnoticed by bears as they watch and photograph them in their natural habitat. Most viewing is done at locations relatively close to the lodge and accessible by boat ride (usually a skiff, although some operators use sea kayaks) and possibly a one- or two-mile hike. Viewing at these areas is usually dictated by timing of salmon migrations, which cause the bears to gather at predictable locations, and the huge tidal fluctuations in the long narrow bays of Kodiak Island, which determine when and for how long an outing can last.

Some operators do not limit their bear viewing to Kodiak Island; they also use areas of the Katmai coast to provide additional viewing opportunities, especially earlier in the season. Lodges provide a range of wildlife-viewing opportunities over the course of several days. Lodge visits may involve a short hike up one of Kodiak’s coastal rivers, a boat ride to one of numerous bays, a floatplane ride to Frazer Lake, watching marine

mammals and other marine wildlife, or, quite possibly, many or all of these activities over a three- to five-day visit. Most visitors to Kodiak Island desire to see a brown bear; no matter what type of trip they come for, a bear sighting is almost always an added benefit.

Air charters typically take clients to different areas during different times of year, depending on where bears are congregated. Information from other pilots can be a critical decision-making factor when the weather is flyable to more than one location. Viewing is typically better along the Katmai coast during May and June when bears are feeding in sedge meadows and along mud flats before the annual salmon migration begins.

Once the salmon start to arrive, viewing improves on Kodiak Island in late July, August and into September as bears congregate at places like Karluk Lake and Frazer fish pass, which is easily accessible by float plane and a three-quarter-mile hike. One guide said it was nice to have an “ace in the hole” like Frazer where bears can be dependably seen. While these operators take small groups of two to six people, it is common to see other groups at these locations. A limited number of locations are readily accessible by floatplane, unaffected by tides, and provide consistent chances of seeing bears.

Many people interviewed as part of a bear-viewing assessment conducted by the Service (Allen and Collins 2002) thought that people who have experience with areas such as Brooks Camp, McNeil River, and Pack Creek tend to seek out and prefer more primitive types of experiences offered at other areas such as the Katmai coast and Kodiak Island. Several operators on Kodiak commented that people who do not know what to expect, or have preconceptions of an experience similar to McNeil River or Brooks Camp, are very satisfied with the experience they do have and appreciate the fact that it is not the same type of bear viewing they might find at other places.

Over the life of the revised conservation plan (approximately 15 years), overall visitor use is expected to increase 20 percent to 30 percent, and some shifts in type of use and users may also occur. On Kodiak Refuge, it is anticipated that wildlife viewing will increase as a proportion of total recreation use days, and nonresidents will constitute a larger proportion of the visitor population than they do today.

Availability of Resources

Adequate Refuge personnel and base operational funds are available to manage wildlife-dependent recreational activities at present levels. Administrative staff time primarily involves phone conversations, written correspondence, public use surveys, and interaction with visitors at the visitor center. As use increases, and there are demands to offer access to some areas currently closed administratively to commercial access, needs for staffing and funding will increase. Step-down planning processes, including intensive public involvement, are called for in the conservation plan prior to opening any of these areas. Such plans require staff time to develop, implement, and monitor, including biological monitoring to ensure compatibility of recreational use with Refuge purposes. These additional activities can be undertaken only as addition of staff and funding allows. Some minimal level of increase may be possible with out increases in staff and funding.

There is also additional work entering activity data into a database for analysis. At present, fieldwork associated with administering the program primarily involves conducting patrols to increase visitor compliance with state and federal regulations and

to foster respect for local residents' activities and property. As use increases and/or additional areas are opened for use, biological monitoring will be required with associated needs for funding and staffing.

Refuge staff time to annually administer and monitor these commercial permits is three months. Transportation and other operational costs for monitoring is about \$5,000 per year. A nonrefundable administrative fee is assessed when each commercial permit is issued. In addition, a client use fee is assessed for each day a guide has a client on the Refuge. Fees collected are deposited into the general fund and are not returned to the Refuge.

Anticipated Impacts of the Use

Adverse impacts to Refuge wildlife and habitats associated with these priority public uses and associated uses are evaluated in the environmental impact statement for the revised Kodiak Refuge conservation plan. Negligible impacts to Refuge habitats from disturbance or introduction of invasive plants are anticipated. Possible localized adverse impacts to some bird species and brown bears have been documented, but the proposed plan would not have any long-term population level impacts on Refuge wildlife. Positive effects on the local economy, though small, are anticipated from these uses.

Implementation of access and bear-viewing management would initially affect bears at concentration areas newly opened to managed bear viewing and other public uses. This use would disturb and displace unhabituated bears, resulting in a measurable short-term decline in bear use levels, despite application of seasonal area-use guidelines and restrictions. Recovery to current bear-use levels would be expected possibly by year two or three, and probably by year four (Barnes 2004), as most bears habituated to nonthreatening, consistent, and predictable visitor activity.

The step-down planning process called for in the conservation plan will be used to establish any additional opportunities for wildlife viewing and photography in sensitive locations. It would minimize adverse impacts, especially those associated with brown bear viewing and photography.

Public Review and Comment

Public comment was solicited concurrently with the revision of the Refuge's comprehensive conservation plan. No comments were received on this compatibility determination. However, the State of Alaska noted during a meeting that there were inconsistencies in some of the special conditions for special use permits. These inconsistencies were corrected.

Determination

☐ Use is Not Compatible

☒ Use is Compatible With the Following Stipulations

Stipulations Necessary to Ensure Compatibility

A special use permit is required.

The management direction provided in the revised comprehensive conservation plan for the Refuge will be implemented. Revision of the public use management plan will be used to identify specific management to ensure that this activity continues to remain compatible with Refuge purposes. This includes monitoring of wildlife-dependent recreation and other compatible activities. Findings from monitoring would be used to determine what additional management actions, if any, were needed to ensure compatibility. Continuing law enforcement and administrative monitoring of permits will be carried out to ensure compliance with the following conditions that are incorporated into all permits to minimize impacts on Refuge lands and resources.

Permit special conditions currently limiting access to nine bear concentration areas will be replaced by special conditions developed through the step-down planning process outlined in the final revised Kodiak National Wildlife Refuge Comprehensive Conservation Plan.

Regional conditions

- Failure to abide by any part of this special use permit; violation of any Refuge-related provision in Titles 43 or 50, Code of Federal Regulations; or violation of any pertinent state regulation (e.g., fish or game violation) will be considered grounds for immediate revocation of this permit and could result in denial of future permit requests for lands administered by the U.S. Fish and Wildlife Service. This provision applies to all persons working under the authority of this permit (e.g., assistants or contractors). Appeals of decisions relative to permits are handled in accordance with 50 Code of Federal Regulations 36.41.
- The permittee is responsible for ensuring that all employees, party members, contractors, aircraft pilots, and any other persons working for the permittee and conducting activities allowed by this permit are familiar with and adhere to the conditions of this permit.
- Any problems with wildlife and/or animals taken in defense-of-life-or-property must be reported immediately to the Refuge Manager, the Alaska Department of Fish and Game, and the Alaska State Troopers. Animals taken must be salvaged in accordance with state regulations.
- The permittee and permittee's employees do not have the exclusive use of the site(s) or lands covered by the permit.
- This permit may be cancelled or revised at any time by the Refuge Manager for noncompliance or in case of emergency (e.g., public safety, unusual resource problems).
- The permittee or party chief shall notify the Refuge Manager during Refuge working hours in person or by telephone before beginning and upon completion of activities allowed by this permit.
- Prior to beginning any activities allowed by this permit, the permittee shall provide the Refuge Manager with: (1) name and method of contact for the field party chief/supervisor; aircraft and other vehicle types to be used, identification information for these vehicles; and names of crew members, and (2) any changes in information provided in the original permit application.
- Prior to beginning any activities allowed by this permit, the permittee shall provide the Refuge with (1) a copy of current business license; (2) proof of comprehensive general liability insurance, listing Kodiak National Wildlife Refuge as additionally insured, (\$300,000 each occurrence, \$500,000 aggregate for guides/outfitters) covering all aspects of operations throughout the annual use period; (3) changes in names of assistant guides and

other employees; (4) copies of CPR and First Aid cards for permittee and all personnel that will operate on the Refuge; and (5) any changes in information provided for the original special use permit proposed operations plan.

- The permittee is responsible for accurate record keeping and shall provide the Refuge Manager with a comprehensive summary of location, numbers of clients, and number of client days by January 15 for all uses during the calendar year, unless stated otherwise in the permit. The permittee shall provide the Refuge Manager with this information on the form provided with the special use permit. An annual nonrefundable administrative fee will be assessed prior issuing this permit. In addition, a client use day will be assessed at the end of the calendar year based on the permittee's use report. Client use fees are adjusted by the Regional Office every three years based on the Implicit Price Deflator Index (PDI). For law enforcement purposes, the permittee may be required to provide names and addresses of clients. Failure to submit required reports and payments could result in the issuance of citations and revocation of the permit.
- In accordance with the Archaeological Resources Protection Act (16 U.S.C. 470aa), the disturbance of archaeological or historical sites, and the removal of artifacts are prohibited. The excavation, disturbance, collection, or purchase of historical, ethnological, or archaeological specimens or artifacts is prohibited.
- Permittees shall maintain their use areas in a neat and sanitary condition. Latrines must be located at least 150 feet from springs, lakes, and streams. All property of the permittee except for cabins and tent frames is to be removed from Refuge lands upon completion of permitted activities.
- The construction of landing strips or pads is prohibited.
- The use of motorized vehicles is prohibited on all Refuge lands.
- The operation of aircraft at altitudes and in flight paths resulting in the herding, harassment, hazing, or driving of wildlife is prohibited. It is recommended that all aircraft, except for takeoff and landing, maintain a minimum altitude of 2,000 feet above ground level.
- The use of helicopters is prohibited.
- Unauthorized fuel caches are prohibited. Fuel storage, if any, will be in compliance with regional Service fuel storage policy.
- Construction of cabins or other permanent structures is prohibited.

Kodiak Refuge Conditions

- Visitors will be required to comply with any temporary restrictions, emergency orders or other types of regulatory actions promulgated by the Refuge Manager to prevent resource problems or conflicts, in cases of emergency, public safety, or unusual resource problems.
- The use of Native or State lands that have been conveyed (patented) is not authorized by this permit.
- Use of Native or State lands that have been selected but not yet conveyed is prohibited unless a letter of concurrence is submitted to the Refuge Manager prior to beginning any activities allowed by this permit.
- A copy of this special use permit must be in the party leader's possession at all times while exercising the privileges of the permit.

- Cabins on Refuge lands shall not be used by the permittee without the permission of the Refuge Manager except in cases of dire emergency for survival purposes.
- Food or garbage attractive to bears or other wildlife will be immediately disposed of. No attractive nuisance for bears or other wildlife shall be created by food storage, improper disposal of garbage (includes of burying of garbage), fish smoking, salting, drying, or other uses.
- Combustibles (paper, wood, etc.) may be burned, but all other debris, including cans, bottles, fuel containers, and any other noncombustible material shall be removed and disposed of off Refuge when departing camps.
- The permittee or his or her designated assistant must accompany clients while on the Refuge. Permittee or assistant must be present within the permit area while clients are engaged in activities authorized under this permit. Permittees with more than one permit area must be present within one of the Kodiak National Wildlife Refuge areas in which they are authorized to operate.
- Closed and Limited Access Areas—An area approximately 2,560 acres near the outlet of the O'Malley River, as described in 50 CFR 36.39 (j)(1), is closed to all public access, occupancy, and use (general and commercial) from June 25 through September 30 annually.
- The following areas are currently closed seasonally to commercial use:
 - Connecticut Creek (July 15–August 31)
 - Humpy Creek (July 15–September 15)
 - Seven Rivers (July 15–September 15)
 - Lower Dog Salmon Falls (June 25–August 31)
- The following areas are currently restricted seasonally to day use only by commercial users:
 - Red Lake River and shoreline (July 1–August 31)
 - Upper Thumb River (July 1–August 31)
 - Southeast Creek (Red Lake) (July 15–August 31)
 - Little River Lakeshore (July 15–August 31)
 - Deadman Bay Creek (August 15–September 30)
- Following are the special conditions for operations on the Ayakulik River effective May 25 through July 15:
 - Over fly the area of intended landing to check for floaters and other aircraft.
 - Announce your position and intention, for takeoff/landing or transit of the area, on CTAF 122.8.
 - Slow (displacement) taxi only, no step taxi.
 - No takeoff or landing on the four designated corners. (See attached map.)
 - Unless the wind creates a safety hazard or makes operations impossible, the area downstream from easternmost designated corner is restricted to landings and displacement taxi only. Avoid the lower area for takeoff or landing.
 - Please advise your clients that airplanes are necessary for the Ayakulik recreational fishery, but there are hazards to both anglers and airplanes. Everyone

- involved needs to be cautious, courteous, and respectful of other users on the river and the resource.
- Guided viewing at the Frazer Lake fish pass site:
 - Access to the marked fish pass wildlife-viewing area will be along the ADF&G trail from the lake and the trail around the base of the ADF&G compound.
 - Wildlife viewing will be conducted from the marked viewing area only.
 - Food and/or flavored drinks will not be transported to, or consumed at, the wildlife-viewing area.
 - Clients will use the designated toilet area near the lake landing whenever possible.
 - All aircraft being used in commercial operations must have 12-inch identification numbers in contrasting colors, which are readily visible.
 - Motorboat operators must possess U.S. Coast Guard (USCG) licenses for all passenger-carrying operations, if required by USCG regulations.
 - Any action by a permittee or the permittee's employees that unduly interferes with or harasses other Refuge visitors or impedes access to any site is strictly prohibited. Examples of prohibited acts include, but are not limited to, low flights over camps or persons at less than 500 feet (unless landing) and parking aircraft or placing other objects on any landable area to restrict use by other aircraft or persons.
 - The permittee's operations plan, as amended and accepted by the U.S. Fish and Wildlife Service, are hereby incorporated in their entirety as a special condition.
 - Permittee is limited to one (1) overnight guide camp in each of a maximum of two (2) drainages specified for overnight use on the face of the permit. Concurrent possession of a Refuge recreational fishing permit does not increase this limit. Any additional overnight camping must be approved in writing by the Refuge Manager. All guide camps must be located at least one (1) mile from other guide camps or Refuge public use cabins and must be completely removed after use. No more than two operators will be permitted to set up overnight camps on a given drainage at a given time.
 - Fixed tent platforms are prohibited. Wall tents with floors that are completely removed from the Refuge at the end of the permit period are allowed.
 - The permittee may not sublet any part of the authorized use area and is prohibited from subcontracting clients with any other guide.
 - Maximum overnight camp size will be six people, including guides and assistants. The Refuge Manager may restrict use and duration of some sites for overnight camping to prevent resource problems or conflicts.
 - Access on Alaska Maritime NWR islands, rocks, and spires adjacent to Kodiak NWR is allowed for wildlife viewing. Access is restricted to day use only, colonies of nesting birds must be avoided, and any foot travel must be performed in a manner to avoid damage of ground-nest sites.
 - The discharge of firearms is prohibited, except in conjunction with authorized hunting seasons or for protection of life or property.
 - This special use permit specifically does not authorize the following:
 - Construction of blinds, stands or any other structures

- Baiting, feeding, harassing, herding, or any other activity that changes, or attempts to change, normal behavior, this includes but is not limited to bears, fox, deer, and eagles
- Any other types of commercially guided activities as described in attachment (a) Refuge Guide and Other Visitor Service Definitions.

Justification

The National Wildlife Refuge System Administration Act (as amended by the Refuge Improvement Act) identifies compatible wildlife observation, photography, environmental education, and interpretation as four of six priority public uses of national wildlife refuges. The law states that, when managed in accordance with principles of sound fish and wildlife management, administration of these uses has been and is expected to continue to be generally compatible and that that priority public uses should receive enhanced consideration over other general public uses in refuge planning and management.

Conditions imposed in the special use permits of guides ensure that these wildlife-dependent activities can occur without adverse effects to Refuge resources, other visitors, or subsistence activities. Permitted guides facilitate public use and enjoyment of these activities while protecting Refuge resources.

Supporting Documents

- Allen, S., and A. Collins. 2002. "An assessment of bear-viewing opportunities relevant to management of Kodiak National Wildlife Refuge." Unpublished report. Anchorage, Alaska: U.S. Fish & Wildlife Service. 77 pp.
- Barnes, V.G. 2004. Personal communication with Bill Pyle, March 9, 2004, about effects of preferred alternative of revised Kodiak National Wildlife Refuge Comprehensive Conservation Plan on brown bears.
- U.S. Fish and Wildlife Service. 1987. Kodiak National Wildlife Refuge Final Comprehensive Conservation Plan, Wilderness Review, and Environmental Impact Statement. U.S. Fish and Wildlife Service. Anchorage, Alaska. 533 pp.
- U.S. Fish and Wildlife Service. 1993. Kodiak National Wildlife Refuge, Final Public Use Management Plan and Environmental Assessment. U.S. Fish and Wildlife Service. Kodiak, Alaska. 202 pp.
- U.S. Fish and Wildlife Service. 2004. Draft Revised Comprehensive Conservation Plan and Environmental Impact Statement Kodiak National Wildlife Refuge. U.S. Fish and Wildlife Service. Anchorage, Alaska.

Refuge Determination

Refuge Manager /
Project Leader Approval: LESLIE KEMM 2-17-2006
(Signature) (Date)

Concurrence

Regional Chief,
National Wildlife
Refuge System: [Signature] 2/17/06
(Signature) (Date)

Mandatory 10-Year Re-Evaluation Date: January 2016

NEPA Compliance for Refuge Use Decision

- ☐ Categorical Exclusion without Environmental Action Memorandum
☐ Categorical Exclusions and Environmental Action Memorandum
☐ Environmental Assessment and Finding of No Significant Impact
☒ Environmental Impact Statement and Record of Decision

COMPATIBILITY DETERMINATION

Use: Commercial Transporter Services

Primary Use: Other uses

Supporting Uses: Boating (electric and wind-driven), boating (human-powered), boating (motorized), environmental education (not conducted by refuge staff or authorized agents), environmental education (other), interpretation (not conducted by refuge staff or authorized agents), fishing (general), fishing (guiding and outfitting), fishing (other), hunting (big game), hunting (big-game guiding and outfitting), hunting (other migratory birds), hunting (upland game), hunting (upland game—guiding and outfitting), hunting (waterfowl), hunting (waterfowl—guiding and outfitting), hunting (other), hunting (other—guiding and outfitting), plant gathering, trapping, natural resource collecting, camping, cross-country skiing, dog sledding and ski touring, hiking and backpacking, pets, photography, video, filming, or audio recording (nonwildlife-dependent, recreational—other), snowshoeing, swimming and beach use, outdoor recreation (other), research, scientific collecting, surveys, fishing (subsistence), gathering (subsistence), hunting (subsistence), trapping (subsistence), subsistence (other), photography (wildlife), wildlife observation, wildlife observation (guiding or outfitting), fixed-wing aircraft, photography, video or filming or audio recording (commercial), photography, video or filming or audio recording (news and education), residential, uses (other).

Refuge Name: Kodiak National Wildlife Refuge

Establishing and Acquisition Authorities

Original authority was Executive Order 8857 (1941); modified by Public Land Order 1634 (1958), Alaska Native Claims Settlement Act (1971), and Alaska National Interest Lands Conservation Act (ANILCA; 1980)

Refuge Purposes

Executive Order 8857 established Kodiak National Wildlife Refuge “. . . for the purpose of protecting the natural feeding and breeding ranges of the brown bears and other wildlife on Uganik and Kodiak Islands . . .”

Section 303(5)(B) of ANILCA states the following:

“The purposes for which the Kodiak National Wildlife Refuge is established and shall be managed include

- (i) to conserve fish and wildlife populations and habitats in their natural diversity including, but not limited, to Kodiak brown bears, salmonids, sea otters, sea lions, and other marine mammals and migratory birds;
- (ii) to fulfill the international treaty obligations of the United States with respect to fish and wildlife and their habitats;
- (iii) to provide, in a manner consistent with purposes set forth in subparagraphs (i) and (ii), the opportunity for continued subsistence uses by local residents; and

- (iv) to ensure, to the maximum extent practicable and in a manner consistent with the purposes set forth in subparagraph (i), water quality and necessary water quantity within the refuge.”

National Wildlife Refuge System Mission

The mission of the National Wildlife Refuge System is to administer a national network of lands and waters for the conservation, management, and, where appropriate, restoration of the fish, wildlife, and plant resources and their habitats within the United States for the benefit of present and future generations of Americans (National Wildlife Refuge System Administration Act of 1966, as amended [16 U.S.C.668dd-668ee]).

Description of Use

Kodiak Refuge is world-renowned for its hunting and fishing opportunities and scenic landscape. Commercial transport of clients to access the Refuge to hunt big game, fish, and participate in numerous other outdoor recreational activities predates Refuge establishment in 1941. Commercial transporters provide a service that most visitors require to access the Refuge. Most commercial transporting activities on the Refuge are conducted by air taxis with float-equipped aircraft.

Transporters are required, as conditions of their permits, to provide information on the primary activity, location, length of stay, group size, and other related items. These reports provide the most accurate and reliable information the Service has on Refuge use by unguided visitors. Commercial transporter-related services contribute to fulfillment of Refuge purposes and the National Wildlife Refuge System mission by providing access for most Refuge visitors and therefore facilitate priority public uses and other uses found compatible in separate compatibility determinations. Many of these compatible public uses contribute directly to achieving healthy fish and wildlife populations through managed use.

Ten air taxi operators are permitted to fly hunters, anglers, wildlife viewers, and other visitors and commercial guides and fishing crews to and from the Refuge. Operators are required to submit quarterly reports of recreation client trips to Refuge lands. There is currently no limit to the number of trips or recreation clients air taxi operators can take to the Refuge. Neither is there a limit to the number of air taxi operators permitted to operate on the Refuge.

The general trend in numbers of air taxis authorized to operate on the Refuge has been stable over the past 15 years. The revised conservation plan projects an increase of 20 percent 30 percent in visitor use of Kodiak Refuge over the 15-year life of the plan. It is assumed that this use would also include increased use of air transporters. Most use occurs between May and October.

Availability of Resources

Adequate Refuge personnel and base operational funds are available to manage commercial transporting activities at current and projected levels. Administrative staff time primarily involves annually issuing permits, ensuring licenses and certifications are current, collecting client use day fees, and entering activity data into a database for

analysis. Fieldwork associated with administering the program primarily involves monitoring the permittees' compliance with the terms of the permits.

Anticipated Impacts of the Use

Impacts associated with the activities that occur on the Refuge as a result of commercial transporters providing the public access to the Refuge are addressed in the respective compatibility determinations for each activity. Due to the Refuge's administrative oversight of the activity, comprehensive state and federal regulations, which continually evolve to respond to fisheries and wildlife management needs, and combined law enforcement efforts of the state and Refuge personnel, direct impacts from commercial transporter services under existing management should have minimal impacts to fish and wildlife resources, other Refuge resources, or other Refuge users as discussed subsequently.

A majority of transporters access the Refuge by landing on saltwater, lakes, or rivers with float-equipped aircraft, thus minimizing impacts on Refuge habitat. Displacement of wildlife may occur, especially during landings and take offs or when weather conditions prevent flying at the recommended minimum altitude of 2,000 feet above ground level. A potential impact or threat associated with floatplane access is the introduction of invasive species carried on the aircraft floats, although it is not known to have occurred on Kodiak Archipelago to date. No upland aircraft landing locations have been developed on the Refuge, and wheeled-plane landings were prohibited prior to ANILCA. Absence of upland landings eliminates the associated impacts of compaction, erosion, and habitat destruction in these areas.

Public Review and Comment

Public comment was solicited concurrently with the revision of the Refuge's comprehensive conservation plan. No comments were received on this compatibility determination. There were comments recommending motorboat and aircraft access to the refuge be restricted. As explained below, access by airplanes and motorboats for traditional activities is provided by ANILCA and has been found to be compatible. Should motorized transportation grow to levels where it interferes with Refuge purposes, the Refuge would take actions necessary to address compatibility concerns. The State of Alaska noted during a meeting that there were inconsistencies in some of the special conditions for special use permits. These inconsistencies were corrected.

Determination

☐ Use is Not Compatible

☒ Use is Compatible With the Following Stipulations

Stipulations Necessary to Ensure Compatibility

A special use permit is required.

The management direction provided in the revised comprehensive conservation plan for the Refuge will be implemented. Step-down planning processes identified in the revised conservation plan will be used to identify specific management to ensure that this activity continues to remain compatible with Refuge purposes. This includes monitoring of wildlife-

dependent recreation and other compatible activities. Findings from monitoring would be used to determine what additional management actions, if any, were needed to ensure compatibility. Continuing law enforcement and administrative monitoring of permits will be carried out to ensure compliance with the following conditions that are incorporated into all permits to minimize impacts on Refuge lands and resources.

Permit special conditions currently limiting access to nine bear concentration areas will be replaced by special conditions developed through the step-down planning process outlined in the final revised Kodiak National Wildlife Refuge Comprehensive Conservation Plan.

Regional conditions

- Failure to abide by any part of this special use permit; violation of any Refuge-related provision in Titles 43 or 50, Code of Federal Regulations; or violation of any pertinent state regulation (e.g., fish or game violation) will be considered grounds for immediate revocation of this permit and could result in denial of future permit requests for lands administered by the U.S. Fish and Wildlife Service. This provision applies to all persons working under the authority of this permit (e.g., assistants or contractors). Appeals of decisions relative to permits are handled in accordance with 50 Code of Federal Regulations 36.41.
- The permittee is responsible for ensuring that all employees, party members, contractors, aircraft pilots, and any other persons working for the permittee and conducting activities allowed by this permit are familiar with and adhere to the conditions of this permit.
- Any problems with wildlife and/or animals taken in defense-of-life-or-property must be reported immediately to the Refuge Manager, the Alaska Department of Fish and Game, and the Alaska State Troopers. Animals taken must be salvaged in accordance with state regulations.
- The permittee and permittee's employees do not have the exclusive use of the site(s) or lands covered by the permit.
- This permit may be cancelled or revised at any time by the Refuge Manager for noncompliance or in case of emergency (e.g., public safety, unusual resource problems).
- Prior to beginning any activities allowed by this permit, the permittee shall provide the Refuge Manager with: (1) aircraft or other vehicle types to be used, identification information for these vehicles; and names of crew members, and (2) any changes in information provided in the original permit application.
- Prior to beginning any activities allowed by this permit, the permittee shall provide the Refuge with (1) a copy of current business license; (2) proof of comprehensive general liability insurance, listing Kodiak National Wildlife Refuge as additionally insured, (\$300,000 each occurrence, \$500,000 aggregate) covering all aspects of operations throughout the annual use period.
- The permittee is responsible for accurate record keeping and shall provide the Refuge Manager with a comprehensive summary of location, numbers of clients, and number of client days by January 15 for all uses during the calendar year, unless stated otherwise in the permit. The permittee shall provide the Refuge Manager with this information on the form provided with the special use permit. An annual nonrefundable administrative fee will be assessed prior issuing this permit. In addition, a client drop-off and a client pick-up will be assessed at the end of the calendar year based on the permittee's use report. Client use fees are adjusted by the Regional Office every three years based on the Implicit Price Deflator

Index (PDI). For law enforcement purposes, the permittee may be required to provide names and addresses of clients. Failure to submit required reports and payments could result in the issuance of citations and revocation of the permit.

- In accordance with the Archaeological Resources Protection Act (16 U.S.C. 470aa), the disturbance of archaeological or historical sites, and the removal of artifacts are prohibited. The excavation, disturbance, collection, or purchase of historical, ethnological, or archaeological specimens or artifacts is prohibited.
- The construction of landing strips or pads is prohibited.
- Unauthorized fuel caches are prohibited. Fuel storage, if any, will be in compliance with regional Service fuel storage policy.
- The use of motorized vehicles is prohibited on all Refuge lands.
- The operation of aircraft at altitudes and in flight paths resulting in the herding, harassment, hazing, or driving of wildlife is prohibited. It is recommended that all aircraft, except for takeoff and landing, maintain a minimum altitude of 2,000 feet above ground level.
- The use of helicopters is prohibited.
- Construction of cabins or other permanent structures is prohibited.

Kodiak Refuge Conditions

- Visitors will be required to comply with any temporary restrictions, emergency orders or other types of regulatory actions promulgated by the Refuge Manager to prevent resource problems or conflicts, in cases of emergency, public safety, or unusual resource problems.
- The use of Native or State lands that have been conveyed (patented) is not authorized by this permit.
- Use of Native or State lands that have been selected but not yet conveyed is prohibited unless a letter of concurrence is submitted to the Refuge Manager prior to beginning any activities allowed by this permit.
- A copy of this special use permit must be in the airplane at all times while exercising the privileges of the permit.
- Cabins on Refuge lands shall not be used by the permittee without the permission of the Refuge Manager except in cases of dire emergency for survival purposes. Construction of cabins or other permanent structures outside of the guidelines found in the Cabin Management Plan is prohibited.
- Food or garbage attractive to bears or other wildlife will be immediately disposed of. No attractive nuisance for bears or other wildlife shall be created by food storage, improper disposal of garbage (includes of burying of garbage), fish smoking, salting, drying, or other uses.
- Combustibles (paper, wood, etc.) may be burned, but all other debris, including cans, bottles, fuel containers, and any other noncombustible material shall be removed and disposed of off Refuge when departing camps.
- Closed and Limited Access Areas—An area approximately 2,560 acres near the outlet of the O'Malley River, as described in 50 CFR 36.39 (j)(1), is closed to all public access, occupancy, and use (general and commercial) from June 25 through September 30 annually.
- The following areas are currently closed seasonally to commercial use:

- Connecticut Creek (July 15–August 31)
 - Humpy Creek (July 15–September 15)
 - Seven Rivers (July 15–September 15)
 - Lower Dog Salmon Falls (June 25–August 31)
- The following areas are currently restricted seasonally to day use only by commercial users:
 - Red Lake River and shoreline (July 1–August 31)
 - Upper Thumb River (July 1–August 31)
 - Southeast Creek (Red Lake) (July 15–August 31)
 - Little River Lakeshore (July 15–August 31)
 - Deadman Bay Creek (August 15–September 30)
- Following are the special conditions for operations on the Ayakulik River effective May 25 through July 15:
 - Over fly the area of intended landing to check for floaters and other aircraft.
 - Announce your position and intention, for takeoff/landing or transit of the area, on CTAF 122.8.
 - Slow (displacement) taxi only, no step taxi.
 - No takeoff or landing on the four designated corners. (See attached map.)
 - Unless the wind creates a safety hazard or makes operations impossible, the area downstream from easternmost designated corner is restricted to landings and displacement taxi only. Avoid the lower area for takeoff or landing.
 - Please advise your clients that airplanes are necessary for the Ayakulik recreational fishery, but there are hazards to both anglers and airplanes. Everyone involved needs to be cautious, courteous, and respectful of other users on the river and the resource.
- All aircraft being used in commercial operations must have 12-inch identification numbers in contrasting colors, which are readily visible.
- Any action by a permittee or the permittee's employees that unduly interferes with or harasses other Refuge visitors or impedes access to any site is strictly prohibited. Examples of prohibited acts include, but are not limited to, low flights over camps or persons at less than 500 feet (unless landing) and parking aircraft or placing other objects on any landable area to restrict use by other aircraft or persons.
- The permittee may not sublet any part of the authorized use area and is prohibited from subcontracting clients with any other transporter.
- This special use permit specifically does not authorize the following:
 - Construction of blinds, stands or any other structures
 - Baiting, feeding, harassing, herding, or any other activity that changes, or attempts to change, normal behavior, this includes but is not limited to bears, fox, deer, and eagles
 - Commercially guided activities as described in attachment (a) Refuge Guide and Other Visitor Service Definitions.
- The discharge of firearms is prohibited, except in conjunction with authorized hunting seasons or for protection of life or property.

- This is a day use permit to transport clients to and from the Kodiak National Wildlife Refuge. No overnight camping or guiding operations are authorized by this permit.

Justification

Commercial transporting is a traditional activity that Congress intended to preserve when it expanded the Refuge with the enactment of ANILCA. Commercial transporter services provide the public with safe access to unique hunting, fishing, wildlife viewing, wildlife photography, and environmental education opportunities found few places elsewhere in the world. These are all activities that the National Wildlife Refuge System Administration Act (as amended by the National Wildlife Refuge System Improvement Act) identifies as priority public uses. These visitor services are a valuable benefit to a segment of the public that does not have personal or other means of access to the extremely remote environment of the Refuge.

Commercial transporters are the Service's primary source of information about unguided use of the Refuge. After fully considering the impacts of this activity, as described previously in the "Anticipated Impacts" section of this document, it is my determination that commercial transporter activities on the Refuge do not materially interfere with or detract from the purposes of the Refuge or the mission of the National Wildlife Refuge System.

Supporting Documents

- U.S. Fish and Wildlife Service. 1987. Kodiak National Wildlife Refuge Final Comprehensive Conservation Plan, Wilderness Review, and Environmental Impact Statement. U.S. Fish and Wildlife Service. Anchorage, Alaska. 533 pp.
- U.S. Fish and Wildlife Service. 1993. Kodiak National Wildlife Refuge, Final Public Use Management Plan and Environmental Assessment. U.S. Fish and Wildlife Service. Kodiak, Alaska. 202 pp.
- U.S. Fish and Wildlife Service. 2004. Draft Revised Comprehensive Conservation Plan and Environmental Impact Statement Kodiak National Wildlife Refuge. U.S. Fish and Wildlife Service. Anchorage, Alaska.

Refuge Determination

Refuge Manager /

Project Leader Approval:

USFWS KENK

(Signature)

2-17-2006

(Date)

Concurrence

Regional Chief,
National Wildlife
Refuge System:

Red J. Fog

(Signature)

2/17/06

(Date)

Mandatory 10-Year Re-Evaluation Date: January 2016

NEPA Compliance for Refuge Use Decision

- ☐ Categorical Exclusion without Environmental Action Memorandum
- ☐ Categorical Exclusions and Environmental Action Memorandum
- ☐ Environmental Assessment and Finding of No Significant Impact
- ☒ Environmental Impact Statement and Record of Decision

COMPATIBILITY DETERMINATION

Use: Fisheries Projects at Frazer Fish Pass, Hidden Lake, and Spiridon Lake

Primary Use: Fishery enhancement

Supporting Uses: Boating (electric and wind-driven), boating (human-powered), boating (motorized), interpretation (not conducted by refuge staff or authorized agents), fishing (general), plant gathering, natural-resource collecting, camping, photography, video, filming, swimming and beach use, outdoor recreation (other), research, scientific collecting, surveys, fishing (subsistence), photography (wildlife), wildlife observation, wildlife observation (guiding or outfitting), fixed-wing aircraft, photography, video or filming or audio recording (commercial), photography, video, filming, audio recording (news and education), audio recording (non-wildlife-dependent, recreational—other).

Refuge Name: Kodiak National Wildlife Refuge

Establishing and Acquisition Authorities

Original authority was Executive Order 8857 (1941); modified by Public Land Order 1634 (1958), Alaska Native Claims Settlement Act (1971), and Alaska National Interest Lands Conservation Act (ANILCA; 1980)

Refuge Purposes

Executive Order 8857 established Kodiak National Wildlife Refuge “. . . for the purpose of protecting the natural feeding and breeding ranges of the brown bears and other wildlife on Uganik and Kodiak Islands . . .”

Section 303(5)(B) of ANILCA states the following:

“The purposes for which the Kodiak National Wildlife Refuge is established and shall be managed include

- (i) to conserve fish and wildlife populations and habitats in their natural diversity including, but not limited, to Kodiak brown bears, salmonids, sea otters, sea lions, and other marine mammals and migratory birds;
- (ii) to fulfill the international treaty obligations of the United States with respect to fish and wildlife and their habitats;
- (iii) to provide, in a manner consistent with purposes set forth in subparagraphs (i) and (ii), the opportunity for continued subsistence uses by local residents; and
- (iv) to ensure, to the maximum extent practicable and in a manner consistent with the purposes set forth in subparagraph (i), water quality and necessary water quantity within the refuge.”

National Wildlife Refuge System Mission

The mission of the National Wildlife Refuge System is to administer a national network of lands and waters for the conservation, management, and, where appropriate, restoration of the fish, wildlife, and plant resources and their habitats within the United

States for the benefit of present and future generations of Americans (National Wildlife Refuge System Administration Act of 1966, as amended [16 U.S.C.668dd-668ee]).

Description of Use

This determination evaluates compatibility of continuing three currently-authorized fisheries management projects on Kodiak Refuge. Alaska Department of Fish and Game maintains a fish ladder on Dog Salmon Creek below Frazer Lake and has sockeye salmon-enhancement projects at Spiridon and Hidden lakes.

As described by the Alaska Department of Fish and Game's Frazer Lake Sockeye Salmon Project Summary, Frazer Lake is located on the southern end of Kodiak Island. Dog Salmon Creek, at the lake outlet, flows south eight miles into Olga Bay. A 30-foot-high waterfall occurs on Dog Salmon Creek about one-half mile below the lake outlet. These falls prevent upstream passage of salmon. Sockeye were introduced to Frazer Lake in 1951 through an egg transplant. Adult returns in 1956 were packed over the falls, a practice that continued through 1962. A fish pass was constructed in 1962 and supplemented with another fish pass in 1979. The creation of this run has resulted in a valuable contribution to Kodiak's economy, and these sockeye have become a valuable food source for brown bears and bald eagles.

In December 1990, Alaska Department of Fish and Game, in cooperation with the Kodiak Regional Aquaculture Association, submitted a proposal to the Service to stock sockeye salmon into Spiridon Lake. Spiridon Lake did not support a natural run of anadromous fish because of an impassible series of falls located below the lake outlet. A plastic pipe was installed to allow smolts to pass around the falls and downstream to the ocean. This long-term stocking project was proposed to improve the commercial harvest of sockeye in the Kodiak area. The commercial fleet harvests these fish along the west side of Kodiak and in a designated terminal harvest area within Spiridon Bay.

In 1992, Alaska Department of Fish and Game proposed to stock sockeye salmon into Hidden Lake on the Afognak-Ban Island Unit of Kodiak Refuge. Hidden Lake is located on the northwestern shore of Afognak Island and does not support native stocks of salmon because of an impassible falls downstream of the lake outlet. All returning adult sockeye are harvested in traditional fishing areas in the northwestern Afognak area or in a special harvest area within Foul Bay.

Availability of Resources

Adequate Refuge personnel and base operational funds are available to manage these projects.

Anticipated Impacts of the Use

Impacts of these projects included permanent and temporary facilities to support the necessary daily work during the field season. Frazer fish pass has three permanent buildings, two concrete fish ladders, and a weir. At least two people are stationed full time during the sockeye run. The area attracts brown bears that feed on the returning salmon, and these bears attract visitors who come to view the bears. Where bears and people mingle, the potential for adverse bear-human interactions occurs. These have been managed through conditions in the authorizations for the facilities and operations

and through special conditions on the permits of authorized wildlife-viewing guides and air transporters.

The Spiridon project has a permanent building, and the Hidden Lakes project has a temporary camp. The environmental assessments prepared for each of these projects included analysis of the physical and chemical impacts, biological impacts, and economic impacts. The potential for over-utilization of nutrients and food sources by introduced salmon was one of the overriding concerns. Limnological monitoring is critical to ensure that this activity is properly managed. Findings of no significant impact were approved for both environmental assessments.

Camps and the associated activities of running fisheries projects potentially could negatively affect Refuge resources. Displacement of wildlife or defense-of-life-or-property kills of bears could result. Impacts on other Refuge uses were also considered. However, monitoring is demonstrating that impacts of the projects are negligible and that the projects are compatible with Refuge purposes.

Public Review and Comment

Public comment was solicited concurrently with the revision of the Refuge's comprehensive conservation plan. No comments were received on this compatibility determination.

Determination

_____ Use is Not Compatible

X_____ Use is Compatible With the Following Stipulations

Stipulations Necessary to Ensure Compatibility

A special use permit is required.

- Monitoring and reporting requirements listed in the cooperative agreements and environmental assessments must be followed. Annual coordination meetings must be held to ensure guidelines are being met.
- Stipulations required for wildlife-viewing guides and transporters apply, and are listed in the compatibility determinations for those activities.
- If a helicopter is used, the helicopter use must be specifically authorized in advance and the transporter must have a valid special use permit from Kodiak National Wildlife Refuge.

Justification

These projects were found, in 1994, to be compatible with the purposes of Kodiak Refuge. Nothing in their operation has changed since they were evaluated in 1994, and the results of monitoring continue to show that stipulations proposed to ensure compatibility are working.

Supporting Documents

- U.S. Fish and Wildlife Service. 1987. Kodiak National Wildlife Refuge Final Comprehensive Conservation Plan, Wilderness Review, and Environmental Impact Statement. U.S. Fish and Wildlife Service. Anchorage, Alaska. 533 pp.
- U.S. Fish and Wildlife Service. 1993. Kodiak National Wildlife Refuge, Final Public Use Management Plan and Environmental Assessment. U.S. Fish and Wildlife Service. Kodiak, Alaska. 202 pp.
- U.S. Fish and Wildlife Service. 1990. Fisheries Management Plan, Kodiak National Wildlife Refuge— Final. U.S. Fish and Wildlife Service, Kodiak, Alaska. 116 pp.
- U.S. Fish and Wildlife Service. 2004. Draft Revised Comprehensive Conservation Plan and Environmental Impact Statement Kodiak National Wildlife Refuge. U.S. Fish and Wildlife Service. Anchorage, Alaska.
- Environmental Assessment for the Introduction of Sockeye Salmon into Spiridon Lake on the Kodiak National Wildlife Refuge. 1991.
- Finding of No Significant Impact for the Introduction of Sockeye Salmon into Spiridon Lake on the Kodiak National Wildlife Refuge. 1991.
- Environmental Action Memorandum for the Introduction of Sockeye Salmon into Spiridon Lake on the Kodiak National Wildlife Refuge. 1991.
- Environmental Assessment for the Introduction of Sockeye Salmon into Hidden Lake on the Kodiak National Wildlife Refuge. 1992.
- Finding of No Significant Impact for the Introduction of Sockeye Salmon into Hidden Lake on the Kodiak National Wildlife Refuge. 1992.
- Environmental Action Memorandum for the Introduction of Sockeye Salmon into Hidden Lake on the Kodiak National Wildlife Refuge. 1992.
- Frazer Lake Sockeye Salmon Project. Alaska Department of Fish and Game report.

Refuge Determination

Refuge Manager /

Project Leader Approval: LESLIE KERR 2-17-2006
(Signature) (Date)

Concurrence

Regional Chief,
National Wildlife
Refuge System:

[Signature] 2/17/06
(Signature) (Date)

Mandatory 10-Year Re-Evaluation Date: January 2016

NEPA Compliance for Refuge Use Decision

- ☐ Categorical Exclusion without Environmental Action Memorandum
- ☐ Categorical Exclusions and Environmental Action Memorandum
- ☐ Environmental Assessment and Finding of No Significant Impact
- ☒ Environmental Impact Statement and Record of Decision

COMPATIBILITY DETERMINATION

Use: Helicopter Use to Support Authorized Activities by Other Federal, Tribal, State, and Local Governments and for Maintenance of One Private Radio Repeater Site

Primary Use: Helicopters

Supporting Uses: Research, scientific collecting, surveys, rights-of-way (utility), other

Refuge Name: Kodiak National Wildlife Refuge

Establishing and Acquisition Authorities

Original authority was Executive Order 8857 (1941); modified by Public Land Order 1634 (1958), Alaska Native Claims Settlement Act (1971), and Alaska National Interest Lands Conservation Act (ANILCA; 1980)

Refuge Purposes

Executive Order 8857 established Kodiak National Wildlife Refuge “. . . for the purpose of protecting the natural feeding and breeding ranges of the brown bears and other wildlife on Uganik and Kodiak Islands . . .”

Section 303(5)(B) of ANILCA states the following:

“The purposes for which the Kodiak National Wildlife Refuge is established and shall be managed include

- (i) to conserve fish and wildlife populations and habitats in their natural diversity including, but not limited, to Kodiak brown bears, salmonids, sea otters, sea lions, and other marine mammals and migratory birds;
- (ii) to fulfill the international treaty obligations of the United States with respect to fish and wildlife and their habitats;
- (iii) to provide, in a manner consistent with purposes set forth in subparagraphs (i) and (ii), the opportunity for continued subsistence uses by local residents; and
- (iv) to ensure, to the maximum extent practicable and in a manner consistent with the purposes set forth in subparagraph (i), water quality and necessary water quantity within the refuge.”

National Wildlife Refuge System Mission

The mission of the National Wildlife Refuge System is to administer a national network of lands and waters for the conservation, management, and, where appropriate, restoration of the fish, wildlife, and plant resources and their habitats within the United States for the benefit of present and future generations of Americans (National Wildlife Refuge System Administration Act of 1966, as amended [16 U.S.C.668dd-668ee]).

Description of Use

This determination re-evaluates helicopter use to support authorized activities of local, state, tribal, and other federal agencies and maintenance of one private radio repeater.

One or two applications per year are normally received to allow helicopter landings as part of some other authorized use such as geologic research, radio repeater site maintenance, State of Alaska fish and wildlife law enforcement, or fish or wildlife surveys. Permits could be issued at any time of the year but are most likely to be for activities during spring, summer, or fall. State law enforcement use of helicopters is normally limited to goat hunter contacts.

Availability of Resources

Adequate Refuge personnel and base operational funds are available to manage permits.

Anticipated Impacts of the Use

Adverse impacts associated with helicopter landings on the Refuge would be associated with displacement of wildlife, especially bears concentrated along streams to feed, perhaps denning bears, and nesting bald eagles. The experience of Refuge visitors could also be adversely affected. Hunters would be especially vulnerable to disturbance by helicopters.

Public Review and Comment

Public comment was solicited concurrently with the revision of the Refuge's comprehensive conservation plan. The Defenders of Wildlife commented that allowing helicopter use to maintain a private radio repeater was an incompatible use. This use was initially determined to be a compatible use in 1994. The operations plan for each request for helicopter use to support maintenance is reviewed for essential need, activity, time of year, and potential for impacts to refuge resources. If it is determined that the maintenance work can be performed with minimal or no impact to refuge resources, a permit is issued with special conditions necessary to ensure compatibility. Our files indicate that maintenance involving helicopter use occurs infrequently - about once every five years. Monitoring of the maintenance work has shown the use did not impact refuge resources and was compatible.

Determination

_____ Use is Not Compatible

X Use is Compatible With the Following Stipulations

Stipulations Necessary to Ensure Compatibility

- Nonemergency helicopter landings would not be authorized during spring and fall bear-hunting seasons.
- Unless authorized for brown bear research, helicopter landings would not be allowed in the vicinity of key bear concentration areas, including important denning locations, during sensitive times of the year.
- Ensure that all aircraft transiting the Refuge actively avoid large mammals (including brown bears, elk, mountain goats, and marine mammals) and active bald eagle nests. "Active avoidance" includes making a vertical or lateral deviation from a flight path within flight safety parameters to minimize or prevent adverse impact on the animals.

Other project-specific stipulations would be included in each separate, associated permit held by the client or other authorizations for the specific activity.

A special use permit is required.

The management direction provided in the revised comprehensive conservation plan for the Refuge will be implemented. Monitoring would be used to determine what additional management actions, if any, were needed to ensure compatibility. Continuing law enforcement and administrative monitoring of permits will be carried out to ensure compliance with the following conditions that are incorporated into all permits to minimize impacts on Refuge lands and resources.

Permit special conditions currently limiting access to nine bear concentration areas will be replaced by special conditions developed through the step-down planning process outlined in the final revised Kodiak National Wildlife Refuge Comprehensive Conservation Plan.

