

RECOVERY PLAN

Louisiana Black Bear (*Ursus americanus luteolus*)



U.S. Fish and Wildlife Service
Southeast Region
Atlanta, Georgia

LOUISIANA BLACK BEAR
Ursus americanus luteolus

RECOVERY PLAN

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for

Southeast Region
U.S. Fish and Wildlife Service
Atlanta, Georgia

Approved: _____

Robert K. Clough
Regional Director, Southeast Region
U.S. Fish & Wildlife Service

Date: _____

September 27, 1995

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Literature citation should read as follows:

U.S. Fish and Wildlife Service. 1995. Louisiana Black Bear Recovery Plan. Jackson, Mississippi. 52 pp.

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ACKNOWLEDGEMENTS

The primary source for information, recovery criteria, and recommended recovery actions in this recovery plan is the Black Bear Restoration Plan, third draft, compiled by the Black Bear Conservation Committee (BBCC). Some portions of the Black Bear Restoration Plan (BBCC 1994) have been reproduced verbatim in this recovery plan. For a copy of the BBCC restoration plan, contact Paul Davidson, at the address listed below.

Various Louisiana black bear recovery actions have been taken, are underway, and are being planned that would not be possible to achieve without the cooperation, support, and involvement of the BBCC, its members, and others. Members have generously contributed to recovery of the Louisiana black bear by providing various forms of assistance and by allowing access to lands occupied by bears.

The BBCC was formed to restore the Louisiana black bear to suitable habitat within its historical range. The BBCC is a broad coalition of about 50 State and Federal agencies, forest and agricultural companies, various special interest organizations, and universities working together for the black bear (see Table 1). The BBCC's priorities have been to put the resource first, to find common ground for building coalitions while avoiding confrontations, to replace emotion with credible science, and to have a strong commitment to black bear restoration and management. This public and private sector alliance is a major key to the future recovery of the Louisiana black bear. For more information, contact Paul Davidson, BBCC Coordinator, P.O. Box 4125, Baton Rouge, LA 70821, telephone 504/338-1040.

Cover artwork was provided by Steve Peterson, the illustration below was provided by Ray Terry, and the illustration on page 1 was provided by Laura Eileen Vigil.

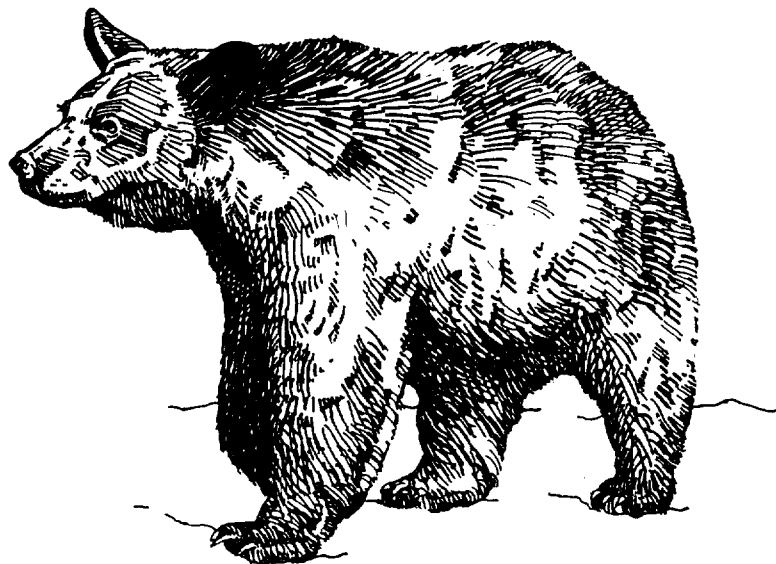


Table 1. BLACK BEAR CONSERVATION COMMITTEE MEMBERSHIP

American Forest and Paper Products Association
 Anderson-Tully Company
 Arkansas Game and Fish Commission
 Audubon Institute
 Bancroft Paper
 Bayou State Bowhunters
 Boise Cascade
 Cavenham Forest Industries
 Champion International
 Crawford and Bourland, Inc.
 Delta Environmental Land Trust Association
 Delta Wildlife Foundation
 Deltic Farm and Timber, Inc.
 Georgia Pacific Corporation
 Grambling Cooperative Wildlife Project
 International Paper Company
 James River Corporation
 Louisiana Cooperative Fish and Wildlife Research Unit
 Louisiana Department of Wildlife and Fisheries
 Louisiana Farm Bureau
 Louisiana Forestry Association
 Louisiana Landowners Association
 Louisiana Office of Forestry
 Louisiana State University; School of Forestry, Wildlife, and Fisheries
 Louisiana Tech University; School of Forestry
 Louisiana Wildlife Federation
 Miami Corporation
 Mississippi Beekeepers Association
 Mississippi Delta Council
 Mississippi Department of Wildlife, Fisheries, and Parks
 Mississippi Forestry Association
 Mississippi Forestry Commission
 Mississippi Museum of Natural Science
 Mississippi State University; Department of Wildlife and Fisheries
 Mississippi Wildlife Federation
 National Council for Air and Stream Improvement, Inc.
 The Nature Conservancy of Louisiana
 The Nature Conservancy of Mississippi
 Orleans Chapter of the National Audubon Society
 Safari Club, Central Louisiana Chapter
 Safari Club, Louisiana Chapter
 Sierra Club, Delta Chapter
 Temple-Inland Corporation
 Texas A & M University, Kingsville
 Texas Forest Service
 Texas Forestry Association
 Texas Parks and Wildlife
 United States Army Corps of Engineers, Lower Mississippi Valley Division
 USDA/APHIS Animal Damage Control
 United States Fish and Wildlife Service
 United States Forest Service
 United States Forest Service, Southern Hardwoods Laboratory
 United States Natural Resource Conservation Service
 University of Tennessee, Department of Forestry, Wildlife, and Fisheries
 Virginia Tech University; Department of Fisheries and Wildlife Sciences
 Virginia Cooperative Fish and Wildlife Research Unit
 Wildlife Technical Services, Inc.
 Willamette Industries

EXECUTIVE SUMMARY

Current Status: The Louisiana black bear (*Ursus americanus luteolus*) is listed as threatened. Other free-living bears of the species *U. americanus* within the historic range of *Ursus americanus luteolus* are designated as threatened by similarity of appearance. The U.S. Fish and Wildlife Service has proposed to designate critical habitat for the Louisiana black bear. The historical habitat of *U. a. luteolus* has suffered extensive modification, its quantity having been reduced by more than 80 percent as of 1980. The remaining habitat has been reduced in quality by fragmentation and conversion to agriculture. Human related mortality continues to pose an additional threat to the Louisiana black bear.

Habitat Requirements and Limiting Factors: The key habitat requirements of black bears are food, water, cover, and denning sites which are spatially arranged across sufficiently large, relatively remote blocks of lands. Reduced quantity and quality of habitat meeting the bear's needs and human-induced mortality are primary factors currently limiting the recovery of the bear.

Recovery Objective: Delisting.

Recovery Criteria: Criteria for delisting the Louisiana black bear are:

- (1) At least two viable subpopulations, one each in the Tensas and Atchafalaya River Basins;
- (2) Establishment of immigration and emigration corridors between the two subpopulations;
- (3) Protection of the habitat and interconnecting corridors that support each of the two viable subpopulations used as justification for delisting.

Actions Needed:

- (1) Restore and protect bear habitat.
- (2) Develop and implement information and education program.
- (3) Protect and manage bear populations.
- (4) Conduct research on population viability and bear biology.

Total Estimated Cost of Recovery: Implementation of the recovery tasks for which cost estimates have been made for the first 3 years total \$717,000.

Date of Recovery: The estimated date for recovery is 2025, if recovery criteria are met.

TABLE OF CONTENTS

I. INTRODUCTION	1
Description	1
Distribution	2
Habitat	5
Life History	5
Reasons for Listing	8
Conservation Measures	8
Strategy of Recovery	13
II. RECOVERY	14
Objective and Criteria	14
Narrative Outline for Recovery Actions	14
Literature Cited	19
III. IMPLEMENTATION SCHEDULE	23
IV. APPENDICES	26
Bee Keepers Survey Results	26
Contingency Plan for Responding to Black Bear Problems in Louisiana	31
"Attention Hunters" Poster Example	46
List of Reviewers	49

I. INTRODUCTION

Description

Hall (1981) lists *U. a. luteolus* as one of 16 subspecies of the American black bear (*Ursus americanus*). The black bear is a large, bulky mammal with long black hair and a short, well-haired tail. The facial profile is rather blunt, the eyes small, and the nose pad broad with large nostrils. The muzzle is yellowish brown with a white patch sometimes present on the lower throat and chest. There are five toes with short, curved claws on the front and hind feet. Although weight varies considerably throughout their range, males may weigh more than 272 kilograms (600 pounds).

In 1821, Edward Griffith, in his work "Carnivora," called the bear from Louisiana, the "yellow bear," according it a full species rank (i.e., *U. luteolus*). The first formal citation of the Louisiana black bear as a subspecies (*U. a. luteolus*) was by Miller and Kellog (1955) cited by Lowery (1974). In 1893, C.H. Merriam described the Louisiana black bear using five skulls from a Mer Rouge locality in Morehouse Parish in northeastern Louisiana. When contrasted with other black bears, these skulls are relatively long, narrow, and flat, and have proportionately large molar teeth (Nowak 1986). Based on results of recent multivariate studies of skull morphology, using principal components and discriminate function analyses, the Louisiana black bear was separable from other populations at sufficiently high levels to be considered a legitimate subspecies (Kennedy 1989).

The final rule listing the Louisiana black bear (*Ursus americanus luteolus*) as threatened within its historic range was published by the U.S. Fish and Wildlife Service (Service) in the Federal Register on January 7, 1992. Other free-living bears of the species *U. americanus* within the same range were designated as threatened due to similarity of appearance.



Distribution

The American black bear was formerly widespread in North America, from northern Alaska, and northern Canada, including Newfoundland; south to central northern Mexico (Lowery 1974). *Ursus americanus luteolus* once occurred throughout southern Mississippi, all of Louisiana, and eastern Texas (Figure 1). The historic range included all Texas counties east of and including Cass, Marion, Harrison, Upshur, Rusk, Cherokee, Anderson, Leon, Robertson, Burleson, Washington, Lavaca, Victoria, Refugio, and Arkansas; all of Louisiana, and the southern Mississippi counties south of and including Washington, Humphreys, Holmes, Attala, Neshoba, and Lauderdale (Hall 1981). While Hall included the southernmost counties in Arkansas as part of the range, there were no Arkansas specimens to support doing so. Accordingly, Arkansas is not considered as part of the historic range.

Both the Black Bear Conservation Committee (BBCC) and the Fish and Wildlife Service define occupied bear habitat as only those areas where there is evidence of reproduction, i.e., a female with cubs. Presently within the historic range of the Louisiana black bear, there are two known breeding bear subpopulations occurring in two Louisiana river basins (Figure 2). The Tensas River Basin (TRB), consisting of Franklin, Madison, and Tensas Parishes, is located in rural northeastern Louisiana and contains an estimated 60 to 100 bears. The Atchafalaya River Basin (ARB) is located in south-central Louisiana and is bisected by Highway 190, Interstate 10, and Highway 90, thereby splitting the basin into four subunits running north to south: upper, middle, lower, and coastal sections. Coastal ARB includes the lower Iberia and St. Mary Parish area south of U.S. Highway 90. ARB supports an estimated subpopulation of 30 to 60 bears, but this subpopulation is further divided into two sub-subpopulations occupying upper and coastal ARB subunits. There are reported sightings of bears outside of the above areas, but it is unknown whether these bears are reproducing or are only wandering subadults and males. Additional areas possibly occupied are the Mississippi River corridor, including portions of the Loess Bluffs in southwestern Mississippi and the adjacent Tunica Hills of Louisiana, and smaller areas in the lower East Pearl River and lower Pascagoula River basins of southern Mississippi (Wooding et al. 1993).

