St. Croix

Wetland Management District

Comprehensive Conservation Plan Approval

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St. Croix

Wetland Management District

Comprehensive Conservation Plan

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Chapter 1: Introduction and Background

Introduction

The St. Croix Wetland Management District, established in 1992, manages over 7,500 acres of Waterfowl Production Areas (WPAs) in eight west-central Wisconsin counties (Figure 1). The heart of the District in the central portion of St. Croix County is known as the Star Prairie Pothole Grasslands. These grasslands are ranked sixth out of 26 priority grassland landscapes in Wisconsin. The District also administers 15 conservation easements. WPAs consist of wetland habitat surrounded by grassland and woodland communities. While WPAs are managed primarily for ducks and geese, they also provide habitat for a variety of other wildlife species such as non-game grassland birds, shorebirds, wading birds, mink, muskrat, Wild Turkey, and deer.

Because the District is located on the eastern edge of the tallgrass prairie and forest transition zone, it includes a variety of habitats not typically found on a wetland management district.

The U.S. Fish and Wildlife Service

The St. Croix Wetland Management District (WMD) is administered by the U.S. Fish and Wildlife Service (USFWS or Service). The USFWS is the primary federal agency responsible for conserving, protecting, and enhancing the nation's fish and wildlife populations and their habitats. It oversees the enforcement of federal wildlife laws, management and protection of migratory bird populations, restoration of nationally significant fisheries, administration of the Endangered Species Act, and the restoration of wildlife habitat such as wetlands. The Service also manages the National Wildlife Refuge System.



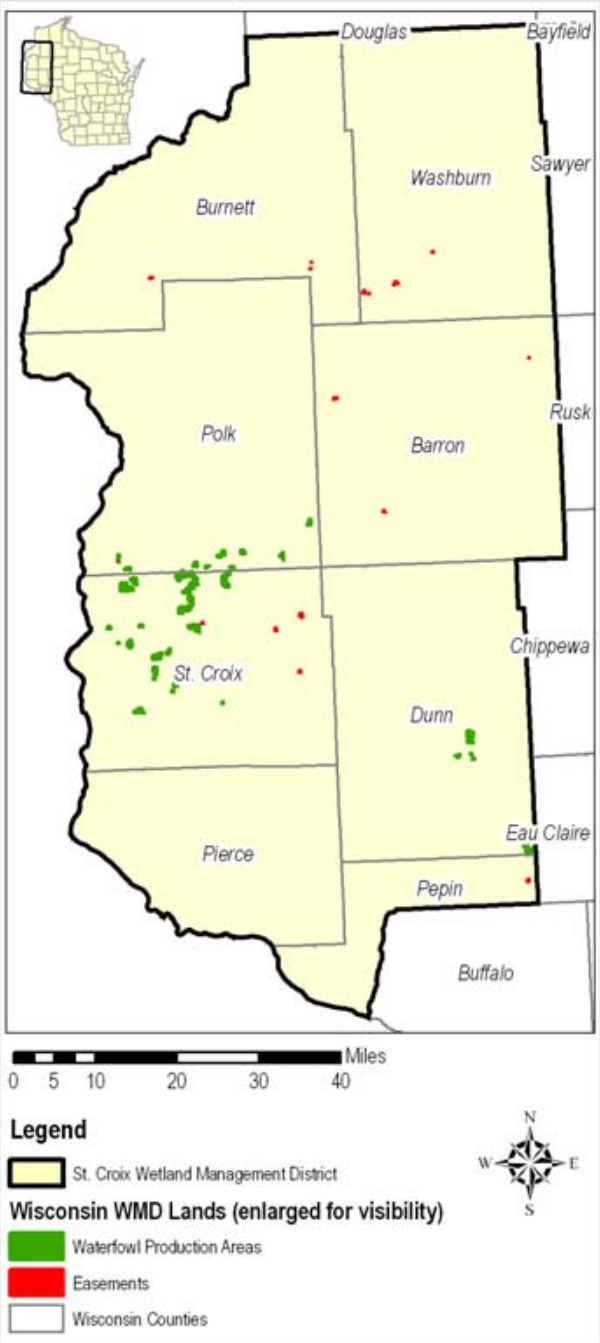
Oak Ridge Waterfowl Production Area, part of St. Croix Wetland Management District. USFWS photo.

The National Wildlife Refuge System

District lands are part of the National Wildlife Refuge System, which was founded in 1903 when President Theodore Roosevelt designated Pelican Island in Florida as a sanctuary for Brown Pelicans. Today, the system is a network of about 545 refuges and wetland management districts covering about 95 million acres of public lands and waters. Most of these lands (82 percent) are in Alaska, with approximately 16 million acres located in the lower 48 states and several island territories.

The National Wildlife Refuge System is the world's largest collection of lands specifically managed for fish and wildlife. Overall, it provides habitat for more than 5,000 species of birds, mammals, fish, amphibians, reptiles, and insects. As a result of international treaties for migratory bird conservation and other legislation, such as the Migratory Bird Conservation Act of 1929, many refuges have been established to protect migratory waterfowl and their migratory flyways. Horicon National Wildlife Refuge serves a dual purpose both as a crit-

Figure 1: Location of St. Croix Wetland Management District



ical nesting ground and as an important link in the Mississippi Flyway network of refuges that serve as rest stops and feeding stations for migrating ducks and geese.

Refuges also play a crucial role in preserving endangered and threatened species. Among the most notable is Aransas National Wildlife Refuge in Texas, which provides winter habitat for the highly endangered Whooping Crane. Likewise, the Florida Panther NWR protects one of the nation's most endangered predators. Refuges also provide unique recreational and educational opportunities for people. When human activities are compatible with wildlife and habitat conservation, they are places where people can enjoy wildlife-dependent recreation such as hunting, fishing, wildlife observation, photography, environmental education, and environmental interpretation. Many refuges have visitor centers, wildlife trails, automobile tours, and environmental education programs. Nationwide, approximately 30 million people visited national wildlife refuges in 2004.

The National Wildlife Refuge System Improvement Act of 1997 established several important mandates aimed at making the management of national wildlife refuges more cohesive. The preparation of Comprehensive Conservation Plans (CCPs) is one of those mandates. The legislation directs the Secretary of the Interior to ensure that the mission of the National Wildlife Refuge System and purposes of the individual refuges are carried out. It also requires the Secretary to maintain the biological integrity, diversity, and environmental health of the National Wildlife Refuge System.

The goals of the National Wildlife Refuge System are to:

- Fulfill our statutory duty to achieve refuge purpose(s) and further the System mission.
- Conserve, restore where appropriate, and enhance all species of fish, wildlife, and plants that are endangered or threatened with becoming endangered.
- Perpetuate migratory bird, inter-jurisdictional fish, and marine mammal populations.
- Conserve a diversity of fish, wildlife, and plants.
- Conserve and restore, where appropriate, representative ecosystems of the United States, including ecological processes characteristic of those ecosystems.
- Foster understanding and instill appreciation of fish, wildlife, and plants, and their conservation, by providing the public with safe,

high-quality, and compatible wildlife-dependent public use. Such use includes hunting, fishing, wildlife observation and photography, and environmental education and interpretation.

District Purposes

The purposes for the District are based upon its land acquisition authorities. Lands are acquired under the authority of the Migratory Bird Hunting and Conservation Stamp Act, and since 1958, under Public Law 85-585 as "Waterfowl Production Areas." The purpose of lands acquired under the Migratory Bird Hunting Conservation Stamp Act is "...as Waterfowl Production Areas" subject to "...all the provisions of such act (the Migratory Bird Conservation Act of 1929,16 U.S.C. 715d) ...except the inviolate sanctuary provisions...," and "...for any other management purpose, for migratory birds."

District Vision

The planning team considered past vision statements and emerging issues and drafted the following vision statement as the desired future state of the District:

> Waterfowl and other migratory birds find District lands isles of refuge in a landscape of increasing residential development. Native plants and animals, amazing in their diversity, flourish on District and private lands from the efforts of many active partners. Neighbors and visitors enjoy and value District land and work to conserve the region's natural heritage.

Purpose and Need for Plan

This CCP articulates the management direction for the St. Croix Wetland Management District for the next 15 years. Through goals, objectives, and strategies, this CCP describes how the District intends to fulfill its purpose and contribute to the overall mission of the National Wildlife Refuge System. Several legislative mandates within the National Wildlife Refuge System Improvement Act of 1997 have guided the development of this plan. These mandates include:



Willow River, Betterly Waterfowl Production Area at St. Croix Wetland Management District. USFWS photo

- Wildlife has first priority in the management of refuges.
- Wildlife-dependent recreation activities, namely hunting, fishing, wildlife observation, wildlife photography, environmental education and interpretation are priority public uses of refuges. We will facilitate these activities when they do not interfere with our ability to fulfill the refuges' purpose or the mission of the Refuge System.
- Other uses of the Refuge will only be allowed when determined appropriate and compatible with Refuge purposes and mission of the Refuge System.

The plan will guide the management of St. Croix WMD by:

- Providing a clear statement of direction for the future management.
- Making a strong connection between District activities and conservation activities that occur in the surrounding area.
- Providing neighbors, visitors, and the general public with an understanding of the Service's land acquisition and management actions in the District.
- Ensuring District actions and programs are consistent with the mandates of the National Wildlife Refuge System.
- Ensuring that District management considers federal, state, and county plans.



Volunteers collect native prairie seeds at St. Croix Wetland Managemet District. USFWS photo.

- Establishing long-term continuity in District management.
- Providing a basis for the development of budget requests on the District's operational, maintenance, and capital improvement needs.

History and Establishment

The WMD has its roots in a 1974 interagency agreement based on U.S. Fish and Wildlife Service (Service) Director Lynn Greenwalt's authorization for federal purchase of land and waters in Wisconsin. These lands would be managed by mutual agreement between the Service and the Wisconsin Department of Natural Resources (WIDNR) under a signed Memorandum of Understanding (MOU).

Management of the WPAs was accomplished according to the MOU signed in 1974 and several addenda after that. In general, Wisconsin Department of Natural Resources personnel were responsible for on-the-ground management activities, and Service personnel were responsible for administration. Federal management authority was under the guidelines of the National Wildlife Refuge System Administration Act with the day-to-day activities spelled out in the Wisconsin Wetland Management Guidelines.

As WPA acreage increased, so did the time and commitment of management personnel. A WIDNR "Workload Analysis" in the late 1980s documented a staff shortage for management activities on the WPAs. The WIDNR Director of the Bureau of Wildlife Management and the Service's Regional Director began meeting in early 1990 to discuss transferring management of the WPAs to the Service. The date selected for the transfer was September 30, 1995.

The transition date was later moved forward when the Service received funding for District Managers and summer temporaries to work with the Wisconsin DNR in the summer and fall of 1992. The final transition and establishment of the St. Croix and the Leopold WMDs took place July 1, 1993.

The advent of the Service's Partners for Fish and Wildlife and conservation easement responsibilities in the late 1980s further defined the WMD's role. Private land habitat restoration projects, and protection and management of wetlands, flood plains, and other important habitats on conservation easements added greatly to the workload and habitat diversity of the District.

Legal Context

In addition to the acquisition authorities of the District, and the National Wildlife Refuge System Improvement Act of 1997, several federal laws, executive orders, and regulations govern its administration. Appendix E contains a partial list of the legal mandates that guided the preparation of this plan and those that pertain to District management.

Chapter 2: The Planning Process

Meetings and Involvement

The planning process for this CCP began in July 2006. Planning for the Wisconsin Wetland Management Districts, the St. Croix WMD and Leopold WMD, occurred along the same timeline with key meetings held jointly. The planning was conducted jointly because the Districts face the same issues, and it makes sense to address the issues consistently and share knowledge and experience between Districts.

Initially, members of the regional planning staff and District staff identified a list of issues and concerns that were associated with the management of the Districts. These preliminary issues and concerns were based on staff knowledge of the area and contacts with citizens in the community.

District staff and Service planners then asked District neighbors, organizations, local government units, and interested citizens to share their thoughts at open houses and through written comments. In September 2006, people were invited through local papers and individual letters to open houses in New Richmond, Portage, and Waukau. Total attendance for the three open houses was 30 people. Three written comments were received by the St. Croix District during the 30-day comment period.

In January 2007 a biological review of the Districts' biological programs provided technical comments and recommendations. In addition to Fish and Wildlife Service Refuges and District personnel, the review team consisted of a panel of experts and partners from the U.S. Geological Survey, the North American Waterfowl Management Plan Science Support Team, and the Wisconsin Department of Natural Resources. The review team considered the programs of both Districts.



Emerald Lands, a private lands project. St. Croix Wetland Management District. USFWS photo.

A visitor services review was independently conducted for each District. A visitor services review report of the District dated June 2006 helped clarify visitor services issues and provided potential actions to consider in formulating alternatives. The visitor services review team included regional and refuge visitor services specialists and District staff.

Publication of the Draft CCP

A Draft Comprehensive Conservation Plan and Environmental Assessment were released to the public on July 25, 2008. The availability of the document was announced in the Federal Register and through an Update mailing to all parties on the planning mailing list. A press release was sent to media outlets throughout the District, as well. The draft document as either a compact disc or hard copy was sent to approximately 50 persons or organizations with special interests in the District. In addition, the draft document was distributed to approximately 50 persons or organizations that had requested all documents produced by the Region's Conservation Planning Division. The document was also available as an Adobe pdf file on the Region's



Wood frog. USFWS photo.

planning website. A public open house was held on August 12, 2008, at District Headquarters to receive any comments on the draft document. Eight people attended. A 30-day comment period closed on August 25, 2008. Comments received and responses to them are included in an appendix to this document.

Issues

Issues play an important role in planning. Issues focus the planning effort on the most important topics and provide a base for considering alternative approaches to management and evaluating the consequences of managing under these alternative approaches. The issues and concerns expressed during the first phase of planning have been organized under the following headings.

Habitat Management

Background: Managing habitat is at the heart of providing for wildlife. The presence of high quality habitat is a necessary, but not sufficient, condition for abundant wildlife use. For example, a WPA may contain very high quality habitat for puddle ducks, but they may not occur on the WPA at the usual time because of poor conditions on wintering grounds or extreme weather during migration. When the forces external to the WPA weaken, however, the habitat base is there to provide for the ducks. On the other hand, low quality habitat will cause wildlife to be absent or less abundant. If a WPA has inadequate habitat, ducks will be absent or occur at very low levels, regardless of the timing or duration of other factors such as weather or conditions on wintering grounds. Recognizing that external factors may limit wildlife use on a WPA, it is reasonable to focus on the things that we can control and provide habitat conditions that offer the greatest potential for the species of concern to us (Schroeder et al. 1998).

Main Concerns:

1. The WMD has identified management strategies that would improve habitat conditions, but the strategies can not be applied as needed. The needs exceed the existing capability of staff hours and budgets. The result is that habitat conditions offer less than their potential for species of concern.

2. Invasive species are a particular challenge within habitat management as they degrade native habitats and reduce biological diversity. Control techniques for invasive species place further demands on the staff and budget of a WMD, and effective control techniques have not been identified for all invasive species.

3. To be most effective, habitat management should be based on good data and sound science. Basic biological information is required to understand the habitat needs of species of concern. Biological data is also needed to evaluate the effectiveness of management strategies within an adaptive management framework. Faced with pressing day-to-day demands, WMD staff find it difficult to allocate the time and resources to develop and discover the desirable biological information. Activities to answer this concern would include literature searches, expert technical workshops, and on-the-ground studies.

4. Management actions sometimes draw negative reaction from neighbors to WPAs. For example, a neighbor may complain about the appearance of a blackened field and the smoke that was generated during a burn. Or, a citizen may complain about the cutting of trees as part of a prairie restoration. There is concern that this negative reaction will lead to opposition to the management activity and an inability to apply the desired treatment. If we are not able to apply particular strategies at the

appropriate time, habitat on the WPA will change and there will be less benefit to wildlife.

5. Habitat management, control of invasive species, biological monitoring, and community outreach require staff and funding for programs, facilities, and equipment. Plans and planning need to articulate these needs and ensure they are represented in databases and other documents used in budget decision-making.

Habitat Loss and Fragmentation

Background: The loss and degradation of habitat has been identified as an important factor in the decline of many species worldwide and at many scales. Development is considered the most lasting form of habitat loss, since the presence of pavement and buildings hinders the return to natural conditions. Development can result in habitat fragmentation where remaining patches of habitat not only support less wildlife, but also may isolate populations vulnerable to a lack of genetic diversity and in an increased "edge" effect, which may increase the effect of predators and parasites (U.S. Fish and Wildlife Service 2002). Wisconsin, along with other Midwest states, is forecast to have continued housing growth in rural areas through 2030 (Radeloff et al. 2006). In its Wildlife Action Plan, Wisconsin Department of Natural Resources identified habitat loss and fragmentation as a major issue faced by land managers (Wisconsin Department of Natural Resources 2005). The Wisconsin WMD counties are experiencing and are expected to continue to experience housing development and its accompanying effects over the next 25 years.

Main Concerns:

1. Development is occurring around some existing waterfowl production areas. The development may be reducing the value of the WPAs to wildlife – the effect is not known with certainty. If the value of the WPA for wildlife is reduced, we need to think of how, or if, we should continue to manage the land.

2. The effect of habitat loss and fragmentation is best dealt with at a broad landscape level in which several entities (federal, state, local, non-governmental organizations, private landowners) have responsibilities. There is an opportunity for improved coordination among responsible entities.

3. How the forecasted development in the WMDs should affect land acquisition decisions is not clear. The criteria for land acquisition used in landscapes dominated by agriculture or other conservation lands may not be appropriate in counties with forecasted high levels of development.

Land Acquisition

Background: Managers of a WMD, in addition to managing existing WPAs, are responsible for identifying tracts that would be worthwhile to acquire for inclusion in the WMD. The primary goal of the acquisition program is to acquire a complex of wetlands and uplands that provide habitat in which waterfowl can successfully reproduce. Identifying lands for purchase as waterfowl production habitat requires weighing a number of biological factors related to breeding waterfowl within an often rapidly changing social and economic context – all the while keeping an eye on cost and efficiency.

Main Concerns:

1. Expanding housing development and changing land use in the Wisconsin WMDs offers particular challenges to the land acquisition program. The challenges are both direct and indirect. Directly, development causes the loss of opportunities through conversion of land to uses that would be difficult to reclaim or restore. And, areas near development are less desirable as waterfowl production habitat. Indirectly, the demand for development is causing a rapid rise in property values with the result that less habitat can be purchased with the funds available.

2. With the current and forecasted continued development, there is a concern that the possible loss of habitat will cause more acquisitions to emphasize the opportunity considerations ("buy while we can") in comparison to the biological considerations and value to waterfowl.

3. How to proceed with land acquisition for the WMDs has increased uncertainty given the above concerns and the lack of biological information on waterfowl production in areas of residential development. The criteria that

guide acquisition in western Minnesota, the Dakotas, and Montana are likely not applicable to Wisconsin without modification.

Visitor Services

Background: The National Wildlife Refuge System Improvement Act of 1997 established six priority uses (hunting, fishing, wildlife observation, photography, environmental education, interpretation) for the Refuge System, which includes Waterfowl Production Areas. The Service is to facilitate these uses when compatible with the purpose of the WPA and the Mission of the System. WPAs differ from national wildlife refuges in that they are open to hunting, fishing, and trapping by specific regulation and open to the other wildlife-dependent activities by notification in general brochures available at the District office. New and existing WPAs are thus "open until closed" in contrast to national wildlife refuges, which are "closed until opened." Hunting has long been associated with WPAs. The other wildlife-dependent activities are increasingly being encouraged by developing interpretive signs, kiosks, and wildlife trails. Identification signs and small parking areas are usually placed at each WPA to facilitate its use by the public.

Main Concerns:

1. Some visitor facilities are sub-standard. Higher quality experiences and greater satisfaction among visitors may be possible with improved visitor facilities.

2. Unauthorized uses (horseback riding, ATVs, dogs off leash, for example) occur on WPAs. The uses lead to habitat degradation and disturbance to wildlife that ultimately reduce wildlife numbers and health. Better habitat conditions and less wildlife disturbance would result from a reduction in unauthorized uses.

3. The public sometimes requests use of WPAs for other than the six priority uses. In order for the public to understand our purpose and mission and its relation to public uses, the compatibility analyses should be consistent within Wisconsin and, ideally, within the Region.

Service Identity

Background: People often approach and interact with staff of the WMD as if they work for the Wisconsin Department of Natural Resources and administer state areas. Because the missions of the two agencies are different, the misperception can lead to misunderstanding. When WMD employees interact with people directly, the misperception can be cleared up through conversation. Over the last several years the Service has acted to develop an improved "corporate identity" through unified standards for publications, uniforms, signs, and vehicles. The experiences of WI WMD personnel suggest that much work still remains in developing the Service identity.

Main Concern:

1. If people do not understand the purpose and mission of the WPAs and the Service, they are not likely to understand our management. The lack of understanding may lead to a lack of support, and, ultimately, to indifference or opposition to our management. If the public had a clear perception of the Service, the public would be able to differentiate between the federal and state missions and understand the actions of the WMD staff. With that understanding the public would make more informed decisions about fish and wildlife issues in general and, particularly relevant to a WPA management, more informed reactions to on-the-ground management activities.

Wilderness Review

As part of the CCP process, lands within the District were reviewed for wilderness suitability. No lands were considered suitable for Congressional designation as wilderness as defined by the Wilderness Act of 1964. The District does not contain 5,000 contiguous acres of roadless, natural lands. Nor does the District possess any units of sufficient size to make their preservation practicable as wilderness. District lands and waters have been substantially altered by humans, especially by agriculture. Extensive modification of natural habitats and manipulation of natural processes has occurred. Adopting a "hands-off" approach to management of District lands would not facilitate the restoration of a pristine or pre-settlement condition, which is the goal of wilderness designation.

Chapter 3: The District Environment and Management

Introduction

Wetland Management District

The St. Croix Wetland Management District (WMD) covers eight counties in west-central Wisconsin. (See Figure 2 to Figure 9.) The staff also administers an eight-county Partners for Fish and Wildlife (PFFW) private lands district and an eight-county Wetland Management District, which involves management and enforcement of U.S. Department of Agriculture's Farm Service Agency Conservation Easements (CEs). Currently there are 41 fee-titled WPAs and 15 CEs.



Oak Ridge WPA, St. Croix Wetland Management District. USFWS photo.

Geographic/Ecosystem Setting

Historic Vegetation

The nature and distribution of vegetation types in Wisconsin are described by Curtis in his 1959 book Vegetation of Wisconsin. The southern forests covered the southern half and western third of the state. Dominant species were primarily oak on the drier sites; sugar maple, basswood, slippery elm, red oak and ironwood on the mesic sites; and silver maple and American elm dominating the lowland sites. In pre-settlement times these forests covered approximately 5.2 million acres with another 7.3 million acres of what is considered oak savanna also falling into this category. In this region the closed woodlands and oak savannas provided no distinct boundaries but blended together. Forests dominated the northern half of Wisconsin. These northern forests supported jack, red, and white pine with red maple and red oak on the dry sites. The more mesic stands of the northern forests were dominated by sugar maple but hemlock and/or beech may have been co-dominant. Finally, the northern lowland (swamp) forests of Wisconsin are split into the tamarack-black spruce bog forests, the white cedar-balsam fir conifer swamps, and the black ash-yellow birch-hemlock hardwood swamps. Prairie and oak savanna covered about 9.5 million acres of Wisconsin. These areas were dominated by many species, including big bluestem, little bluestem, needlegrass and many other grass and forb species. Burr, black, Hill's and white oak dominated the oak savannas. The detail of historic vegetation for the District is depicted in Figure 10 on page 18.

Land Use/Cover

Of the approximately 9.5 million acres of prairie and oak savanna that Wisconsin hosted just 150 short years ago, only one-half of 1 percent (less than 10,000 acres) of the prairies and less than one-tenth of 1 percent (less than 1,000 acres) of the savanna remains. Farming, urban sprawl, fire suppression, and other developments continue to threaten the few acres of prairie and savanna that remain. A quote