Regional conditions

- Failure to abide by any part of this special use permit; violation of any Refuge-related provision in Titles 43 or 50, Code of Federal Regulations; or violation of any pertinent state regulation (e.g., fish or game violation) will be considered grounds for immediate revocation of this permit and could result in denial of future permit requests for lands administered by the U.S. Fish and Wildlife Service. This provision applies to all persons working under the authority of this permit (e.g., assistants or contractors). Appeals of decisions relative to permits are handled in accordance with 50 Code of Federal Regulations 36.41.
- The permittee is responsible for ensuring that all employees, party members, contractors, aircraft pilots, and any other persons working for the permittee and conducting activities allowed by this permit are familiar with and adhere to the conditions of this permit.
- Any problems with wildlife and/or animals taken in defense-of-life-or-property must be reported immediately to the Refuge Manager, the Alaska Department of Fish and Game, and the Alaska State Troopers. Animals taken must be salvaged in accordance with state regulations.
- The permittee and permittee's employees do not have the exclusive use of the site(s) or lands covered by the permit.
- This permit may be cancelled or revised at any time by the Refuge Manager for noncompliance or in case of emergency (e.g., public safety, unusual resource problems).
- Prior to beginning any activities allowed by this permit, the permittee shall provide the Refuge with (1) a copy of current business license; (2) proof of comprehensive general liability insurance, listing Kodiak National Wildlife Refuge as additionally insured, (\$300,000 each occurrence, \$500,000 aggregate) covering all aspects of operations throughout the annual use period.
- In accordance with the Archaeological Resources Protection Act (16 U.S.C. 470aa), the disturbance of archaeological or historical sites, and the removal of artifacts are prohibited. The excavation, disturbance, collection, or purchase of historical, ethnological, or archaeological specimens or artifacts is prohibited.
- The construction of landing strips or pads is prohibited.
- The use of motorized vehicles is prohibited on all Refuge lands.

- The operation of aircraft at altitudes and in flight paths resulting in the herding, harassment, hazing, or driving of wildlife is prohibited. It is recommended that all aircraft, except for takeoff and landing, maintain a minimum altitude of 2,000 feet above ground level.
- Unauthorized fuel caches are prohibited. Fuel storage, if any, will be in compliance with regional Service fuel storage policy.
- Construction of cabins or other permanent structures is prohibited.

Kodiak Refuge Conditions

- Visitors will be required to comply with any temporary restrictions, emergency orders or other types of regulatory actions promulgated by the Refuge Manager to prevent resource problems or conflicts, in cases of emergency, public safety, or unusual resource problems.
- The use of Native or State lands that have been conveyed (patented) is not authorized by this permit.
- Use of Native or State lands that have been selected but not yet conveyed is prohibited unless a letter of concurrence is submitted to the Refuge Manager prior to beginning any activities allowed by this permit.
- A copy of this special use permit must be in the helicopter at all times while exercising the privileges of the permit.
- Cabins on Refuge lands shall not be used by the permittee without the permission of the Refuge Manager except in cases of dire emergency for survival purposes.
- The permittee shall provide the Refuge Manager with a report of activities under this permit within 30 days of permit expiration.
- A nonrefundable administrative fee will be assessed prior to issuing this permit.
- Closed and Limited Access Areas—An area approximately 2,560 acres near the outlet of the O'Malley River, as described in 50 CFR 36.39 (j)(1), is closed to all public access, occupancy, and use (general and commercial) from June 25 through September 30 annually.
- The following areas are currently closed seasonally to commercial use:
 - Connecticut Creek (July 15–August 31)
 - Humpy Creek (July 15–September 15)
 - Seven Rivers (July 15–September 15)
 - Lower Dog Salmon Falls (June 25–August 31)
- The following areas are currently restricted seasonally to day use only by commercial users:
 - Red Lake River and shoreline (July 1–August 31)
 - Upper Thumb River (July 1–August 31)
 - Southeast Creek (Red Lake) (July 15–August 31)
 - Little River Lakeshore (July 15–August 31)
 - Deadman Bay Creek (August 15–September 30)
- Following are the special conditions for operations on the Ayakulik River effective May 25 through July 15:

- Announce your position and intention, for takeoff/landing or transit of the area, on CTAF 122.8.
- This special use permit specifically does not authorize the following:
 - Construction of blinds, stands or any other structures
 - Baiting, feeding, harassing, herding, or any other activity that changes, or attempts to change, normal behavior, this includes but is not limited to bears, fox, deer, and eagles
 - Any type of commercially guided activities as described in attachment (a) Refuge Guide and Other Visitor Service Definitions.
- All aircraft being used in commercial operations must have 12-inch identification numbers in contrasting colors, which are readily visible.
- The Service requests that helicopters avoid landing in the vicinity of Refuge visitors and their camps.
- The discharge of firearms is prohibited, except in conjunction with authorized hunting seasons or for protection of life or property.

Justification

Under 43 CFR 36.11(4), helicopter use on national wildlife refuges requires a special use permit. The current conservation plan (page 165) states “use of helicopters is not permitted for recreational activities; other uses require a special use permit.” As only occasional and limited use of helicopters would be authorized, the potential for adverse effects to Refuge resources and visitors would be negligible. It is recommended that all aircraft fly 2,000 feet above ground level when possible. When weather conditions do not permit, aircraft should maintain an altitude of at least 800 feet above ground level. Observations (Wilker and Barnes 1998) have shown that when aircraft fly above 800 feet, they provide minimal, if any, disturbance to brown bears. Helicopter landings would only be authorized when other means of access are impractical or unsafe.

Supporting Documents

- U.S. Fish and Wildlife Service. 1987. Kodiak National Wildlife Refuge Final Comprehensive Conservation Plan, Wilderness Review, and Environmental Impact Statement. U.S. Fish and Wildlife Service. Anchorage, Alaska. 533 pp.
- U.S. Fish and Wildlife Service. 1993. Kodiak National Wildlife Refuge, Final Public Use Management Plan and Environmental Assessment. U.S. Fish and Wildlife Service. Kodiak, Alaska. 202 pp.
- U.S. Fish and Wildlife Service. 2004. Draft Revised Comprehensive Conservation Plan and Environmental Impact Statement Kodiak National Wildlife Refuge. U.S. Fish and Wildlife Service. Anchorage, Alaska.
- Wilker, G. A., and V. G. Barnes, Jr. 1998. Responses of brown bears to human activities at O'Malley River, Kodiak Island, Alaska. International Conference on Bear Research and Management. 10:557–561.

Refuge Determination

Refuge Manager /
Project Leader Approval: LESLIE KERR 2-17-2006
(Signature) (Date)

Concurrence

Regional Chief,
National Wildlife
Refuge System: [Signature] 2/17/06
(Signature) (Date)

Mandatory 10-Year Re-Evaluation Date: January 2016

NEPA Compliance for Refuge Use Decision

- ☐ Categorical Exclusion without Environmental Action Memorandum
☐ Categorical Exclusions and Environmental Action Memorandum
☐ Environmental Assessment and Finding of No Significant Impact
☒ Environmental Impact Statement and Record of Decision

COMPATIBILITY DETERMINATION

Use: Limited Military Training Activities

Primary Use: Military training

Supporting Uses: Camping, cross-country skiing, hiking and backpacking, fixed-wing aircraft and helicopter access.

Refuge Name: Kodiak National Wildlife Refuge

Establishing and Acquisition Authorities

Original authority was Executive Order 8857 (1941); modified by Public Land Order 1634 (1958), Alaska Native Claims Settlement Act (1971), and Alaska National Interest Lands Conservation Act (ANILCA; 1980)

Refuge Purposes

Executive Order 8857 established Kodiak National Wildlife Refuge “. . . for the purpose of protecting the natural feeding and breeding ranges of the brown bears and other wildlife on Uganik and Kodiak Islands . . .”

Section 303(5)(B) of ANILCA states the following:

“The purposes for which the Kodiak National Wildlife Refuge is established and shall be managed include

- (i) to conserve fish and wildlife populations and habitats in their natural diversity including, but not limited, to Kodiak brown bears, salmonids, sea otters, sea lions, and other marine mammals and migratory birds;
- (ii) to fulfill the international treaty obligations of the United States with respect to fish and wildlife and their habitats;
- (iii) to provide, in a manner consistent with purposes set forth in subparagraphs (i) and (ii), the opportunity for continued subsistence uses by local residents; and
- (iv) to ensure, to the maximum extent practicable and in a manner consistent with the purposes set forth in subparagraph (i), water quality and necessary water quantity within the refuge.”

National Wildlife Refuge System Mission

The mission of the National Wildlife Refuge System is to administer a national network of lands and waters for the conservation, management, and, where appropriate, restoration of the fish, wildlife, and plant resources and their habitats within the United States for the benefit of present and future generations of Americans (National Wildlife Refuge System Administration Act of 1966, as amended [16 U.S.C.668dd-668ee]).

Description of Use

This determination re-evaluates requests from the military to conduct limited training exercises on Refuge lands. Although most of their on-the-ground training occurs outside

Refuge boundaries, Navy Seals and Coast Guard personnel occasionally use glaciers on the Refuge for winter survival training. Helicopters are used for access for this training. The Coast Guard has entered into a memorandum of agreement with the Service and the Alaska Department of Fish and Game regarding flights over Kodiak Island. Navy Seals have their winter training school at Kodiak. Prior to each training activity, the military submits a detailed operational plan to the Refuge for approval.

Availability of Resources

Adequate Refuge personnel and base operational funds are available to manage these uses. Refuge staff provides the military information on sensitive wildlife areas and provides the Coast Guard annual refresher training on recommendations governing use of aircraft in and around the Refuge. Refuge staff review operations plans for any on-the-ground training on the Refuge.

Anticipated Impacts of the Use

Navy Seal and Coast Guard survival-training activities in the high country can impact mountain goats and denning brown bears. Season of use is a prime consideration for this activity. Camp impacts include attracting bears by improper storage of food and disposal of garbage. Information provided in advance of training exercises stresses bear-aware camping and minimizing the opportunities for adverse effects.

Public Review and Comment

Public comment was solicited concurrently with the revision of the Refuge's comprehensive conservation plan. The Defenders of Wildlife commented that they were concerned that "non-coastguard helicopter transport and survival training" are not compatible with the refuge mission and goals because of disturbance to mountain goats and denning brown bears. Defenders stated, "we believe this disturbance occurs at a level that renders this use incompatible with the National Wildlife Refuge System Improvement Act. The Service rightfully banned recreational helicopters and should do the same with helicopter use associated with military training. In the eyes of the Improvement Act there is no qualitative difference between two non-wildlife dependent uses with respect to meeting the strict compatibility requirements." The operations plan for each proposed military training is reviewed for essential need, location, activity, time of year, alternate training locations, and potential impacts to refuge resources. If it is determined that training can be conducted with minimal or no impact to refuge resources, a permit is issued with the special conditions necessary to ensure compatibility. Otherwise, a permit would not be issued. Our files indicate that training occur infrequently - about once every ten years. The last permit for training was issued in 1996. Monitoring of the last two training exercises indicated the use did not impact refuge resources.

Determination

☐ Use is Not Compatible
☒ Use is Compatible With the Following Stipulations

Stipulations Necessary to Ensure Compatibility

- Nonemergency helicopter landings would not be authorized during spring and fall bear-hunting seasons.
- Helicopter landings would not be allowed in the vicinity of key bear concentration areas, including important denning locations, during sensitive times of the year.
- Ensure that all aircraft transiting the Refuge actively avoid large mammals (including brown bears, elk, mountain goats, and marine mammals) and active bald eagle nests. “Active avoidance” includes making a vertical or lateral deviation from a flight path within flight safety parameters to minimize or prevent adverse impact on the animals.
- Coordinate with the Service and Alaska Department of Fish and Game for annual refresher training on laws (both Federal and state) governing the use of aircraft around wildlife and, to minimize interference, review areas where large concentrations of brown bears are located. Prior to obtaining approval for training, the military must submit a detailed operations plan for Refuge approval. This operation plan must outline how wildlife impacts will be avoided. The plan must contain the details about the proposed training, including all areas where ground operations will be conducted and locations proposed for camping and other training activities. An inspection flight must be provided to take Refuge staff member to any campsite once activities are completed to ensure proper camp closeout procedures were followed. Any low-level flight activities must be coordinated in advance with the Refuge to ensure safety and to minimize wildlife disturbance.
- A special use permit is required.

The management direction provided in the revised comprehensive conservation plan for the Refuge will be implemented. Monitoring would be used to determine what additional management actions, if any, were needed to ensure compatibility. Continuing law enforcement and administrative monitoring of permits will be carried out to ensure compliance with the following conditions that are incorporated into all permits to minimize impacts on Refuge lands and resources.

Regional conditions

- Failure to abide by any part of this special use permit; violation of any Refuge-related provision in Titles 43 or 50, Code of Federal Regulations; or violation of any pertinent state regulation (e.g., fish or game violation) will be considered grounds for immediate revocation of this permit and could result in denial of future permit requests for lands administered by the U.S. Fish and Wildlife Service. This provision applies to all persons working under the authority of this permit (e.g., assistants or contractors). Appeals of decisions relative to permits are handled in accordance with 50 Code of Federal Regulations 36.41.
- The permittee is responsible for ensuring that all employees, party members, contractors, aircraft pilots, and any other persons working for the permittee and conducting activities allowed by this permit are familiar with and adhere to the conditions of this permit.
- Any problems with wildlife and/or animals taken in defense-of-life-or-property must be reported immediately to the Refuge Manager, the Alaska Department of Fish and Game, and the Alaska State Troopers. Animals taken must be salvaged in accordance with state regulations.
- The permittee and permittee’s employees do not have the exclusive use of the site(s) or lands covered by the permit.

- This permit may be cancelled or revised at any time by the Refuge Manager for noncompliance or in case of emergency (e.g., public safety, unusual resource problems).
- The permittee or party chief shall notify the Refuge Manager during Refuge working hours in person or by telephone before beginning and upon completion of activities allowed by this permit.
- Prior to beginning any activities allowed by this permit, the permittee shall provide the Refuge Manager with: (1) name and method of contact for the field party chief/supervisor; aircraft and other vehicle types to be used, identification information for these vehicles; and names of crew members, and (2) any changes in information provided in the original permit application.
- In accordance with the Archaeological Resources Protection Act (16 U.S.C. 470aa), the disturbance of archaeological or historical sites, and the removal of artifacts are prohibited. The excavation, disturbance, collection, or purchase of historical, ethnological, or archaeological specimens or artifacts is prohibited.
- Permittees shall maintain their use areas in a neat and sanitary condition. Latrines must be located at least 150 feet from springs, lakes, and streams. All property of the permittee is to be removed from Refuge lands upon completion of permitted activities and the permittee must provide an inspection flight for Refuge staff to activity areas to ensure proper camp closeout procedures were followed.
- The construction of landing strips or pads is prohibited.
- The use of motorized vehicles is prohibited on all Refuge lands.
- The operation of aircraft at altitudes and in flight paths resulting in the herding, harassment, hazing, or driving of wildlife is prohibited. It is recommended that all aircraft, except for takeoff and landing, maintain a minimum altitude of 2,000 feet above ground level.
- Unauthorized fuel caches are prohibited. Fuel storage, if any, will be in compliance with regional Service fuel storage policy.
- Construction of cabins or other permanent structures is prohibited.

Kodiak Refuge Conditions

- Visitors will be required to comply with any temporary restrictions, emergency orders or other types of regulatory actions promulgated by the Refuge Manager to prevent resource problems or conflicts, in cases of emergency, public safety, or unusual resource problems.
- The use of Native or State lands that have been conveyed (patented) is not authorized by this permit.
- Use of Native or State lands that have been selected but not yet conveyed is prohibited unless a letter of concurrence is submitted to the Refuge Manager prior to beginning any activities allowed by this permit.
- A copy of this special use permit must be in the party leader's possession at all times while exercising the privileges of the permit.
- Cabins on Refuge lands shall not be used by the permittee without the permission of the Refuge Manager except in cases of dire emergency for survival purposes.
- Food or garbage attractive to bears or other wildlife will be immediately disposed of. No attractive nuisance for bears or other wildlife shall be created by food storage, improper disposal of garbage (includes of burying of garbage), fish smoking, salting, drying, or other uses.

- Combustibles (paper, wood, etc.) may be burned, but all other debris, including cans, bottles, fuel containers, and any other noncombustible material shall be removed and disposed of off Refuge when departing camps.
- Closed and Limited Access Areas—An area approximately 2,560 acres near the outlet of the O'Malley River, as described in 50 CFR 36.39 (j)(1), is closed to all public access, occupancy, and use (general and commercial) from June 25 through September 30 annually.
- Following are the special conditions for operations on the Ayakulik River effective May 25 through July 15:
 - Announce your position and intention, for takeoff/landing or transit of the area, on CTAF 122.8.
- The Service requests that helicopters avoid landing in the vicinity of Refuge visitors and their camps.
- Ensure that all aircrews are briefed on the importance of maintaining an appropriate distance from all wildlife to avoid harassment.
- Any action by a permittee or the permittee's employees that unduly interferes with or harasses other Refuge visitors or impedes access to any site is strictly prohibited. Examples of prohibited acts include, but are not limited to, low flights over camps or persons at less than 500 feet (unless landing) and parking aircraft or placing other objects on any landable area to restrict use by other aircraft or persons.
- The permittee's operations plan, as amended and accepted by the U.S. Fish and Wildlife Service, is hereby incorporated in their entirety as a special condition. All deviations from the operations plan must receive prior written approval by the Refuge Manager or his/her designee.
- Access on Alaska Maritime NWR islands, rocks, and spires adjacent to Kodiak NWR is allowed for glassing or scoping of game and wildlife viewing. Access is restricted to day-use only, colonies of nesting birds must be avoided, and any foot travel must be performed in a manner to avoid damage of ground-nest sites.
- When transiting lands within the boundaries of the Kodiak Refuge, aircraft shall maintain an altitude of at least 750 feet above ground level. An exception is granted when inclement weather makes it necessary for aircraft to fly at lower levels, particularly during the transit of mountain passes.
- The discharge of firearms is prohibited, except in conjunction with authorized hunting seasons or for protection of life or property.

Justification

The Refuge staff and Alaska Department of Fish and Game work closely with the Coast Guard to insure there are minimal impacts from their operations. The Coast Guard willingly entered into the memorandum of agreement to cover their flight operations over Kodiak Refuge. Navy Seal and Coast Guard winter-survival training is conducted on glaciers on Kodiak Island. Depending on winter weather conditions, it is sometimes necessary for these activities to be conducted within Refuge boundaries. By working closely together, the Refuge and the military can meet military training requirements in an area where alternative nonRefuge sites are not available, and protect sensitive wildlife resources. Specific special conditions to ensure protection of Refuge resources and avoidance of impacts, such as practicing leave-no-trace camping, are included in specific

operational plans approved in advance by the Refuge. If there is potential for significant impacts to occur, a permit would not be issued.

This activity was initially determined to be a compatible use in 1994. Our files indicate that training exercises occur infrequently - about once every ten years. The last permit for training was issued in 1996. Monitoring of the last two training exercises indicated the use did not impact refuge resources and was compatible.

Supporting Documents

- Memorandum of Agreement Between U.S. Fish and Wildlife Service, Alaska Department of Fish and Game, and U.S. Coast Guard Regarding Flight Operations Over Kodiak. April 30, 2002. On file with Kodiak National Wildlife Refuge, Kodiak, Alaska. 4 pp.
- U.S. Fish and Wildlife Service. 1987. Kodiak National Wildlife Refuge Final Comprehensive Conservation Plan, Wilderness Review, and Environmental Impact Statement. U.S. Fish and Wildlife Service. Anchorage, Alaska. 533 pp.
- U.S. Fish and Wildlife Service. 1993. Kodiak National Wildlife Refuge, Final Public Use Management Plan and Environmental Assessment. U.S. Fish and Wildlife Service. Kodiak, Alaska. 202 pp.
- U.S. Fish and Wildlife Service. 2004. Draft Revised Comprehensive Conservation Plan and Environmental Impact Statement Kodiak National Wildlife Refuge. U.S. Fish and Wildlife Service. Anchorage, Alaska.

Refuge Determination

Refuge Manager /
Project Leader Approval: USFWS KENN 2-17-2006
(Signature) (Date)

Concurrence

Regional Chief,
National Wildlife
Refuge System: Carol J. Fog 2/17/06
(Signature) (Date)

Mandatory 10-Year Re-Evaluation Date: January 2016

NEPA Compliance for Refuge Use Decision

- ☐ Categorical Exclusion without Environmental Action Memorandum
- ☐ Categorical Exclusions and Environmental Action Memorandum
- ☐ Environmental Assessment and Finding of No Significant Impact
- ☒ Environmental Impact Statement and Record of Decision

COMPATIBILITY DETERMINATION

Use: Unguided Wildlife Viewing, Photography, Environmental Education, and Interpretation

Primary Uses: Environmental education (teaching teachers or group leaders, teaching students, other), interpretation, photography (wildlife), wildlife observation.

Supporting Uses: Boating (electric and wind-driven), boating (human-powered), boating (motorized), fishing (general), fishing (other), hunting (big game), hunting (other migratory birds), hunting (upland game), hunting (waterfowl), hunting (other), plant gathering, rock collecting, trapping, natural resource collecting, camping, cross-country skiing, dog sledding and ski touring, hiking and backpacking, pets, photography, video, filming, audio recording (nonwildlife-dependent, recreational—other), snowshoeing, swimming and beach use, outdoor recreation (other), fishing (subsistence), gathering (subsistence), hunting (subsistence), photography (wildlife), wildlife observation, fixed-wing aircraft, tree harvest (firewood).

Refuge Name: Kodiak National Wildlife Refuge

Establishing and Acquisition Authorities

Original authority was Executive Order 8857 (1941); modified by Public Land Order 1634 (1958), Alaska Native Claims Settlement Act (1971), and Alaska National Interest Lands Conservation Act (ANILCA; 1980)

Refuge Purposes

Executive Order 8857 established Kodiak National Wildlife Refuge “. . . for the purpose of protecting the natural feeding and breeding ranges of the brown bears and other wildlife on Uganik and Kodiak Islands . . .”

Section 303(5)(B) of ANILCA states the following:

“The purposes for which the Kodiak National Wildlife Refuge is established and shall be managed include

- (i) to conserve fish and wildlife populations and habitats in their natural diversity including, but not limited, to Kodiak brown bears, salmonids, sea otters, sea lions, and other marine mammals and migratory birds;
- (ii) to fulfill the international treaty obligations of the United States with respect to fish and wildlife and their habitats;
- (iii) to provide, in a manner consistent with purposes set forth in subparagraphs (i) and (ii), the opportunity for continued subsistence uses by local residents; and
- (iv) to ensure, to the maximum extent practicable and in a manner consistent with the purposes set forth in subparagraph (i), water quality and necessary water quantity within the refuge.”

National Wildlife Refuge System Mission

The mission of the National Wildlife Refuge System is to administer a national network of lands and waters for the conservation, management, and, where appropriate,

restoration of the fish, wildlife, and plant resources and their habitats within the United States for the benefit of present and future generations of Americans (National Wildlife Refuge System Administration Act of 1966, as amended [16 U.S.C.668dd-668ee]).

Description of Use

This determination re-evaluates the following unguided wildlife-dependent activities: wildlife viewing, wildlife photography, environmental education, and interpretation. While some visitors come to the Refuge specifically to engage in one or more of these nonconsumptive activities, many visitors also include these activities as part of a Refuge hunting or fishing trip. Compatibility of hunting and fishing is evaluated separately. Associated activities such as camping, backpacking, hiking, and other incidental uses are considered part of these wildlife-dependent activities for the purposes of this evaluation. Of the four priority public uses, wildlife observation and photography are by far the most widespread with on-Refuge environmental education and interpretation occurring only intermittently as staff talk with visitors during patrols or chance encounters when conducting other work.

Interpretive and educational efforts occur primarily in the City of Kodiak rather than on the Refuge because of the lack of developed visitor facilities and difficult access to the Refuge itself. Educational programs occurring on the Refuge are often held in conjunction with one of the six villages on the island (Old Harbor, Ouzinkie, Port Lions, Karluk, Larsen Bay, and Akhiok). Limited, informal interpretive and environmental education services are provided during contacts with visitors on the Refuge by staff on routine patrol. No formal environmental education or interpretive programs are regularly conducted on the Refuge nor are any formal on-site programs planned under the revised conservation plan.

The Kodiak brown bear is a key attraction, but visitors also take advantage of opportunities to view and photograph other wildlife and the dramatic landscapes of the Refuge. Most of these activities predate Refuge establishment in 1941. Recreational settings on the Refuge are remote and inaccessible by road. Typical forms of access for all areas of the Refuge include fixed-wing airplanes, motorboats, nonpowered boats, hiking, snowshoeing, cross-country skiing, and other nonmotorized means. However, most visitors access the Refuge by commercial air taxis or charter boat. Private boats and airplanes are the most common means of access for the relatively few visitors not using commercial transporters.

Day trips to the Refuge are common for visitors interested in wildlife viewing, photography, and sightseeing. Camping on the Refuge usually occurs for periods of several days. Campers use tents ranging from small backpack-type tent camps to larger multiperson tents. Visitors also occupy public use cabins maintained by the Refuge or stay at private facilities located adjacent to the Refuge or on inholdings.

People visit the Refuge year-round, but most come to view and photograph wildlife during summer. Over the last seven years, estimated annual wildlife-viewing and photography use has ranged from just more than 850 use days to more than 1,200 use days (a use day is one person visiting for all or part of one day). Use is concentrated at areas that are accessible and that generally provide reliable viewing such as along major

rivers during salmon runs. Of that total use, between 140 and 300 use days have been unguided during the same period.

Over the next 15 years, overall visitor use is expected to increase 20 percent to 30 percent, and some shifts in type of use and users may also occur. Specifically, wildlife viewing and photography are expected to grow at a faster rate than other activities such as hunting and fishing. Nonresident use is expected to grow more quickly than resident use, which may suggest that unguided wildlife viewing and photography are not likely to grow as rapidly as guided viewing and photography.

Availability of Resources

Adequate Refuge personnel and base operational funds are available to manage these wildlife-dependent recreational activities. Administrative staff time primarily involves phone conversations, written correspondence, public use surveys, and interaction with visitors at the visitor center. Staff time will also be involved with the step-down planning process for key bear concentration areas called for in the conservation plan. There is also additional work entering activity data into a database for analysis. Field work associated with administering the program primarily involves conducting patrols to increase visitor compliance with state and federal regulations and to foster respect for local residents' activities and property.

Anticipated Impacts of the Use

Adverse impacts to Refuge wildlife and habitats associated with these priority public uses and associated uses are evaluated in this environmental impact statement for the revised Kodiak Refuge conservation plan. Negligible impacts to Refuge habitats from disturbance or introduction of invasive plants are anticipated. Possible localized adverse impacts to some bird species and brown bears have been documented, but the proposed plan would not have any long-term population-level impacts on Refuge wildlife. Positive effects on the local economy, though small, are anticipated from these uses.

Implementation of access and bear-viewing management would initially impact bears at concentration areas newly opened to bear viewing and other public uses. This use would disturb and displace unhabituated bears, resulting in a measurable short-term decline in bear-use levels, despite application of seasonal area use guidelines and restrictions. Recovery to current bear-use levels would be expected possibly by year two or three, and probably by year four (Barnes 2004), as most bears habituated to nonthreatening, consistent, and predictable visitor activity.

The step-down planning process called for in the conservation plan will be used to delineate wildlife viewing and photography in sensitive locations. It would minimize adverse impacts, especially those associated with brown bear viewing and photography.

Public Review and Comment

Public comment was solicited concurrently with the revision of the Refuge's comprehensive conservation plan. No comments were received on this compatibility determination.

Determination

_____ Use is Not Compatible

X Use is Compatible With the Following Stipulations

Stipulations Necessary to Ensure Compatibility

No special use permit is required.

The management direction provided in the revised comprehensive conservation plan for the Refuge will be implemented. Revision of the public use management plan will be used to identify specific management to ensure that this activity continues to remain compatible with Refuge purposes. This includes monitoring of wildlife-dependent recreation and other compatible activities. Findings from monitoring would be used to determine what additional management actions, if any, were needed to ensure compatibility. Continuing law enforcement and administrative monitoring of will be carried out to ensure compliance with the following conditions to minimize impacts on Refuge lands and resources.

Visitors will be required to comply with any regulations in places such as the seasonal closure of the O'Malley River area. Visitors will also be strongly encouraged to comply with voluntary guidelines adopted for wildlife viewing and photography and associated activities.

Justification

All Refuge lands in the Kodiak Refuge are open to general public access unless specifically closed. The proposed uses are four of the six priority public uses identified in the National Wildlife Refuge Administration Act (as amended by the National Wildlife Refuge System Improvement Act). The law calls for the Service to ensure that opportunities are provided for these uses and requires that the priority public uses receive enhanced consideration over other public uses in planning and management.

Kodiak Refuge provides an incredible opportunity to function as an outdoor classroom promoting an awareness of ecological functions and the interrelationship between human activities and the natural system and to educate and motivate future generations of people to support wildlife conservation. The current and projected amount of these activities has been found to have insignificant adverse physical and biological effects in the environmental impact statement for revision of the Kodiak Refuge conservation plan.

Supporting Documents

- Barnes, V.G. 2004. Personal communication with Bill Pyle, March 9, 2004, about effects of preferred alternative of draft revised Kodiak National Wildlife Refuge Comprehensive Conservation Plan on brown bears.
- U.S. Fish and Wildlife Service. 1987. Kodiak National Wildlife Refuge Final Comprehensive Conservation Plan, Wilderness Review, and Environmental Impact Statement. U.S. Fish and Wildlife Service. Anchorage, Alaska. 533 pp.
- U.S. Fish and Wildlife Service. 1993. Kodiak National Wildlife Refuge, Final Public Use Management Plan and Environmental Assessment. U.S. Fish and Wildlife Service. Kodiak, Alaska. 202 pp.

U.S. Fish and Wildlife Service. 2004. Draft Revised Comprehensive Conservation Plan and Environmental Impact Statement Kodiak National Wildlife Refuge. U.S. Fish and Wildlife Service. Anchorage, Alaska.

Refuge Determination

Refuge Manager /

Project Leader Approval:

USFWS KODK

(Signature)

2-17-2006

(Date)

ConcurrenceRegional Chief,
National Wildlife
Refuge System:[Signature]

(Signature)

2/17/06

(Date)

Mandatory 15-Year Re-Evaluation Date: January 2021**NEPA Compliance for Refuge Use Decision**

- ☐ Categorical Exclusion without Environmental Action Memorandum
- ☐ Categorical Exclusions and Environmental Action Memorandum
- ☐ Environmental Assessment and Finding of No Significant Impact
- ☒ Environmental Impact Statement and Record of Decision

COMPATIBILITY DETERMINATION

Use: O'Malley River Bear-Viewing Program

Primary Uses: Photography (wildlife), wildlife observation, and wildlife observation (guiding or outfitting)

Supporting Uses: Boating (electric and wind-driven), boating (human-powered), boating (motorized), environmental education (not conducted by refuge staff or authorized agents), interpretation, interpretation (not conducted by refuge staff or authorized agents), fishing (general), fishing (guiding or outfitting), plant gathering, rock collecting, natural resource collecting, camping, hiking and backpacking, photography, video, filming, or audio recording (nonwildlife-dependent, recreational—other), swimming and beach use, outdoor recreation (other), fixed-wing aircraft.

Refuge Name: Kodiak National Wildlife Refuge

Establishing and Acquisition Authorities

Original authority was Executive Order 8857 (1941); modified by Public Land Order 1634 (1958), Alaska Native Claims Settlement Act (1971), and Alaska National Interest Lands Conservation Act (ANILCA; 1980)

Refuge Purposes

Executive Order 8857 established Kodiak National Wildlife Refuge “. . . for the purpose of protecting the natural feeding and breeding ranges of the brown bears and other wildlife on Uganik and Kodiak Islands . . .”

Section 303(5)(B) of ANILCA states the following:

“The purposes for which the Kodiak National Wildlife Refuge is established and shall be managed include

- (i) to conserve fish and wildlife populations and habitats in their natural diversity including, but not limited, to Kodiak brown bears, salmonids, sea otters, sea lions, and other marine mammals and migratory birds;
- (ii) to fulfill the international treaty obligations of the United States with respect to fish and wildlife and their habitats;
- (iii) to provide, in a manner consistent with purposes set forth in subparagraphs (i) and (ii), the opportunity for continued subsistence uses by local residents; and
- (iv) to ensure, to the maximum extent practicable and in a manner consistent with the purposes set forth in subparagraph (i), water quality and necessary water quantity within the refuge.”

National Wildlife Refuge System Mission

The mission of the National Wildlife Refuge System is to administer a national network of lands and waters for the conservation, management, and, where appropriate, restoration of the fish, wildlife, and plant resources and their habitats within the United

States for the benefit of present and future generations of Americans (National Wildlife Refuge System Administration Act of 1966, as amended [16 U.S.C.668dd-668ee]).

Description of Use

This determination evaluates operation of a bear-viewing program at the O'Malley River within Kodiak Refuge. The Service, in cooperation with Alaska Department of Fish and Game, would develop and implement a bear-viewing program at O'Malley River. The regulation now closing the O'Malley River area to all use on a seasonal basis would be modified to allow this use. The viewing program would combine agency-supervised use with commercially guided use, although agency-supervised viewers and commercially guided viewers would not be present at the same time. Permits for agency-supervised visitation would be allocated to individuals by lottery. Qualified bear-viewing guides would apply for guided use opportunities, which would then be available to their clients via private bookings. The viewing program would be patterned after the program operated by the Service at the O'Malley River site in 1992, but would probably differ in some respects.

The 1992 program operated between early July and mid-August and included the following elements:

- Maximum of six to eight participants per viewing period, selected by lottery;
- Viewing period of four days;
- Participants supplied their own transportation to the site, food, clothing, footwear, and bedding;
- The Service provided support facilities, including weatherports (large tents with rigid floors), a cooking shelter with cook stoves, utensils, and fuel, and an outhouse (all located outside the limited access area);
- Participants were escorted to and from the viewing site each day;
- The viewing site consisted of a small, wooden platform located on an upland bench within 50 yards of O'Malley River;
- Participants were required to stay at the viewing site during the day; and
- Participants were allowed, under supervision, to fish, hike, or pursue other activities in designated areas adjacent to the support facilities site, but outside the limited use area.

Aircraft access was managed to minimize the number of days on which aircraft landings occurred at the camp area.

Qualified bear-viewing guides would be selected through a screening process, probably a prospectus. Applicants would be required to submit a proposed operations plan and other pertinent information requested by the Service and outlined in the prospectus. Applications would be evaluated and a permit awarded for operation of the program. Kodiak Refuge staff, in coordination with Alaska Department of Fish and Game, would provide management oversight of the program, but all aspects of operation—such as client booking, transportation to the site, and on-site management of viewing activities—would be the responsibility of the permittee(s). Selected guides could offer a viewing opportunity similar to that being offered by the agency program or possibly negotiate alternative plans of operation that would require the approval of the Refuge Manager.

Availability of Resources

This program would only be implemented once adequate staff and funding were available, including staff and funding to supervise program participants and to conduct biological monitoring of program effects. A similar program was operated in the past with existing staff and funding; however, the costs of biological monitoring were not being funded by the Refuge at that time. In addition, the Refuge was not doing as much on-the-ground management of public use as it is today (for example, Ayakulik, Karluk, and Frazer rivers). Costs of this proposed program, which combines guided and agency-run opportunities, would likely be higher than the cost of a purely agency-run program. Management costs would be similar to those that might be expected if the entire program were operated by guides. While the Refuge would seek to have the fees collected through this program returned to the Refuge to manage this program, this would require reauthorization of federal Fee-Demonstration-Program legislation and that this program be added to the list of authorized fee-demonstration projects.

Anticipated Impacts of the Use

The main effects likely from the bear-viewing program at O'Malley River would be on brown bears and on visitors. We would expect minor impacts to bears from the bear-viewing program to be established at O'Malley River. These noticeable but minor impacts would be limited mainly to unhabituated animals that traditionally used the access trail and viewing site vicinity in July and August. Some affected bears would gradually habituate to this activity; others would shift their daily activity patterns to avoid it (Sellers and Aumiller 1994). Yet other bears would probably move to and remain at different foraging sites. Although these animals may encounter increased competition with other bears, their survival would not be jeopardized.

Initial declines in summer bear use would be followed by a gradual increase in use to preprogram levels as displacement decreased and habituation increased (Wilker and Barnes 1998, Barnes and Wilker 2002). Bear use would be unlikely to differ significantly with preprogram levels after year four of program operation (Barnes 2004).

Bears would be minimally disturbed by viewing-program activities because the type, level, timing, and distribution of human activity would be carefully managed. Access to and from the viewing site and activity at the viewing site would be managed similarly to that of the agency-run viewing program conducted in 1992. However, some additional impacts to individual bears would be expected, given the realities of monitoring use by commercial operation. Those impacts could likely be alleviated only through presence of an on-site agency monitor and strict penalties for noncompliance.

The camp adjacent to the concentration area would have negligible effects on bears (Wilker and Barnes 1998). Careful camp management would ensure safety and prevent problems. Curious bears approaching camp would be deterred. Although other activities such as fishing could occur in the camp vicinity, effects on bears would be negligible because these activities would occur outside the bear concentration area.

Viewing-program characteristics could change if fall bear viewing were authorized. Because of changes in distribution of food resources, bears increasingly use the lake shore area for travel and foraging in fall. Despite this need, adult males might tend to avoid the lake shore or shift activity patterns in response to human activity. If fall

viewing were allowed, social conflicts between bear viewers and bear hunters could develop.

The current annual seasonal closure extends from June 25 through September 30. This allows unrestricted public access for a month before the start of hunting season. Habituated bears in the O'Malley area would be somewhat at risk of harvest, although the risk to individual bears is reduced by several factors (Barnes and Wilker 2000). The bears most likely to become habituated include females accompanied by cubs—protected from harvest by regulation—and subadults whose small size makes them less attractive as trophy animals. However, two such bears were harvested in the O'Malley area in the fall of 2003 (Wilker 2004). Current management of recreational harvest provides for a conservative harvest. Consequently, there is substantial natural mortality of adult females. Few bears are present in the O'Malley area during the spring bear-hunting season because of the absence of spring forage in the area. Bears do not begin to congregate here in large numbers until the salmon runs start.

In summary, a commercial viewing program would have minor short- and long-term effects on bears, assuming strict adherence to program requirements. Impacts would be minor mainly because the type, distribution, and level of human activity would be consistent and carefully regulated; human use would be limited to the access trail and viewing site vicinity, a relatively small portion of the concentration area; and most bears initially disturbed by humans would gradually habituate to them and resume traditional habitat use patterns.

Reopenning of the O'Malley River bear-viewing site would increase wildlife-viewing opportunities on the Refuge. Bears are almost certainly the most popular wildlife-viewing attraction on the Refuge. In recent years, the Refuge has received an average of about 900 guided wildlife-viewing use days per year. A bear-viewing program at O'Malley River, modeled after past programs, could support approximately 400 bear-viewing use days if it operated at full capacity. Therefore, reopening the O'Malley River bear-viewing site for operation of a viewing program could clearly have a substantial positive effect on wildlife-viewing opportunities, leading to an increase in participation of nearly 50 percent.

There would be a positive economic effect on the guides selected to provide the commercial viewing at O'Malley River and on local air taxi operators who would provide transportation to and from the site for visitors using both the government-run and the commercially guided programs. Other impacts from the program are likely to be negligible.

Public Review and Comment

Public comment was solicited concurrently with the revision of the Refuge's comprehensive conservation plan. While there were no comments specifically addressing this compatibility determination, there were many comments about the proposed O'Malley River Bear Viewing Program. One comment stated, "To allow wildlife viewers egress and ingress, in and out of sensitive areas on a daily basis, at a critical time of the year, and to allow people to trample natural habitat and plants, to disrupt diurnal rhythms of bears and other animals, are things that blatantly contradicts the very purpose the Kodiak Refuge had been created and managed for over six decades." Most

other comments addressed the practicality and logistics of operating the proposed program. Previous experience has shown that this use can be conducted compatible with refuge purposes and the Service mission. Stipulations contained in this compatibility determination and refined through step-down planning would ensure that this priority public use is compatible.

Determination

_____ Use is Not Compatible

X _____ Use is Compatible with the Following Stipulations

Stipulations Necessary to Ensure Compatibility

A permit for individuals selected by lottery is required

A special use permit for commercial guides is required

The management direction provided in the revised comprehensive conservation plan for the Refuge will be implemented. The step-down planning processes identified in the revised conservation plan will be used to identify specific management to ensure that this activity continues to remain compatible with Refuge purposes. This includes monitoring of wildlife-dependent recreation and other Refuge-compatible activities. Findings from monitoring would be used to determine what additional management actions, if any, were needed to ensure compatibility. Continuing law enforcement and administrative monitoring of permits will be carried out to ensure compliance with the following conditions that are incorporated into all permits to minimize impacts on Refuge lands and resources.

Permit special conditions displayed here will be replaced by special conditions developed through the step-down planning process outlined in the final revised Kodiak National Wildlife Refuge Comprehensive Conservation Plan.

Regional conditions

- Failure to abide by any part of this special use permit; violation of any Refuge-related provision in Titles 43 or 50, Code of Federal Regulations; or violation of any pertinent state regulation (e.g., fish or game violation) will be considered grounds for immediate revocation of this permit and could result in denial of future permit requests for lands administered by the U.S. Fish and Wildlife Service. This provision applies to all persons working under the authority of this permit (e.g., assistants or contractors). Appeals of decisions relative to permits are handled in accordance with 50 Code of Federal Regulations 36.41.
- The permittee is responsible for ensuring that all employees, party members, contractors, aircraft pilots, and any other persons working for the permittee and conducting activities allowed by this permit are familiar with and adhere to the conditions of this permit.
- Any problems with wildlife and/or animals taken in defense-of-life-or-property must be reported immediately to the Refuge Manager, the Alaska Department of Fish and Game, and the Alaska State Troopers. Animals taken must be salvaged in accordance with state regulations.
- This permit may be cancelled or revised at any time by the Refuge Manager for noncompliance or in case of emergency (e.g., public safety, unusual resource problems).

- The permittee or party chief shall notify the Refuge Manager during Refuge working hours in person or by telephone before beginning and upon completion of activities allowed by this permit.
- Prior to beginning any activities allowed by this permit, the permittee shall provide the Refuge Manager with: (1) name and method of contact for the field party chief/supervisor; aircraft and other vehicle types to be used, identification information for these vehicles; and names of crew members, and (2) any changes in information provided in the original permit application.
- Prior to beginning any activities allowed by this permit, the permittee shall provide the Refuge with (1) a copy of current business license; (2) proof of comprehensive general liability insurance, listing Kodiak National Wildlife Refuge as additionally insured, (\$300,000 each occurrence, \$500,000 aggregate for guides/outfitters) covering all aspects of operations throughout the annual use period; (3) changes in names of assistant guides and other employees; (4) copies of CPR and First Aid cards for permittee and all personnel that will operate on the Refuge; and (5) any changes in information provided for the original special use permit proposed operations plan.
- The permittee is responsible for accurate record keeping and shall provide the Refuge Manager with a comprehensive summary of location, numbers of clients, and number of client days by January 15 for all uses during the calendar year, unless stated otherwise in the permit. The permittee shall provide the Refuge Manager with this information on the form provided with the special use permit. An annual nonrefundable administrative fee will be assessed prior issuing this permit. In addition, a client use day will be assessed at the end of the calendar year based on the permittee's use report. Client use fees are adjusted by the Regional Office every three years based on the Implicit Price Deflator Index (PDI). For law enforcement purposes, the permittee may be required to provide names and addresses of clients. Failure to submit required reports and payments could result in the issuance of citations and revocation of the permit.
- In accordance with the Archaeological Resources Protection Act (16 U.S.C. 470aa), the disturbance of archaeological or historical sites, and the removal of artifacts are prohibited. The excavation, disturbance, collection, or purchase of historical, ethnological, or archaeological specimens or artifacts is prohibited.
- Permittees shall maintain their use areas in a neat and sanitary condition. Latrines must be located at least 150 feet from springs, lakes, and streams. All property of the permittee except for cabins and tent frames is to be removed from Refuge lands upon completion of permitted activities.
- The construction of landing strips or pads is prohibited.
- The permittee may not sublet any part of the authorized use area and is prohibited from subcontracting clients with any other guide.
- The use of motorized vehicles is prohibited on all Refuge lands.
- The operation of aircraft at altitudes and in flight paths resulting in the herding, harassment, hazing, or driving of wildlife is prohibited. It is recommended that all aircraft, except for takeoff and landing, maintain a minimum altitude of 2,000 feet above ground level.
- The use of helicopters is prohibited.
- Unauthorized fuel caches are prohibited. Fuel storage, if any, will be in compliance with regional Service fuel storage policy.

- Construction of cabins or other permanent structures is prohibited.

Kodiak Refuge Conditions

- Visitors will be required to comply with any temporary restrictions, emergency orders or other types of regulatory actions promulgated by the Refuge Manager to prevent resource problems or conflicts, in cases of emergency, public safety, or unusual resource problems.
- The use of Native or State lands that have been conveyed (patented) is not authorized by this permit.
- Use of Native or State lands that have been selected but not yet conveyed is prohibited unless a letter of concurrence is submitted to the Refuge Manager prior to beginning any activities allowed by this permit.
- A copy of this special use permit must be in the party leader's possession at all times while exercising the privileges of the permit.
- Food or garbage attractive to bears or other wildlife will be immediately disposed of. No attractive nuisance for bears or other wildlife shall be created by food storage, improper disposal of garbage (includes of burying of garbage), fish smoking, salting, drying, or other uses.
- Combustibles (paper, wood, etc.) may be burned, but all other debris, including cans, bottles, fuel containers, and any other noncombustible material shall be removed and disposed of off Refuge when departing camps.
- The permittee or his or her designated assistant must accompany clients while on the Refuge. Permittee or assistant must be present within the permit area while clients are engaged in activities authorized under this permit. Permittees with more than one permit area must be present within one of the Kodiak National Wildlife Refuge areas in which they are authorized to operate.
- All aircraft being used in commercial operations must have 12-inch identification numbers in contrasting colors, which are readily visible.
- Any action by a permittee or the permittee's employees that unduly interferes with or harasses other Refuge visitors or impedes access to any site is strictly prohibited. Examples of prohibited acts include, but are not limited to, low flights over camps or persons at less than 500 feet (unless landing) and parking aircraft or placing other objects on any landable area to restrict use by other aircraft or persons.
- The permittee's operations plan, as amended and accepted by the U.S. Fish and Wildlife Service, are hereby incorporated in their entirety as a special condition. All deviations from the operations plan and synopsis must receive prior written approval by the Refuge Manager or his/her designee.
- Maximum overnight camp size will be 8 to 10 people, including guides and assistants. The Refuge Manager may restrict use and duration of some sites for overnight camping to prevent resource problems or conflicts.
- This special use permit specifically does not authorize the following:
 - Construction of blinds, stands or any other structures
 - Baiting, feeding, harassing, herding, or any other activity that changes, or attempts to change, normal behavior, this includes but is not limited to bears, fox, deer, and eagles

- Any other types of commercially guided activities as described in attachment (a) Refuge Guide and Other Visitor Service Definitions.
- Motorboat operators must possess U.S. Coast Guard (USCG) licenses for all passenger-carrying operations, if required by USCG regulations.
- The discharge of firearms is prohibited, except for protection of life or property.

Justification

The National Wildlife Refuge System Administration Act (as amended by the National Wildlife Refuge System Improvement Act) identifies compatible wildlife observation, photography, environmental education, and interpretation as four of six priority public uses of national wildlife refuges. The law states that, when managed in accordance with principles of sound fish and wildlife management, administration of these uses has been and is expected to continue to be generally compatible and that that priority public uses should receive enhanced consideration over other general public uses in refuge planning and management. The proposed O'Malley River bear-viewing program would clearly enhance the opportunity for the public to participate in these activities while protecting wild Kodiak bears and other Refuge resources.

Conditions imposed in the special use permits of the guides and on the Service and Alaska Department of Fish and Game would ensure that these wildlife-dependent activities can occur without adverse effects to Refuge resources, other visitors, or subsistence activities.