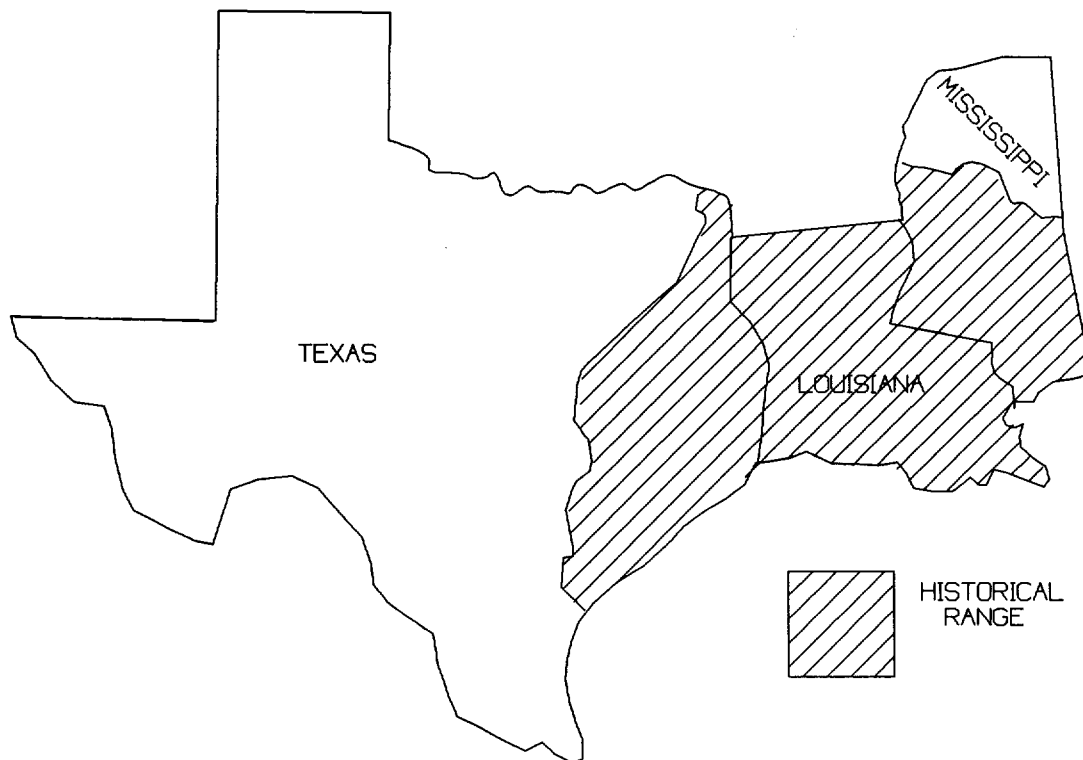


Figure 1 - Historical Range of Louisiana Black Bear

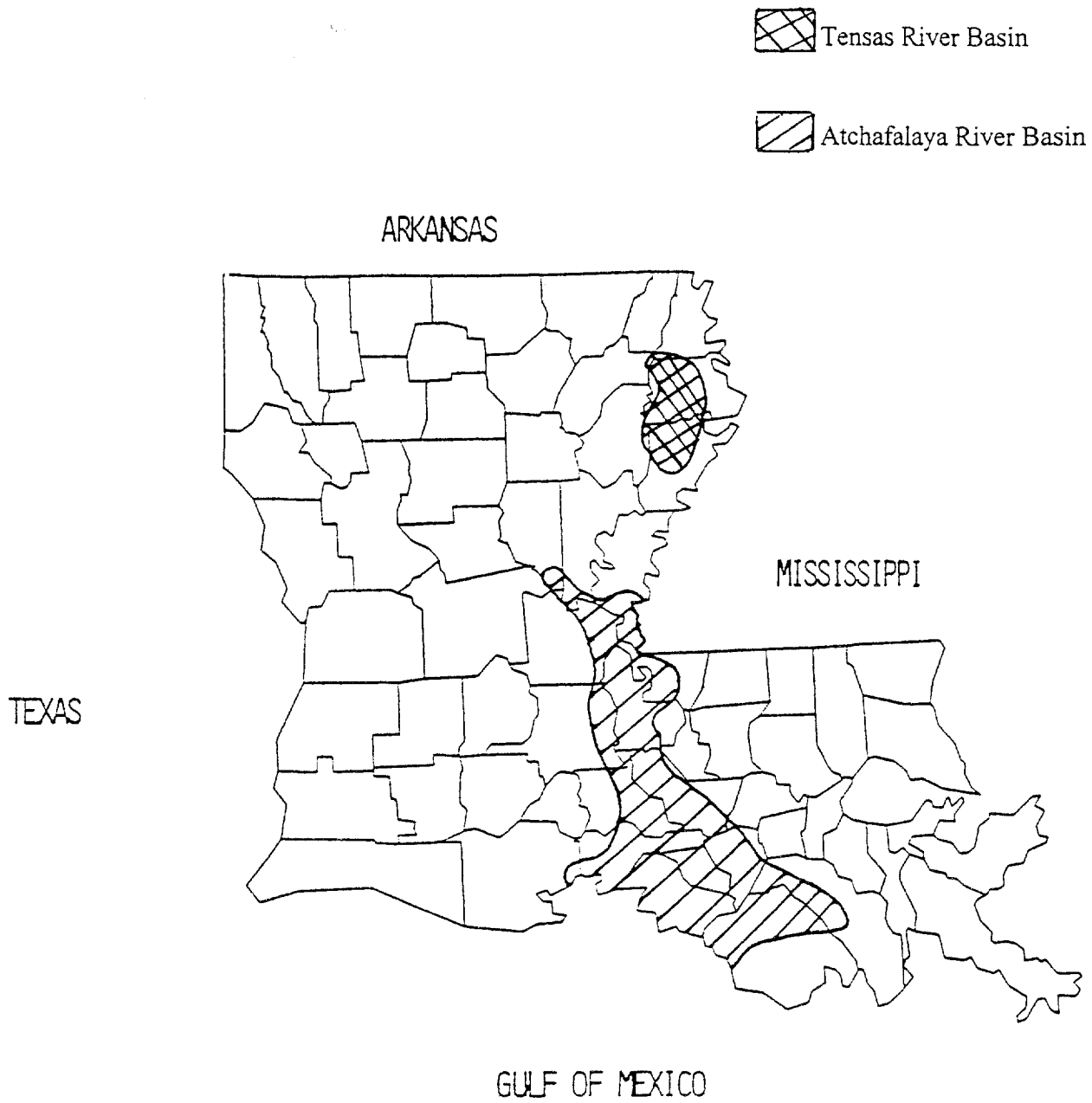


Figure 2 - Current Range of Known Breeding Subpopulations of Louisiana Black Bear.

Habitat

The key habitat requirements of black bears are food, water, cover, and denning sites which are spatially arranged across sufficiently large, relatively remote blocks of lands. Louisiana black bears typically inhabit bottomland hardwood (BLH) communities but other habitat types may be utilized. Bottomland hardwood forest community types in the range of the Louisiana black bear, expressed in terms of dominance-codominance, include bald cypress (*Taxodium distichum*); bald cypress-water tupelo (*T. distichum*-*Nyssa aquatica*); river birch-American sycamore (*Betula nigra*-*Platanus occidentalis*); cottonwood (*Populus deltoides*); sugarberry-American elm-green ash (*Celtis laevigata*-*Ulmus americana*-*Fraxinus pennsylvanica*); Nuttall oak-American elm-green ash (*Quercus nuttallii*-*U. americana*-*F. pennsylvanica*); overcup oak-water hickory (*Q. lyrata*-*Carya aquatica*); sweetgum-water oak (*Liquidambar styraciflua*-*Q. nigra*); and swamp chestnut oak-cherrybark oak (*Q. michauxii*-*Q. falcata*). Other documented habitat types used by the bear include brackish and freshwater marshes, salt domes, wooded spoil levees along canals and bayous, and agricultural fields. Although black bears originally occurred throughout the lower southeastern coastal plain, bear densities were probably historically greater within bottomland hardwood and other forested communities where hard and soft mast production was higher than in the fire-maintained, pine-dominated communities.

Remoteness is an important spatial feature of black bear habitat; in the Southeast, remoteness is relative to forest tract size and the presence of roads. Examples of remoteness relative to black bears include: a tract of timberland 0.8 kilometers (km) (0.5 miles (mi)) from well-maintained roads and development (Rudis 1986), a forested tract of more than 1,000 hectares (ha) (2,500 acres) (Rudis 1988), or a tract with 0.5 km (0.3 mi) or less of road per km² (0.3861 mi²) of forest (Pelton 1986). Forest tract size and the number of roads reflect the likelihood of human disturbances which can limit habitat suitability and use (Hellgren and Vaughan 1989, Brody and Pelton 1989).

High quality cover for bedding, denning, and escape cover is of great importance as forests become smaller, more fragmented, and as human encroachment and disturbance in bear habitat increases (Pelton 1986, Rogers and Allen 1987). Black bears are adaptable and opportunistic. They can survive in proximity to humans if afforded areas of retreat that ensure little chance of close contact or visual encounters.

Life History

Although classified as carnivores, black bears are opportunistic omnivores since their diet is largely determined by food availability. Black bears spend considerable amounts of time foraging for food. The variety of plant food eaten by bears depends upon the seasons. With the arrival of spring and summer; dewberries (*Rubus spp.*), blackberries (*Rubus spp.*), wild grapes (*Vitis spp.*), other fruited vines, elderberries (*Sambucus canadensis*), soft mast producing shrubs, persimmon (*Diospyros virginiana*), pawpaw (*Asimina triloba*), pokeweed (*Phytolacca americana*), devils walking stick (*Aralia spinosa*), thistle, palmetto (*Sabal minor*), and in the fall; acorns (*Quercus spp.*), pecans (*Carya spp.*), corn, oats, wheat are consumed (BBCC 1992). Invertebrates are probably the most commonly taken form of animal matter, and carrion

is also consumed. Bears visited sugar cane fields in southern coastal Louisiana, especially in the fall when sugar levels in stalks were highest (Nyland 1995). The most readily available natural diet of black bears tends to be high in carbohydrates and low in fat or protein. Black bears prefer high fat and protein foods when they can get it, i.e., the food and garbage of man (Pelton 1982).

The size, shape, and dynamics of a black bear's home range may depend on habitat type, sex and age, season, environmental conditions, and population density (Taylor 1971). The home range must provide the essentials of life including food, water, cover, denning sites, and contact with potential mates. The movement of bears and establishment of their home ranges are determined by the presence of these essential components. Adult male bears generally have home ranges 3 to 8 times larger than adult females (Pelton 1982). In a movement ecology study completed in fragmented bottomland hardwood habitat, Marchinton (1995) found mean home ranges of 52.33 km² (20.20 mi²) and 12.61 km² (4.87 mi²) for males and females, respectively, and ranges were largest during fall. He also found extensive home range overlap, particularly among females. Home range shape appeared to be influenced by available forest cover (Marchinton 1995). In the Tensas River Basin, Weaver estimated home ranges of 44.5-161.9 km² (17.18-62.5 mi²) for males and 10.1-72.9 km² (3.9-28.1 mi²) for females (K. Weaver, unpubl. data).

Corridors providing cover may facilitate the movement of bears between highly fragmented forest habitats (Pelton 1982, Noss 1987). If adequate immigration and emigration exists between habitat patches, small numbers of bears can function as a viable population (Lande 1987). In Marchinton's (1995) study all bears used wooded drainages for traveling among fragmented forest tracts and used the wooded drainages as staging areas for foraging in adjacent agricultural fields. However, bears in the Tensas River Basin crossed open, agricultural lands when moving among fragmented forested tracts, even when forested corridors were available (K. Weaver, unpubl. data). Habitat blocks may provide more effective corridors, and possibly allow young females to establish home ranges. Key corridors or habitat blocks need to be identified and will be required to ease fragmentation within and between occupied habitat for the Louisiana black bear.

The reproductive biology of the Louisiana black bear is not well known. Most reproductive characteristics of the Louisiana black bear are assumptions based upon studies of black bears elsewhere. Female black bears become sexually mature at 3 to 5 years. Poor soft and hard mast crops may result in delayed first estrus, decreased litter size and cub survival, and increased incidence of barren females (Pelton 1982).