Figure 2: Barron County, Wisconsin, St. Croix Wetland Management District

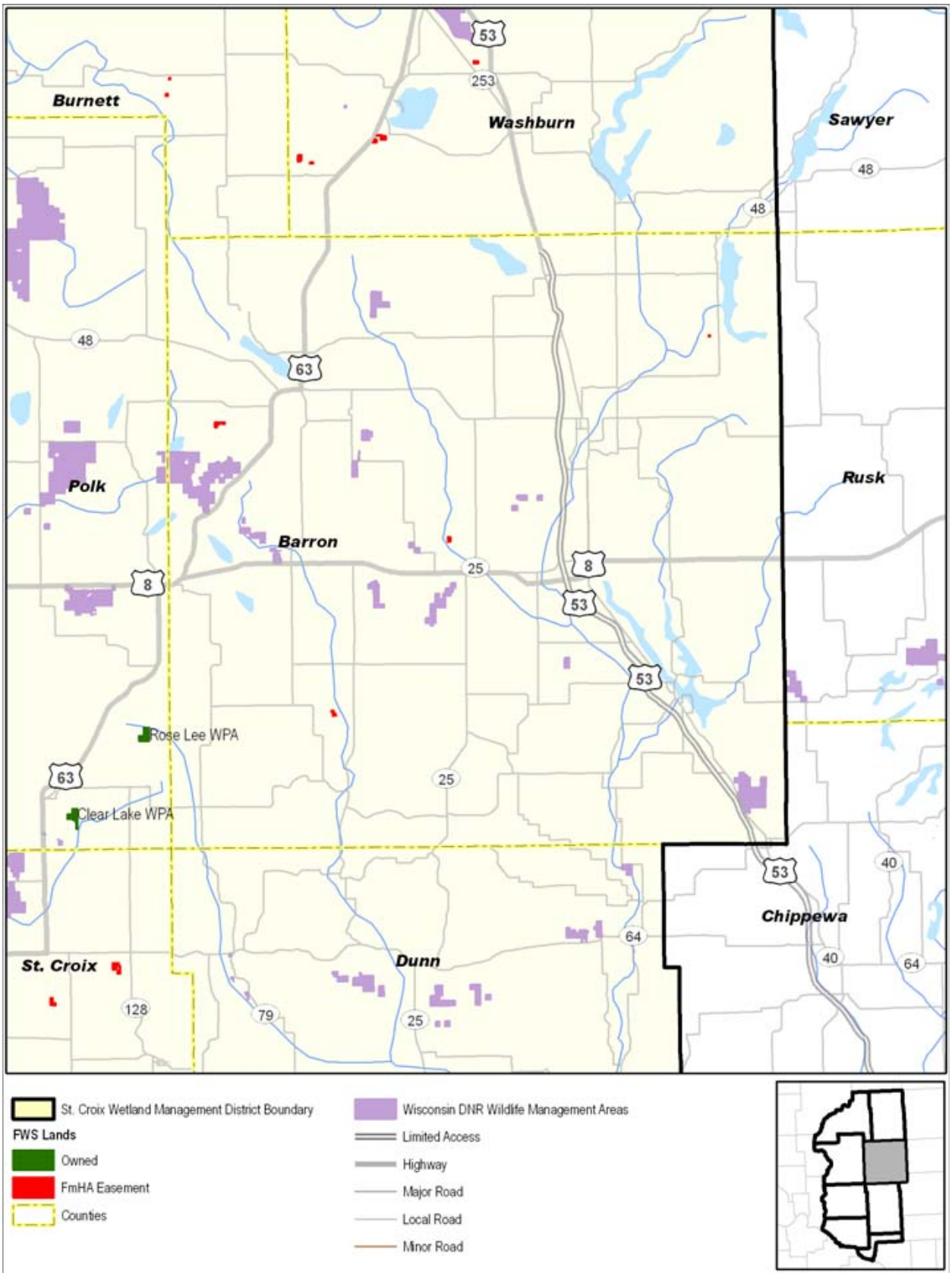


Figure 3: Burnett County, Wisconsin, St. Croix Wetland Management District

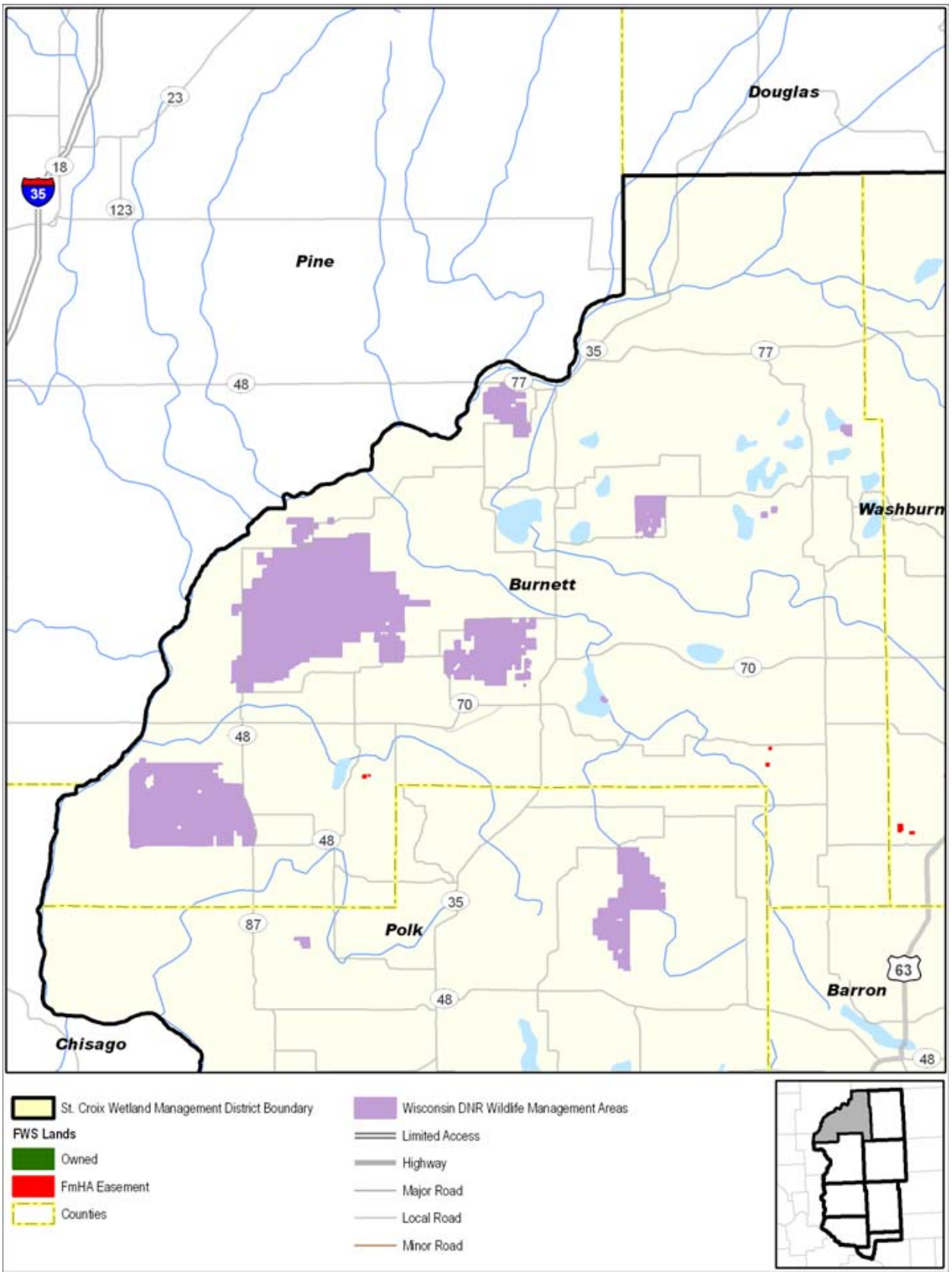


Figure 4: Dunn County, Wisconsin, St. Croix Wetland Management District

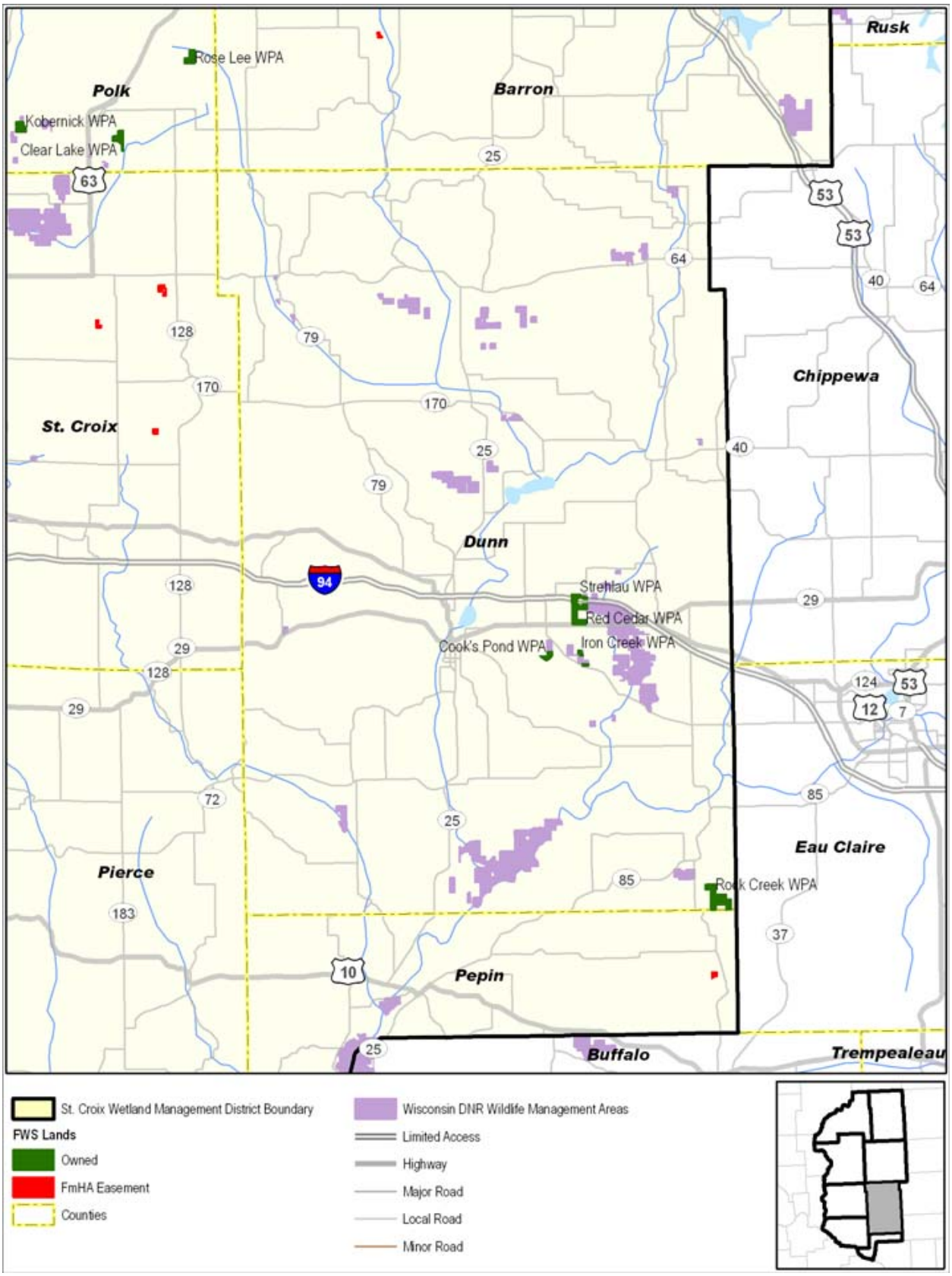


Figure 5: Pepin County, Wisconsin, St. Croix Wetland Management District

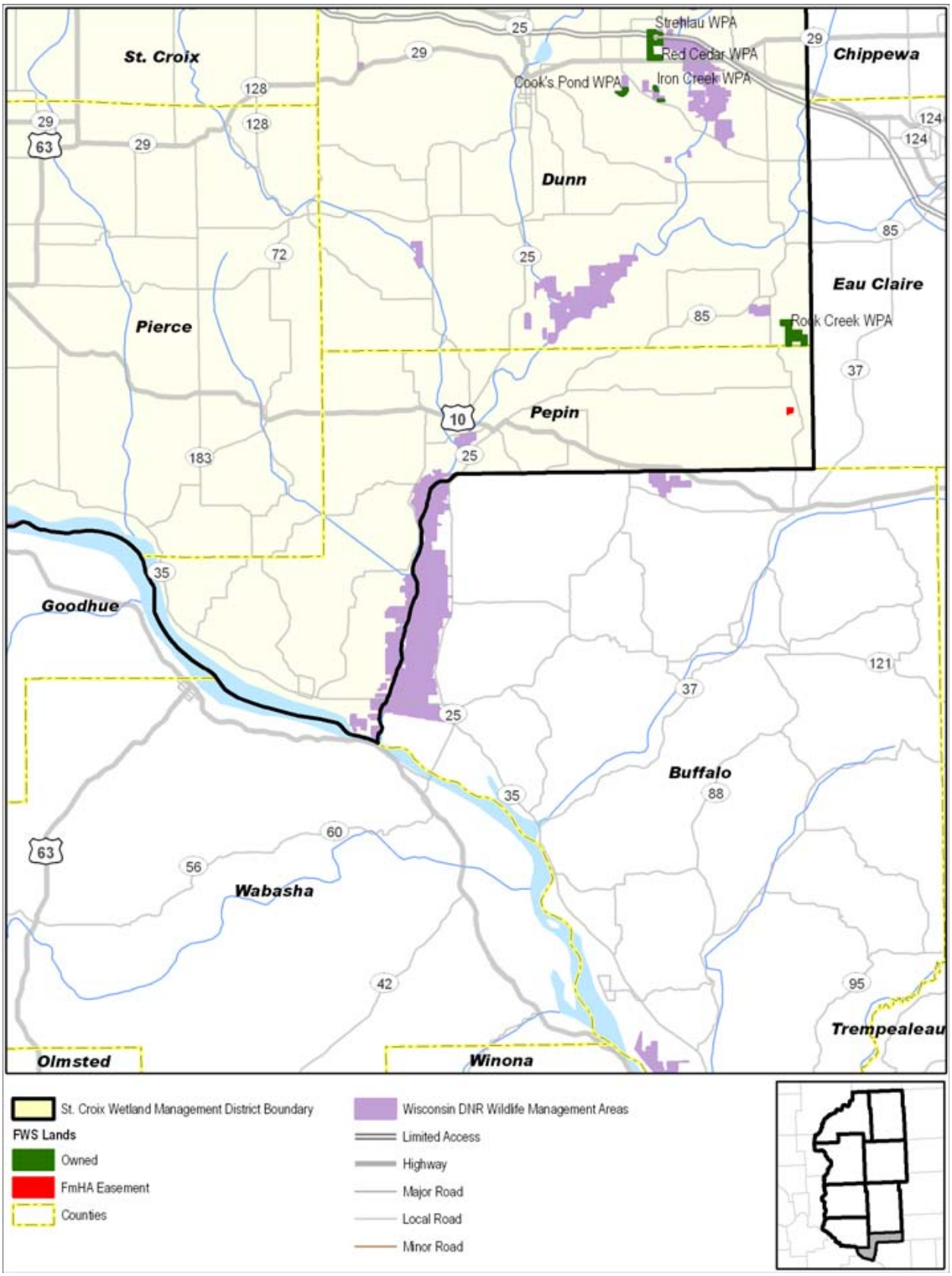


Figure 6: Pierce County, Wisconsin, St. Croix Wetland Management District

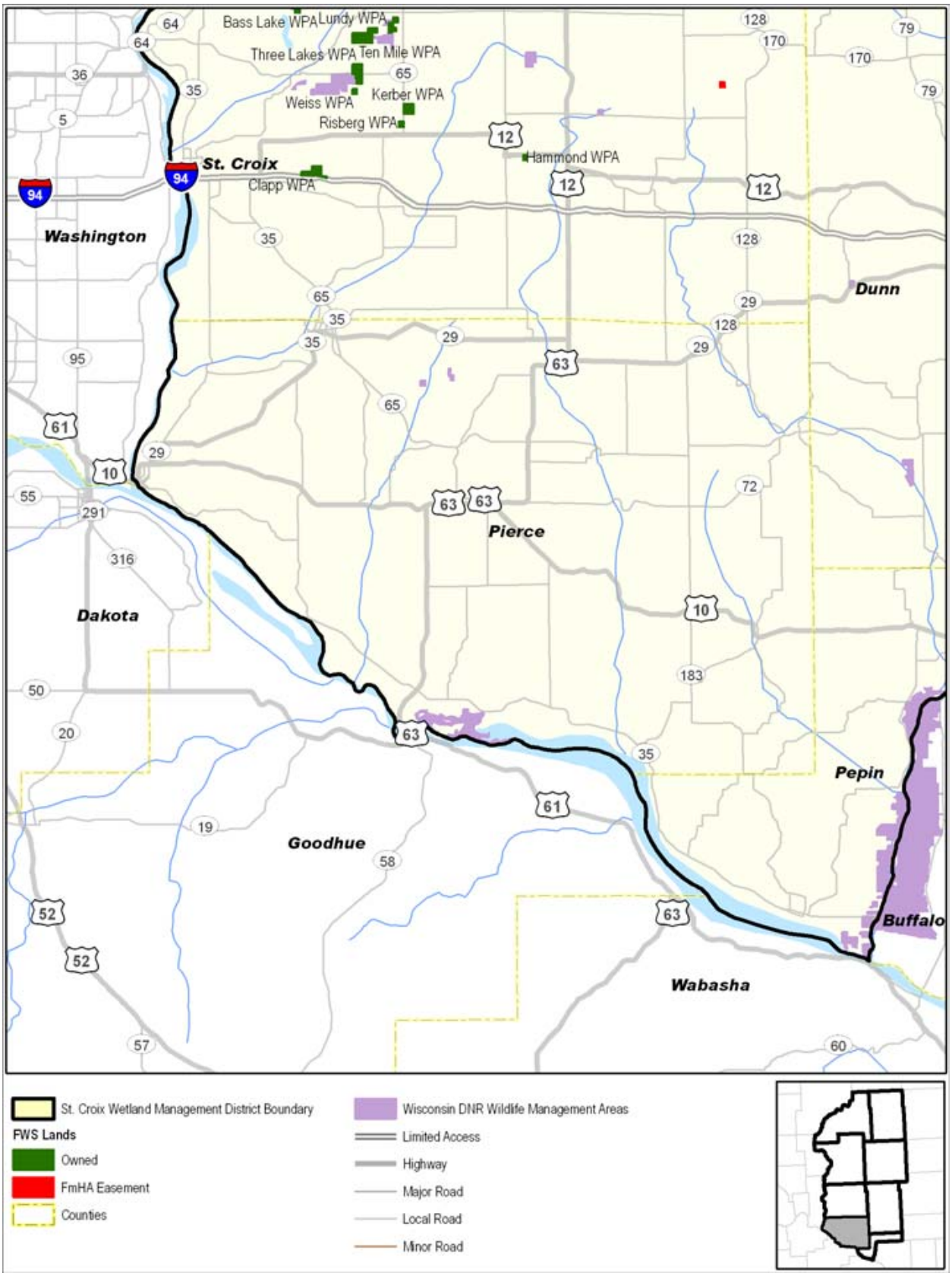


Figure 7: Polk County, Wisconsin, St. Croix Wetland Management District

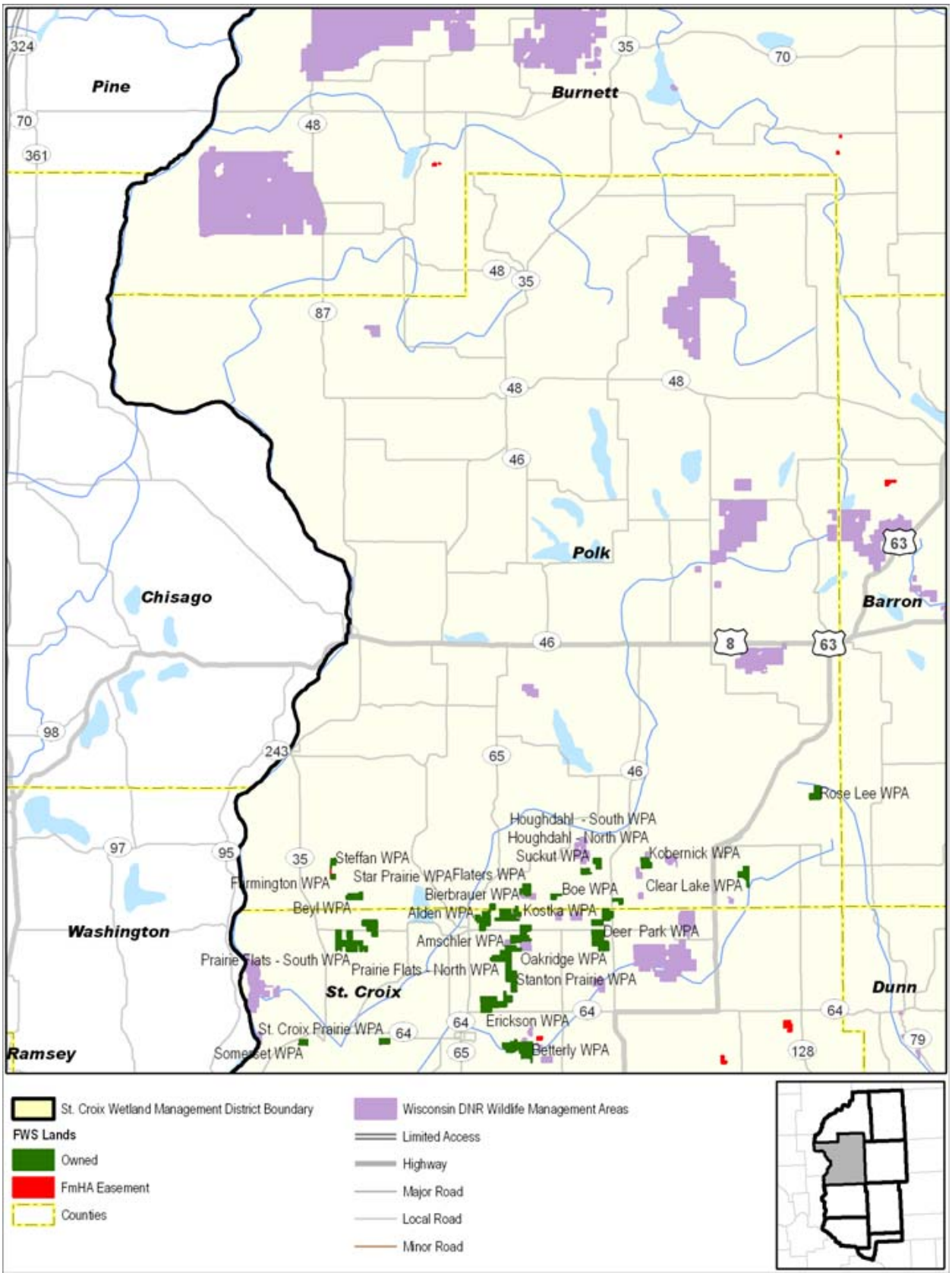


Figure 8: St. Croix County, Wisconsin, St. Croix Wetland Management District

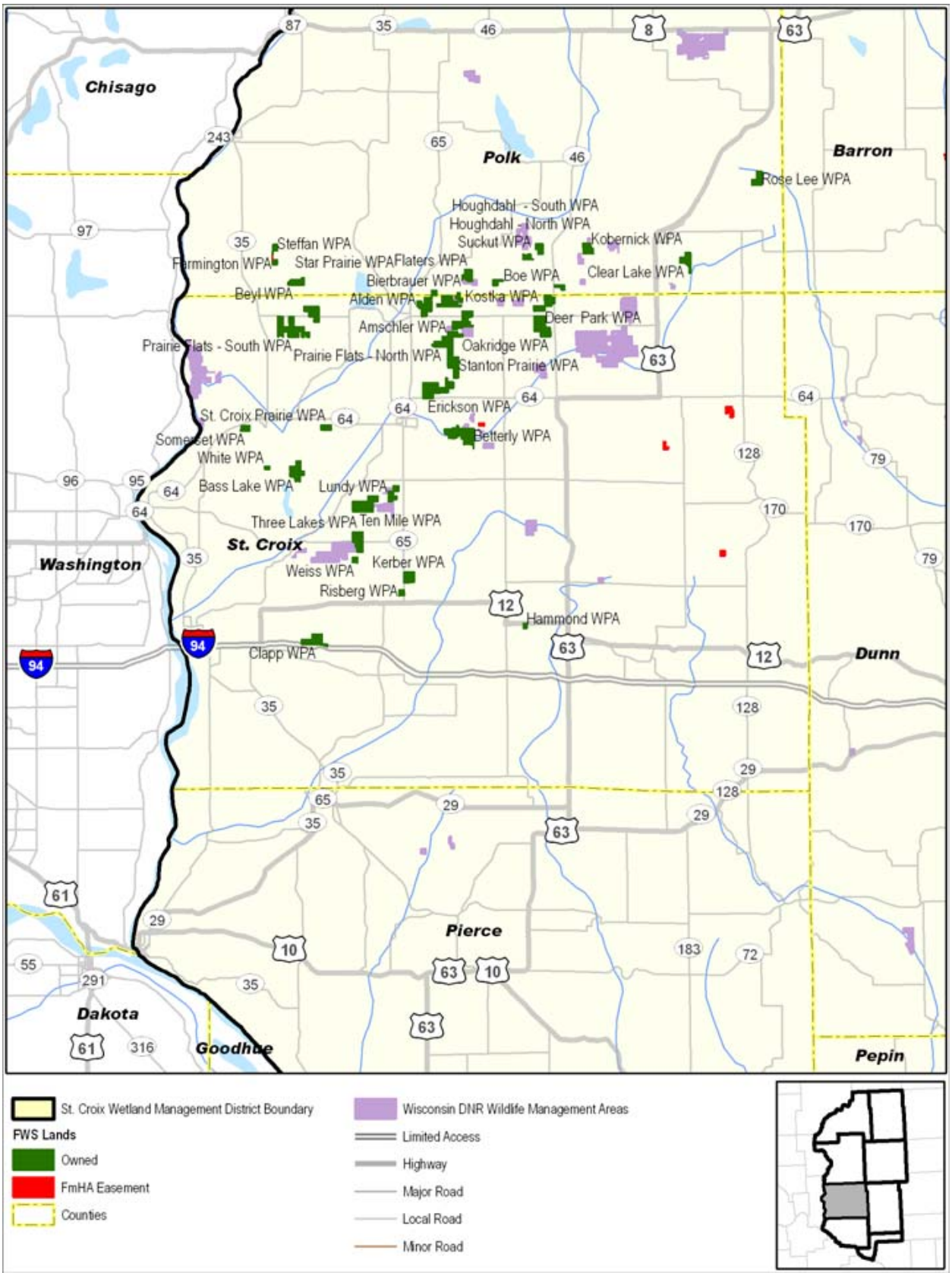


Figure 9: Washburn County, Wisconsin, St. Croix Wetland Management District

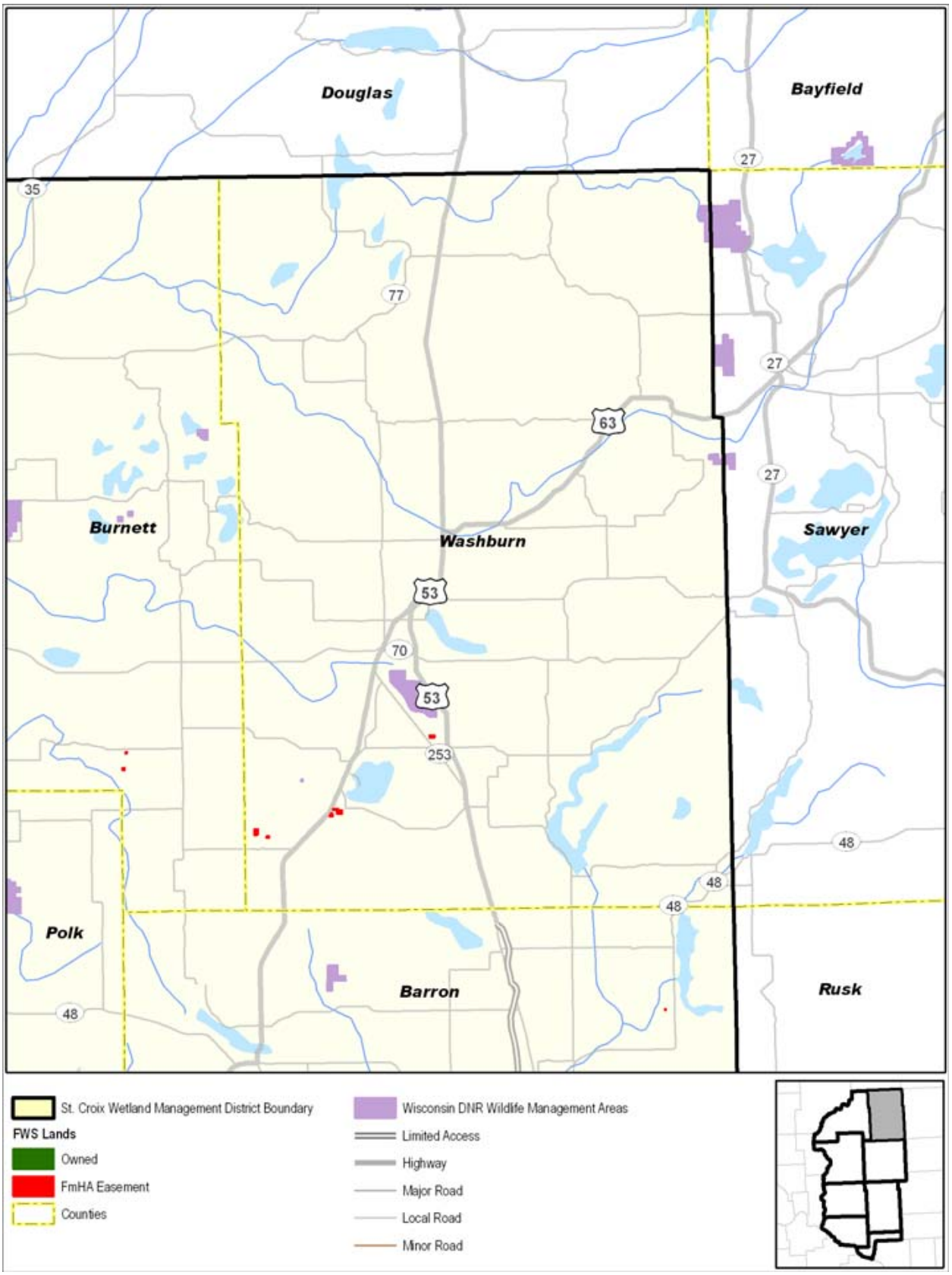


Figure 10: Historic Vegetation for the St. Croix Wetland Management District

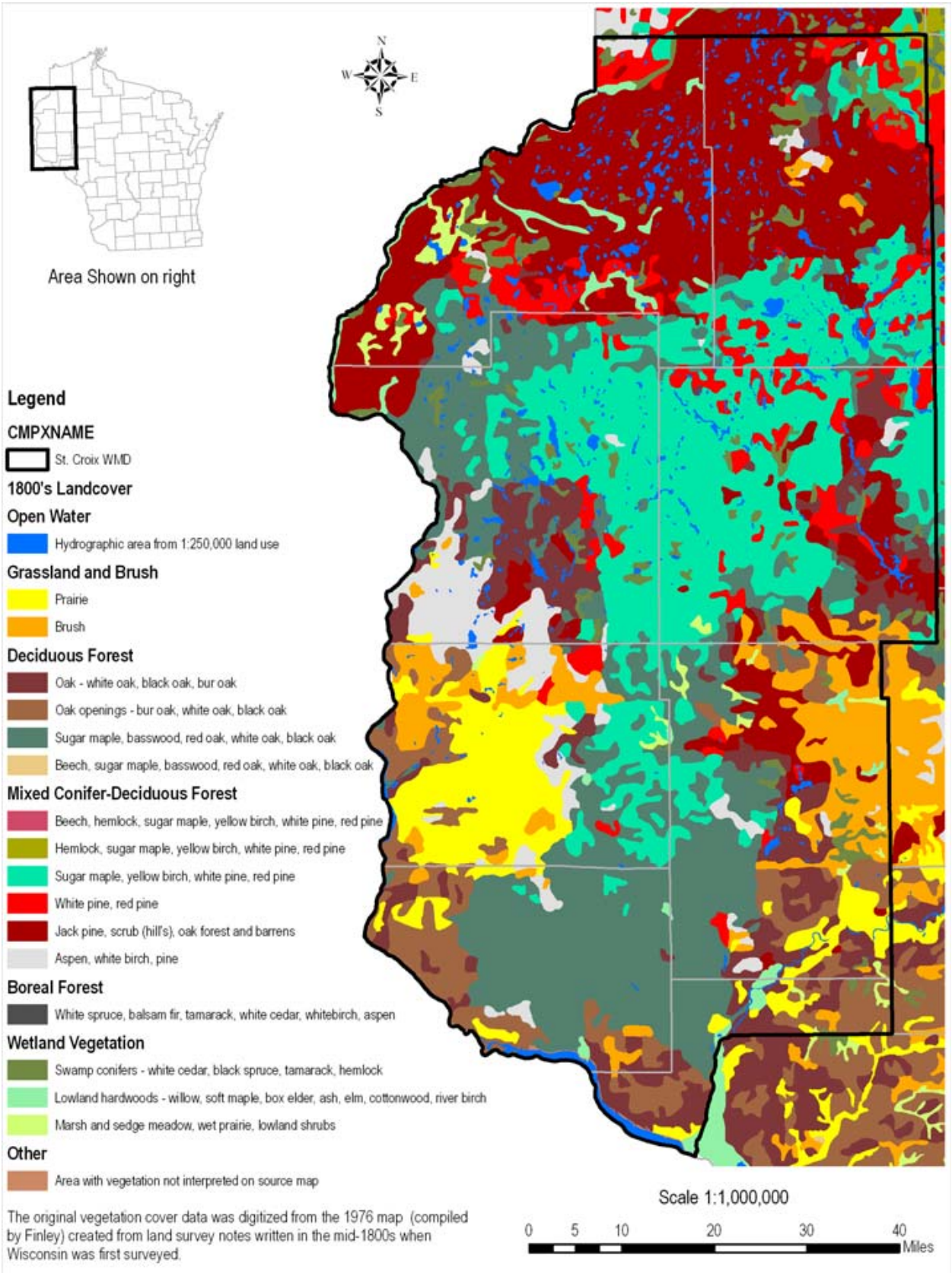


Table 1: Landcover in the St. Croix Wetland Management District

	Urban	Agricultural	Grassland	Forest	Water	Wetland	Barren	Shrubland
Barron County	0.6%	38.7%	12.2%	34.2%	3.3%	7.0%	3.2%	0.8%
Burnett County	0.2%	3.4%	15.5%	48.9%	5.9%	20.2%	0.3%	5.7%
Dunn County	0.5%	35.5%	17.4%	37.4%	1.4%	7.5%	0.0%	0.2%
Pepin County	0.4%	33.4%	15.0%	40.4%	6.1%	4.6%	0.0%	0.1%
Pierce County	0.7%	43.1%	24.4%	27.5%	2.6%	1.5%	0.1%	0.0%
Polk County	0.5%	21.2%	25.7%	37.8%	4.4%	9.3%	0.3%	0.7%
St. Croix County	1.0%	45.0%	30.8%	18.2%	2.0%	2.6%	0.3%	0.0%
Washburn County	0.2%	4.7%	11.8%	60.6%	5.7%	14.0%	0.4%	2.5%
Wisconsin State	1.6%	30.8%	10.7%	37.5%	3.4%	14.1%	1.1%	0.9%

Source: Wisconsin DNR Wiscland 1998 as cited in Wisconsin SCORP

that appears in Curtis's book provides a view of what we have lost in the last 150 years. This quote is through the eyes of a Lieutenant D. Ruggles (1835) in writing about the prairies around Fort Winnebago in Columbia County:

> "In some instances, the prairies are found stretching for miles around, without a tree or shrub, so level as scarcely to present a single undulation; in others, those called the "rolling prairies," appears in undulation upon undulation, as far as the eye can reach presenting a view of peculiar sublimity, especially to the beholder for the first time. It seems when in verdure, a real troubled ocean, wave upon wave, rolls before you, ever varying, ever swelling; even the breezes play around to heighten the illusion; so that here at near two thousand miles from the ocean, we have a facsimile of sublimity, which no miniature imitation can approach."