Supporting Documents

- Barnes, V.G. 2004. Personal communication with Bill Pyle, March 9, 2004, about effects of preferred alternative of draft revised Kodiak National Wildlife Refuge Comprehensive Conservation Plan on brown bears.
- Barnes, V. G., and G. A. Wilker. 2000–2002. Assessment of the vulnerability of habituated bears to sport harvest in the Karluk Lake vicinity of Kodiak National Wildlife Refuge, Alaska. Pages T-1 to T-5 *in* Alaska Department of Fish and Game. 2002. Kodiak Archipelago Bear Conservation and Management Plan. Alaska Dept. Fish and Game, Anchorage, Alaska. 240 pp.
- Sellers, R.A., and L.D. Aumiller. 1994. Brown bear population characteristics at McNeil River, Alaska. *Int. Conf. Bear Res. and Manage.* 9(1):283–293.
- U.S. Fish and Wildlife Service. 1987. Kodiak National Wildlife Refuge Final Comprehensive Conservation Plan, Wilderness Review, and Environmental Impact Statement. U.S. Fish and Wildlife Service. Anchorage, Alaska. 533 pp.
- U.S. Fish and Wildlife Service. 1993. Kodiak National Wildlife Refuge, Final Public Use Management Plan and Environmental Assessment. U.S. Fish and Wildlife Service. Kodiak, Alaska. 202 pp.
- U.S. Fish and Wildlife Service. 2004. Draft Revised Comprehensive Conservation Plan and Environmental Impact Statement Kodiak National Wildlife Refuge. U.S. Fish and Wildlife Service. Anchorage, Alaska.
- Wilker, Greg. 2004. Personal communication with Mike Getman on June 28, 2004, about bear harvest at O'Malley River during the fall 2003 hunting season.
- Wilker, G. A., and V. G. Barnes, Jr. 1998. Responses of brown bears to human activities at O'Malley River, Kodiak Island, Alaska. *Ursus* 10:557-561.

Refuge Determination

Refuge Manager /

Project Leader Approval:

LESLIE KENN

(Signature)

2-17-2006

(Date)

ConcurrenceRegional Chief,
National Wildlife
Refuge System:Bob J. Fog

(Signature)

2/17/06

(Date)

Mandatory 10-Year Re-Evaluation Date: January 2016**NEPA Compliance for Refuge Use Decision**

- ☐ Categorical Exclusion without Environmental Action Memorandum
- ☐ Categorical Exclusions and Environmental Action Memorandum
- ☐ Environmental Assessment and Finding of No Significant Impact
- ☒ Environmental Impact Statement and Record of Decision

COMPATIBILITY DETERMINATION

Use: Other Public Uses

Primary Uses: Boating (electric and wind-driven), boating (human-powered), boating (motorized), plant gathering, rock collecting, natural resource collecting, camping, cross-country skiing, dog training (including field trials), dog sledding and ski touring, hiking and backpacking, pets, photography, video, filming, audio recording (nonwildlife-dependent, recreational—other), snorkeling or scuba diving, snowshoeing, swimming and beach use, outdoor recreation (other), tree harvest (firewood). If any of these other public uses are performed for commercial purposes, a special use permit would be required before going into the field. For example, commercial photography, video or filming must have an Other Public Uses special use permit.

Supporting Use: Fixed-wing aircraft

Refuge Name: Kodiak National Wildlife Refuge

Establishing and Acquisition Authorities

Original authority was Executive Order 8857 (1941); modified by Public Land Order 1634 (1958), Alaska Native Claims Settlement Act (1971), and Alaska National Interest Lands Conservation Act (ANILCA; 1980)

Refuge Purposes

Executive Order 8857 established Kodiak National Wildlife Refuge “. . . for the purpose of protecting the natural feeding and breeding ranges of the brown bears and other wildlife on Uganik and Kodiak Islands . . .”

Section 303(5)(B) of ANILCA states the following:

“The purposes for which the Kodiak National Wildlife Refuge is established and shall be managed include

- (i) to conserve fish and wildlife populations and habitats in their natural diversity including, but not limited, to Kodiak brown bears, salmonids, sea otters, sea lions, and other marine mammals and migratory birds;
- (ii) to fulfill the international treaty obligations of the United States with respect to fish and wildlife and their habitats;
- (iii) to provide, in a manner consistent with purposes set forth in subparagraphs (i) and (ii), the opportunity for continued subsistence uses by local residents; and
- (iv) to ensure, to the maximum extent practicable and in a manner consistent with the purposes set forth in subparagraph (i), water quality and necessary water quantity within the refuge.”

National Wildlife Refuge System Mission

The mission of the National Wildlife Refuge System is to administer a national network of lands and waters for the conservation, management, and, where appropriate, restoration of the fish, wildlife, and plant resources and their habitats within the United

States for the benefit of present and future generations of Americans (National Wildlife Refuge System Administration Act of 1966, as amended [16 U.S.C.668dd-668ee]).

Description of Use

This determination re-evaluates general public uses not covered in the other compatibility determinations, including camping, hiking, backpacking, firewood cutting, boating (motorized and nonmotorized), plant gathering (including berry picking), natural resource collecting, rock collecting, cross-country skiing, dog sledding, pets, beach use, snowshoeing, photography, and other general outdoor recreation when the uses are not associated with one of the other uses evaluated elsewhere for compatibility. These uses could occur year-round; though most are most common in summer. The uses probably occur infrequently *not* in association with other uses.

Availability of Resources

Adequate Refuge personnel and base operational funds are available to manage these uses. Management consists of Refuge staff contacting visitors on an opportunistic basis when in the field for other purposes.

Anticipated Impacts of the Use

These activities are anticipated to have negligible effects on Refuge resources and other visitors, primarily because they occur so infrequently. For example, most berry picking occurs as a subsistence activity or by visitors engaged in another activity such as wildlife viewing, hunting, or fishing.

Public Review and Comment

Public comment was solicited concurrently with the revision of the Refuge's comprehensive conservation plan. No comments were received on this compatibility determination.

Determination

☐ Use is Not Compatible

☒ Use is Compatible With the Following Stipulations

Stipulations Necessary to Ensure Compatibility

No special use permit is required for non-commercial uses.

A special use permit is required for commercial uses and would contain special conditions similar to those listed under commercially guided wildlife viewing, photography, environmental education and interpretation.

The management direction provided in the revised comprehensive conservation plan for the Refuge will be implemented. Revision of the public use management plan will be used to identify specific management to ensure that this activity continues to remain compatible with Refuge purposes. This includes monitoring of wildlife-dependent recreation and other compatible activities. Findings from monitoring would be used to determine what additional management actions, if any, were needed to ensure compatibility. Continuing law enforcement

and administrative monitoring will be carried out to ensure compliance with laws and regulations and to minimize impacts on Refuge lands and resources.

Justification

These uses at the levels anticipated are not likely to have any adverse effects on Refuge resources or other visitors. The activities have been found compatible when conducted in relation to other Refuge uses such as wildlife observation and photography, hunting, fishing, trapping, or subsistence activities at the current levels because the levels and effects are negligible. Because the Refuge is remote and only accessible by boat, airplane, or arduous cross-country travel on foot, it is extremely unlikely that many visitors travel to Kodiak to engage solely in these nonpriority public use activities.

Supporting Documents

- U.S. Fish and Wildlife Service. 1987. Kodiak National Wildlife Refuge Final Comprehensive Conservation Plan, Wilderness Review, and Environmental Impact Statement. U.S. Fish and Wildlife Service. Anchorage, Alaska. 533 pp.
- U.S. Fish and Wildlife Service. 1993. Kodiak National Wildlife Refuge, Final Public Use Management Plan and Environmental Assessment. U.S. Fish and Wildlife Service. Kodiak, Alaska. 202 pp.
- U.S. Fish and Wildlife Service. 2004. Draft Revised Comprehensive Conservation Plan and Environmental Impact Statement Kodiak National Wildlife Refuge. U.S. Fish and Wildlife Service. Anchorage, Alaska.

Refuge Determination

Refuge Manager /

Project Leader Approval:

USFWS KODAK

(Signature)

2-17-2006

(Date)

Concurrence

Regional Chief,
National Wildlife
Refuge System:

[Signature]

(Signature)

2/17/06

(Date)

Mandatory 10-Year Re-Evaluation Date: January 2016

NEPA Compliance for Refuge Use Decision

- ☐ Categorical Exclusion without Environmental Action Memorandum
- ☐ Categorical Exclusions and Environmental Action Memorandum
- ☐ Environmental Assessment and Finding of No Significant Impact
- ☒ Environmental Impact Statement and Record of Decision

COMPATIBILITY DETERMINATION

Use: Private Cabin and Temporary Camp Special Use Permits

Primary Use: Uses (other)—Private cabin and temporary camp special use permits

Supporting Uses: Boating (electric and wind-driven), boating (human-powered), boating (motorized), interpretation (not conducted by refuge staff or authorized agents), fishing (guiding and outfitting), hunting (upland-game—guiding or outfitting), hunting (waterfowl—guiding or outfitting), hunting (other—guiding or outfitting), plant gathering, rock collecting, natural-resource collecting, camping, hiking and backpacking, pets, photography, video, filming, audio recording (nonwildlife-dependent, recreational—other), swimming and beach use, outdoor recreation (other), photography (wildlife), wildlife observation (guiding or outfitting), fixed-wing aircraft, tree harvest (firewood).

Refuge Name: Kodiak National Wildlife Refuge

Establishing and Acquisition Authorities

Original authority was Executive Order 8857 (1941); modified by Public Land Order 1634 (1958), Alaska Native Claims Settlement Act (1971), and Alaska National Interest Lands Conservation Act (ANILCA; 1980)

Refuge Purposes

Executive Order 8857 established Kodiak National Wildlife Refuge “. . . for the purpose of protecting the natural feeding and breeding ranges of the brown bears and other wildlife on Uganik and Kodiak Islands . . .”

Section 303(5)(B) of ANILCA states the following:

“The purposes for which the Kodiak National Wildlife Refuge is established and shall be managed include

- (i) to conserve fish and wildlife populations and habitats in their natural diversity including, but not limited, to Kodiak brown bears, salmonids, sea otters, sea lions, and other marine mammals and migratory birds;
- (ii) to fulfill the international treaty obligations of the United States with respect to fish and wildlife and their habitats;
- (iii) to provide, in a manner consistent with purposes set forth in subparagraphs (i) and (ii), the opportunity for continued subsistence uses by local residents; and
- (iv) to ensure, to the maximum extent practicable and in a manner consistent with the purposes set forth in subparagraph (i), water quality and necessary water quantity within the refuge.”

National Wildlife Refuge System Mission

The mission of the National Wildlife Refuge System is to administer a national network of lands and waters for the conservation, management, and, where appropriate, restoration of the fish, wildlife, and plant resources and their habitats within the United

States for the benefit of present and future generations of Americans (National Wildlife Refuge System Administration Act of 1966, as amended [16 U.S.C.668dd-668ee]).

Description of Use

This determination re-evaluates five reserved land site permits: outfitter guide cabins at Campbell's Lagoon, Spiridon Bay, and Deadman Bay; an outfitter-guide tent floor/cache on Karluk Lake; and a subsistence cabin in the northeastern arm of Uganik Bay. All the facilities have been in use for numerous years.

Availability of Resources

Adequate Refuge personnel and base operational funds are available to manage these special uses. Administrative staff process paperwork associated with the permits, and field staff conduct periodic inspections to ensure compliance with terms of the special use permits.

Anticipated Impacts of the Use

Special conditions attached to each special use permit are designed to minimize the chances of adverse effects to bears and refuge visitors. All the structures have been in place for many years (15 years or more), thus any bear or other wildlife displacement that may have occurred has happened. Most bears using these areas are likely habituated to the presence of these structures and the activities that routinely occur in and near them. The structures provide relatively secure storage for food, fish, game meat, and other materials that might attract bears.

Public Review and Comment

Public comment was solicited concurrently with the revision of the Refuge's comprehensive conservation plan. Two commenters expressed concern about apparent discrepancies between the discussion of cabin impacts on bears in this compatibility determination and the compatibility determination for private camps and cabins. This compatibility determination has been revised to clarify the potential impacts.

Determination

_____ Use is Not Compatible

X Use is Compatible With the Following Stipulations

Stipulations Necessary to Ensure Compatibility

A special use permit is required.

The management direction provided in the revised comprehensive conservation plan for the Refuge will be implemented. Monitoring would be used to determine what additional management actions, if any, were needed to ensure compatibility. Continuing law enforcement and administrative monitoring of permits will be carried out to ensure compliance with the following conditions that are incorporated into all permits to minimize impacts on Refuge lands and resources.

Note that the following special conditions for a special use permit for private cabin and temporary camp special use will be updated, if necessary, to comply with future step-down plans.

Regional conditions

- Failure to abide by any part of this special use permit; violation of any Refuge-related provision in Titles 43 or 50, Code of Federal Regulations; or violation of any pertinent state regulation (e.g., fish or game violation) will be considered grounds for immediate revocation of this permit and could result in denial of future permit requests for lands administered by the U.S. Fish and Wildlife Service. This provision applies to all persons working under the authority of this permit (e.g., assistants or contractors). Appeals of decisions relative to permits are handled in accordance with 50 Code of Federal Regulations 36.41.
- The permittee is responsible for ensuring that all employees, party members, contractors, aircraft pilots, and any other persons working for the permittee and conducting activities allowed by this permit are familiar with and adhere to the conditions of this permit.
- Any problems with wildlife and/or animals taken in defense-of-life-or-property must be reported immediately to the Refuge Manager, the Alaska Department of Fish and Game, and the Alaska State Troopers. Animals taken must be salvaged in accordance with state regulations.
- The permittee and permittee's employees do not have the exclusive use of the site(s) or lands covered by the permit.
- This permit may be cancelled or revised at any time by the Refuge Manager for noncompliance or in case of emergency (e.g., public safety, unusual resource problems).
- In accordance with the Archaeological Resources Protection Act (16 U.S.C. 470aa), the disturbance of archaeological or historical sites, and the removal of artifacts are prohibited. The excavation, disturbance, collection, or purchase of historical, ethnological, or archaeological specimens or artifacts is prohibited.
- Permittees shall maintain their use areas in a neat and sanitary condition. Latrines must be located at least 150 feet from springs, lakes, and streams. All property of the permittee except for cabins and tent frames is to be removed from Refuge lands upon completion of permitted activities.
- The construction of landing strips or pads is prohibited.
- The use of motorized vehicles is prohibited on all Refuge lands.
- The operation of aircraft at altitudes and in flight paths resulting in the herding, harassment, hazing, or driving of wildlife is prohibited. It is recommended that all aircraft, except for takeoff and landing, maintain a minimum altitude of 2,000 feet above ground level.
- The use of helicopters is prohibited.
- Unauthorized fuel caches are prohibited. Fuel storage, if any, will be in compliance with regional Service fuel storage policy.
- Subject to available suppression resources, all permitted cabins will be protected from wildfire to the extent possible. Human safety will receive the highest priority consideration by land Managers and fire-suppression personnel.

Kodiak Refuge Conditions

- Visitors will be required to comply with any temporary restrictions, emergency orders or other types of regulatory actions promulgated by the Refuge Manager to prevent resource problems or conflicts, in cases of emergency, public safety, or unusual resource problems.
- The use of Native or State lands that have been conveyed (patented) is not authorized by this permit.
- Use of Native or State lands that have been selected but not yet conveyed is prohibited unless a letter of concurrence is submitted to the Refuge Manager prior to beginning any activities allowed by this permit.
- A copy of this special use permit must be in the party leader's possession at all times while exercising the privileges of the permit.
- Food or garbage attractive to bears or other wildlife will be immediately disposed of. No attractive nuisance for bears or other wildlife shall be created by food storage, improper disposal of garbage (includes of burying of garbage), fish smoking, salting, drying, or other uses.
- Combustibles (paper, wood, etc.) may be burned, but all other debris, including cans, bottles, fuel containers, and any other noncombustible material shall be removed and disposed of off Refuge when departing camps.
- A nonrefundable administrative fee will be assessed prior to issuing this permit for revocation of this permit.
- This is a permit for the specific approved structure at a designated site. The structure may not be sublet or rented.
- This special use permit specifically does not authorize the following:
 - Construction of blinds, stands or any other structures
 - Baiting, feeding, harassing, herding, or any other activity that changes, or attempts to change, normal behavior, this includes but is not limited to bears, fox, deer, and eagles
 - Commercially guided activities as described in attachment (a) Refuge Guide and Other Visitor Service Definitions.
- Additions or alterations to existing structures and construction of new facilities must have the Refuge Manager's prior approval in writing.
- The discharge of firearms is prohibited, except in conjunction with authorized hunting seasons or for protection of life or property.

Justification

These permanent and semipermanent facilities were evaluated in detail in the public use management planning process that found that impacts caused by their construction had already occurred and that continued use, at similar levels and times of year as in the past, would remain compatible. However, the public use management plan also found that allowing the development of new permanent and semipermanent private facilities or substantial expansion of the season of use or types of activities allowed at the existing facilities should not be authorized. New technologies for camping such as weatherport and bomb shelter tents provide excellent alternatives to fixed tent platforms and allow greater flexibility in operations. Management of outfitter-guide permits has changed

through time, and guides are normally not allowed to camp in one location for more than 15 days.

These permits have been issued considering the guidance from the public use plan. While these structures are not available to the general public, except in emergencies, they do accommodate and facilitate some individual's uses of the Refuge. Those that are operated by outfitter-guides support use of the Refuge by clients. Special conditions provided with the permits help ensure that use of the facilities will not adversely affect Refuge resources or other visitors.

Supporting Documents

- U.S. Fish and Wildlife Service. 1987. Kodiak National Wildlife Refuge Final Comprehensive Conservation Plan, Wilderness Review, and Environmental Impact Statement. U.S. Fish and Wildlife Service. Anchorage, Alaska. 533 pp.
- U.S. Fish and Wildlife Service. 1993. Kodiak National Wildlife Refuge, Final Public Use Management Plan and Environmental Assessment. U.S. Fish and Wildlife Service. Kodiak, Alaska. 202 pp.
- U.S. Fish and Wildlife Service. 2004. Draft Revised Comprehensive Conservation Plan and Environmental Impact Statement Kodiak National Wildlife Refuge. U.S. Fish and Wildlife Service. Anchorage, Alaska.

Refuge Determination

Refuge Manager /

Project Leader Approval:

LESLIE PERK

(Signature)

2-17-2006

(Date)

Concurrence

Regional Chief,
National Wildlife
Refuge System:

[Signature]

(Signature)

2/17/06

(Date)

Mandatory 10-Year Re-Evaluation Date: January 2016

NEPA Compliance for Refuge Use Decision

- ☐ Categorical Exclusion without Environmental Action Memorandum
- ☐ Categorical Exclusions and Environmental Action Memorandum
- ☐ Environmental Assessment and Finding of No Significant Impact
- ☒ Environmental Impact Statement and Record of Decision

COMPATIBILITY DETERMINATION

Use: Public Use Cabins

Primary Use: Outdoor recreation (other)—public use cabins

Supporting Uses: Boating (electric and wind-driven), boating (human-powered), boating (motorized), fishing (general), fishing (other), hunting (big game), hunting (other migratory birds), hunting (upland game), hunting (waterfowl), hunting (other), plant gathering, rock collecting, trapping, natural-resource collecting, camping, cross-country skiing, dog training (including field trials), dog sledding and ski touring, hiking and backpacking, pets, photography, video, filming, audio recording (nonwildlife-dependent, recreational—other), snorkeling or scuba diving, snowshoeing, swimming and beach use, outdoor recreation (other), fishing (subsistence), gathering (subsistence), hunting (subsistence), trapping (subsistence), subsistence (other), photography (wildlife), wildlife observation, fixed-wing aircraft, tree harvest (firewood),

Refuge Name: Kodiak National Wildlife Refuge

Establishing and Acquisition Authorities

Original authority was Executive Order 8857 (1941); modified by Public Land Order 1634 (1958), Alaska Native Claims Settlement Act (1971), and Alaska National Interest Lands Conservation Act (ANILCA; 1980)

Refuge Purposes

Executive Order 8857 established Kodiak National Wildlife Refuge “. . . for the purpose of protecting the natural feeding and breeding ranges of the brown bears and other wildlife on Uganik and Kodiak Islands . . .”

Section 303(5)(B) of ANILCA states the following:

“The purposes for which the Kodiak National Wildlife Refuge is established and shall be managed include

- (i) to conserve fish and wildlife populations and habitats in their natural diversity including, but not limited, to Kodiak brown bears, salmonids, sea otters, sea lions, and other marine mammals and migratory birds;
- (ii) to fulfill the international treaty obligations of the United States with respect to fish and wildlife and their habitats;
- (iii) to provide, in a manner consistent with purposes set forth in subparagraphs (i) and (ii), the opportunity for continued subsistence uses by local residents; and
- (iv) to ensure, to the maximum extent practicable and in a manner consistent with the purposes set forth in subparagraph (i), water quality and necessary water quantity within the refuge.”

National Wildlife Refuge System Mission

The mission of the National Wildlife Refuge System is to administer a national network of lands and waters for the conservation, management, and, where appropriate, restoration of the fish, wildlife, and plant resources and their habitats within the United States for the benefit of present and future generations of Americans (National Wildlife Refuge System Administration Act of 1966, as amended [16 U.S.C.668dd-668ee]).

Description of Use

This determination looks at the Kodiak Refuge public use cabin program. Public use cabins are one- or two-room structures. Pit toilets and meat caches are located at the cabins. These cabins provide an alternative to tent-camping for visitors participating in hunting, fishing, wildlife observation and photography, hiking, and related outdoor recreation on Kodiak Refuge. Cabins also provide emergency shelter to anyone stranded near one of the sites. Cabins are available for reservation year-round, but only those cabins on saltwater receive winter use.

Seven cabins are currently available for reservation by the public as part of the Refuge's public use cabin program. These cabins could be relocated if more desirable locations are identified. Two additional cabins could be built to replace public use cabins that have been removed from key bear concentration areas. Cabins on newly acquired lands could also be considered for management as public use cabins. New cabins would only be added after consultation with interested citizens, appropriate public involvement, and National Environmental Policy Act analysis. Criteria such as the following would be considered in selecting new cabin sites and/or selection of cabins for addition to the public use cabin program: (1) availability of diverse recreational activities such as hunting, fishing, wildlife viewing, kayaking, and hiking; (2) solitude and isolation from other uses and facilities such as lodges and setnet sites; (3) ease of access both for users and for maintenance; and (4) prevention of adverse impacts to Refuge resources such as wildlife movement corridors and key wildlife use areas.

Availability of Resources

Adequate Refuge personnel and base operational funds are available to manage the public use cabin program. Administrative staff manage the permit system and collect cabin fees. Maintenance staff conduct routine maintenance. Other staff periodically visit cabins to check on condition and use, usually incidental to other work in the areas.

Anticipated Impacts of the Use

Public use cabins have generally positive impacts on bears because Kodiak Refuge has determined that the conditions and periods of public use have limited effects on bear behavior.

Refuge cabins afford relatively secure temporary storage of food, garbage, and game meat. Cabin permits require proper use of these facilities, including removal of all food and garbage at the end of each visit. Effectiveness is indicated by the absence of historical records of adverse bear-human incidents attributed to the cabin program. Adverse bear-human interactions occasionally occur in the Refuge back country and are

associated with temporary tent camps, especially those with game meat stored nearby (Smith et al. 1989).

Another positive impact of the cabin program is related to the visitor experience. Cabins provide the most secure option for overnight use by visitors with limited experience camping in bear country. The combination of secure facilities and cabin permit requirements serve to educate visitors in appropriate back country bear-aware practices.

Invasive plants could become established at cabin sites because of the frequent presence of visitors and existing vegetation and soil disturbance. Cabin sites would be relatively easy to monitor for the presence of invasive plants, and eradication efforts could be undertaken prior to invasive plants spreading beyond the immediate vicinity.

The cabin program could have serious adverse impacts on bears if cabins were sited in bear concentration areas. However, the criteria proposed for selecting cabins sites would ensure that cabins would not be constructed in bear concentration areas; if cabins on acquired lands were in bear concentration areas, they would not be converted to public use.

Public Review and Comment

Public comment was solicited concurrently with the revision of the Refuge's comprehensive conservation plan. Two commenters expressed concern about apparent discrepancies between the discussion of cabin impacts on bears in this compatibility determination and the compatibility determination for private camps and cabins. The Private Cabin and Temporary Camp Special Use Permits Compatibility Determination has been revised to clarify the potential impacts.

Determination

☐ Use is Not Compatible

☒ Use is Compatible With the Following Stipulations

Stipulations Necessary to Ensure Compatibility

Other than in emergencies, occupancy of a public use cabin requires a cabin permit issued by the Refuge. No individual may occupy a Refuge public use cabin longer than 30 days (January 1 through March 31); 15 days (April 1 through May 15), and 7 days (May 16 through December 31). During their visit, cabin users are required to store all food, garbage, and harvested fish and game in a manner to not attract bears; users must remove all food, garbage, and harvested fish and game at the end of their stay.

A regulation will be proposed prohibiting camping within one quarter mile of a public use cabin under the revised comprehensive conservation plan.

Justification

Cabins have a long history of use on Kodiak Refuge. While cabins can concentrate visitor use, they also provide a relatively safe and secure place for visitors to store food, garbage, and harvested fish and game. Cabins on Kodiak Refuge can facilitate wildlife-dependent use by visitors and minimize the physical impacts of camping; they can make human

behavior more predictable to wildlife, especially bears; and they can protect both humans and bears from adverse encounters. Cabins also provide a measure of safety from the unpredictable weather of Kodiak Refuge and an opportunity for those with limited camping skills to visit and enjoy the Refuge and its resources with no long-lasting adverse impacts.

Supporting Documents

- Smith, R.B., V.G. Barnes Jr. and L.J. Van Daele Jr. 1989. *Brown Bear-human conflicts in the Kodiak Archipelago, Alaska*. In proceedings from Symp. Bear People Conflicts. M. Bromley, ed. pp. 111-119. Yellowknife, Northwest Territories, Canada: Canadian Government of Northwest Territories.
- U.S. Fish and Wildlife Service. 1987. Kodiak National Wildlife Refuge Final Comprehensive Conservation Plan, Wilderness Review, and Environmental Impact Statement. U.S. Fish and Wildlife Service. Anchorage, Alaska. 533 pp.
- U.S. Fish and Wildlife Service. 1993. Kodiak National Wildlife Refuge, Final Public Use Management Plan and Environmental Assessment. U.S. Fish and Wildlife Service. Kodiak, Alaska. 202 pp.
- U.S. Fish and Wildlife Service. 2004. Draft Revised Comprehensive Conservation Plan and Environmental Impact Statement Kodiak National Wildlife Refuge. U.S. Fish and Wildlife Service. Anchorage, Alaska.

Refuge Determination

Refuge Manager /
Project Leader Approval: LESLIE KERR 2-17-2006
(Signature) (Date)

Concurrence

Regional Chief,
National Wildlife
Refuge System: Paul J. Joy 2/17/06
(Signature) (Date)

Mandatory 15-Year Re-Evaluation Date: January 2021

NEPA Compliance for Refuge Use Decision

- ☐ Categorical Exclusion without Environmental Action Memorandum
- ☐ Categorical Exclusions and Environmental Action Memorandum
- ☐ Environmental Assessment and Finding of No Significant Impact
- ☒ Environmental Impact Statement and Record of Decision

COMPATIBILITY DETERMINATION

Use: Reburial of Archaeological Human Remains per State and Federal Guidelines

Primary Use: Use (other)—Reburial of archaeological human remains

Supporting Uses: Boating (electric and wind-driven), boating (human-powered), boating (motorized), camping, hiking and backpacking, photography, video, filming, audio recording (nonwildlife-dependent, recreational—other), fixed-wing aircraft, cemetery

Refuge Name: Kodiak National Wildlife Refuge

Establishing and Acquisition Authorities

Original authority was Executive Order 8857 (1941); modified by Public Land Order 1634 (1958), Alaska Native Claims Settlement Act (1971), and Alaska National Interest Lands Conservation Act (ANILCA; 1980)

Refuge Purposes

Executive Order 8857 established Kodiak National Wildlife Refuge “. . . for the purpose of protecting the natural feeding and breeding ranges of the brown bears and other wildlife on Uganik and Kodiak Islands . . .”

Section 303(5)(B) of ANILCA states the following:

“The purposes for which the Kodiak National Wildlife Refuge is established and shall be managed include

- (i) to conserve fish and wildlife populations and habitats in their natural diversity including, but not limited, to Kodiak brown bears, salmonids, sea otters, sea lions, and other marine mammals and migratory birds;
- (ii) to fulfill the international treaty obligations of the United States with respect to fish and wildlife and their habitats;
- (iii) to provide, in a manner consistent with purposes set forth in subparagraphs (i) and (ii), the opportunity for continued subsistence uses by local residents; and
- (iv) to ensure, to the maximum extent practicable and in a manner consistent with the purposes set forth in subparagraph (i), water quality and necessary water quantity within the refuge.”

National Wildlife Refuge System Mission

The mission of the National Wildlife Refuge System is to administer a national network of lands and waters for the conservation, management, and, where appropriate, restoration of the fish, wildlife, and plant resources and their habitats within the United States for the benefit of present and future generations of Americans (National Wildlife Refuge System Administration Act of 1966, as amended [16 U.S.C.668dd-668ee]).

Description of Use

The Refuge anticipates requests to rebury human remains eroding from recorded and unrecorded prehistoric sites and remains that have been removed from prehistoric sites. The inadvertent-discovery section of the Native American Graves Protection and Repatriation Act of 1990 (Public Law 101-601) requires that the land-management agency identify and notify the closest Native group and then, if requested, provide for the repatriation of the remains. With this in mind, the Refuge has prepared this compatibility determination to cover an expected average of one burial request annually over the next 10 years. Each proposed burial and its proposed reburial location would need to be approved by the Regional Historic Preservation Officer, who will ensure compliance with the National Historic Preservation Act Section 106 prior to issuance of a permit for this activity.

Reburial of repatriated human remains would take place near the place of discovery of such remains or near their original burial place. Each burial would involve a small excavation with hand tools. Impacts to Refuge resources would be negligible and short-term, with no foreseeable long-term effects, and would not affect subsistence use of the Refuge. A copy of the Global Positioning System (GPS) coordinates and contents of the burial site will be filed at Refuge headquarters and with the Regional Historic Preservation Officer. The remains should be buried with a modern object (e.g., coin, button—with date) to indicate it is a historical reburial.

Availability of Resources

Except for issuance of the permit, no Refuge resources would be needed to administer use. All activities associated with use would be accomplished by the permittee.

Anticipated Impacts of the Use

Reburials would result in minimal and short-term impacts to Refuge resources, involving a few small-scale excavations with hand tools and then internment of the remains.

Public Review and Comment

Public comment was solicited concurrently with the revision of the Refuge's comprehensive conservation plan. No comments were received on this compatibility determination.

Determination

☐ Use is Not Compatible

☒ Use is Compatible With the Following Stipulations

Stipulations Necessary to Ensure Compatibility

A special use permit is required.

Note that the following special conditions for a special use permit for Reburial of Archaeological Human Remains per State and Federal Guidelines will be updated to reflect changes, if any, due to step-down plans completed in the future.

Regional conditions

- Failure to abide by any part of this special use permit; violation of any Refuge-related provision in Titles 43 or 50, Code of Federal Regulations; or violation of any pertinent state regulation (e.g., fish or game violation) will be considered grounds for immediate revocation of this permit and could result in denial of future permit requests for lands administered by the U.S. Fish and Wildlife Service. This provision applies to all persons working under the authority of this permit (e.g., assistants or contractors). Appeals of decisions relative to permits are handled in accordance with 50 Code of Federal Regulations 36.41.
- The permittee is responsible for ensuring that all employees, party members, contractors, aircraft pilots, and any other persons working for the permittee and conducting activities allowed by this permit are familiar with and adhere to the conditions of this permit.
- Any problems with wildlife and/or animals taken in defense-of-life-or-property must be reported immediately to the Refuge Manager, the Alaska Department of Fish and Game, and the Alaska State Troopers. Animals taken must be salvaged in accordance with state regulations.
- The permittee and permittee's employees do not have the exclusive use of the site(s) or lands covered by the permit.
- This permit may be cancelled or revised at any time by the Refuge Manager for noncompliance or in case of emergency (e.g., public safety, unusual resource problems).
- The permittee or party chief shall notify the Refuge Manager during Refuge working hours in person or by telephone before beginning and upon completion of activities allowed by this permit.
- Prior to beginning any activities allowed by this permit, the permittee shall provide the Refuge Manager with: (1) name and method of contact for the field party chief/supervisor; aircraft and other vehicle types to be used, identification information for these vehicles; and names of crew members, and (2) any changes in information provided in the original permit application.
- In accordance with the Archaeological Resources Protection Act (16 U.S.C. 470aa), the disturbance of archaeological or historical sites, and the removal of artifacts are prohibited. The excavation, disturbance, collection, or purchase of historical, ethnological, or archaeological specimens or artifacts is prohibited.
- Permittees shall maintain their use areas in a neat and sanitary condition. Latrines must be located at least 150 feet from springs, lakes, and streams. All property of the permittee except for cabins and tent frames is to be removed from Refuge lands upon completion of permitted activities.
- The construction of landing strips or pads is prohibited.
- The use of motorized vehicles is prohibited on all Refuge lands.
- The operation of aircraft at altitudes and in flight paths resulting in the herding, harassment, hazing, or driving of wildlife is prohibited. It is recommended that all aircraft, except for takeoff and landing, maintain a minimum altitude of 2,000 feet above ground level.
- The use of helicopters is prohibited.
- Unauthorized fuel caches are prohibited. Fuel storage, if any, will be in compliance with regional Service fuel storage policy.

Refuge Conditions

- Visitors will be required to comply with any temporary restrictions, emergency orders or other types of regulatory actions promulgated by the Refuge Manager to prevent resource problems or conflicts, in cases of emergency, public safety, or unusual resource problems.
- The use of Native or State lands that have been conveyed (patented) is not authorized by this permit.
- Use of Native or State lands that have been selected but not yet conveyed is prohibited unless a letter of concurrence is submitted to the Refuge Manager prior to beginning any activities allowed by this permit.
- A copy of this special use permit must be in the party leader's possession at all times while exercising the privileges of the permit.
- Cabins on Refuge lands shall not be used by the permittee without the permission of the Refuge Manager except in cases of dire emergency for survival purposes.
- Food or garbage attractive to bears or other wildlife will be immediately disposed of. No attractive nuisance for bears or other wildlife shall be created by food storage, improper disposal of garbage (includes of burying of garbage), fish smoking, salting, drying, or other uses.
- Combustibles (paper, wood, etc.) may be burned, but all other debris, including cans, bottles, fuel containers, and any other noncombustible material shall be removed and disposed of off Refuge when departing camps.
- Reburial of repatriated human remains will take place near the place of discovery of such remains and/or near the place of their original burial.
- The permittee or permittees' representatives will make the smallest possible excavation, using only hand tools.
- The Global Positioning System (GPS) coordinates and a list of the contents of the burial site will be filed at Refuge headquarters and with the Regional Historic Preservation Officer within 30 days of burial.
- Remains shall be buried with a modern object (e.g., coin, button, etc.—with date) to indicate that it is a historical reburial.
- The discharge of firearms is prohibited, except in conjunction with authorized hunting seasons or for protection of life or property.

Justification

The proposed use is limited and short-term and thus will result in minimal impact to Refuge resources. This use is necessary for the Refuge to comply with the Native American Graves Protection and Repatriation Act of 1990. It will not interfere with nor detract from the National Wildlife Refuge System mission or the purposes of the Refuge.

Supporting Documents

- U.S. Fish and Wildlife Service. 1987. Kodiak National Wildlife Refuge Final Comprehensive Conservation Plan, Wilderness Review, and Environmental Impact Statement. U.S. Fish and Wildlife Service. Anchorage, Alaska. 533 pp.
- U.S. Fish and Wildlife Service. 1993. Kodiak National Wildlife Refuge, Final Public Use Management Plan and Environmental Assessment. U.S. Fish and Wildlife Service. Kodiak, Alaska. 202 pp.

U.S. Fish and Wildlife Service, 1994. Native American Policy. U.S. Fish and Wildlife Service National Policy Issuance #94-10 and appendix. Washington, D.C. 13 pages, available at http://policy.fws.gov/npi94_10.html.

U.S. Fish and Wildlife Service. 2004. Draft Revised Comprehensive Conservation Plan and Environmental Impact Statement Kodiak National Wildlife Refuge. U.S. Fish and Wildlife Service. Anchorage, Alaska.

Refuge Determination

Refuge Manager /

Project Leader Approval:

LESLIE KERR

(Signature)

2-17-2006

(Date)

Concurrence

Regional Chief,
National Wildlife
Refuge System:

Robert J. Joy

(Signature)

2/17/06

(Date)

Mandatory 10-Year Re-Evaluation Date: January 2016

NEPA Compliance for Refuge Use Decision

☐ Categorical Exclusion without Environmental Action Memorandum

☐ Categorical Exclusions and Environmental Action Memorandum

☐ Environmental Assessment and Finding of No Significant Impact

☒ Environmental Impact Statement and Record of Decision

COMPATIBILITY DETERMINATION

Use: Recreational Fishing

Primary Use: Fishing (general and other)

Supporting Uses: Boating (electric and wind-driven), boating (human-powered), boating (motorized), hunting (big game), hunting (other migratory birds), hunting (upland game), hunting (waterfowl), hunting (other), plant gathering, rock collecting, trapping, natural resource collecting, camping, hiking and backpacking, pets, photography, video, filming, audio recording (nonwildlife-dependent, recreational—other), swimming and beach use, outdoor recreation (other), photography (wildlife), wildlife observation, fixed-wing aircraft

Refuge Name: Kodiak National Wildlife Refuge

Establishing and Acquisition Authorities

Original authority was Executive Order 8857 (1941); modified by Public Land Order 1634 (1958), Alaska Native Claims Settlement Act (1971), and Alaska National Interest Lands Conservation Act (ANILCA; 1980)

Refuge Purposes

Executive Order 8857 established Kodiak National Wildlife Refuge “. . . for the purpose of protecting the natural feeding and breeding ranges of the brown bears and other wildlife on Uganik and Kodiak Islands . . .”

Section 303(5)(B) of ANILCA states the following:

“The purposes for which the Kodiak National Wildlife Refuge is established and shall be managed include

- (i) to conserve fish and wildlife populations and habitats in their natural diversity including, but not limited, to Kodiak brown bears, salmonids, sea otters, sea lions, and other marine mammals and migratory birds;
- (ii) to fulfill the international treaty obligations of the United States with respect to fish and wildlife and their habitats;
- (iii) to provide, in a manner consistent with purposes set forth in subparagraphs (i) and (ii), the opportunity for continued subsistence uses by local residents; and
- (iv) to ensure, to the maximum extent practicable and in a manner consistent with the purposes set forth in subparagraph (i), water quality and necessary water quantity within the refuge.”

National Wildlife Refuge System Mission

The mission of the National Wildlife Refuge System is to administer a national network of lands and waters for the conservation, management, and, where appropriate, restoration of the fish, wildlife, and plant resources and their habitats within the United States for the benefit of present and future generations of Americans (National Wildlife Refuge System Administration Act of 1966, as amended [16 U.S.C.668dd-668ee]).

Description of Use

Kodiak Refuge is renowned for its recreational fishing opportunities and provides excellent opportunities to catch a number of fish species. Angling opportunities include fishing for five species of Pacific salmon and steelhead, rainbow trout, Dolly Varden, and Arctic char. Recreational fishing on the Kodiak archipelago predates Refuge establishment and has been occurring on the Refuge since its establishment in 1941. Associated activities such as camping, backpacking, hiking, and other incidental uses are considered part of wildlife-dependent fishing activities.

Recreational settings on the Refuge are remote and inaccessible by road. Traditional forms of access for all areas on the Refuge include fixed-wing aircraft, motorboats, nonpowered boats, hiking, and other nonmotorized means. However, the vast majority of visitors participating in the subject activities access the Refuge by commercial air taxis. The most common means of access by the relatively few recreational users not using commercial transporters is private aircraft and boats.

Recreational fishing use patterns are estimated primarily from direct observation by Refuge staff and from annual reports provided by air-taxi operators, who transport nearly all recreational anglers to the Refuge. Air-taxi operators provide information on primary activity, location, length of stay, group size, and related items.

Most recreational fishing occurs from May through October. The annual number of visitor use days associated with recreational fishing for the last seven years varied from 2,722 in 1998 to 3,829 in 2003. During the same time, unguided recreational fishing varied from 1,355 use days in 1997 to 2,151 use days in 2002. Guided angling accounts for about half of all Refuge recreational fishing and is evaluated in a separate compatibility determination. Recreational fishing accounts for slightly more than one-third of overall annual public use on the Refuge. Annual recreational fishing effort in the overall Kodiak area has generally been stable over the last 10 or more years. Recreational fishing on the Refuge is anticipated to grow about 20 percent during the 15-year life of the revised conservation plan.

The most popular destinations on the Refuge for unguided recreational fishing include the Akalura, Ayakulik, Brown's Lagoon, Deadman, Dog Salmon, Horse Marine, Karluk, Little River, Spiridon, Uganik, and Zachar drainages.

Availability of Resources

Adequate Refuge personnel and base operational funds are available to manage recreational fishing at existing and projected levels. Administrative staff time primarily involves phone conversations, written correspondence, issuing permits for Koniag easement lands on the Karluk River, and personal interaction with visitors at the visitor center. There is also additional work entering activity data into a database for analysis. Field work associated with administering the program primarily involves conducting law enforcement patrols to increase visitors' compliance with state and federal regulations and to foster respect for local residents' activities and property. Refuge camps are operated on the Ayakulik and Karluk Rivers during the king salmon fishing season (June 1 to July 15) for law enforcement purposes and to provide assistance to visitors to minimize the potential for undesirable human-bear encounters and conflicts between

visitors. Monitoring of recreational fishing is also performed through creel surveys and visitor studies on the more popular river systems (e.g., Ayakulik, Karluk, and Uganik).

Anticipated Impacts of the Use

Comprehensive state and federal regulations continually evolve to respond to fishery management needs. Regulations combined with law enforcement by the state and Refuge personnel minimize impacts from the recreational fishing to fish and wildlife, other Refuge resources, and other Refuge users. Potential impacts to Refuge resources and/or other Refuge users are greatest at several of the more popular use areas such as the Ayakulik River. The presence of recreational anglers, as with other human presence, could displace bears from critical feeding areas. The O'Malley River area closure protects feeding bears at this sensitive area from adverse effects of angling and other activities. The revised conservation plan would address these impacts through the step-down management planning process.

Recreational fishing activities result in minimal competition or interference with subsistence users and/or other Refuge users for limited number of resources or preferred campsite and use areas. However, both the Federal Subsistence Board and State Board of Fisheries regularly adopt regulations in response to fish population levels and management needs to reduce impacts to these resources. By doing this, there is the continued opportunity for subsistence uses of these species by local residents. Numerous regulation changes have been made by these boards in recent years to address the Refuge's fish and resource management needs. To address various concerns, the Refuge has also imposed permit restrictions on commercial transporters in recent years. The estimated harvest of fish resources is well within the limits established in Alaska Department of Fish and Game and Kodiak Refuge management plans.

The vast majority of recreational anglers access the Refuge by commercial air taxis that predominantly land on lakes and rivers with float-equipped aircraft. Impacts associated with transporter access are discussed in a separate compatibility determination specific to that use.

Public Review and Comment

Public comment was solicited concurrently with the revision of the Refuge's comprehensive conservation plan. No comments were received on this compatibility determination. There were comments recommending motorboat and aircraft access to the refuge be restricted. As explained below, access by airplanes and motorboats for traditional activities is provided by ANILCA and has been found to be compatible. Should motorized transportation grow to levels where it interferes with Refuge purposes, the Refuge would take actions necessary to address compatibility concerns.

Determination

☐ Use is Not Compatible

☒ Use is Compatible With the Following Stipulations

Stipulations Necessary to Ensure Compatibility

No special use permit is required.

The management direction provided in the revised comprehensive conservation plan for the Refuge will be implemented. Revision of the public use management plan will be used to identify specific management to ensure that this activity continues to remain compatible with Refuge purposes. This includes monitoring of wildlife-dependent recreation and other compatible activities. Findings from monitoring would be used to determine what additional management actions, if any, were needed to ensure compatibility. Continuing law enforcement and administrative monitoring will be carried out to ensure compliance with the following conditions to minimize impacts on Refuge lands and resources.

Visitors will be required to comply with any temporary restrictions, emergency orders or other types of regulatory actions promulgated by the Refuge Manager to prevent resource problems or conflicts, in cases of emergency, public safety, or unusual resource problems.

Visitors will also be strongly encouraged to comply with voluntary guidelines adopted for wildlife viewing and photography and associated activities.

Justification

The National Wildlife Refuge System Administration Act (as amended by the Refuge Improvement Act) identifies compatible fishing as one of six priority public uses of national wildlife refuges. The law states that, when managed in accordance with principles of sound fish and wildlife management, administration of these uses has been, and is expected to continue to be, generally compatible and that that priority public uses should receive enhanced consideration over other general public uses in refuge planning and management. The law also states that the Service should provide increased opportunities for families to experience compatible wildlife-dependent recreation, particularly opportunities for parents and their children to safely engage in traditional outdoor activities such as fishing.

Access by airplanes, motorboats, and nonpowered means for traditional activities, as provided by ANILCA and as currently regulated by the Service, have not materially interfered with or detracted from Refuge purposes. Should motorized transportation grow to levels where it interferes with Refuge purposes, the Refuge would work with anglers and Alaska Department of Fish and Game to address impacts and resolve compatibility concerns.

Recreational fishing is an activity that Congress intended to preserve when the Refuge was redesignated by ANILCA. As stated previously, recreational fishing on the Refuge provides the public with high-quality, safe, and unique recreational fishing opportunities found few places elsewhere in the world. To reduce impacts to fishery resources and to provide the continued opportunity for subsistence uses of these species by local residents, both the Federal Subsistence Board and State Board of Fish regularly adopt regulations in response to fish population levels and management needs. These regulations provide adequate protection for the Refuge's fishery resources, continued subsistence opportunities, and other Refuge purposes.

Supporting Documents

U.S. Fish and Wildlife Service. 1987. Kodiak National Wildlife Refuge Final Comprehensive Conservation Plan, Wilderness Review, and Environmental Impact Statement. U.S. Fish and Wildlife Service. Anchorage, Alaska. 533 pp.

U.S. Fish and Wildlife Service. 1993. Kodiak National Wildlife Refuge, Final Public Use Management Plan and Environmental Assessment. U.S. Fish and Wildlife Service. Kodiak, Alaska. 202 pp.

U.S. Fish and Wildlife Service. 2004. Draft Revised Comprehensive Conservation Plan and Environmental Impact Statement Kodiak National Wildlife Refuge. U.S. Fish and Wildlife Service. Anchorage, Alaska.

Refuge Determination

Refuge Manager /

Project Leader Approval:

LESLIE KERR

(Signature)

2-17-2006

(Date)

Concurrence

Regional Chief,
National Wildlife
Refuge System:

Todd J. Grogan

(Signature)

2/17/06

(Date)

Mandatory 15-Year Re-Evaluation Date: January 2021

NEPA Compliance for Refuge Use Decision

- ☐ Categorical Exclusion without Environmental Action Memorandum
- ☐ Categorical Exclusions and Environmental Action Memorandum
- ☐ Environmental Assessment and Finding of No Significant Impact
- ☒ Environmental Impact Statement and Record of Decision

COMPATIBILITY DETERMINATION

Use: Recreational Hunting

Primary Use: Hunting (big game, other migratory birds, upland game, waterfowl, other)

Supporting Uses: Boating (electric and wind-driven), boating (human-powered), boating (motorized), fishing (general), fishing (other), plant gathering, rock collecting, trapping, natural resource collecting, camping, dog training (including field trials), hiking and backpacking, pets, photography, video, filming, audio recording (nonwildlife-dependent, recreational—other), swimming and beach use, outdoor recreation (other), photography (wildlife), wildlife observation, fixed-wing aircraft

Refuge Name: Kodiak National Wildlife Refuge

Establishing and Acquisition Authorities

Original authority was Executive Order 8857 (1941); modified by Public Land Order 1634 (1958), Alaska Native Claims Settlement Act (1971), and Alaska National Interest Lands Conservation Act (ANILCA; 1980)

Refuge Purposes

Executive Order 8857 established Kodiak National Wildlife Refuge “. . . for the purpose of protecting the natural feeding and breeding ranges of the brown bears and other wildlife on Uganik and Kodiak Islands . . .”