In the Tensas River Basin, pregnant females entered dens earlier and emerged later than all other bears. Den entrance dates ranged from November 26 to December 12 and emergence dates ranged from April 6 to May 30 (Weaver 1992). Black bear cubs are born in the den during January and February. Larger, well-nourished females generally produce larger litters and have larger, healthier cubs that have increased chances for survival (Kolenosky and Strathearn 1987). Weaver et al. (1991) found litter sizes ranged from one to three, with two cubs most common. Cubs emerge from the winter den with their mother from late March to late May and den with her the following winter. The family unit generally breaks up during its second summer, resulting in an alternate year breeding cycle. Deviation from the alternate year cycle

can occur if litter loss occurs prior to late summer or if the female is not of sufficient health or nutritional status to become estrous. Black bears have relatively low reproductive potential; therefore, changes that influence reproduction can significantly impact population dynamics, an important management consideration. Population densities, as well as home range size, vary substantially among black bear populations (Pelton 1982).

Weaver and Pelton (1994) studied den use and characteristics in the Tensas River Basin (TRB) and it was determined that bears used hollow trees, brush piles, and ground nests for winter dens. Adult males and subadults used ground dens with greater frequencies than adult females. No pregnant female used a ground nest for a natal den (Weaver 1992). All ground nests were located in wooded habitat and nests were either woven from vegetation or built from stacked palmettos. All brushpile dens used the felled tree tops from timber harvesting operations. Both ground and brush dens need thick ground cover. Den habitat can be improved by retaining logging slash following timber harvests and protecting switchcane and palmetto thickets. Tree dens were used by 80 percent of all adult females, 68 percent of all adults and 43 percent of subadults (Weaver 1992). Den trees used were bald cypress, overcup oak, and an American sycamore stump. All den trees were located in or adjacent to water. Only one of the den trees was dead (an overcup oak snag). In a habitat fragmentation study, Marchinton (1995) found one female bear den in a water oak snag and one male den in a hollow overcup oak. Bears using ground nests and brushpile dens in TRB seemed more vulnerable to human disturbance than those in tree dens. Tree dens may be an important component for female reproductive success, especially in areas subject to flooding (Smith 1985, Alt 1984). Weaver (1992) documented the movement of one female who changed tree dens because her den was flooded due to heavy rains. Weaver (1992) also found a dead cub floating in the flooded den cavity. Tree dens can provide seclusion from human disturbances (Pelton *et al.* 1980) and can be vital habitat components where human disturbances are frequent (Johnson and Pelton 1980).

Some black bears may live over 25 years in the wild. Because bears are relatively long-lived animals, population growth and persistence at small population sizes is especially sensitive to adult mortality rates (McCullough 1981, Suchy *et al.* 1985, Cox 1993). The loss of a breeding age female can have a significant impact on small, isolated populations and certainly hampers recovery efforts.

Bear mortality has been attributed to natural and human causes. Natural causes include disease, cannibalism, drowning, maternal care, and climbing accidents. Human-induced mortality of bears in general includes habitat destruction, hunting, trapping, poaching, vehicle and train collisions, electrocution, depredation/nuisance kills, disturbance (causing den abandonment), and accidents associated with research activities. Farming activities can also cause bear mortality; for example, two bears were run over and killed by a sugar cane harvesting machine in lower Louisiana.

Human activity and exploitation (legal and illegal) of wildlife increases with accessibility (Holbrook and Vaughan 1985, Van Dyke *et al.* 1986). Roads' fragment habitat, cause direct mortality, increase human contact, and may decrease habitat use or act as barriers to dispersal

(major highways). In Louisiana and Mississippi, the most significant mortality factors are poaching and road kills. Since 1988, at least 21 Louisiana black bears are known to have died directly from human-related causes.

The most important natural factor regulating black bear populations appears to be variation in food supply and its effect on physiological status and reproduction (Rogers 1976). The survival rate of black bear cubs is closely associated with the physical condition of the mother (Rogers 1976). Cub mortality rates and female infertility are typically greater in single or successive years of poor mast production or failure (Rogers 1987, Elowe and Dodge 1989, Eiler et al. 1989). During periods of food shortages bears range further in search of food, substantially increasing their chances for human encounters and increasing chances for human-related mortality (Jonkel and Cowan 1971, Beeman and Pelton 1976, Rogers 1976). High mortalities are suspected for yearling and subadult black bear males dispersing from the family unit, probably due to starvation and poaching.

Reasons for Listing

Habitat destruction or modification is the primary threat to the Louisiana black bear. Its historical habitat has suffered extensive modification. Habitat quantity has been reduced by more than 80 percent as of 1980. The remaining habitat has been reduced in quality and quantity by fragmentation. Habitat fragmentation also limits the potential for the present population to expand its current occupied range. In addition, further loss of occupied habitat added incrementally to past losses could breach the minimum habitat size necessary to ensure continued survival of the Louisiana black bear.

Human related mortality poses an additional threat for black bears. As a population of bears approaches the minimum viable threshold, any loss to that population becomes more significant.

Conservation Measures

Recovery efforts undertaken since the listing of the Louisiana black bear have included public involvement through the BBCC and others, Federal and State actions taken as a result of the Endangered Species Act and the Wetlands Reserve Program of the 1990 Farm Act, and research conducted on Louisiana black bear ecology and systematics. The bulk of recovery activities are a direct result of efforts of the BBCC.

The Black Bear Conservation Committee was formed in October 1990 to restore the Louisiana black bear to suitable habitat within its historical range. The BBCC is a broad coalition of over 50 State and Federal agencies, forest and agricultural companies, various special interest organizations, and universities working together for the black bear and associated natural resources (see Table 1). The BBCC's priorities have been to put the resource first, to find common ground for building coalitions while avoiding confrontations, to replace emotion with credible science, and to have a strong commitment to black bear restoration and management. The continued active role of this public and private sector alliance is a major key to the restoration of the Louisiana black bear. The BBCC's long-range goal approach to

management of black bears includes five major goals: (1) preventing further habitat destruction; (2) establishing corridors between existing fragmented habitat; (3) integrating management among tracts to effectively use fragmented resources; (4) focusing efforts of a diverse user group toward common management objectives that benefit the bear; and, (5) educating the public about the Louisiana black bear. In addition to the restoration plan being developed (BBCC 1994), the BBCC has published several articles, newsletters (BBCC 1991), and the Black Bear Management Handbook (BBCC 1992).

The Black Bear Management Handbook is available to landowners and land managers interested in black bear ecology and management of habitat for black bear. The publication provides recommendations on management of bottomland hardwoods, hardwood plantations, upland pines, and upland mixed pine/hardwoods. It discusses agricultural considerations, the positives and negatives associated with certain crops in bear habitat, and the State and Federal programs affecting habitat. It contains sections on resolution of human/bear conflicts and an introduction to the concept of landscape management. The goal of landscape management is to establish and bring together suitable black bear habitat components and management efforts among multiple landowners using a coordinated approach in which various user groups work together to promote bear management over a large area.

The BBCC has initiated a "Bear Conflict Management Team" to examine ways to reduce human-bear conflicts. One of the committee's first tasks was to survey beekeepers in Louisiana about bear damage (Appendix I).

The BBCC recognized Deltic Farm & Timber, Inc. (Deltic), a large private land holding company in northeast Louisiana, as its first award recipient for a landowner or individual contributing significantly toward the enhancement and restoration of the Louisiana black bear (BBCC 1991). Deltic owns and manages bottomland hardwood forests in Madison and East Carroll Parishes. Management through careful timber harvests, reforestation of marginal agricultural land, rigid protection, and a tolerant attitude toward the occasional depredation of the company's agricultural crops by bears has helped in the conservation and recovery of the bear. In addition, Deltic has cooperated with bear research personnel.

Conservation education can be an important factor in altering behavior of potential wildlife law violators, as well as in developing public concern and motivating public action (Duda et al. 1989). The main contributor to the education effort is the BBCC Coordinator who has given numerous presentations on black bear ecology throughout the State. In addition, since 1991, printed materials, television programs (e.g., "Mississippi Outdoors"), and other public programs have addressed Louisiana black bear conservation.

The final rule listing the Louisiana black bear (*Ursus americanus luteolus*) as a threatened species within its historic range and designating other free-living bears of the species *U. americanus* within the same range as threatened by similarity of appearance was published by the Fish and Wildlife Service in the Federal Register on January 7, 1992. The "threatened by similarity of appearance" designation is used where there is a non-listed species (*U. americanus*) that looks so similar to the listed species (*U. a. luteolus*) that law enforcement

agents cannot tell them apart easily. Under these circumstances, the listed species could quite easily be taken or traded under the guise of being the non-listed species.

Section 9 of the Endangered Species Act of 1973 (ESA), as amended, includes prohibition against take, harm, trade, shipment, commerce, possession, or transportation of any listed species. "Harm," under these circumstances, may be interpreted to also include significant habitat modification or degradation such that members of a listed species are injured or killed through significant impairment of essential behavioral patterns including breeding, feeding, or sheltering (U.S. Fish and Wildlife Service 1992^b). A special rule was included in the final rule listing the Louisiana black bear that exempted normal forest management activities within the historic range from the take prohibitions except for those activities causing damage to or loss of den trees, den tree sites, or candidate den trees (U.S. Fish and Wildlife Service 1992^b). The exemption is based on recent studies affirming that the habitat diversity resulting from such activities is compatible with the habitat needs of the bear (U.S. Fish and Wildlife Service 1992^b). For purposes of the exemption, normal forest management activities are defined as those activities that support a sustained yield of timber products and wildlife habitats, thereby maintaining forested conditions in occupied habitat. For purposes of this special rule, candidate den trees are considered to be bald cypress and tupelo gum with visible cavities, having a minimum diameter at breast height of 36 inches, and occurring in or along rivers, lakes, streams, bayous, sloughs, or other water bodies.

On December 2, 1993, the Fish and Wildlife Service proposed to designate bottomland forested areas as critical habitat for the Louisiana black bear (U.S. Fish and Wildlife Service 1993). The determination of critical habitat is currently in progress. By definition, critical habitat affects only Federal agency actions and does not apply to private, or local or State government activities that are not subject to Federal authorization or funding (U.S. Fish and Wildlife Service 1993). Habitat loss, especially the conversion of forested habitats to croplands, is the principal threat to the Louisiana black bear. This loss has occurred in a piecemeal and cumulative fashion and is still ongoing.

Section 7 of the ESA provides protection, through an interagency cooperation process, to both endangered and threatened (listed) species and designated critical habitat for Federal actions that are within the jurisdiction of the United States or on the high seas. Federal agencies, under Section 7(a)(2), are required to ensure that any actions they implement, fund, or authorize are not likely to jeopardize the continued existence of listed species or result in destruction or adverse modification of the critical habitat of such species. If a Federal agency determines that its proposed action may affect a listed species or critical habitat, it must consult with the Fish and Wildlife Service. The added protection of critical habitat may stem piecemeal habitat loss, otherwise permitted by the jeopardy standard.

The core area for the TRB bear population is found on Tensas River National Wildlife Refuge (NWR) in northeast Louisiana. This Refuge covers approximately 24,000 hectares (ha) or 60,000 acres in Madison and

Tensas Parishes and is managed in consideration of the bear's needs. The State of Louisiana's Big Lake Wildlife Management Area (WMA) is adjacent to the refuge and contributes crucial bear habitat.

The Louisiana Department of Wildlife and Fisheries (LDWF) manages the following areas with consideration to the black bear: Attakapas, Big Lake WMA, Boeuf WMA, Dewey W. Wills WMA, Grassy Lake WMA, Ouachita WMA, Pearl River WMA, Red River WMA, Russell Sage WMA, Sherburne WMA/Atchafalaya NWR, Three Rivers WMA, and Tunica Hills WMA for about 133,449 ha (333,624 acres).

Land acquisition is an important conservation measure for Louisiana black bear recovery. In the TRB, a proposal has been accepted by the Fish and Wildlife Service to expand Tensas River National Wildlife Refuge by purchasing 8,000 ha (20,000 acres) adjacent to the refuge from willing sellers. Another proposal to add an additional 8,000 ha (20,000 acres) with three corridors is being reviewed. The LDWF is also helping connect bottomland hardwood tracts through land acquisition within the historic range. The Army Corps of Engineers has been and will continue to purchase land or acquire easements on land in the lower Atchafalaya River Basin.