The northern forests, much like the southern forests and prairies, have been altered through logging, farming, fire prevention, and urbanization. Because of this, few stands of "virgin" timber exist outside of those protected by conservation organizations, some Forest Service and State Forest areas, lands within the WIDNR State Natural Areas program, or through conservation easements.

In 2002 about 52 percent of the land area in the District was in farms. (Table 1) For the State of Wisconsin about 45 percent of the land is in farms. The counties with the highest proportion of farm land in the District are Dunn, Pepin, and Pierce with over 70 percent of their lands in farms. The counties with the least proportion of farm land are Burnett, which has about 49 percent of the county in forest, and Washburn, which has about 61 percent of the county in forest. Both of these counties have about 20 percent of their land in farms. Within the District 97,031 acres of land were enrolled in Conservation Reserve or Wetlands Reserve Programs in 2002. This represents 5.0 percent of the farm land or 2.6 percent of the total land area of the District.

In 1999 a land cover map was completed for Wisconsin. The map was created though automated computer interpretation of satellite images. The work was completed by the partnership WISCLAND. The land cover for the District is depicted in Figure 11. Percent land cover for each county are shown in Table 1.

Migratory Bird Conservation Initiatives

Several migratory bird conservation plans have been published over the last decade that can be used to help guide management decisions for the Districts. Bird conservation planning efforts have evolved from a largely local, site-based orientation to a more regional, even inter-continental, land-

Figure 11: Current Landcover for the St. Croix Wetland Management District

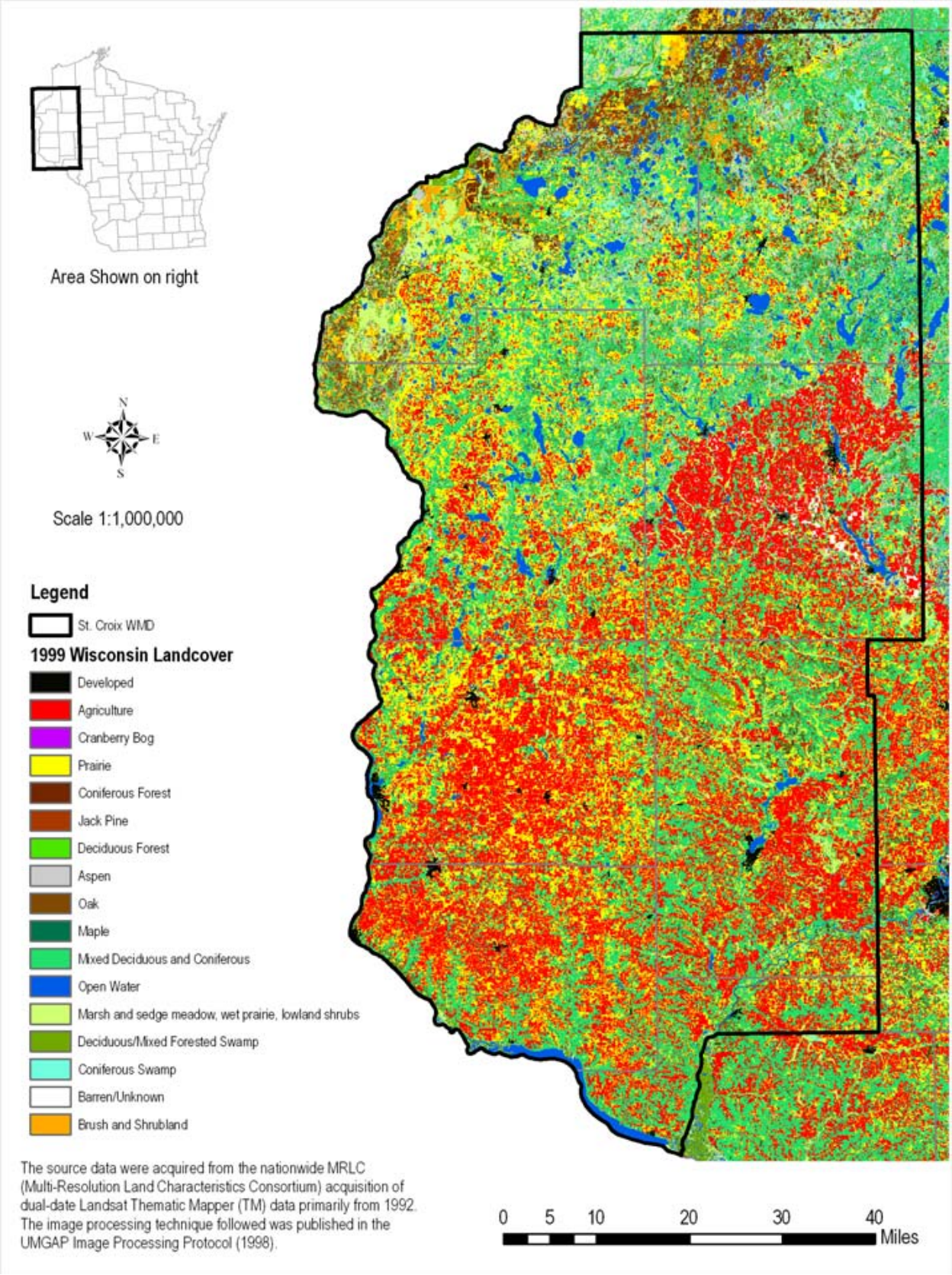
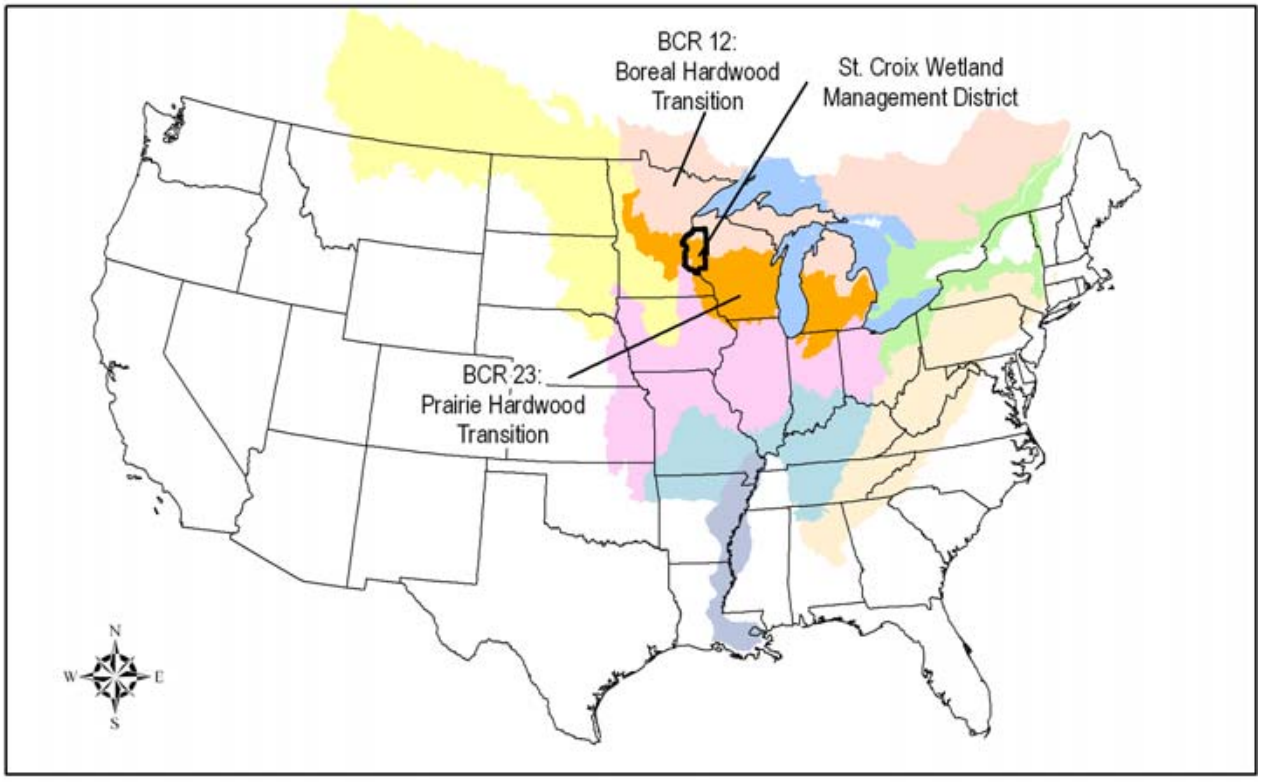


Figure 12: Prairie Potholes, Eastern Tallgrass and Prairie Hardwood Transition Bird Conservation Regions



scape-oriented perspective. Several transnational migratory bird conservation initiatives have emerged to help guide the planning and implementation process. The regional plans relevant to St. Croix Wetland Management District are:

- The Upper Mississippi River/Great Lakes Joint Venture Implementation Plan of the North American Waterfowl Management Plan;
- The Partners in Flight Boreal Hardwood Transition [land] Bird Conservation Plan;
- The Upper Mississippi Valley/Great Lakes Regional Shorebird Conservation Plan; and
- The Upper Mississippi Valley/Great Lakes Regional Waterbird Conservation Plan.

All four conservation plans will be integrated under the umbrella of the North American Bird Conservation Initiative (NABCI) in the Prairie Potholes, Eastern Tallgrass and Prairie Hardwood Transition Bird Conservation Regions (BCR 11, 22 and 23) (Figure 12). Each of the bird conservation initiatives has a process for designating priority species, modeled to a large extent on the Partners in Flight method of computing scores based on independent assessments of global relative abundance, breeding and wintering distribution, vulnerability to threats, area importance, and population trend. These scores are often used by agencies in developing lists of priority bird species. The Service based its 2001 list of Non-game Birds of Conservation Concern primarily on the Partners in Flight, shorebird, and waterbird status assessment scores.

Wildlife Species of Management Concern

As described in the Biological Integriy, Diversity, and Environmental Health policy (601 FW 3), the goal of habitat management on units of the National Wildlife Refuge System is to ensure the long-term maintenance and, where possible, restoration of healthy populations of native fish, wildlife, plants, and their habitats. Resources of concern include species, species groups, and/or communities that

support District purposes as well as Service trust resource responsibilities (including threatened and endangered species and migratory birds). Resources of concern are also native species and natural, functional communities such as those found under historic conditions that are to be maintained and, where appropriate, restored on a refuge (601 FW 3.10B[1]. Resources of concern take into account the conservation needs identified within international, national, regional, or ecosystem goals/plans; state fish and wildlife conservaton plans; recovery plans for threatened and endangered species; regional fisheries management plans; and previously approved resource management plans.

Appendix D summarizes information on the status and current habitat use of important wildlife species found on lands administered by the District. Individual species, or species groups, were chosen because they are listed as Regional Resource Conservation Priorities or State-listed threatened or endangered species. Other species are listed due to their importance for economic or recreational reasons, because the District or its partners monitor or survey them, or for their status as an overabundant or invasive species.

Other Conservation and Recreation Lands in the Area

Wisconsin Department of Natural Resources manages over 138,000 acres of conservation and recreation lands within the District (Figure 13). The DNR lands include 22 State Wildlife Areas with a total acreage over 83,000 acres. The largest Wildlife Area, Crex Meadows, is over 27,000 acres. The DNR manages nearly 4,000 acres of natural areas, 8,600 acres of parks and trails, and 8,200 acres of other wildlife habitat within the District. Most of the lands managed for wildlife and some other state lands are open to wildlife-dependent recreation.

County forests are also a part of the conservation and recreation landscape of the District. Burnett, Washburn, Polk, and Barron Counties administer approximately 275,000 acres to address ecological and socioeconomic needs. These forests provide benefits to fish, wildlife, and endangered species and recreation opportunities, while being managed for a sustaining timber harvest.

The 252 miles of the St. Croix and Lower St. Croix National Scenic Riverways occur along much of the western boundary of the District. The Riverways include the St. Croix and Namekogan Rivers and their biologically diverse habitats. "The St. Croix Valley is an important route for migrating birds. It connects the western Great Lakes basin and much of central Canada with the Mississippi Flyway. Millions of birds annually pass along the Riverway during spring and fall migrations. Many of these migrants depend upon the contiguous forested corridor that the Riverway protects." (www.nps.gov/sacn/management/natural_res.html)

Wisconsin Strategy for Wildlife Species of Greatest Conservation Need

Wisconsin has developed a State Wildlife Action Plan that has analyzed the animal species of Wisconsin, identified those most in need of attention because they are declining or are dependent on habitat or places that are declining, and suggests conservation measures to ensure their survival. The document describing their analysis and findings is filled with information that helps identify conservation needs. For each Ecological Landscape of Wisconsin (see Figure 14), it provides information on the overarching needs and opportunities in the landscape as well as lists of those natural communities that are major and important management opportunities. It also lists those Species of Greatest Conservation Need with high, moderate, or low degrees of probability of occurring in the landscape. The State's analysis provides a good basis for coordination of District activities with the State and other conservation organizations. This information is available in the State Wildlife Action Plan (http://dnr.wi.gov/org/land/er/wwap/).

The State of Wisconsin has designated the Western Prairie Habitat Restoration Area (WPHRA) as one of two important conservation focus areas within the state. When the first European settlers arrived in west central Wisconsin, in what is now St. Croix and Polk Counties, they found over 200,000 acres of tallgrass prairie and oak savanna. This complex of prairie, wetlands and oak savanna was very productive, both for wildlife and farming. Many of the local communities, such as Star Prairie and Erin Prairie, have names reflecting the surrounding prairie landscape. Only a small percentage of the original tallgrass prairie still exists, making it one of the rarest and most fragmented ecosystems in America. The goal of the WPHRA is to restore and protect 20,000 acres of wetland and grassland habitat in St. Croix and southwestern Polk counties.

Figure 13: Other Conservation Lands in the Area of St. Croix WMD

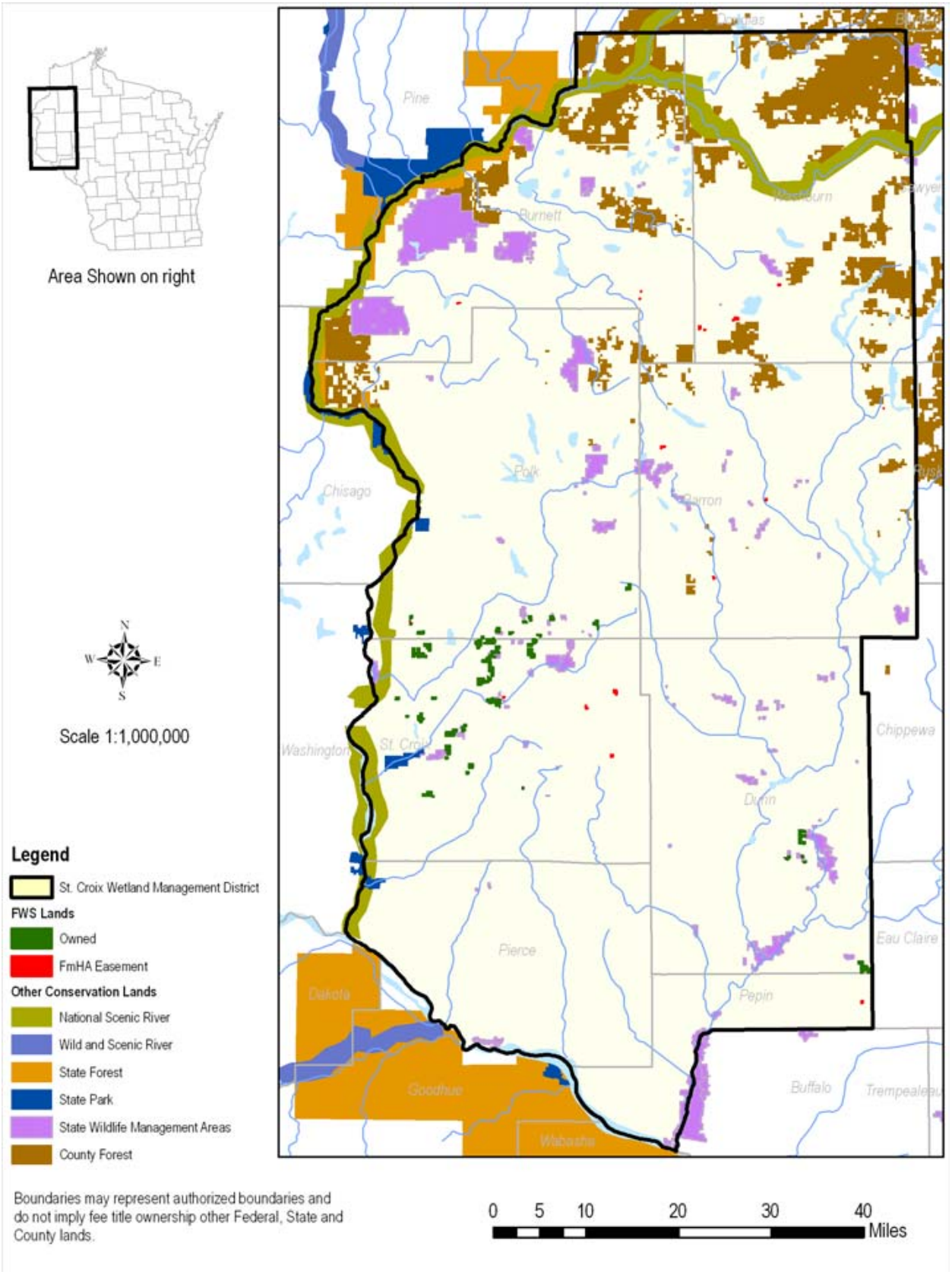


Figure 14: Wisconsin Ecological Landscapes

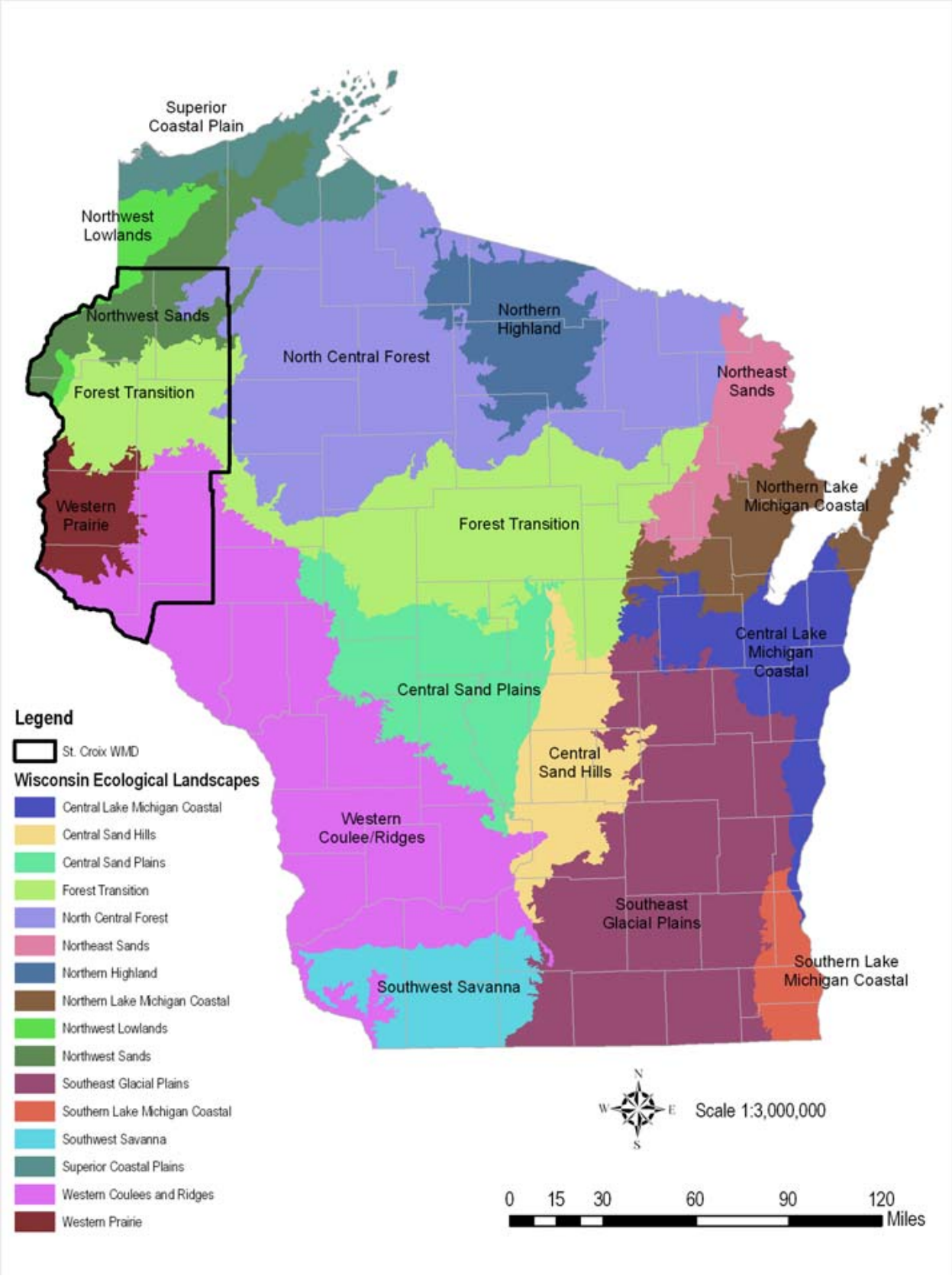


Table 2: Socioeconomic Characteristics, St. Croix Wetland Management District

	Total Population	Percent Urban	Median Age	Female	College Educated	Asian	American Indian	Median HH Income	Median Housing Value
Barron County	44,963	27.9%	38.8	50.5%	15%	n/a	0.8%	$37,275	$78,000
Burnett County	15,674	0.0%	44.1	49.6%	14%	n/a	4.5%	$34,218	$87,500
Dunn County	39,858	41.5%	30.6	49.6%	21%	2.1%	n/a	$38,753	$92,900
Pepin County	7,213	0.0%	38.7	49.7%	13%	0.2%	n/a	$37,609	$79,200
Pierce County	36,804	38.4%	32.1	50.7%	25%	0.4%	n/a	$49,551	$123,100
Polk County	41,319	6.9%	38.7	50.0%	16%	n/a	1.1%	$41,183	$100,200
St. Croix County	63,155	43.2%	35.0	50.0%	26%	0.6%	n/a	$54,930	$139,500
Washburn County	16,036	16.5%	42.1	49.7%	15%	n/a	1.0%	$33,716	$85,700
State of Wisconsin		68.3%	36	50.6%	22%	1.6%	0.8%	$43,791	$112,200

Source: Census 2000 as reported in Wisconsin SCORP
Percent college educated calculated for persons age 25 and older. Housing value is calculated for owner occupied housing units. n/a is not available.

Socioeconomic Setting

Just as the environmental characteristics vary across the District, so, too, do the socioeconomic characteristics. (Table 2) The Minneapolis/Saint Paul Metropolitan Area influences St. Croix County. St. Croix County has the highest total population, percent urban population, percent college educated, median household income, and median housing value in the District. The District has a low minority population much like the State of Wisconsin. In comparison to the rest of the District and the State of Wisconsin, Barron, Burnett, Pepin and Washburn Counties are well below median household income, housing value, and percent college educated. Polk and Dunn Counties are nearer the state averages in these characteristics.

The population of the District is expected to grow about 1 percent per year over the next 20 years. (Table 3) The county projected to grow at the highest average annual rate is St. Croix. The District is projected to increase in population about 57,000 from 2005 to 2025. For additional detailed descriptions of the characteristics and projections for the counties and their implications for recreation see the regional demographic profiles prepared by the Applied Population Lab and Wisconsin Department of Natural Resources for the Wisconsin SCORP 2005-2010 planning process.

Potential District Visitors

We used block group data from the 2000 census to estimate how many people lived near WPAs. For the WPAs managed by the District, we learned that about 53,000 people lived within 5 miles of a WPA in 2000; 158,000 within 10 miles; and 262,000 within 15 miles.

In order to refine our understanding and estimate the potential market for visitors to the WPAs, we looked at 1998 consumer behavior data for an area within an approximate 15-mile distance from WPAs. The data were organized by zip code areas, which made the buffers around the WPAs irregular and not equidistant at all boundary points. We thought the distance was a good approximation for a reasonable drive to a WPA for an outing.

The consumer behavior data used in the analysis is derived from Mediamark Research Inc. data. The company collects and analyzes data on consumer demographics, product and brand usage, and exposure to all forms of advertising media. The consumer behavior data were projected by Tetrad

Table 3: Population Projections 2005-2025 in St. Croix WMD Counties

	Historical				Projections				Average Annual Percent Increases	
	1980	1990	2000	2005	2010	2015	2020	2025	2005-2020	2005-2025
Barron County	38,730	40,750	44,963	46,067	47,401	48,493	49,386	50,004	0.60	0.43
Burnett County	12,340	13,084	15,674	16,375	16,993	17,329	17,415	17,390	0.53	0.31
Dunn County	34,314	35,909	39,858	42,046	43,771	45,165	47,061	49,105	0.99	0.84
Pepin County	7,477	7,107	7,213	7,631	8,121	8,418	8,737	8,862	1.21	0.81
Pierce County	31,149	32,765	36,804	38,194	39,818	41,190	42,655	44,368	0.97	0.81
Polk County	32,351	34,773	41,319	43,621	45,901	47,842	49,592	51,152	1.14	0.86
St. Croix County	43,262	50,251	63,155	72,377	80,779	87,967	95,202	100,806	2.63	1.96
Washburn County	13,174	13,772	16,036	16,671	17,250	17,634	17,869	18,023	0.60	0.41
St. Croix WMD	214,777	230,401	267,022	284,987	302,044	316,053	329,937	341,735	1.31	1.00
Wisconsin Department of Administration Official Population Projections, June 2002										

Computer Applications Inc. to new populations using Mosaic data. Mosaic is a methodology that classifies neighborhoods into segments based on their demographic and socioeconomic composition. The basic assumption in the analysis is that people in demographically similar neighborhoods will tend to have similar consumption, ownership, and lifestyle preferences. Because of the assumptions made in the analysis, the data should be considered as relative indicators of potential, not actual participation.

We looked at potential participants in birdwatching, photography, freshwater fishing, hunting, and hiking. The consumer behavior data apply to persons more than 18 years old. For the area that we included in our analysis, the estimated maximum participants for each activity are: birdwatching (34,882), photography (56,898), hunting (32,715), freshwater fishing (64,909), and hiking (50,539). We interpret the estimates to represent the core audience for repeated trips to a WPA. It is important to recognize that each WPA offers different opportunities for these wildlife dependent types of recreation based on habitat types and wildlife use.

Climate and Climate Change Impacts

The District's climate is continental with cold winters and warm summers. The normal temperatures and annual precipitation averages for the period 1971-2000 for a region that includes Dunn, Pepin, Pierce, and St. Croix Counties and other southern counties present an adequate indication of the climate of the District. The region has an average annual temperature of 44.1 degrees Fahrenheit. July is the warmest month with an average temperature of 70.8 degrees Fahrenheit. The coldest month is January with an average temperature of 12.7 degrees Fahrenheit. Annual precipitation is 33.34 inches. The average monthly precipitation exceeds 3 inches for April, May, and September. The average monthly precipitation exceeds 4 inches for June, July, and August. (Source: State of Wisconsin Blue Book 2005-2006)

The U.S. Department of the Interior issued an order in January 2001 requiring federal agencies, under its direction, that have land management responsibilities to consider potential climate change impacts as part of long range planning endeavors.



Jackrabbit. USFWS photo

The increase of carbon dioxide (CO2) within the earth's atmosphere has been linked to the gradual rise in surface temperature commonly referred to as global warming. In relation to comprehensive conservation planning for wetland management districts, carbon sequestration constitutes the primary climate-related impact to be considered in planning. The U.S. Department of Energy's "*Carbon Sequestration Research and Development*" defines carbon sequestration as "...the capture and secure storage of carbon that would otherwise be emitted to or remain in the atmosphere."

Vegetated land is a tremendous factor in carbon sequestration. Terrestrial biomes of all sorts – grasslands, forests, wetlands, tundra, and desert – are effective both in preventing carbon emission and acting as a biological "scrubber" of atmospheric CO2. The Department of Energy report's conclusions noted that ecosystem protection is important to carbon sequestration and may reduce or prevent loss of carbon currently stored in the terrestrial biosphere.