Section 303(5)(B) of ANILCA states the following:

“The purposes for which the Kodiak National Wildlife Refuge is established and shall be managed include

- (i) to conserve fish and wildlife populations and habitats in their natural diversity including, but not limited, to Kodiak brown bears, salmonids, sea otters, sea lions, and other marine mammals and migratory birds;
- (ii) to fulfill the international treaty obligations of the United States with respect to fish and wildlife and their habitats;
- (iii) to provide, in a manner consistent with purposes set forth in subparagraphs (i) and (ii), the opportunity for continued subsistence uses by local residents; and
- (iv) to ensure, to the maximum extent practicable and in a manner consistent with the purposes set forth in subparagraph (i), water quality and necessary water quantity within the refuge.”

National Wildlife Refuge System Mission

The mission of the National Wildlife Refuge System is to administer a national network of lands and waters for the conservation, management, and, where appropriate, restoration of the fish, wildlife, and plant resources and their habitats within the United States for the benefit of present and future generations of Americans (National Wildlife Refuge System Administration Act of 1966, as amended [16 U.S.C.668dd-668ee]).

Description of Use

Recreational hunting is re-evaluated in this determination. Kodiak Refuge is famous for brown bear hunting. The Refuge also provides opportunities to hunt Sitka black-tailed deer, Roosevelt elk, and mountain goat. Recreational hunting predates Refuge establishment and has been occurring on the Refuge since its establishment in 1941. Associated activities such as camping, backpacking, hiking, and other incidental uses are considered part of recreational hunting. The majority of hunting has been for brown bear and Sitka black-tailed deer (the latter having been introduced in 1924). Roosevelt elk are hunted on Afognak Island, and mountain goats are hunted on Kodiak Island.

Recreational hunting seasons on Kodiak Refuge begin with spring bear season from April 1 through May 15 annually. Deer season runs from August 1 through December 31. Goat hunting runs from August 20 through October 25 and November 1 through December 15. Fall bear season is from October 25 through November 30. Elk hunts are offered from September 25 through November 30, although not all areas of the archipelago are open to elk hunting at the same time. One brown bear may be harvested every four years, and one elk and one goat may be harvest annually. All bear, elk, and goat hunting is by registration or drawing permits. Deer hunters currently may harvest as many as to three deer annually. The state changes deer harvest limits based on the size of deer populations.

Hunting for small game and waterfowl also occurs on the Refuge, as allowed by state regulations. Small-game and waterfowl hunting often occurs in conjunction with big-game hunts and fall fishing excursions. The number of recreational use days for small-game and waterfowl hunting on the Refuge is unknown, but is minimal in comparison with big-game hunting recreational use days.

Recreation settings on the Refuge are remote and inaccessible by road. Traditional forms of access to the Refuge include fixed-wing aircraft, motorboats, and nonmotorized means. However, the vast majority of visitors access the Refuge by commercial air taxis or charter boats. The most common means of access by recreational hunters not using commercial transporters is private airplane or boat.

Recreational hunting use is estimated primarily from direct observation by Refuge staff and annual reports provided by air-taxi operators, who transport nearly all recreational hunters to locations on the Refuge. Air-taxi operators provide visitor information, including primary activity, location, length of stay, and group size.

In most years, recreational hunting constitutes more than half of all recreation use on the Refuge. Over the last seven years, hunting has averaged more than 4,000 use days per year. From 1997 to 2001, deer hunting varied from 3,287 use days in 1997 to 712 use days in 2000. The decline in hunting use over the period is directly related to a decrease in the deer population due to the severe winter of 1998–1999. Brown ear hunting for the same time period ranged from a high of 2,086 use days in 1999 to a low of 1,329 use days in 1997. Goat hunting ranged from a low of 206 use days in 2000 and a high of 303 use days in 2001. Harvest figures presented in the next paragraph are for the entire archipelago and do not distinguish the specific harvest from the Refuge. All recreational hunting on Kodiak Refuge is under State of Alaska regulations.

It is estimated that about 40 percent of deer harvest in the Kodiak Archipelago occurs on the Refuge. Kodiak Archipelago deer harvest during the last 10 years has ranged from an estimated 10,401 deer harvested in the 1994–1995 season to 2,491 deer harvested in the 2000–2001 season. Bear harvest in the archipelago has been relatively stable over the last 20 years with a 10-year average annual harvest of 160 brown bears from the 1990–1991 to 2000–2001 harvest seasons. Alaska Department of Fish and Game attributes annual variations to weather and hunter participation. Bear are managed by Alaska Department of Fish and Game under the *Kodiak Archipelago Bear Conservation and Management Plan*, which was completed with full Refuge participation in 2002.

Mountain goat harvest is managed by the State of Alaska using a permit hunting season. From the 1996–1997 hunting season through the 2000–2001 hunting season, mountain goat harvest in the archipelago has averaged 62 goats per year, ranging from 54 to 70 goats harvested. Alaska Department of Fish and Game biologists (VanDaele and Crye 2002) believe that goats now occupy almost all suitable habitats on the Refuge and that the goat population is the maximum that can be sustained.

Elk harvest from 1996 through 2001 has ranged from a low of 66 in the 2000–2001 season to a high of 181 in the 1998–1999 season. This decline in harvest is related to a decline in population due to winter kill, according to Alaska Department of Fish and Game (VanDaele and Crye 2002).

Availability of Resources

Adequate Refuge personnel and base operational funds are available to manage recreational hunting activities at existing and projected levels. Administrative staff time primarily involves phone conversations, written correspondence, and personal interaction with visitors at the visitor's center. There is also additional work entering activity data into a database for analysis. Field work associated with administering the program primarily involves conducting law enforcement patrols to increase recreational hunter compliance with state and federal regulations and to foster respect for local residents' activities and property.

Anticipated Impacts of the Use

Comprehensive state and federal regulations continually evolve to respond to wildlife management needs. Combined with law enforcement efforts by state and Refuge personnel, regulations minimize recreational hunting impacts to wildlife resources, Refuge users, and other Refuge resources.

Recreational hunting may result in some competition with subsistence users and/or other Refuge users for the limited number of resources and preferred campsite and use areas. However, both the Federal Subsistence Board and State Board of Game regularly adopt regulations in response to wildlife population levels and management needs. These regulations reduce impacts to the Refuge's resources and allow the opportunity for continued subsistence uses of these species by local residents. Numerous regulation changes have been made by these boards in recent years to address the Refuge's wildlife resource management needs.

The estimated harvest of these wildlife resources is well within the limits established in various state management plans. Past impact evaluations and studies have focused

primarily on impacts to the brown bear and deer populations. Displacement of bears from favored feeding streams was demonstrated to be within acceptable limits.

Refuge officers and State Troopers routinely patrol the Refuge to increase compliance with state and federal regulations. A majority of hunters access the Refuge by landing on lakes and rivers with float-equipped aircraft, minimizing impacts to Refuge habitat. A potential impact or threat associated with floatplane access is the introduction of invasive species carried on the aircraft floats. Although it is not known or proved to have occurred on the Kodiak archipelago to date, invasive species spread is being monitored.

"According to a 2003 analysis conducted by the Institute for Social and Economic Research at the University of Alaska Anchorage, recreational hunting on Kodiak Refuge contributes about \$678,000 in payroll and 25 average annual jobs to the Alaska economy each year. Average annual jobs are calculated by dividing payroll by the average annual pay for a job related to the hunting industry (guiding and support services). Due to the seasonal nature of hunting, the number of jobs during peak periods is much greater than the annual average. Payroll figures are based on Refuge visitor numbers and estimated expenditures; they do not include hunting activities that occur outside the Refuge, although those activities may partially depend on Refuge wildlife and habitat resources."

Public Review and Comment

Public comment was solicited concurrently with the revision of the Refuge's comprehensive conservation plan. No comments were received on this compatibility determination. There were comments recommending motorboat and aircraft access to the refuge be restricted. As explained below, access by airplanes and motorboats for traditional activities is provided by ANILCA and has been found to be compatible. Should motorized transportation grow to levels where it interferes with Refuge purposes, the Refuge would take actions necessary to address compatibility concerns.

Determination

☐ Use is Not Compatible

☒ Use is Compatible With the Following Stipulations

Stipulations Necessary to Ensure Compatibility

No special use permit is required.

The management direction provided in the revised comprehensive conservation plan for the Refuge will be implemented. Revision of the public use management plan will be used to identify specific management to ensure that this activity continues to remain compatible with Refuge purposes. This includes monitoring of wildlife-dependent recreation and other compatible activities. Findings from monitoring would be used to determine what additional management actions, if any, were needed to ensure compatibility. Continuing law enforcement and administrative monitoring will be carried out to ensure compliance with the following conditions to minimize impacts on Refuge lands and resources.

Visitors will be required to comply with any temporary restrictions, emergency orders or other types of regulatory actions promulgated by the Refuge Manager to prevent resource problems or conflicts, in cases of emergency, public safety, or unusual resource problems.

Visitors will also be strongly encouraged to comply with voluntary guidelines adopted for wildlife viewing and photography and associated activities.

Justification

All lands in the Kodiak Refuge are open to general public access except the O'Malley area, which is seasonally closed to the public from June 25 through September 25. The National Wildlife Refuge System Administration Act of 1966 (as amended by the Refuge Improvement Act) identifies recreational hunting as one of six priority public uses of National Wildlife Refuge System lands. The law states that, when managed in accordance with principles of sound fish and wildlife management, administration of these uses has been and is expected to continue to be generally compatible and that that priority public uses should receive enhanced consideration over other general public uses in refuge planning and management. The law also states that the Service should provide increased opportunities for families to experience compatible wildlife-dependent recreation, particularly opportunities for parents and their children to safely engage in traditional outdoor activities such as hunting.

Access by airplanes, motorboats, and nonpowered means for traditional activities, as provided by ANILCA and as currently regulated by the Service, have not materially interfered with or detracted from Refuge purposes. Should motorized transportation grow to levels where it interferes with Refuge purposes, the Refuge would work with hunters and Alaska Department of Fish and Game to address impacts and resolve compatibility concerns.

Recreational hunting is an activity that Congress intended to preserve when the Refuge was established by ANILCA. As stated previously, recreational hunting on the Refuge provides the public with high-quality, safe, and unique hunting opportunities found few places elsewhere in the world. To reduce impacts to wildlife resources and to provide the continued opportunity for subsistence uses of these species by local residents, both the Federal Subsistence Board and State Board of Fish regularly adopt regulations in response to wildlife population levels and management needs. These regulations provide adequate protection for the Refuge's wildlife resources, continued subsistence opportunities, and other Refuge purposes.

Supporting Documents

- Alaska Department of Fish and Game. 2003. Alaska hunting regulations effective dates July 1, 2003–June 30, 2004, governing general, subsistence, and commercial uses of Alaska's wildlife. Juneau, Alaska. Viewed on April 20, 2004 at www.state.ak.us/adfg/wildlife/wildmain.htm.
- Alaska Department of Fish and Game. 2002. *Kodiak Archipelago Bear Conservation and Management Plan*. Alaska Department of Fish and Game, Anchorage, Alaska. 240 pp.
- U.S. Fish and Wildlife Service. 1987. Kodiak National Wildlife Refuge Final Comprehensive Conservation Plan, Wilderness Review, and Environmental Impact Statement. U.S. Fish and Wildlife Service. Anchorage, Alaska. 533 pp.

- U.S. Fish and Wildlife Service. 1993. Kodiak National Wildlife Refuge, Final Public Use Management Plan and Environmental Assessment. U.S. Fish and Wildlife Service. Kodiak, Alaska. 202 pp.
- U.S. Fish and Wildlife Service. 2004. Draft Revised Comprehensive Conservation Plan and Environmental Impact Statement Kodiak National Wildlife Refuge. U.S. Fish and Wildlife Service. Anchorage, Alaska.
- VanDaele, L.J., and J.R. Crye. 2001. pp. 75–99 in “Brown Bear Management Report of Survey-Inventory Activities, 1 July 1998–30 June 2000.” C. Healy, ed. Project 4.0. Juneau, Alaska: Alaska Department of Fish and Game.
- VanDaele, L.J., and J.R. Crye. 2002. pp. 134–174 in “Mountain Goat Management Report of Survey-Inventory Activities, 1 July 1999–30 June 2001.” C. Healy, ed. Project 13.0. Juneau, Alaska: Alaska Department of Fish and Game.
- VanDaele, L.J., and J.R. Crye. 2002. pp. 10–23 in “Elk Management Report of Survey-Inventory Activities, 1 July 1999–30 June 2001. C. Healy, ed. Project 12.0. Juneau, Alaska: Alaska Department of Fish and Game.
- VanDaele, L.J., and J.R. Crye. 2002. pp. 106–123 in “Deer Management Report of Survey-Inventory Activities, 1 July 2000–30 June 2002. C. Healy, ed. Juneau, Alaska: Alaska Department of Fish and Game.

Refuge Determination

Refuge Manager /

Project Leader Approval:

LESLIE KERN

(Signature)

2-17-2006

(Date)

Concurrence

Regional Chief,
National Wildlife
Refuge System:

Paul J. Fay

(Signature)

2/17/06

(Date)

Mandatory 15-Year Re-Evaluation Date : January 2021

NEPA Compliance for Refuge Use Decision

- ☐ Categorical Exclusion without Environmental Action Memorandum
- ☐ Categorical Exclusions and Environmental Action Memorandum
- ☐ Environmental Assessment and Finding of No Significant Impact
- ☒ Environmental Impact Statement and Record of Decision

COMPATIBILITY DETERMINATION

Use: Residence Permit

Primary Use: Residential

Supporting Uses: Boating (electric and wind-driven), boating (human-powered), boating (motorized), fishing (general), fishing (other), hunting (big game), hunting (other migratory birds), hunting (upland game), hunting (waterfowl), hunting (other), plant gathering, rock collecting, trapping, natural resource collecting, pets, fishing (subsistence), gathering (subsistence), hunting (subsistence), trapping (subsistence), subsistence (other)

Refuge Name: Kodiak National Wildlife Refuge

Establishing and Acquisition Authorities

Original authority was Executive Order 8857 (1941); modified by Public Land Order 1634 (1958), Alaska Native Claims Settlement Act (1971), and Alaska National Interest Lands Conservation Act (ANILCA; 1980)

Refuge Purposes

Executive Order 8857 established Kodiak National Wildlife Refuge “. . . for the purpose of protecting the natural feeding and breeding ranges of the brown bears and other wildlife on Uganik and Kodiak Islands . . .”

Section 303(5)(B) of ANILCA states the following:

“The purposes for which the Kodiak National Wildlife Refuge is established and shall be managed include

- (i) to conserve fish and wildlife populations and habitats in their natural diversity including, but not limited, to Kodiak brown bears, salmonids, sea otters, sea lions, and other marine mammals and migratory birds;
- (ii) to fulfill the international treaty obligations of the United States with respect to fish and wildlife and their habitats;
- (iii) to provide, in a manner consistent with purposes set forth in subparagraphs (i) and (ii), the opportunity for continued subsistence uses by local residents; and
- (iv) to ensure, to the maximum extent practicable and in a manner consistent with the purposes set forth in subparagraph (i), water quality and necessary water quantity within the refuge.”

National Wildlife Refuge System Mission

The mission of the National Wildlife Refuge System is to administer a national network of lands and waters for the conservation, management, and, where appropriate, restoration of the fish, wildlife, and plant resources and their habitats within the United States for the benefit of present and future generations of Americans (National Wildlife Refuge System Administration Act of 1966, as amended [16 U.S.C.668dd-668ee]).

Description of Use

This determination re-evaluates the retained occupancy residence special use permit. Since 1988, authorization has been granted to Jeanne Shepherd to occupy a residence located on Kodiak Refuge in the east arm of Uganik Bay. The permit authorizes the home and associated structures including a generator shed, outhouses, banya, smokehouse, drying shed, shop, tool shed, three greenhouses, a water box, a woodshed, chicken coop, duck coop, and four garden plots. This special use permit was issued to resolve a problem that resulted from a faulty survey. The house and related facilities were purchased in 1981 under the assumption that they were located on U.S. Survey 260. Subsequently, it was determined that the house and associated structures are located on Refuge lands. Negotiations between the owner and the Service resulted in a decision to allow continued occupancy. Ms. Shepherd has demonstrated excellent compliance with all special conditions of her special use permit for more than 20 years.

Availability of Resources

Adequate Refuge personnel and base operational funds are available to manage this special use. Administrative staff process paperwork associated with the permits and field staff conducts periodic inspections to ensure compliance with terms of the special use permits.

Anticipated Impacts of the Use

Continued occupancy of the residence and associated facilities has potential to cause adverse bear-human encounters. Physical impacts from construction of the residence and other facilities occurred when they were built. Special conditions attached to the special use permit are designed to minimize the chances of adverse effects to bears and other resources. The structures have been in place for more than 20 years; thus any bear or other wildlife displacement that may have occurred has happened. Most bears using these areas are likely habituated to the presence of these structures and the activities that routinely occur in and near them.

Public Review and Comment

Public comment was solicited concurrently with the revision of the Refuge's comprehensive conservation plan. No comments were received on this compatibility determination.

Determination

☐ Use is Not Compatible

☒ Use is Compatible With the Following Stipulations

Stipulations Necessary to Ensure Compatibility

A special use permit is required.

Monitoring of the permit will be carried out to ensure compliance with the following conditions to minimize impacts on Refuge lands and resources.

Regional conditions

- Failure to abide by any part of this special use permit; violation of any Refuge-related provision in Titles 43 or 50, Code of Federal Regulations; or violation of any pertinent state regulation (e.g., fish or game violation) will be considered grounds for immediate revocation of this permit and could result in denial of future permit requests for lands administered by the U.S. Fish and Wildlife Service. This provision applies to all persons working under the authority of this permit (e.g., assistants or contractors). Appeals of decisions relative to permits are handled in accordance with 50 Code of Federal Regulations 36.41.
- The permittee is responsible for ensuring that all employees, party members, contractors, aircraft pilots, and any other persons working for the permittee and conducting activities allowed by this permit are familiar with and adhere to the conditions of this permit.
- Any problems with wildlife and/or animals taken in defense-of-life-or-property must be reported immediately to the Refuge Manager, the Alaska Department of Fish and Game, and the Alaska State Troopers. Animals taken must be salvaged in accordance with state regulations.
- This permit may be cancelled or revised at any time by the Refuge Manager for noncompliance or in case of emergency (e.g., public safety, unusual resource problems).
- In accordance with the Archaeological Resources Protection Act (16 U.S.C. 470aa), the disturbance of archaeological or historical sites, and the removal of artifacts are prohibited. The excavation, disturbance, collection, or purchase of historical, ethnological, or archaeological specimens or artifacts is prohibited.
- Permittees shall maintain their use areas in a neat and sanitary condition.
- The construction of landing strips or pads is prohibited.
- The use of motorized vehicles is prohibited on all Refuge lands.
- The use of helicopters is prohibited.
- Unauthorized fuel caches are prohibited. Fuel storage, if any, will be in compliance with regional Service fuel storage policy.
- Subject to available suppression resources, all permitted cabins will be protected from wildfire to the extent possible. Human safety will receive the highest priority consideration by land managers and fire-suppression personnel.

Kodiak Refuge Conditions

- Visitors will be required to comply with any temporary restrictions, emergency orders or other types of regulatory actions promulgated by the Refuge Manager to prevent resource problems or conflicts, in cases of emergency, public safety, or unusual resource problems.
- A copy of this special use permit must be on the premises at all times while exercising the privileges of the permit.
- Food or garbage attractive to bears or other wildlife will be immediately disposed of. No attractive nuisance for bears or other wildlife shall be created by food storage, improper disposal of garbage (includes of burying of garbage), fish smoking, salting, drying, or other uses.
- A nonrefundable administrative fee will be assessed prior to issuing this permit.
- Additions or alterations to existing structures and construction of new facilities must have the Refuge Manager's prior approval in writing.

- The discharge of firearms is prohibited, except in conjunction with authorized hunting seasons or for protection of life or property.

Justification

Although the Refuge would not authorize additional residences, as stated previously, more than 20 years ago the homeowner purchased the property in good faith with no knowledge that the building was located on Refuge lands. Continued occupancy of the residence at the very edge of the Refuge immediately adjacent to private lands has negligible effects on Refuge resources or users. Authorizing continued occupancy allows the homeowner use of her home; special conditions contained in the special use permit provide the Refuge a high level of control over use and occupancy of the residence and related facilities to ensure continued compatibility. The permit holder has always complied fully with all special conditions of her permit. Her residence and related structures are well maintained and used in a fashion to minimize any opportunities for adverse effects to bears and other Refuge resources.

Supporting Documents

- U.S. Fish and Wildlife Service. 1987. Kodiak National Wildlife Refuge Final Comprehensive Conservation Plan, Wilderness Review, and Environmental Impact Statement. U.S. Fish and Wildlife Service. Anchorage, Alaska. 533 pp.
- U.S. Fish and Wildlife Service. 1993. Kodiak National Wildlife Refuge, Final Public Use Management Plan and Environmental Assessment. U.S. Fish and Wildlife Service. Kodiak, Alaska. 202 pp.
- U.S. Fish and Wildlife Service. 2004. Draft Revised Comprehensive Conservation Plan and Environmental Impact Statement Kodiak National Wildlife Refuge. U.S. Fish and Wildlife Service. Anchorage, Alaska.

Refuge Determination

Refuge Manager /
Project Leader Approval: LESLIE KENNEL 2-17-2006
(Signature) (Date)

Concurrence

Regional Chief,
National Wildlife
Refuge System: Red J. Joy 2/17/06
(Signature) (Date)

Mandatory 10-Year Re-Evaluation Date : January 2016

NEPA Compliance for Refuge Use Decision

- ☐ Categorical Exclusion without Environmental Action Memorandum
- ☐ Categorical Exclusions and Environmental Action Memorandum
- ☐ Environmental Assessment and Finding of No Significant Impact
- ☒ Environmental Impact Statement and Record of Decision

COMPATIBILITY DETERMINATION

Use: Scientific Research

Primary Use: Research and surveys

Supporting Uses: Boating (electric and wind-driven), boating (human-powered), boating (motorized), environmental education (not conducted by refuge staff or authorized agents), environmental education (other), interpretation (not conducted by refuge staff or authorized agents), fishing (general), fishing (other), plant gathering, rock collecting, trapping, natural resource collecting, camping, cross-country skiing, hiking and backpacking, photography, video, filming, audio recording (nonwildlife-dependent, recreational—other), snorkeling or scuba diving, snowshoeing, swimming and beach use, outdoor recreation (other), scientific collecting, photography (wildlife), wildlife observation, fixed-wing aircraft.

Refuge Name: Kodiak National Wildlife Refuge

Establishing and Acquisition Authorities

Original authority was Executive Order 8857 (1941); modified by Public Land Order 1634 (1958), Alaska Native Claims Settlement Act (1971), and Alaska National Interest Lands Conservation Act (ANILCA; 1980)

Refuge Purposes

Executive Order 8857 established Kodiak National Wildlife Refuge “. . . for the purpose of protecting the natural feeding and breeding ranges of the brown bears and other wildlife on Uganik and Kodiak Islands . . .”

Section 303(5)(B) of ANILCA states the following:

“The purposes for which the Kodiak National Wildlife Refuge is established and shall be managed include

- (i) to conserve fish and wildlife populations and habitats in their natural diversity including, but not limited, to Kodiak brown bears, salmonids, sea otters, sea lions, and other marine mammals and migratory birds;
- (ii) to fulfill the international treaty obligations of the United States with respect to fish and wildlife and their habitats;
- (iii) to provide, in a manner consistent with purposes set forth in subparagraphs (i) and (ii), the opportunity for continued subsistence uses by local residents; and
- (iv) to ensure, to the maximum extent practicable and in a manner consistent with the purposes set forth in subparagraph (i), water quality and necessary water quantity within the refuge.”

National Wildlife Refuge System Mission

The mission of the National Wildlife Refuge System is to administer a national network of lands and waters for the conservation, management, and, where appropriate, restoration of the fish, wildlife, and plant resources and their habitats within the United

States for the benefit of present and future generations of Americans (National Wildlife Refuge System Administration Act of 1966, as amended [16 U.S.C.668dd-668ee]).

Description of Use

This compatibility determination addresses the full spectrum of uses associated with the scientific research on fish, wildlife, habitat, and other Refuge resources. It includes all means of access, lodging and facilities, and other elements identified in the research proposal. The scope of this determination includes research conducted by all agencies or entities other than the Service and the Alaska Department of Fish and Game or in cooperation with the Service. Specific authorized means of access for all areas on the Refuge will be described in each special use permit. Potential means of access include fixed-wing aircraft, motor boats, nonpowered boats, hiking, snowshoeing, and cross-country skiing. Potential lodging and facilities include tents, tent frames, weatherports, existing cabins, and caches. Most research would occur during spring, summer, and fall, but winter research is also possible. If any activities are performed for commercial purposes, a separate commercial use special use permit would be required before going into the field. For example, commercial photography, video or filming must have an Other Public Uses special use permit.

Availability of Resources

Adequate Refuge personnel and base operational funds are available to manage research activities at existing and projected levels. Administrative staff time primarily involves phone conversations, written correspondence, proposal review, and interaction with researchers. Field work associated with administering the program primarily involves monitoring researchers' compliance with the terms of their permits.

Anticipated Impacts of the Use

The Refuge Manager will assist the applicant with obtaining appropriate collection permits for research involving fish and wildlife. Factors such as targeted research species, number of researchers, transportation modes, number of aircraft and amount of aircraft use, fuel storage, garbage and human waste management, type and location of lodging, and location of access points will determine the extent of impacts on the Refuge. Special conditions the Service imposes on scientific research and associated activities would ensure these activities would not have significant impacts on the wildlife resources; other Refuge resources such as water quality, soil, and vegetation; and other Refuge users, especially subsistence users.

Public Review and Comment

Public comment was solicited concurrently with the revision of the Refuge's comprehensive conservation plan. No comments were received on this compatibility determination.

Determination

☐ Use is Not Compatible

☒ Use is Compatible With the Following Stipulations

Stipulations Necessary to Ensure Compatibility

A special use permit is required.

The management direction provided in the revised comprehensive conservation plan for the Refuge will be implemented. Monitoring would be used to determine what additional management actions, if any, were needed to ensure compatibility. Continuing law enforcement and administrative monitoring of permits will be carried out to ensure compliance with the following conditions that are incorporated into all permits to minimize impacts on Refuge lands and resources.

Regional conditions

- Failure to abide by any part of this special use permit; violation of any Refuge-related provision in Titles 43 or 50, Code of Federal Regulations; or violation of any pertinent state regulation (e.g., fish or game violation) will be considered grounds for immediate revocation of this permit and could result in denial of future permit requests for lands administered by the U.S. Fish and Wildlife Service. This provision applies to all persons working under the authority of this permit (e.g., assistants or contractors). Appeals of decisions relative to permits are handled in accordance with 50 Code of Federal Regulations 36.41.
- The permittee is responsible for ensuring that all employees, party members, contractors, aircraft pilots, and any other persons working for the permittee and conducting activities allowed by this permit are familiar with and adhere to the conditions of this permit.
- Any problems with wildlife and/or animals taken in defense-of-life-or-property must be reported immediately to the Refuge Manager, the Alaska Department of Fish and Game, and the Alaska State Troopers. Animals taken must be salvaged in accordance with state regulations.
- The permittee and permittee's employees do not have the exclusive use of the site(s) or lands covered by the permit.
- This permit may be cancelled or revised at any time by the Refuge Manager for noncompliance or in case of emergency (e.g., public safety, unusual resource problems).
- The permittee or party chief shall notify the Refuge Manager during Refuge working hours in person or by telephone before beginning and upon completion of activities allowed by this permit.
- Prior to beginning any activities allowed by this permit, the permittee shall provide the Refuge Manager with: (1) name and method of contact for the field party chief/supervisor; aircraft and other vehicle types to be used, identification information for these vehicles; and names of crew members, and (2) any changes in information provided in the original permit application.
- Unless the permit is for archaeological work, in accordance with the Archaeological Resources Protection Act (16 U.S.C. 470aa), the disturbance of archaeological or historical sites, and the removal of artifacts are prohibited. The excavation, disturbance, collection, or purchase of historical, ethnological, or archaeological specimens or artifacts is prohibited.
- Permittees shall maintain their use areas in a neat and sanitary condition. Latrines must be located at least 150 feet from springs, lakes, and streams. All property of the permittee

except for cabins and tent frames is to be removed from Refuge lands upon completion of permitted activities.

- The construction of landing strips or pads is prohibited.
- The use of motorized vehicles is prohibited on all Refuge lands.
- The operation of aircraft at altitudes and in flight paths resulting in the herding, harassment, hazing, or driving of wildlife is prohibited. It is recommended that all aircraft, except for takeoff and landing, maintain a minimum altitude of 2,000 feet above ground level.
- Unauthorized fuel caches are prohibited. Fuel storage, if any, will be in compliance with regional Service fuel storage policy.
- Construction of cabins or other permanent structures is prohibited.

Kodiak Refuge Conditions

- Visitors will be required to comply with any temporary restrictions, emergency orders or other types of regulatory actions promulgated by the Refuge Manager to prevent resource problems or conflicts, in cases of emergency, public safety, or unusual resource problems.
- The use of Native or State lands that have been conveyed (patented) is not authorized by this permit.
- Use of Native or State lands that have been selected but not yet conveyed is prohibited unless a letter of concurrence is submitted to the Refuge Manager prior to beginning any activities allowed by this permit.
- A copy of this special use permit must be in the party leader's possession at all times while exercising the privileges of the permit.
- Cabins on Refuge lands shall not be used by the permittee without the permission of the Refuge Manager except in cases of dire emergency for survival purposes.
- Food or garbage attractive to bears or other wildlife will be immediately disposed of. No attractive nuisance for bears or other wildlife shall be created by food storage, improper disposal of garbage (includes of burying of garbage), fish smoking, salting, drying, or other uses.
- Combustibles (paper, wood, etc.) may be burned, but all other debris, including cans, bottles, fuel containers, and any other noncombustible material shall be removed and disposed of off Refuge when departing camps.
- The permittee shall provide the Refuge Manager with a report of activities under this permit within 30 days of permit expiration.
 - If any activities are performed for commercial purposes, a special use permit for Other Public Uses would be required before going into the field.
- This special use permit specifically does not authorize the following:
 - Construction of blinds, stands or any other structures
 - Baiting, feeding, harassing, herding, or any other activity that changes, or attempts to change, normal behavior, this includes but is not limited to bears, fox, deer, and eagles
 - Commercially guided activities as described in attachment (a) Refuge Guide and Other Visitor Service Definitions.

- All aircraft being used in commercial operations must have 12-inch identification numbers in contrasting colors, which are readily visible.
- Helicopter use must be specifically authorized and the transporter must have a valid special use permit from Kodiak National Wildlife Refuge.
- Motorboat operators must possess U.S. Coast Guard (USCG) licenses for all passenger-carrying operations, if required by USCG regulations.
- The discharge of firearms is prohibited, except in conjunction with authorized hunting seasons or for protection of life or property.
- Any action by a permittee or the permittee's employees that unduly interferes with or harasses other Refuge visitors or impedes access to any site is strictly prohibited. Examples of prohibited acts include, but are not limited to, low flights over camps or persons at less than 500 feet (unless landing) and parking aircraft or placing other objects on any landable area to restrict use by other aircraft of persons.
- All information, reports, photos, data, collections, and observations obtained as a result of this permit must be accessible from the permittee at any time upon request by the Service at no cost, unless specific arrangements are made to the contrary. The Service recognizes the proprietary nature of scientific data and will respect the researchers' privileged position regarding first publication. These data may be used in resource management decisions by the Service prior to their publication, however. Proprietary data of commercial value will be treated confidentially upon request, but may also be used in management decisions.
- Prior to implementing field work, the permittee must provide documentation that activities that involve an invasive procedure or that harm or materially alter the behavior of an animal under study, and the proposed procedures, have been reviewed and approved by a recognized Institutional Animal Care and Use Committee (IACUC) as required by the Animal Welfare Act.

Justification

Natural and social science information is necessary for the proper management of the National Wildlife Refuge System. It is Service policy to encourage and support research and management studies to provide scientific data that leads to decisions regarding management units in the refuge system.

The Service will also permit the use of a refuge by other investigators for scientific purposes when such use is compatible with the purposes for which the refuge is managed. Priority will be given to studies that contribute to the enhancement, protection, use, conservation, and management of native wildlife populations and their habitats in their natural diversity. All proposed research conducted by other agencies or entities will be thoroughly evaluated prior to authorization and then monitored closely to ensure that the activities do not materially interfere with or detract from the purposes of the Refuge or the mission of the National Wildlife Refuge System.

Supporting Documents

U.S. Fish and Wildlife Service. 1987. Kodiak National Wildlife Refuge Final Comprehensive Conservation Plan, Wilderness Review, and Environmental Impact Statement. U.S. Fish and Wildlife Service. Anchorage, Alaska. 533 pp.

U.S. Fish and Wildlife Service. 1993. Kodiak National Wildlife Refuge, Final Public Use Management Plan and Environmental Assessment. U.S. Fish and Wildlife Service. Kodiak, Alaska. 202 pp.

U.S. Fish and Wildlife Service. 2004. Draft Revised Comprehensive Conservation Plan and Environmental Impact Statement Kodiak National Wildlife Refuge. U.S. Fish and Wildlife Service. Anchorage, Alaska.

Refuge Determination

Refuge Manager /
Project Leader Approval: USFWS KBRN 2-17-2006
(Signature) (Date)

Concurrence

Regional Chief,
National Wildlife
Refuge System: Red J. [Signature] 2/17/06
(Signature) (Date)

Mandatory 10-Year Re-Evaluation Date: January 2016

NEPA Compliance for Refuge Use Decision

- ☐ Categorical Exclusion without Environmental Action Memorandum
- ☐ Categorical Exclusions and Environmental Action Memorandum
- ☐ Environmental Assessment and Finding of No Significant Impact
- ☐ Environmental Impact Statement and Record of Decision

COMPATIBILITY DETERMINATION

Use: Snowmachines (Snowmobiles)

Primary Use: Snowmachines

Supporting Uses: Boating (electric and wind-driven), boating (human-powered), hunting (big game), hunting (upland game), trapping, natural resource collecting, camping, cross-country skiing, photography, video, filming, audio recording (nonwildlife-dependent, recreational —other), snowshoeing, outdoor recreation (other), research, scientific collecting, surveys, gathering (subsistence), hunting (subsistence), trapping (subsistence), subsistence (other), photography (wildlife), wildlife observation.

Refuge Name: Kodiak National Wildlife Refuge

Establishing and Acquisition Authorities

Original authority was Executive Order 8857 (1941); modified by Public Land Order 1634 (1958), Alaska Native Claims Settlement Act (1971), and Alaska National Interest Lands Conservation Act (ANILCA; 1980)

Refuge Purposes

Executive Order 8857 established Kodiak National Wildlife Refuge “. . . for the purpose of protecting the natural feeding and breeding ranges of the brown bears and other wildlife on Uganik and Kodiak Islands . . .”

Section 303(5)(B) of ANILCA states the following:

“The purposes for which the Kodiak National Wildlife Refuge is established and shall be managed include

- (i) to conserve fish and wildlife populations and habitats in their natural diversity including, but not limited, to Kodiak brown bears, salmonids, sea otters, sea lions, and other marine mammals and migratory birds;
- (ii) to fulfill the international treaty obligations of the United States with respect to fish and wildlife and their habitats;
- (iii) to provide, in a manner consistent with purposes set forth in subparagraphs (i) and (ii), the opportunity for continued subsistence uses by local residents; and
- (iv) to ensure, to the maximum extent practicable and in a manner consistent with the purposes set forth in subparagraph (i), water quality and necessary water quantity within the refuge.”

National Wildlife Refuge System Mission

The mission of the National Wildlife Refuge System is to administer a national network of lands and waters for the conservation, management, and, where appropriate, restoration of the fish, wildlife, and plant resources and their habitats within the United States for the benefit of present and future generations of Americans (National Wildlife Refuge System Administration Act of 1966, as amended [16 U.S.C.668dd-668ee]).

Description of Use

This determination re-evaluates use of snowmachines (snowmobiles) for access to Kodiak Refuge. The Code of Federal Regulations defines a snowmachines as “a self-propelled vehicle intended for off-road vehicle travel primarily on snow [and] having a curb weight of not more than 1000 pounds, driven by track or tracks in contact with the snow and driven by a ski or skis in contact with the snow (50 CFR 36.32).” The Code of Federal Regulations also requires that snowmachines are only allowed during periods of adequate snow cover. Adequate snow cover is snow cover that will protect underlying vegetation from adverse effects. Snowmachine use occurs during winter and would continue to all accessible areas of the Refuge except for an area around Den Mountain, which would be closed to snowmachine use to protect denning brown bears.

Although the exact amount of snowmachine use on the Refuge is not documented, it is not believed to be substantive. Prior to passage of ANILCA in 1980, snowmachines were prohibited on Refuge lands by regulation. The relatively warm maritime climate and steep topography of Kodiak Island make the use of snowmachines at low elevations impractical during many winters. Some snowmachine use does occur at higher elevations and at lower elevations during snowy and cold winters.

There is a recreational snowmachine club in the city of Kodiak. Club activities include some trips to high elevation areas from the Anton Larsen Road (off-Refuge) and occasional trips to Port Lions using a route that may include Refuge lands. Snowmachines have also been used occasionally to access high-elevation areas along the northern Refuge boundary in the Terror Lake vicinity. Only two of the four villages bordering the Refuge have a past history of snowmachine use, according to information provided at public meetings for the original comprehensive conservation plan.

Availability of Resources

Adequate Refuge personnel and base operational funds are available to manage this limited use. Monitoring can be conducted by talking with snowmachine club members and local residents and, during winter and spring, overflights of the Refuge conducted for other purposes.

Anticipated Impacts of the Use

Potential impacts of snowmachine use include disturbing underlying vegetation and wildlife. Denning bears are most susceptible to snowmachine disturbance. Denning bears disturbed by ill-advised or uninformed snowmachine use by just one individual could cause bears to abandon dens and newborn cubs incapable to travel (Jonkel 1980). The proposed seasonal closure of the Den Mountain area would protect denning brown bears in the area. These bears would continue to exhibit natural, wild patterns of activity and habitat use if the area is less accessible to snowmachine use. Snowmachine tracks have been observed entering the Refuge near Viekoda River and traversing parts of Baumann Creek (Wilker 2004). However, this area was not recommended for seasonal closure because denning habitat at Baumann Creek is comprised of cliffs and very steep terrain situated in upper slopes of a canyon. Though snowmachines can access the lower canyon floor and highlands above the canyon, physical barriers prevent penetration of denning habitat. Though snowmachine tracks have been observed within and adjacent to the Den Mountain area, none have been observed in the denning area of Baumann Creek.

Public Review and Comment

Public comment was solicited concurrently with the revision of the Refuge's comprehensive conservation plan. No comments were received on this compatibility determination, however there were many comments about snowmachine use on the refuge. The Wilderness Society and the Defenders of Wildlife expressed concerns about snowmobile use and questioned why only one denning area was proposed for closure to snowmachine use. Additional information explaining that the bear denning area adjacent to Baumann Creek is not accessible by snowmachines was added to the impacts section of this compatibility determination.

Determination

_____ Use is Not Compatible

X Use is Compatible With the Following Stipulations

Stipulations Necessary to Ensure Compatibility

No special use permit is required.

The management direction provided in the revised comprehensive conservation plan for the Refuge will be implemented. Monitoring would be used to determine what additional management actions, if any, were needed to ensure compatibility. Continuing law enforcement and administrative monitoring will be carried out to ensure compliance with laws and regulations and to minimize impacts on Refuge lands and resources.

- The Den Mountain Area will be closed to snowmobile use to protect denning brown bears.
- Snowmobile use is only allowed during periods of adequate snow cover as defined in regulation 50 CFR 36.2.

Justification

Snowmachines allow access for winter activities on the Refuge. The proposed closure to snowmachine access to the Den Mountain area will protect the denning bears in this sensitive area from possible adverse effects due to snow machine use. Snowmachine access to other sensitive bear denning areas is unlikely. Regulations defining the size and weight of snowmachines coupled with the requirement that adequate snow cover be present eliminate most potential for damage to habitat. The low levels of snowmachine use on Kodiak Refuge would have negligible adverse effects on other wildlife and would allow the public to visit the Refuge during winter.

Supporting Documents

- Jonkel, C. J. 1980. "Black, brown, and polar bears." Pages 227–228 in *Big game of North America: ecology and management*. J. L. Schmidt and D.L. Gilbert, eds. Harrisburg, Pennsylvania: Stackpole Books.
- U.S. Fish and Wildlife Service. 1987. Kodiak National Wildlife Refuge Final Comprehensive Conservation Plan, Wilderness Review, and Environmental Impact Statement. U.S. Fish and Wildlife Service. Anchorage, Alaska. 533 pp.

U.S. Fish and Wildlife Service. 1993. Kodiak National Wildlife Refuge, Final Public Use Management Plan and Environmental Assessment. U.S. Fish and Wildlife Service. Kodiak. 202 pp.

U.S. Fish and Wildlife Service. 2004. Draft Revised Comprehensive Conservation Plan and Environmental Impact Statement Kodiak National Wildlife Refuge. U.S. Fish and Wildlife Service. Anchorage, Alaska.

Wilker, Greg. 2004. Personal communication with Leslie Kerr about impacts to bears, March 13, 2004.

Refuge Determination

Refuge Manager /

Project Leader Approval: USFWS Kerr 2-17-2006
(Signature) (Date)

Concurrence

Regional Chief,
National Wildlife
Refuge System:

Paul J. Fog 2/17/06
(Signature) (Date)

Mandatory 10-Year Re-Evaluation Date: January 2016

NEPA Compliance for Refuge Use Decision

- ☐ Categorical Exclusion without Environmental Action Memorandum
☐ Categorical Exclusions and Environmental Action Memorandum
☐ Environmental Assessment and Finding of No Significant Impact
☒ Environmental Impact Statement and Record of Decision

COMPATIBILITY DETERMINATION

Use: State of Alaska Management Activities

Primary Use: Uses (other)—State of Alaska management activities

Supporting Uses: Boating (electric and wind-driven), boating (human-powered), boating (motorized), environmental education (not conducted by refuge staff or authorized agents), interpretation (not conducted by refuge staff or authorized agents), fishing (general), fishing (other), plant gathering, rock collecting, trapping, natural resource collecting, camping, cross-country skiing, hiking and backpacking, photography, video, filming, audio recording (nonwildlife-dependent, recreational—other), snorkeling or scuba diving, snowshoeing, swimming and beach use, outdoor recreation (other), research, scientific collecting, surveys, photography (wildlife), wildlife observation, fixed-wing aircraft and helicopter access, tree harvest (firewood).

Refuge Name: Kodiak National Wildlife Refuge

Establishing and Acquisition Authorities

Original authority was Executive Order 8857 (1941); modified by Public Land Order 1634 (1958), Alaska Native Claims Settlement Act (1971), and Alaska National Interest Lands Conservation Act (ANILCA; 1980)

Refuge Purposes

Executive Order 8857 established Kodiak National Wildlife Refuge “. . . for the purpose of protecting the natural feeding and breeding ranges of the brown bears and other wildlife on Uganik and Kodiak Islands . . .”

Section 303(5)(B) of ANILCA states the following:

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- (i) to conserve fish and wildlife populations and habitats in their natural diversity including, but not limited, to Kodiak brown bears, salmonids, sea otters, sea lions, and other marine mammals and migratory birds;
- (ii) to fulfill the international treaty obligations of the United States with respect to fish and wildlife and their habitats;
- (iii) to provide, in a manner consistent with purposes set forth in subparagraphs (i) and (ii), the opportunity for continued subsistence uses by local residents; and
- (iv) to ensure, to the maximum extent practicable and in a manner consistent with the purposes set forth in subparagraph (i), water quality and necessary water quantity within the refuge.”

National Wildlife Refuge System Mission

The mission of the National Wildlife Refuge System is to administer a national network of lands and waters for the conservation, management, and, where appropriate, restoration of the fish, wildlife, and plant resources and their habitats within the United

States for the benefit of present and future generations of Americans (National Wildlife Refuge System Administration Act of 1966, as amended [16 U.S.C.668dd-668ee]).

Description of Use

This compatibility determination addresses routine management activities conducted by the Alaska Department of Fish and Game and the Alaska Bureau of Wildlife Enforcement State Troopers that are not cooperative projects with the Service. These projects may not be encompassed by the Master Memorandum of Understanding between the Alaska Department of Fish and Game, Juneau, Alaska, and the U.S. Fish and Wildlife Service, Department of the Interior, Anchorage, Alaska, signed March 13, 1982, and/or be law enforcement activities conducted by Alaska Bureau of Wildlife Enforcement State Troopers. This includes the following activities: fish and wildlife surveys conducted by boat, foot, or other means not restricted by regulation or policy; aircraft landings in support of aerial fish and wildlife surveys; vegetation and habitat classification and surveys; and law enforcement activities.

This compatibility determination does not address predator management, fish and wildlife control (with the exception of animals taken in defense-of-life-or-property), reintroduction of species, non-native species management, pest management, disease prevention and control, fishery restoration, fishery enhancement, native fish introductions, non-native species introductions, construction of facilities, or any other unpermitted activity that could alter Refuge ecosystems. Separate compatibility determinations addressing specific proposals will be required for those activities. All management and research activities conducted by the Alaska Department of Fish and Game under a specific cooperative agreement with the Fish and Wildlife Service to fulfill one or more purposes of the Refuge or the National Wildlife Refuge System mission are not subject to a compatibility determination.

Potential means of access include fixed-wing aircraft, motorboats, snowmachines, nonpowered boats, foot, snowshoes, and cross-country skis. Helicopter access is addressed in a separate compatibility determination. Potential lodging and facilities include tents, tent frames, tent platforms, weatherports, existing permitted cabins, and caches.

Availability of Resources

Adequate Refuge personnel and base operational funds are available to manage activities at existing and projected levels. Administrative staff time (as many as 10 staff days per year) primarily involves phone conversations, written correspondence, and personal interaction with state personnel regarding ongoing activities. Field work associated with administering the program primarily involves monitoring (when applicable) the state's activities to ensure all activities remain compatible.

Anticipated Impacts of the Use

Because Alaska Department of Fish and Game and Bureau of Wildlife Enforcement personnel are trained professionals, the Service anticipates that routine law enforcement and fish and wildlife monitoring and management activities would have positive overall impacts on wildlife resources, other Refuge resources (such as water quality, soil, and vegetation), and Refuge visitors. These positive impacts would support Refuge purposes and goals and the Service mission.

Public Review and Comment

Public comment was solicited concurrently with the revision of the Refuge's comprehensive conservation plan. No comments were received on this compatibility determination.

Determination

_____ Use is Not Compatible

X _____ Use is Compatible With the Following Stipulations

Stipulations Necessary to Ensure Compatibility

A compatibility determination is not required for state activities on Refuge lands where an established agreement is in place. Refuge staff will monitor state activities on the Refuge. Findings from these monitoring efforts will be used to determine what additional management actions, if any, would be needed to ensure state activities remain compatible with Refuge purposes and in compliance with established agreements.

Justification

The State of Alaska and the Service are partners in the management of many resources on Kodiak Refuge. Natural and social science information is necessary for the proper management of the National Wildlife Refuge System. It is the policy of the Service to encourage and support research and management studies to provide scientific data upon which decisions regarding management of units of the Refuge system may be based. State research, management, and law enforcement activities support achieving Refuge purposes and goals and the System mission and would have favorable impacts on Refuge resources and wildlife-dependent priority public uses.