The 1990 Farm Act established the Wetland Reserve Program (WRP) to assist landowners in restoring and protecting wetland habitat. The WRP is now administered by the Natural Resource Conservation Service (NRCS) with technical assistance from the Fish and Wildlife Service and State forestry agencies. Eligible WRP lands may include prior converted cropland, farmed wetlands, farmed wetland pasture, and certain other areas. Landowners must record permanent easements ensuring wetland protection in return for WRP payments. A conservation easement plan is developed by technical agency personnel to restore or protect functional values of an accepted site. Cost-sharing up to 75 percent is authorized for restoration on non-permanent easement acres and up to 100 percent for restoration on permanent easement acres. Landowners must submit their proposals to the NRCS during the WRP sign-up period. After the sign-up closes, NRCS and the Fish and Wildlife Service, using established ranking factors, prioritize the sites submitted for funding. During the 1994 and the on-going 1995 sign-up, the proximity of the sites to occupied bear habitat has been a ranking factor. Sign-ups in 1992 and 1994 totalled approximately 15,440 ha (38,600 acres) in Louisiana and 17,520 ha (43,800 acres) in Mississippi. About \$53 million of the 1995 appropriation remains available to enroll additional acreage. Beginning in 1995, NRCS is paying 100 percent of the wetland restoration cost on land enrolled in WRP.

The Fish and Wildlife Service developed a contingency plan for responding to Louisiana black bear problems in Louisiana (Appendix II). The purpose of this plan is to provide clear direction to personnel engaged in reducing and resolving conflicts between humans and bears. This document also provides guidelines for the handling and disposition of orphaned bear cubs; sick, injured, or dead bears; and nuisance bears. The Department of Agriculture's Animal Damage Control has the lead for dealing with handling, aversive conditioning, and relocation of chronic nuisance bears. Implementation of the plan provides quick response time to complaints involving bears. Prompt responses will help ease the public's concern, foster support for recovery of the Louisiana black bear, and possibly avoid illegal take of black bears.

The Defenders of Wildlife, in conjunction with the Fish and Wildlife Service, the Mississippi Department of Wildlife, Fisheries, and Parks, the Louisiana Department of Wildlife and Fisheries, and the Louisiana Chapter of the Safari Club International, has established a reward program for information leading to the conviction or plea bargain of an illegal Louisiana black bear kill (Appendix III). Harming a black bear in Louisiana and southern Mississippi carries fines up to \$10,000 and 120 days in jail and up to \$1,000 and 1 year in jail, respectively.

As part of the Fish and Wildlife Service ecosystem approach to fish and wildlife conservation, the Lower Mississippi Valley (LMV) ecosystem was identified. The LMV ecosystem plan of action contains objectives that are complementary to conserving and restoring the Louisiana black bear, such as: (1) protect and restore bottomland hardwood forested habitat, including riparian travel corridors; (2) implement actions to facilitate the recovery of threatened species; and, (3) increase public awareness and support for LMV resources and their management.

Most of the existing data on the Louisiana black bear is due to studies done by the Fish and Wildlife Service on the Tensas National Wildlife Refuge. Information has been provided on home range, movements, use of corridors, food habits, day-beds, and denning (Weaver 1992, Weaver et al. 1991). Additional Tensas River Basin studies are ongoing under the supervision of Dr. Michael Pelton of the University of Tennessee. One study examined bear movements on four fragmented bottomland hardwood forest tracts in Madison Parish (Marchinton 1995). One Madison Parish tract of 600 ha (1500 acres) known as Blue Cat, is owned by Deltic and is believed to support one of the highest densities of bears in the State. Dr. Michael Pelton has also initiated research projects in Tennessee on black bear winter denning, artificial dens, and relocation methods for sows which may be applicable to Louisiana black bears.

Research on bear ecology in the Atchafalaya region in Louisiana and on the status of bears in adjacent southwest Mississippi is being conducted under the supervision of Dr. Richard Pace of the Louisiana Cooperative Fish and Wildlife Unit (Coop. Unit) at Louisiana State University. The study is being funded by the Fish and Wildlife Service, Louisiana Department of Wildlife and Fisheries, and the Coop. Unit. Fish and Wildlife Service funded research has been initiated in the Tunica Hills region, located in West Feliciana Parish, Louisiana and Wilkinson County, Mississippi, to determine if the area supports a population of breeding bears. Dr. Pace has started two additional Louisiana black bear projects. One project will analyze population data and the other will examine bear movement patterns.

The Fish and Wildlife Service has funded additional systematic investigations through Dr. Mike Vaughn of the Virginia Cooperative Fish and Wildlife Unit at Virginia Tech University. These studies will determine morphological, genetic, and nutritional differences among the Louisiana black bear, the Florida black bear (*U. a. floridanus*), and the American black bear (*U. a. americanus*).

Mississippi State University has initiated a study, supervised by Dr. Harry Jacobson, on bear use of forested habitats and the relationship between black bear ecology and forest management. The study area is located near the Mississippi River in Bolivar County, Mississippi and Desha County, Arkansas.

A preliminary survey of public attitudes toward black bears in Mississippi revealed that the majority of responding sportsmen felt it was important or very important to know more about black bears, and they supported or highly supported spending sportsmen's dollars to do so (Shropshire, unpublished data).

The Florida Game and Fresh Water Fish Commission has developed a Geographic Information System (GIS) to map occupied and potential black bear habitat on public and private lands in Florida (Cox et al. 1994). A regional assessment of forests and black bear habitat by Rudis and Tansey (1995) has provided data which could be used in a GIS similar to the Florida model. A regional GIS database would provide useful information for Louisiana black bear recovery.

Strategy of Recovery

Recovery actions will be implemented to alleviate known threats to the survival of the Louisiana black bear. Since the primary threat is loss of habitat, restoring Louisiana black bear habitat with interconnecting corridors between habitat fragments, thereby increasing habitat quantity and quality, will be the focus of this recovery plan. The support of private landowners will be vital to this effort. Other complementary actions to be considered include public education, gathering information about the bear's biological needs for use in more effectively managing the bear population and its supporting habitat, reducing the incidence of human-induced mortality, and monitoring the effectiveness of the various recovery actions implemented.

Although this recovery plan may differ slightly from the Black Bear Restoration Plan (BBCC 1994), the content and actions required for recovery mirror the Black Bear Conservation Committee's plan. The desired effect of both plans is the continued survival of the Louisiana black bear, and as a result, the plans are complementary and should be implemented together under cooperative partnerships.

II. RECOVERY

A. Objective and Criteria

The objective of the recovery goals in this plan is to sufficiently alleviate the threats to the Louisiana black bear metapopulation, and the habitat that supports it, so that the protection afforded by the Endangered Species Act is no longer warranted. The following are criteria for delisting the Louisiana black bear:

- (1) At least two viable subpopulations, one each in the Tensas and Atchafalaya River Basins;
- (2) Immigration and emigration corridors between the two viable subpopulations; and,
- (3) Long-term protection of the habitat and interconnecting corridors that support each of the two viable subpopulations used as justification for delisting.

A minimum viable subpopulation is defined as a subpopulation which has a 95 percent or better chance of persistence over 100 years, despite the foreseeable effects of four stochastic factors: demography, environment, genetics, and natural catastrophe (Shaffer 1981).

Long-term protection is defined as having sufficient voluntary conservation agreements with private land owners and public land managers in the Tensas and Atchafalaya River Basins so that habitat degradation is unlikely to occur over 100 years.

These recovery criteria are preliminary and may be revised on the basis of new information.

B. Narrative Outline for Recovery Actions Addressing Threats

1. Restore and protect bear habitat. The habitat of the Louisiana black bear has suffered extensive modification with suitable habitat having been reduced by more than 80 percent as of 1980. The remaining habitat has been reduced in quality and quantity by fragmentation. Recovery of the Louisiana black bear is dependent upon restoration of habitat sufficient to support a metapopulation of two or more viable subpopulations.
 - 1.1 Identify key recovery blocks and key corridors. Map occupied and potential occupied habitat (using GIS) displaying land use, ownership, and cover type. From the map, identify and prioritize key recovery blocks within and outside the Tensas and Atchafalaya River Basins and key corridors to aid in long-term habitat protection (i.e., initiating reforestation efforts, planning land acquisition, developing conservation agreements and easements). Use results of task 4.2 (viable population goals) to help identify key recovery blocks.
 - 1.2 Develop long-term landowner protection of bear habitat. Establish positive contacts with private landowners (task 2.4). Obtain cooperative conservation agreements from

willing landowners to help protect bear habitat in the historic range, with special emphasis on key recovery and corridor areas (task 1.1).

- 1.3 Enhance, restore and manage bear habitat via cooperative matrix. Provide the key habitat requirements of black bears (food, water, cover, and denning sites) through a cooperative matrix consisting of bear habitat management on existing lands (Federal, State, and private), conservation easements, partnership agreements, conservation agreements, and land acquisition from willing sellers. Distribute the Black Bear Management Handbook to all interested in managing bear habitat and use the handbook to guide management practices (BBCC 1992). Forest management activities should provide for abundance, stability, and diversity of natural foods, and for habitat diversity, denning sites, escape cover, conservation of habitat linkages, reforestation, and access management (Weaver 1992).
- 1.4 Develop, implement, and evaluate habitat restoration plan. In general, reforestation of remote areas within and near occupied habitat should be a high priority. However, reforestation may be used to establish a corridor along streams or through habitat with unsuitable features. Reforestation of non-productive open land is also recommended. The plan should also prioritize location of restoration in relation to occupied habitat (task 1.1). The restoration plan should be distributed to all interested land managers (Federal, State, private).
- 1.5 Protect habitat to support long-term survival of bear population via cooperative matrix. Protect large tracts of relatively remote blocks of bear habitat with connecting corridors (task 1.1). Use results of task 4.2 (viable population goals) to help guide habitat protection. Habitat protection can be achieved via a cooperative matrix consisting of present land management efforts on existing lands (Federal, State, and private), conservation easements, partnership agreements, conservation agreements, and land acquisition from willing sellers. Coordinate enforcement of laws that protect bears and their habitat (task 3.1).
2. Develop and implement information and education program. The primary threats to the Louisiana black bear are habitat loss and human-induced mortality. Conducting management actions that benefit bears in all their habitats and reducing human-induced mortality are critical to recovery of the Louisiana black bear. Therefore, it is crucial that all owners and managers of black bear habitat and the public understand the importance and reasons for recommended bear recovery actions and bear habitat management practices. Only then, through their support and active involvement in the restoration of Louisiana black bear populations and their habitat, can recovery of the bear become a reality.

- 2.1 Disseminate bear status, recovery, and management information. An informed public is more likely to be understanding and supportive of necessary recovery actions and to become involved in the implementation of those actions. Strategies for widespread ongoing dissemination of information to the public about the bear, its biology, threats to its survival, and recovery actions to be taken should be developed in an outreach plan. Information can be disseminated through television programs (i.e., "Mississippi Outdoors"), newspaper and magazine articles, fact sheets, brochures, and presentations. Also distribute the Black Bear Management Handbook to all interested in managing bear habitat.
 - 2.2 Reduce illegal killing through education. Educate hunters and general public about the serious legal consequences of State and Federal conviction for illegal killing. A reward program should be actively publicized with requests for information leading to successful legal action against poachers (see Appendix III).
 - 2.3 Reduce human-bear conflict through education. Reducing human-bear conflicts can be achieved through education and implementation of the contingency plan for responding to Louisiana black bear problems in Louisiana (Appendix II). A similar plan should be developed for Mississippi and Texas when warranted. Emphasize preventative measures that can be taken to reduce the opportunity for conflict and to develop avenues for bear damage compensation.
 - 2.4 Identify bear management incentives for private landowners and distribute. Determine the array of available incentives for private landowner participation in habitat restoration. Assemble information in a manner (pamphlet or booklet) that enables private landowners to determine applicable incentives with sufficient guidance for them to get involved. Distribute information to all landholders with existing or potential black bear habitat.
3. Protect and manage bear populations. Managing bear numbers is dependent upon bear habitat management practices and population goals (task 1.3 and task 4.3). Recovery of the Louisiana black bear requires establishing two or more viable subpopulations. Achieving recovery will necessitate informed population management actions to overcome factors currently limiting Louisiana black bears. In Louisiana and Mississippi, it appears that poaching and road kills are the most significant mortality factor of bears. During a limited-permit deer hunt on Tensas National Wildlife Refuge, a radio-collared female bear was shot and the fate of her two cubs are unknown; the loss of a breeding age female can significantly impact population dynamics. Incidences like this may be prevented through education (task 2.1).
 - 3.1 Enforce legal protection of bears. Coordinate enforcement of laws that protect bears. Coordination of expertise, resources, and programs at the local, State, and Federal

level can more effectively contribute to the goal of recovering the Louisiana black bear (task 2.2 and task 2.3).