Conserving natural habitat for wildlife is the heart of any long-range plan for national wildlife refuges. The actions proposed in this CCP would conserve or restore land and habitat, and would thus retain existing carbon sequestration on the Wetland Management District. This in turn contributes positively to efforts to mitigate human-induced global climate change.

One Service activity in particular – prescribed burning – releases CO2 directly to the atmosphere from the biomass consumed during combustion. However, there is actually no net loss of carbon, since new vegetation quickly germinates and sprouts to replace the burned-up biomass and sequesters or assimilates an approximately equal amount of carbon as was lost to the air (Boutton et al. 2006).

Several impacts of climate change have been identified that may need to be considered and addressed in the future:

- Habitat available for cold water fish such as trout and salmon in lakes and streams could be reduced.
- Forests may change, with some species shifting their range northward or dying out, and other trees moving in to take their place.
- Ducks and other waterfowl could lose breeding habitat due to stronger and more frequent droughts.
- Changes in the timing of migration and nesting could put some birds out of sync with the life cycles of their prey species.
- Animal and insect species historically found farther south may colonize new areas to the north as winter climatic conditions moderate.

The managers and resource specialists on the Wetland Management District need to be aware of the possibility of change due to global warming. When feasible, documenting long-term vegetation, species, and hydrologic changes should become a part of research and monitoring programs on the District. Adjustments in District management direction may be necessary over the course of time to adapt to a changing climate.

The following is an excerpt from the 2000 report, *Climate Change Impacts on the United States: The Potential Consequences of Climate Variability and Change*, produced by the National Assessment Synthesis Team, an advisory committee chartered under the Federal Advisory Committee Act to help the US Global Change Research Program fulfill its mandate under the Global Change Research Act of 1990. These excerpts are from the section of the report focused upon the eight-state Midwest region.

Observed Climate Trends

Over the 20th century, the northern portion of the Midwest, including the upper Great Lakes, has warmed by almost 4 degree Fahrenheit (F) (2 degrees Celsius (C)), while the southern portion, along the Ohio River valley, has cooled by about 1 degree F (0.5 degree C). Annual precipitation has increased, with many of the changes quite substantial, including as much as 10 to 20 percent increases over the 20th century. Much of the precipitation has resulted from an increased rise in the number of days with heavy and very heavy precipitation events. There have been moderate to very large increases in the number of days with excessive moisture in the eastern portion of the basin.

Scenarios of Future Climate

During the 21st century, models project that temperatures will increase throughout the Midwest, and at a greater rate than has been observed in the 20th century. Even over the northern portion of the region, where warming has been the largest, an accelerated warming trend is projected for the 21st century, with temperatures increasing by 5 to 10 degrees F (3 to 6 degrees C). The average minimum temperature is likely to increase as much as 1 to 2 degrees F (0.5 to 1 degree C) more than the maximum temperature. Precipitation is likely to continue its upward trend, at a slightly accelerated rate; 10 to 30 percent increases are projected across much of the region. Despite the increases in precipitation, increases in temperature and other meteorological factors are likely to lead to a substantial increase in evaporation, causing a soil moisture deficit, reduction in lake and river levels, and more drought-like conditions in much of the region. In addition, increases in the proportion of precipitation coming from heavy and extreme precipitation are very likely.

Key Issues in the Midwest

Reduction in Lake and River Levels

Water levels, supply, quality, and water-based transportation and recreation are all climate-sensitive issues affecting the region. Despite the projected increase in precipitation, increased evaporation due to higher summer air temperatures is likely to lead to reduced levels in the Great Lakes. Of 12 models used to assess this question,11 suggest significant decreases in lake levels while one suggests a small increase. The total range of the 11 models' projections is less than a 1-foot increase to more than a 5-foot decrease. A 5-foot (1.5- meter) reduction would lead to a 20 to 40 percent reduction in outflow to the St. Lawrence Seaway. Lower lake levels cause reduced hydropower generation downstream, with reductions of up to 15 percent by 2050. An increase in demand for water across the region at the same time as net flows decrease is of particular concern. There is a possibility of increased national and international tension related to increased pressure for water diversions from the Lakes as demands for water increase. For smaller lakes and rivers, reduced flows are likely to cause water quality issues to become more acute. In addition, the projected increase in very heavy precipitation events will likely lead to increased flash flooding and worsen agricultural and other nonpoint source pollution as more frequent heavy rains wash pollutants into rivers and lakes. Lower water levels are likely to make water-based transportation more difficult with increases in the costs of navigation of 5 to 40 percent. Some of this increase will likely be offset as reduced ice cover extends the navigation season. Shoreline damage due to high lake levels is likely to decrease 40 to 80 percent due to reduced water levels.

Adaptations: A reduction in lake and river levels would require adaptations such as re-engineering of ship docks and locks for transportation and recreation. If flows decrease while demand increases, international commissions focusing on Great Lakes water issues are likely to become even more important in the future. Improved forecasts and warnings of extreme precipitation events could help reduce some related impacts.

Agricultural Shifts

Agriculture is of vital importance to this region, the nation, and the world. It has exhibited a capacity to adapt to moderate differences in growing season climate, and it is likely that agriculture would be able to continue to adapt. With an increase in the length of the growing season, double cropping, the practice of planting a second crop after the first is harvested, is likely to become more prevalent. The CO2 fertilization effect is likely to enhance plant growth and contribute to generally higher yields. The largest increases are projected to occur in the northern areas of the region, where crop yields are currently temperature limited. However, yields are not likely to increase in all parts of the region. For example, in the southern portions of Indiana and Illinois, corn yields are likely to decline, with 10-20



Big bluestem, St. Croix Wetland Management District. USFWS photo.

percent decreases projected in some locations. Consumers are likely to pay lower prices due to generally increased yields, while most producers are likely to suffer reduced profits due to declining prices. Increased use of pesticides and herbicides are very likely to be required and to present new challenges.

Adaptations: Plant breeding programs can use skilled climate predictions to aid in breeding new varieties for the new growing conditions. Farmers can then choose varieties that are better attuned to the expected climate. It is likely that plant breeders will need to use all the tools of plant breeding, including genetic engineering, in adapting to climate change. Changing planting and harvest dates and planting densities, and using integrated pest management, conservation tillage, and new farm technologies are additional options. There is also the potential for shifting or expanding the area where certain crops are grown if climate conditions become more favorable. Weather conditions during the growing season are the primary factor in year-to-year differences in corn and soybean yields. Droughts and floods result in large yield reductions; severe droughts, like the drought of 1988, cause yield reductions of over 30 percent. Reliable seasonal forecasts are likely to help farmers adjust their practices from year to year to respond to such events.

Changes in Semi-natural and Natural Ecosystems

The Upper Midwest has a unique combination of soil and climate that allows for abundant coniferous tree growth. Higher temperatures and increased evaporation will likely reduce boreal forest acreage, and make current forestlands more susceptible to pests and diseases. It is likely that the southern transition zone of the boreal forest will be susceptible to expansion of temperate forests, which in turn will have to compete with other land use pressures. However, warmer weather (coupled with beneficial effects of increased CO2), are likely to lead to an increase in tree growth rates on marginal forestlands that are currently temperature-limited. Most climate models indicate that higher air temperatures will cause greater evaporation and hence reduced soil moisture, a situation conducive to forest fires. As the 21st century progresses, there will be an increased likelihood of greater environmental stress on both deciduous and coniferous trees, making them susceptible to disease and pest infestation, likely resulting in increased tree mortality.

As water temperatures in lakes increase, major changes in freshwater ecosystems will very likely occur, such as a shift from cold water fish species, such as trout, to warmer water species, such as bass and catfish. Warmer water is also likely to create an environment more susceptible to invasions by non-native species. Runoff of excess nutrients (such as nitrogen and phosphorus from fertilizer) into lakes and rivers is likely to increase due to the increase in heavy precipitation events. This, coupled with warmer lake temperatures, is likely to stimulate the growth of algae, depleting the water of oxygen to the detriment of other living things. Declining lake levels are likely to cause large impacts to the current distribution of shoreline wetlands. There is some chance that some of these wetlands could gradually migrate, but in areas where their migration is limited by the topography, they would disappear. Changes in bird populations and other native wildlife have already been linked to increasing temperatures and more changes are likely in the future. Wildlife populations are particularly susceptible to climate extremes due to the effects of drought on their food sources.

Geology and Soils

The counties that lie within the St. Croix WMD owe much of their ecology to the glacial history of Wisconsin. Glaciers most recently flowed into Wisconsin about 25,000 years ago and reached their greatest extent, covering approximately two-thirds of the state, some 14,000 to 16,000 years ago. The retreat of the ice front was interrupted a number of times by re-advances, the last one touched west-central Wisconsin about 10,000 years ago. The area that contains most of the District's WPAs lies within the Western Prairie Ecological Landscape identified by Wisconsin in their *Strategy for Wildlife Species of Greatest Conservation Need*. This area is described as containing "the only true representative prairie potholes in the state. It is characterized by its glaciated, rolling topography and primarily open landscape with rich prairie soils and pothole lakes, ponds, and wet depressions, except for forested areas along the St. Croix River. Sandstone underlies a mosaic of soils. Silty loams that can be shallow and stony cover most of the area. Alluvial sands and peats are found in stream valleys."

The northern portion of the District lies primarily in the Forest Transition Ecological Landscape whose western portion lies on the moraines of the Wisconsin glaciation (Figure 14). The soils are diverse and range from poorly drained to well drained. The southern and eastern part of the District lies within the Western Coulee and Ridges Ecological Landscape, which "is characterized by its highly eroded, Driftless topography and relatively forested landscape. Soils are silt loams (loess) and sandy loams over sandstone residuum over dolomite."

Information on soils is essential for their conservation, development, and productive use. The various soil types have characteristic properties that determine their potential and limitations for specific land uses. Knowledge of soils is important in managing the District's wildlife habitat programs.

Water and Hydrology

Hydrologic features vary across the ecological landscapes of the District, although the past draining of wetlands is consistent throughout the District. According to the Wisconsin DNR, watershed and groundwater pollution vary considerably across the District (Figure 15). From a practical perspective, the relevance of hydrology to the establishment and management of a WPA is best analyzed and discussed at a local scale.



Star Prairie WPA, St. Croix Wetland Management District. USFWS photo.

District Resources

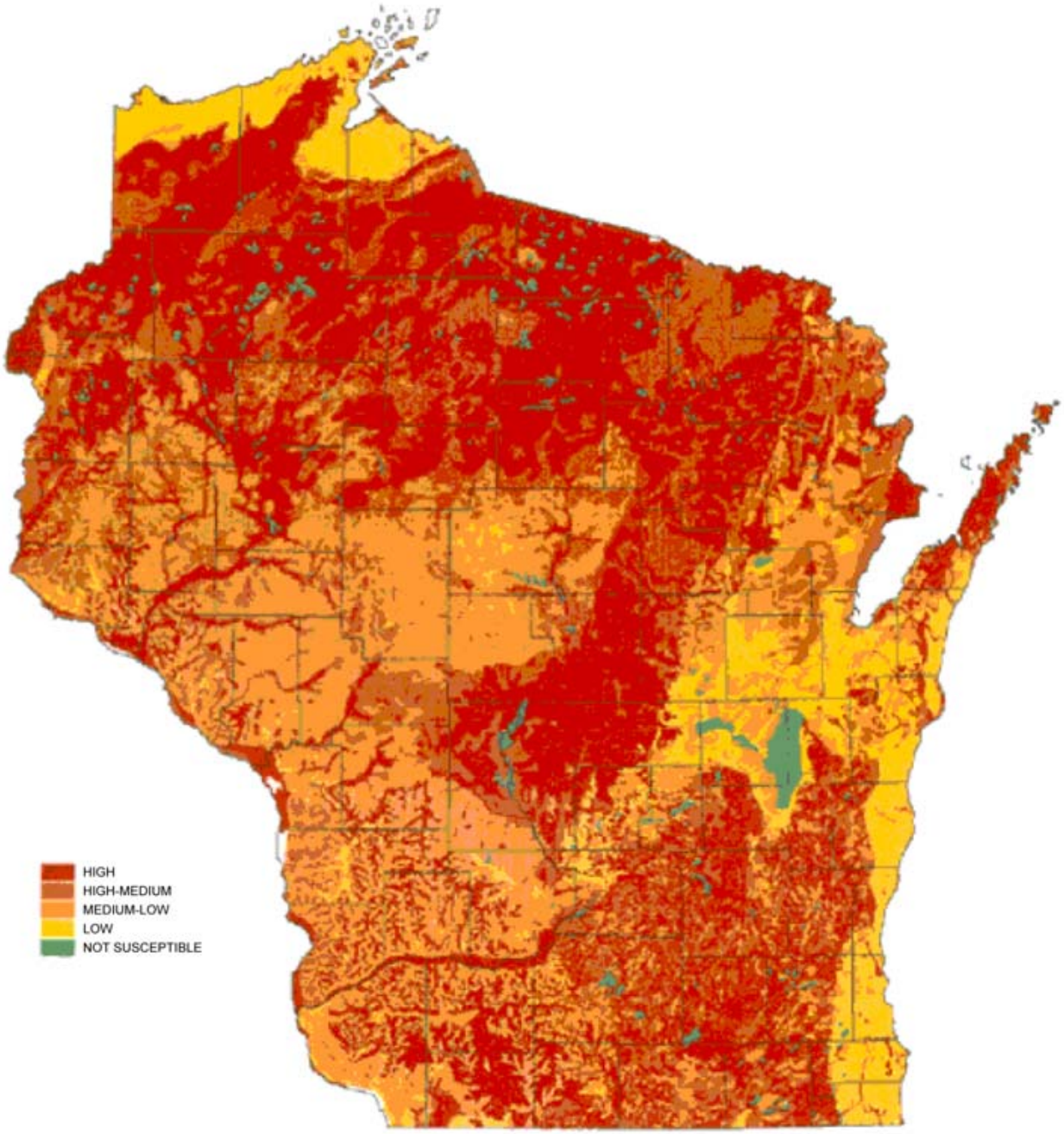
Wetlands

Wetlands are lands where saturation with water is the dominant factor determining the nature of soil development and the types of plant and animal communities living in the soil and on its surface (Cowardin et al. 1979). It is estimated that the contiguous United States contained 221 million acres of wetlands just 200 years ago (Dahl 1990). By the mid-1970s, only 46 percent of the original acreage remained (Tiner 1984). Wetlands now cover about 5 percent of the landscape of the lower 48 states.

Wetlands are important to both migratory and resident wildlife. They serve as breeding and nesting habitat for migratory birds and as wintering habitat for many species of resident wildlife. Humans also benefit from wetlands as these habitats improve water quality and quantity, reduce flooding effects, and provide areas for recreation.

Wetlands are classified using a number of attributes including vegetation, water regimes (the length of time water occupies a specific area), and water chemistry. District wetlands are classified using the following water regime descriptions (Cowardin et al. 1979):

Figure 15: Wisconsin Groundwater Contamination Susceptability Model



- Temporarily flooded-surface water is present for brief periods during the growing season. The water table usually lies below the soil surface most of the season, so plants that grow in both uplands and wetlands are characteristic.
- Seasonally flooded-surface water is present for extended periods especially early in the growing season, but is absent by the end of the season in most years. When surface water is absent, the water table is often near the surface.

- Semi-permanently flooded-surface water persists throughout the growing season in most years. When surface water is absent, the water table is usually at or very near the land surface.
- Permanently flooded-water covers the land throughout the year in nearly all years. Vegetation is composed of obligate hydrophytes, such as cattails.

The District has focused on saving and restoring small wetlands. Wetland diversity is important because wetlands change continuously; a single wetland can not be maximally productive all the time. Waterfowl use different types of wetlands at different times during the breeding season. Laying hens may forage in ephemeral, temporary, and seasonal wetlands early in the season and shift to semi-permanent and permanent wetlands after the brood is hatched. Marsh birds need a variety of wetlands in close proximity so they can shift from one wetland to another as the wetlands cycle through different phases. Wetland complexes include a variety of basins, some shallow and some deep, in close proximity. Diverse wetland complexes are rare today because most shallow ephemeral, temporary, and seasonal basins have been drained.

Freshwater wetlands like those in the District are among the most productive in the world (Weller 1982). The dynamic water cycle creates a rich environment for many waterfowl and other marsh birds. Cycling water accelerates decomposition of marsh vegetation, resulting in a natural fertilizer. When the basins recharge in the spring, the water becomes a soup of nutrients and supports a diverse and healthy population of aquatic invertebrates, which feed reproducing waterfowl and marsh birds throughout the spring and summer. In the larger basins, the vegetation changes from densely closed cattail or bulrush to completely open over a period of years. In the process of transition, the cover vegetation moves through a phase, known as hemi-marsh, when clumps of emergent vegetation are interspersed with open water (Weller 1982). In this phase, the structure of the vegetation itself creates habitat and stimulates the production of aquatic invertebrates. The marsh, in this phase, hosts the maximum number of marsh birds. Unfortunately, the phase is only temporary and most wetlands cycle out of it in 1 to 3 years.

Wetlands within the District occur in a diverse distribution of sizes, types, locations, and associations. The WPAs have approximately 1,452 acres of wetlands ranging in size from small seasonal basins less than half an acre in size to large, permanent marshes more than 200 acres in size.

Plant Communities

Plant Communities Associated with Wetlands

Wetlands throughout the District provide both resting cover and food resources for migratory birds. Substantial emergent and submergent aquatic vegetation occurs in freshwater wetlands. Sago pondweed, coontail, various pondweeds and duckweed occur in the deeper, more permanently flooded zones, while cattail, hardstem and softstem bulrush, burreed, arrowhead, sedges, and smartweed grow in shallow areas that may go dry during some periods.

Most palustrine basins exhibit concentric zones of vegetation that are dominated by different plant species. The terms commonly used in reference to these zones are, in decreasing order of water permanency, deep marsh, shallow marsh, and wet meadow (Kantrud et al. 1989). The water regime in a deep marsh zone is usually semipermanent. Dominant plants include cattail, hardstem and softstem bulrush, submergent or floating plants, and submergent vascular plants, but this zone also may be devoid of vegetation if bottom sediments are unconsolidated. Shallow marsh zones are usually dominated by emergent grasses, sedges, and some forbs,



Purple stemmed aster, St. Croix Wetland Management District. USFWS photo.

but submergent or floating vascular plants also may occur. Wet meadow zones also are typically dominated by grasses, rushes, and sedges, whereas submergent or floating plants are absent.

A listing of 50 plant species found on WPA wetlands during a study completed between 1983 and 1990 (Lillie, 2004) can be found in Appendix C on page 102.

A variety of wildlife species, from ducks to rails to songbirds, use this community. Common breeding bird species include Mallard, Blue-winged Teal, Wood Duck, Sandhill Crane, Canada Goose, Trumpeter Swan, Hooded Merganser, Pied-billed Grebe, Great Blue Heron, Green Heron, Killdeer, Red-winged Blackbird and Virginia Rail. Waterfowl species present during the spring and fall migration include Mallard, Wood Duck, Canada Goose, Green-winged Teal, Blue-winged Teal, Ring-necked Duck, Canvasback, Lesser and Greater Scaup and American Wigeon.

Plant Communities Associated with Uplands

Upland vegetation is essential to provide nesting habitat for migratory and resident bird species. Upland habitats also provide necessary habitat requirements for resident wildlife throughout the year. The District currently uses a variety of management techniques to maintain and enhance upland habitat conditions including prescribed fire, native grass seeding, mowing, grazing, tree cutting, and invasive species management.

Grasslands

Past habitat management emphasized the provision of dense nesting cover (DNC) for waterfowl. Several areas on the District were planted to grass species such as tall and intermediate wheatgrass, sweetclover, and alfalfa. These fields initially provided good cover for nesting birds; however, over time they deteriorated and were prone to invasion by Canada thistle and other problem species (e.g., smooth brome). In addition, many of the Waterfowl Production Areas contained fields that had been enrolled in the Conservation Reserve Program and were planted to brome by the previous owners. These monotypic stands of brome provide some habitat for wildlife but not as much as diverse native species plantings. The District has begun the process of restoring these grasslands to native grasses and forbs. The native grass restoration process generally involves cropping the field for 3 or more years to eliminate exotic cool-season grass seeds and rhizomes, control Canada thistle and other invasive plants, and prepare a seed bed for planting native grass seed. Fields are planted to corn for 2 years and then soybeans for 1 year. Soybean stubble provides a good seedbed for native grassland and forb species.



American Widgeon. USFWS photo.

Some uplands in the District were historically comprised of cool-and warm-season grasses characteristic of the tall-grass prairie. Vegetation composition at local levels was determined by numerous interrelated factors, including elevation, topography, climate, soil characteristics, herbivory, and fire. Species typical of the historical mixed-grass prairie include little bluestem, Indian grass, big bluestem, switchgrass, side oats gramma and numerous forbs such as yellow coneflower, blue vervain, oxeye sunflower, blazing star, bergamont, cup plant, giant hyssop and potentilla. Appendix C includes a listing of prairie plants found on the WPAs.

The District has been planting native grasses and forbs as former crop lands are converted to more favorable wildlife habitat. The District has approximately 4,192 acres of grassland in blocks that range from 1 to 400 acres in size. Approximately 2,576 acres of the grassland is brome or other introduced cool season grasses while 1,616 acres is native prairie. In addition, the District is in the process of converting 640 acres of cropland to native grass.

Grassland restoration and management is targeted to create large blocks of unbroken grassland habitat. Many species of grassland- and wetland-dependant migratory birds have declined dramatically due to the loss of habitat such as grasslands and wetlands. Most of these species evolved in a treeless landscape of prairie and wetlands with scat-

tered patches of oak savanna. There is growing evidence that the presence of trees has dire consequences for these species, often resulting in lower reproductive success.

Bird species that benefit from the District's grasslands include Henslow's Sparrow, Bobolink, Eastern and Western Meadowlark, Sandhill Crane, Mallard, Blue-winged Teal, Ring-Necked Pheasant, Wild Turkey, Dickcissel, Northern Harrier, Short-eared Owl and many other grassland-dependent species.

Shrub-Scrub

Some scrub shrub communities are found on District lands. Most are found in upland grass fields that have not been managed intensively with fire, mowing or grazing. These fields are usually going through succession and if left unmanaged would eventually turn into forest. Common plant species include willow, dogwood, box elder, prickly ash, sumac and numerous young tree saplings.

Wetland areas also support some scrub shrub habitat, mostly around the edge of wetlands or wet meadows. These areas are very important for migratory birds such as warblers or woodcock, especially during spring or fall migration. This wetland shrub habitat contains numerous species including alder, willow, red osier dogwood and numerous species of sedges. No plant or animal inventories have been completed for scrub shrub habitat.

Shrub scrub acreage is included under the heading of wetland or grassland habitat.

Forests

The District is located along a transition zone where several forest, wetland and prairie vegetation community types intersect. Several types of forests are found on the District including oak savanna, southern oak forest, southern mesic forest and northern mesic forest. Oak savannas are dominated by burr oaks, white oaks and an understory of prairie grasses and forbs. Southern oak forests are found in small sections of the District and are dominated by white, black and red oaks. Southern mesic forests contain sugar maple, elm and basswood while northern mesic forests contain maple, hemlock and yellow birch. Most of the forested habitat on WPAs are oak savannas, old farm woodlots or pine plantations with red pine or white pine.

Oak savannas are an extremely rare community with less than one-tenth of 1 percent of the original oak savanna habitat remaining. Oak savannas depend on fire to prevent the succession to deciduous forest. With the suppression of fire, many oak savannas need intensive management to bring back the understory community. Burr oaks, which have a thick fire resistant bark are the dominant tree species in oak savannas. A wide variety of prairie grass and forb species are found in the understory of a healthy oak savanna.

Numerous animal species are found in forested habitats on WPAs. Many species of neotropical migrants use the small woodland patches for migration habitat. In addition, numerous mammals use the forested habitat including white-tailed deer, Wild Turkey, coyote, red fox, gray fox and many small mammals. No surveys have been completed on the District to assess wildlife use of forested habitats. Oak savannas are important habitat for Red-headed Woodpeckers and are also used heavily by Wild Turkey and deer.

The District has approximately 1,202 acres of forest in blocks that range from less than an acre to 90 acres in size. The forest acreage includes oak savanna, pine plantations, deciduous forest and grassland areas taken over by trees.

Shrubs and Trees in Fencerows

Some WPAs contain old fencerows that are remnants from previous land owners. The fencerows contain shrubs and trees that are beneficial for some wildlife and are, generally, a detriment to grassland bird species. Many of the trees found in fencerows are invasive species such as Siberian elm, honeysuckle, black locust, box elder and buckthorn. Since these trees and shrubs have invaded grassland areas, the trees along the fencerows are typically removed. Although these trees provide habitat for edge species such as Brown-headed Cowbirds, Blue Jays and Robins, these fencerows are detrimental to grassland dependent species that require large tracts of unbroken grassland for their habitat. Because interior fencerows fragment blocks of habitat, the wire and posts are removed in addition to trees and shrubs. The removal of interior fencerows also improves our ability to manage the habitat with mowing or prescribed fire. Within the District there are over 30 miles of fencerows.

Fish and Wildlife Communities

The variety of vegetative communities on the District provides habitat for both wetland and upland associated wildlife, such as ducks, herons, songbirds, deer, and turkey. The District also hosts furbearers, marsh birds, raptors, and a variety of woodland mammals, in addition to amphibians and reptiles. Most wetlands within the District are too shallow to support fish although several basins, including Oak Ridge Lake, Bass Lake and some larger wetland basins have fish in them.

Birds

A complete inventory of bird species that use WPAs within the District has not been completed. Based on the state list and surveys completed during the 1970s, we would expect over 250 species to be found on the WPAs. (Appendix C)

Mallards, Wood Ducks, Blue-winged Teal, Hooded Mergansers, Trumpeter Swans, and Canada Geese are common nesting waterfowl species on WPAs. In addition, during migration the following waterfowl species are also common: Canvasback, Greater and Lesser Scaup, Gadwall, Northern Shoveler, Redhead, Bufflehead, Green-winged Teal, Ameican Wigeon, Pintail, and Ring-necked Duck.

The grassland and wetland complexes in the District provide nesting habitat for many species of birds including Bobolinks, Meadowlarks, Bluebirds, Henslow's Sparrows, Killdeer, Sandhill Cranes, Northern Harrier, and Short-eared Owls. In addition, many species of waterbirds including Great Blue Herons, Great Egrets, Green Herons, Least Bitterns, rails, and American Coots use District wetlands. Numerous other species use District lands during spring and fall migration.

Mammals

Common mammal species for the District include white-tailed deer, raccoon, black bear, beaver, muskrat, mink, red squirrel, gray squirrel, eastern cottontail and numerous small mammals such as eastern chipmunks, deer mouse, meadow jumping mouse, meadow vole, shorttail shrew, white-footed mouse, thirteen lined ground squirrel and plains pocket gopher. Red fox are the most common carnivores of the area followed by coyote and gray fox. An inventory of mammal species has not been completed for the District. A checklist of mammals that are likely to occur on WPAs, although they have not all been confirmed, is included in Appendix C.

Amphibians and Reptiles

Data from state lists indicates that 19 species of amphibians and reptiles could be found on District lands. Appendix C lists the species that may occur on District lands. No surveys have been conducted on District lands to document species presence or distribution, although some species such as snapping turtle, painted turtle, and spring peepers are commonly seen or heard.

Invertebrates

Data from a study conducted from 1983 to 1992 indicated that there were 250 invertebrate taxa collected in WPA wetlands and adjacent uplands. This included 54 terrestrial taxa and 196 aquatic invertebrate species. A listing of the taxanomic orders is found in Appendix C. A complete listing of invertebrate species can be found in Evard and Lillie (1996). Freshwater invertebrates are an extremely important food source for waterfowl, especially for hens during spring migration and egg laying.

Fish

Data from surveys conducted in 1983-1992 indicated that seven species of fish were found on WPAs. These species were yellow perch, white sucker, golden shiner, pumpkinseed, fathead minnow, stickleback and mud minnow. In addition, brown trout are found in the Willow River which flows through the Betterly WPA.



Black bear. USFWS photo.

Threatened and Endangered Species

The Karner blue butterfly is listed as endangered in all but Pepin and Pierce Counties within the District. To date, no Karner blue butterflies have been identified on Service lands, nor has wild lupine, a critical component of Karner blue butterfly habitat, been found on Service lands within the District.

Threats to Resources

Invasive Species

Three categories of undesirable species (invasive, exotic, noxious) are found within the District. Invasive species are alien species whose introduction causes or is likely to cause economic or environmental harm or harm to human health. Executive Order 13112 requires the District to monitor, prevent, and control the presence of invasive species. Exotic species are species that are not native to a particular ecosystem. Service policy directs the District to try to maintain habitats free of exotic species. Noxious weeds are designated by the U.S. Department of Agriculture or the Wisconsin Department of Agriculture as species which, when established, are destructive, competitive or difficult to control. Canada thistle and field bindweed (creeping Jenny), and leafy spurge are introduced species classified as noxious weeds in Wisconsin. Purple loosestrife and multiflora rose are introduced species classified as nuisance weeds.