Supporting Documents

- U.S. Fish and Wildlife Service. 1987. Kodiak National Wildlife Refuge Final Comprehensive Conservation Plan, Wilderness Review, and Environmental Impact Statement. U.S. Fish and Wildlife Service. Anchorage, Alaska. 533 pp.
- U.S. Fish and Wildlife Service. 1993. Kodiak National Wildlife Refuge, Final Public Use Management Plan and Environmental Assessment. U.S. Fish and Wildlife Service. Kodiak, Alaska. 202 pp.
- U.S. Fish and Wildlife Service. 2004. Draft Revised Comprehensive Conservation Plan and Environmental Impact Statement Kodiak National Wildlife Refuge. U.S. Fish and Wildlife Service. Anchorage, Alaska.

Refuge Determination

Refuge Manager /
Project Leader Approval: LESLIE KENN 2-17-2006
(Signature) (Date)

Chief
National Wildlife
Refuge System: Paul J. [Signature] 2/17/06
(Signature) (Date)

Mandatory 10-Year Re-Evaluation Date: January 2016

NEPA Compliance for Refuge Use Decision

- ☐ Categorical Exclusion without Environmental Action Memorandum
- ☐ Categorical Exclusions and Environmental Action Memorandum
- ☐ Environmental Assessment and Finding of No Significant Impact
- ☒ Environmental Impact Statement and Record of Decision

COMPATIBILITY DETERMINATION

Use: Subsistence Activities

Primary Uses: Fishing (subsistence), gathering (subsistence), hunting (subsistence), and subsistence (other).

Supporting Uses: Tree harvest (firewood), boating (electric and wind-driven), boating (human-powered), boating (motorized), rock collecting, trapping, natural resource collecting, camping, cross-country skiing, dog sledding and ski touring, hiking and backpacking, photography, video, filming, audio recording (nonwildlife-dependent, recreational—other), snorkeling or scuba diving, snowshoeing, swimming and beach use, outdoor recreation (other), photography (wildlife), wildlife observation, fixed-wing aircraft.

Refuge Name: Kodiak National Wildlife Refuge

Establishing and Acquisition Authorities

Original authority was Executive Order 8857 (1941); modified by Public Land Order 1634 (1958), Alaska Native Claims Settlement Act (1971), and Alaska National Interest Lands Conservation Act (ANILCA; 1980)

Refuge Purposes

Executive Order 8857 established Kodiak National Wildlife Refuge “. . . for the purpose of protecting the natural feeding and breeding ranges of the brown bears and other wildlife on Uganik and Kodiak Islands . . .”

Section 303(5)(B) of ANILCA states the following:

“The purposes for which the Kodiak National Wildlife Refuge is established and shall be managed include

- (i) to conserve fish and wildlife populations and habitats in their natural diversity including, but not limited, to Kodiak brown bears, salmonids, sea otters, sea lions, and other marine mammals and migratory birds;
- (ii) to fulfill the international treaty obligations of the United States with respect to fish and wildlife and their habitats;
- (iii) to provide, in a manner consistent with purposes set forth in subparagraphs (i) and (ii), the opportunity for continued subsistence uses by local residents; and
- (iv) to ensure, to the maximum extent practicable and in a manner consistent with the purposes set forth in subparagraph (i), water quality and necessary water quantity within the refuge.”

National Wildlife Refuge System Mission

The mission of the National Wildlife Refuge System is to administer a national network of lands and waters for the conservation, management, and, where appropriate, restoration of the fish, wildlife, and plant resources and their habitats within the United States for the benefit of present and future generations of Americans (National Wildlife Refuge System Administration Act of 1966, as amended [16 U.S.C.668dd-668ee]).

Description of Use

Subsistence activities addressed in this determination include hunting, fishing, firewood gathering, berry picking, and gathering of other plant materials (e.g., roots, wild celery, and grass). They also include airplane access and other associated means of transport such as snowmachines, motorboats, and other means of surface transportation traditionally employed for such purposes, as allowed under ANILCA Section 811.

Residents of the six villages (Larsen Bay, Old Harbor, Karluk, Ahkiok, Port Lions, and Ouzinkie) located in or near the Refuge have lifestyles and economies that depend on subsistence resources. Kodiak city residents are also considered subsistence users under federal regulations. Subsistence activities are not just a way of obtaining food, but an important mechanism for maintaining cultural values such as kinship, community, respect for elders, hospitality, sharing resources, and the passing of values to younger generations. In addition, many residents in the area simply prefer the taste of traditional wild foods to that of commercially purchased foods.

The mainstay subsistence food for the Refuge's nearby communities is salmon, which is obtained by subsistence harvest as well as kept from the commercial catch. All five Pacific salmon species found in Alaska are used, although chinook, sockeye, and coho are preferred. Freshwater species—including rainbow trout, Arctic char, and Dolly Varden—are also used, but to a much lesser extent. Birds and their eggs are also subsistence foods used by local residents. Large mammals, especially deer and elk, are important subsistence resources. Annual wild food harvests for Kodiak area communities average 272 pounds per person (Scott, et al. 2001).

A few local trappers operate within the Refuge, harvesting beaver, river otter and other small fur-bearing mammals. The sale of these furs provides supplemental income to residents of some communities adjacent the Refuge. The average annual number of trapper-related visits and harvest numbers of furbearers occurring on the Refuge are not available, but the numbers are small because less than 10 trapping permits are issued annually on the Refuge. Trapping is evaluated in a separate compatibility determination.

Availability of Resources

Adequate Refuge personnel and base operational funds are available to manage subsistence activities at existing and projected levels. Management primarily includes conducting wildlife and public use studies and surveys specifically for the management of subsistence species, conducting harvest surveys in the local communities, and participating in the regulatory development process with the Federal Subsistence Board and State Boards of Fish and Game.

Anticipated Impacts of the Use

Fish and wildlife harvested by subsistence users at current and projected levels—in accordance with established state and federal regulations pertaining to season, bag limits, and methods of harvest—are not expected to have long-term impacts on the overall populations of Refuge fish and wildlife resources. State and federal biologists monitor fish and game populations, and state and federal regulatory bodies continually respond to management needs by adopting regulations to ensure the continued health of fish and wildlife populations.

Impacts to the resources from berry picking and other plant harvesting activities are relatively insignificant. Impacts to habitat caused by aircraft, boats, and foot travel are generally minimal. Much of the access by subsistence users is by boat, thereby causing very little impact to Refuge habitat. The number of aircraft landings on the Refuge by subsistence users is relatively low, and those occur primarily on existing bodies of water using float planes.

Public Review and Comment

Public comment was solicited concurrently with the revision of the Refuge's comprehensive conservation plan. No comments were received on this compatibility determination.

Determination

_____ Use is Not Compatible

X _____ Use is Compatible With the Following Stipulations

Stipulations Necessary to Ensure Compatibility

Subsistence monitoring is carried out by staff of the Federal Subsistence Board. The Federal Subsistence Board designs subsistence regulations to insure protection of Refuge resources.

Justification

One of the purposes of Kodiak Refuge is to provide for continued subsistence uses by local residents, consistent with the other Refuge purposes of conserving fish and wildlife populations and habitats and fulfilling international treaty obligations with respect to fish and wildlife. ANILCA recognized that the continued opportunity for subsistence uses of public lands is critical to the physical, economic, traditional, social, and cultural existence of rural Native and non-Native residents of Alaska. ANILCA established a preference for subsistence users, stating that the taking of fish and wildlife on public lands for nonwasteful subsistence use is given priority over other consumptive uses. In times of scarcity, recreational use is limited first.

Section 811 of ANILCA ensures that subsistence users can access public lands by snowmachine, motorboat, and other traditionally used means of transportation, subject to reasonable regulation. In conclusion, current subsistence activities occurring on the Refuge contribute to one of the purposes of the Refuge while not materially interfering with or detracting from the other purposes of the Refuge or the mission of the National Wildlife Refuge System.

Supporting Documents

- Scott, Cheryl, Amy Paige, and Louis Brown. 2001. Community Profile Database. Alaska Department of Fish and Game, Division of Subsistence.
- U.S. Fish and Wildlife Service. 1987. Kodiak National Wildlife Refuge Final Comprehensive Conservation Plan, Wilderness Review, and Environmental Impact Statement. U.S. Fish and Wildlife Service. Anchorage, Alaska. 533 pp.
- U.S. Fish and Wildlife Service. 1993. Kodiak National Wildlife Refuge, Final Public Use Management Plan and Environmental Assessment. U.S. Fish and Wildlife Service. Kodiak, Alaska. 202 pp.

U.S. Fish and Wildlife Service. 2004. Draft Revised Comprehensive Conservation Plan and Environmental Impact Statement Kodiak National Wildlife Refuge. U.S. Fish and Wildlife Service. Anchorage, Alaska.

Refuge Determination

Refuge Manager /
Project Leader Approval: LESLIE KERR 2-17-2006
(Signature) (Date)

Concurrence

Regional Chief,
National Wildlife
Refuge System: [Signature] 2/17/06
(Signature) (Date)

Mandatory 10-Year Re-Evaluation Date: January, 2016

NEPA Compliance for Refuge Use Decision

☐ Categorical Exclusion without Environmental Action Memorandum
☐ Categorical Exclusions and Environmental Action Memorandum
☐ Environmental Assessment and Finding of No Significant Impact
☒ Environmental Impact Statement and Record of Decision

COMPATIBILITY DETERMINATION

Use: Trapping

Primary Use: Trapping

Supporting Uses: Boating (electric and wind-driven), boating (human-powered), boating (motorized), fishing (general), fishing (other), hunting (big game), hunting (other migratory birds), hunting (upland game), hunting (waterfowl), hunting (other), plant gathering, rock collecting, natural resource collecting, camping, cross-country skiing, dog sledding and ski touring, hiking and backpacking, photography, video, filming, audio recording (nonwildlife-dependent, recreational—other), snowshoeing, swimming and beach use, outdoor recreation (other), fishing (subsistence), gathering (subsistence), hunting (subsistence), trapping (subsistence), subsistence (other), photography (wildlife), wildlife observation, fixed-wing aircraft, tree harvest (firewood).

Refuge Name: Kodiak National Wildlife Refuge

Establishing and Acquisition Authorities

Original authority was Executive Order 8857 (1941); modified by Public Land Order 1634 (1958), Alaska Native Claims Settlement Act (1971), and Alaska National Interest Lands Conservation Act (ANILCA; 1980)

Refuge Purposes

Executive Order 8857 established Kodiak National Wildlife Refuge “. . . for the purpose of protecting the natural feeding and breeding ranges of the brown bears and other wildlife on Uganik and Kodiak Islands . . .”

Section 303(5)(B) of ANILCA states the following:

“The purposes for which the Kodiak National Wildlife Refuge is established and shall be managed include

- (i) to conserve fish and wildlife populations and habitats in their natural diversity including, but not limited, to Kodiak brown bears, salmonids, sea otters, sea lions, and other marine mammals and migratory birds;
- (ii) to fulfill the international treaty obligations of the United States with respect to fish and wildlife and their habitats;
- (iii) to provide, in a manner consistent with purposes set forth in subparagraphs (i) and (ii), the opportunity for continued subsistence uses by local residents; and
- (iv) to ensure, to the maximum extent practicable and in a manner consistent with the purposes set forth in subparagraph (i), water quality and necessary water quantity within the refuge.”

National Wildlife Refuge System Mission

The mission of the National Wildlife Refuge System is to administer a national network of lands and waters for the conservation, management, and, where appropriate,

restoration of the fish, wildlife, and plant resources and their habitats within the United States for the benefit of present and future generations of Americans (National Wildlife Refuge System Administration Act of 1966, as amended [16 U.S.C.668dd-668ee]).

Description of Use

This determination re-evaluates trapping furbearing animals on Kodiak Refuge under federal subsistence and State of Alaska trapping regulations. River otter, red fox, and weasel are native mammals trapped. Of the introduced species, beaver, snowshoe hare, and red squirrel may be trapped throughout the Refuge, and marten may be trapped on Afognak Island. By regulation (50 CFR 36.32(c)(1)(iii)), the Refuge requires each trapper to obtain a trapping permit. Trapping occurs during winter, with an average of nine trapping permits issued annually 1994–1999.

Availability of Resources

Adequate Refuge personnel and base operational funds are available to manage trapping on Kodiak Refuge. A few hours of staff time are involved in issuing trapping permits and collecting information supplied by trappers.

Anticipated Impacts of the Use

State and federal trapping regulations are established to ensure healthy sustainable wildlife populations. Trappers themselves have little impact on the Refuge. Occasionally a nontargeted animal could be harvested. No long-term adverse impacts on wildlife populations or other Refuge resources are likely to occur because of continuation of trapping on the Refuge.

Public Review and Comment

Public comment was solicited concurrently with the revision of the Refuge's comprehensive conservation plan. No comments were received on this compatibility determination.

Determination

_____ Use is Not Compatible

X Use is Compatible With the Following Stipulations

Stipulations Necessary to Ensure Compatibility

A trapping permit is required.

The management direction provided in the revised comprehensive conservation plan for the Refuge will be implemented. Monitoring would be used to determine what additional management actions, if any, were needed to ensure compatibility. Continuing law enforcement and administrative monitoring of permits will be carried out to ensure compliance with the following conditions that are incorporated into all permits to minimize impacts on Refuge lands and resources.

Regional conditions

- Failure to abide by any part of this special use permit; violation of any Refuge-related provision in Titles 43 or 50, Code of Federal Regulations; or violation of any pertinent state regulation (e.g., fish or game violation) will be considered grounds for immediate revocation of this permit and could result in denial of future permit requests for lands administered by the U.S. Fish and Wildlife Service. This provision applies to all persons working under the authority of this permit (e.g., assistants or contractors). Appeals of decisions relative to permits are handled in accordance with 50 Code of Federal Regulations 36.41.
- Any problems with wildlife and/or animals taken in defense-of-life-or-property must be reported immediately to the Refuge Manager, the Alaska Department of Fish and Game, and the Alaska State Troopers. Animals taken must be salvaged in accordance with state regulations.
- The permittee does not have the exclusive use of the site(s) or lands covered by the permit.
- This permit may be cancelled or revised at any time by the Refuge Manager for noncompliance or in case of emergency (e.g., public safety, unusual resource problems).
- The permittee shall notify the Refuge Manager during Refuge working hours in person or by telephone before beginning and upon completion of activities allowed by this permit.
- In accordance with the Archaeological Resources Protection Act (16 U.S.C. 470aa), the disturbance of archaeological or historical sites, and the removal of artifacts are prohibited. The excavation, disturbance, collection, or purchase of historical, ethnological, or archaeological specimens or artifacts is prohibited.
- Permittees shall maintain their use areas in a neat and sanitary condition. Latrines must be located at least 150 feet from springs, lakes, and streams. All property of the permittee except for cabins and tent frames is to be removed from Refuge lands upon completion of permitted activities.
- The construction of landing strips or pads is prohibited.
- The use of motorized vehicles is prohibited on all Refuge lands.
- The operation of aircraft at altitudes and in flight paths resulting in the herding, harassment, hazing, or driving of wildlife is prohibited. It is recommended that all aircraft, except for takeoff and landing, maintain a minimum altitude of 2,000 feet above ground level.
- The use of helicopters is prohibited.
- Unauthorized caches of fuel or other supplies are prohibited. Fuel storage, if any, will be in compliance with regional Service fuel storage policy.

Kodiak Refuge Conditions

- Visitors will be required to comply with any temporary restrictions, emergency orders or other types of regulatory actions promulgated by the Refuge Manager to prevent resource problems or conflicts, in cases of emergency, public safety, or unusual resource problems.
- The use of Native or State lands that have been conveyed (patented) is not authorized by this permit.
- Use of Native or State lands that have been selected but not yet conveyed is prohibited unless a letter of concurrence is submitted to the Refuge Manager prior to beginning any activities allowed by this permit.

- A copy of this special use permit must be in the permittee's possession at all times while exercising the privileges of the permit.
- Cabins on Refuge lands shall not be used by the permittee without the permission of the Refuge Manager except in cases of dire emergency for survival purposes.
- Food or garbage attractive to bears or other wildlife will be immediately disposed of. No attractive nuisance for bears or other wildlife shall be created by food storage, improper disposal of garbage (includes of burying of garbage), fish smoking, salting, drying, or other uses.
- Combustibles (paper, wood, etc.) may be burned, but all other debris, including cans, bottles, fuel containers, and any other noncombustible material shall be removed and disposed of off Refuge when departing camps.
- The permittee shall provide the Refuge Manager with a report of activities, including the number of animals by species taken under this permit within 30 days of permit expiration.
- Construction of cabins or other permanent structures is prohibited.

Justification

Trapping is a long-established use on the Refuge. Except for red fox, river otter, and weasel, wildlife sought by trappers is not native to the Refuge. Both the State of Alaska and Federal Subsistence Board manage harvest of wildlife, native and non-native, to ensure long-term sustainability of harvest. Most trapping occurs when there are few other visitors on the Refuge. Although pelts of animals trapped may be sold, trapping on Kodiak Refuge is not a major commercial venture. Trapping occurs either as a subsistence or recreational activity. The current level of trapping, or even a substantial increase in trapping activities, would have only negligible adverse effects on the resources of Kodiak Refuge because of State and Federal harvest management and the special conditions included in Refuge trapping permits.

Supporting Documents

- U.S. Fish and Wildlife Service. 1987. Kodiak National Wildlife Refuge Final Comprehensive Conservation Plan, Wilderness Review, and Environmental Impact Statement. U.S. Fish and Wildlife Service. Anchorage, Alaska. 533 pp.
- U.S. Fish and Wildlife Service. 1993. Kodiak National Wildlife Refuge, Final Public Use Management Plan and Environmental Assessment. U.S. Fish and Wildlife Service. Kodiak, Alaska. 202 pp.
- U.S. Fish and Wildlife Service. 2004. Draft Revised Comprehensive Conservation Plan and Environmental Impact Statement Kodiak National Wildlife Refuge. U.S. Fish and Wildlife Service. Anchorage, Alaska.

Refuge Determination

Refuge Manager /

Project Leader Approval:

LB SUE KERN

(Signature)

2-17-2006

(Date)

ConcurrenceRegional Chief,
National Wildlife
Refuge System:T. J. J. J.

(Signature)

2/17/06

(Date)

Mandatory 10-Year Re-Evaluation Date: January 2016**NEPA Compliance for Refuge Use Decision**

- ☐ Categorical Exclusion without Environmental Action Memorandum
- ☐ Categorical Exclusions and Environmental Action Memorandum
- ☐ Environmental Assessment and Finding of No Significant Impact
- ☒ Environmental Impact Statement and Record of Decision

Appendix F

Easements, Withdrawals, and Rights of Way within the Kodiak National Wildlife Refuge

Easements, Withdrawals, and Rights-of-Way within Kodiak National Wildlife Refuge

Easements Reserved by the Service over Private Lands under Sec. 17(b) of ANCSA

Section 17(b) of the Alaska Native Claims Settlement Act (ANCSA) authorizes the Secretary of the Interior to reserve public easements on lands conveyed to Native corporations to guarantee access to public lands or waters. These easements include linear easements across Native lands and site easements. Easements are listed by easement identification number (EIN). Figure F-1 displays these easements.

Akhiok-Kaguyak, Incorporated

SITES

EIN 10a D9.....	One-acre site at northwest head of Jap Bay in T37S R28W, Sec. 15 (USGS map Kaguyak D-6)
EIN 20 D9 C6 L	Two and one-half acre site on north (right) bank of Olga Creek in T36S R32W, Sec. 14, at outlet of Lower South Olga Lake (USGS map Karluk A-1)
EIN 22 D9 C6 L	Two and one-half acre site on south (left) bank of Olga Creek in T36S R32W, Sec. 14, at outlet of Lower South Olga Lake (USGS map Karluk A-1)
EIN 24 D9	One-acre site at mouth of Olga Creek in T36S R31W, Sec. 19, at Lower South Olga Lake (USGS map Karluk A-1)
EIN 26 C6 D9 L	One-acre site on Olga Creek in T36S R31W, Sec. 17, at outlet of Upper South Olga Lake (USGS map Karluk A-1)
EIN 29a D9.....	One-acre site on east shore of Olga Bay in T36S R30W, Sec. 17 (USGS map Karluk A-1)
EIN 37a C4.....	One-acre site on east shore of Moser Bay in T36S R30W, Sec. 29, at unnamed creek (USGS map Karluk A-1)
EIN 42a C5 C6 D1 D9	25-ft × 1000-ft site on east end of Moser Lake in T36S R31W, Sec. 23 and 26 (USGS map Karluk A-1)

PROPOSED TRAILS (25 feet wide)

EIN 10 D9	Head of Jap Bay in T37S R28W, Sec. 15, at site EIN 10a D9 southwesterly to refuge land (USGS map Kaguyak D-6)
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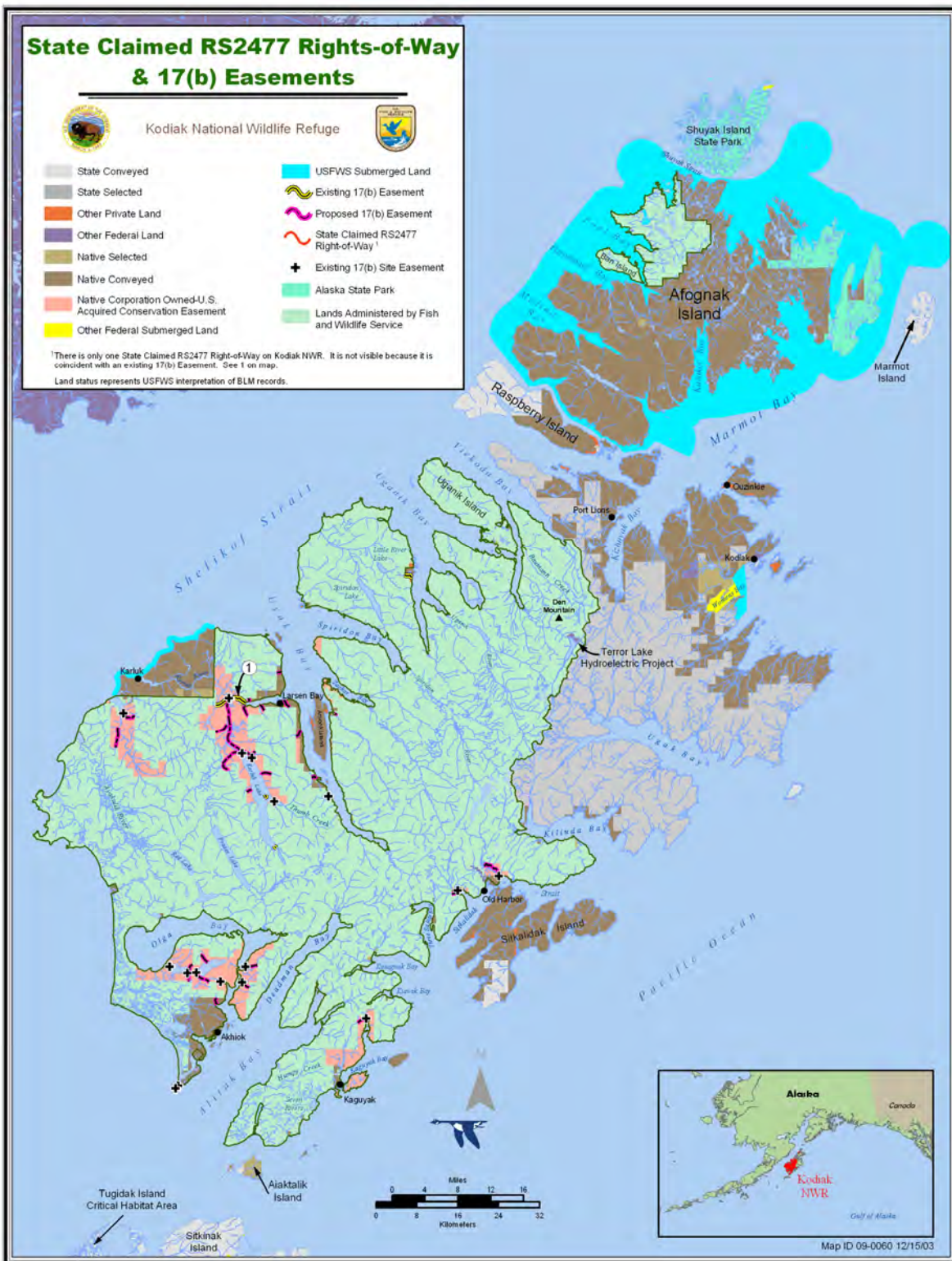


Figure F-1 17(b) easements and proposed RS-2477 routes on Kodiak Refuge

EIN 23 D9	Mouth of Olga Creek at Lower South Olga Lake in T36S R31W, Sec. 19, at site EIN 24 D9 northerly and southerly to refuge land (USGS map Karluk A-1)
EIN 23a D9.....	Upper South Olga Lake in T36S R31W, Sec. 9, northwesterly parallel to an unnamed stream to refuge land (USGS map Karluk A-1)
EIN 27 D9	Upper South Olga Lake in T36S R31W, Sec. 17, at site EIN 26 C6 D9 L southeasterly to refuge land (USGS map Karluk A-1)
EIN 29 D9	East shore of Olga Bay in T36S R30W, Sec. 17, at site EIN 29a D9 easterly to refuge land (USGS map Karluk A-1)
EIN 37 C4.....	East shore of Moser Bay in T36S R30W, Sec. 29 at site EIN 37a C4 southeasterly parallel to an unnamed stream to refuge land (USGS map Karluk A-1)
EIN 39 C5 C6 D1 D9	North shore of Snug Cove in T37S R31W, Sec. 4, northerly to refuge land. (USGS map Trinity Islands D-1)

**RESTRICTED TO U.S.
GOVERNMENT USE**

EIN 100 J.....	225-ft radius around U.S. Coast Guard light at Cape Alitak in T38S R32W, Sec. 34 (USGS map Trinity Islands D-1)
EIN 101 J.....	25-ft-wide trail at Cape Alitak in T38S R32W, Sec. 34, at USCG light EIN 100 J, northeasterly to Sec. 27 at site EIN 102 J (USGS map Trinity Islands D-1)
EIN 102 J.....	One-acre site on south shore of Alitak Lagoon in T38S R32W, Sec. 27 (USGS map Trinity Islands D-1)
EIN 103 J.....	25-ft-wide trail at Cape Alitak in T38S R32W, Sec. 34, at USCG light EIN 100 J northerly to helicopter landing site EIN 104 (USGS map Trinity Islands D-1)
EIN 104 J.....	One-acre helicopter landing site 600 ft north of USCG light EIN 100 J in T38S R32W, Sec. 34 (USGS map Trinity Islands D-1)

Koniag, Incorporated (includes villages of Karluk and Larsen Bay)

SITES

EIN 13a C6 D9 L.....	Ten-acre site on east (right) bank of Karluk River in T30S R30W, Sec. 31, at trail EIN 12 C6 D9 L (USGS map Karluk C-1)
EIN 13b C6 D9 L	Two and one-half acre site on west (left) bank of Karluk River in T30S R30W, Sec. 31 (USGS map Karluk C-1)
EIN 20 C1 C6 D9 L.....	Five-acre site on west (left) bank of Karluk River in T31S R30W, Sec. 33, at outlet of Karluk Lake (USGS map Karluk B-1)
EIN 21 C1 C6 D9 L.....	Fifteen-acre site on east (right) bank of Karluk River in T31S R30W, Sec. 33, at outlet of Karluk Lake (USGS map Karluk B-1)

Appendix F: Easements, Withdrawals, and Rights of Way

EIN 29 C4	One-acre site on east shore of Sturgeon Lagoon in T31S R33W, Sec. 12, at mouth of unnamed stream (USGS map Karluk C-2)
EIN 30a D9	One-acre site on west shore of Uyak Bay in T32S R28W, NW quarter of Sec. 32 (USGS map Kodiak B-6)
EIN 34 C6 L.....	One-acre site on north (right) bank of Thumb River in T32S R29W, Sec. 31, at confluence with Karluk Lake (USGS map Kodiak B-6)
EIN 39 C4	One-acre site on east shore of Karluk Lake in T32S R30W, Sec. 3, at mouth of Moraine Creek (USGS map Karluk B-1)

EXISTING TRAILS (25 feet in width)

EIN 2d C6	South shore of Karluk Lake and south bank of O'Malley River in T33S R30W, Sec. 35, easterly to refuge land (USGS maps Karluk B-1 and Kodiak B-6)
EIN 11 D9	End of trail EIN 47 C4 in T30S R30W, Sec. 31, southwesterly to refuge land (USGS map Karluk C-1)
EIN 12 C6 D9 L.....	Head of Larsen Bay in T30S R30W, Sec. 33, westerly to Karluk River in T30S R30W, Sec. 31, at site EIN 13a C6 D9 L (USGS map Karluk C-1)
EIN 47 C4	West (left) bank of Karluk River in T31S R30W, Sec. 31, at site EIN 13b C6 D9 L southwesterly to beginning of trail EIN 11 D9 (USGS map Karluk C-1)
EIN 100 C4	Camp Island in T32S R30W, Sec. 25 and 36 (USGS map Karluk B-1)

PROPOSED TRAILS (25 feet in width)

EIN 6 D9 L	West shore of Uyak Bay in T30S R29W, Sec. 8, westerly along left bank of Salmon Creek to refuge land (USGS maps Kodiak C-6 and Karluk C-1)
EIN 7 D9	Larsen Bay airport in T30S R 29W, Sec. 32, southeasterly parallel to an unnamed stream to refuge land (USGS map Kodiak C-6)
EIN 8 D9	South shore of Larsen Bay in T30S R30W, Sec. 35, southeasterly to refuge land (USGS map Karluk C-1)
EIN 9 D9	South shore of Larsen Bay in T31S R30W, Sec. 4, southeasterly to refuge land (USGS map Karluk C-1)
EIN 11 D9	North shore of Larsen Bay in T30S R30W, Sec. 34, northwesterly to refuge land (USGS map Karluk C-1)
EIN 17 C6 D9	Outlet of Karluk Lake in T31S R30W, Sec. 33, at site EIN 21 C1 C6 D9 L northerly and parallel to the east bank of Karluk River to T30S R30W, Sec. 31, at site EIN 13a C6 D9 L (USGS map Karluk B-1)
EIN 18 C6 L.....	Outlet of Karluk Lake in T31S R30W, Sec. 33, at site EIN 20 C1 C6 D9 L southwesterly to refuge land (USGS map Karluk B-1)

EIN 18a D.....	From proposed trail EIN 18 C6 L in T32S R30W, Sec. 7, southeasterly to refuge land (USGS map Karluk B-1)
EIN 22 C6 D9 L	West shore of Uyak Bay in T31S R29W, Sec. 15, southwesterly and parallel to an unnamed stream to refuge land (USGS map Kodiak B-6)
EIN 24 D9	Mouth of Brown's Lagoon in T31S R28W, Sec. 5, northeasterly to refuge land (USGS map Kodiak C-6)
EIN 26 D9	East shore of Sturgeon Lagoon in T31S R33W, Sec. 12, at site EIN 29 C4 easterly and parallel to an unnamed stream to refuge land (USGS map Karluk C-2)
EIN 30b D9	West shore of Uyak Bay in T32S R28W, Sec. 32, at site EIN 30a D9 westerly and parallel to an unnamed stream to refuge land (USGS map Kodiak B-6)
EIN 32 C6 L	West shore of Uyak Bay in T32S R29W, Sec. 13, southwesterly and parallel to an unnamed stream to refuge land (USGS map Kodiak B-6)
EIN 35 C4.....	West (left) bank of Sturgeon River in T31S R33W, Sec. 14, southerly to refuge land (USGS map Karluk B-2)
EIN 36 D9	East shore of Karluk Lake in T32S R30W, Sec. 14, easterly and parallel to Cottonwood Creek to refuge land (USGS map Karluk B-1)
EIN 37 D9	East shore of Karluk Lake in T32S R30W, Sec. 3, at site EIN 39 C4 northeasterly to refuge land (USGS map Karluk B-1)
EIN 38 D9	West shore of Karluk Lake in T32S R30W, Sec. 27, westerly to refuge land (USGS map Karluk B-1)
EIN 40 C4.....	Outlet of Karluk Lake in T31S R30W, Sec. 33, at site EIN 21 C1 C6 D9 L southeasterly and parallel to Karluk Lake to T32S R30W, Sec. 3, at site EIN 39 C4 (USGS map Karluk B-1)
EIN 43 C4 C6.....	West (left) bank of Karluk River in T31S R30W, Sec. 18, westerly to refuge land (USGS map Karluk B-1)

Old Harbor Native Corporation

SITES

EIN 13 D9	One-acre site at head of Midway Bay in T34S R25W, Sec. 16, at mouth of unnamed stream (USGS map Kodiak A-4)
EIN 17 D9	One-acre site at head of Barling Bay in T34S R26W, Sec. 27, at mouth of unnamed stream flowing from the south (USGS map Kodiak A-5)

PROPOSED TRAILS (25 feet in width)

EIN 15 D9	Head of Barling Bay in T34S R26W, Sec. 27, at site EIN 17 D9 northerly and parallel to an unnamed stream to refuge land (USGS map Kodiak A-5)
EIN 18a D1 D9 C6 C4	Head of Barling Bay in T34S R26W, Sec. 27, at site EIN 17 D9 southwesterly and parallel to an unnamed stream to refuge land (USGS map Kodiak A-5)
EIN 18d D9	Head of Barling Bay in T34S R26W, Sec. 27, at site EIN 17 D9 westerly and parallel to a tidal stream to refuge land (USGS map Kodiak A-5)
EIN 27 D1 D9 C6 C4.....	Head of Midway Bay in T34S R25W, Sec. 16, at site EIN 13 D9 northwesterly and parallel to the east bank of an unnamed stream to refuge land (USGS maps Kodiak A-4 and Kodiak B-4)

Uganik

EXISTING TRAIL (25 feet in width)

EIN 1a C5	West shore of Uganik Bay in T28S R26W, Sec. 7, at beach westerly to refuge land (USGS map Kodiak D-5)
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RS-2477 Routes

The State of Alaska has identified the route commonly referred to as the “Portage Trail” (EIN 12 C6 D9 L) and believes it may be claimed as a highway under Revised Statute (RS) 2477, a section of the Mining Act of 1866. RS-2477 states that “the right-of-way for the construction of highways over public lands, not reserved for public uses, is hereby granted.” In addition to specific routes, the State of Alaska also claims section line easements under RS-2477. RS-2477 was repealed by the Federal Land Policy and Management Act of 1976, subject to valid existing claims. All claims must be adjudicated, and rules for determining valid claims are still a matter of some dispute. See Figure F-1 for the location of the RS-2477 route on Kodiak Refuge.

Appendix G

Species Lists

Species Lists

This appendix contains a list of species for Kodiak National Wildlife Refuge and a list of species with special designations.

Fish

Scientific Name	Common Name
<i>Entosphenus tridentatus</i>	Pacific lamprey
<i>Oncorhynchus mykiss</i>	Rainbow trout (resident)
<i>Oncorhynchus mykiss</i>	Steelhead trout
<i>Salvelinus alpinus</i>	Arctic char
<i>Salvelinus malma</i>	Dolly varden
<i>Oncorhynchus gorbuscha</i>	Pink salmon
<i>Oncorhynchus nerka</i>	Sockeye salmon

Scientific Name	Common Name
<i>Oncorhynchus tshawtscha</i>	Chinook salmon
<i>Oncorhynchus kisutch</i>	Coho salmon
<i>Oncorhynchus keta</i>	Chum salmon
<i>Gasterosteus aculeatus</i>	Threespine stickleback
<i>Pungitius pungitius</i>	Ninespine stickleback
<i>Cottus alueticus</i>	Coastrange sculpin

Birds

* found nesting on Kodiak National Wildlife Refuge

Scientific Name	Common Name
<i>Gavia stellata</i>	Red-throated loon*
<i>Gavia arctica</i>	Pacific loon
<i>Gavia immer</i>	Common loon*
<i>Gavia adamsii</i>	Yellow-billed loon
<i>Podilymbus podiceps</i>	Pie-billed grebe
<i>Podiceps auritus</i>	Horned grebe
<i>Podiceps grisegena</i>	Red-necked grebe*
<i>Diomedea immutabilis</i>	Laysan albatross
<i>Diomedea nigripes</i>	Black-footed albatross
<i>Diomedea albatrus</i>	Short-tailed albatross
<i>Fulmarcus glacialis</i>	Northern fulmar
<i>Pterodroma inexpectata</i>	Mottled petrel
<i>Puffinus creatopus</i>	Pink-footed shearwater
<i>Puffinus carneipes</i>	Flesh-footed shearwater

Scientific Name	Common Name
<i>Puffinus griseus</i>	Sooty shearwater
<i>Puffinus tenuirostris</i>	Short-tailed shearwater
<i>Oceanodroma furcata</i>	Fork-tailed storm-petrel*
<i>Oceanodroma leucorhoa</i>	Leach's storm-petrel*
<i>Phalacrocorax auritus</i>	Double-crested cormorant*
<i>Phalacrocorax urile</i>	Red-faced cormorant*
<i>Phalacrocorax pelagicus</i>	Pelagic cormorant*
<i>Ardea herodias</i>	Great blue heron
<i>Casmerodius albus</i>	Great egret
<i>Anser albifrons</i>	Greater white-fronted goose
<i>Chen canagica</i>	Emperor goose
<i>Puffinus bulleri</i>	Buller's shearwater
<i>Chen caerulescens</i>	Snow goose
<i>Branata canadensis</i>	Canada goose*

Scientific Name	Common Name
<i>Branata bernicla</i>	Brant
<i>Cygnus buccinator</i>	Trumpeter swan
<i>Cygnus columbianus</i>	Tundra swan*
<i>Aix sponsa</i>	Wood duck
<i>Anas strepera</i>	Gadwall*
<i>Anas penelope</i>	Eurasian wigeon
<i>Anas americana</i>	American wigeon*
<i>Anas platyrhynchos</i>	Mallard*
<i>Anas poecilorhyncha</i>	Spot-billed duck
<i>Anas discors</i>	Blue-winged teal
<i>Anas cyanoptera</i>	Cinnamon teal
<i>Anas clypeata</i>	Northern shoveler
<i>Anas acuta</i>	Northern pintail*
<i>Anas crecca</i>	Green-winged teal*
<i>Aythya valisineria</i>	Canvasback
<i>Aythya americana</i>	Redhead
<i>Aythya collaris</i>	Ring-necked duck
<i>Aythya fuligula</i>	Tufted duck
<i>Aythya marila</i>	Greater scaup*
<i>Aythya affinis</i>	Lesser scaup*
<i>Somateria stelleri</i>	Steller's eider
<i>Somateria fischeri</i>	Spectacled eider
<i>Somateria spectabilis</i>	King eider
<i>Somateria mollissima</i>	Common eider*
<i>Histrionicus histrionicus</i>	Harlequin duck*
<i>Melanitta perspicillata</i>	Surf scoter
<i>Melanitta fusca</i>	White-winged scoter
<i>Melanitta nigra</i>	Black scoter*

Scientific Name	Common Name
<i>Clangula hyemalis</i>	Long-tailed duck
<i>Bucephala albeola</i>	Bufflehead duck
<i>Bucephala clangula</i>	Common goldeneye*
<i>Bucephala islandica</i>	Barrow's goldeneye*
<i>Mergellus albellus</i>	Smew
<i>Lophodytes cucullatus</i>	Hooded merganser
<i>Mergus merganser</i>	Common merganser*
<i>Mergus serrator</i>	Red-breasted merganser*
<i>Pandion haliaetus</i>	Osprey
<i>Haliaeetus leucocephalus</i>	Bald eagle*
<i>Haliaeetus pelagicus</i>	Steller's sea eagle
<i>Circus cyaneus</i>	Northern harrier
<i>Accipiter striatus</i>	Sharp-shinned hawk
<i>Accipiter gentilis</i>	Northern goshawk*
<i>Buteo jamaicensis</i>	Red-tailed hawk
<i>Buteo lagopus</i>	Rough-legged hawk*
<i>Aquila chrysaetos</i>	Golden eagle*
<i>Falco sparverius</i>	American kestrel
<i>Falco columbarius</i>	Merlin*
<i>Falco rusticolus</i>	Gyr Falcon*
<i>Falco peregrinus pealei</i>	Peregrine falcon*
<i>Lagopus lagopus</i>	Willow ptarmigan*
<i>Lagopus mutus</i>	Rock ptarmigan*
<i>Fulica americana</i>	American coot
<i>Grus canadensis</i>	Sandhill crane
<i>Pluvialis squatarola</i>	Black-bellied plover
<i>Pluvialis fulvas</i>	Lesser golden plover
<i>Pluvialis dominica</i>	Pacific golden plover

Scientific Name	Common Name
<i>Charadrius mongolus</i>	Mongolian plover
<i>Charadrius semipalmatus</i>	Semi-palmated plover*
<i>Charadrius vociferus</i>	Killdeer
<i>Haematopus bachmani</i>	Black oystercatcher*
<i>Tringa melanoleuca</i>	Greater yellowlegs*
<i>Tringa flavipes</i>	Lesser yellowlegs
<i>Tringa solitaria</i>	Solitary sandpiper
<i>Heteroscelus incanus</i>	Wandering tattler*
<i>Heteroscelus brevipes</i>	Gray-tailed tattler
<i>Actitis macularia</i>	Spotted sandpiper*
<i>Bartramia longicauda</i>	Upland sandpiper
<i>Numenius phaeopus</i>	Whimbrel
<i>Numenius tahitiensis</i>	Bristle-thighed curlew
<i>Limosa limosa</i>	Black-tailed godwit
<i>Limosa haemastica</i>	Hudsonian godwit
<i>Limosa lapponica</i>	Bar-tailed godwit
<i>Limosa fedoa</i>	Marbled godwit
<i>Arenaria interpres</i>	Ruddy turnstone
<i>Arenia melanocephala</i>	Black turnstone
<i>Aphriza virgata</i>	Surfbird*
<i>Calidris canutus</i>	Red knot
<i>Calidris alba</i>	Sanderling
<i>Calidris pusilla</i>	Semipalmated sandpiper
<i>Calidris mauri</i>	Western sandpiper
<i>Calidris temminckii</i>	Temminck's stint
<i>Calidris minutilla</i>	Least sandpiper*
<i>Calidris bairdii</i>	Baird's sandpiper
<i>Calidris melanotos</i>	Pectoral sandpiper

Scientific Name	Common Name
<i>Calidris acuminata</i>	Sharp-tailed sandpiper
<i>Calidris ptilocnemis</i>	Rock sandpiper*
<i>Calidris alpina</i>	Dunlin
<i>Calidris ferruginea</i>	Curlew sandpiper
<i>Calidris himatopus</i>	Stilt sandpiper
<i>Tryngites subruficollis</i>	Buff-breasted sandpiper
<i>Philomachus pugnax</i>	Ruff
<i>Linmodromus griseus</i>	Short-billed dowitcher*
<i>Linmodromus scolopaceus</i>	Long-billed dowitcher
<i>Gallinago gallinago</i>	Common snipe*
<i>Phalaropus tricolor</i>	Wilson's phalarope
<i>Phalaropus lobatus</i>	Red-necked phalarope*
<i>Phalaropus fulicaria</i>	Red phalarope
<i>Catharacta maccormicki</i>	South polar skua
<i>Stercorarius pomarinus</i>	Pomarine jaeger
<i>Stercorarius parasiticus</i>	Parasitic jaeger*
<i>Stercorarius longicaudus</i>	Long-tailed jaeger*
<i>Larus pipixcan</i>	Franklin's gull
<i>Larus ridibundus</i>	Black-headed gull
<i>Larus philadelphia</i>	Bonaparte's gull
<i>Larus crassirostris</i>	Black-tailed gull
<i>Larus canus</i>	Mew gull*
<i>Larus delawarensis</i>	Ring-billed gull
<i>Larus californicus</i>	California gull
<i>Larus argentatus</i>	Herring gull
<i>Larus thayeri</i>	Iceland gull (inc. Thayer's gull)
<i>Larus fuscus</i>	Lesser black-backed gull
<i>Larus schistisagus</i>	Slaty-backed gull

Scientific Name	Common Name
<i>Larus occidentalis</i>	Western gull
<i>Larus glaucescens</i>	Glaucous-winged gull*
<i>Larus hyerboreus</i>	Glaucous gull
<i>Larus marinus</i>	Great black-backed gull
<i>Xema sabini</i>	Sabine's gull
<i>Rissa tridactyla</i>	Black-legged kittiwake*
<i>Rissa brevirostris</i>	Red-legged kittiwake
<i>Sterna caspia</i>	Caspian tern
<i>Sterna paradisaea</i>	Arctic tern*
<i>Sterna aleutica</i>	Aluetian tern*
<i>Alle alle</i>	Dovekie
<i>Uria aalge</i>	Common murre*
<i>Uria lomvia</i>	Thick-billed murre*
<i>Cephus columba</i>	Pigeon guillemot*
<i>Brachyramphus perdix</i>	Long-billed murrelet
<i>Brachyramphus marmoratus</i>	Marbled murrelet*
<i>Brachyramphus brevirostris</i>	Kittlitz's murrelet*
<i>Synthliboramphus antiquus</i>	Ancient murrelet*
<i>Ptychoramphus alueticus</i>	Cassin's auklet*
<i>Cyclorhynchus psittacula</i>	Parakeet auklet*
<i>Aethia pusilla</i>	Least auklet
<i>Aethia cristatella</i>	Crested auklet
<i>Cerorhinca moncerata</i>	Rhinoceros auklet*
<i>Fratercula corniculata</i>	Horned puffin*
<i>Fratercula cirrhata</i>	Tufted puffin*
<i>Zenaida macroura</i>	Mourning dove
<i>Nyctea scandiaca</i>	Snowy owl
<i>Surnia ulula</i>	Northern hawk-owl*

Scientific Name	Common Name
<i>Strix nebulosa</i>	Great grey owl
<i>Asio flammeus</i>	Short-eared owl*
<i>Argolius funereus</i>	Boreal owl*
<i>Nyctidromus albigollis</i>	Common nighthawk
<i>Selasphorus rufus</i>	Rufous hummingbird
<i>Ceryle alcyon</i>	Belted kingfisher*
<i>Sphyrapicus varius</i>	Yellow-bellied sapsucker
<i>Sphyrapicus ruber</i>	Red-breasted sapsucker
<i>Picoides pubescens</i>	Downy woodpecker*
<i>Picoides villosus</i>	Hairy woodpecker
<i>Picoides tridactylus</i>	Three-toed woodpecker*
<i>Colaptes auratus</i>	Northern flicker
<i>Sayornis saya</i>	Say's phoebe
<i>Tyrannus tyrannus</i>	Eastern kingbird
<i>Lanius excubitor</i>	Northern shrike*
<i>Pica pica</i>	Black-billed magpie*
<i>Corvus caurinus</i>	Northwestern crow*
<i>Corvus corax</i>	Common raven*
<i>Eremophila alpestris</i>	Horned lark
<i>Tachycineta bicolor</i>	Tree swallow*
<i>Tachycineta thalassina</i>	Violet-green swallow*
<i>Riparia riparia</i>	Bank swallow*
<i>Petrochelidon pyrrhonota</i>	Cliff swallow
<i>Hirundo rustica</i>	Barn swallow
<i>Parus atricapillus</i>	Black-capped chickadee*
<i>Sitta canadensis</i>	Red-breasted nuthatch*
<i>Certhia familiaris</i>	Brown creeper*
<i>Troglodytes troglodytes</i>	Winter wren*

Scientific Name	Common Name
<i>Cinclus mexicanus</i>	American dipper*
<i>Regulus satrapa</i>	Golden-crowned kinglet*
<i>Regulus calendula</i>	Ruby-crowned kinglet
<i>Sialia currucoides</i>	Mountain bluebird
<i>Catharus minimus</i>	Gray-cheeked thrush*
<i>Catharus ustulatus</i>	Swainson's thrush
<i>Catharus guttatus</i>	Hermit thrush*
<i>Turdus migratorius</i>	American robin
<i>Ixoreus naevius</i>	Varied thrush*
<i>Sturnus vulgaris</i>	European starling
<i>Motacilla flava</i>	Yellow wagtail
<i>Anthus spinoletta</i>	American pipit*
<i>Bombycilla garrulus</i>	Bohemian waxwing
<i>Bombycilla cedrorum</i>	Cedar waxwing
<i>Vermivora celata</i>	Orange-crowned warbler*
<i>Dendroica petechia</i>	Yellow warbler*
<i>Dendroica coronata</i>	Yellow-rumped warbler*
<i>Dendroica townsendi</i>	Townsend's warbler
<i>Dendroica palmarum</i>	Palm warbler
<i>Dendroica striata</i>	Blackpoll warbler
<i>Wilsonia pusilla</i>	Wilson's warbler*
<i>Spizella arborea</i>	American tree sparrow
<i>Passerculus sandwichensis</i>	Savannah sparrow*

Mammals

Scientific Name	Common Name
<i>Myotis lucifugus</i>	Little brown bat
<i>Lepus americanus</i>	Snowshoe hare
<i>Tamiasciurus hudsonicus</i>	Red squirrel

Scientific Name	Common Name
<i>Passerculus iliaca</i>	Fox sparrow*
<i>Melospiza melodia</i>	Song sparrow*
<i>Melospiza lincolni</i>	Lincoln's sparrow
<i>Zonotrichia albicollis</i>	White-throated sparrow
<i>Zonotrichia querula</i>	Harris's sparrow
<i>Zonotrichia leucophrys</i>	White-crowned sparrow
<i>Zonotrichia atricapilla</i>	Golden-crowned sparrow*
<i>Junco hyemalis</i>	Dark-eyed junco
<i>Calcarius lapponicus</i>	Lapland longspur*
<i>Emberiza rustica</i>	Rustic bunting
<i>Plectrophenax nivalis</i>	Snow bunting*
<i>Plectrophenax hyperboreus</i>	McKay's bunting
<i>Agelaius phoeniceus</i>	Red-winged blackbird
<i>Euphagus carolinus</i>	Rusty blackbird
<i>Fringilla montifringilla</i>	Brambling
<i>Luecosticte arctoa</i>	Gray-crowned rosy finch*
<i>Pheucticus melanocephalus</i>	Black-headed grosbeak
<i>Pinicola enucleator</i>	Pine grosbeak*
<i>Loxia curvirostra</i>	Red crossbill*
<i>Loxia leucoptera</i>	White-winged crossbill*
<i>Carduelis flammea</i>	Common redpoll*
<i>Carduelis hornemanni</i>	Hoary redpoll
<i>Carduelis pinus</i>	Pine siskin*

Scientific Name	Common Name
<i>Castor canadensis</i>	Beaver
<i>Microtus oeconomus</i>	Tundra vole
<i>Vulpes vulpes</i>	Red fox

Scientific Name	Common Name
<i>Ursus arctos middendorffi</i>	Brown bear
<i>Mustela erminea</i>	Short-tailed weasel
<i>Martes americana</i>	Marten (Afognak only)
<i>Odocoileus hemionus sitkensis</i>	Sitka black-tailed deer

Marine Mammals

Scientific Name	Common Name
<i>Enhydra lutris kenyoni</i>	Sea otter
<i>Eumetopias jubatus</i>	Steller sea lion
<i>Phoca vitulina</i>	Harbor seal
<i>Megaptera novaeangliae</i>	Humpback whale
<i>Balaenoptera physalus</i>	Fin whale
<i>Balaenoptera borealis</i>	Sei whale
<i>Balaenoptera acutorostrata</i>	Minke whale

Federally Listed Threatened or Endangered Species

E=Endangered T=Threatened C=Candidate

Short-tailed albatross (E)
 Steller's eider (T)
 Spectacled eider (T)
 Kittlitz's murrelet (C)
 Northern sea otter (SW Alaska population) (T)
 Steller sea lion (E)
 Humpback whale (E)
 Fin whale (E)
 Sei whale (E)
 North Pacific right whale (E)

Scientific Name	Common Name
<i>Oreamnos americanus</i>	Mountain goat
<i>Cervus elaphus roosevelti</i>	Roosevelt elk
<i>Rangifer tarandus</i>	Reindeer

Scientific Name	Common Name
<i>Eschrichtius robustus</i>	Gray whale
<i>Martes americana</i>	Marten (Afognak only)
<i>Odocoileus hemionus sitkensis</i>	Sitka black-tailed deer
<i>Oreamnos americanus</i>	Mountain goat
<i>Cervus elaphus roosevelti</i>	Roosevelt elk
<i>Rangifer tarandus</i>	Reindeer
<i>Eubalaena japonica</i>	North Pacific Right Whale

State of Alaska Endangered Species

Short-tailed albatross
 Humpback whale
 Right whale (now classified as North Pacific right whale)

State of Alaska Species of Special Concern

Steller's eider
 Spectacled eider
 Gray-cheeked thrush
 Townsend's warbler
 Blackpoll warbler
 Sea otter (Northern sea otter)
 Steller sea lion
 Harbor seal

Appendix H

Land Acquisition Program within Kodiak National Wildlife Refuge

1. Land Acquisition Program within Kodiak Refuge

The following discussion provides additional detail on the land-acquisition program on Kodiak Refuge. Figure 3-2 depicts the acquisition program refuge-wide. Figures H-1 through H-4 depict, on Refuge maps, the large-parcel acquisition program with each Native corporation.