- 3.2 Coordinate record keeping of all reported and investigated bear deaths. All records of reported and investigated bear deaths in Louisiana, Mississippi and Texas (within historic range) should be stored in a designated place. The "keeper of the records" needs to be determined after coordination with all interested parties. This mortality data can then be synthesized and analyzed for trends (task 4.6).
- 3.3 Develop and implement road management guidelines. Development of guidelines should consider the following factors: distribution and density of roads, expected human use of roads, road design, and road management. See Fish and Wildlife Service recovery plans for the eastern timber wolf (U.S. Fish and Wildlife Service 1992a) and grizzly bear (Servheen 1993) for additional road management guidelines.
- 3.4 Develop and implement bear management plans. A management plan should be developed for each subpopulation and its supporting habitat. Use the Black Bear Management Handbook to guide management practices (BBCC 1992).
- 3.5 Monitor results of bear management plans. As implementation of the bear management plans proceeds, the status of the bear subpopulations and their habitat, and the effectiveness of the various management actions implemented should be monitored on an ongoing basis. Develop a monitoring plan, conduct monitoring, analyze results, and report every 5 years.
- 3.6 Review bear management plans and modify as warranted. After every 5-year report, the bear management plan for each subpopulation should be reviewed and modified as warranted. Doing so will maximize the effectiveness of the plans in contributing to the recovery of the Louisiana black bear.
4. Conduct research on population viability, corridors, and bear biology.
 - 4.1 Develop population monitoring techniques or indices. Through research and bear management, develop methods to census or estimate bear population numbers.
 - 4.2 Conduct population viability analysis. Conduct population viability analysis for each subpopulation. The ultimate subpopulation goals, habitat area size, and management actions required to meet the recovery objectives will be based upon the results of this analysis.

- 4.3 Define viable subpopulation goals. Through research and modeling, estimate viable subpopulation for the Tensas River and Atchafalaya Basins (task 4.1 and 4.2). Update recovery plan, if warranted.
- 4.4 Evaluate population indices and viable population goals. Once population indices and goals are developed, evaluate and report every 5 years (task 3.5 and task 3.6).
- 4.5 Develop corridor requirements and guidelines. From research studies, incorporate knowledge of corridors into practical management guidelines (task 1.1, 1.4, and task 3.3).
- 4.6 Study bear biology and limiting factors. The Black Bear Restoration Plan identifies additional research needs (BBCC 1994).

C. Literature Cited

- Alt, G.L. 1984. Cub adoption in the black bear. *Journal of Mammalogy* 65:511-512.
- Beeman, L.E. and M.R. Pelton. 1976. Homing of black bears in the Great Smoky Mountains National Park. *International Conference on Bear Research and Management* 3:87-95.
- Black Bear Conservation Committee. 1991. Black Bear Conservation Committee Newsletter. Volume 1, Number 1.
- Black Bear Conservation Committee. 1992. Black Bear Management Handbook. Black Bear Conservation Committee, Baton Rouge, LA. 28 pp.
- Black Bear Conservation Committee. 1994. Black Bear Restoration Plan (third draft). Baton Rouge, LA. 138 pp.
- Brody, A.J., and M.R. Pelton. 1989. Effects of roads on black bear movements in western North Carolina. *Wildlife Society Bulletin* 17:5-10.
- Cox, J., R. Kautz, M. MacLauglin, and T. Gilbert. 1994. Closing the gaps in Florida's wildlife habitat conservation system. Office of Environmental Services, Florida Game and Fresh Water Fish Commission, Tallahassee, FL. 239 pp.
- Cox, J.R. 1993. Black bear (*Ursus americanus*): species abstract. Unpublished manuscript. Florida Game and Fresh Water Fish Commission, Tallahassee, FL.
- Duda, M.D., S.I. Cerulean and J.A. Gillian. 1989. Comprehensive wildlife education planning in Florida: the value of human dimensions research. *North American Wildlife and Natural Resources Conference* 54:455-467.
- Eiler, J.H., W.G. Wathen, and M.R. Pelton. 1989. Reproduction in black bears in the southern Appalachian mountains. *Journal of Wildlife Management* 53:353-360.
- Elowe, K.D. and W.E. Dodge. 1989. Factors affecting black bear reproductive success and cub survival. *Journal of Wildlife Management* 53:962-968.
- Griffith, E. 1821. General and Particular Descriptions of the Vertebrated Animals order Carnivora. London: Presented for Baldwin, Cradock, and Joy.
- Hall, E.R. 1981. The Mammals of North America. John Wiley and Sons, New York, NY. pp 950-951.
- Hellgren, E.C. and M.R. Vaughan. 1989. Denning ecology of black bears in a southeastern wetland. *Journal of Wildlife Management* 53:347-353.
- Holbrook, H. T. and M. R. Vaughn. 1985. Influence of roads on turkey mortality. *Journal of Wildlife Management* 49:611-614.

- Johnson, K.G. and M.R. Pelton. 1980. Environmental relationships and the denning period of black bears in Tennessee. *Journal of Mammalogy* 61:653-660.
- Jonkel, C.J. and I.M. Cowan. 1971. The black bear in the spruce-fir forest. *Wildlife Monographs* 27:1-57.
- Kennedy, M.L. 1989. Systematic assessment of the black bear, *Ursus americanus luteolus*. Special Report to the U.S. Fish and Wildlife Service, Jackson, MS.
- Kolenosky, G.B. and S.M. Strathearn. 1987. Winter denning of black bears in east-central Ontario. *International Conference of Bear Research and Management* 7:305-316.
- Lande, R. 1987. Extinction thresholds in demographic models of territorial populations. *American Naturalist* 130:624-635.
- Lowery, G.H., Jr. 1974. The Mammals of Louisiana and its adjacent waters. Louisiana State University Press, Baton Rouge, LA. 565 pp.
- Marchinton, F. B. 1995. Movement ecology of black bears in a fragmented bottomland hardwood habitat in Louisiana. M.S. thesis, University of Tennessee, Knoxville, TN. 107 pp.
- McCullough, D.R. 1981. Population dynamics of the Yellowstone grizzly. Pp. 173-196 In: C.W. Fowler and T.D. Smith (eds.). *Dynamics of Large Mammal Populations*. John Wiley, New York, NY.
- Merriam, C.H. 1893. The Yellow Bear of Louisiana. *Ursus luteolus griffithi*. *Proceedings of the Biological Society of Washington* 3:147-152.
- Miller, G.S., Jr., and R. Kellog. 1955. List of North America's recent mammals. *Bulletin of the U.S. National Museum* 205.
- Noss, R.F. 1987. Protecting natural areas in fragmented landscapes. *Natural Areas Journal* 7:2-13.
- Nowak, R.M. 1986. Status of the Louisiana Bear. U.S. Fish and Wildlife Service, Washington D.C. 17 pp.
- Nyland, P.D. 1995. Black bear habitat relationships in coastal Louisiana. M.S. thesis. Louisiana State University, Baton Rouge, LA. 76 pp.
- Pelton, M.R., L.E. Beeman, and D.C. Eager. 1980. Den selection by black bears in the Great Smoky Mountains National Park. *International Conference on Bear Research and Management* 4:149-151.
- Pelton, M.R. 1982. Black Bear. Pp. 504-514 In: J.A. Chapman and G.A. Feldhammer (eds.). *Wild Mammals of North America: Biology, Management and Economics*. The John Hopkins University Press, Baltimore, MD.
- Pelton, M.R. 1986. Habitat needs of black bears in the east. Pp. 49-53 In: D.L. Kulhavy and R.N. Conner (eds.). *Wilderness and Natural Areas in the Eastern United States: A Management Challenge*. Center for Applied Studies, School of Forestry, Stephen F. Austin State University, Nacogdoches, TX.

- Rogers, L.L. 1976. Effects of mast and berry crop failures on survival, growth, and reproductive success in black bears. North American Wildlife Conference 41:431-438.
- Rogers, L.L. 1987. Effects of food supply and kinship on social behavior, movements, and population growth of black bears in northeastern Minnesota. Wildlife Monographs 97:1-72.
- Rogers, L.L. and Allen. 1987. Habitat suitability index models: black bear, upper Great Lakes Region. Biological Report 82(10.144). U.S. Fish Wildlife Service.
- Rudis, V.A. 1986. Emerging patterns in the distribution of roadless forested areas in the midsouth. Pp. 265-270 In: D.L. Kulhavy and R.N. Conner (eds.). Wilderness and Natural Areas in the Eastern United States: A Management Challenge. Center for Applied Studies, School of Forestry, Stephen F. Austin State University, Nacogdoches, TX.
- Rudis, V.A. 1988. Nontimber values of Louisiana's timberland. Resource Bulletin SO-132. USDA Forest Service, Southern Forest Experiment Station. New Orleans, LA. 27 pp.
- Rudis, V.A. and J. B. Tansey. 1995. Regional assessment of remote forests and black bear habitat from forest resource surveys. Journal of Wildlife Management 59:170-180.
- Servheen, C. 1993. Grizzly bear recovery plan (second revision). U.S. Fish and Wildlife Service. 181 pp.
- Shaffer, M.L. 1981. Minimum population sizes for species conservation. Bioscience 31:131-134.
- Smith, T.R. 1985. Ecology of black bears in a bottomland hardwood forest in Arkansas. Ph.D. Dissertation, University of Tennessee, Knoxville. 209 pp.
- Suchy, W.J., L.L. McDonald, M.D. Strickland, and S.H. Anderson. 1985. New estimates of minimum viable population sizes for grizzly bears of the Yellowstone ecosystem. Wildlife Society Bulletin 13:223-228.
- Taylor, D.F. 1971. A radio-telemetry study of the black bear (*Euarctos americanus*) with notes on its history and present status in Louisiana. M.S. Thesis, Louisiana State University, Baton Rouge, LA.
- U.S. Fish and Wildlife Service. 1992. Recovery plan for the eastern timber wolf (second revision). 73 pp.
- U.S. Fish and Wildlife Service. 1992. Endangered and threatened wildlife and plants; determination of threatened status for *U. a. luteolus* (Louisiana black bear). Federal Register 57:588-595.
- U.S. Fish and Wildlife Service. 1993. Endangered and threatened wildlife and plants; proposed determination of critical habitat for the Louisiana black bear. Federal Register 58:63560-63569.
- Van Dyke, F.G., R.H. Brocke, H.G. Shaw, B.B. Ackermann, T.P. Hemker, and F.G. Lindzey. 1986. Reaction of mountain lions to logging and human activity. Journal of Wildlife Management 50:95-102.

- Weaver, K.M. 1992. Louisiana Status Report. Proceedings of the Ninth Eastern Workshop on Black Bear Research and Management. Ontario, Canada. 14 pp.
- Weaver, K.M., J.C. Posey, and M.D. Esters. 1991. Louisiana black bear status report. Proceedings Eastern Workshop Black Bear Research and Management 10:23-29.
- Weaver, K.M. and M.R. Pelton. 1994. Denning ecology of black bears in the Tensas River Basin of Louisiana. International Conference on Black Bear Research and Management (in press).
- Wooding, J.B., M.R. Pelton, and J.R. Cox. 1993. GIS generated Map of occupied and potential black bear habitat on public and private lands in the Southeast Coastal Plains. Florida Game and Fresh Water Fish Commission, Tallahassee, FL.

III. IMPLEMENTATION SCHEDULE

The following Implementation Schedule outlines recovery actions and their estimated costs for the first 3 years of the recovery program. It is a guide for meeting the objective discussed in Part II of this plan. This Schedule indicates task priorities, task numbers, task descriptions, duration of tasks, the responsible agencies, and lastly, estimated costs.