Invasive, exotic and noxious weed species are relatively abundant within the District. These species are quite diverse and are found in most District habitats, although some are typically found in agricultural fields or lakes and ponds. Currently, most District control efforts focus on Canada thistle, spotted knapweed, leafy spurge, buckthorn and black locust. The principal invasive and exotic plant species within the District are reed canary grass, spotted knapweed, leafy spurge, garlic mustard, box elder, buckthorn, black locust, phragmites, hybrid cattail, brome and purple loosestrife. Exotic and invasive plant species pose one of the greatest threats to the maintenance and restoration of the diverse habitats found on WPAs. They threaten biological diversity by causing population declines of native species and by altering key ecosystem processes like hydrology, nitrogen fixation, and fire regimes. Left unchecked, these plants have come to dominate areas on some WPAs and reduced the value of the land as wildlife habitat. There is a bountiful seed source of many of these exotic/invasive species on the lands surrounding the WPAs, thus in order to be effective in our management plans, we must bring together a complex set of interests including private landowner, commercial, and public agencies.

Drainage and Pesticides

Waterfowl Production Areas are often islands in a sea of intensive agriculture. Natural drainage patterns have been altered throughout the landscape, increasing the frequency, intensity, and duration of water flowing into many units. Siltation, nutrient loading, and contamination from point and non-point sources of pollution are a serious problem on many WPAs. Waterfowl Production Areas are also threatened by farming, trespass, dumping, wildfires, and pesticide applications on adjacent agricultural land. A study in Ontario examined the effects of habitat and agricultural practices on birds breeding on farmland and determined that the most important variable decreasing total bird species abundance was pesticide use (Freemark and Csizy 1993).

Recent changes in agriculture have accelerated the impact of pesticides on surrounding land. Genetically altered Round-up ready corn, soybeans, cotton and sugar beats have expanded the window of opportunity for pesticide applications and promises to kill everything green on fields except the genetically altered crops. Another altered crop, Bt. Corn, contains a genetically engineered insecticide.

Research has shown that insecticides commonly used for sunflowers, soybeans and corn can kill wildlife directly and indirectly (e.g. by decreasing the amount of food available to ducks). For example, ducks feed on grain much of the year but in the spring they shift to aquatic invertebrates (insect larvae, amphipods, snails, etc.) and depend on this food source for reproduction and survival. Even when aerial pesticide applications are done carefully and wetlands are avoided, the chemicals drift into wetlands in measurable amounts and kill aquatic invertebrates (Tome et al. 1991 and Grue et al. 1986).

Insecticides have a direct effect by killing aquatic invertebrates, but herbicides also have an indirect effect on food available to waterfowl. The Service conducted a study of the impact of agricultural chemicals on selected wetlands in four of the Wetland Management Districts (Ensor and Smith, 1994). Herbicides from surrounding agricultural



Development near the St. Croix Wetland Management District. USFWS photo.

land enter wetlands and disrupt the functional interaction between vegetation structure and aquatic invertebrate life. The changing dynamic reduces food available to breeding waterfowl.

Seasonal and semipermanent wetlands (the majority of WPA wetlands) are the most exposed to agricultural chemicals. These wetlands are small and interspersed with croplands, which increases the probability of pesticides from over-spray and aerial drift. Most herbicides and insecticides are applied to crops in the spring and early summer, coincident with maximum runoff and waterfowl breeding. Ensor and Smith (1994) write:

> "A result of our survey... indicates that prairie pothole wetlands may involve interactions of multiple herbicides (and potentially insecticides) comprising chemical "soups" unique to individual wetlands."

This study showed that "typical agricultural use" of pesticides on surrounding land had a significant impact in reducing the biological quality of WPA wetlands.

Rural Development

Rural development also threatens District lands in counties with growing populations, such as St. Croix County. Lands adjoining WPAs are often seen as highly desirable rural building lots that are purchased as small hobby farms or rural home sites. This can result in the WPA being "ringed" by homes, with a series of negative impacts on the WPA. Such development can limit future management such as prescribed fire; increase trespass on District lands by neighbors using ATVs, horses, or vehicles; increase threats to wildlife from stray pets (cats and dogs); increase incidents of illegal use of District land by neighbors for purposes such as dumping, gardening, equipment storage, etc.; and can place hunters and neighbors at odds over concerns about safety during the hunting seasons. In addition to limiting future management options on the property, these rural developments adjacent to WPAs also require a large amount of staff time to deal with these issues. Large-scale rural development would also bring threats from noise and storm water runoff.

Administrative Facilities

The Service is responsible for maintaining the District headquarters building and maintenance buildings. The headquarters is located on the St. Croix Prairie WPA about 2 miles west of New Richmond. The headquarters building consists primarily of office space for the District and Private Lands Program. The building is a modified residential house that has 2,800 square feet and was built in the mid 1980s. An 880-square-foot, three-stall garage is located next to the headquarters building.

The maintenance complex is a former farmsite that was purchased with the Prairie Flats South WPA and is located about 3 miles north of Somerset. The maintenance building consists of a modified machine shed that has 1,920 square feet. Except for a small office space in the barn, the maintenance building is the only heated space in the maintenance complex. There are also several other buildings including a 6,292-square-foot pole building used to store equipment, supplies and seed. There is a 2,925-square-foot barn and a 3,894-square-foot calf barn. These two buildings are used for equipment and supply storage.

Cultural Resources and Historic Preservation

Cultural resources are important parts of the Nation's heritage. The Service is committed to protecting valuable evidence of human interactions with each other and the landscape. Protection is accomplished in conjunction with the Service's mandate to protect fish, wildlife, and plant resources. Responding to the requirement in the National Wildlife Refuge System Improvement Act of 1997 that comprehensive conservation plans include "the

archaeological and cultural values of the planning unit," the Service contracted for an archeological and historic resources study of the Leopold and St. Croix Wetland Management Districts. The Leopold WMD is located in southcentral Wisconsin and the report combines information for both districts. The study report was submitted in 2003.

Egan-Bruhy (2003) reports:

> "Wisconsin has a rich and complex history of 11,500 years of change. Through time, populations adapted to the unique and changing environmental setting of the region. The archeological and historical records reflect alterations in the economy, belief systems, social organization, cultural composition, and lifeways of the people of what is now the state of Wisconsin."
>
> "The archeological data ... provides information regarding the probability of identifying prehistoric sites in association with specific environmental attributes. An association between site location and types of water bodies, soils, and elevations was established for several of the prehistoric time periods. The analysis also indicates that there is a relatively high probability of encountering historic archaeological sites ... particularly proximate to transportation routes and along section lines....".

The Saint Croix WMD and Leopold WMD cover 30 counties in Wisconsin. Consequently they are likely to contain archeological sites from all of the cultural periods found in Wisconsin: PaleoIndian, Archaic, Woodland, Mississippian, Oneota, and Western (French, British, and United States) cultures. (See Chapter 3 of the Egan-Bruhy report for a more complete discussion of cultural resources on the Districts.) In addition, Indian tribes may identify sacred sites and traditional cultural properties on WPAs, and the Districts may acquire buildings and other structures of historical importance. However, as of 2006, the Service has no record of extant sacred sites, traditional cultural properties, and historic buildings and structures on any WPA.

Just 118 acres of District land have been subjected to an archeological survey. From those surveys and other sources, 89 cultural resources sites are reported on the Districts. The potential, therefore, is high for finding many more cultural resources sites.

A review of the National and/or State Registers of Historic Places by Egan-Bruhy (2003) showed the eight counties of the District contained 10 historic/architectural properties. The places include a house, farmhouse, farmstead, bridges, and church among other properties. There are no National Historic Landmark properties within the District. At this time no sites on waterfowl production areas have been nominated or placed on the National Register of Historic Places, although all sites are considered eligible until determined not eligible through the Section 106 process.

The following listed Indian tribes have been recognized by the Federal government or self-identified by the tribe as having a potential concern for traditional cultural resources, sacred sites, and cultural hunting and gathering areas in Wisconsin.

- Bad River Band of the Lake Superior Tribe of Chippewa Indians of the Bad River Reservation, Wisconsin
- Bois Forte Band (Nett Lake) of the Minnesota Chippewa Tribe, Minnesota
- Citizen Potawatomi Nation, Oklahoma
- Flandreau Santee Sioux Tribe of South Dakota
- Fond du Lac Band of the Minnesota Chippewa Tribe, Minnesota
- Forest County Potawatomi Community, Wisconsin
- Grand Portage Band of the Minnesota Chippewa Tribe, Minnesota
- Hannahville Indian Community, Michigan
- Ho-Chunk Nation of Wisconsin
- Iowa Tribe of Kansas
- Keweenaw Bay Indian Community, Michigan
- Lac Courte Oreilles Band of Lake Superior Chippewa Indians of Wisconsin
- Lac du Flambeau Band of Lake Superior Chippewa Indians of the Lac du Flambeau Reservation of Wisconsin
- Lac Vieux Desert Band of Lake Superior Chippewa Indians, Michigan
- Leech Lake Band of the Minnesota Chippewa Tribe, Minnesota

- Lower Sioux Indian Community in the State of Minnesota
- Menominee Indian Tribe of Wisconsin
- Mille Lacs Band of the Minnesota Chippewa Tribe, Minnesota
- Minnesota Chippewa Tribe, Minnesota
- Nottawaseppi Huron Band
- Oneida Tribe of Indians of Wisconsin
- Peoria Indian Tribe
- Pokagon Band of Potawatomi
- Prairie Band of Potawatomi Nation, Kansas
- Prairie Island Indian Community in the State of Minnesota
- Red Cliff Band of Lake Superior Chippewa Indians of Wisconsin
- Sac & Fox Nation of Missouri in Kansas and Nebraska
- Sac & Fox Nation, Oklahoma
- Sac & Fox Tribe of the Mississippi in Iowa
- Santee Sioux Nation, Nebraska
- Sisseton-Wahpeton Oyate of the Lake Traverse Reservation, South Dakota
- Sokaogon Chippewa Community, Wisconsin
- Spirit Lake Tribe, North Dakota
- St. Croix Chippewa Indians of Wisconsin
- Stockbridge Munsee Community, Wisconsin
- Upper Sioux Community, Minnesota
- White Earth Band of Minnesota Chippewa Tribe, Minnesota
- Winnebago Tribe of Nebraska

Although Indian tribes are generally understood to have concerns about traditional cultural properties, other groups such as church congregations, civic groups, and county historical societies could have similar concerns.

Museums and Repositories

The Districts have museum property. Archeological collections are not stored on-site, but 526 artifacts from four collections are stored in non-Federal repositories. Artifacts are owned by the Federal Government and can be recalled by the RHPO at any time. The Districts have no other types of museum property such as artwork, historical objects or documents (including photographs), nor natural resources collections. They have no scope of collections statement.

Cultural resources are important parts of the Nation's heritage. The Service is committed to protecting valuable evidence of human interactions with each other and the landscape. Protection is accomplished in conjunction with the Service's mandate to protect fish, wildlife, and plant resources.

Visitor Services

The Refuge Improvement Act established six priority uses of the Refuge System, which includes the WPAs in the District. These priority uses all depend on the presence of, or expectation of the presence, of wildlife, and are thus called wildlife-dependent uses. These uses are hunting, fishing, wildlife observation, photography, environmental education, and interpretation. Although Congress clearly expects managers to facilitate these priority uses, they must be compatible with the purpose for which the WPA was established and the mission of the Refuge System. Compatibility Determinations for the priority uses and numerous other uses in compliance with the Refuge Improvement Act and national compatibility policy and regulations are included (Appendix F).

Waterfowl Production Areas differ from national wildlife refuges in that they are open to hunting, fishing, and trapping by specific regulation, and open to the other wildlife-dependent activities by notification in general brochures available at the District office. New and existing WPAs are thus "open until closed" versus national wildlife refuges, which are "closed until opened." Within the St. Croix WMD, Oak Ridge WPA has special hunting regulations since it is located within a state closed area. Oak Ridge WPA is closed to hunting from the opening day of waterfowl season until the first Saturday in December except deer hunting during regular archery, gun and muzzleloader seasons.

Hunters and hunting have a long and linked history with WPAs. When Congress amended the Migratory Bird Hunting and Conservation Stamp Tax Act (Duck Stamp Act) in 1958, it authorized the acquisition of wetlands and uplands as WPAs and waived the usual "inviolate sanctuary" provisions



Environmental education, St. Croix Wetland Management District. USFWS photo.

for new migratory bird units. Thus, WPAs were intended to be open to waterfowl hunting, in part because waterfowl hunters, through the purchase of Duck Stamps and support for price increases of the stamp, played a major role in acquisition of these areas.

Wildlife observation, photography, interpretation, and environmental education are encouraged on WPAs and are increasing in popularity with the public. In general, WPAs lack an adequate fishery to support fishing.

Other District Uses

In addition to the wildlife-dependent recreational uses, the District regularly receives requests for various non-wildlife-dependent uses such as dog trials, horseback riding, plant collecting, berry picking, and special events. Also, various economic uses such as haying, grazing, and timber harvest are used as habitat management tools and involve the issuance of special use permits. The manager must often make decisions about other "uses" including requests for rights-of-way for new or expanded roads, utilities, pipelines, and communications equipment. Generally the District receives a few requests each year for these "uses", although the quantity has been increasing, which may be one result of the increased developmental pressure in St. Croix County.

Current Management

Habitat Management

Wetland Management

The intention of the District is to restore and manage wetlands on the WPAs. As the District purchases new WPAs or round-outs to existing WPAs, restoring or enhancing wetlands often provides a challenge to securing the necessary funding to complete the work in a timely manner. The District has frequently utilized grant funds from the North American Wetland Conservation Act or donations from conservation organizations to accomplish much of the work on these projects. In addition to wetland restorations on new tracts, restorations are also completed on existing lands whenever possible. Some restoration opportunities are limited due to potential impacts on adjacent properties. This is frequently true when drainage ditches are involved.

A common restoration technique on the WPAs is scraping out sediment from small Type I basins. In many cases, former agricultural practices have resulted in erosion of sediment into these small seasonal basins which are usually less than 2 feet in depth. In addition, many of the small seasonal basins were filled with rocks and boulders from the adjacent farm fields. By removing the sediment and rocks after the surrounding uplands have been planted to grass, these small basins will again hold water for several weeks in the spring. These seasonal basins are extremely important feeding habitat for nesting waterfowl. In addition they provide important amphibian breeding habitat.

Once wetlands are restored, management activities include maintenance of levees and water control structures, water level manipulation through natural flow and pumping, prescribed fire, and control of exotic and invasive plants. In general, the wetlands are managed to mimic natural processes and cycles. There are only four water control structures on District wetlands. Most wetlands on the District do not have water control structures that can be used to manipulate water levels, therefore they cycle with natural drought and wet years. This cycle is a natural part of prairie wetland ecology and maintains the productivity of these basins.

Grasslands

Several management techniques are used to manage and restore grassland habitat on the District.

These techniques include planting prairie species, converting former CRP fields to prairie, mowing, grazing, prescribed fire and tree removal.

Planting Prairie Species in Cropland

As lands are acquired, uplands are restored with native prairie plantings using Wisconsin ecotype grasses and forbs. Upon acquisition, cropfields are evaluated to determine when they will be planted to prairie grasses and forbs. Soybean stubble is a good seedbed for native prairie plantings. Depending on the availability of local ecotype seed, cropfields in soybean stubble are usually planted in the spring after acquisition. Fields in corn or other crops may be rotated through corn and soybeans to prepare the site for planting.

Conversion of Former CRP Fields to Prairie

The District is also actively converting former Conservation Reserve Program lands, which were planted to brome and alfalfa to planted native prairie. These brome fields are usually monotypic stands of grass, meaning that usually only one species of grass is growing in the field. They are not very diverse and although they provide some wildlife habitat, it is not as good as native prairie. The fields are being plowed and planted to crops to prepare the fields for planting with native grasses and forbs. The fields will be planted to corn for 2 years and then soybeans for 1 year. Soybean stubble provides an ideal seedbed for native grasses and flowers. The cropping reduces weed competition and creates a good seedbed for native seeds.

Mowing and Haying

Mowing is another management tool used to remove or set back the growth of trees and shrubs in grasslands on the District. Mowing is used once the trees or shrubs have reached a density or size that fire cannot set back their growth. Alternate forms of management such as mowing and haying are used more frequently on units surrounded by homes or developments that limit the management options on a WPA.

Grazing

Several WPAs and easements in the District have active grazing programs to maintain grasslands. Generally, grazing occurs after July 15 and is used to set back brush and maintain the grassland. Grazing is conducted through a Special Use Permit with specific conditions that meet management objectives for the unit and minimize impact to wildlife.

Tree Removal

The District is also actively removing trees on WPAs to restore grassland. With the suppression of fire, the spread of invasive tree species and the planting of pine plantations in the 1970s and 1980s when land was in private ownership, numerous WPAs have been invaded by trees. We are removing non native or invading woody species in these areas. Some of the species that may be removed include buckthorn, green ash, black locust and box elder. These species are either not native to North America or are not native to this area and are generally considered nuisance species or create competition to native tree species.

In most cases, the trees that will be removed have invaded into existing grassland, were planted as shelterbelts or as part of building sites prior to the Service purchasing the WPA, or have come up on their own along ditches or wetland edges. These are typically cottonwood, willow, green ash, cedar, box elder, Siberian elm and aspen. We will also be removing planted stands of pine trees. Land surveys from the 1930s, aerial photos from 1958 and existing vegetation characteristics such as the presence of old mature burr oak trees are some of the pieces of information used to make a decision about tree removal.

Some WPAs have remnant stands of native trees such as burr oak, white oak, and black oak. We do not intend to remove the native oak species in native stands of trees. We will be managing these oak stands as oak savannas, a plant community adapted to fire. Tree removal is completed using several methods, including biomass utilization, firewood cutting, prescribed fire, and hydro axing. Decisions on the best technique are based on site characteristics as well as cost effectiveness.

Prescribed Fire

Prior to European settlement, fire influenced the structure and function of prairie and savannah in the area that is now the District. Fire was less of a



White-tailed deer. USFWS photo.

factor in open forests, and even less in closed forests. Now, the natural process of fire has been replaced by fire management that includes suppression and prescribed burning. Fire is essential for proper management of native, warm-season grasses and associated forbs. Prescribed fire stimulates growth of the grasses, increases seed germination and growth of forbs, creates open ground for wildlife, retards encroachment of woody vegetation, and reduces the fuel load. Prescribed fire is conducted under a specific prescription that identifies the conditions needed to safely complete a burn. Elements in the prescription include wind direction, mixing height, relative humidity, crew size and equipment requirements. The prescribed fire will only be completed when the elements in the prescription are met. Fire will play a significant role in maintaining prairie and oak savanna habitats, which benefit grassland bird species.

During a prescribed fire, efforts are taken to assure that smoke does not impact sensitive areas such as roads and local residences. The impact of smoke can be reduced through management actions that include traffic control, signing, and altering ignition techniques and sequence. Prescribed fires may temporarily impact air quality, but the impacts are mitigated by small burn units, direction of wind, and distance from population centers. In the event of wind direction change, mitigation measures are taken to assure public safety and comfort. The Prescribed Fire Plan describes specific measures to deal with smoke management problems for each unit. Any smoke from a WPA may cause some public concern. This concern is reduced through a concerted effort by District personnel to inform the local citizens about the prescribed burning program, emphasizing the benefits to wildlife and the safety precautions that are taken. Informational programs, explaining the prescribed burning program, may also be conducted on and off WPAs.

The prescribed fire program is conducted under a Fire Management Plan, which is revised every five years and was last approved in 2008. The Fire Management Plan covers the historical and ecological role of fire, fire management objectives, preparedness, suppression, fire management actions and responses, fire impacts, use of prescribed fire and fire management restrictions.

Forests

Most forest management consists of cutting invasive or exotic trees to restore the WPA to grassland or oak savanna. During oak savanna restoration, the native burr and white oaks are not removed. The removal of the understory vegetation and the frequent use of prescribed fire is used to stimulate the growth of the native prairie grasses and forbs. Long-term management of these areas includes periodic prescribed fire combined with occasional mechanical removal of unwanted trees and brush.

Small stands of forest also occur on several WPAs. Limited timber stand improvement is conducted on these stands.

Cropland

Approximately 640 acres were farmed in 2007 through Special Use Permits. The overall target is to break approximately 200 acres of monotypic cool season grasses each year and add them to the cropland program. In addition, we are planting approximately 200 acres of cropland coming out of the third year of rotation (soybeans) to native grasses and forbs. For the next several years, approximately 600 acres of WPAs will be cropped each year as we transition District brome fields to native prairie. The availability of local ecotype seed, which is harvested from a nursery run in partnership with the WI DNR, determines the final acreage planted each year. The seed harvest varies year to year depending on many variables including weather and rainfall.

Management of Resident Species

Federal trust species are generally those that cross state and international boundaries or are afforded national protection through various laws and treaties, such as the Migratory Bird Treaty Act and the Endangered Species Act. The well-being of waterfowl populations is a classic Federal trust responsibility and the main purpose for the creation of the Small Wetland Acquisition Program in the 1960s. This does not mean that resident species such as white-tailed deer and pheasants found on WPAs should not receive management attention. Rather it is the degree of management focus, based on the knowledge that management for trust resources like waterfowl will usually benefit the myriad of resident wildlife that share the prairie-wetland landscape.

Local and regional residents, however, may often favor the management for those species like white-tailed deer and pheasant that provide consumptive recreation opportunities. Thus, managers are often faced with requests for food plots, tree and shrub plantings, or direct stockings of game species that may have a negative effect on the primary purpose of waterfowl production and the broader goals of restoring native plant communities. The key is to seek the proper balance between practices focused on trust species and those that can accommodate the public's desire for resident wildlife management.



Blue-winged Teal. USFWS photo.

Habitat Management: Partners for Fish and Wildlife Program

The Partners for Fish and Wildlife Program is very important for the St. Croix Wetland Management District since significant wetland, prairie and oak savanna habitat has been restored in partnership with many conservation organizations and the WIDNR. Through this program, the Service assists local landowners with restoration of a variety of habitat on their property. Projects in the past several years have included wetland, prairie grassland, oak savanna and riparian restoration projects. Projects range in size from small half-acre basins to 50-acre prairie and oak savanna restoration projects. The District private lands biologist also assists landowners with other agency programs such as USDA agricultural programs that provide habitat restoration funding.

Land Acquisition

Funds for land acquisition come from the Migratory Bird Conservation Fund (MBCF) account. This account has four sources, the primary one being revenue from the sale of the Migratory Bird Hunting and Conservation Stamp commonly known as the Federal Duck Stamp. MBCF monies are allocated yearly for the purchase of wetlands that will become waterfowl production areas or national wildlife refuges.

Lands are only acquired from willing sellers. When the Service acquires land, the land is removed from the tax rolls. But, the Refuge Revenue Sharing Act and its amendments allow the Service to offset the tax losses by making an annual payment to the county or other local unit of government. The Refuge Sharing Act specifies how the revenue sharing payments are to be calculated.

St. Croix WMD is distinguished from most wetland management districts in several notable ways:

- It is located on the edge of the prairie rather than in the middle of it.
- It is adjacent to a metropolitan area of 3 million people.
- Wetland drainage is not as significant a threat as wetland degradation and loss of upland habitat because of rural residential development although there are many drained, ditched and tiled wetlands throughout the District.

- In portions of the District (especially St. Croix County), land values for WPAs are commensurate with metropolitan land values for development. Land values in the rest of the District are comparable to other wetland districts in Minnesota and Wisconsin.
- Development around WPAs in St. Croix County is accelerating rapidly. A rural residential property owner feels secure that the WPA out their back door will never be sold for development. Therefore, lands adjacent to WPAs are very desirable for rural residential development.

Because of the elements listed above, an acquisition strategy has been developed for the St. Croix WMD. The District has identified four focus areas for priority acquisition based on current management ownership, high waterfowl production potential, and land protection by other conservation agencies/organizations. (Figure 16). The first is the central part of St. Croix County into south central Polk County. The second is in Dunn County east of Menomonie. These focus areas currently contain 26 of the District's 41 WPAs and 89 percent of the acreage. Following the assembly of Geographic Information System data for the District, which has not been completed yet, we will also evaluate the rest of the District for waterfowl production potential. Land values outside of St. Croix County are comparable to other Minnesota and Wisconsin Wetland Management Districts. A comprehensive analysis of the District using information such as the "Predicted Distribution and Characteristics of Wetlands Used by Mallards in the Great Lakes States," restored wetland basin inventory, wetland inventory information and Landsat data may provide an indication of other areas of the District that should be evaluated as focus areas for acquisition.

Acquisition funding will always be in short supply. Funding levels have been static, which combined with increasing land values, results in fewer acres acquired. Biologically, the larger the tract of land, the healthier the wildlife populations. Waterfowl and many other species of grassland dependent migratory birds such as Henslow's Sparrow, Eastern Meadowlark and Bobolink are dependent on large tracts of unbroken grassland, therefore tracts that add to existing complexes or connect permanently protected habitat will be given priority in acquisition. Wildlife corridors between WPAs and State wildlife areas also provide valuable habitat. What we exclude from a tract (including building sites) will likely become residential in the future, complicating management later. If the opportunity arises to acquire potential in-holding building sites, we will weigh the acquisition cost against future management implications when making a decision.

The acquisition priorities are:

- Round-outs of existing WPAs in the two focus areas.
- New WPAs over 80 acres in the two focus areas.
- Wildlife corridors connecting WPAs/State wildlife areas and other permanently protected lands.
- Roundouts of existing WPAs in the prairie pothole counties.
- New WPAs over 120 acres.
- Evaluation of the remainder of the District for other focus areas.

Monitoring

No surveys, censuses, studies or investigations are conducted by District staff.

Visitor Services

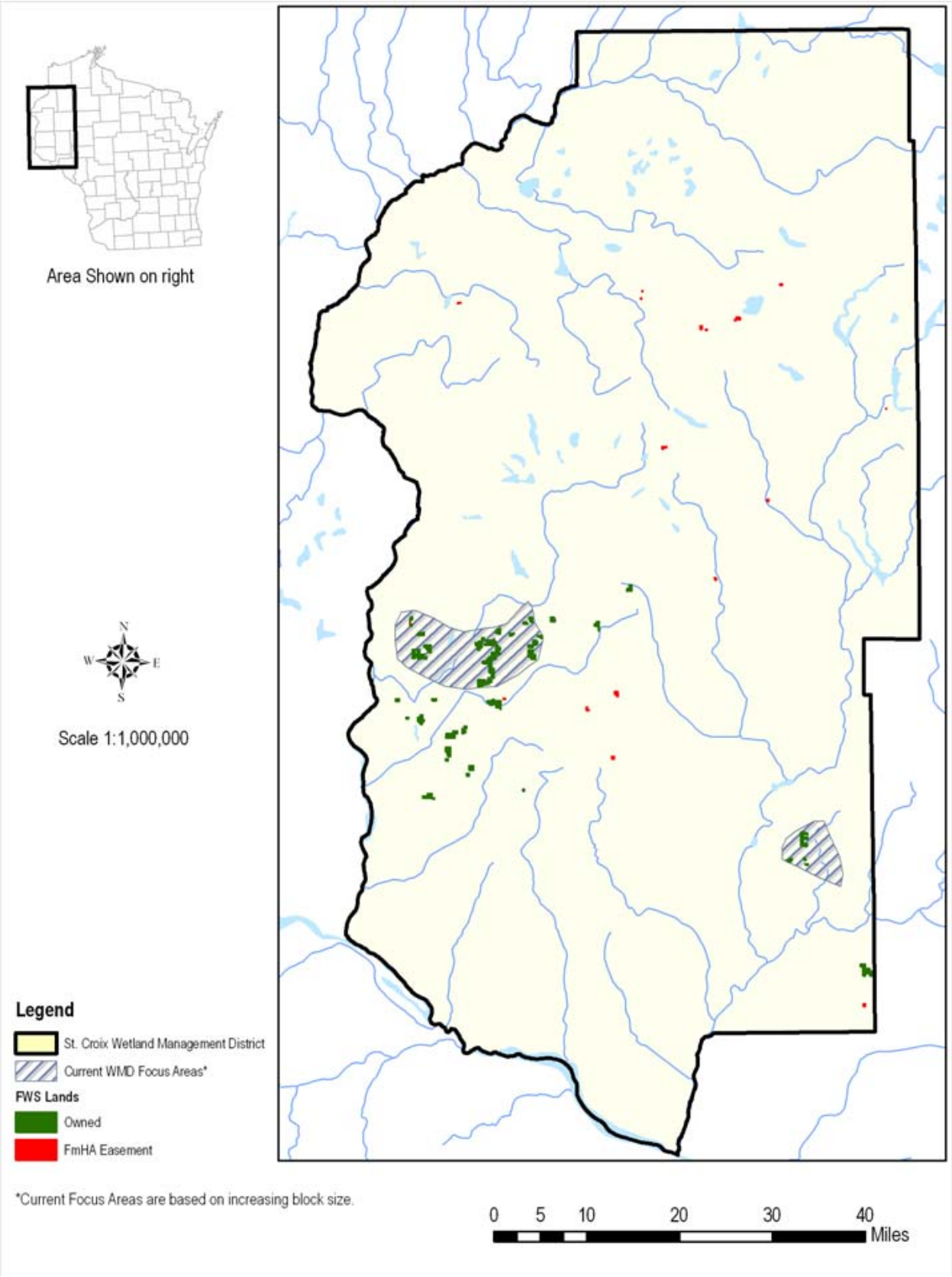
The District facilitates wildlife-dependent recreational uses by distributing information and maps of the WPAs and developing wildlife trails, interpretive signs, and kiosks. Currently, the District has 26 parking lots, three kiosks and a 1-mile loop trail. The number of people visiting the District is estimated from the number of cars employees see in WPA parking lots as they go about their duties.

Hunting

Hunting consistent with state regulations is allowed on all Waterfowl Production Areas. The only WPA with special regulations is the Oak Ridge WPA in St. Croix County. The Oak Ridge WPA falls within a state closed area and therefore, consistent with state regulations, is closed to hunting from the opening day of waterfowl season until the first Saturday in December except deer hunting during regular archery, gun and muzzleloader seasons.