1.1 Summary of the Akhiok-Kaguyak, Inc., Large Parcel Acquisition (Figure H-1)

1.1.1 Acquisition

The United States, with the U.S. Fish & Wildlife Service (Service) as its agent, and Akhiok-Kaguyak, Inc. (AKI), signed an Agreement to Purchase Lands and Interests in Lands on May 23, 1995. The agreement, funded by the *Exxon Valdez* Oil Spill (EVOS) Trustee Council using EVOS restoration (civil) funding, called for the acquisition of AKI lands by the United States for inclusion into the protection of Kodiak Refuge. Through a series of five closings, AKI sold a total of 70,938 acres in fee surface estate for inclusion into Kodiak Refuge and protected an additional 72,375 acres with a conservation easement. The United States acquired all AKI lands on the northern and southeastern shoreline of Olga Bay, as well as all AKI lands on the Aliulik Peninsula, except those lands surrounding Kaguyak and nearby bays. AKI transferred all rights to the property sold to the United States, except a right conveyed to the State of Alaska, via conservation easement, to ensure the property remained undeveloped.

In addition to conveying the previously described lands, AKI also conveyed a conservation easement to the United States that protected the remaining AKI lands on the Aliulik and Moser peninsulas. This easement included numerous provisions outlined subsequently.

1.1.2 Conservation Easement

This easement ensures that the conservation values of the protected lands will be maintained in perpetuity. AKI maintains title and ownership of these lands; however, management of the lands will be consistent with applicable regulations, statutes, legal mandates, etc., that govern Kodiak Refuge. As landowner, AKI maintains many rights to the land and has some latitude in its management. The terms of the easement are summarized in the following subsections.

Rights of the Service

- To enter the protected property in order to achieve the purposes and enforce the terms of the easement.
- The right, but not the obligation, to restore natural resources and services injured by the *Exxon Valdez* oil spill.

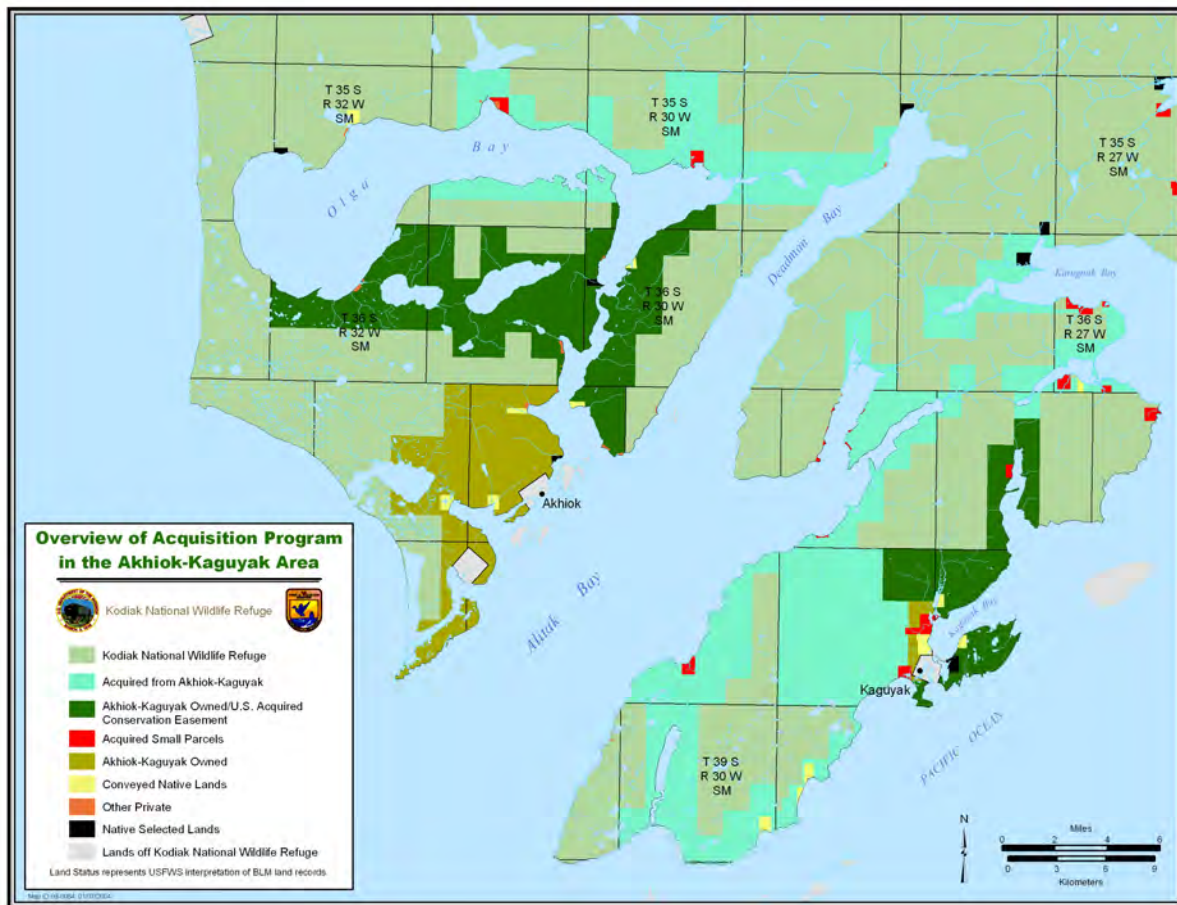


Figure H-1. Overview of acquisition program in Akhiok-Kaguyak area

- To prevent any activity on, or use of, the protected property that is inconsistent with the purpose of the easement, including the right to assess, monitor, and police AKI's use of the easement lands and to limit such use, if necessary, to achieve the purposes of the easement.
- To conduct fish, wildlife, and habitat surveys and research using customary techniques.
- To construct and operate one weir site and one sonar site, and related facilities, for the purposes of fish and wildlife management and general monitoring of ecosystem health; establishment, by the Service, of any additional weir or sonar sites and related facilities requires written consent from AKI.
- Establish as many as three seasonal camps for research or management purposes: the camp sites should be selected after consultation with AKI; these camps may be in different locations each year; additional camps and sites may be established with written consent from AKI.
- To enforce all applicable state and federal fish, wildlife, and Refuge System statutory and regulatory requirements.

- To take all reasonable steps to ensure that privileges and rights of AKI are protected and preserved, including limiting or denying access that might interfere with AKI's rights.

Rights of AKI (the Grantor)

- To place conditions on noncommercial public use and access to the protected property by issuing land use permits for a fee of not more than 125 percent of that charged by the Department of Interior elsewhere in the United States.
- Issuance and denial of land use permits from AKI shall be made on the basis of standards and criteria determined, jointly by the Service and AKI, to be compatible with the purposes of this easement.
- Exclusive right to control all commercial access to and use of the protected property. This exclusive right includes the right to conduct, authorize, permit, charge use fees for, control, limit, or exclude all commercial operations on or using the protected property.
- Exclusive right to construct, maintain, use, and lease cabins and related structures—not to exceed 500 total square feet per site—for compatible fishing, hunting, ecotourism, recreation, or similar purpose. No more than six cabin sites may be established and maintained at any one time.
- To invoke an emergency closure, not to exceed 30 days, of all or a portion of the protected property in the event that permitted access is incompatible with any of the purposes of this easement.

Public Access and Use

This easement does not convey to the public the right to enter the protected property for any purpose whatsoever. However, the parties agree to permit public access to and use of the protected property for hunting, fishing, and other natural land-based recreation opportunities consistent with policies, laws, and regulations governing Kodiak National Wildlife Refuge. Such access is conditional upon the issuance of a permit by AKI.

The parties intend that the Service will use its available legal authorities to provide law enforcement and trespass control and assistance to the Grantor (AKI) in relation to the permitted public access and use under this easement, subject to the availability of appropriated funds, available personnel, and the right of agency discretion.

Prohibited Uses

The following uses of the protected property are prohibited *unless* the Service determines the use to be necessary for either Refuge or conservation research or management of the protected property, or for conveying information to the public to protect public safety or natural resources.

- Construction of buildings, fixed or improved camping accommodations or mobile homes, fences, billboards, or signs (other than those signs for boundary, trespass, direction, or general information)
- Operation of all-terrain vehicles or other motorized land conveyances—not in use on the property as of April 20th, 1995—determined by the Refuge manager to injure conservation values of the property, consistent with restrictions on Refuge lands
- Changing of the topography or the removal, destruction, or cutting of trees or plants except for local subsistence or medicinal uses
- The use of biocides except as necessary to control or remove nonnative fish, wildlife, or plants
- The manipulation or alteration of natural water courses, shores, marshes, etc., that affects the water purity on the protected property.
- At no time is the introduction of nonnative fish, wildlife, or plants allowed.
- Dumping trash, garbage, or other offensive materials at any time

Rights of the State of Alaska

To enforce compliance by the Grantee and/or Grantor with the terms of the prohibited uses, the State of Alaska has the right to enter upon the protected property to monitor compliance with the prohibited uses, provided prior notice is given to the Refuge manager and to AKI.

Refuge and AKI Coordination Requirements

- Standards and criteria for the issuance or denial of land use permits will be jointly determined to be compatible with the purposes of the easement. These standards and criteria shall include provisions to control permitted public access in a manner that will not interfere with AKI's exclusive commercial control. These standards and criteria shall include the amount, type, location, and timing of access to and use of the protected property and the reasonableness of the fee charged. The parties will meet at least biannually to review and revise the standards and criteria as necessary. These standards and criteria must be approved by the Refuge manager. AKI has the right to appeal an adverse decision.
- New cabin sites will be selected in consultation with the Refuge manager, and new construction will take place only when the Refuge manager has determined that the location is compatible with the purposes of this easement. Should a cabin and site be abandoned, AKI must promptly restore the site to a natural state that meets the satisfaction of the Refuge manager.
- Seasonal campsite locations used by the Service for research and management purposes will be selected after consultation with AKI.

1.2 Summary of the Old Harbor Native Corporation Large Parcel Acquisition (Figure H-2)

1.2.1 Acquisition

The United States, with the U.S. Fish & Wildlife Service (Service) as its agent, and Old Harbor Native Corporation (OHNC) signed an Agreement to Purchase Lands and Interests in Lands on May 23, 1995. The agreement, funded by the *Exxon Valdez* Oil Spill (EVOS) Trustee Council using EVOS restoration (civil and criminal) funding, called for the acquisition of OHNC lands by the United States for inclusion into the protection of Kodiak Refuge. Through two closings, OHNC sold a total of 28,431 acres in fee surface estate for inclusion into Kodiak Refuge and protected an additional 3,000 acres with a conservation easement. The United States acquired all OHNC lands within Kodiak Refuge, except for small parcels at the head of Barling Bay and in the immediate vicinity of the village of Old Harbor. Upon transferring these lands, OHNC reserved an easement for subsistence access for residents of Old Harbor, a conservation easement conveyed to the State of Alaska to ensure the property remained undeveloped, and a reversionary right to take effect if the lands ever cease to be managed for Refuge or conservation purposes.

1.2.2 Conservation Easement

This easement ensures that the conservation values of the protected lands will be maintained in perpetuity as a wildlife refuge. Management of the lands will be consistent with applicable regulations, statutes, legal mandates, etc., that govern Kodiak Refuge. As landowner, Old Harbor maintains rights to the land and its management. Specific details of these rights and the rights of the Service as the Grantee described in the easement are discussed in the following subsections.

Rights of the Service

- To enter the protected property in order to achieve the purposes and to enforce the terms of the easement
- The right, but not the obligation, to restore natural resources and services injured by the *Exxon Valdez* oil spill
- To prevent any activity on, or use of, the protected property that is inconsistent with the purpose of the easement.
- To conduct fish, wildlife, and habitat surveys and research using customary techniques; this includes the right to establish and operate fish weirs and sonar sites and related facilities with written consent from OHNC.

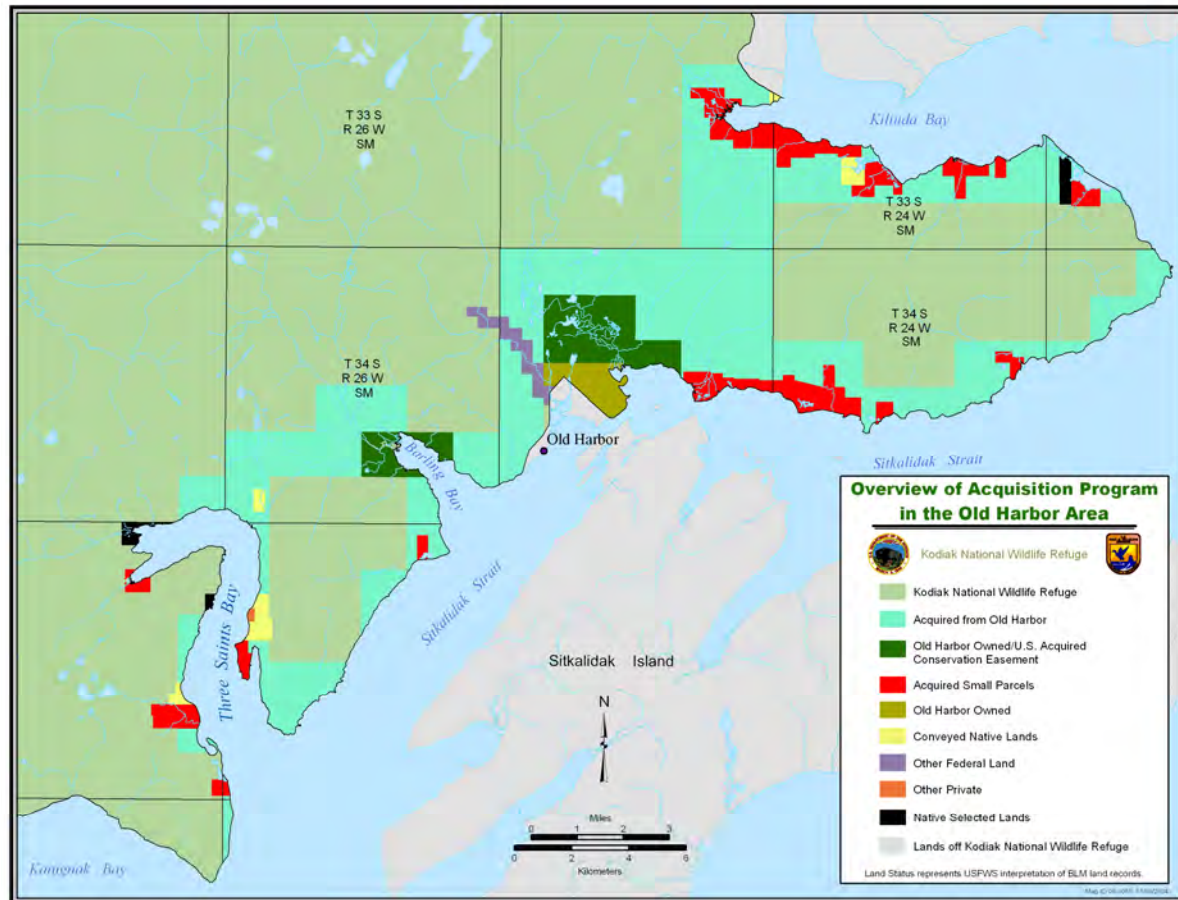


Figure H-2. Overview of acquisition program in the Old Harbor area

Rights of Old Harbor (the Grantor)

- The right to exclude others from entering or engaging in any use of the protected property, except as otherwise provided for in this easement
- The right to unlimited subsistence use of the protected property in accordance with applicable state and federal laws and regulations
- The right to enforce the prohibited uses described in this easement

Prohibited Uses

The following uses of the Protected Property are prohibited *unless* the Service, in consultation with OHNC, determines the use to be necessary for either Refuge or conservation research or management of the protected property, or for conveying information to the public to protect public safety or natural resources:

- Construction of buildings, fixed or improved camping accommodations or mobile homes, fences, billboards, or signs

(other than those signs for boundary, trespass, direction, or general information)

- The construction or maintenance of foot trails or paths
- Operation of all-terrain vehicles or other motorized land conveyances, not in use on the property as of April 20, 1995, determined by the Refuge manager to injure conservation values of the property consistent with restrictions on Refuge lands
- Changing of the topography or the removal, destruction, or cutting of trees or plants except for local subsistence or medicinal uses
- The use of biocides except as necessary to control or remove nonnative fish, wildlife, or plants
- The manipulation or alteration of natural water courses, shores, marshes, etc., that affect the water purity on the protected property
- At no time is the introduction of nonnative fish, wildlife, or plants allowed.
- Dumping trash, garbage, or other offensive materials at any time

With written authorization and compatibility determination by the Refuge manager, OHNC may undertake activities on the protected property that are otherwise prohibited.

Public Access and Use

No specific rights or implied intent for public access is described in this easement.

Rights of the State of Alaska

To enforce compliance by the Grantee and/or Grantor with the terms of the prohibited uses, the State of Alaska has the right to enter upon the protected property to monitor compliance with the prohibited uses, provided prior notice is given to the Refuge manager and to OHNC.

1.3 Summary of the Koniag, Inc., Large-Parcel Acquisition, Phase 1 (Figure H-3)

1.3.1 Acquisition

The United States, with the U.S. Fish & Wildlife Service (Service) as its agent, and Koniag, Inc. (Koniag) signed an Agreement to Purchase Lands and Interests in Lands on November 9, 1995. The agreement, funded by the *Exxon Valdez* Oil Spill (EVOS) Trustee Council using EVOS restoration (civil and criminal) funding, called for the acquisition of Koniag lands by the United States for inclusion into the protection of Kodiak Refuge. Through a series of four closings, Koniag sold a total of 59,426 acres in fee surface estate for inclusion into the Kodiak Refuge. Upon transfer, Koniag reserved an

easement for subsistence access for residents of Karluk and Larsen Bay and reserved a conservation easement conveyed to the State of Alaska to ensure the property remained undeveloped. An additional 56,860 acres (primarily in the Karluk and Sturgeon river drainages) were protected with a temporary nondevelopment easement that extended, with numerous amendments, until October 15, 2002.

1.3.2 Nondevelopment Easement

This easement ensures that the conservation values of the protected lands will be maintained for a period of time to allow Koniag and the United States to negotiate a more permanent arrangement for the protection of the property. The Koniag board of directors was not interested at that time in selling the land, but was interested in allowing future negotiations. Management of the lands were to be consistent with applicable regulations, statutes, legal mandates, etc., that govern Kodiak Refuge. As landowner, Koniag retained rights to the land and its management. Specific details of these rights, and the rights of the Service as the Grantee described in the easement, are discussed in the following subsections.

Prohibited Uses by Grantor (Koniag, Inc.)

- To sell or lease the property to any entity other than the Grantee or its assigns
- Construction of any additional improvements other than the existing cabins on the site
- Having more than three seasonal camps along the Karluk and Sturgeon rivers
- Construction of any roads or changing of topography by any method
- Removal, destruction, or cutting of trees or plants—except for local subsistence or medicinal uses—or the use of biocides except as necessary to control or remove nonnative fish, wildlife, or plants
- The manipulation or alteration of natural water courses, shores, marshes, etc., that affects the water purity on the protected property
- The dumping of trash, garbage, or other offensive materials at any time

U.S. (Grantee) Access Rights

- Right to conduct fish and wildlife research with Grantor's permission
- Right to monitor the protected property to ensure compliance with the terms of the easement

Rights of the Public

No rights of access are conveyed to the public with this nondevelopment easement.

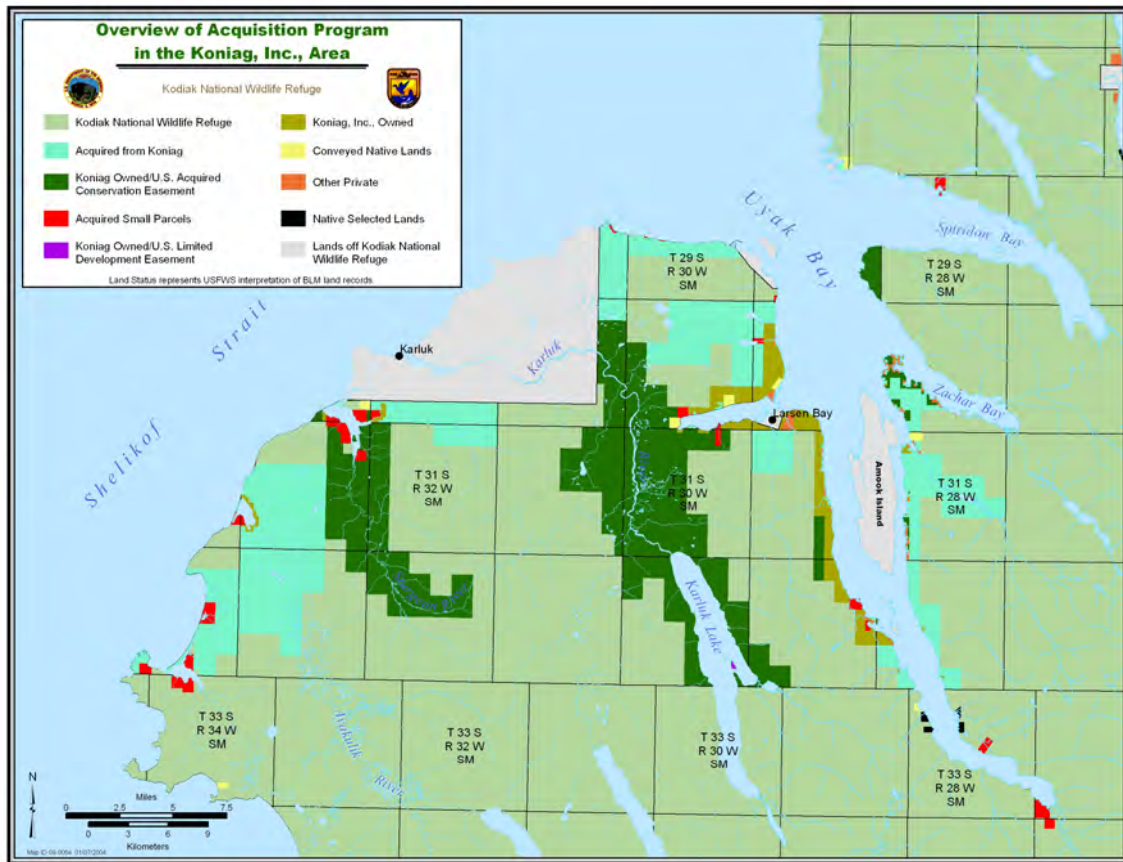


Figure H-3. Overview of acquisition program in Kodiak, Inc., area

1.4 Summary of the Kodiak, Inc., Large-Parcel Acquisition, Phase 2 (Figure H-3)

On July 31, 2002, representatives for the Service, Kodiak, Inc. (Koniag), and the State of Alaska (via the Alaska Department of Fish and Game [ADF&G]) signed the Master Agreement for the Protection of Certain Lands and Resources that ensures the protection and guarantees public access to nearly 59,000 acres of Kodiak-owned land in western Kodiak Refuge. The agreement is very complex and is summarized in the following subsection.

1.4.1 Conservation Easement

The parties have signed a conservation easement, involving the Kodiak lands, that protects the Karluk River, Karluk Lake, and Sturgeon River drainages from development for a period of 10 years beginning October 15, 2002, with an additional 10-year period for renewal at the option of Kodiak. At the initiation of this time period, the Service deposited funds from the *Exxon Valdez* Oil Spill (EVOS) restoration fund into a special interest-bearing account. Those funds will accumulate interest for the 10 years the conservation easement is

in effect. An annual management fee will be taken from this fund and paid to Koniag.

At the end of the initial 10-year term of the conservation easement, Koniag shall have the option to (1) sell the property to the United States for the amount of money resting at that time in the special account; (2) renew the conservation easement for a second 10-year period; or (3) return the lands to full management by Koniag. If Koniag chooses to allow the easement to die without renewing it, the funds in the special account will return to the EVOS Trustee Council for habitat protection (land acquisition). Should Koniag choose to sell at that time, or at any anniversary of the renewal, it would take possession of the funds in the special account in return for signing a deed transferring the property to the United States.

As a part of the agreement, Koniag has agreed that it will take any additional Alaska Native Claims Settlement Act (ANCSA) entitlement it may have from somewhere outside the boundaries of Kodiak Refuge.

The conservation easement provides unlimited access to the Service and ADF&G for fish, wildlife, and habitat monitoring and research. It allows free public access for all purposes permissible on Kodiak Refuge. While most of the Koniag lands within the Refuge are open to unlimited recreation use, a free permit system will be initiated for public use of Koniag lands within one-half mile of Karluk Lake and River. In order to preserve fish and wildlife habitat and to provide quality recreation experiences for visitors, some limits will be established on the number of visitors allowed between June 10 and July 15 each year. The initial limit for daily permits during this period is set at 70, with 40 percent guaranteed to guided river users and 40 percent guaranteed to nonguided river users. Studies to evaluate habitat sustainability, resource capabilities, and quality of experience will determine future permit limits.

Koniag will retain the right to manage its five existing cabins and to issue permits for all revenue-producing visitor services for fish and wildlife recreation along the Karluk River. No additional cabins may be built unless a corresponding number of existing cabins is removed. The Service will assume the permitting for commercial visitor services on the remainder of the Karluk lands (unless Koniag chooses to do it).

Koniag retains the right to operate a bear-viewing operation in the Thumb River drainage of Karluk Lake. Koniag's land in the Thumb Lake area will be closed to public use; however, the existing 17(b) one-acre site easement in the area will remain open to public use. This easement does not allow public recreation or access to other Koniag lands in the area. Its uses are restricted to camping not to exceed 24 hours and change in mode of transportation. Koniag also retains the right to operate one seasonal camp along each of the

Karluk and Sturgeon rivers. Client numbers are limited, and helicopter access is prohibited.

A three-person management group consisting of one representative each from the Service, Koniag, and the State of Alaska will discuss issues related to and coordinate management of the Koniag lands. A cooperative agreement between Koniag and the Service will allow limited public use of Koniag lands downstream (outside) of the Refuge boundary, including the right to fish on the lower Karluk River and to camp for one night at one of three designated campsites.

Along with the conservation easement, the parties also signed the Camp Island Limited Development Easement. This agreement will allow Koniag to develop a six-acre site on Camp Island in Karluk Lake with a lodge and visitors facilities. The lodge and other facilities will be limited to not more than 30,000 square feet in aggregate and will be limited to not more than 28 clients, plus necessary staff, per day. This limitation on client numbers will be increased to 40 guests after year 10. Client use of the property will be limited to fish, wildlife, archaeological, or other wildlands-oriented activities. Jet skis, airboats, and helicopters are prohibited. Further, boat motors are limited to 100 horsepower.

The management of the Koniag lands within the Refuge is not intended to be static. Public demands and the concerns of the management group will continue to provide challenges and opportunities for increased use by the public for recreation and subsistence activities.

1.5 Summary of the Afognak Joint Venture Large-Parcel Acquisition (Figure H-4)

The United States, with the U.S. Fish & Wildlife Service (Service) as its agent, State of Alaska, and Afognak Joint Venture (AJV) signed an Agreement to Purchase Lands and Interests in Lands on November 20, 1998. The agreement, funded by the *Exxon Valdez* Oil Spill (EVOS) Trustee Council using EVOS restoration (civil and/or criminal) funding, called for the acquisition of AJV lands by the State of Alaska and the United States for inclusion, in part, into the protection of Kodiak Refuge. Through a series of three closings, AJV sold approximately 5,491 acres in fee surface estate for inclusion into the Kodiak Refuge; about 559 acres were included in Alaska Maritime Refuge. Additional lands purchased from AJV were transferred to the State of Alaska for inclusion in Afognak Island State Park. No conservation or nondevelopment easement on other lands was included as part of this acquisition. The United States acquired the eastern side of Blue Fox Bay and the lands west of Waterfall Lake. Both parcels were outside the existing boundaries of Kodiak Refuge but were added to the Refuge pursuant to the provisions of Section 103(b) of ANILCA. AJV transferred all rights to the property sold to the United States, with the U.S. Fish & Wildlife Service (Service) as its agent, except a right conveyed to the

State of Alaska via conservation easement to insure the property remained undeveloped and a reservation of all cultural artifacts and the right to explore for such artifacts.

In March 2004, the United States, with the U.S. Fish & Wildlife Service (Service) as its agent, the State of Alaska, and Koniag, Inc., signed an agreement that provides for Koniag to sell the subsurface under the AJV lands to the State of Alaska and the United States. That agreement, also funded by EVOS civil funding, will cause the merger of the subsurface and surface estates on Afognak Island to the United States and to the State of Alaska and will complete the acquisition of lands initiated when the governments bought the surface from AJV.

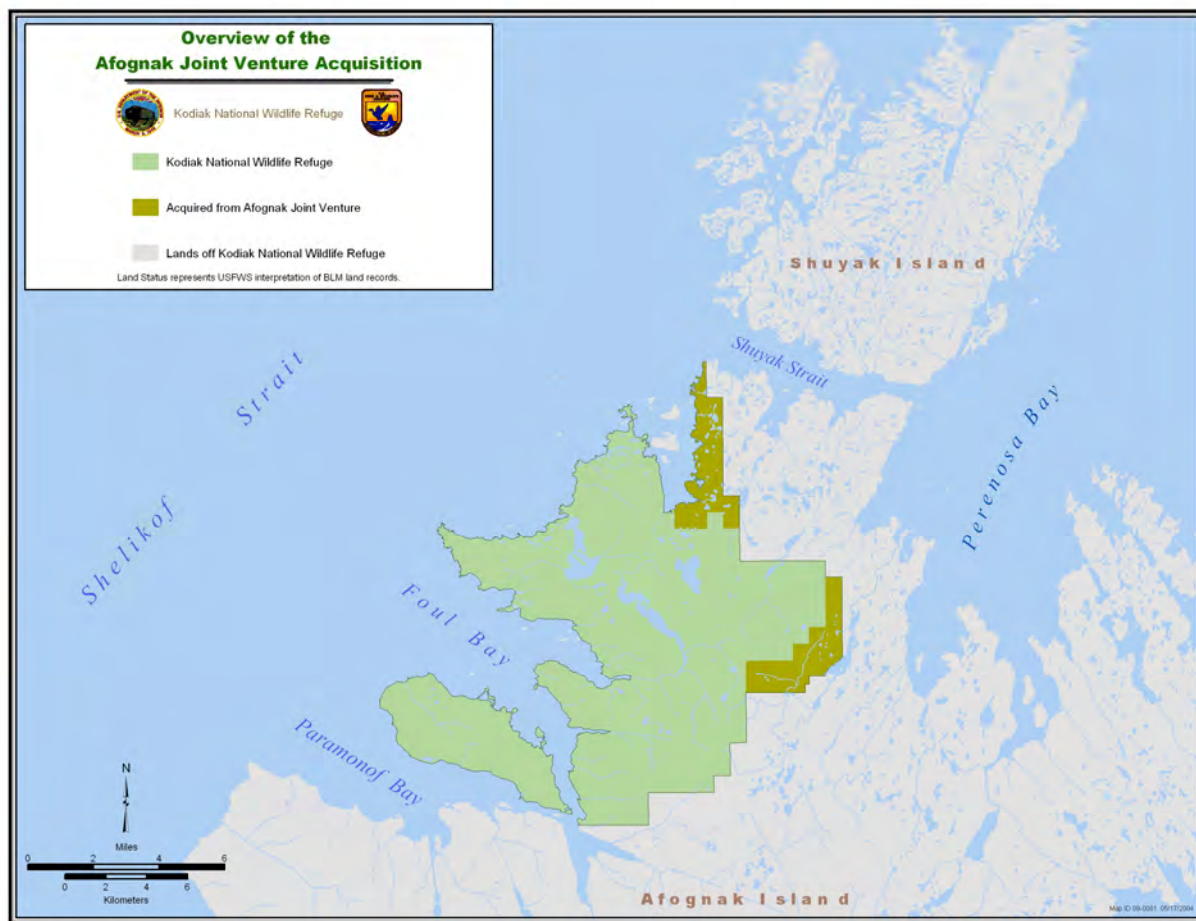


Figure H-4. Overview of acquisition program with Afognak Joint Venture

1.6 Summary of Small-Parcel Conservation Easements with the State of Alaska

These easements are intended to preserve and protect the conservation values of the protected lands in perpetuity. These easements cover small-parcel acquisitions that were acquired by Kodiak Refuge with *Exxon Valdez* Oil Spill (EVOS) restoration funds. This is a summary of the easements; the reader should not assume that all aspects of the easements are discussed here.

1.6.1 Rights of the State of Alaska (Grantee)

The state is entitled to enforce the terms of the restrictive covenants.

Prohibited Uses of the Protected Property

The following uses of the protected property are prohibited *unless* the Service determines the use to be necessary for either Refuge or conservation research, management of the protected property or for conveying information to the public to protect public safety or natural resources:

- Construction of buildings, fixed or improved camping accommodations or mobile homes, fences, billboards or signs (other than those signs for boundary, trespass, direction, or general information)
- Changing of the topography or the removal, destruction, or cutting of trees or plants except for local subsistence or medicinal uses
- The use of biocides except as necessary to control or remove nonnative fish, wildlife, or plants
- The manipulation or alteration of natural water courses, shores, marshes, etc., that affect the water purity on the protected property

At no time is the introduction of nonnative fish, wildlife, or plants allowed. Dumping trash, garbage, or other offensive materials is prohibited at all times.

Other small-parcel acquisitions are discussed in section 3.1.2 in Chapter 3.

Appendix I

Preparers

Preparers of the Kodiak Refuge Draft Revised Comprehensive Conservation Plan

Name	Expertise/Function	Degree(s)	Experience (years)
Refuge Staff			
Samantha Bartling	Recreation Management	BS—Natural Resources Management	2 Refuge Management
Jay Bellinger	Refuge Management	BS—Wildlife Management	33 Refuge Management
Donald (Tony) Chatto	Fisheries Biology	BS—Fisheries and Wildlife Management	27 Fisheries Management
Jean-Marie Epping	Recreation Management	BS—Parks and Recreation Administration BS—Early Childhood Development	21 Recreation Management
Tony Fischbach	Wildlife Biology	BS—Molecular Biology MS—Ecology	4 Marine Mammal Management 1 Wildlife Biology
Tracy Fischbach	Wildlife Biology	BS—Biology (wildlife emphasis)	3 Wildlife Biology 4 Refuge Management
Michael Getman	Refuge Management	BS—Wildlife Management	8 Wildlife Management 21 Refuge Management
Leslie Kerr	Refuge Planning and Management	BLA—Landscape Architecture, Loeb Fellow in Advanced Environmental Studies (Harvard), Fellow (ASLA), Registered Landscape Architect (State of Montana)	31 Planning and Refuge Management
Abbey Kucera	Public Use	BS—Ecology; Land Use Planning MS—Geography	26 Habitat Analysis and Protection
Lecita Monzon	Permits		14 Administrative Technician
James (Butch) Patterson	Public Use	BA—Economics and Art	27 Pilot
Beth Pattinson	Fisheries Biology		8 Fish and Wildlife Biology
William Pyle	Wildlife Biology	BS—Biology MS—Wildlife Science	17 Wildlife Biologist
Robert Stovall	Subsistence, Wildlife	BS—Management Biology	10 Subsistence Biology
Gareth K. VanHatten	Fishery Biologist	MS—Fisheries	20 Fisheries Biology and Management
Greg Wilker	Wildlife Biology, Law Enforcement	AAS—Natural Resources Law Enforcement	14 Bear Research 6 Law Enforcement
Denny Zwiefelhofer	Wildlife Biology (Avian), Endangered Species	BS—Wildlife Management/Biology	28 Wildlife Biology

Appendix I: Preparers

Region 7 Planning Staff			
Stewart Allen	Social Science, Social Analysis, Economic Analysis	BA—Psychology, BA—Journalism, MA—Social Psychology, PhD—Recreation Management	20 Social Aspects of Public Land and Natural Resources Management
Chuck Ardizzzone	Wildlife Biology	BA—pre-Vet Medicine, MS—Terrestrial Ecology, PhD—Wildlife (candidate)	4 Planning 8 Wildlife Management
Rob Campellone	Natural Resources Planning	MS—Forest Resources Management	11 Natural Resources Planning and Management
Helen Clough	Planning, NEPA, Public Use	BA—Anthropology	16 Refuge Planning 6 Public Land Management
Brian Glaspell	Social Science	PhD—Forestry/Wilderness and Recreation Management	10 Social Science Research
Mikel Haase	Planning Team Leader	BA—Environmental Design MS—Forest Resources	27 Natural Resource Planning
Karen L. Lew	Technical Writing and Editing	BA—Humanities	33 Writing and Editing
Karen Murphy	Natural Resource Planning	BS—Wildlife Biology MEnvMgmt—Resource Ecology	15 Wildlife Biology, Restoration Ecology, and Planning
Kenneth W. Rice	NEPA, Policy and ANILCA Compliance	MS—Wildlife Management	32 Resources Management
Region 7 Fisheries and Ecological Services			
Jim Larson	Fisheries Management	BS—Fishery Management MS—Natural Resources	25 Fisheries Biology 6 Refuge Planning
Mary Price	Fisheries Biology and Management	BS—Environmental/Systems Biology	16 Fisheries Biology Management
State of Alaska			
John Crye	Liaison with State of Alaska; ADF&G	AA—Environmental Science BS—Fisheries Management	9 Wildlife Management
Brandon McCutcheon	Liaison with State of Alaska; DNR	BS—Natural Resource Management	8 Resource Management
Brad Palach	Liaison with State of Alaska; ADF&G	BA—Justice	21 Fish and Wildlife Management
Bruce Talbot	Liaison with State of Alaska; DNR	BS—Wildlife Management MS—Natural Resource Planning	23 Planning and Policy

Appendix J

Mailing List

Mailing List

ALASKA STATE GOVERNMENT

Alaska Board of Fisheries
Alaska Board of Game
Alaska Department of Fish & Game
Alaska Department of Natural Resources
Alaska Department of Public Safety
Alaska Department of Transportation and Public Facilities
Alaska Division of Tourism
Alaska State Parks
Bering Straits Coastal Management Program
Division of Governmental Coordination
Office of Environmental Policy & Office of the Governor
State Historic Preservation Office

BIG-GAME GUIDES

A & L Outdoor Adventures
Adams Guiding Service
Classic Hunts
Commodores Guide Service
Cooper Landing Fish Camp
Dodge Outfitters
Exclusive Alaskan Hunts
Fair Chase Hunts
Fejes Guide Service
Highlander Guide Service
Kichatna Guide Service
Kodiak Guides
Kodiak Sports & Tour
Kodiak Treks
Lake Country Lodge
Last Frontier Guiding & Outfit, The
Lazer's Guide Service
Milleur's Guide Service
Mt. Spirit Adventures
Munsey's Bear Camp
Nin Ridge Guides
Outdoor Enterprises
Peterson's Hunting & Fishing
Rohrer's Bear Camp, Inc
Sitkalidak Lodge & Safaris, Inc
Spiridon Bear Camp
Timberline Outfitters
Trident Charters and River Adventures
Ugashik Lakes Lodge
Ultima Thule Outfitters
Wild Alaska Trophy Outfitters

BUSINESS, INDUSTRY

4 W Air
A & M Fisheries
AAA Alaska Outfitter's, Inc
Akhiok Charters
Alaska Adventures Unlimited
Alaska Air Carriers Association

Alaska Angler Publications
Alaska Bush Sports
Alaska Draggers Association
Alaska Drift Boaters
Alaska Fresh Seafoods, Inc.
Alaska Ground Fish Data Bank
Alaska Legal Services
Alaska Oil And Gas Association
Alaska Rainbow Lodge
Alaska Rainbow Unlimited
Alaska Research Company
Alaska Resource Analysts
Alaska Sealife Center
Alaska Trophy Outfitters
Alaska Trophy Safari
Alaska Village Electric Cooperative
Alaska West Air
Alaska Wilderness Expeditions
Alaska Wilderness Outfitting Co.
Alaska Wilderness Recreation & Tourism
Alaska Wildland Adventures
Alaska's Konyag Country
American Wildlands
Amook Island Lodge
Andres Airways, Inc.
ARCO Alaska Inc
ARCO Coal
ARCO, AP-4161
Arctic Engineering
Arctic Treks
Associated General Contractors of Alaska
Ballards Farm
Bear Country
Bechtel Group, Inc
Birch, Horton, Bittner & Cherot
Branham Adventures
Broken Point Fisheries
Cannery at Zachar Bay, The
Capitol Information Group
Chasse et Peche
Chignik Airways, Inc
Chip Cove Fisheries
Conoco, Inc
Cub Air
Cultural Dynamics
Cy's Sporting Goods
Dave Duncan & Sons
Denali View B&B & Raft Adventures
Eagle Adventures
Entrix, Inc
Environmental Audit Incorporated
Equinox Wilderness Expeditions
Eruk's Wilderness Float Tours
Exxon Company USA
Falls Creek Environmental
Fishing Unlimited Lodge
Float Alaska Raft Rentals
Forsi Consulting Group
GCI
Glacier Guides, Inc
H.C. Price Co
Halliburton Geophysical Services

Highlands Holding Company
Highline Air
Hughes, Thorsness, Gantz, Powell
HWW Consultants
Island Adventures
Island Air Service
Jake's Alaska Wilderness Outfitter
Janlynn Corporation
Jim Air
Karluk Lodge
Kempel, Huffman, and Ginder
Kenai Peninsula Tourism
Ketchum Air Service, Inc
King Salmon Sportsmen's Lodge
Kinnetic Laboratories, Inc
Kodiak Adventures
Kodiak Air Service
Kodiak Island Charters
Kodiak Island Convention & Visitor's Bureau
Kodiak Island Hospital
Kodiak Safaris, Inc
Kodiak Treks
Kodiak Western Charters
Koncor Forest Products
KRA Corporation Fish & Wildlife Reference
Lake Becharof Bible Camp
Larsen Bay Lodge, Inc.
Lockhart Construction
Lynx Enterprises, Inc
Many Rivers Alaska Maritime Enterprises
Maritime Helicopters
Meadow Properties, Inc.
Mountaineer Investigations & Security, Inc.
Murphy Oil USA
Mythos Expeditions Kodiak
Natural Resource Conservation
Nature Alaska Tour
New Venture Ltd.
Newhalen Lodge
Northern Alaska Environmental Ctr
Olga Bay Lodge, Inc
Peninsula Airways
Pennzoil Exploration
Phillips Petroleum Co
Plumber & Pipefitters
Point Adventure Lodge
Port Lions Lodge
Rainbow King Lodge, Inc
Resource Analysts
Seabird Fisheries
Seahawk Air
Shadow of the Bear
Shaska Ventures, Inc
Sholiton Enterprises
Siwash Safaris, Inc
SJM Biological
Sky Trekking Alaska
Snug Cove Fisheries, Inc
Sonosky, Chambers, Sachse & Miller
Spirit of Alaska