Priorities in column one of the following Implementation Schedule are assigned as follows:

1. Priority 1 - An action that must be taken to prevent extinction or to prevent the species from declining irreversibly in the foreseeable future.
2. Priority 2 - An action that must be taken to prevent a significant decline in species population/habitat quality or some other significant negative impact short of extinction.
3. Priority 3 - All other actions necessary to meet the recovery objective.

Key to Acronyms used in Implementation Schedule

USFWS- United States Fish and Wildlife Service
LE - Law Enforcement (USFWS)
TE - Division of Endangered Species (USFWS)
NWR - National Wildlife Refuges (USFWS)
R - Reality (USFWS)
LMV - Lower Mississippi Valley Ecosystem Plan (USFWS)
BBCC - Black Bear Conservation Committee
WMA - State Wildlife Management Area (LDWF)
LDWF - Louisiana Department Wildlife and Fisheries
MDWFP- Mississippi Department Wildlife, Fisheries and Parks
NRCS - Natural Resource Conservation Service
COE - U.S. Army Corps of Engineers
ADC - Animal Damage Control (USDA)
UNV. - University (Louisiana Cooperative Fish and Wildlife Research Unit, University of Tennessee, Louisiana State University, Mississippi State University, Virginia Cooperative Fish and Wildlife Research Unit)
Pvt. - Private land or timber land owners and land managers

IMPLEMENTATION SCHEDULE										
PRIORITY #	TASK #	TASK DESCRIPTION	TASK DURATION	RESPONSIBLE PARTY			COST ESTIMATES (\$K)			COMMENTS/NOTES
				USFWS		Other	FY 1	FY 2	FY 3	
				Region	Division					
1	1.1	Identify key recovery blocks and key corridors.	5 yrs.	4	TE, NWR, LMV	BBCC, LDWF, UNV, Pvt.	50	30	30	Use GIS and use results of task 4.2.
1	1.2	Develop landowner protection of bear habitat.	ongoing	4	TE, NWR	BBCC, Pvt.	10	10	10	Conservation agreements, Partners for Wildlife Program.
2	1.3	Enhance, restore, and manage bear habitat.	ongoing	4	TE, NWR, R, LMV NWR	BBCC, WMA, LDWF, COE, Pvt.	15	15	15	Use <u>Black Bear Management Handbook</u> as a guide.
2	1.4	Develop, implement, and evaluate habitat restoration plan.	5 yrs.	4	TE, NWR	BBCC, UNV, Pvt.	10	---	---	Incorporate task 1.1.
1	1.5	Protect habitat to support long-term survival of bear populations.	ongoing	4	TE, LE, NWR, R, LMV	BBCC, WMA, LDWF, COE, Pvt.	50	50	50	Incorporate tasks 1.1, 3.1 and use results of 4.2.
1	2.1	Disseminate bear status, recovery, and management information.	ongoing	4	TE, NWR	BBCC, LDWF, MDWFP, COE, UNV, Pvt.	3	1	1	
2	2.2	Reduce illegal killing through education.	ongoing	4	TE, LE, NWR	BBCC, LDWF, MDWFP	1	1	1	
3	2.3	Reduce human-bear conflict through education.	ongoing	4	TE, LE, NWR	BBCC, LDWF, MDWFP, ADC, UNV	1	1	1	Use Contingency Plan as guide.
2	2.4	Identify bear management incentives for private landowners and distribute.	ongoing	4	TE, NWR, LMV	BBCC, LDWF, MDWFP, NRCS	1	---	---	

IMPLEMENTATION SCHEDULE										
PRIORITY #	TASK #	TASK DESCRIPTION	TASK DURATION	RESPONSIBLE PARTY			COST ESTIMATES (\$K)			COMMENTS/NOTES
				USFWS		Other	FY 1	FY 2	FY 3	
				Region	Division					
2	3.1	Enforce legal protection of bears.	ongoing	4	TE, LE, NWR	LDWF, MDWFP				Use exisiting program funding.
3	3.2	Coordinate record keeping of bear deaths.	ongoing	4	TE, LE, NWR	BBCC, LDWF, MDWFP, ADC, UNV, Pvt.				Use existing program funding.
2	3.3	Develop and implement road management guidelines.	ongoing	4	TE, NWR	BBCC, UNV	5	5	---	
3	3.4	Develop and implement bear management plans.	2 yrs.	4	TE, NWR	BBCC, LDWF, MDWFP, UNV, Pvt.	10	5	---	
3	3.5	Monitor results of bear management plans.	ongoing	4	TE, NWR	BBCC, LDWF, MDWFP, UNV, Pvt.				Will follow completion of task 3.4 - cost unknown.
3	3.6	Review bear management plans.	every 5 yrs.	4	TE, NWR	BBCC, LDWF, MDWFP, UNV, Pvt.				Estimated cost is 5K every fifth year.
2	4.1	Develop population monitoring techniques or indices.	6 yrs.	4	TE, NWR	BBCC, LDWF, MDWFP, COE, UNV, Pvt.	30	15	15	
2	4.2	Conduct population viability analysis.	5 yrs.	4	TE, NWR	BBCC, UNV	35	15	10	
2	4.3	Define viable subpopulation goals.	5 yrs.	4	TE, NWR	BBCC, UNV				Update recovery plan, if warranted. Cost unknown.
3	4.4	Evaluate population indices and goals.	every 5 yrs.	4	TE, NWR	BBCC, LDWF, MDWFP, UNV				Cost unknown.
2	4.5	Develop corridor guidelines.	5 yrs.	4	TE, NWR	BBCC, UNV	15	10	10	Incorporate results into tasks 1.1 and 3.3
3	4.6	Study bear biology and limiting factors.	ongoing	4	TE, NWR	BBCC, LDWF, MDWFP, UNV	60	60	60	

IV. APPENDIX I

Bee Keepers Survey Results

MEMORANDUM

DATE: June 4, 1995

TO: Members; Black Bear Conservation Committee

FROM: Dwight LeBlanc, Chair; Bear Conflict Management Team of the Black Bear Conservation Committee

SUBJECT: Results of beekeeper survey

In October, 1994, a bear-damage survey instrument (copy attached) was compiled by member of the Black Bear Conservation Committee. The LA Cooperative Extension Service mailed this survey to 104 Louisiana beekeepers having 3 (N=24) or 4 or more (N=80) apiary locations. Responses were returned by 34 individuals. Results of this survey follow.

Twenty responses had retrievable postmarks and came from the following Parishes: Acadia (1), Avoyelles (2), Caldwell (1), Concordia (1), East Baton Rouge (1), Grant (1), Iberville (1), Jeff Davis (1), Livingston (1), Orleans (2), St. Charles (1), St. Landry (2), St. Tammany (3), Tangipahoa (2).

QUESTION 1. Have you ever seen or encountered a black bear near your apiaries? (Y or N)

Thirty-four responses were received. Of these, 29 (85%) reported "no" and 4 (15%) reported "yes." Two postmarks on the "yes" responses were from Avoyelles and Jeff Davis Parishes; the other postmarks could not be identified.

QUESTION 2. Within the last five years have you ever had problems with a bear at any of your apiaries? (Y or N)

Thirty-three responses were received. Of these, 31 (94%) reported "no" and 2 (6%) reported "yes." The postmarks of the two responses indicating "yes" to the question were from Avoyelles and Jeff Davis Parishes.

QUESTION 2a. If yes to Question 2, use the attached chart to provide information about your losses.

Two beekeeperS provided information, as follows:

PARISH	LOC. IN PARISH	YEAR	# TIMES DAMAGED	# HIVES DAMAGED	# HIVES INVOLVED	\$ LOSS			
						HONEY	BEES	EQUIP.	PROD.
Pointe Coupee	NE	1990	4	10	45	\$252	?	\$200	\$900
Pointe Coupee	NE	1991	6	15	45	\$378	?	\$300	\$2,350
Cameron	NE	1995	1	20	?	?	?	?	?

QUESTION 2b. Were any of the apiaries damaged by bears located on public land? (Y or N) yes, what agency owns or manages the land?

Four responses were received. One indicated damage to hives located on public land. This beekeeper reported that damage occurred in Cameron Parish on the U.S. Fish and Wildlife Service's Lacassine National Wildlife Refuge.

QUESTION 2c. How many of the damaged apiaries were in permanent locations? How many were in temporary locations?

One response was received. It indicated that damage occurred at one permanent apiary location.

QUESTION 3. What types of bear-proof measures have you taken to protect your beekeeping operation (examples: harassment, permanent electric fence, temporary electric fence, move apiary, etc.)? How successful were each of these in terms of preventing or reducing further damage?

One beekeeper from Avoyelles Parish tried to "leave human scent" in his affected apiaries in the evening but was not successful in stopping damage.

QUESTION 4. Have you had any other type of bear-caused damage on your property or property you control? (Y or N) If yes, describe. What measures have you taken to prevent future problems with bears?

Twenty one responses were received. All indicated that no other bear-caused damage had been encountered on property they owned or controlled. None indicated that they had taken steps to preventive steps for the future.

QUESTION 5. How tolerant of bear-caused damage would you be if provided the following types of assistance:

a. Advice from a wildlife professional on how to bear proof an apiary?

Nineteen beekeepers responded to this question, as follows:

9 Very Tolerant

9 Tolerant

5 Not Tolerant

b. Assistance from a wildlife professional to help bear-proof and apiary?

Twenty-three beekeepers responded to this questions, as follows:

11 Very Tolerant

8 Tolerant

4 Not Tolerant

c. Assistance with moving a bear that is causing or threatening damage?

Twenty-three beekeepers responded, as follows:

14 Very Tolerant

7 Tolerant

2 Not Tolerant

d. Partial financial assistance to compensate for losses that occur after bear-proofing measures are taken?

Twenty-three beekeepers responded, as follows:

12 Very Tolerant

7 Tolerant

4 Not Tolerant

e. A combination of technical and financial assistance?

Twenty-two beekeepers responded, as follows:

13 Very Tolerant

6 Tolerant

3 Not Tolerant

QUESTION 6. If you regularly encounter problems with bears, do you want someone to visit with you to discuss bear control options available to you? (Y or N) If yes, give name, address, and telephone number.

Of the beekeepers reporting that they had seen bears near their apiaries or had experienced damage, only one requested a visit from a wildlife professional. Five other beekeepers would like for someone to visit and provide information on bears.

OTHER COMMENTS: One beekeeper reported that he would shoot a bear damaging his hives.

APPENDIX II

Contingency Plan for Responding to Black Bear Problems in Louisiana

CONTINGENCY PLAN FOR RESPONDING TO
BLACK BEAR PROBLEMS IN LOUISIANA

Fish and Wildlife Service
Southeast Region
1875 Century Boulevard
Atlanta, Georgia 30345

Approved:



Acting Regional Director

Date:

October 20, 1994

I. INTRODUCTION

The Louisiana black bear (*Ursus americanus luteolus*) was listed as threatened in the Federal Register on January 7, 1992 (50 CFR Part 17). This listing is the result of the reduction in population size due to extensive habitat loss. Remaining bear populations are stressed because existing suitable habitat quality has been reduced by fragmentation. Illegal poaching of black bears has also contributed to the decline of the species. As restoration efforts progress, bear populations and, consequently, the number of complaints involving bears, will increase. It is essential that the public's concerns regarding problem bears be addressed in a timely and professional manner. Prompt responses to problem bear complaints will foster support for recovery of the Louisiana black bear.

The purpose of this contingency plan is to provide clear direction to personnel engaged in reducing and resolving future conflicts between humans and Louisiana black bears. This document also provides wildlife professionals with procedural guidelines for the handling and disposition of orphaned bear cubs; sick, injured, or dead bears; and nuisance bears.

This document will clearly identify the responsibilities of the different agencies and groups actively involved in the restoration of the Louisiana black bear. Those groups include: the Fish and Wildlife Service (Service); the Black Bear Conservation Committee (BBCC); Department of Agriculture, Animal Damage Control (ADC); the Louisiana Cooperative Fish and Wildlife Research Unit (Coop. Unit), located at Louisiana State University; and Louisiana Department of Wildlife and Fisheries (LDWF). Those groups have all assumed varying degrees of responsibility for the management and recovery of the Louisiana black bear.