Twenty-six parking lots are provided on 24 WPAs in the District. General county maps designating WPA locations are provided upon request and are available at the headquarters kiosk. The majority of

Figure 16: Focus Areas, St. Croix Wetland Management District



hunters on WPAs are waterfowl and small game hunting. Waterfowl, pheasants and Wild Turkey are the common species that hunters pursue.

The District receives one or two requests a year for special use permits for accessible hunting opportunities.

Fishing

Fishing consistent with state regulations is allowed on all WPAs. Only a limited number of WPAs have wetlands or rivers capable of supporting fish. Parking lots that can be used for fishing access are available on some WPAs.

Interpretation, Wildlife Observation, and Photography

District staff provide several interpretive programs each year to groups and conservation organizations. There are no specific facilities on WPAs for wildlife observation or photography.

Environmental Education

District staff respond to occasional requests for environmental education programs for school groups. The District does not have a visitor services specialist and therefore does not provide structured curriculum based environmental education.

Pest Management

Various herbaceous and woody pest plants are found on District lands. Of primary concern are Canada thistle, spotted knapweed, purple loosestrife, box elder, black locust, and buckthorn.

Chemical, biological, and mechanical methods are employed in an integrated approach to control unwanted plant growth. Chemicals and mowing are used to control Canada thistle. *Galerucella* beetles are used to discourage purple loosestrife, which has increased on several WPAs. Spotted knapweed (*Centaurea maculosa*) has been found on numerous WPAs. In most cases the spotted knapweed was found in the parking lots or invading from roadside ditches where highway department mowing activities perpetuate and further its spread. More recently this pest plant has invaded into established grassland fields and is dramatically expanding its presence in the District. Plants are hand pulled prior to seed set. Chemical control is also being evaluated on several small areas.

The District is also releasing *Apthona laceratosa*, *A. nigriscutis* and *Oberea spp.* to control leafy spurge on WPAs. Leafy spurge is becoming more common on District lands.

Brush and tree species are controlled to restore oak savanna, improve woodlands, maintain grasslands, and remove wooded fence lines between grassland fields. Mechanical and chemical control and a combination of the two are used to control brush and trees.

Archaeological and Cultural Resources

Cultural resources management in the Service is the responsibility of the Regional Director and is not delegated for the Section 106 process when historic properties could be affected by Service undertakings, for issuing archeological permits, and for Indian tribal involvement. The Regional Historic Preservation Officer (RHPO) advises the Regional Director about procedures, compliance, and implementation of cultural resources laws. The District Manager assists the RHPO by informing the RHPO about Service undertakings, by protecting archeological sites and historic properties on Service managed and administered lands, by monitoring archeological investigations by contractors and permittees, and by reporting violations.

Farm Service Agency Conservation Easements

When the Farm Service Agency (FSA), formerly the Farmers Home Administration (FmHA), acquires property through default of loans, it is required to protect wetland and floodplain resources on the property prior to resale to the public. The Service assists the FSA in identifying important wetland and floodplain resources on the property. Once those resources have been identified, FSA protects the areas through a perpetual conservation easement and transfers management responsibility to the Service. The authority and direction comes from the Consolidated Farm and Rural Development Act (7 U.S.C. 1981 and 1985, as amended); Executive Order 11990 providing for the protection of wetlands; and Executive Order 11988 providing for the management of floodplain resources. The Service administers the easements as part of the National Wildlife Refuge System.

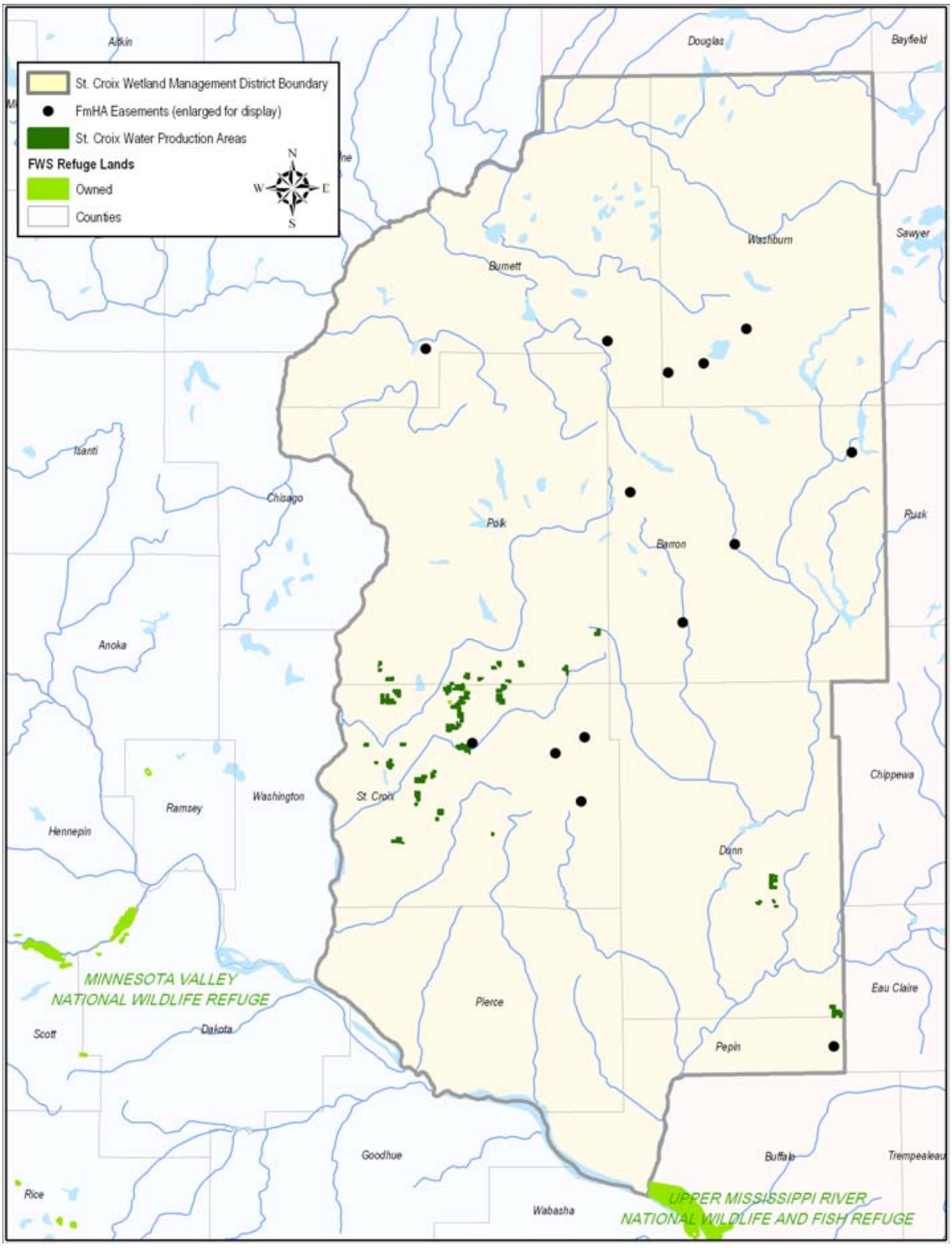
The District manages 14 conservation easement areas totaling 438.5 acres located within the Wildlife Management District, an eight-county area in west-central Wisconsin (see Figure 17). Most conservation easements are visually checked for boundary signs, trespass, and various other infractions each year and a letter is sent to the landowners describing the conditions of the easement.

Existing Partnerships

The District has partnerships with local, state, and national organizations. These partnerships benefit the District in many ways, including fostering good community relations and enhancing habitats and wildlife populations. Examples of partnerships include the following:

- Cooperative seed nursery for growing and harvesting local ecotype native grass and forb seeds with the WI DNR.
- Partners for Fish and Wildlife Program partnership with the WI DNR for cost share on private lands wetland and grassland restoration projects within the District.
- The Service partnered on a cooperative restoration project with Ducks Unlimited, St. Croix County Highway Department, St. Croix and Polk County Land and Water Conservation Departments, WI DNR and the Squaw Lake Association for the restoration of wetlands in the watershed to improve the water quality of Squaw Lake.
- The District is a member of the St. Croix Conservation Collaborative, a group of government agencies and conservation organizations that provides a forum for basin wide conservation activities and needs.

Figure 17: Locations of Conservation Easements, St. Croix WMD



Chapter 4: Management Direction

Introduction

Goals and Objectives

This chapter presents the goals, objectives and strategies that will guide management and administration of the District over the next 15 years. This management direction represents the plan for the District and mirrors Alternative 4 in the Environmental Assessment that was prepared as part of the planning process and was included in the Draft CCP as Appendix A.

The District has four goals:

1. Preserve, restore, and enhance the ecological diversity of wetlands, grasslands, and native flora of District lands to support the conservation of breeding habitat for waterfowl, grassland birds, and other wildlife.

2. Preserve, restore, and enhance the diversity and abundance of migratory birds and other native wildlife with emphasis on waterfowl, grassland and wetland-dependent birds.

3. A broad cross section of the public enjoys and appreciates District lands.

4. Protect the integrity of biological resources within the District and the cultural resources and health and safety of visitors and Service staff on WPAs.

The goals are general statements of what the District wants to accomplish. The objectives under each goal are specific statements of what will be accomplished to help achieve the goal. Strategies listed under each objective specify the activities that will be pursued to realize an objective. The strategies may be refined or amended as specific tasks are completed or new research and information come to light. Some strategies are linked to the duties of an employee position, which indicates that the strategy will be accomplished with the help of a new staff position. When a time in number of years is noted in an objective or strategy, it refers to the number of years from approval of this CCP. If no time is given, the objective is to be accomplished within the 15 years of the life of the plan.



Seed harvest, St. Croix Wetland Management District. USFWS photo.

Goal 1: Habitat

Preserve, restore, and enhance the ecological diversity of wetlands, grasslands, and native flora of District lands to support the conservation of breeding habitat for waterfowl, grassland birds, and other wildlife.

Objective 1.1: Grasslands

Restore 200 acres of native grassland and remove 1 mile of fence row annually, on average. Within 15 years, 70 percent of the District's grassland acres will be under optimal management. Remove the remaining 26 acres of pine plantations from WPAs and identify and remove woodlots from grassland areas.

Rationale: The District currently manages 4,832 acres of grasslands including 1,616 acres of native prairie, 2,576 acres of cool season grasses including brome and Kentucky blue grass and 640 acres of cropland in the process of conversion to native prairie. Grasslands benefit numerous species of wildlife in the District. Large tracts of grasslands provide important nest sites for Mallards and Blue-winged Teal, the two most common species of upland nesting waterfowl in the District. In addition to waterfowl, grasslands provide important habitat for many other species of migratory birds. The populations of many of these species of grassland-dependent birds are decreasing due to several factors. Loss of grasslands for nesting habitat is one of those reasons. The Western Meadowlark used to be one of the most common birds in Wisconsin but since the mid-1960s its numbers have declined by 90 percent. Many of Wisconsin's other 40 species of grassland-dependent birds have declined as well. Historically, these species were found in western Wisconsin in this prairie grassland/wetland dominated landscape. Many of these grassland species of birds such as Bobolink, Grasshopper Sparrow and Western Meadowlark are Fish and Wildlife Service Regional Species of Concern.



Western Meadowlark. USFWS photo.

The District is actively changing fields from monotypic stands of exotic cool season grasses, typically former CRP contract plantings, to planted stands of local ecotype native grasses and forbs. The planting of native grasses and forbs on these sites is designed to provide structural (height-density) and species diversity to benefit breeding grassland-dependent birds. Removal of trees and woody vegetation also makes the grassland patches more attractive to grassland nesting birds. An increase in block size also provides better habitat for many species of grassland-dependent birds. Numerous studies have shown that trees and shrubs should be removed from within and around grassland patches to decrease nest predation and brood parasitism. Patches for restoration of grassland habitat should also be as large as possible to decrease contact with edge predators.

Several techniques are used to transition fields from exotic cool season grasses to native species with the underlying realization that we cannot recreate a pure native plant species stand. Due to many outside influences such as past farming history, agricultural chemical use, erosion, invasive species and landscape level influences by humans, we will have to live with a certain number of invasive or exotic species in the grasslands we manage in the District. Total elimination of these species is not practical.

Depending on site conditions, transition techniques include 3-year cropping rotation and various combinations of tree removal, chemical treatment, prescribed fire, cover crops and overseeding. Factors such as the presence of tree stumps, the availability of farmers to crop areas, soil types, erosion potential and existing species on the site are considered in deciding how best to restore and manage the site. Optimal management conditions will be reached when prescribed fire is the primary tool used to manage and maintain a grassland.

Strategies:

1. Seed agricultural fields on new acquisitions to local ecotype native prairie grasses and forbs within 3 years of acquisition. Evaluate cool season grass fields on new acquisitions within 2 years to determine long-term grassland management needs. Plant 200 acres per year.

2. Continue the native prairie seed nursery in partnership with the Wisconsin DNR.

3. Add three new local ecotype grass species and 10 new local ecotype forb species to the nursery planting mix within 10 years of plan approval.

4. Identify unbroken remnant native prairie on WPAs within 3 years and manage these sites to maintain the genetic diversity. The wildlife biologist position will be responsible for identification and inventory of these sites.

5. Maintain cooperative grazing, haying and mowing on 150 acres of grassland habitat.

6. Using prescribed fire, burn 1,200 acres of grassland annually to maintain quality grassland habitat.

7. Remove 15 miles of fencerows within 15 years to maximize unbroken blocks of grassland cover. The seasonal tractor operator will play an important role in removing fencerow.

8. Remove woodlots, pine plantations and trees from grasslands on WPAs. Work with neighboring private landowners to remove trees on and adjacent to common property lines.

9. Work with neighbors to establish native grassland buffers around WPAs and remove common fence rows. The wildlife refuge specialist position will be responsible for contacting and working with neighbors.

10. Through chemical application or mowing, treat areas infested with Canada Thistle.

11. Target tree removal, native prairie planting and land acquisition, to create grassland blocks of at least 80 acres.

Objective 1.2: Wetlands

Within 15 years, restore 90 percent of the District's wetland acres, manage water levels on 80 acres in four basins, and maintain seasonal basins in an early successional state through active management.

Rationale: The District currently has 1,453 acres of wetland. These wetlands provide important habitat for a variety of species including Mallards, Blue-winged Teal, Wood Ducks and many other species of migratory waterfowl. In addition, numerous species of shorebirds and other waterbirds use these areas for breeding and migration.

Drained wetlands on WPAs will be restored when feasible. In an effort to increase the number of wetlands surrounding WPAs, an attempt will be made to restore co-owned basins. Complexes of wetlands across the landscape provide feeding and loafing areas for waterfowl pairs. Restoration and protection of these basins in proximity to large tracts of grassland on WPAs is very important.

Basins with water control structures will be managed to provide hemi-marsh conditions. Hemi-marsh conditions, which are a 50:50 mix of open water and emergent vegetation, provide quality habitat for many wildlife species. Manipulation of water levels on basins with water control structures can also increase invertebrate populations following reflooding. Invertebrates are a crucial food source for waterfowl and other wetland-dependent species. Existing natural basins on the WPAs are not manipulated since naturally occurring drought and wet years provide natural cycling of vegetation and nutrients. Other spring-fed wetland basins and lakes on the District have good stands of submergent vegetation and manipulation may result in the spread of aquatic invasive species such as hybrid cattail or phragmites throughout the basin. Active manipulation of basins will generally occur on basins with water control structures or basins affected by invasive species.

Temporary and seasonal wetlands within the District are crucial for attracting breeding waterfowl pairs to the landscape, however many of these wetlands have become choked with invasive reed canary grass or cattail. In addition, these wetlands are easily drained and filled so active restoration and management is needed to provide temporary shallow open water on the landscape. Many of these wetlands were located in croplands before Fish and Wildlife Service acquisition, so they were subject to high rates of sedimentation. Active manipulation of these basins may be necessary to restore some of the wetland functions. In addition to providing invertebrate food sources for hen waterfowl during egg laying, these basins are extremely important breeding habitat for amphibians. Active manipulation of the wetlands may include a variety of techniques including mowing, grazing, prescribed fire or mechanical manipulation through disking or scraping. Various techniques will be used to manipulate

the basins and an attempt will be made to determine the most cost effective technique to manage these basins and simulate the natural disturbances that make them extremely productive and valuable for many species of wildlife.

Strategies:

1. Maintain levees and water control structures.
2. Manipulate water levels through natural flow and pumping.
3. Complete an inventory of seasonal basins on WPAs and easements.
4. Use prescribed fire to manage cattail choked basins.
5. Scrape sediment from small cattail dominated basins.
6. Monitor vegetative, invertebrate, and wildlife response to active management of seasonal basins and determine the most effective technique. The wildlife biologist will design and implement the monitoring for this project.
7. Work with neighbors to restore co-owned wetland basins.

Objective 1.3: Oak Savanna

Within 15 years, inventory 90 percent of forest habitat to locate remnant oak savanna and restore 80 percent of identified potential savanna. Restoration will include cutting trees and planting local ecotype grass and forb species on 30 acres per year.

Rationale: Unlike the Prairie Pothold Region where trees were a minor part of the historical landscape the natural vegetation within the Wetland Management Districts of Wisconsin historically contained a mix of grassland, wetlands, woodlands, and savanna. As such these natural landscapes should be retained and restored where applicable. Oak savannas are one of the most endangered ecosystems in the world with less than one-tenth of 1 percent remaining. Oak savannas are a fire-dependent community dominated by an overstory of oak trees and an understory of native grasses and forbs. The understory may also contain many species of desireable native shrubs, such as hazelnut and hawthorn. In the District, numerous species of oaks, including burr, white, Hill's and black, are found in oak savannas. Without fire to control succession, these communities are overrun with aggressive tree species such as maple, ash, buckthorn, Siberian elm and box elder that thrive in the open conditions in a savanna. Eventually, as the old oak trees die, these savannas turn into forest and lose their characteristic grass/forb dominated understory. With the suppression of wildfire and human development of the landscape, oak savannas are rapidly disappearing. Restoration of oak savannas is very labor intensive and often entails dramatic changes to the landscape. The process of restoring each savanna differs based on the number and species of oak trees present, the long-term viability of burning the unit and the degree of invasion by invasive species such as buckthorn, Siberian elm and honeysuckle. Although initial restoration of savannas will involve removal of non-oak tree species and some grass/forb planting, complete restoration through repeated burning and control of brush and invasives may take 30-40 years before a more natural fire regime of burning every 8-15 years can be used.

Strategies:

1. Using prescribed fire, burn 100 acres of oak savanna annually.
2. Mechanical removal of unwanted trees on oak savanna restoration sites.
3. Plant prairie grass and forb species.
4. Monitor vegetative response to management.



Emerald Lands project. USFWS photo.

5. Add oak savanna grass and forb species to nursery program to enhance species diversity within restored savannas.

Objective 1.4: Woodlands

Implement timber stand improvement on 20 percent of forest habitat.

Rationale: Currently 1,202 acres of woodlands are found on District lands. It is necessary to inventory these forested areas and determine if they should be restored to native grassland, oak savanna or managed as woodlands. For areas that will remain as forested habitat, timber stand improvement will be used on a limited basis to maintain the long-term viability of these woodlands. Timber stand improvement includes thinning, site preparation for natural reproduction, removal of undesirable tree species and release cutting or killing of undesirable older over topping trees. Timber stand improvement can increase production of foods valued by wildlife such as acorns and nuts and increase the value of forested areas to certain species of wildlife such as Wood Ducks, deer, Wild Turkey and numerous species of migratory birds. Timber stand improvement will be a tool used in limited areas on WPAs for specific management goals.

Strategies:

1. Implement timber stand improvement on select woodlots to provide benefits to wildlife. Timber stand improvement will include thinning, site preparation for natural reproduction and release by cutting or killing undesirable older overtopping trees.

Objective 1.5: Invasive Species

Inventory 100 percent of District lands for invasive species and apply biocontrol for three species on 50 percent of District lands. The first priority for control will be on grasslands and wetlands, followed by woodlands.

Rationale: Invasive species are detrimental to native plant and animal populations. Invasive species are considered to be one of the greatest threats to the National Wildlife Refuge System, and to St. Croix Wetland Management District. The District will target control of invasive species to those that directly affect habitats used by waterfowl and grassland-dependent birds. However, many of the invasive species found in woodlots, fencerows and



First-year prairie planting at Bierbauer WPA. USFWS photo.

forest are also common early successional invaders of grassland habitat therefore species such as buckthorn, honeysuckle, and Siberian elm must also be controlled. Many of the same natural disturbances, such as drought, flood and wildfire, that maintain productivity of natural systems, also provide opportunities for invasive species to multiply and spread. Human activities and disturbances on the landscape such as roads, yards, over-grazed pastures, and vehicle trespass etc. also create conditions conducive to the spread of invasive species. It is very important that the District staff are able to inventory and monitor the spread of invasive species and take actions to minimize the distribution of the species or control its abundance on the landscape. We will probably never be able to eliminate these species from the landscape but targeted chemical control, bio-control or prescribed fire may be useful in reducing their impact on native species. Certain high-quality remnant prairies or naturally functioning wetlands may warrant a more intensive strategy to control invasive species.

Strategies:

1. Inventory and map distribution of invasive species on WPAs and associated state lands. The wildlife biologist will play an important role in completing this project in partnership with volunteers and other organizations and agencies.

2. Develop integrated pest management plan for control of the species that have the most detrimental effect on wetland and grassland habitat on the District. (Wildlife biologist).



Pintail Ducks. USFWS photo.

3. Collect and distribute biocontrol agents within the District to control invasive species.

4. Develop monitoring program with volunteers.

5. Work with adjacent landowners and the DNR to control invasive species on a landscape level, targeting blocks of wetland and grassland habitat. The wildlife refuge specialist will work on this project.

Objective 1.6: Land Acquisition

Acquire 200 acres per year and develop two additional focus areas.

Rationale: Funds for the acquisition of WPAs in Wisconsin will always be limited. Acquisitions are an important tool that will be targeted to protect lands that produce waterfowl and maintain the long-term viability of individual WPAs or public land complexes. Acquisition and management of large blocks of permanently protected wetland/grassland habitat in conjunction with other land management agencies and organizations will provide the greatest benefit to waterfowl production within the District. The District will work with other agencies and organizations to develop two additional focus areas using available GIS and biological data. In addition to state wildlife areas and parks, there are substantial lands in public ownership by the National Park Service, counties and schools. There are also several land trusts that are permanently protecting large pieces of property. Combined with private lands wetland restorations, USDA easement programs, and existing lakes, wetlands and rivers, there are many areas within the District that produce waterfowl. A landscape level analysis in coordination with partners is needed to understand predicted waterfowl production on a District-wide scale. This analysis will provide valuable information for acquisition and management programs by the Service and its partners.

Strategies:

1. Respond to inquiries regarding land acquisition.

2. Work to acquire roundouts of existing WPAs.

3. Identify and contact landowners of key, small inholdings.

4. Work with partners to identify two additional waterfowl production focus areas within the District based on available biological data.

5. Acquire lands that maximize block size of grassland-wetland complexes through the acquisition of key tracts that add to existing public habitat complexes.

6. Work in partnership with Wisconsin DNR to achieve goals outlined for the Western Prairie Habitat Restoration Area.

7. Secure funding from grants and partners to assist with land acquisition efforts.

8. Investigate long-term viability of select WPAs within the District to see if they will be able to meet the conservation goals of the WPA program. If the long-term viability is threatened by urban encroachment, trade these lands for high quality lands that will meet long-term waterfowl production goals.

Goal 2: Wildlife

Preserve, restore, and enhance the diversity and abundance of migratory birds and other native wildlife with emphasis on waterfowl, grassland and wetland-dependent birds.

Objective 2.1: Waterfowl

Develop a waterfowl recruitment monitoring program within 5 years of CCP approval that will include working with partners and a university to develop a waterfowl production and survival study.

Rationale: An assessment of waterfowl production through a waterfowl recruitment monitoring program and research study would provide additional information to assist in acquisition and restoration efforts within the District. The monitoring program and research studies would attempt to determine waterfowl pair density on the landscape, nest success and brood survival. When used in combination with on-the-ground knowledge of waterfowl use, analysis of GIS information including wetland density, grassland distribution and public ownership, waterfowl recruitment data can be a very valuable tool to direct management activities. Additional information is needed to understand local waterfowl populations and factors affecting recruitment within the St. Croix Wetland Management District. Breeding birds surveys conducted between 1966 and 1980 in St. Croix, Polk and Burnett Counties included numerous records of nesting Mallards, Blue-winged Teal, Wood Duck, Ring-necked Ducks and Hooded Mergansers. Although listed as uncommon, there were also records of nesting Northern Shovelers, Gadwall, Pintails, Redhead, Lesser Scaup and Ruddy Ducks. A study from 1976 to 1979, using traditional nest dragging techniques and brood surveys, showed Mallards and Blue-winged Teal as the predominant species but also found nesting Wood Ducks, Ruddy Ducks, Pintail, Scaup, Ring-necked Ducks, Shoveler and Wigeon. Numerous land use changes have occurred throughout the Upper Midwest in the last 25 years and these changes have probably affected waterfowl production and distribution.

In addition to nest density and success, other factors such as duckling survival may play an important role in recruitment. The District is located on the very eastern edge of what is considered prairie pothole landscape created by glaciers. Several studies have indicated that duckling survival plays a larger role in Mallard production in the Great Lakes region than in the prairie potholes of North and South Dakota. In contrast, nest success plays a larger role in waterfowl production in the Dakotas. In addition to prairie pothole habitat, there are several known areas within the District that produce large numbers of waterfowl but do not resemble "traditional" prairie pothole habitat. Crex Meadows State Wildlife Area, which totals 30,000 acres of wetlands, brush prairie and forest, documents numerous Mallard, Blue-winged Teal and Ring-necked Duck broods each year in their brood surveys (P. Engman WI DNR, pers. communication). In conjunction with local studies to assess waterfowl production and distribution, the recruitment data and on-the-ground knowledge of the landscape will provide valuable information for making management and acquisition decisions.

Strategies:

1. Partner with Wisconsin DNR and Ducks Unlimited to assess waterfowl production in Northwestern Wisconsin. The wildlife biologist will take the lead on this project.

2. Partner with local university and the Service's Biological Monitoring Team to assess waterfowl production, recruitment and distribution. The wildlife biologist will take the lead on this project.

Objective 2.2: Federally Listed Threatened and Endangered Species

Assure that federally listed species and federally proposed species and their habitats are protected.

Rationale: At the present time no federally listed threatened or endangered species are using District lands. Although the District overlaps with the range of several listed species, notably the Karner Blue Butterfly, no recorded observations have been made on District lands. Surveys for the presence of endangered species on WPAs will allow the District to change or modify management practices to avoid negative impacts and enhance these populations.

Strategies:

1. Protect known occurrences of listed and proposed species.

2. Survey for presence/absence of listed and proposed species.

Objective 2.3: Regional Species of Concern

Develop baseline surveys to identify Regional Species of Concern use of District lands. Surveys will identify the presence/absence of species and abundance of select high priority species.

Rationale: Region 3'sRegional Conservation Priority (RCP) list includes rare and declining species, federally listed, and recreationally important species that are of high concern in the Upper Midwest. The RCP list was developed to help prioritize man-

agement within the Region. Knowing that the species are using the habitats on the District will be an indicator of success in providing for these species, with the exception of nuisance species. As of 2006, the District hosted 61 bird species, one mammal species, one fish species, and three insect species on the Region 3 RCP list. Numbers may change as new species are documented and as habitats are restored or managed.

Monitoring is a key element in determining if District management is achieving its goals of providing habitat for key wildlife species. Monitoring can be costly if high precision is sought. For this plan, a monitoring plan will be developed and a survey will be conducted to confirm species presence.

Strategies:

1. Develop monitoring plan. The biologist will complete and implement this plan.

2. Continue to document observed fish and wildlife species and add to District species lists.

Objective 2.4: State T&E Species and Species of Concern

Consider known populations of state listed species in management actions.

Rationale: The range of several state listed species overlaps with District lands. Surveys need to be conducted to document the presence of these species on District lands. Monitoring can be costly if high precision is sought. For this plan, a monitoring plan will be developed and a survey will be conducted to confirm species presence. State threatened and endangered species and Species of Greatest Conservation Need as designated in the Wisconsin Action Plan will be considered in management actions on the District.



Wetland Management District and La Crosse Fisheries staff conducting a fish survey. USFWS photo.

Strategies:

1. Document the presence of state listed species and add to District species lists.

2. Incorporate known locations of state-listed threatened and endangered species and species of concern in management planning.

Objective 2.5: Monitoring

Assess the value of local ecotype native seed mixtures and plantings for migratory birds.

Rationale: The District needs to develop a better understanding of the value and success of our local ecotype seed plantings to migratory birds. Studies in the Dakotas have suggested that a number of grassland-dependent bird species favor areas dominated by native vegetation. Although the District uses a very diverse mix of five grass species and 30-40 forb species, an assessment of the resulting diversity and heterogeneity of the plantings will be valuable in determining if the mixes are providing quality habitat. In addition, site specific conditions and planting techniques may result in mixed stands of native plants and cool season exotic species such as brome. The conversion of many of these fields to native plant species is an experiment in finding the optimal combination of native grasses and forbs. Ongoing monitoring and assessment of these plantings is needed to refine our restoration and management process and achieve the best habitat conditions. As habitat conditions change in these fields from monotypic stands of brome to a very diverse mix of native species, the District also needs to understand changes in migratory bird populations and adjust management strategies accordingly.

Strategies:

1. Develop a partnership with a university to conduct a research study on the native seed plantings and associated migratory bird use (wildlife biologist).