Sport Fishing Safaris of Alaska
Springer and Associates
Starlite, Inc
Stephan Braund and Associates
Stewart's Fly Shop
Szabo Marine Services
Telonics, Inc
Terragon North Consulting
The Farmers Bank
Tikchik Narrows Lodge
Toklat Photography
True North Adventures
Union Texas Petroleum
Corporation
United Fishermen's Marketing
Association
Unocal Alaska Region
Uyak Bay Fisheries, Inc
VECO Corporation
Washington Fish & Oyster
Company
Wilderness Air
Willard's Farm
Willard's Moose Lodge

COUNCILS, COMMITTEES, COMMISSIONS, BOARDS

Anchorage Fish & Game Advisory
Committee
Bristol Bay Subsistence Advisory
Council
Citizens Advisory Committee
(Kodiak Archipelago
Conservation & Management
Plan)
Intergovernmental Planning
Group(Kodiak Archipelago
Conservation & Management
Plan)
Kodiak Fish & Game Advisory
Committee
Kodiak/Aleutian Island Federal
Subsistence Regional
Advisory Council
Land Resources Committee
Matanuska Valley Fish & Game
Advisory Committee
Middle Nenana River Fish & Game
Advisory Committee
Nevada Division of Wildlife
North Pacific Fishery Management
Council
Northwest Arctic Subsistence
Advisory Council
Southwest Regional Fish & Game
Council
Tennessee Wilderness Action
Council

ELECTED OFFICIALS (BELOW STATE LEVEL)

Akhiok City Council
Aleutians East Borough
Bristol Bay Borough
City and Borough of Sitka
City of Akhiok

City of CLarks Point
City of Craig
City of Kodiak
City of Mekoryuk
City of Ouzinkie
City of Port Heiden
City of Ruby
City of Scammon Bay
Dillingham Police Department
Kenai Borough Coastal District
Kodiak Island Borough
Lake & Peninsula Borough
Larsen Bay City Council
Municipality of Anchorage
North Slope Borough
Old Harbor City Council
Ouzinkie City Council
Port Lions City Council
Southwest Alaska Municipal
Conference

FEDERAL GOVERNMENT

Admiralty National Monument
Alaska Army National Guard
BLM—Division of Realty
Bureau of Indian Affairs
Bureau of Land Management
Chugach National Forest
Elmendorf Natural Resources
Office
Environmental Protection Agency
Federal Aviation Administration
Katmai National Park & Preserve
Kenai Fjords National Park
Minerals Management Service
National Conservation Training
Center
National Marine Fisheries Service
National Park Service
NOAA/National Marine Fisheries
Service
NOAA/NMFS Habitat Protection
Office of the Secretary, DOI
RuralCap
U.S. Arctic Research Commission
U.S. Army Corp of Engineers
U.S. Coast Guard
U.S. Coast Guard Support Center
U.S. Department of Commerce
U.S. Department of The Interior
U.S. Environmental Protection
Agency R-10
U.S. Fish & Wildlife Service
U.S. Forest Service
U.S. Government Printing Office
USGS/EROS Field Office

FOREIGN GOVERNMENTS

Canadian Wildlife Service
Government of the Northwest
Territory
Government of Yukon

LIBRARIES

Akiachak School/Community
Library
Akiak School/Community Library

Alaska State Library
Anchorage Law Library
ARLIS
Carnegie Museum of Natural
History
Holmes Johnson Memorial Library
Ninilchik Community Library
Rasmuson Library
Seattle Public Library
Z.J. Loussac Library

MEDIA

Alaska Angler Publications
Alaska Magazine
Alaska Public Radio Network
Anchorage Daily News
Associated Press
Bristol Bay Times
Fishing & Hunting News
Juneau Empire
KBBI AM 890 Homer
KFSK Public Radio
KIMO 13 News
KJNP Radio
KNBZ Radio
Kodiak Daily Mirror
KSKA Public Radio
KVOK Radio
Petroleum Engineer Magazine
Seattle Times
Seward Phoenix Log
United Press International
WERU-FM
Wolf Magazine

NATIVE (BUSINESS, ASSOCIATION, TRIBAL GOVERNMENT)

Afognak Joint Venture
Akhiok Tribal Council
Alaska Federation of Natives
Allakaket Village Council
Alutiiq Museum
Bristol Bay Native Association
Copper River Native Association
Iliamna Village Council
Karluk IRA Council
Kasigluk Traditional Council
Kodiak Area Native Association
Larsen Bay Tribal Council
Leisnoi Tribal Council/Woody Is
Tribal Council
McGrath Native Village Council
Native Village of Afognak
Native Village of Akhiok
Native Village of Larsen Bay
Native Village of Nunapitchuk (IRA)
Native Village of Old Harbor
Old Harbor Tribal Council
Ouzinkie Tribal Council
Port Lions Traditional Tribal
Council
Ruby Traditional Council
Uganik Trading Company
Village of Quinhagak IRA Council
Woman's Bay Community Council

NATIVE CORPORATIONS (REGIONAL OR VILLAGE)

Afognak Native Corporation
AHTNA Incorporated
Akhiok-Kaguyak, Inc
Akiachak Limited
Aleut Corporation
Anton Larsen Incorporated
AWRTA
Ayakulik, Inc
Becharof Corporation
Chignik Lagoon Native Corporation
Chitina Native Corporation
Chugach Alaska Corporation
Chugachmiut, Inc
Cook Inlet Region, Inc
Dineega Corporation
Doyon Limited
Koniag, Inc.
Kuitsarak, Inc
Kuskokwim Corporation
Kwethluk Incorporated
Natives of Kodiak, Inc
Old Harbor Native Corporation
Ouzinkie Native Corporation
Sealaska Corporation
Shuyak Incorporated
St. Mary's Native Corporation
Tanana Chiefs Conference, Inc
Tozitna Limited
Uyak Incorporated

ORGANIZATION OR ASSOCIATION

Alaska Center for the Environment
Alaska Chapter Wilderness Watch
Alaska Conservation Foundation
Alaska Natural Heritage Program
Alaska Outdoor Council
Alaska Professional Hunters
Association
Alaska Public Lands Information
Center
Alaska Wildlife Alliance
Albemarle Environmental
Association
Alliance for Survival
American Wildlands
Anchorage Audubon Society
Animal Protection Institute
Animal Rights Foundation of
Florida
Annette Island Natural Resource
Center
Appalachian Mountain Club
Big Horn Audubon Society
Biodiversity Legal Foundation
Blue Mountain Audubon Society
Boone & Crockett Club
Bristol Humane Society
CIAA
Congressional Sportsmen's
Foundation
Council for Historic Preservation
Defenders of Wildlife
EarthJustice Legal Defense Fund
East Jersey Trout Unlimited

Environmental Defense Fund
Foundation of Biological Research
Friends in Unity With Nature
Friends of Admiralty Island
Friends of Animals, Inc
Fund for Animals
GA Chapter Safari Club
International
International Association of Fish &
Wildlife Agencies
Izaak Walton League Of America,
Inc.
Knik Canoers and Kayakers
Kodiak Audubon Society
Kodiak Brown Bear Trust
Kodiak Chamber of Commerce
Kodiak Historical Society
Kodiak Island Sportsman
Association
Kodiak Regional Aquaculture
Association.
Kodiak Soil & Water Conservation
Lazzeroni, Inc.
Marshall State Wildlife Area
Massachusetts Audubon Society
N.S.R.A.A.
National Association of
Commercial Photographers
National Audubon Society
National Parks & Conservation
Association
National Rifle Association
National Trappers Association, Inc
National Wildlife Federation
National Wildlife Refuge
Association
Nebraska Audubon Council
Northern SE Regional Aquaculture
Outdoor Writers Association of
America
PCFFA
Penn State Park Service
Resource Development Council for
Alaska
Safari Club International
Safari Club International AZ
Chapter
Safari Club International ID
Chapter
Safari Club International Kansas
City
Safari Club International, Central
WA Chapter
Sierra Club
Society of American Foresters
Southeast Conference
Sportsmen Association
The Fund for Animals
The Humane Society of the United
States
The Izaak Walton League of
America, Inc
The Wilderness Society
The Wildlife Legislative Fund of
America
Trans-Species Unlimited
Trout Unlimited
Trustees For Alaska
United Fishermen of Alaska
URS Corporation

WAYA
Wild River Audubon Society
Wilderness Watch
Wildlife Federation of Alaska
Wildlife Forever
Yellowstone Valley Audubon

SCHOOLS

Alaska Pacific University
Anna Tobeluk Memorial School
Anthony Andrews School
Atka School
Colorado State University
Cordova High School
Envir & Nat Resource Institute
Haines Borough Schools
Houghtaling Elementary
Institute of Arctic Biology
Kodiak Island Borough School
District.
Lake and Peninsula School District
Memorial University
Meshik School
New York Board of Education
NOLS
Quinhagak High School
Sand Point School
Soldotna Elementary School
South High School
Temple University
Tustumena Elementary School
UAA ISER
UAF 4-H Youth Development
University of Alaska Anchorage
University of Alaska Fairbanks
University of Alaska Southeast
University of Copenhagen
University of Idaho
Water Resources Center
Williams College Mystic SeaPort

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Jacob Aga
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Karen Ailor
Tyler Allen
Gene Allison
Alex Ambrosia
Brad Ames
Richard Ames
Deanie Anderson
Floyd Anderson
Jacqui & Lane Anderson
Michael Anderson
Morris Anderson
Nolan Anderson
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Stosh & Claudia Anderson
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Mia Baker	David Capjohn	Sheree Daugherty
Donald Bale	Brad Carlquist	Thomas J. Davan
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Ben Ballenger	Michael and Lisa Carlson	Karry Delaney
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M. Mummert-Crawford
Leonard Mundorf
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Jo Murphy

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Nelle Murray
Chris Myrick
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Bruce W. Nelson
Ruth & J Nelson
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Mr & Mrs Pelech
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Nicholas Pestrikoff
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Gary C. & Stacie S. Peterson
Howard Peterson
Timothy Peterson
William Peterson
William W. Peterson
Frank R. Peterson, Sr.
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Edward Phillips, Sr.

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D. Pingree
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Bill Poland
Jeffery Poor
Gary Porter
Walter Potthast
Mark Powers
Gary Price
Kevin Proescholdt
Chris Provost
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Dennis Randall
M. Louise Randel
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Tyler Randolph
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Pete Raynor
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Brett Reid
Dana Reid
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Bob Reynolds
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Stanton Richardson
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Kurt Rotter
Gary Rozelle
Barbara Rudio
Cheryl Rykacgewski
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Dr. Otis Schleyer
Paul Schmidt
Barbara Schmitt
Gordon Schoepfle
Jody R. Schoonover
Steve Schrof
Susan Schulmeister
Helen Schulz
Max Schwab
Douglas Schwartz

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Arnold Shryock	Garland Teich	Kennan Ward
Dave Shuckman	Steven Thaw	Tim Ward
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Sean Sigler	Jennifer Thiermann	Roland C Warnecke
Becky Sill	John R. Thomas	Robert Weber
Mitch & Judy Simeonoff	Kevin Thomes	William Weidemoyer
Veronica Sims	Dorothy Thompson	Jeff Welch
Donald Sisson	Gary Thompson	Daisy West
Don & Beverly Sitten	Linda Throop	Edward West
Allan Skinner	William Tobin	Pat West
Kelvin Skonberg	Lee Todd	Danny Whatley
Jacob Skretting	Robert S. (Steve) Todd	Marie Car & Joshua White
Jeffrey B. Slaughter	John N. Tolliver	Jack Wick
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Glenn Smeltzer	James Towers	Randall Wilk
Eric Smith	Jeffrey Towner	James K. Wilkens
Stan Smith	Bob Tracey	Donald Williams
Steve Smith	Megan Travis	Henny Wilson
T. Smith	Frank Tretikoff	Charles Winegarden
Joseph H Snyder	Nick & Sally Troxell	Philip Winslow
Don Soileau	Tim Troyer	Mark Withrow
Rebecca Sonchele	Will Troyer	Myrna Wnerth
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Fred Squartsoff	Edward H. Turton	Kenneth J. Wood
Herman Squartsoff	Vicki Twohy	Steven Woodman
John Squartsoff	Alice J. Tysinger	Connie L. Workman
Virginia Squartsoff	Carol Udd	Karen Wuestenfeld
Mike Stacy	Judith Ungermann	Laquita Yatsik
Allen Stasiewski	Henrietta Vaden	M. Yerkes
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The Honorable Ted Stevens	Charlotte Van Winkle	John Young
Doug Stewart	Charles Vandergaw	The Honorable Don Young
Jeffery T. Stewart	L. Vanmeter	Jo Yount
Roland Stickney	Anita Vanronk	John Zabielski
Jewel I. Stogner	Kyle Vansloten	Ken Zafren
Clifford & Bella Stoll	Salvador Vasquez	E. Zahn
Annette Stone	Gale K. Vick	Robert Zeller
Reed Stoops	Paul Vick	Thomas V. Zimmerman, Jr.
Keri A. Stout	Vita	Lori Zirkle
Kathi Strawa	Linda Vrem	Sarah Zurflueth
Debbie Strong	Dale Wagner	Ralph Zusman

Appendix K

Response to Comments

1. Introduction

This appendix summarizes comments received in response to the Draft Kodiak National Wildlife Refuge Comprehensive Conservation Plan Revision (Draft Plan) in writing and provided at public meetings. The first section provides a general overview of the comments. The second section provides responses to substantive comments. Full text of comments and detailed notes from public meetings are available on file at Kodiak Refuge headquarters.

Thirty-four written comments were received: 27 from Alaska and seven from outside Alaska. Agencies and organizations commenting included the State of Alaska, U.S. Environmental Protection Agency (EPA), Kodiak Island Convention and Visitors Bureau, Kodiak Regional Aquaculture Association, Kodiak Unified Bear Subcommittee, Cascadia Wildlands Project, Defenders of Wildlife, National Wildlife Federation, Sierra Club, and The Wilderness Society. Twenty-four individuals, including five guides and two air taxi operators, commented. Public meetings in Kodiak, Anchorage, Port Lions, and Old Harbor were attended by 24 people.

2. Summary of Public Comments

There were numerous positive comments. The State of Alaska commended the Service stating, “We believe this document will become an important benchmark for future collaborative planning processes.” The Wilderness Society said, “We commend the Service for its strong conservation measures overall in the Preferred Alternative.”

2.1 Alternatives

Most comments on alternatives supported Alternative D, the Service’s Preferred Alternative. Many reviewers preferred Alternative D with some change. The Kodiak Regional Aquaculture Association “strongly” supported Alternative A because of salmon rehabilitation for depressed stocks and salmon production supplementation to natural production primarily through accessing underused salmon rearing habitat such as barrier lakes.

Some reviewers supported the reduction in the amount of moderate management while the State commented that “[t]his proposal is not specifically discussed or analyzed.” “The State is concerned that this change could lead to significant restrictions on the commercial fishing industry that uses a portion of the Refuge coastal uplands in support of their activities. Areas that could be affected . . . include the 7 Mile Beach and Spiridon Bay area within Uyak Bay, among other locations.”

2.2 Management of Camping Areas

Some commented that while there may be justification for improved campsites in some areas, these improvements should only be implemented when there is adequate staffing to ensure that they are removed on schedule. One person said he saw no need to prohibit camping close to public cabins or administrative cabins. Another person commented that providing “campgrounds” would invite inexperienced users to attempt an adventure in bear country.

2.3 Public Use Cabin Program

Most expressed support for the public use cabin program. One individual indicated a preference for abolishing the cabins. Sierra Club requested “. . . a moratorium on new cabin construction until Congress reviews potential additions to the Wilderness and Wild and Scenic Rivers Systems.” The State prefers development of the public use cabin system to meet public demand, without establishing limits on the number of cabins allowed. Some reviewers expressed concerns about impacts on bears and other resources. EPA stated that the EIS should identify potential new cabin sites, potential impacts of construction on wildlife, construction methods and mitigation measures to avoid impacts. One individual commented that proposed cabin construction costs were too low and that the Service should charge a higher fee for cabins.

2.4 Protection of Bear Concentration Areas

Protection of bear concentration areas received the greatest number of comments of any topic. Many expressed concern about voluntary guidelines. Most reviewers did not seem to understand that under the preferred alternative, voluntary guidelines could be augmented by regulations if necessary. A typical comment, “Our primary concern is that impact on the bears does not seem to have priority over impact on the public . . . voluntary guidelines for public use in areas of high bear concentration sounds good on paper and will be popular with the public, but voluntary guidelines will only affect those who choose to follow these guidelines and will have no effect whatsoever on those who don’t.”

Some reviewers expressed concern that more information on how bear concentration areas would be managed was not provided in the plan, “This draft has been five years in the writing and yet no definitive management plan other than develop voluntary guidelines.” A couple of people commented that because these areas have received an inordinate amount of attention, re-opening them could prove disastrous for bears and their habitat. Several suggested closing all bear denning areas to snow machine use.

Some provided specific recommendations about management of bear viewing including suggesting areas to open and requesting that we consider modes of access and access points, group size, and increased airplane traffic and flight patterns. “Connecticut Creek, Humpy Cove, 7 Rivers, and O’Malley should be reopened to commercial operators. Lower Dog Salmon should be reopened to use, though it should be restricted to [avoid] commercial aircraft landing in close proximity to the bear’s feeding area, possibly causing unsafe conditions and interfering with feeding bears.”

Some commercial operators commented that visitors should be able to view brown bears on Kodiak Island, not have to travel to other areas such as Katmai. Both air taxi operators supported air taxi bear viewing. A few reviewers recommended closing bear viewing areas to hunting, while another commented, “I believe bear hunters and bear viewers can comfortably co-exist.” Some recommended maximizing the economic value to local residents by using local guides. One reviewer indicated that if additional restrictions are needed, he was generally against restricting commercial operators first over the general public.

2.5 O’Malley Bear Viewing

There were many comments about O’Malley bear viewing. At the Anchorage and Kodiak public meetings, this topic was the focus of much of the discussion and refuge staff were asked many questions about how the preferred alternative would be implemented. Some supported the preferred alternative. Several commented that they saw no need for bear viewing at O’Malley. “To allow wildlife viewers egress and ingress, in and out of sensitive areas on a daily basis, at a critical time of the year, and to allow people to trample natural habitat and plants, to disrupt diurnal rhythms of bears and other animals, are things that blatantly contradicts the very purpose the Kodiak Refuge had been created and managed for over six decades.” “There are other places to view bears outside of Kodiak Refuge.” “As an alternative to allowing bear viewing here, why not encourage, even assist Koniag’s viewing endeavor at the Thumb River area?”

The Sierra Club recommended opening O’Malley to bear viewing under a government-run program similar to the 1992 program but first reopening it on a tentative, experimental basis before committing to a full-fledged program involving long-term concession contracts. An air taxi operator suggested opening O’Malley for some sort of “day use” activities. If aircraft noise is a major concern, consider requiring landing down the lake and using skiff access to the river viewing area. An individual said we do not need intensively managed bear viewing program on Kodiak – preferring a more primitive type of experiences. The Wilderness Society commended the Service for proposing to implement a well thought-out bear viewing program in O’Malley Creek and said, “We believe O’Malley Creek is an excellent location for a well-managed

bear viewing program, and encourage the Service to move ahead with this proposal.”

The Kodiak Island Convention and Visitors Bureau and several guides commented that the Service should look to the private sector first for running bear viewing operations prior to developing agency-run operations. “The Federal Government shouldn’t be providing a service that the private sector is well qualified to provide.” “There seems to be no thought of subsidizing hunting trips on Kodiak.” “Why would the government consider using taxpayer dollars to compete with private industry to offer bear viewing trips for less than market value?”

2.6 Wilderness and Rivers

The State commented that they appreciate “that the Service is not using the CCP revision process to re-evaluate wilderness recommendations under ANILCA 1317(a).” They also commented, “We recognize that the Kodiak Refuge contains wilderness values that must be considered in this planning document, pursuant to ANILCA Section 304(g). The State supports Service management actions that fully consider all refuge values, and that maximize the range of public uses available on the refuge. Since Kodiak Refuge has no formal designated Wilderness, we generally do not support actions that appear to give wilderness values a higher priority to the detriment of other resources, values and uses.”

The Wilderness Society, the Sierra Club, and several individuals requested that the Service identify suitable wilderness lands and provide a range of wilderness recommendations in the alternatives for analysis in the revision process. They commented that lands had been added to the refuge since the original recommendations had been made. Some commented that the original recommendations were “flawed.” The Sierra Club recommended the Service “[r]etain the Special River Management category in the final Revised CCP.”

2.7 Other Comments

There were comments on management of introduced species and their effects on refuge wildlife and habitats. There were comments about fisheries management, including effects to fisheries from public use and introduction of native fish to areas where they have not previously occurred. The Wilderness Society commented at length about motorized and mechanized vehicle use, including recommending that recreation use of snowmachines be prohibited. The National Wildlife Federation urged the Service to include a discussion of climate change in the plan and to include a specific climate change goal in its goals and objectives.

3. Response to Substantive Comments

This section responds to those comments considered substantive. By substantive, we mean comments that point out errors in the document, disagree with our conclusions, or otherwise merit a response. If there was any question on whether a comment merited a response, we provided a response. Comments provided by governments and organizations are so noted.

3.1 Alternatives

Comment 1: Cascadia Wildlands Project commented that the alternatives “do not reflect a reasonable range. They do not each represent a clear management direction or philosophy. It is not clear why management components were arranged among the alternatives the way they were.”

Response: The range of alternatives is relatively narrow because the plan is a revision of an existing plan and focuses on identifying the need for change in management. The planning team clustered the actions proposed in each alternative according to what seemed logical. All alternatives were designed to meet the purposes of Kodiak National Wildlife Refuge, achieve the mission of the National Wildlife Refuge System, and achieve refuge goals. The alternatives were also developed to address the issues identified in section 1.6 of this document.

Comment 2: The Wilderness Society commented that “[t]he draft CCP indicates the Service is moving toward voluntary guidelines for public use of bear concentration areas. All alternatives except the no action alternative include these voluntary guidelines. It is unclear why the Service is moving away from regulations and toward voluntary guidelines in this plan. We do not believe the draft CCP sufficiently clarifies the reasoning behind this management direction, and we would like to see greater clarification.”

Response: All action alternatives provide for beginning with voluntary guidelines, yet retain the option to adopt regulations if necessary. Beginning with voluntary guidelines gives us an opportunity to test management strategies, determine if they will work, and fine-tune our management before we undertake a rule-making process. They also allow us to rapidly respond to changes in circumstances or new information. Regulations could be adopted if voluntary use guidelines are not effective under all of the action alternatives (B, C, and D). Also see the discussion on “Implementing Management of Bear Concentration Areas under the Preferred Alternative (section 2.10.2) and the response to comment number 13 are addition discussion of the rationale for using voluntary guidelines instead of or prior to adopting regulations.

Comment 3: The State of Alaska commented about the reduction in Moderate Management under preferred Alternative D. “Over 30,000

acres of mostly coastal areas are proposed to be changed from Moderate to Minimal Management. This proposal is not specifically discussed or analyzed. We request articulation of the rationale for this change.”

Response: We have modified the proposed reduction in Moderate Management category acreage in the preferred alternative (Alternative D). All areas located on the Refuge’s west coast between Zachar Bay and Viekoda Bay (including Uganik Island) currently managed under the Moderate Management category (Alternative A) have been removed from the lands proposed for Minimal Management in the preferred alternative. This includes the general area used by the set net fishery in this area, excluding the heads of bays.

Seven-mile Beach and the area within Uyak Bay would continue to be proposed for management under the Minimal Management category. These lands include parcels formerly owned by Koniag, Inc. and other private parties. They were reacquired for the Refuge using Exxon Valdez Oil Spill restitution funds. All parcels acquired using this funding source carry a conservation easement which prohibits facility construction and certain other uses and is most consistent with the Minimal Management category.

Similarly, the coastal lands on the south side of the Refuge—from Akhiok eastward and northward to Kiliuda Bay—that were reacquired using Exxon Valdez Oil Spill restitution funds also carry this conservation easement. These reacquired lands include parcels that were conveyed to Akhiok-Kaguyak, Inc. or Old Harbor Native Corporation prior to completion of the 1987 Conservation Plan as well as other parcels that were conveyed subsequent to completion of the Plan, most having been managed under the Moderate Management category prior to conveyance. Other refuge lands along the coastline have been managed under the Moderate Management category since the 1987 Plan was approved. The Refuge is proposing under both Alternatives C and D (the Preferred Alternative) to classify all their lands in this area under the Minimal Management category thus providing for consistent management direction that is consistent with the conservation easement on the reacquired lands.

Comment 4: The State of Alaska requested “. . . an analysis of potential effects [resulting from the reduction in Moderate Management] on community-based economic activities such as mariculture or ecotourism development (trails, caching of rental boats, etc.)”.

Response: We do not see a need to evaluate effects of potential economic activities. As explained above, conditions on conservation (non-development) easements held by the State of Alaska prohibit any development on these acquired lands.

Comment 5: “The State is concerned that this change could lead to significant restrictions on the commercial fishing industry that uses a portion of the Refuge coastal uplands in support of their activities. Areas that could be affected by this action include the 7 Mile Beach and Spiridon Bay area within Uyak Bay, among other locations.”

Response: Revising the Moderate Management zones (as described in comment 4) alleviates this concern, except for Seven Mile Beach, the area within Uyak Bay and areas in the Aliulik Peninsula and Deadman Bay areas. These areas were acquired using Exxon Valdez Oil Spill restitution funds. All parcels acquired using this funding source carry a conservation easement which prohibits any construction. The Minimal Management Category best accommodates these conservation easements.

Comment 6: The State of Alaska commented that “[c]hanging these areas from moderate to minimal management reduces the Refuge’s flexibility to react to changing needs and developments associated with adjacent land and resource managers. In our view, current refuge policy already unnecessarily restricts the ANILCA protected on-shore commercial fishing support activities. The more stringent management regime of minimal management as characterized on page 2-77 may further restrict these activities, even though the shore-based activities may be authorized in both management categories. Without additional analysis and assurances that the change in management categories will not further restrict legitimate, ANILCA protected uses of the uplands, we cannot support this action.”

Response: The Moderate Management Zone has been modified in the Preferred Alternative (Alternative D), as addressed in section 2.1.

3.2 Management of Camping Areas

Comment 7: Several individuals and the Kodiak Island Convention and Visitors Bureau commented on proposed management of camping areas. Comments included:

- Prohibit installation of latrines, electric fences and food storage containers as mitigation techniques for campers. If these are necessary “then there are too many humans in the area and the appropriate response should be to reduce the amount of low priority users and visitors to the refuge. Sport hunting, recreational camping, biking, and hiking are examples of low priority uses.”
- Do not approve of adding electric fences, latrines, and food storage containers. “Camping facilities are unnecessary and compromise the quality of the wilderness.”
- Improving underdeveloped camping areas will benefit the public, but, depending on where they are located, create additional impact on the bears.
- “While there may be justification for improved campsites in some areas, these improvements should only be implemented

when there is adequate staffing to ensure buildings and/or structures are removed on schedule. This has been a problem on the Ayakulik – an otherwise excellent program.”

- Providing campgrounds “would invite inexperienced users to attempt an adventure in bear country.”

Response: The National Wildlife Refuge System Administration Act requires Kodiak Refuge to give priority consideration to six priority wildlife-dependent recreational uses – hunting, fishing, wildlife viewing, wildlife photography, environmental education, and environmental interpretation – if they are determined to be compatible with refuge purposes. (See section 3.3.7 of this document for detailed discussions of these activities.) Compatibility determinations for these activities are found in Appendix E.

Solitude and other wilderness values can be experienced throughout the Refuge. Visitors seeking these experiences need only avoid the seasonal concentrations of activity that coincide with the various salmon runs (see Wilderness Values discussion in section 4.1.3 of this document for a discussion of potential effects on wilderness values). Kodiak Refuge proposes to place temporary electric fences, temporary latrines, and portable bear resistant food containers only when and where use levels warrant, (e.g. the Ayakulik River at Bare Creek and at the nearby refuge administrative campsite.

The protective measures proposed in heavy use areas are not expected to change the number of visitors; rather they would help reduce the effects of visitation. The measures, taken on the Ayakulik with no discernable change in numbers of visitors, will be considered elsewhere to protect bears from becoming food-conditioned and thus more susceptible to defense of life or property kills and to protect the habitat from the effects of visitor behavior including abandoned food and garbage, scattered human waste, and litter, including toilet paper.

Disposal of human waste in concentrated areas of seasonal use also has an impact on archeological sites. Many of today’s high use areas have, in fact, been used for at least 7,500 years. Remnants of prehistoric villages occur in the form of numerous structure depressions and middens. Visitors seek privacy in these depressions, digging “cat holes,” leaving organic waste, and large volumes of litter (cumulatively), e.g., toilet paper.

3.3 Public Use Cabin Program

Comment 8: Three individuals commented that they support the possibility of adding some new public use cabins. One added, “If appropriate, I would like you to consider adding cabins on both Akalura Lake and Red Lake.” New cabins should not be located in sensitive bear habitat.

Response: The Refuge has removed cabins from bear habitat where conflicts occurred and will not consider placing new cabins in such sites. A variety of sites could be considered for placement of cabins (e.g. sites which would provide visitors opportunities to hunt, fish, and view wildlife, but would not interfere with key wildlife areas). Each potential site would go through a rigorous review to determine its appropriateness. Also see responses to other comments in this section..

Comment 9: The Environmental Protection Agency commented that “[t]he EIS should identify potential new cabin sites. Without such information it is not possible to determine the potential impacts of new cabins.” The EIS should also discuss potential impacts of construction on wildlife” and “identify what method would be used to construct new cabins and what mitigation measures would be implemented to avoid impacts on bears and other wildlife populations.”

Response: The Conservation Plan provides direction for, and addresses in general, new and existing cabin sites. The Conservation Plan provides general guidance that will be followed up by several detailed step-down plans (see section 2.2.19) including a public use cabin plan which will describe the cabin site selection process (summarized in section 2.9.2 of this document). Site selection will also be consistent with criteria identified in the compatibility determination for public use cabins in Appendix E. Prior to construction of new public use cabins, relocation of existing public use cabins, or conversion of acquired private cabins to public use, the appropriate level of compliance with the National Environmental Policy Act will be completed. No additions or modifications to the public use cabin program will occur outside that process.

A generic public use cabin site (described under Public Use Cabins discussion in section 3.3.7 of this document) would include a cabin (approximately 12 foot by 20 foot), a small bear-proof meat cache building for temporary storage of food, garbage, and harvested fish and game, and an outhouse. Less than 500 square feet of habitat would be lost or significantly damaged. Cabin sites would not be located in or adjacent to key wildlife areas. We would minimize the impact of cabins on bears by implementing the same construction and public permit conditions as we have used at cabins for the last 20 years. Visitors would be required to read and agree to special conditions on cabin permits. These conditions provide guidelines and requirements for proper storage and removal of food, garbage, human waste, and harvested fish and game. Also see responses to other comments in this section.

Comment 10: The Sierra Club recommended that a moratorium be placed “on new cabins pending Congress’s review of potential additions to the Wilderness and Wild and Scenic Rivers systems. Cabins, by concentrating public use at the cabin sites and surrounding lands, and through the associated use of motorized

access, tend to reduce the quality of wilderness and wild river experiences.”

Response: The record of decision for the original Comprehensive Plan (USFWS 1987) recommended about 1.08 million acres for wilderness designation. This recommendation will remain in effect until Congressional action is taken or the Conservation Plan is amended to modify or remove it.

In Alaska, cabins can be constructed in designated wilderness areas under section 1315(d) of ANILCA. The presence of public use cabins on the refuge does not by itself impair eligibility of the area to be designated wilderness. The effects of cabins on wilderness values are discussed under Wilderness Values in Section 4.1.3 of this document.

New cabins would be added only after consultation with interested citizens, appropriate public involvement, and National Environmental Policy Act analysis. Criteria such as the following would be considered in selecting new cabin sites and/or selection of cabins for addition to the public use cabin program: (1) availability of diverse recreational activities such as hunting, fishing, wildlife viewing, kayaking, and hiking; (2) solitude and isolation from other uses and facilities such as lodges and set net sites; (3) ease of access for users and for maintenance; and (4) prevention of adverse impacts to refuge resources such as wildlife movement corridors and key wildlife use areas. Directions found under Minimal Management would apply to further reduce impacts to refuge resources. Also see other responses to comments in this section.

Comment 11: An individual with over 24 years of building experience on Kodiak, including quite a bit of remote construction, stated that “I think the operating and construction costs are under estimated in your tables.”

Response: Cabin construction costs were based on actual costs from 2000, adjusted for inflation. Estimates include use of refuge vessel and plane for material transport with construction performed by refuge personnel whose labor costs were not included in the total. The \$30,000 figure is an average cost. Cabin location will have a significant effect on costs (e.g., Is the site on the coast or a freshwater lake? How far is it from Kodiak?) Specific site locations for new cabins were not identified in this plan so actual cabin costs can not be precisely determined at this time. The above factors were also used to estimate operating costs.

Comment 12: An individual commented, “I don’t think the Refuge charges an adequate fee for use of cabins to cover operating and construction costs and thus subsidizes users and competes unfairly with private enterprise.”

Response: The daily rental rates for Forest Service cabins in Alaska vary from \$25 to \$45. Refuge cabins are similar in size to those in nearby Afognak State Park which are rented at \$35 per night. One

difference is that firewood and cooking utensils are provided with Afognak State Park cabins, but not with refuge cabins. Based on this comparison, refuge fees are comparable to cabins rented by other agencies. The last cabin fee increase occurred on January 1, 2000 when the fee was increased from \$20 per night to \$30 per night during the peak seasons of spring, summer, and fall.

3.4 Protection of Bear Concentration Areas

Comment 13: Several individuals and the Cascadia Wildlands Project expressed concern that voluntary guidelines would not work and were not sufficient to protect bears.

***Response:** We believe that the management process and use of voluntary guidelines proposed for protection of areas where bears concentrate on streams are reasonable and sufficient. The proposed process, detailed in section 2.10.2 of this document, would encourage continued public input, test voluntary guidelines to evaluate operational adequacy, and provide a means for correcting problems, should any arise, either through modification of guidelines or establishment of regulations.*

Proposed use of voluntary guidelines is consistent with recommendations of the Bear Plan (ADF&G 2002). In particular, recommendation number 188 advised the Refuge to use the minimum management tool required to ensure protection of bears and the public who use bear concentration areas.

Our experience indicates that voluntary guidelines can work when properly considered, advertised, and implemented, such as they have at Frazer Fish Pass, where bear viewing has occurred on Kodiak Island over the last 20 years. More recently voluntary guidelines have been effectively used to manage perceived crowding on the Ayakulik River during the chinook fishery. Federal and state managers must continue to monitor compliance and effectiveness of voluntary guidelines. If compliance problems develop despite our best efforts, managers are in a much better position to seek a permanent regulation because they have demonstrated that less restrictive measures have not worked.

Finally, we expect full compliance with guidelines by commercial operators because guidelines would be mandated as a condition of their permits to use the Refuge. These commercial operators are also among the Refuge's best ambassadors by modeling appropriate behavior and thus encouraging unguided users to comply with voluntary guidelines.

Also see response to comment 2 in section 3.1.1 of this appendix.

3.5 O'Malley Bear Viewing

Comment 14: Two individuals expressed doubts about the plan's estimates of demand for bear viewing opportunities. One of the

individuals noted that refuge records reported in the Draft Plan show a 25 percent decrease in wildlife viewing visits to the Refuge since 2000. Both individuals suggested that there is no established or pressing need to open O'Malley River for a bear viewing program at this time.

Response: The estimates of wildlife viewing visitor numbers printed in chapter three of the Draft Plan may appear to suggest that participation in wildlife viewing is flat or declining; however, these numbers are not appropriate estimators of demand for bear viewing opportunities. Wildlife viewing is a notoriously difficult activity to track because visitors often engage in viewing in combination with other activities such as fishing. Refuge estimates of wildlife viewing use only include visitors whose primary activity is viewing; the estimates do not capture viewing use that may occur in conjunction with some other primary activity. In addition, participation in bear-viewing on the Refuge may currently be constrained by the seasonal access closures at O'Malley River and other areas. In written comments on the Draft Plan, one Kodiak air taxi operator noted:

*The reason Kodiak [bear-viewing] use is not growing is **not** because more of the public does not want to see Kodiak bears on Kodiak Island (emphasis added). ...[O]perators choose Katmai Park over Kodiak because if there are no bears in our first choice of landing spots...we don't have to tell our clients, 'Sorry, we can't show you any bears today because all other areas on Kodiak Island are closed to commercial use (in the case of O'Malley, any access).'*

As the preceding quotation suggests, there is substantial and growing demand for bear viewing opportunities, despite refuge estimates that seem to suggest flat or declining participation. An assessment conducted by USFWS staff in 2002 (Allen and Collins 2002) concluded definitively that there is sufficient demand to re-open O'Malley River for a structured bear-viewing opportunity. That conclusion is now supported by more recently published findings at both the national and regional levels. The National Survey of Fishing, Hunting, and Wildlife Associated Recreation, conducted every five years since 1955, showed that wildlife viewing was the fastest growing form of wildlife-associated recreation in the country in 2001 (study results were issued in October 2002). In the Alaska Board of Game's Bear Conservation and Management Policy published in 2004 (2004-147-BOG), the Board states: "Public interest in bears has increased dramatically in Alaska during the past decade...The interest exceeds the opportunities provided now by such established and controlled sites as McNeil River, Pack Creek, Anan Creek, Wolverine Creek and Brooks Camp" (p.3). Finally, the same air taxi operator quoted above also noted in written comments that bear viewing has grown from less than one percent of business 12 years ago, "...to over 20% of our gross revenue this past [2004] season."

Comment 15: The same two individuals expressed concern about a potential government-run viewing program at O'Malley River competing with private industry. One of the individuals cited Office of Management and Budget (OMB) Circular A-76 to support the argument against a government run viewing program. The other individual suggested that government provision of a bear viewing program is "clearly outside the scope of the Refuge mission" and that such a program would amount to an unfair subsidy for bear viewing.

Response: *OMB Circular A-76 is a Federal government directive that establishes policy and procedures for determining whether commercial activities should be performed by private entities or in-house by the government. The circular states that the government "shall not carry on any activity to provide a commercial product or service if the product or service can be procured more economically from a commercial source." At O'Malley River, it is not clear that a commercial source could provide the same bear viewing opportunity that the Refuge could, nor is it clear that a private commercial viewing program would be more economical than a government-run program.*

In bear viewing and similar recreation activities, the "product" that people purchase is a particular combination of physical, biological, and social setting elements combined with management inputs. At O'Malley River, most of the important setting elements (physical landscape, bears, use regulations, and law enforcement to keep it all in place) would continue to be protected and provided by the Refuge, regardless of who runs a viewing program. However, the public face of industry and government-run programs would differ substantially: Under a private industry scenario, bear viewing guides and interpreters would be private company employees while under a government-run scenario, uniformed refuge employees would guide and supervise visitor use. In this way, government and industry viewing products would be quite different and not necessarily substitutable for one another. In their inventory and analysis of Alaska bear-viewing opportunities, Allen and Collins (2002) noted that, while there are several existing and planned commercial viewing programs on Kodiak Island, there are no government-run programs available.

Even if private industry could provide the kind of viewing opportunity that is currently unavailable on Kodiak Refuge, it is not clear that a commercial program would be more economical to administer than an in-house (government run) program. As noted previously, core resource management and law enforcement activities associated with re-opening O'Malley River would be conducted by the Refuge, regardless of who runs the viewing program. Some of these activities might reasonably be conducted as collateral duty by refuge employees working as guides and interpreters at a government-run viewing program. On the other hand, any cost savings associated with having private industry run a viewing program would likely be offset by the need to maintain

refuge biological monitoring and law enforcement presence at O'Malley River, and by the cost of administering a bid and permit system for selecting one or more private bear-viewing contractors.

Due to uncertainties regarding the exact nature of the viewing product desired by visitors and the relative costs of administering commercial and government-run viewing programs, the O'Malley viewing program under the preferred alternative (Alternative D) would combine refuge-supervised use with commercially-guided use. See Commercial Wildlife Viewing in section 2.10.2 of this document for a description of the proposed combined program.

With respect to the concern about an unfair bear-viewing subsidy, Kodiak Refuge supports both bear hunting and viewing activities and related visitor services through biological, law enforcement, and permit programs that protect bears and their habitats. Visitor services, whether they are provided by the Refuge or by private industry, do not fully recoup the cost of managing the resources they depend on, and they are neither expected nor required to do so.

Comment 16: An individual asked as an alternative to allowing bear viewing at O'Malley, “. . . why not encourage, even assist Koniag's viewing endeavor at the Thumb River area?”

Response: We do not consider the Thumb area as a viable substitute for the bear viewing program proposed at O'Malley River. In contrast to the proposed O'Malley program, Koniag, Inc. controls all public access and usage of the Thumb area. Additionally, the level of bear use at Thumb is lower and less prolonged than use at O'Malley. In conclusion, we believe that dual operation of Thumb and O'Malley viewing programs would provide the public with a greater range of options for acquiring a quality viewing experience.

The Refuge has a long tradition of working with Koniag on its bear viewing program at Thumb River. A primary guide who operated their program in the 1990s was initially trained in the refuge-run bear viewing program at O'Malley River. Most of the successful operational standards implemented in the O'Malley program were later instituted by Koniag in its Thumb program. As required by provisions of the Koniag Conservation Easement Agreement in 2002, the Refuge and Koniag officials have periodically consulted regarding re-establishment and operation of their viewing program at Thumb River.

Comment 17: An individual expressed concern that bears routinely subjected to viewing become habituated to human presence and the same bears also figure into the same population that is open to sport hunting.

Response: Please refer to our extended discussion of viewing and hunting relationships under Bear Viewing in section 3.2.3 and under Brown Bear Populations in section 4.1.2 of this document. In sum, we believe that vulnerability of neutrally habituated bears to harvest

currently is low and will remain low in the future despite a forecasted increase in bear viewing activity on the Refuge. Reasons follow. Though the number of places used for bear viewing would increase, viewing activity would have limited influence on bears. Relatively few animals would habituate to routine, non-threatening human activity because it would be restricted to an access trail, viewing site, and small part of a concentration area. Duration of the use at most of these areas is also limited to a matter of a few weeks based on the timing of the various salmon runs. Selection of new viewing sites would be limited to sites which provided good opportunities to view bear family groups and subadults. Because these sites would not include areas normally frequented by adult males, disturbance or habituation of this population segment would be minimized.

Due to limited human activity, scope of habituation would be limited to relatively few bear groups that routinely encountered people. Bear groups most likely to become habituated would include females accompanied by cubs (protected from harvest by regulation), and subadults (whose small size makes them less attractive as trophy animals). Other factors contributing to survival of adult females would include continued conservative harvest quota and hunter emphasis on selection of adult males for harvest. Finally, we believe that habituated bears probably face increased risk of hunter harvest only if they encounter hunters near the habituation site during the hunting season. Because of shifting habitat use it is unlikely that bears habituated by summer viewing operations would use these same places during fall and spring hunting seasons. We would therefore expect them to react as any non-habituated bear would—to flee upon first detection of human presence. Should on-going monitoring of bear harvest indicate that a hunter harvested a habituated bear, we would consider the need to impose harvest risk-reduction measures detailed by Barnes and Wilker (2000).

3.6 Wilderness

Comment 18: The Wilderness Society and other respondents requested that the Service identify suitable lands and make a range of wilderness recommendations within the alternatives in the CCP revision process. The Wilderness Society stated that “both existing and potential future designated wilderness is a resource and a value of the refuges which must be addressed. The Service’s laws and policies require that wilderness reviews be conducted as part of the CCP process. . . . Further, under the Wilderness Values section of the draft CCP, there is discussion of 175,000 acres that have been acquired by the Service and added to the Kodiak National Wildlife Refuge since the initial planning cycle in the 1980’s (p 3-114).” An individual commented that the wilderness recommendations “made in 1987 are badly flawed in the sense that some unique, Wildlands vital to bears, ecosystem, and wilderness management” have been excluded: “Alilulik Peninsula, the area south of Olga Bay, the area west of Red River flats, the area south of Seven Mile Beach, Little

River Peninsula and Uganik Island.” Explain why these lands were not included.

Response: Sections 1.6 (Table 1-1) and 2.5 of the plan include our rationale for not conducting wilderness reviews. After a thorough review of the planning requirements in Sec. 304(g) of ANILCA and the Refuge System planning policy, we determined that until the wilderness review policy was complete we would best meet the ANILCA requirements by identifying the special values of the refuge and clearer direction for how the refuge will be administered to protect these values without conducting a wilderness review.

Comment 19: The Wilderness Society commented, the Draft CCP also states that “[c]urrent and proposed management direction provides adequate protection for all wilderness values (p.2-109). However, we do not fully agree with this statement. In reviewing the minimal and wilderness management categories in the management template (pgs. 2-83 to 2-105), it is clear that the management direction for the activities listed below is more restrictive in wilderness than it is in minimal management.” Activities mentioned included Aquatic Habitat Modifications, Helicopters, Radio Repeater Sites, Geophysical Exploration and Seismic Studies, Core Sampling, and Other Geophysical Studies. They are concerned “. . . particularly in light of the fact that wilderness is not being reviewed in this planning cycle, no wilderness recommendations are being made, and there is no designated wilderness on the Refuge.”

*Response: Although this plan does not include any additional wilderness recommendations, the 1.08 million acre recommendation from the 1987 Conservation Plan will remain as the Service’s recommendation for Kodiak Refuge. As such, these lands (as well as most other refuge lands) would be included in the Minimal Management category. Regional Service policy (per Section 1317 of ANILCA) is to **not** manage lands recommended for wilderness designation as Wilderness unless and until Congress takes action on the proposal. As the Minimal Management category “is designed to maintain the natural environment with very little evidence of human-caused change,” there is little potential for impacts to wilderness values should any of the activities identified be proposed and authorized. In addition to being under Minimal Management, before these activities could be authorized, site-specific NEPA analysis would be required, identifying any potential impacts to wilderness values.*

Comment 20: “The State questions the applicability in Alaska of the primitive recreation description that states ‘Primitive recreation is nonmotorized . . .’ ANILCA recognized the unique conditions in Alaska, and provided for the continuation of motorized use within all CSUs in Alaska, including wilderness. We suggest striking ‘nonmotorized’ from the primitive recreation description.”

Response: This comment confuses a discussion of wilderness values with management direction found elsewhere in the document. Section 102 of ANILCA clearly states that “The terms ‘wilderness’ and ‘National Wilderness Preservation System’ have the same meaning as when used in the Wilderness Act”. The meaning of “primitive recreation” is clear in the history and purposes of the Wilderness Act, and in the Act’s explicit general prohibition on the use of motor vehicles and motorized equipment. ANILCA allows for continued use of specific types of motor vehicles for traditional activities, and motorized surface transportation traditionally used for subsistence. The Wilderness Act allows for the continued use of aircraft and motorboats in Wilderness areas where those uses had previously become established. However, these legislative special provisions do not change the meaning of primitive recreation provided in the Wilderness Act for the purposes of describing wilderness values. In order to address the apparent confusion we have revised the discussion to recognize the nonconforming uses provided for in ANILCA.

3.7 Rivers and Other Waters

Comment 21: Federal Jurisdiction over Waters within the Refuge: The State of Alaska disputes the Service’s contention that waters within pre-Statehood withdrawals were always reserved for the Federal government at the time of statehood. They commented, “We appreciate the footnote on page 1-14 [of the Draft Plan] that recognizes this legal dispute. We request similar clarifications in other portions of the [Draft] plan (pages 2-37, 2-40, and 3-1) that report on these assertions.”

Response: The Service recognizes the position of the State of Alaska regarding this issue. However, the federal position on jurisdiction of waters within Kodiak Refuge (all of which were within pre-statehood conservation withdrawals) is that the United States owns the large majority of submerged lands beneath navigable and nonnavigable waters within the boundary of the Refuge. Language discussing this issue has been changed to reflect the federal position, which includes the results of the 2005 Glacier Bay Supreme Court decision..