Similar conflict management plans have been prepared for other Federally listed species, including wolves in North Dakota, Montana, and Wyoming; and grizzly bears in Wyoming, Idaho, Montana, and Washington. A number of states have also prepared contingency plans for problem black bears in states where the bear is not Federally protected. Much of this plan is based on the procedures contained in those plans.

The protocol established in this document is intended to be dynamic. Measures described in this document will be reviewed periodically for needed changes, based on experience. Proposed changes will be covered by amendments to this document and will undergo review by appropriate agencies and other entities.

II. LEGALITY OF BEAR CONTROL

It is unlawful to take species protected by the Endangered Species Act of 1973, as amended, (Act) (16 U.S.C. 1531 et seq.) except under the following conditions:

- o Any person may take endangered or threatened wildlife in defense of his own life or the lives of others; or
- o Any employee or agent of the Service, any other Federal land management agency, the National Marine Fisheries Service, or a State conservation agency, who is designated by his agency for such purposes, may, when acting in the course of his official duties, take threatened or endangered wildlife without Service authorization if such action is necessary to:
 - 1) Aid a sick, injured or orphaned specimen; or
 - 2) Dispose of a dead specimen; or
 - 3) Salvage a dead specimen which may be useful for scientific study; or
 - 4) Remove specimens which constitute a demonstrable but nonimmediate threat to human safety, provided that the taking is done in a humane manner; that taking may involve killing or injuring only if it has not been reasonably possible to eliminate such threat by live-capturing and releasing the specimen unharmed, in a remote area.

Pursuant to Section 6(c) of the Act, the Service' implementing regulations further identify take exemptions for endangered species under 50 CFR 17.21(c)(3) and 50 CFR 17.21(c)(5), and for threatened species under 50 CFR 17.31(a) and 50 CFR 17.31(b) for State cooperators. A summary of these exemptions is provided below.

- o Any qualified employee or agent of a State Conservation Agency which is a party to a Cooperative Agreement with the Service in accordance with section 6(c) of the Act, who is designated by his agency for such purposes, may, when acting in the course of his official duties, take those endangered species which are covered by an approved cooperative agreement for conservation programs in accordance with the Cooperative Agreement, provided that such taking is not reasonably anticipated to result in:

- 1) The death or permanent disabling of the specimen;
- 2) The removal of the specimen from the State where the taking occurred;
- 3) The introduction of the specimen so taken, or of any progeny derived from such a specimen, into an area beyond the historical range of the species; or,
- 4) The holding of the specimen in captivity for a period of more than 45 consecutive days.

The above provisions apply only to endangered species. The regulations make the following distinction for threatened species, as follows:

- o Any qualified employee or agent of a State Conservation Agency which is party to a Cooperative Agreement with the Service in accordance with section 6(c) of the Act, who is designated by his agency for such purposes, may, when acting in the course of his official duties, take those threatened species which are covered by an approved cooperative agreement to carry out conservation programs.

Since the Louisiana black bear is a threatened species, either LDWF or Service has the authority to issue authorizations to conduct conservation activities. The Service and LDWF have jointly determined that the Service, exclusively, will issue authorizations associated with the activities described in the Plan.

For personnel who are not employees or agents of Service or LDWF, Section 10 (a) (1) (A) of the Act, includes a provision allowing the Secretary of the Interior (Secretary) to permit acts otherwise prohibited by Section 9 (including the taking of a listed species) for scientific purposes or to enhance propagation or survival of the species. For threatened species, Section 10 regulations also provide for educational and zoological uses as well.

If problem bears are not dealt with by responsible government officials, it is likely that private citizens will handle problem bears by killing them, thereby undermining recovery efforts. In addition, bears that lose their fear of humans have more opportunities for encountering humans and, thus, being taken illegally. Illegal take has been recognized as a contributor to the black bear population decline in Louisiana. Responsible efforts to address nuisance bears will enhance the overall survival and recovery of the Louisiana black

bear. A Section 10 permit will be issued by Service to ADC, the Coop Unit, and the BBCC Coordinator for varying degrees of otherwise unlawful take. This plan will be included as a part of each authorization, and will be used as protocol when the permittee deals with orphaned, sick, injured, or dead bears or when resolving conflicts between humans and bears.

III. DISPOSITION OF ORPHANED BEAR CUBS

Black bear cubs are born in winter dens in January and February; litter sizes vary from one to three cubs. The cubs emerge from the den with the sow in the spring and stay with her throughout the following year through the next summer.

A bear cub should not be treated as an orphan unless a dead sow is confirmed. If biologists are unable to confirm a dead sow, the cub should be left in, or returned to, the area it was captured, if at all possible.

If the sow is confirmed dead, the cub may still be able to survive independently in the wild, depending on its age and size. Generally, the rule of thumb will be to leave the cub in the wild if captured after August 1 (Dr. Richard Pace and George Chandler, pers. comm.). Otherwise, the cub should be treated and released onsite. A cub treed or trapped in a developed area should be allowed to escape by removing curious onlookers.

If the cub is injured and requires lengthy treatment, the cub should be captured and taken to appropriate facilities. The Audubon Institute's Species Survival Center may have the facilities to care and rehabilitate the cubs for reintroduction into the wild. Also, if a motherless cub is found before August 1, it should be transported to the facility, or another suitable facility, as soon as possible. Transportation of the cub(s) will be coordinated with all BBCC members, to reduce time and effort expended by any one agency. There should be as little contact between the cub(s) and humans as possible to facilitate successful reintroduction to the wild. All facilities identified to receive orphaned bear cubs pursuant to this element of the Plan must be appropriately permitted by the Service. The Service will coordinate with potential facilities and facilitate permitting matters.

Reintroduction to the wild should take place as soon as possible, by placing the cub with a sow having cubs of a similar age. Other states have had good success fostering cubs to a dened sow. Since this has not been done in Louisiana, the Coop. Unit will be charged with

the responsibility of developing appropriate protocol. That protocol would be incorporated, by amendment, into this plan.

IV. DISPOSITION OF SICK OR INJURED BEARS

A sick or wounded bear should be examined in the field by a biologist to determine the extent of illness or injury. Every effort will be made to treat sick or injured bears on-site, and release the bear, either on-site or at another location, if necessary. Currently, there are no resources available that can care for sick or injured adult bears and still return the bear to the wild when recovered. If the bear requires rehabilitation, a decision will need to be made at that time on disposition of the bear. If a facility that is certified by the American Zoological Association and permitted by Service has expressed a willingness to obtain a bear, then the bear can be transported to that facility for keeping, subject to the provisions on transport of live mammals specified in 50 CFR 14. If the facility does not have a permit to hold a listed species, the Service will coordinate issuing an after-the-fact permit through the Regional Office. Otherwise, the animal should be humanely destroyed by authorized and qualified personnel (i.e., ADC, Coop. Unit, or the personnel of the Service's Tensas River National Wildlife Refuge (NWR)).

V. DISPOSITION OF DEAD BEARS

Dead bears should be immediately reported to the Senior Resident Agent, Law Enforcement, Fish and Wildlife Service, 56707 Behrman St., Suite #2, Slidell, Louisiana, 70458, telephone 504/641-6209, within 24 hours. A listing of Special Agents (including addresses and telephone numbers) located throughout the State is provided in Appendix A. Except for bears destroyed via lethal control authorized by this plan, the dead bear and its immediate surroundings should be protected from disturbance until Service can visit the site. If the bear's death was clearly accidental (e.g., hit by a vehicle), and not the result of foul play, the carcass may be moved to: 1) the Enforcement freezer at LDWF headquarters on Quail Drive in Baton Rouge, or 2) the freezer located at the LDWF Fur and Refuge Division office located at 2415 Darnall Road in New Iberia; or 3) placed in the freezer at the Tensas River NWR.

The Assistant Regional Director, Law Enforcement (U.S. Fish and Wildlife Service, 1875 Century Blvd., Atlanta, Georgia, 30345, telephone 404/679-7040, will make the final determination on disposition of any bear carcass or bear parts.

VI. RESOLVING HUMAN/BEAR CONFLICTS

Unless human safety or the life of the bear is threatened, passive damage control actions are to be used whenever possible to solve reported problems. Passive control actions recommended by ADC will be implemented by the complainant before any direct control actions are taken against the bear. Direct control actions would be implemented only if avoidance actions have failed, and would include: trapping and release on site; trapping and translocation; or aversive conditioning with ammunition containing rubber slugs/pellets or capsaicin-based repellents. Lethal control will be considered only as a last resort, when a bear is an immediate threat to human life or is mortally wounded or diseased, and only under established guidelines.

All direct control actions involving the Louisiana black bear will be conducted by qualified, trained personnel permitted by the Service, in accordance with the Act and guidelines contained within this contingency plan. All direct control actions will be directed at individual bears rather than the local bear population. The goal of this plan is to stop or alleviate damage with the least amount of stress to the offending animal and population as possible.

VII. GUIDELINES FOR RESPONDING TO BEAR COMPLAINTS

Bears, as opportunistic feeders, are capable of learning to search out food, either from garbage, food contained in campsites, agricultural crops, or apiaries, and will teach that behavior to their young. Control actions must be conducted in a responsible, objective, and professional manner and only in a manner conducive to the overall recovery of this subspecies. Therefore, specific guidelines are provided for determining problem bear status, capture methods, aversive conditioning, relocation, and disposition.

A. Initial Response/Investigation of Reported Complaints - All reports of bear sightings and incidents of damage or threat to human safety will be referred to the nearest LDWF District office or Service refuge or field office. Bear sighting data will be obtained from the caller, recorded, and reported to Service, ADC, and BBCC for input into computer databases or files. For calls involving property damage or human safety, LDWF or Service will dispatch personnel within 24 hours (sooner if threat to humans is involved) to:

- 1) confirm that a bear is responsible for the conflict;

- 2) provide verbal and written recommendations for eliminating bear attractants and reducing the likelihood of continuing bear problems;
- 3) determine if more direct assistance is needed, and instruct the complainant on reporting continuing bear conflicts.

Before direct control measures are used, ADC personnel will visit with the complainant to ensure that preventative actions have been taken and passive control measures are not working. In the event that LDWF or Service cannot make this initial visit, then the complaint will be handled, in the following order, by ADC, the BBCC coordinator, or the Coop. Unit. The investigator will complete a "Black Bear Complaint Investigation Form" (Appendix B) during this visit and submit copies to Service, ADC, LDWF, and the BBCC.

- B. Resolution of Chronic or Significant Problems - Except for cases involving property damage or human safety, direct control actions will not be conducted unless the complainant has taken steps to eliminate or isolate bear attractants. If passive control methods have failed to resolve the conflict, ADC will determine the appropriate direct control actions to take against the offending bear. A "Conflict Resolution Committee" comprised of ADC, Service, LDWF, and BBCC representatives will be formed to periodically review direct control actions taken and make recommendations on future actions, if necessary. The Conflict Resolution Committee will also evaluate the effectiveness of all control actions and make a biological determination on the effect of the actions, individually and cumulatively, on the species' status and population. Names, addresses, and telephone numbers of each member of the Committee is provided in Appendix C. In the event that ADC cannot implement the recommended action, then it will be conducted, in the following order, by LDWF, BBCC, or Service personnel.

As noted above, in some cases property damage or human safety may be a factor, thus requiring immediate action against the bear. Any of the following scenarios may warrant immediate use of direct control actions:

- 1) A bear that appears diseased or injured and biologists believe that the animal poses a threat to human

health and safety.

2) A bear that appears unafraid of humans, or approaches humans for food.

3) A bear that is/has been involved in an unprovoked threat or attack on humans, pets, apiaries, or livestock, including poultry or apiaries.

Bears trapped or treed by curious onlookers should be given the opportunity to escape by encouraging any onlookers to leave. However, darting (tranquilizing) the bear in the tree and catching the animal with a net or lowering with a rope may be necessary. Assistance in dispersing curious onlookers may be requested from LDWF or Service enforcement personnel and/or state and local enforcement personnel.

C. Approved Direct Control Methods - The following direct control methods may be used by trained personnel:

1) aversive conditioning, including the use of chemical repellents such as capsaicin-based sprays, bullets containing rubber slugs or pellets, and electric stimuli from handheld devices (for restrained animals only), and "screamer pistols" and other pyrotechnic devices;

2) capture and release of bears on-site after collecting biological data;

3) capture and aversive conditioning;

4) capture, translocation, and release of bears at predesignated areas after collecting biological data; and

5) lethal control.