2. Assess the diversity and success of native seed plantings to evaluate restoration and management techniques (wildlife biologist).

Goal 3: People

A broad cross section of the public enjoys and appreciates District lands.

Objective 3.1: Visitor Services (General)

Improve visitor services facilities and programs to raise quality of visitors' experiences.

Rationale: The District is increasingly influenced by the growth of the Twin Cities metropolitan area. The expanding residential development challenges the District's habitat and wildlife goals. The increased population in the District also offers an opportunity to offer wildlife-dependent recreation to more people leading to a greater understanding and appreciation for the natural world and wildlife conservation. WPAs are open to compatible wildlife-dependent recreation, but the District's facilities and services are lacking. Recreation information in print and on the internet is minimal, and there are few signs offering information and identification. Upgrades to facilities and programs are needed to satisfy basic standards of service.

To evaluate improvements across the entire visitor services program and summarize progress, the District will use the evaluation standards of RAPP (Refuge Annual Performance Plan). RAPP measures act as a general indicator of how successful management is in satisfying the criteria for quality of recreation use as described in the Service Manual Chapter 605 FW1.6. RAPP identifies 11 criteria for evaluating the quality of the priority wildlife-dependent recreational activities. By applying the 11 criteria to each use, a quality ranking factor can be assigned. The District program for the specific use is considered "good" if you meet eight to 11 of the criteria; "fair" if you meet five to seven; and "poor" if you meet zero to four. One example of a criteria is "promotes safety of participants, other visitors and facilities." Some improvements are clearly needed and inferred from the criteria in the Service manual. These improvements are identified below in the strategies and under the strategies of the wildlife-dependent activities listed in the next objectives. As the visitor services program of the District matures and more details are specified in a visitor services plan, the District will be able to move to more direct and specific measures of recreation quality. These direct measures will include a survey of visitors.

Not all WPAs are equally valuable for public access. Some have greater potential to offer quality wildlife-dependent recreation experiences. To use resources most effectively, WPAs will be evaluated and those with the greatest potential for public use will be developed more fully. Likely WPAs to have increased attention include Oak Ridge, Prairie Flats, Erickson, and Bass Lake. Development of public use facilities will be in addition to raising the general level of the visitor services program and some improvement at all WPAs.

Strategies:

1. Develop four properties with parking lot, kiosks, and other compatible facilities. The wildlife refuge specialist position will be responsible for developing these WPAs and coordinating long-term maintenance and management of visitor services facilities.

2. Develop a visitor services plan based on the visitor services review completed in 2006 (wildlife refuge specialist).

3. Develop the website following Regional mapping standards.

4. Improve District brochures and update the District's general brochure.

5. Update WPA maps and aerial photos.

6. Develop a work study partnership with two local universities.

7. Develop and install interpretive panels on kiosks following regional standards.

8. Update boundary posting on all WPAs .

9. Install "Your Duck Stamp Dollars at Work" on all WPAs with enhanced visitor services facilities. In addition, put up these signs at other high visibility WPAs.

Objective 3.2: Hunting

Achieve a Service quality ranking of "good" within 5 years and evaluate the quality of hunting visits within 15 years.

Rationale: As one of the six priority wildlife-dependent recreational uses identified in the National Wildlife Refuge System Improvement Act of 1997, hunting provides traditional recreational activities on the District with no definable adverse impacts to the biological integrity or habitat sustainability of District resources. Waterfowl production areas differ from national wildlife refuges in that they are open to hunting, fishing, and trapping by specific regulation, and open to the other wildlife-dependent recreational activities by notification in general brochures available at the District office. New and existing WPAs are thus "open until closed" versus national wildlife refuges, which are "closed until opened." Within the St. Croix WMD, Oak Ridge WPA has special hunting regulations since it is located within a state closed area. Oak Ridge WPA is closed to hunting from the opening day of waterfowl season until the first Saturday in December except deer hunting during regular archery, gun and muzzleloader seasons.

In an effort to improve the quality of the hunting program, specific strategies will be implemented to meet criteria listed in the RAPP rating. The RAPP rating will give a general indication for how well the District is doing in providing quality hunting opportunities. But, to more directly and definitively evaluate the type and quality of experience as perceived by hunters, it will be necessary to get feedback from hunters. Therefore, before the end of the life of this plan, the District will survey hunters to document their experience. The survey data will be useful in evaluating the program and provide a basis for possible revisions in the program during the next cycle of planning. An increase in hunter knowledge of regulations through signage may also reduce illegal take of wildlife. Replacement of faded boundary signs and an increased emphasis on maintaining posting, parking lots and gates may also reduce trespass problems on WPAs and neighboring private lands.

Strategies:

1. See strategies under "Visitor Services (General)."
2. Develop hunting plan.
3. Develop accessible hunting opportunities.
4. Survey hunters.
5. Install regulation signs at all WPA parking lots.
6. Replace faded and missing boundary signs on WPAs. The seasonal tractor operator will be responsible for assuring boundaries are clearly marked and posted.

Objective 3.3: Fishing

Achieve a Service quality ranking of "good" within 5 years and evaluate the quality of fishing visits within 15 years.

Rationale: As one of the six priority recreational uses identified in the National Wildlife Refuge System Improvement Act of 1997, fishing provides traditional recreational activities on the District with no definable adverse impacts to the biological integrity or habitat sustainability of District resources. This recreational use is secondary to the primary purpose for which the District was created and must be compatible with that purpose.

Several WPAs, including Bass Lake, Bierbrauer, and Erickson, do support fish on some wetlands. In addition, brown trout are found in the Willow River, which passes through the Betterly WPA. Other than these specific sites, there is little fishing on the District's WPAs because most WPA wetlands are relatively shallow and do not support fish.

The RAPP rating will give a general indication for how well the District is doing in providing quality fishing opportunities. But, to more directly and definitively evaluate the type and quality of experience as perceived by anglers, it will be necessary to get feedback from them. Therefore, before the end of the life of this plan, the District will survey anglers to document their experience. The survey data will be useful in evaluating the program and provide a basis for possible revisions in the program during the next cycle of planning.

Strategies:

1. See strategies under "Visitor Services (General)."
2. Consult with the Service's Fishery Resources Office about restoring the fishery at Bass Lake WPA.
3. Survey anglers to determine the quality of their fishing experience.

Objective 3.4: Wildlife Observation and Photography

Achieve a Service quality ranking of good within 5 years and evaluate quality of observation and photography visits within 15 years.

Rationale: Wildlife observation and photography are both priority wildlife-dependent recreational activities, which are listed in the National Wildlife Refuge System Improvement Act of 1997. These recreational uses are secondary to the primary purpose for which the District was created and must be compatible. The District has the potential to provide opportunities for wildlife observation and photography in the rapidly growing eastern portion of the Twin Cities metropolitan area. Some of the WPAs are scenic, but their remoteness and low public awareness does not promote visits by the public. The quality of a visit would be enhanced for the casual visitor by developing trail access, an observation platform, and interpretive messages for one or more WPAs. Developing visitor services amenities on the most suitable WPAs and promoting them in the local community will increase visitation and foster a connection between visitors and nature.

Strategies:

1. See strategies under "Visitor Services (General)"
2. Develop a short loop trail and overlook on at least two WPAs.



American badger. USFWS photo.

3. Develop a bird list brochure.
4. Develop a theme for interpretive materials.
5. Recruit volunteers to support observation and photography program.
6. Promote sales of duck stamps and the role of duck stamps in WPA land acquisition.

Objective 3.5: Environmental Education and Interpretation

Achieve a Service quality ranking of "good" within 5 years and evaluate quality of environmental education and interpretation visits within 15 years.

Rationale: Environmental education and interpretation are both priority wildlife-dependent recreational activities, which are listed in the National Wildlife Refuge System Improvement Act of 1997. These recreational uses are secondary to the primary purpose for which the District was created and must be compatible. Little environmental education or interpretation has occurred in the District. Interpretive themes have not been formally developed, and the District office has minimal space for interpretive information. WPA parking lots are not easily accessible for school buses, and there are no accessible trails on the District for school groups and the general public. The District's approach in the past has been to respond case-by-case to inquiries from teachers. The District staff provides interpretive programs to partners and other organizations as requested. The programs primarily consist of overviews of the District and current management practices.

Since the District will probably not have an environmental education specialist position during the life of the plan, an emphasis will be to develop educational materials and information that schools and groups can use on self-guided visits to WPAs. The value of the environmental education and interpretation program will be to increase public understanding of the WMD and its goals. This program should complement the activities of community outreach and seek to increase stewardship of WPAs and wildlife habitat.

Strategies:

1. See strategies under "Visitor Services (General)."

2. Include school bus turn-arounds among public use improvements proposed for some WPAs.

3. Seek cooperation from university programs to create environmental education materials for District programs.

4. Develop a theme for interpretive materials.

5. Upgrade interpretive materials available at headquarters.

6. Present five interpretive/informational programs per year.

7. Work with the Minnesota Valley NWR zone park ranger to complete education and interpretation projects on the WMD.

Objective 3.6: Volunteers

Volunteers contribute 200 hours per year within 2 years of plan approval.

Rationale: Opportunities for enhancing the wildlife and visitor services programs will likely always exceed the District's budget. Therefore, all District activities will benefit from volunteer participation, and certain activities will require volunteer participation to be successful. Many of the WMD goals, such as increasing local ecotype forb and grass harvest and controlling invasive species, will require large amounts of volunteer time to complete. A coordinated and efficiently run volunteer program will be essential to achieving many District goals. The wildlife refuge specialist position will be very important in developing and coordinating the volunteer program which will be successful if there is personal contact and follow-up with the volunteers.

Strategies:

1. Recruit new volunteers to assist with resource management and visitor services.

2. Recognize and supervise volunteers as adjunct staff.

3. Coordinate volunteer activities within the resource management and visitor service programs. (Wildlife biologist and wildlife refuge specialist)

4. Follow Service guidelines for volunteer management.



Cooperative organizations and volunteers are a key part of St. Croix WMD's future. USFWS photo.

5. Expand the volunteer program to include organized groups of volunteers to complete large projects such as seed harvest, seed nursery weed control, invasive species control, and interpretive programs.

Objective 3.7: Partnerships

Increase and improve partnerships over the level of the 2007 program.

Rationale: The value of a WPA is enhanced when it exists in a complex of wetlands. A WPA adjacent to other wetlands is more valuable to waterfowl than one that is isolated in an agricultural or residential landscape. And, no one organization or person can match the accomplishments of several entities working together. It is important, therefore, for the District to work with neighbors, other government agencies, and private organizations to improve the District's landscape for the benefit of migratory birds, other wildlife, and humans. Many WPAs are located immediately adjacent to or within a short distance of State Wildlife Areas or other public lands. Since the main objective of the District's habitat management program is to provide large blocks of quality wetland and grassland habitat for nesting waterfowl and other migratory birds, the Service should work with partners to assist with projects that meet this goal, regardless of ownership boundaries. Several focus areas and project areas overlap the geographic area of the District and complement the Service's goal of providing habitat for waterfowl and other grassland and wetland dependent migratory birds.

The Upper Mississippi River and Great Lakes Joint Venture Implementation Plan of 2007, as part of the North American Waterfowl Management Plan, identifies the Northwest Focus Area of Wisconsin, which includes the District, as a high priority area for conserving breeding waterfowl habitat. The implementation plan encourages private-public partnerships in a landscape approach to conservation. Based on the past success of the partnerships, the District will continue its participation and coordination in this program to pursue the synergistic benefits of cooperation.

Ducks Unlimited has identified a priority area in Northwest Wisconsin, which includes the District, as a focus for protecting and restoring small seasonal wetlands, re-establishing native prairie adjacent to wetlands for production habitat, and expanding existing state and federal wildlife areas. Ducks Unlimited and its partners have been active in conserving wetland and upland habitat in the past. Because of past success, the District will continue to actively work with these partners in further habitat work.

The State of Wisconsin has identified the Western Prairie Habitat Restoration Area (WPHRA) as a focus for the state. It is one of two HRAs in the State of Wisconsin. The WPHRA was established to protect and restore 20,000 acres of grassland and wetland habitat in western St. Croix and southwestern Polk Counties. The Wisconsin DNR and partners will use several tools, including acquisition of fee title or easements to protect important grassland and wetland habitat.

There are numerous other partnership opportunities associated with the protection of the St. Croix River and its watershed. With increased emphasis on the water quality of the St. Croix River and the proposed 2008 listing of the St. Croix as an impaired water, there may be increased funding and opportunities to restore wetlands and grasslands in the watershed. Many of these projects will be complementary to the Service's efforts.

Strategies:

1. Active implementation of the Upper Mississippi Joint Venture Plan and Ducks Unlimited Northwest Pothole Focus Area.

2. Active implementation of the Western Prairie Habitat Restoration Area in partnership with the Wisconsin DNR.

3. Work with land management organizations including the Wisconsin DNR, National Park Service, West Wisconsin Land Trust and many others to implement landscape level habitat protection and restoration.

4. Increase partnering with conservation organizations.

5. Evaluate creating a "Friends of St. Croix WMD."

Objective 3.8: Community Outreach

Within 5 years identify neighbors to 80 percent of the District's WPAs and provide them with information about waterfowl management and make 10 public presentations per year to civic groups, local governments, and other organizations to develop community support and action for waterfowl management across the entire District, both on and off Service lands.

Rationale: The District considers its neighbors and visitors to be very important. The District is an asset to the community and the continued support of the community is essential for the success of the District. It is important that the District continues efforts to build and maintain open communication with neighbors to let them know the successes, challenges, and opportunities in conservation and wildlife-dependent recreation. In an ideal setting, the objective would be to achieve an appreciation of the value and need for fish and wildlife conservation among a larger percentage of the population living around the District. The success in achieving the objective would be determined through a survey of the general population. However, for an objective to be useful it must be measurable in both a conceptual and practical sense. It is not practical to propose that the District will conduct a survey of the general population anytime in the next few years, because the approvals and costs are beyond the likely resources of the District. As an alternative, the objective reflects the assumption that providing neighbors and community members with written and oral information will lead to positive conservation attitudes and action. Public understanding of the purpose of District lands, including appropriate and compatible uses, may lead to a reduction in illegal uses such as snowmobiling, dumping, littering, dog training and off-road vehicle use. Public understanding and acceptance of District purposes are also important in maintaining the long-term viabil-

ity of using management practices such as grazing and prescribed fire to maintain grassland and wetland habitat.

Strategies:

1. Develop neighbors email list.
2. Develop an outreach plan.
3. Work with UW Extension to develop wildlife and habitat materials for neighbors and conservation organizations on WPA management. (Wildlife refuge specialist)
4. Engage neighbors in active habitat management. (Wildlife refuge specialist)
5. Contact neighbors the day of prescribed fires.

Goal 4: Land and Visitor Protection

Protect the integrity of biological resources within the District and the cultural resources and health and safety of visitors and Service staff on WPAs.

Objective 4.1: Conservation Easements

Meet Service monitoring guidelines for FSA easements and permanently protect an additional 1,000 acres of grassland and wetland through easements over next 15 years.

Rationale: The District is responsible for managing Farm Services Administration (FSA, formerly known as FmHA) within the eight-county District. These easements were placed on the properties when landowners defaulted on their Farmers Home Administration loans. Properties were then resold to the original landowner at a discounted price due to the easement or sold to another individual. The Service is designated as the easement manager and is responsible for habitat management on the easement and enforcement of easement provisions. These easements provide additional wetland and grassland habitat throughout the District. Several of the easements are located close to WPAs or other public lands and therefore provide complementary wildlife benefits to these lands.



Muskrat. USFWS photo.

The new use of the Service wetland and grassland easement program as well as partnerships with other agencies and organizations to use existing easement programs will provide long-term benefits to wildlife populations. The concept of wetland and grassland easements is to provide waterfowl habitat on a landscape scale while allowing land to remain in private ownership.

Strategies:

1. Annually inspect each FSA easement and follow up with landowner contact.
2. Send letters to new landowners informing them of existing easements on their property, along with the associated regulations.
3. Follow protocols within the Service's easement manual to handle all potential violations.
4. Using existing authorities, contact landowners and promote conservation of grasslands and wetlands through perpetual easements.

Objective 4.2: Partners for Fish and Wildlife

Restore 120 acres of wetland, grassland, and oak savanna habitat per year with emphasis on focus areas.

Rationale: Over 85 percent of the land in the St. Croix WMD is in private ownership. Only by working with private landowners will the Service be able to affect migratory bird populations on a broader landscape scale. The complementary affects of restoring wetlands adjacent to WPAs or other large wetland/grassland complexes will increase the value of these grasslands by providing additional wetland habitat for waterfowl pair and feeding habitat. In addition to the on-the-ground habitat restoration, there are also significant benefits for a broader pub-

lic understanding of the Service's mission and goals when private lands biologists interact with landowners. Increasing public knowledge and understanding of habitat and wildlife should also result in greater stewardship of our natural resources. The Partners for Fish and Wildlife Program will play an important role in complementing many of the other objectives and strategies in this CCP including community outreach, partnerships, identification of focus areas and landscape conservation initiatives.

Strategies:

1. Work with Wisconsin DNR, private landowners and other partners to restore important wetland, grassland, oak savanna and riparian habitat.

2. Work with USDA to facilitate available programs such as the Conservation Reserve Program (CRP), Wetlands Reserve Program (WRP) and Environmental Quality Incentives Program (EQIP) to protect valuable wildlife habitat.

Objective 4.3: Enforcement

Visitors feel safe and the resource is protected.

Rationale: The District is responsible for protecting District resources and providing a safe environment for employees and visitors. The District's law enforcement program is a critical tool in protecting trust resources, habitat, public facilities, employees, and the visiting public. To provide this essential service, the District will share regional resources and cooperate with other law enforcement authorities to meet its responsibilities.

Strategies:

1. Share regional law enforcement resources.

2. Partner with Wisconsin DNR Conservation Wardens.

Objective 4.4: Cultural Resources

Over the life of the plan, avoid and protect against disturbance of all known cultural, historic, or archeological sites.

Rationale: Cultural resources are an important facet of the country's heritage. St. Croix WMD, like all national wildlife refuges and wetland management districts, remains committed to preserving archeological and historic sites against degradation, looting, and other adverse impacts.

Cultural Resources of concern for the St. Croix Wetland Management District include archeological resources, historic structures, and historic cultural landscapes. The National Historic Preservation Act of 1966, as amended, is an "Act to Establish a Program of Preservation of Additional Historic Properties throughout the Nation and for other Purposes." The Act provides guidance for deciding whether cultural resources are of sufficient importance to be determined eligible for listing on the National Register of Historic Places (National Register) or whether significance of integrity are strong enough to support the property to be nominated as a National Historic Landmark.

The National Historic Preservation Act of 1966, as amended, in section 110, directs Federal Agencies to make efforts to minimize harm to National Historic Landmarks in their project planning. Numerous historic properties lie within the counties of the St. Croix Wetland Management District. Actions resulting from the CCP will require Section 106 Compliance, if those actions affect historic property. Section 106 of the Historic Preservation Act of 1966, as amended, is a Federal process that ensures cultural resources are taken into consideration during project planning and execution. The affected environment and environmental consequences that may result from actions proposed in the St. Croix CCP will require consideration of any cultural resource areas affected by the project, e.g., those areas where ground disturbance, changes in flooding patterns, or modifications to cultural resources would occur.

The District must ensure archeological and cultural values are described, identified, and taken into consideration prior to implementing undertakings. It is also essential that new site discoveries are documented. In order to meet these responsibilities, the District intends to maintain an open dialogue with the Regional Historic Preservation Officer (RHPO) and to provide the RHPO with information about new archeological site discoveries. The District will also cooperate with Federal, state, and local agencies, American Indian tribes, and the public in managing cultural resources on the District.



Broadcast seeding, St. Croix Wetland Management District. USFWS photo.

Strategies:

1. Conduct site-specific surveys prior to ground disturbing projects and protect known archeological, cultural and historic sites.

2. Identify and nominate to the National Register of Historic Places all historic properties including those of religious and cultural significance to Indian tribes.

3. Inform the RHPO early in project planning to ensure compliance with Section 106 of National Historic Preservation Act.

4. Contract with cultural resources firms specializing in Wisconsin to conduct Phase I surveys prior to undertakings that could adversely affect historic resources.

5. In the event of inadvertent discoveries of ancient human remains, follow instructions and procedures indicated by the RHPO.

6. Ensure archeological and cultural values are described, identified, and taken into consideration prior to implementing undertakings.

7. Inspect the condition of known cultural resources on the District and report to the RHPO changes in the conditions.

8. Integrate historic preservation with planning and management of other resources and activities.

Chapter 5: Plan Implementation

Introduction

This chapter summarizes the actions, funding, coordination, and monitoring to implement the CCP. As noted in the inside cover of this document, this plan does not constitute a commitment for staffing increases, operational and maintenance increases, or funding for future land acquisition. These decisions are at the discretion of Congress in overall appropriations, and in budget allocation decisions made at the Washington and Regional levels of the Service.

New and Existing Projects

This CCP outlines an ambitious course of action for the future management of the St. Croix Wetland Management District. It will require considerable staff commitment as well as funding commitment to actively manage the wildlife habitats and add and improve public use facilities. The District will continually need appropriate operational and maintenance funding to implement the objectives in this plan. A full listing of unfunded District projects and operational needs can be found in Appendix H. A brief description of the highest priority District projects is listed below.

Minimum District Operations Needs

The project will provide funds to operate the District office including expenses for heating, air conditioning, required safety inspections, electrical expenses, and safety improvements. These funds will also allow for the upkeep of District facilities including parking lots, interpretive kiosks, interpretive trails, and water control structures. It is important to provide a quality experience for visitors who come to the District each year. The project will help pay fuel bills, electric bills and the day-to-day costs of operating a District. (First Year Cost: $106,000, recurring annual cost $106,000)



Muskrat lodge, St. Croix Wetland Management District. USFWS photo.

Prairie Restoration on WPAs and Easements

Quality prairie grassland on the District's WPAs is essential to meet the waterfowl production goals of the District. In addition, numerous species of migratory birds benefit from native prairie grassland. Only 33 percent of the District's grasslands are native prairie, the remaining grasslands are cool season exotic grasses such as brome that do not provide diverse habitat for wildlife. This project will renovate the remaining cool season grass fields in the District in the next 10 years. This project will address equipment purchase, temporary staff time, chemical, seed and contracts for brush cutting and seed removal. (First Year Cost: $119,000, recurring annual cost $35,000)

Enhance Biological Program (District Biologist)

A Biologist position would enable the District to develop a biological program with an emphasis on evaluating and refining management actions to provide quality habitat for wildlife. The Biologist would also be responsible for the coordination of data col-

lection to monitor waterfowl use and recruitment within the District. The data collected from numerous surveys and biological programs would be very useful in making biologically based decisions within the District. Focus areas for acquisition, restoration and management would be developed and refined using this data. (First Year Cost: 149,000, recurring annual cost $74,000)

Expand District Prescribed Fire and Fuels Removal Program (Lead Range Technician)

A full-time Lead Range Technician is required to adequately administer the District's prescribed fire and hazardous fuels removal program. The current 17 pay period position would be increased to 26 pay periods a year. The District relies on temporary Emergency AD hires for assistance on prescribed fires. Although cost effective from a staffing perspective, this reliance on AD hires also increases administrative time for training, coordination and daily supervision. The District has also significantly increased our mechanical fuels treatment program, coordinating numerous special use permits and programs to meet our fuel treatment goals. Additional staff time is needed to coordinate this program and provide adequate oversight of permittees and contractors. (Recurring annual cost: $18,000)

Enhance Visitor Services Program (Seasonal Tractor Operator)

The WPAs in St. Croix, Dunn and Polk Counties provide important recreational opportunities for Wisconsin residents. They also provide an opportunity to reconnect people with nature. The purpose of the project will be to construct and maintain entrance signs, boundary signs, wildlife observation platforms, trails, kiosks, parking lots and boundary fences on WPAs. Some WPAs will also be developed to provide public opportunities for priority wildlife-dependent recreational uses: hunting, fishing, wildlife observation, wildlife photography, interpretation and environmental education. (First Year Cost: $119,000, recurring annual cost $54,000)



Prescribed burning at St. Croix Wetland Management District. USFWS photo

Control of Invasive Species, Noxious Weeds and Woody Invaders

Invasive species are detrimental to plant and animal populations. In addition, grassland habitat on the District is negatively impacted by other noxious weeds and woody invaders such as box elder, maple and cottonwood. The purpose of the project is to control these unwanted plant species and provide quality wetland, grassland and woodland habitat on the District. The project would be in partnership with neighboring landowners and agencies in an effort to take a landscape approach to habitat management. Funds will be used for chemical, contract plant removal and temporary staff. (First Year Cost: $136,000, recurring annual cost $45,000)

Replace Facilities (Headquarters and Maintenance Facilities)

The current shop and headquarters facilities are inadequate to meet the needs of the Service. The facilities are not universally accessible and are not of an adequate size to support current staffing levels. Presently, the station headquarters is a converted two story house with little room for interpretive exhibits for visitors. There is also not enough office space to support the current staff level. The maintenance facility consists of a small shop, a pole barn and a calf barn. The shop does not have adequate storage or work areas and does not have a lift. The barns are not large enough to store equipment and supplies and do not have adequate doors and walls for secure storage. It is important to have adequate indoor secure storage to protect the Service's investment in equipment and supplies. The proposed maintenance facility would include a shop and two pole barns which would provide adequate size to store all equipment. (One Time Cost: $2.9 million)

Staffing

Implementing the vision set forth in this CCP will require changes in the organizational structure of the District. Existing staff will direct their time and

Table 4: Current and Proposed Staffing Under the CCP

Current Staff- 7.5 FTEs	Proposed Additions – 3.0 FTEs
District manager	
Wildlife Refuge Specialist	Wildlife Refuge Specialist with emphasis in public use
Wildlife biologist (Partners for Fish and Wildlife)	Wildlife biologist
Maintenance worker	Seasonal tractor operator
Administrative technician	
Biological science technician	
Prescribed fire specialist	
Lead Range Technician (19pp)	Lead Range Technician 7pp)

energy in new directions and new staff members will be added to assist in these efforts. Table 4 presents current staffing and the increases proposed for the District in this plan. Figure 18 shows the staffing organization at St. Croix WMD.

Partnership Opportunities

Partnerships are an essential element for the successful accomplishment of goals, objectives, and strategies at St. Croix WMD. The objectives outlined in this CCP need the support and the partnerships of federal, state and local agencies, nongovernmental organizations and individual citizens. District staff will continue to seek creative partnership opportunities to achieve the vision of the District.

We expect to continue to work with the following notable partners, while developing new partnerships:

- County Agencies
- County Land and Water Conservation Departments
- Ducks Unlimited
- Keeping Youth Involved
- Minnesota Conservation Corps
- National Park Service
- Natural Resources Conservation Service (USDA)
- Pheasants Forever
- St. Croix County Conservation Collaborative
- St. Croix County Sportsmen's Alliance
- Standing Cedars Land Trust
- Star Prairie Fish and Game
- Star Prairie Land Preservation Trust
- Towns
- Trout Unlimited
- University of Wisconsin Extension
- University of Wisconsin River Falls
- West Wisconsin Land Trust
- Wisconsin Department of Natural Resources

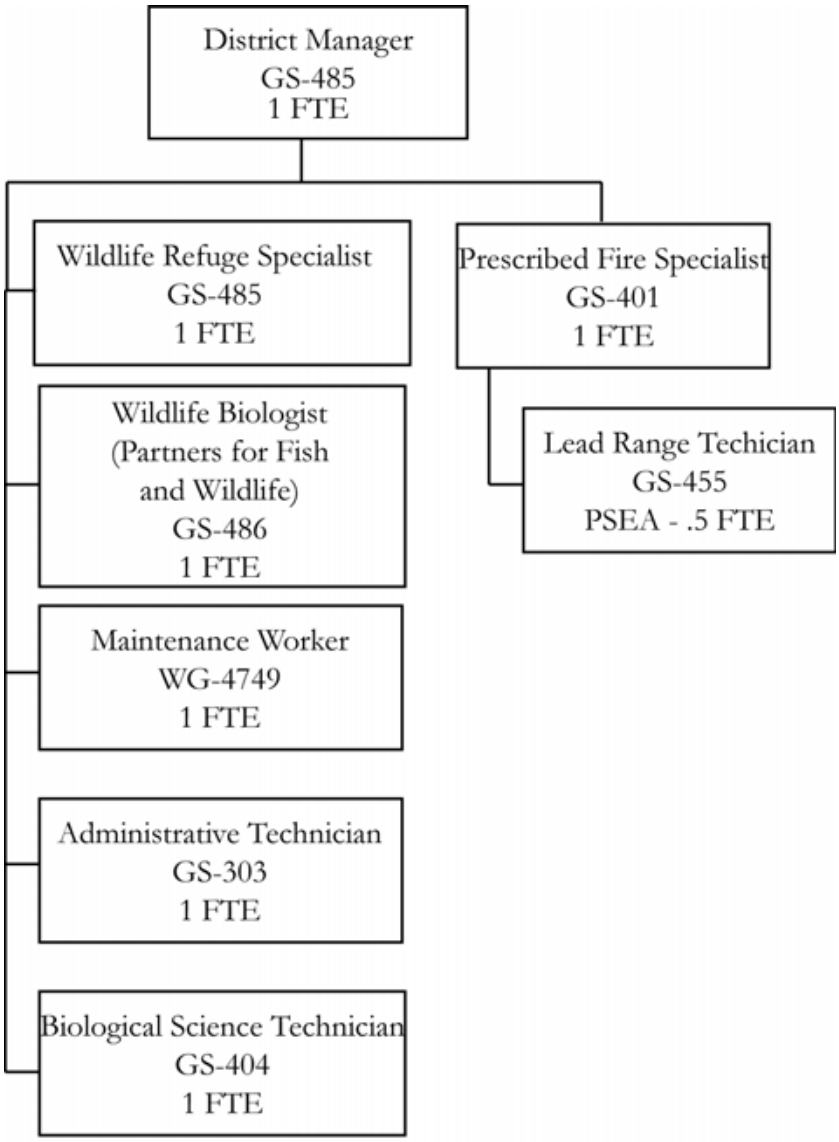
Step-Down Management Plans

The CCP is a plan that provides general concepts and specific wildlife, habitat, and people related objectives. Step-down management plans provide greater detail to managers and employees who will carry out the strategies described in the CCP. The District staff will revise or develop the following step-down plans:

- Habitat Management Plan (within 5 years)
- Visitor Services Plan (within 8 years)
- Habitat and Wildlife Monitoring Plans (within 8 years)

The Fire Management Plan, approved in 2008, provides direction and establishes procedures to guide various wildland fire program activities. The Fire Management Plan covers the historical and ecological role of fire, fire management objectives, preparedness, suppression, fire management actions and responses, fire impacts, use of prescribed fire and fire management restrictions.