Comment 22: Several conservation organizations and individuals asked, “Why no review or consideration of potential wild and scenic river designation?” The Sierra Club commented, “Eliminating consideration of six refuge rivers for potential inclusion in the Wild and Scenic Rivers System is contrary to the requirements of the Wild and Scenic Rivers Act. The Act requires federal land management agencies, as they initiate or revise land management plans, to evaluate the rivers under their jurisdiction for eligibility as potential additions to the Wild and Scenic Rivers System. Rivers found to be eligible (qualified under the criteria of the Act) must be identified as such in the plans, whether or not the agencies recommend any of the eligible rivers as suitable for addition to the System.”

Response: Sections 1.6 (Table 1-1) and 2.5 of the plan include our rationale for not conducting wild and scenic river reviews. After a thorough review of Section 304(g) of ANILCA planning requirements and Refuge System planning policy we determined that we would best meet the ANILCA requirements by identifying the special values of the refuge without conducting a wild and scenic rivers review. The Service is not pursuing formal wild and scenic river eligibility study of rivers beyond those identified in Section 604 of ANILCA, none of which are located on Kodiak refuge.

Comment 23: The Sierra Club recommended that we “retain the Special River Management category in the final Revised CCP.” They also suggested we “[d]esignate the Karluk, Sturgeon, Dog Salmon, Ayakulik, Spiridon and Uganik rivers as Rivers with Exceptional Values to be protected under the Special River Management prescriptions as set forth in Table 2[-4]. Revise the base budget and staffing needs to account for the additional staff and funds needed to prepare six river management plans.” They provided several comments about the Special River Management category.

“In justifying the purging of the category, the Draft Revised CCP (Draft) claims that ‘This category varies only slightly in management direction from the Minimal Management category.’ (2-114). This claim is not supported by Table 2, which compares the differences between the two categories as each is applied to various refuge uses. (2-115). In every instance, Special River Management offers more security for outstandingly remarkable rivers and adjacent riparian lands than does Minimal Management. Under the latter category, five of the six uses are ‘permitted’ while one ‘may be permitted’ if compatible (hydroelectric projects). Under Special River Management, four of the six uses ‘may be permitted,’ one is ‘not permitted’ (hydroelectric projects), and one is ‘permitted.’ (2-114). There is a vital difference between ‘permitted’ and ‘may be permitted.’ The latter provides the agency with authority to deny use temporarily or permanently if necessary to safeguard critically important habitats or other important river and riparian values; the former drops this administrative discretion, unnecessarily making it more difficult for the Refuge to afford the rivers and riparian areas the protection they deserve . . . the Refuge confesses that in the 17 years since the 1987 CCP went into effect, no river management plans have been completed and no river boundaries established. (2-114). Were any plans begun, and if so, why have they not been completed?”

Response: Elimination of the Special River Management category does not remove the potential for development of river management plans for the Karluk, Sturgeon, Ayakulik, and Dog Salmon rivers (or other refuge rivers) if it is determined that such plans are necessary to protect the values of these rivers. Should plans be developed, any modifications to the current management direction for these areas would be made as a part of the river management planning process. Studies were undertaken in the early to mid 90s to determine whether

any river management plans were needed; it was determined that none were needed at that time.

3.8 Introduced species

Comment 24: The State of Alaska commented that they “understand that, unlike most refuges in Alaska, the Kodiak Refuge contains an unusually high number of intentionally introduced species, and that some of these introduced species could cause undesirable impacts.” They expressed concern “that part of the plan appears to over-emphasize possible impacts without sufficient documentation or the recognition that some species are now considered an integral part of the Refuge fauna (see pages 3-29 and 30). For example, while Sitka black-tailed deer are a non-native species introduced to the Kodiak Archipelago approximately 80 years ago [in 1924] prior to the creation of the Refuge, they have adapted well, become widespread and are now an integral part of the recreational and subsistence values of the area.”

Response: Note revisions to discussion of Invasive Plants and Influence of Introduce Fauna in section 3.2.1 of this document.

3.9 Fisheries

Comment 25: An individual expressed concern that recreational fishing will greatly increase within the Refuge and cause negative impacts. “Negative impacts on streambeds due to increased travel could be harmful to redds (steelhead in particular, due to their preference of riffle areas with small gravel substrate) where a majority of fishing and stream crossing occurs. Negative impacts to cut banks due to increased bank travel as well could be detrimental to juvenile populations of all species. Deterioration of cut banks could also reduce resting areas for mature fish and make them more susceptible to depredation by birds of prey and bears.”

Response: While it is true that increasing the number of people visiting certain limited areas could affect habitat, State and Federal managers are employing a number of strategies to keep this from happening. For example, on the Karluk River a permit system was established per the conservation easement with Koniag, Inc. which helps us manage this fishery and any related impacts on habitat. A registration permit is now required year-round to help the refuge monitor use. During the peak of the chinook salmon season, use is capped at 70 anglers per day. Additional monitoring is also required to ensure this level of use can be sustained and to consider potential mitigation methods if required. A visitor satisfaction survey has also been conducted over a several year period and satisfaction with the fishery is reported as high.

Similarly, on the Ayakulik River during the chinook season, refuge and state managers working in concert with a stakeholder group chartered by the local fish and game advisory committee have implemented a number of voluntary guidelines to minimize impacts.

These voluntary guidelines include no camping zones at several popular fishing holes, as well as group size and length of stay recommendations. State and federal managers collaborated on a two year survey and creel census to document public reaction to the voluntary guidelines and get ideas about user preferences as to management strategies. For now the voluntary guidelines are achieving the desired result and visitor satisfaction is high. Monitoring continues at a reduced level. If and when these types of actions are no longer effective, state and federal managers will be in an excellent position to jointly seek regulations making the appropriate guidelines permanent.

It is also fortunate that the timing and location of the various angling “hot spots” within the Refuge keep any one system from being used continuously. This allows the habitat to recover.

Comment 26: The State of Alaska commented, “The CCP does not address the rationale for the change relating to species introductions as described on page 2-118, Table 2-5, Fish and Wildlife species introduction. The State does not object to eliminating the option to introduce species from outside the refuge (native species from elsewhere in North America), however we believe the new, more restrictive policy represented on this page goes too far. Specifically, we object to new management direction that would no longer allow the introduction of locally native fish species (native to the refuge) where it could be biologically justified in accordance with NEPA and a compatibility determination. We base our view on Section 304(e) of ANILCA, which states that fishery enhancement is an allowable management practice where compatible and in accord with sound fisheries management principles, and with similar direction under Section 5(4) of the Refuge Improvement Act. Limiting such localized introductions removes the flexibility of the Service and the State to consider enhancement projects, which could be highly successful in the development of fisheries resources such as the Frazer, Spiridon and Hidden Lake projects. We therefore request the final plan allow for consideration of the introduction of locally native fish species if such an introduction meets all state and Service criteria for scientific acceptability.”

Response: *Table 2-5 has been revised to better reflect the differences between current and proposed management related to introduction/reintroduction of fish and wildlife species and better reflects current scientific understanding of population genetics. See response to comment 27.*

Comment 27: The State also commented, “We also note that the language on page 2-118, Table 2-5, Fish and Wildlife species introductions [of the Draft Plan], is more restrictive than the narrative management direction on page 2-60 for Fisheries Enhancement. The first paragraph on page 2-60 would allow enhancement projects, including the stocking of barren lakes, access to barren spawning areas and the construction of hatcheries and other

enhancement actions. The proposed management alternatives in B, C, and D would prohibit those activities. Based on the rationale in the above paragraph, we request the Table on page 2-118 reflect the management approach on page 2-60.”

Response: Table 2-5 has been modified to clarify management direction changes related to introduction of fish and wildlife species. Introduction of native fish species within a refuge drainage into areas where they have not occurred historically may now be allowed in Minimal Management areas, not just under Moderate Management. If populations are reduced or threatened, introductions may be allowed based on site-specific NEPA analysis and a determination that the action is compatible.

3.10 Motorized and Mechanized Activities

Comment 28: The Wilderness Society commented, “It is unclear to us from the Draft CCP whether the Service is proposing to allow snowmachines and other motorized travel for traditional activities only, as is authorized by Section 1110(a) of ANILCA, or if they will be allowed for recreational activities as well. We strongly encourage the Service to prohibit recreational use of snowmachines and ORVs within the Refuges. The Service must clarify specifically what types of motorized use are being allowed on the refuges and for what purposes. In doing so, it should prohibit recreational use of snowmachines and ORVs.”

Response: With the exception of allowed uses as specified in sections 811 and 1110 of ANILCA (see section 2.2.13), off-road/all-terrain vehicle use “may be allowed” only on designated routes or areas or by special use permit (43 CFR 36.11(g)(1)) in a very small percentage of the refuge (that area designated as Moderate Management). No routes or areas of the Refuge have been designated for such use and no special use permits have been issued to date which authorize such use.

Snowmachine use, as authorized by ANILCA in 1980, would be allowed to continue. Under current management, the entire Refuge is open to snowmachine use during periods of adequate snow cover. With the exception of a proposed closure in the Den Mountain area to protect denning bears, the Refuge will remain open to snowmachine use. Current and projected use of snowmachines within the Refuge does not demonstrate the need for additional regulations at this time, but should use increase to levels thought to be detrimental to refuge resources, measures to further regulate snowmachine use would be initiated. For additional discussion see the final compatibility determination for snowmachine use (Appendix E).

Comment 29: The Wilderness Society commented, “Until the Service defines traditional activities, the agency must clarify that snowmachine and powerboat use is allowed on the Refuges for traditional activities as authorized under ANILCA Title XI or for

subsistence as authorized under ANILCA Title VIII. The rulemaking process for defining traditional activities adopted for snowmachine use in the Old Park of Denali must be followed by all Alaska federal land managing agencies, including the U.S. Fish and Wildlife Service. The Draft CCP deviates from this planned approach. We believe that the Service should not authorize recreational snowmachine or powerboat use, as is done in the DEIS, until the Service defines traditional activities for the Refuges in a separate rulemaking process.” The Defenders of Wildlife provided similar comments.

Response: The proposed plan would restrict snowmachine use in the one area of the Refuge where it could result in unacceptable adverse effects. Title XI of ANILCA allows snowmachines for traditional activities. Compatible public recreational activities are allowed on Alaska refuges under 50 CFR 36.31(a). We have not defined traditional as it applies to this refuge, however we have found snowmachine use to be a compatible use at current levels (see Appendix E).

Comment 30: The Wilderness Society is “concerned that the Service is not taking steps to appropriately limit motorized access for authorized traditional activities. The Draft CCP indicates that in the Preferred Alternative, the landing of airplanes and the use of snowmachines and motorized boats would not be restricted except for some specific seasonal closures (p. 2-145). We question this blanket, open approach. Rather than simply allow unlimited motorized access throughout the refuge, the Service should carefully limit or phase out certain uses, where appropriate, of motorized access in the Refuges. At an absolute minimum, the traditional motorized modes allowed shall be subject to reasonable regulations designed to protect the natural and other values of the refuge. Further, the compatibility standard must be applied to all transportation activities.

“Additionally, where appropriate, the USFWS should consider limitations or the phasing out of certain uses, not simply allowing motorized access throughout the Refuges. The traditional motorized modes allowed under Section 1110 of ANILCA should not exceed the levels that existed at the time ANILCA was passed. This limitation is stated very clearly in the legislative history:

“Even in wilderness, access by airplane and motorized boat may be permitted at existing levels of intensity. (Sen. Rep. No. 96-413 p. 247)”

The Defenders of Wildlife commented they recognize “the need for air taxis to access remote areas within the refuge. We commend the Service decisions to eliminate helicopter air taxis and seasonally restrict access to ecologically sensitive areas. We are concerned however with the maintenance of the status quo in allowing unrestricted numbers of trips, recreation clients, and numbers of air

taxi operators. With a predicted visitor volume increase of 20-30 percent over the 15-year life of the plan, Defenders feels it is irresponsible to continue this myopic policy. While promoting greater public access is important, the “wildlife first” Service mandate needs to take precedence. The Service should evaluate where the responsible threshold for air taxi volume lies to ensure this use remains compatible with the refuge mission and goals. Prevention of invasive species transfer should also be examined. An evaluation coupled with a proactive, forward looking management plan is the appropriate course of action for this use.”

Response: Current and projected use of airplanes and motorboats within the Refuge does not demonstrate the need to regulate their use at this time (see section 3.3.7 of this document). The Refuge would follow the regulatory process, as described in 50 CFR 36.42, if use increased to levels that we thought would be detrimental to resource values of the Refuge.

Inventories and monitoring for invasive species are recommended in this plan (see Objectives 1.4, 1.5, and 6.1, as well as discussions under section 2.2.10 [Weed Control] and section 3.2.3 [Invasive Plants and Invertebrates]). A plan of action will be developed immediately upon confirmation that an invasive species is present on the Refuge.

Comment 31: The Defenders of Wildlife “applauds the Service’s proposed closure of Den Mountain but feels the Service has not gone far enough. . . . The DEIS says that denning bears are most susceptible to snowmobile disturbance. Snowmobile use by just one individual could cause bears to abandon dens and newborn cubs incapable of travel (Jonkel 1980). Defender’s feels this is an avoidable and highly undesirable consequence of snowmobile use. Given President Roosevelt’s designation of Kodiak Refuge ‘to protect the natural feeding and breeding ranges of the brown bears and other wildlife’ the issue of bear disturbance is of paramount importance in maintaining this charter.”

The Wilderness Society “strongly supports the goal of developing baseline information and understanding of snowmachine use on the Refuge. . . . should be done prior to opening any bear den concentration areas to snowmachine activities. Under the current plan, two areas are closed to snowmachine use due to bear denning activity -- Baumann Creek (2,240 acres) and Den Mountain (2,820 acres). However, the Preferred Alternative closes only the latter of these areas -- Den Mountain. Thus, the Service intends to open a potentially sensitive bear denning area to snowmachine use without prior understanding . . . of the potential levels of use. This appears to be an arbitrary decision, and thus we cannot support it. Given the potential sensitivity of denning brown bears to snowmachine use, it seems prudent for the Service to better understand the levels of use on the Refuge prior to opening Baumann Creek to snowmachines. Further, the explanation given for why the Service intends to open

Baumann Creek area to snowmachine use is that Baumann Creek is, 'less accessible to snowmachine use. However, snowmachine tracks have been observed entering the Refuge near Viekoda River and traversing parts of Baumann Creek' (p. 4-8). This is of concern to us because every year bigger, better snowmachines are built that penetrate faster and farther into wild areas that previously had been off limits to these machines. We do not believe the Service has adequately assessed the risks involved with this decision, and, . . . strongly encourage the Service to maintain this closure, at a minimum until the Service has a better understanding of levels of snowmachine use on the Refuge. Finally, it is unclear from the Draft CCP if the Den Mountain area will be closed by regulation or by voluntary guideline only (p. 2-145, 146). The Service needs to clarify this in the Record of Decision (ROD). We strongly urge the Service to close the Den Mountain area by regulation, not voluntary guideline."

The Environmental Protection Agency commented, "While the EIS states that accessibility to the Baumann Creek area is limited due to its physical setting, it also states that snowmachine tracks have been observed in the area. Bears are most vulnerable to disturbance in winter. As stated in the EIS, even a single event of disturbance by a snowmachine could cause abandonment of dens. The EIS should discuss potential impacts of snowmachine use in bear denning areas including the Baumann Creek area and identify mitigation measures as necessary."

Response: The entire Refuge is, and has been since 1980, open to snowmachine use when adequate snow cover is present. The two denning areas described in Alternative A have yet to be closed through regulation. In general, frequently inadequate snow cover limits snowmachine usage and access on Kodiak Island, including access to and on the Refuge.

The Refuge carefully evaluated management needs regarding protection of denning Kodiak bears. We reviewed results of denning studies and consulted extensively with ADF&G officials who conducted the Terror Lake study and monitored ongoing snowmachine use of the region. For reasons stated in the discussion of Bear Concentration Areas under section 3.2.3 of this document, we concluded that Den Mountain should be closed by regulation to snowmachine use, consistent with an earlier recommendation (USFWS 1993.) In contrast, we concluded that closure of the denning area in Baumann Creek was not warranted.

Unlike at Den Mountain, denning habitat at Baumann Creek is comprised of cliffs and very steep terrain situated in upper slopes of a canyon. Though snowmachines can access the lower canyon floor and highlands above the canyon, physical barriers prevent penetration of denning habitat. Though snowmachine tracks have been observed within and adjacent to the Den Mountain area, none have been observed in the denning area of Baumann Creek.

Effectiveness of implemented protection practices would be informally monitored via routine refuge and State Trooper winter patrols. Additionally, we would encourage air taxi operators to contact the Refuge if they observe snowmachine use within either Den Mountain or Baumann Creek denning areas. Evidence of snow machine use within the Den Mountain denning area would trigger a law enforcement investigation and prosecution of perpetrators if they were caught. Evidence of snow machine use of the Baumann Creek denning area would trigger site-specific monitoring, and a re-evaluation of the need to institute additional protection measures potentially including closure by regulation.

3.11 Other Comments

Comment 32: Cascadia Wildlands Project commented, “Subsistence should be a primary value.” They asked, “What is the impact of the recent rule change regarding federal management of subsistence in marine waters of the refuge?”

Response: *Provision of opportunities for subsistence use is a refuge purpose and will continue to be one of the primary goals of Kodiak Refuge. Certain marine waters surrounding the Kodiak Archipelago are under the jurisdiction of Alaska Maritime National Wildlife Refuge; federal subsistence fishery management responsibilities for these marine waters lie with the Kodiak Refuge Manager. There is no change in either the areas managed, or in the role of the Kodiak Refuge Manager, due to the recent rule changes.*

Comment 33: Global Climate Change: National Wildlife Federal urges the Service “to include a discussion of climate change” in the plan “and to include a specific climate change goal in its goals and objectives.” They suggested as a refuge goal, “Increase our knowledge of climate change impacts on Refuge fish and wildlife populations, their habitats, their interrelationships and incorporate the anticipated effects of climate change into Refuge management decisions.”

Response: *The Fish and Wildlife Service is pursuing several avenues to address global warming. For example, we are coordinating efforts at the national and regional level with the U.S. Geological Survey. Global climate change was one of four major topics addressed at a national workshop in 2004 (Future Challenges Workshop) and a regional workshop held in Anchorage in June 2005. Discussion focused on identifying ways the Service and USGS can focus management and research on this issue. Where appropriate, management and research recommendations from these workshops will be incorporated into refuge operations. For specifics, see <http://www.fws.gov/science/FCWorkshopNCT0808.html>. Locally, the Refuge would work with researchers studying the effects of global warming. Objective 6.3 in Section 2.1 would contribute to understanding how refuge plant communities may be influenced by climate change. Also, we recently completed, in cooperation with*

ADF&G and other partners, a comprehensive land cover map of the Kodiak Archipelago (see section 3.2.1 of this document). We expect this state-of-the-art map to serve as a key tool for evaluating the potential long-term influence of global warming on vegetation types at a landscape scale.

Comment 34: Private Cabins: The State of Alaska requested “consideration to allow private recreational use of permitted commercial use cabins within the Refuge. Currently, under 50 CFR 36.33, recreational uses of commercial use cabins is not permitted. Traditionally, many commercial use cabins were used by visitors for recreational activities such as hunting and fishing when not in use for their permitted commercial activities. Reviving such use would allow dispersal of recreation, reduce potential for bear conflicts and promote safety during the more inclement months on Kodiak Island.”

Response: *During the development the State’s Kodiak Archipelago Bear Conservation and Management Plan, a recommendation was presented to consider allowing recreational use of commercial cabins on the Refuge. The Citizens Advisory Committee, who prepared the Plan, evaluated this topic and declined to include it as a recommendation in the Plan. An important factor in their decision was that to comply with Department of Interior regulations, the cabins would have to be made available to the general public if they were opened to visitors for recreational activities, just as refuge public use cabins are. Commercial cabin permittees expressed opposition to the opening of their facilities to the general public and the recommendation was dropped. For these reasons we have not included the requested action in any alternative.*

This comment is correct in that 50 CFR 36.33 prohibits recreational use of commercial cabins. Region 7’s Cabin Management Policy on National Wildlife Refuges in Alaska also prohibits this.

Comment 35: Cascadia Wildlands Project requested that the Service “please pursue the \$100 million re-opener on the Exxon civil settlement, for unforeseen adverse consequences to the Refuge.”

Response: *Whether or not these additional funds are sought is a decision which will be made by the Exxon Valdez Trustee Council, not the Refuge or the Service.*

Comment 36: Statewide Management Direction: The Wilderness Society stated that they submitted lengthy comments regarding the Statewide Management Template in their comments on the Alaska Peninsula/Becharof Draft CCP and incorporate those comments by reference. “Overall, we continue to have concerns regarding many issues related to the template, and encourage the Service to use the Template with a degree of caution. It appears as though the Service has used some caution with respect to the template for the Kodiak

Draft CCP. We commend you for your judicial use of the Template in this Draft plan.”

Response: Modifications to the statewide management direction have been made as a result of your comments. Any specific changes to this management direction as applied to Kodiak Refuge made in response to your comments are reflected in the Final Revision of the Kodiak Conservation Plan. Specific responses to your comments are included with those comments.

Comment 37: Several members of the public questioned the economic values described in the Plan for bear hunting, bear viewing, and the Refuge as a whole. Two individuals suggested that bear hunting is undervalued in the Plan and one individual suggested that bear viewing is undervalued compared to hunting. One individual disagreed with statements in the plan referring to negligible effects of the Refuge on the Kodiak Island Borough Economy and requested that the “full economic value” of the Refuge be included in the final plan.

Response: The Plan contains a description of the economic significance of Kodiak Refuge (Section 3.3.4). Economic significance is a measure of the total number of jobs and the total household income generated by refuge management expenditures, visitor expenditures, and expenditures for harvest and other uses of refuge resources. Jobs and income generated by the Refuge were estimated by the Institute for Social and Economic Research at the University of Alaska Anchorage (ISER). The full report on the economic contribution of Kodiak Refuge, titled “The Kodiak National Wildlife Refuge: Economic Importance” (Goldsmith et al. 2003) is available from ISER.

Estimates of economic significance are based on actual spending by refuge visitors and others who use refuge resources; they do not include consumer surplus (the amount consumers would be willing to pay above what they actually paid), option or existence values, or other such components frequently included in “total value” estimates. As a result, estimates of the value of refuge activities or resources reported elsewhere may appear to be higher than estimates of economic significance that are reported in the Plan.

The vast majority of the economic significance of the Refuge can be attributed to commercial fish harvesting and processing—activities that partially depend on spawning and rearing habitats within the Refuge. The economic impact of these activities with the Kodiak Island Borough was estimated at nearly 800 annual jobs (average) and \$59 million in payroll (in 2000). In comparison, the economic impact of recreational hunting (including bear hunting) was estimated at just over 19 annual jobs (average) and about \$506,000 in annual payroll, while non-consumptive uses (including bear viewing) were estimated to produce about 5 jobs and \$101,000 annually. It is important to note that estimates of the significance of

hunting and non-consumptive uses are based on on-site refuge activities; if off-refuge bear-hunting and viewing activities were considered in the calculations, then estimates would likely be higher.

While the economic contributions of refuge bear hunting and viewing activities to the Kodiak economy are important, they are dwarfed by the jobs and income produced by commercial fishing and processing. Therefore, changes to the economic significance of bear hunting or viewing would have only minor effects on the overall economic significance of the Refuge. And, on the scale of the Kodiak Borough and Alaska statewide economies, these effects would be negligible. The plan does not propose any management actions that would affect the economic significance of commercial fishing or processing, therefore the likely economic effects of proposed refuge management actions were determined to be negligible (as stated in Chapter 4).

Comment 38: The Environmental Protection Agency commented that “language regarding impacts of bear habituation is confusing. The EIS states that human-bear encounters would cause short-term displacement and long-term habituation, resulting in minor long-term impacts. Specifically, it states, ‘over time, bear use would increase to current levels as management measures took force and bears neutrally habituated to nonthreatening, consistent, and predictable human activity’ (p. 4-16). However, the EIS also states that long-term impacts of bear habituation is not clear (p. 4-8). Habituation of bears to people, especially habituation by food rewards, is the primary factor associated with bear-human conflicts in many places. Habituated bears are often perceived as threats to human safety and removed from the population because people are more likely to inadvertently approach within its “individual distance” and be charged (National Park Service, Yellowstone National Park Homepage). The EIS should discuss potential conflicts between human activities and habituated bears. The EPA recommends the EIS include further analysis of the potential impacts of habituation.”

Response: *See Bear Viewing in Section 3.2.3 of the full document for our detailed discussion of the risks and benefits of various forms of bear habituation. As a matter of policy, we will not tolerate any practices that encourage habituation of bears to human food or garbage, a behavioral response known as food-conditioning. Moreover, a bear that successfully acquires food waste or garbage becomes dependent on them and associates people as a source of food. Such circumstances are unnatural, tend to diminish respect for bears, and present a public safety hazard. Eventually such a food-conditioned bear becomes involved in altercations with people and winds up dead. Proper food and waste management and prevention of food-conditioning in bears are standard goals of existing and proposed management programs. Strict adherence to such standards is also required as a condition of public use (cabins, Karluk easement) and commercial operation permits (guides and air taxi operators).*

Comment 39: Page xvi. Glossary definition of “big game outfitter”: A guide pointed out that Alaska Statutes require a person who provides these services to have the same Guide License the “big game guide-outfitter” must have.

Response: This comment identified an error in a definition. That definition has been corrected.

Comment 40: An individual made several comments about Section 1.1 and provided new information.

“Livestock introductions were made during the Russian colonization era in the early 1800s. Grazing animals were translocated following the Mt. Katmai eruption as volcanic ash inundated grazing ranges. There wasn’t any shellfish industry per se until the 1950s. A major expansion of the livestock industry occurred after World War II. The statement that government hunters were brought in during the 1930s to reduce the bear population or otherwise curb cattle depredation is incorrect. Federal predator control agents made a token effort to kill problem bears around the mid 1950s. A major effort to reduce the number of bears ranging outside the refuge, on grazing leases, was undertaken by the State . . . early in the 1960s.

“The statement . . . that advocacy groups led to refuge establishment is unfounded. Events leading up to World War II provided an impetus for establishing refuges in Alaska. Large military withdrawals had taken place in the Territory. In 1941 construction of military bases at Kodiak, Sitka, Dutch Harbor and elsewhere already ensued before the bombing of Pearl Harbor. Proponents of establishing Kodiak and Kenai refuges consisted mainly of scientists/authorities of the former Bureau of Biological Survey (several land parcels in the Kodiak area including the whole of Near Island were already under auspice of the Survey) . . . The person that championed the Kodiak Refuge was Dr. Ira H. Gabrielson . . . Chief of the Survey.” Threats to natural resources were obvious to him and other early conservationists from large-scale military expansion in south central Alaska.

“A proposed Kodiak Refuge was controversial from the outset, for . . . commercial salmon fishing, situated around the island’s perimeter, objected to its classification. A compromise accommodated economic expansion with a designated one-mile wide strip extending around the island that cleared a way for Refuge establishment by Executive Order. The Fish and Wildlife Service maintained control over the strip and it was not, contrary to what the draft plan states, open to settlement. Absolute authority over the strip came through a political tradeoff, namely a Public Land

Order issued in 1958 that realigned the refuge's northern boundary transferring one time refuge holdings, next to grazing leases, over to the State."

Response: We have reviewed available historic information and made appropriate changes to section 1.1 of the Plan. Thank you for making us aware of the inaccuracies in our discussion.

Comment 41: An individual commented about section 1.6. For the issue statements "to be of any value to planners, . . . the number of participants, their place of residency, who they represented and their reasons for involvement" should be included "so reviewers can more objectively evaluate the plan's alternatives. . . . there is no evidence that public input has been compiled, yet alone analyzed as a means of determining whether or not there's a consensus for your consideration in formulating management direction. While opinions of local constituent is vitally important, the final decision . . . must be within the realm of serving the National interest, not just those of a local or Statewide interest."

Response: A thorough analysis of the public input into the planning process was completed as part of identifying the issues and concerns addressed in the revision of the Kodiak Refuge Conservation Plan. A brief summary of this analysis was included in the Draft Conservation Plan (see sections 1.5.2 and 1.6); additional information has been added to these sections in the Final Conservation Plan. If additional information is desired, the analysis of public scoping comments is available upon request.

Comment 42: Sand and Gravel: Defenders of Wildlife and Cascadia Wildlands Project questioned why sand and gravel removal would be allowed and asked how that is compatible with the purpose of the refuge? "Defenders believes that this use is entirely incompatible with the National Wildlife Refuge System Improvement Act. Moderate management lands where sand, gravel, and other common variety materials sale are allowed are located on the northern coast of Kodiak Island. This use is inappropriate given that coastal regions are particularly sensitive to these activities. It is well know that depletion of sand and gravel in streambeds and along coastal areas causes the deepening of rivers and estuaries, and the enlargement of river mouths and coastal inlets. This can lead to significant geographic change and undesirable salt water intrusion from the Shelikof Strait. The effects of coastal material removal are compounded by the effect of sea level rise, which Alaska waters are particularly susceptible to. Habitat disturbance and alteration from mining infrastructure and material transport adversely affects the wildlife and consequentially the biological integrity of the refuge."

Response: Information on the circumstances under which sand and gravel removal would be allowed is presented in section 2.2.17. Given the location of the moderate management areas on Kodiak Refuge, it is unlikely that the Refuge would ever address sand and

gravel removal but it is possible. Prior to approving any such use, appropriate site-specific NEPA analysis and a compatibility determination would be conducted.

Comment 43: Commercial Gathering of Other Refuge Resources: “Defenders [of Wildlife] feels that including this blanket ‘other’ use in the template is totally inapt. Without allowing the public to comment on specific commercial uses the Service is effacing public review in the CCP process. USFWS policy clearly states the goals for the CCP: B. To provide a clear and comprehensive statement of desired future conditions for each refuge or planning unit. F. To provide a forum for the public to comment on the type, extent, and compatibility of uses on refuges, including priority wildlife-dependent recreational uses (602 FW 3) The Service must remove this category from the template and consider the “other” refuge resources commercially gathered individually.”

Response: “*May be authorized*” means an application for this use would be evaluated on a case-by-case basis, would be subject to NEPA analysis, a compatibility determination, and other applicable laws. See definition in section 2.3.5.

The public will be permitted to comment on the commercial harvest of any refuge resource not specifically identified in this table prior to the Refuge authorizing such use. The Refuge is required to complete a site-specific NEPA analysis (may require public review) and a compatibility determination (opportunity for public review is required) prior to issuing a special use permit or other authorization for commercial harvest of any refuge resources.

Comment 44: Hazardous Materials Storage: Defenders of Wildlife and The Wilderness Society are concerned about allowing hazardous materials storage within the refuge. “We [Defenders of Wildlife] believe hazardous materials storage is inappropriate and inconsistent with the refuge goals and mission. This includes maintaining the ‘primeval character and influence’ and ‘natural conditions’ of the refuges’ recommended wilderness areas (16 U.S.C. Sec. 1131(c)). Hazardous materials storage does not meet the compatibility standard set by congress and therefore should be removed from the final plan.”

Response: *Storage of hazardous materials on the Refuge is directed through regulations and policy. Gasoline in tanks for immediate use in boats and airplanes is the most common hazardous material encountered. This is not considered fuel storage. If a commercial operator wants to temporarily store any fuels for the duration of their camp, it must be done in conformance with Regional Fuel Storage Policy 7-4 and be described in detail within their plan of operations. See Appendix E of the Conservation Plan; note the special condition for fuel storage for commercial operators. Fuel storage for longer than the duration of their camp is not permitted.*

The frequency, quantities, and duration of fuel storage that currently occurs are not considered an incompatible use of the Refuge.

Comment 45: Jet Boats: Cascadia Wildland Project commented, “Why give blanket permit for jet boats? Even if use is very low now, jet boats could potentially become management concern. The potential of intensive commercial jet boat enterprises threaten erosion and disturbance to wildlife. Please at least keep the management option available to restrict or require permits for jet boat use in the refuge, should use become a problem.” An individual commenting on use of motorboats (page 2-92) said “Recommend a separate category for ‘jet boats’ and identify that they ‘may be allowed.’ Although their use has not become a problem yet, the potential is still here. There are areas that should be subject to site-specific NEPA analysis when considering their use.”

Response: *The use of jet boats was evaluated in the Public Use Management Plan (USFWS 1993; USFWS 1994). There was a recommendation in this plan to seasonally restrict jet boat use on specified refuge rivers. In 2000, an effort was made to develop the regulations recommended in the Public Use Management Plan. At that time, it was decided not to include the jet boat regulations since physical attributes of the rivers identified seldom allow for travel in a jet boat; use was too infrequent to justify the development of a regulation to minimize resource impacts. There is a concern that with development of new jet boat technology the physical attributes of these rivers may no longer be the limiting factor to jet boat use. Jet boat use will be monitored and necessary management action will be taken if resource issues develop*

Comment 46: The State of Alaska commented that “[t]he information contained on page 2-62 regarding helicopters is potentially misleading to the public. The text states that ‘Helicopter landings for recreational activities are not allowed on Kodiak Refuge.’ We request the CCP explain the mechanism for prohibiting this activity, such as the following suggested language: Regulations at 43 CFR 36.11(4) prohibit landing of helicopters except at designated landing areas by permit. It is the policy of Kodiak Refuge to not issue permits for the landing of helicopters for recreational purposes.”

Response: *The language requested by the State has been incorporated into section 2.2.13.*

Comment 47: Airboats: The Wilderness Society recommended that the Service “clarify that airboats are prohibited on the Refuges because they were not found to be a traditional mode of access under ANILCA Title XI.” They said, “We object to all airboat use on any Alaska refuges because of their significant impacts to fish, wildlife, natural soundscapes, vegetation, and soils. However, the Service also needs to review impacts from airboat use on navigable waters in the Draft CCP, however. If the use of airboats on navigable waters

would disturb wildlife, then the Service has the authority, grounded in its Property Clause authority, to manage the public lands and to restrict the use of airboats even if the state has regulatory authority over the navigable waters.”

Response: The use of airboats on the Refuge is prohibited by 43 CFR 36.11 and 50 CFR 36.2. See section 2.2.13 and Table 2-2 in this document. We see no need to conduct additional analysis.

Comment 48: Jet-skis: The Wilderness Society commented that “[r]egardless of the national policy being determined by the Service at this time, jet-skis should not be allowed on Alaskan Refuges.” They said, “These joy-riding machines fall far outside the purposes of the Refuges, are nontraditional, and are known to disrupt sensitive wildlife, subsistence activities, and other recreational experiences. We encourage the Service to ban jet-skis from Kodiak Refuge.”

Response: At this time we have not documented any use of jet-skis within the Refuge. If policy is developed on their use, the Plan will be reviewed to determine if an amendment is necessary. Before any restrictions could be implemented the Service would have to go through the rule-making procedures and develop regulations. The Camp Island Limited Development Easement includes the following: “No jet skis, or similar type of personal watercraft may be used or based at or supported from the Protected Property.” Koniag, Inc., the State of Alaska, and the Service are parties to this easement.

Comment 49: Page 2-66: One person said, “totally disagree with wildlife viewing being nonconsumptive - see section 2.2.14 .”

Response: The difference between the terms consumptive and nonconsumptive activities or uses is useful for a variety of types of discussions, including compatibility with refuge goals and objectives and developing sustainable harvest levels. ANILCA and other laws provide legal definitions that differentiate between the two for a variety of specific legal purposes. The terms often begin to blur, however, when wildlife managers analyze data on the effects of human presence on wildlife and habitat. We acknowledge that the functional effect of human presence often results in take or consumption of refuge resources whether the activity is labeled consumptive or nonconsumptive. It is still important to have the two definitions.

We also acknowledge that Service biological data have shown that bear viewing and even simple human presence can be consumptive. Bears can be displaced directly by human presence either by conditioned fear or by active human deterrent. In biological studies, scientists have observed the death of bears and separation of sows and cubs that lead to cub mortality because of human activities such as fishing and hiking. Often defense of life or property bear kills are a result of human activity unrelated to hunting. Kodiak Refuge bear

viewing programs would be developed using biological data to minimize the consumptive nature of bear viewing.

Comment 50: Page 2-72, Commercial Fishing and Related Facilities: The State of Alaska commented that it “has had continuing but unsuccessful dialogue with the Service concerning the issuance of special use permits in support of commercial fishing activities. Under separate cover, we will request the Service meet with the State to seek immediate resolution the long standing issue regarding the Service’s narrow interpretation of allowed commercial fishing support activities pursuant to ANILCA Section 304(d). To the extent these issues are not resolved outside the CCP process, we request that the CCP increase the priority of the Kodiak Refuge Fisheries Management Plan revision (now slated for 2007) to complete the plan at the earliest possible time.”

Response: *The Refuge is always willing to meet with the State to review and discuss issues pertaining to the Commercial Fisheries Management Plan. The Commercial Fisheries Management Plan is slated for revision in 2007. Given current staffing and other competing refuge priorities, it is unlikely we would be able to move the schedule ahead.*

Comment 51: Page 2-73, Commercial Gathering of Other Resources: The State of Alaska asked the following. “The first sentence references regulations at 50 CFR 27.51. Would 50 CFR 27.97 be a better fit?”

Response: *The first sentence as written is accurate and with the correct CFR reference. However, this regulation applies mainly to personal, non-commercial actions which may be confusing under this activity – Commercial Gathering of Other Resources. The regulation, 50 CFR 27.97, states that conducting a commercial enterprise on any national wildlife refuge is prohibited except as may be authorized by special permit. If someone was caught gathering resources for commercial purposes without a special use permit on the refuge they would be cited for the intent of commercial profit as per 50 CFR 27.97.*

Comment 52: Page 2-91, Temporary Facilities: An individual commented that “[t]he provisions of Section 1316 of ANILCA must be included here exactly as stated in the current plan.”

Response: *Section 1316 of ANILCA states that we “shall permit, subject to reasonable regulation to insure compatibility, the continuance of existing uses, and the future establishment, and use, of temporary campsites, tent platforms, shelters, and other temporary facilities and equipment directly and necessarily related to such activities.” In the public use management planning process, it was determined that the establishment of new tent platforms on Kodiak Refuge would not be consistent with refuge purposes.*

Comment 53: Page 2-103: An individual recommended we “[a]dd category for Guiding Support Facilities and identify as ‘may be authorized’. If this is appropriate for Commercial Fishing it stands to reason that the same provision should apply to guiding.”

Response: *A category for Guiding Support Facilities will not be added. It is appropriate to include commercial fishing facilities, but not guiding support facilities. Commercial fishing support facilities are authorized by Section 304(d) of ANILCA. Guiding support facilities are handled as part of the special use permit process.*

Comment 54: The State of Alaska commented, “Regarding the table on page 2-119 addressing proposed changes in the CCP from the original 1987 CCP, we note that mariculture (and aquaculture) have been eliminated from consideration. The State requests the Service retain the current management direction of providing the option to consider mariculture and aquaculture support facilities in Moderate Management areas. While the State currently has no plans for new mariculture or aquaculture projects in the Kodiak Archipelago, we request this change to retain maximum management flexibility. Since there are no Intensive Management lands within the Kodiak Refuge the proposed management direction would effectively prohibit these activities.”

Response: *The Refuge has adopted the new management direction for mariculture and aquaculture support facilities that the Service is applying to all national wildlife refuges in Alaska. This management direction does not preclude these activities from occurring on refuge lands, subsequent to site-specific NEPA analysis and completion of a compatibility determination, but would require that the Plan be amended to reclassify areas of the Refuge as Intensive Management prior to authorizing the activity.*

Comment 55: Page 3-114: The State of Alaska questioned the primitive recreation description that appears in the wilderness values discussion in Chapter 3 of the Plan. The State noted that ANILCA provides for continued motorized uses in designated Wilderness areas and requested that “nonmotorized” be removed from the primitive recreation description.

Response: *ANILCA clearly states that, “The terms ‘wilderness’ and ‘National Wilderness Preservation System’ have the same meaning as when used in the Wilderness Act” (Section 102). The meaning of “primitive recreation” is clear in the history and purposes of the Wilderness Act, and in the Act’s explicit general prohibition on the use of motor vehicles and motorized equipment. ANILCA allows for continued use of specific types of motor vehicles for traditional activities, and motorized surface transportation traditionally used for subsistence. The Wilderness Act allows continued use of aircraft and motorboats in Wilderness areas where those uses had previously become established. However, these provisions do not change the*

meaning of primitive recreation provided in the Wilderness Act for the purposes of describing wilderness values.

Comment 56: Visitor Center: The Defenders of Wildlife commented that they recognize “the vital role a visitor center plays in informing and educating the public. Fostering an environmental ethic through education is a noble cause and a visitor center is an appropriate conduit for this edification. This said, the big show is Kodiak Refuge and Defenders believes that this is where the majority of the Service’s energy and resources should be directed. The proposed visitor center with its eight million dollar (plus land acquisition) price tag seems excessive. Given the current budgetary constraints of the USFWS, Defenders recommends that the Service evaluate less costly alternatives in constructing a new visitor center.” An individual also expressed concern about the cost of a new visitor center.

Response: *The planning and design of the new visitor center is separate from the Conservation Plan revision. The Fish and Wildlife Service does not have funding in its general budget for the visitor center. The funding is a one-time special appropriation from Congress that can be used exclusively for construction of the Kodiak Refuge visitor center. These funds would not be available for other uses.*

Much of Kodiak Refuge’s pristine nature and suitability for brown bears is attributable to its remoteness and complete lack of roads. Access is by chartered boat or single-engine airplane. These attributes make Kodiak Refuge inaccessible to the general public, especially to children, people of low to middle income and people who have disabilities that make access to back country difficult. Another key constituent group consists of people who intensely support the existence of a remote, wild Refuge heavily populated by brown bears and who have no interest in visiting the bears in their habitats. In short, a very small percentage of the public at large and even Kodiak Island residents are able to visit Kodiak Refuge.

The new visitor center will provide residents of Kodiak and visitors with a safe, accessible, affordable opportunity to learn about Kodiak Refuge, its wonders and the larger ecological context. Kodiak school children will be able to learn at the center during the regular school day with minimal time and money involved with transportation. Our present facility is several miles outside of town. It is not integrated into the City of Kodiak. The downtown location of the visitor center will benefit the City of Kodiak economically by giving visitors yet another reason to stay in to the heart of town, possibly encouraging visitors to stay an extra day.

The visitor center will also provide the refuge with better opportunities to educate people who plan to visit Kodiak Refuge. Prospective visitors can learn about etiquette, guidelines, regulations and laws pertaining to a stay at Kodiak Refuge. We will

provide information on the concept of leave-no-trace visitation (toilet paper as litter, for example) and visiting bear country in a way that is safe for both visitors and bears. This is expected to improve the overall quality of experience of refuge visitors and to help reduce undesired bear-human encounters consistent with The Kodiak Archipelago Bear Conservation and Management Plan.

3.12 Compatibility Determinations

Comment 57: Page E-5, Justification Section: The State of Alaska said, “We request removal or revision of the last sentence of the first paragraph to indicate the Service is not entering into an allocation issue between commercial set net operators within the Kodiak Salmon Management Area. The Service may have received comments from some current permit holders that they would prefer not to have additional permits issued for a specific area; however, competition between users should not be a criterion for the Refuge to unintentionally or otherwise interfere with the State’s management of a commercial fishery. The Alaska Department of Fish and Game manages all salmon fisheries in the Kodiak Salmon Management Area at the direction of the Alaska Board of Fisheries. Limited entry permits for salmon are issued for the entire Kodiak Salmon Management Area, not for one side of Kodiak Island or the other. Resolution of allocation issues resides with the Board.”

Response: *This sentence pertains to special use permits issued by Kodiak Refuge for set-net site facilities. It does not refer to state-issued limited entry permits. A text change has been made to clarify this.*

Comment 58: Two individuals expressed concern about apparent inconsistencies related to the impacts of cabins on bears. “On Page E-68 under anticipated impacts of use concerning private structures, this statement is made. ‘Use of these authorized structures has the potential to cause adverse bear-human encounters.’ On page E-73 under Anticipated Impacts of use concerning ‘public use cabins’ this statement is made. ‘Public use cabins have generally positive impacts on bears.’ Both statements can’t be true! . . . These impact statements should be the same for both private and public structures in the final plan.”

Response: *We have changed the wording in the two compatibility determinations to address this concern. New language has been added to clarify the differences between private cabins and public use cabins. Kodiak Refuge has removed public use cabins that caused conflicts between people and bears. Our decisions in siting new cabins will include consideration of timing and location of adjacent bear use.*

Human presence brings with it potential problems such as garbage, meat and fish from harvest, and human waste. In general, cabins tend to concentrate human activity near these structures. Cabins

afford better protection for wildlife and habitat than tent camps when cabin users take measures such as using meat caches, collecting, protecting, or burning garbage, disposing of human waste in latrines, and using electric fences for items stored outside the cabin. Kodiak Refuge law enforcement patrols will continue to extend to public use cabins as weather and funding allow ensuring that visitors comply with the protective conditions for use of these cabins.

Specifically, we have inserted additional language in the Anticipated Impacts section of the compatibility determination for private cabins and temporary camps. See Appendix E.

Comment 59: Military Training: “Defenders [of Wildlife] believes that there are many affirmative wildlife protections associated with refresher training and detailed operations plan outlined in the DEIS. We are concerned however that non-coastguard helicopter transport and survival training are not compatible with the refuge mission and goals. The DEIS acknowledges that helicopter transport and survival training disturb mountain goats and denning brown bears. We believe this disturbance occurs at a level that renders this use incompatible with the National Wildlife Refuge System Improvement Act. The Service rightfully banned recreational helicopters and should do the same with helicopter use associated with military training. In the eyes of the Improvement Act there is no qualitative difference between two non-wildlife dependent uses with respect to meeting the strict compatibility requirements. Defenders believes that the Service has a legal obligation to suspend non-coastguard helicopter transport and survival training at Kodiak Refuge.”

Response: *This activity was initially determined to be a compatible use in 1994. The operations plan for each military request for training is reviewed for essential need, location, activity, and time of year, alternate training locations, and potential for impacts to refuge resources. If it is determined that the training can be conducted with minimal or no impact to refuge resources, a permit is issued with the stipulations necessary to ensure compatibility. A permit is not issued if there is greater potential for impacts. Our files indicate that training exercises occur infrequently - about once every ten years. The last permit for training was issued in 1996. Monitoring of the last two training exercises indicated the use did not impact refuge resources and was compatible.*

Comment 60: Private Helicopter Use: The Defenders of Wildlife commented, “While the prohibition of recreational helicopter use is laudable, allowing helicopter use for maintenance of a private radio repeater site is totally incongruent with refuge goals and mission. A compatible use is ‘a proposed or existing wildlife-dependent recreational use...that, based on sound professional judgment, will not materially interfere with or detract from the fulfillment of the National Wildlife System mission or the purpose(s) of the national wildlife refuge.’ (50 CFR § 25.12 (a)). This is a non-wildlife

dependent incompatible use that must be removed from the final plan.”

Response: This activity was initially determined to be a compatible use in 1994. The operations plan for each request for maintenance is reviewed for essential need, activity, and time of year, and potential for impacts to refuge resources. If it is determined that the maintenance work can be performed with minimal or no impact to refuge resources, a permit is issued with the stipulations necessary to ensure compatibility. Our files indicate that maintenance involving helicopter use occurs infrequently - about once every five years. Monitoring of the maintenance work has indicated the use did not impact refuge resources and was compatible. This private radio tower was used by a cannery. This cannery has been closed for the past three years and it is not known if it will be reopened.

Comment 61: An individual at the Port Lions meeting commented that, because of the misunderstandings the public has about native private land, “Native Corporation Selected,” should read “Privately Owned Native Corporation Selected” on the General Land Status Map (Figure 3-1).

Response: “Native Corporation Selected” is the correct term for these lands. It refers specifically to lands that have been selected by, but not yet conveyed to, a regional or village Native corporation. Ownership remains with the federal government until such time as they are conveyed to the selecting Native corporation (or remains with the federal government should the selection(s) be rejected or invalidated).

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