When immediate intervention is needed to resolve a problem, approved control actions will be conducted by personnel holding the required Section 10 permits. Capture, immobilization, and release of bears will be the primary responsibility of ADC, Tensas River NWR, or the Coop Unit and in accordance with permit provisions, this contingency plan, and any applicable Federal and State laws and policies. If ADC, Tensas River NWR, or the Coop. Unit is unable to capture bears involved in

conflicts, then the action will be conducted by another member of the Conflict Resolution Committee. All personnel using traps will also be trained and authorized to use immobilizing drugs. Capture will be accomplished using leg snares, barrel traps, or culvert traps, with the latter preferred in areas frequented by humans. Trapping efforts will cease if target animals are not captured within five days of the last reported conflict. Capture in conjunction with aversive conditioning and on-site release will be used before translocation is conducted. Biological information (including standard measurements, removal of molar for aging purposes, and a blood sample to contribute to genetic modeling) will be obtained from all bears that are captured and immobilized, and each individual will be ear-tagged and tattooed.

Black bears that continue to create problems will be captured and translocated to areas identified by the Conflict Resolution Committee. A conference call with as many members of the Conflict Resolution Committee as possible will be arranged to determine where to relocate the animal. The Service will coordinate translocation with the landowner or land manager before the bear is transported. Cubs will be translocated with a sow if they are unable to survive independently of the adult. If the cubs cannot be captured and are unable to survive independent of the sow, the animal should not be relocated. Instead, aversive conditioning should be applied to reduce nuisance problems.

D. Delegation of Authority for Certain Control Measures

- Under certain conditions, the ADC State Director may, with concurrence from Service, authorize individuals to harass black bears with approved devices such as shotgun shells containing rubber slugs/pellets, capsaicin-based bear repellents, or suitable pyrotechnics. Any authorizations would be subject to the requirements of the Service permit pertaining to knowledge and ability of the individual and the general requirements of 50 CFR 13.25 and the conditions specified in the Section 10 permit held by ADC. ADC would either provide these individuals with the devices or the sources of supply for these devices and provide training in their use. Under no circumstances would any individual authorized as an agent of ADC be allowed to use devices that could intentionally wound or kill bears.

E. Lethal Control - In certain circumstances, bears that are aggressive, and/or do not respond to any of the aforementioned direct control methods may be destroyed with approval from Service. The request to destroy a bear will be reviewed by the Conflict

Resolution Committee, which would then make a recommendation to the Service for final determination. The individual animal must be positively identified, using tags or tatoos or both, before lethal control is administered. Lethal control will be done only by ADC, the Coop. Unit, or Tensas River NWR. Disposition of the bear carcass or bear parts taken during authorized activities would be coordinated through the Senior Resident Agent, of the Service's Law Enforcement Division.

VII. Communications and Media Coordination

The public and the news media are extremely interested in any actions involving black bears. To ensure that accurate information is provided, planned news releases on control actions will be coordinated and released by Service, and the BBCC coordinator. Also, Service, ADC, and the BBCC coordinator will develop and distribute pamphlets to the public on bears. The pamphlets will include information on how to avoid conflicts with bears, and phone numbers to use when reporting bear sightings and conflicts with bears.

Appendix A

USFWS/DIVISION OF LAW ENFORCEMENT

SPECIAL AGENTS - LOUISIANA

<u>AGENT/LOCATION</u>	<u>TELEPHONE #</u>	<u>FAX #</u>
James Bartee (SRA) Gene Moore Bill Mellor 56707 Behrman St., Ste. #2 Slidell, LA 70458	504-641-6209	504-641-5352
Downie Wolfe John Collins P.O. Box 1057 Denham Springs, LA 70727-1057	504-664-9663	504-664-9704
Flip Siragusa 825 Kaliste Saloom Rd. Bldg. II, Suite 102 Lafayette, LA 70508	318-262-6630	318-262-6663
Bill Ferguson U.S.P.O. Bldg., Rm. 2210 Lake Charles, LA 70601	318-437-7214	318-437-7214 (Call first)
Kash Schriefer P.O. Box 1873 Monroe, LA 71210	318-325-1735	318-325-1735 (Call first)

Appendix B

BLACK BEAR COMPLAINT INVESTIGATION FORM

Investigator(s) _____ Agency Affiliation _____
Landowners Name _____ Landowners Tel. # _____
Landowners Address _____

Property damage/nuisance: Date _____ Time _____

Parish _____ Section _____ Township _____ Range _____
Describe location of site _____

Description of Complaint Received _____

Photo's Taken? _____

Evidence of bear? (Scat, Track, Claw Marks) _____

Describe potential for future bear activity _____

Previous complaints on specific bear or specific tract of land? _____

Describe action taken and dates of action _____

Additional comments _____

Send report to:

Field Supervisor
Ecological Services
U.S. Fish and Wildlife Service
825 Kaliste Saloom Rd
Building II, Room 102
Lafayette, Louisiana 70508

Appendix C

CONFLICT RESOLUTION COMMITTEE MEMBERS

1. Black Bear Conservation Committee
Paul Davidson, Coordinator
P.O. Box 4125
Baton Rouge, LA 70821
(504) 338-1040 FAX (504) 338-0103
2. Louisiana Department of Wildlife and Fisheries
Tommy Prickett
P.O. Box 98000
Baton Rouge, LA
(504) 765-2821
3. U.S. Department of the Interior, Office of the Biological Survey, Cooperative Wildlife and Fisheries Research Unit
Dr. Richard Pace
Louisiana State University
Baton Rouge, LA 70803
(504) 388-5747 FAX (504) 388-4227
4. U.S. Fish and Wildlife Service, Ecological Services
Terry Rabot
Fish and Wildlife Biologist
U.S. Fish and Wildlife Service
825 Kaliste Saloom Rd., Bldg II, Rm. 102
Lafayette, LA 70508
(318) 262-6662 ext. 229 FAX (318) 262-6663
5. Tensas River National Wildlife Refuge
George Chandler
Refuge Manager
Route 2, Box 295
Tallulah, LA 71282
(318) 574-2664 FAX (318) 574-1624
6. U.S. Fish and Wildlife Service, Division of Law Enforcement
James Bartee
Senior Resident Agent
56707 Behrman St., Suite 2
Slidell, LA 70458
(504) 641-6209 FAX (504) 641-5352
7. U.S. Department of Agriculture, Animal and Plant Health Inspection Service, Animal Damage Control
Dwight LeBlanc, State Director
P.O. Box 589
Port Allen, LA 70767
(504) 389-0229 FAX (504) 389-0228

APPENDIX III

"Attention Hunters" Poster Example



ATTENTION HUNTERS



Photo by: Nancy Webb

THE LOUISIANA BLACK BEAR (*Ursus americanus luteolus*) has been listed by the United States Fish and Wildlife Service as "threatened" under the authority of the Endangered Species Act.

Harming a black bear in Louisiana or southern Mississippi is a violation of state and federal laws and carries severe penalties, both civil and criminal.

FEDERAL PENALTIES: up to \$50,000 and 1 year in jail

LOUISIANA: up to \$10,000 and 120 days in jail

MISSISSIPPI: up to \$1,000 and 1 year in jail

TO REPORT VIOLATIONS:

LOUISIANA DEPARTMENT OF WILDLIFE AND FISHERIES: 1-800-325-7067

MISSISSIPPI DEPARTMENT OF WILDLIFE, FISHERIES AND PARKS: 1-800-237-6278

U.S. FISH AND WILDLIFE SERVICE:

Slidell, La. - 504-641-6209
Denham Springs, La. - 504-388-0360
Lafayette, La. - 318-264-6630
Lake Charles, La. - 318-437-7214
Monroe, La. - 318-325-1735
Greenwood, MS - 601-455-1297
Jackson, MS - 601-965-4469



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MISSISSIPPI DEPARTMENT OF WILDLIFE, FISHERIES AND PARKS: 1-800-237-6278

U.S. FISH AND WILDLIFE SERVICE:

Slidell, La. - 504-641-6209

Denham Springs, La. - 504-388-0360

Lafayette, La. - 318-264-6630

Lake Charles, La. - 318-437-7214

Monroe, La. - 318-325-1735

Greenwood, MS - 601-455-1297

Jackson, MS - 601-965-4469



A REWARD OF UP TO \$5,000 WILL BE PAID TO PERSONS REPORTING INFORMATION LEADING TO A CONVICTION OR PLEA BARGAIN IN BEAR POACHING CASES.

TO REPORT VIOLATIONS CALL: OPERATION GAME THIEF

1-800-442-4511

For more information contact: BLACK BEAR CONSERVATION COMMITTEE

P.O. Box 4125

Baton Rouge, LA 70821

Ph. 504-338-1040

A hunter education project sponsored by S. ARI CLUB INTERNATIONAL, LA. CHAPTER

APPENDIX IV

List of Reviewers*

Field Supervisor
U.S. Fish and Wildlife
Service
P.O. Drawer 1190
Daphne, AL 36526

Field Supervisor
U.S. Fish and Wildlife
Service
2524 S. Frontage Rd.
Suite B
Vicksburg, MS 39180-5269

Mr. Mark Bosch
U.S. Forest Service
1720 Peachtree Street
Atlanta, GA 30367

Office of Public Affairs
(PA, 3447 MIB)
U.S. Fish and Wildlife
Service
Washington, D.C. 20240

Division of Refuges
(Mail Stop 670 ARLSQ)
U.S. Fish and Wildlife
Service
Washington, D.C. 20240

Refuge Manager
U.S. Fish and Wildlife
Service
Route 2, Box 295
Tallulah, LA 71282

Field Supervisor
U.S. Fish and Wildlife
Service
825 Kaliste Saloom Road
Building 2, Suite 102
Lafayette, LA 70508

Lawrence Mason
Office of International
Affairs
(IA, Mail Stop 860 ARLSQ)
U.S. Fish and Wildlife
Service
Washington, D.C. 20240

Division of Endangered
Species
(Mail Stop 452 ARLSQ)
U.S. Fish and Wildlife
Service
Washington, D.C. 20240

Office of Research Support
(RD-8/ORS, Mail Stop 725
ARLSQ)
U.S. Fish and Wildlife
Service
Washington, D.C. 20240

Refuge Manager
U.S. Fish and Wildlife
Service
1010 Gause Blvd.,
Bldg. 936
Slidell, LA 70458

Environmental Protection
Agency
Hazard Evaluation Division
-EEB (TS769C)
401 M Street, SW
Washington, D.C. 20460

Dr. Richard Pace*
124 Forestry, Wildlife &
Fisheries Bldg.
Louisiana State University,
Baton Rouge, LA 70803

Texas Department of Parks
and Wildlife
4200 Smith School Road
Austin, TX 78744

Dr. Ronald M. Nowak
Office of Scientific
Authority
Mail Stop: Room 725
Arlington Square
Washington, D.C. 20240

Regional Director (AES)
U.S. Fish and Wildlife
Service
P. O. Box 1306
Albuquerque, NM 87103-1306

Jimmy Bullock
Union Camp Corp.
P. O. Box 1391
Savannah, GA 31402

Darryl Stanley
Temple-Inland Corporation
303 South Temple Blvd.
Diboll, TX 95941

Dr. Jim Dyer
Louisiana Tech University
P.O. Box 10138
Tech Station
Ruston, LA 71270

LA Nature Conservancy
P.O. 4125
Baton Rouge, LA 70821

Louisiana Landowners
Association, Inc.
P. O. Box 44121
Baton Rouge, LA 70804-4121

Mr. Joe L. Herring,
Secretary
Louisiana Department of
Wildlife and Fisheries
Post Office Box 98000
Baton Rouge, LA 70898

Dr. Mike Pelton*
University of Tennessee
Post Office Box 1071
Knoxville, TN 37901

Ms. Cathy Shropshire
Mississippi Department of
Wildlife, Fisheries, and
Parks
P.O. Box 451
Jackson, MS 39205

Tom Bourland
Crawford and Bourland,
Inc.
2529 E. 70th Troy Plaza
P.O. Box 5933
Shreveport, LA 71135

Everard Baker
Mississippi Forestry
Commission
Suite 300, 301 Building
Jackson, MS 39201

Murray Lloyd
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