Figure 18: Current Staff, St. Croix WMD



Monitoring and Evaluation

The direction set forth in this CCP and specifically identified strategies and projects will be monitored throughout the life of this plan. On a periodic basis, the Regional Office will assemble a station review team whose purpose will be to visit the District and evaluate current activities in light of this plan. The team will review all aspects of District management, including direction, accomplishments and funding. The goals and objectives presented in this CCP will provide the baseline for evaluation of this field station.

Plan Review and Revision

The CCP is meant to provide guidance to District managers and staff over the next 15 years. However, the CCP is also a dynamic and flexible document and several of the strategies contained in this plan are subject to uncontrollable events of nature. Likewise, many of the strategies are dependent upon Service funding for staff and projects. Because of all these factors, the recommendations in the CCP will be reviewed periodically and, if necessary, revised to meet new circumstances. If any revisions are major, the review and revision will include the public.

Appendix A: Finding of No Significant Impact

Finding of No Significant Impact

Environmental Assessment and Comprehensive Conservation Plan for St. Croix Wetland Management District, Wisconsin

An Environmental Assessment (EA) has been prepared to identify management strategies to meet the conservation goals of the St. Croix Wetland Management District (WMD). The EA examined the environmental consequences that each management alternative could have on the quality of the physical, biological, and human environment, as required by the National Environmental Policy Act of 1969 (NEPA). The EA evaluated four alternatives for the future management of the Refuge.

The alternative selected for implementation is *Alternative 4*. The preferred alternative for St. Croix WMD increases the acreage subject to habitat management activities, increases monitoring of habitat and wildlife, and expands and improves the quality of visitor services.

For reasons presented above and below, and based on an evaluation of the information contained in the Environmental Assessment, we have determined that the action of adopting Alternative 4 as the management alternative for the District is not a major federal action which would significantly affect the quality of the human environment, within the meaning of Section 102 (2) (c) of the National Environmental Policy Act of 1969.

Additional Reasons:

1. Future management actions will have a neutral or positive impact on the local economy.
2. This action will not have an adverse impact on threatened or endangered species.

Supporting References:

Environmental Assessment
Comprehensive Conservation Plan



Regional Director

Charles M. Wooley
Acting Regional Director

9/22/08
Date

Appendix B: Glossary

Appendix B / Glossary

Adaptive Management

A systematic process for continually improving management policies and practices by learning from the outcomes of operational programs.

Alternative

A set of objectives and strategies needed to achieve refuge goals and the desired future condition.

Biological Diversity

The variety of life forms and its processes, including the variety of living organisms, the genetic differences among them, and the communities and ecosystems in which they occur.

Biological Integrity

Biotic composition, structure, and functioning at genetic, organism, and community levels comparable with historic conditions, including the natural biological processes that shape genomes, organisms, and communities.

Compatible Use

A wildlife-dependent recreational use, or any other use on a refuge that will not materially interfere with or detract from the fulfillment of the mission of the Service or the purposes of the refuge.

Comprehensive Conservation Plan

A document that describes the desired future conditions of the refuge, and specifies management actions to achieve refuge goals and the mission of the National Wildlife Refuge System.

Conservation Easement

A popular method of land conservation used by private individuals, land trusts and governments. Conservation easements involve the acquisition of specific land rights for the purpose of achieving defined habitat objectives.

Cultural Resources

"Those parts of the physical environment -- natural and built -- that have cultural value to some kind of sociocultural group ... [and] those nonmaterial human social institutions...." Cultural resources include historic sites, archeological sites and associated artifacts, sacred sites, traditional cultural properties, cultural items (human remains, funerary objects, sacred objects, and objects of cultural patrimony), and buildings and structures.

Ecosystem

A dynamic and interrelated complex of plant and animal communities and their associated non-living environment.

Ecotype

A subspecies or race of a species which has adapted specifically to cope with a particular set of environmental conditions.

Endangered Species

Any species of plant or animal defined through the Endangered Species Act as being in danger of extinction throughout all or a significant portion of its range, and published in the Federal Register.

Environmental Assessment

A systematic analysis to determine if proposed actions would result in a significant effect on the quality of the environment.

Goals

Descriptive statements of desired future conditions.

Habitat Fragmentation

The discontinuity in the spatial distribution of resources and conditions present in an area at a given scale that affects occupancy, reproduction, or survival in a particular species. [Citation:

Franklin, Alan B., Barry R. Noon, and T. Luke George. 2002. What Is Habitat Fragmentation? Studies in Avian Biology No. 25:20-29.]

High Quality Recreation

Wildlife-dependent recreational programs that meet criteria defined in Section 1.6 of 605 FW 1.

Invasive Species

Invasive species are alien species whose introduction causes or is likely to cause economic or environmental harm or harm to human health. Executive Order 13112 requires the District to monitor, prevent, and control the presence of invasive species.

Issue

Any unsettled matter that requires a management decision. For example, a resource management problem, concern, a threat to natural resources, a conflict in uses, or in the presence of an undesirable resource condition.

National Wildlife Refuge System

All lands, waters, and interests therein administered by the U.S. Fish and Wildlife Service as wildlife refuges, wildlife ranges, wildlife management areas, waterfowl production areas, and other areas for the protection and conservation of fish, wildlife and plant resources.

Objectives

A concise statement of what we want to achieve. The statement is specific, measurable, achievable, results oriented, and time-fixed.

Preferred Alternative

The Service's selected alternative identified in the environmental assessment and fully developed in the Comprehensive Conservation Plan.

Prescribed Fire

Prescribed fire is any fire ignited to meet specific objectives. Before lighting the fire, a written prescribed fire plan must be approved and National Environmental Policy Act requirements must be followed.

Recruitment

A term used by biologists to describe the rate at which breeding hens produce young for the fall population.

Scoping

A process for determining the scope of issues to be addressed by a comprehensive conservation plan and for identifying the significant issues. Involved in the scoping process are federal, state and local agencies; private organizations; and individuals.

Species

A distinctive kind of plant or animal having distinguishable characteristics, and that can interbreed and produce young. A category of biological classification.

Strategies

A general approach or specific actions to achieve objectives.

Threatened Species

Those plant or animal species likely to become endangered species throughout all of or a significant portion of their range within the foreseeable future. A plant or animal identified and defined in accordance with the 1973 Endangered Species Act and published in the Federal Register.

Undertaking:

"A project, activity, or program funded in whole or in part under the direct or indirect jurisdiction of a Federal agency, including those carried out by or on behalf of a Federal agency; those carried out with Federal financial assistance; those requiring a Federal permit, license or approval...," i.e., all Federal actions.

Vegetation

Plants in general, or the sum total of the plant life in an area.

Vegetation Type

A category of land based on potential or existing dominant plant species of a particular area.

Waterfowl Production Area

Waterfowl production area means any wetland or pothole area acquired pursuant to section 4(c) of the amended Migratory Bird Hunting Stamp Act (72 Stat. 487; 16 U.S.C. 718d(c)), owned or controlled by the United States and administered by the U.S. Fish and Wildlife Service as a part of the National Wildlife Refuge System. (50CFR25.12--Sec. 25.12)

Watershed

The entire land area that collects and drains water into a stream or stream system.

Wetland

Areas such as lakes, marshes, and streams that are inundated by surface or ground water for a long enough period of time each year to support, and that do support under natural conditions, plants and animals that require saturated or seasonally saturated soils.

Wetland Management District

An administrative unit of the U.S. Fish and Wildlife Service charged with acquiring, overseeing and managing waterfowl production areas and easements with a specified group of counties.

Wildlife-dependent Recreational Use

A use of refuge that involves hunting, fishing, wildlife observation and photography, or environmental education and interpretation, as identified in the National Wildlife Refuge System Improvement Act of 1997.

Wilderness

A wilderness, in contrast with those areas where man and his own works dominate the landscape, is hereby recognized as an area where the earth and its community of life are untrammeled by man, where man himself is a visitor who does not remain. An area of wilderness is further defined to mean in this chapter an area of undeveloped Federal land retaining its primeval character and influence, without permanent improvements or human habitation, which is protected and managed so as to preserve its natural conditions and which (1) generally appears to have been affected primarily by the forces of nature, with the imprint of man's work substantially unnoticeable; (2) has outstanding opportunities for solitude or a primitive and unconfined type of recreation; (3) has at least five thousand acres of land or is of sufficient size as to make practicable its preservation and use in an unimpaired condition; and (4) may also contain ecological, geological, or other features of scientific, educational, scenic, or historical value. (Public Law 88-577)

Appendix C: Species List

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Mammals Found on the St. Croix Wetland Management District

Order	Family			Common Name
Didelphimorphia				
	Didelphidae			
		Didelphis	*virginiana*	Virginia Opossum
Insectivora				
	Soricidae			
		Blarinia	*brevicauda*	Northern Short tail Shrew
		Cryptotis	*parva*	Least Shrew
		Sorex	*arcticus*	Arctic Shrew
		Sorex	*cinereus*	Masked Shrew
		Sorex	*hoyi*	Pygmy Shrew
		Sorex	*palustris*	Northern Water Shrew
	Talpidae			
		Condylura	*cristata*	Star-nosed Mole
		Scalopus	*aquaticus*	Eastern Mole
Chiroptera				
	Vespertilionidae			
		Eptesicus	*fuscus*	Big Brown Bat
		Lasionycteris	*noctivagans*	Silver-haired Bat
		Lasiurus	*borealis*	Red Bat
		Lasiurus	*cinereus*	Hoary Bat
		Myotis	*lucifugus*	Little Brown Bat
		Myotis	*septentrionalis*	Northern Myotis (Long Eared Bat)
		Pipistrellus	*subflavus*	Eastern Pipistrelle
Carnivora				
	Canidae			
		Canis	*latrans*	Coyote
		Canis	*lupus*	Gray Wolf
		Urocyon	*cinereoargenteus*	Gray Fox
		Vulpes	*vulpes*	Red Fox
	Ursidae			

Mammals Found on the St. Croix Wetland Management District (Continued)

Order	Family			Common Name
		Ursus	*americanus*	Black Bear
	Procyonidae			
		Procyon	*lotor*	Common Raccon
	Mustelidae			
		Lontra	*canadensis*	Northern River otter
		Mustela	*erminea*	Short-tailed Weasel
		Mustela	*frenata*	Long-tailed Weasel
		Mustela	*nivallis*	Least Weasel
		Mustela	*vison*	American Mink
		Taxidea	*taxus*	American Badger
	Mephitidae			
		Mephitis	*mephitis*	Striped Skunk
		Spilogale	*putorius*	Eastern Spotted Skunk
	Felidae			
		Lynx	*canadensis*	Canada Lynx
		Lynx	*rufus*	Bobcat
Rodentia				
	Squirdae			
		Glaucomys	*sabrinus*	Northern Flying Squirrel
		Glaucomys	*volans*	Southern Flying Squirrel
		Maramota	*monax*	Woodchuck
		Sciurus	*carolinensis*	Eastern Gray Squirrel
		Sciurus	*niger*	Eastern Fox Squirrel
		Spermophilus	*franklinii*	Franklin's Ground Squirrel
		Spermophilus	*tridecemlineatus*	Thirteen-lined Ground Squirrel
		Tamias	*minimus*	Least Chipmonk
		Tamiasciurus	*hudsonicus*	Red Squirrel
	Geomyidae			
		Geomys	*bursarius*	Plains Pocket Gopher
	Castoridae			

Mammals Found on the St. Croix Wetland Management District (Continued)

Order	Family			Common Name
		Castor	*canadensis*	American Beaver
	Muridae			
		Clethrionomys	*gapperi*	Southern Red-backed Vole
		Microtus	*ochrogaster*	Prairie Vole
		Microtus	*pennsylvanicus*	Meadow Vole
		Microtus	*pinetorum*	Woodland Vole
		Mus	*musculus*	House Mouse
		Ondatra	*zibethicus*	Muskrat
		Peromyscus	*leucopus*	White-footed Mouse
		Peromyscus	*maniculatus*	Deer Mouse
		Rattus	*norvegicus*	Norway Rat
		Synaptomys	*cooperi*	Southern Bog Lemming
	Zapodidae			
		Napaeozapus	*insignis*	Woodland Jumping Mouse
		Zapus	*hudsonius*	Meadow Jumping Mouse
	Erethizontidae			
		Erethizon	*dorsatum*	Common Porcupine
Artiodactyla				
	Cervidae			
		Alces	*alces*	Moose
		Odocoileus	*virginianus*	White-tailed Deer
	Lagomorha			
Leporidae				
		Lepus	*americanus*	Snowshoe Hare
		Lepus	*townsendii*	White-tailed Jackrabbit
		Sylvilagus	*floridanus*	Eastern Cottontail

Amphibians Found on the St. Croix Wetland Management District

Order	Family			Common Name
Caudata				
	Salamandride			
		Notophtalmus	*viridescens louisianensis*	Common Newt
	Proteidae			
		Necturus	*maculosus maculosus*	Common Mudpuppy
	Ambystomatidae			
		Ambystoma	*laterale*	Blue-spotted Salamander
		Ambystoma	*maculatum*	Spotted Salamander
		Ambystoma	*tigerinum tigerinum*	Eastern Tiger Salamander
	Plethodontide			
		Hemidactylium	*scutatum*	Four-toed Salamander
		Plethodon	*cinereus*	Eastern Red-backed Salamander
Anura				
	Bufonidae			
		Bufo	*americanus americanus*	Eastern American Toad
	Hylidae			
		Acris	*crepitans blanchardi*	Blanchard's Cricket Frog
		Psudacris	*crucifer crucifer*	Northern Spring Peeper
		Psudacris	*triseriata*	Chorus Frog
		Hyla	*chrysoscelis*	Cope's Gray treefrog
		Hyla	*versicolor*	Gray Frog
	Ranidae			
		Rana	*catesbeiana*	American Bullfrog
		Rana	*clamitans melanota*	Northern Green Frog
		Rana	*palustris*	Pickerel Frog
		Rana	*pipiens*	Northern Leopard Frog
		Rana	*septentrionalis*	Mink Frog
		Rana	*sylvatica*	Wood Frog

Taxanomic Order of Invertebrates Found in WPA Wetlands, St. Croix WMD

Taxanomic Order	Scientific Name
Beetles	*(Coleoptera)*
Bugs	*(Heteroptera)*
Caddisflies	*(Trichoptera)*
Ceratopogonids	*(Ceratapogonidae)*
Chironomids	*(Chironomidae)*
Clams	*(Pelecypoda)*
Leeches	*(Hirudinea)*
Mayflies	*(Ephemeroptera)*
Mites	*(Hydracarina)*
Odonates	*(Odonata)*
Scuds	*(Amphipoda)*
Snails	*(Gastropoda)*
Total Diptera	

Fish Species Found on St. Croix WMD

Common Name	Scientific Name
Brown trout	*(Salmo trutta)*
Fathead minnow	*(Pimephales promelas)*
Golden shiner	*(Notemigonus crysoleucas)*
Mudminnow	*(Umbra limi)*
Pumpkinseed	*(Lepomis gibbosus)*
Brook stickleback	*(Culaea inconstans)*
White sucker	*(Catostomus commersonii)*
Yellow perch	*(Perca flavescens)*

Reptiles Found on St. Croix Wetland Management District

Order	Family			Common Name
Testudines				
	Chelydridae			
		Chelydra	*serpentina*	Eastern Snapping Turtle
	Emydidae			
		Chrysemys	*picta*	Painted Turtle
		Clemmys	*insculpta*	Wood Turtle
		Emydoidea	*blandingii*	Blanding's Turtle
		Graptemys	*geographica*	Northern Map Turtle
		Graptemys	*pseudogeographica*	False Map Turtle
	Trionychidae			
		Apalone	*spinifera*	Eastern Spiny Softshell Turtle
Squamata				
	Teiidae			
		Cnemidophorus	*sexlineatus*	Six-lined Racerunner
	Scincidae			
		Eumeces	*fasciatus*	Common Five-linned Skink
		Eumeces	*septentrionalis*	Northen Prairie Skink
	Colubridae			
		Coluber	*constrictor*	Eastern Racer
		Elaphe	*vulpina*	Western Foxsnake (Pine Snake)
		Heterodon	*platirhinos*	Eastern Hog-nosed Snake
		Lampropeltis	*triangulum triangulum*	Eastern Milksnake
		Nerodia	*sipedon*	Northern Watersnake
		Opheodrys	*vernalis*	Smooth Greensnake
		Pituophis	*catenifer*	Bullsnake
		Storeria	*dekayi*	DeKay's Brownsnake
		Storeria	*occipitomaculata*	Northern Red-bellied Snake
		Thamnophis	*radix*	Plains Gartersnake
		Thamnophis	*sirtalis*	Common Gatersnake

Reptiles Found on St. Croix Wetland Management District (Continued)

Order	Family			Common Name
	Viperidae			
		Crotalus	*horridus*	Timber Rattlesnake
		Sistrurus	*catenatus*	Eastern Massasauga rattlesnake

Bird Species Found on St. Croix Wetland Management District

Order	Family	Subfamily	Genus	Species	English name
ANSERIFORMES					
	ANATIDAE				
		Anserinae			
			Anser	*albifrons*	Greater White-fronted Goose
			Chen	*caerulescens*	Snow Goose
			Branta	*bernicla*	Brant
			Branta	*canadensis*	Canada Goose
			Cygnus	*olor*	Mute Swan
			Cygnus	*buccinator*	Trumpeter Swan
			Cygnus	*columbianus*	Tundra Swan
		Anatinae			
			Aix	*sponsa*	Wood Duck
			Anas	*strepera*	Gadwall
			Anas	*americana*	American Wigeon
			Anas	*rubripes*	American Black Duck
			Anas	*platyrhynchos*	Mallard
			Anas	*discors*	Blue-winged Teal
			Anas	*clypeata*	Northern Shoveler
			Anas	*acuta*	Northern Pintail
			Anas	*crecca*	Green-winged Teal
			Aythya	*valisineria*	Canvasback
			Aythya	*americana*	Redhead
			Aythya	*collaris*	Ring-necked Duck
			Aythya	*marila*	Greater Scaup
			Aythya	*affinis*	Lesser Scaup
			Bucephala	*albeola*	Bufflehead
			Bucephala	*clangula*	Common Goldeneye
			Lophodytes	*cucullatus*	Hooded Merganser
			Mergus	*merganser*	Common Merganser
			Mergus	*serrator*	Red-breasted Merganser
			Oxyura	*jamaicensis*	Ruddy Duck

Bird Species Found on St. Croix Wetland Management District (Continued)

Order	Family	Subfamily	Genus	Species	English name
GALLIFORMES					
	PHASIANIDAE				
		Phasianinae			
			Phasianus	*colchicus*	Ring-necked Pheasant
		Tetraoninae			
			Bonasa	*umbellus*	Ruffed Grouse
			Tympanuchus	*phasianellus*	Sharp-tailed Grouse
		Meleagridinae			
			Meleagris	*gallopavo*	Wild Turkey
	ODONTOPHORIDAE				
			Colinus	*virginianus*	Northern Bobwhite
GAVIIFORMES					
	GAVIIDAE				
			Gavia	*stellata*	Red-throated Loon
			Gavia	*immer*	Common Loon
PODICIPEDIFORMES					
	PODICIPEDIDAE				
			Podilymbus	*podiceps*	Pied-billed Grebe
			Podiceps	*auritus*	Horned Grebe
			Podiceps	*grisegena*	Red-necked Grebe
			Podiceps	*nigricollis*	Eared Grebe
			Aechmophorus	*occidentalis*	Western Grebe
PELECANIFORMES					
	PELECANIDAE				
			Pelecanus	*erythrorhynchos*	American White Pelican
	PHALACROCORACIDAE				
			Phalacrocorax	*auritus*	Double-crested Cormorant
	ANHINGIDAE				
CICONIIFORMES					
	ARDEIDAE				
			Botaurus	*lentiginosus*	American Bittern
			Ixobrychus	*exilis*	Least Bittern
			Ardea	*herodias*	Great Blue Heron

Bird Species Found on St. Croix Wetland Management District (Continued)

Order	Family	Subfamily	Genus	Species	English name
			Ardea	*alba*	Great Egret
			Bubulcus	*ibis*	Cattle Egret
			Butorides	*virescens*	Green Heron
			Nycticorax	*nycticorax*	Black-crowned Night-Heron
	CATHARTIDAE				
			Cathartes	*aura*	Turkey Vulture
FALCONIFORMES					
	ACCIPITRIDAE				
		Pandioninae			
			Pandion	*haliaetus*	Osprey
		Accipitrinae			
			Haliaeetus	*leucocephalus*	Bald Eagle
			Circus	*cyaneus*	Northern Harrier
			Accipiter	*striatus*	Sharp-shinned Hawk
			Accipiter	*cooperii*	Cooper's Hawk
			Accipiter	*gentilis*	Northern Goshawk
			Buteo	*lineatus*	Red-shouldered Hawk
			Buteo	*platypterus*	Broad-winged Hawk
			Buteo	*jamaicensis*	Red-tailed Hawk
			Buteo	*lagopus*	Rough-legged Hawk
			Aquila	*chrysaetos*	Golden Eagle
	FALCONIDAE				
		Falconinae			
			Falco	*sparverius*	American Kestrel
			Falco	*peregrinus*	Peregrine Falcon
GRUIFORMES					
	RALLIDAE				
			Coturnicops	*noveboracensis*	Yellow Rail
			Rallus	*elegans*	King Rail
			Rallus	*limicola*	Virginia Rail
			Porzana	*carolina*	Sora
			Gallinula	*chloropus*	Common Moorhen
			Fulica	*americana*	American Coot

Bird Species Found on St. Croix Wetland Management District (Continued)

Order	Family	Subfamily	Genus	Species	English name
	GRUIDAE				
		Gruinae			
			Grus	*canadensis*	Sandhill Crane
			Grus	*americana*	Whooping Crane
CHARADRIIFORMES					
		Charadriinae			
			Pluvialis	*squatarola*	Black-bellied Plover
			Pluvialis	*dominica*	American Golden-Plover
			Charadrius	*semipalmatus*	Semipalmated Plover
			Charadrius	*melodus*	Piping Plover
			Charadrius	*vociferus*	Killdeer
	RECURVIROSTRIDAE				
			Recurvirostra	*americana*	American Avocet
	SCOLOPACIDAE				
		Scolopacinae			
			Actitis	*macularius*	Spotted Sandpiper
			Tringa	*solitaria*	Solitary Sandpiper
			Tringa	*melanoleuca*	Greater Yellowlegs
			Tringa	*semipalmata*	Willet
			Tringa	*flavipes*	Lesser Yellowlegs
			Bartramia	*longicauda*	Upland Sandpiper
			Numenius	*phaeopus*	Whimbrel
			Limosa	*haemastica*	Hudsonian Godwit
			Limosa	*fedoa*	Marbled Godwit
			Arenaria	*interpres*	Ruddy Turnstone
			Calidris	*canutus*	Red Knot
			Calidris	*alba*	Sanderling
			Calidris	*pusilla*	Semipalmated Sandpiper
			Calidris	*mauri*	Western Sandpiper
			Calidris	*minutilla*	Least Sandpiper
			Calidris	*fuscicollis*	White-rumped Sandpiper
			Calidris	*bairdii*	Baird's Sandpiper

Bird Species Found on St. Croix Wetland Management District (Continued)

Order	Family	Subfamily	Genus	Species	English name
			Calidris	*melanotos*	Pectoral Sandpiper
			Calidris	*alpina*	Dunlin
			Limnodromus	*griseus*	Short-billed Dowitcher
			Limnodromus	*scolopaceus*	Long-billed Dowitcher
			Gallinago	*gallinago*	Common Snipe
			Scolopax	*minor*	American Woodcock
		Phalaropodinae			
			Phalaropus	*tricolor*	Wilson's Phalarope
			Phalaropus	*lobatus*	Red-necked Phalarope
	LARIDAE				
		Larinae			
			Larus	*pipixcan*	Franklin's Gull
			Larus	*philadelphia*	Bonaparte's Gull
			Larus	*delawarensis*	Ring-billed Gull
			Larus	*argentatus*	Herring Gull
		Sterninae			
			Hydroprogne	*caspia*	Caspian Tern
			Chlidonias	*niger*	Black Tern
			Sterna	*hirundo*	Common Tern
			Sterna	*forsteri*	Forster's Tern
COLUMBIFORMES					
	COLUMBIDAE				
			Columba	*livia*	Rock Pigeon
			Zenaida	*macroura*	Mourning Dove
CUCULIFORMES					
	CUCULIDAE				
		Cuculinae			
			Coccyzus	*americanus*	Yellow-billed Cuckoo
			Coccyzus	*erythropthalmus*	Black-billed Cuckoo
STRIGIFORMES					
	TYTONIDAE				
			Tyto	*alba*	Barn Owl
	STRIGIDAE				
			Megascops	asio	Eastern Screech-Owl

Bird Species Found on St. Croix Wetland Management District (Continued)

Order	Family	Subfamily	Genus	Species	English name
			Bubo	*virginianus*	Great Horned Owl
			Bubo	*scandiacus*	Snowy Owl
			Surnia	*ulula*	Northern Hawk Owl
			Strix	*varia*	Barred Owl
			Strix	*nebulosa*	Great Gray Owl
			Asio	*otus*	Long-eared Owl
			Asio	*flammeus*	Short-eared Owl
			Aegolius	*funereus*	Boreal Owl
			Aegolius	*acadicus*	Northern Saw-whet Owl
CAPRIMULGIFORMES					
	CAPRIMULGIDAE				
		Chordeilinae			
			Chordeiles	*minor*	Common Nighthawk
		Caprimulginae			
			Caprimulgus	*vociferus*	Whip-poor-will
APODIFORMES					
	APODIDAE				
		Chaeturinae			
			Chaetura	*pelagica*	Chimney Swift
		Trochilinae			
			Archilochus	*colubris*	Ruby-throated Hummingbird
CORACIIFORMES					
	ALCEDINIDAE				
		Cerylinae			
			Ceryle	*alcyon*	Belted Kingfisher
PICIFORMES					
	PICIDAE				
		Picinae			
			Melanerpes	*erythrocephalus*	Red-headed Woodpecker
			Melanerpes	*carolinus*	Red-bellied Woodpecker
			Sphyrapicus	*varius*	Yellow-bellied Sapsucker
			Picoides	*pubescens*	Downy Woodpecker
			Picoides	*villosus*	Hairy Woodpecker

Bird Species Found on St. Croix Wetland Management District (Continued)

Order	Family	Subfamily	Genus	Species	English name
			Picoides	*arcticus*	Black-backed Woodpecker
			Colaptes	*auratus*	Northern Flicker
			Dryocopus	*pileatus*	Pileated Woodpecker
PASSERIFORMES					
		Platyrinchinae			
		Fluvicolinae			
			Contopus	*cooperi*	Olive-sided Flycatcher
			Contopus	*virens*	Eastern Wood-Pewee
			Empidonax	*flaviventris*	Yellow-bellied Flycatcher
			Empidonax	*virescens*	Acadian Flycatcher
			Empidonax	*alnorum*	Alder Flycatcher
			Empidonax	*traillii*	Willow Flycatcher
			Empidonax	*minimus*	Least Flycatcher
			Sayornis	*phoebe*	Eastern Phoebe
		Tyranninae			
			Myiarchus	*crinitus*	Great Crested Flycatcher
			Tyrannus	*verticalis*	Western Kingbird
			Tyrannus	*tyrannus*	Eastern Kingbird
	LANIIDAE				
			Lanius	*ludovicianus*	Loggerhead Shrike
			Lanius	*excubitor*	Northern Shrike
	VIREONIDAE				
			Vireo	*bellii*	Bell's Vireo
			Vireo	*solitarius*	Blue-headed Vireo (Solitary)
			Vireo	*flavifrons*	Yellow-throated Vireo
			Vireo	*philadelphicus*	Philadelphia Vireo
			Vireo	*olivaceus*	Red-eyed Vireo
	CORVIDAE				
			Perisoreus	*canadensis*	Gray Jay
			Cyanocitta	*cristata*	Blue Jay
			Corvus	*brachyrhynchos*	American Crow
			Corvus	*corax*	Common Raven

Bird Species Found on St. Croix Wetland Management District (Continued)

Order	Family	Subfamily	Genus	Species	English name
	ALAUDIDAE				
			Eremophila	*alpestris*	Horned Lark
	HIRUNDINIDAE				
		Hirundininae			
			Progne	*subis*	Purple Martin
			Tachycineta	*bicolor*	Tree Swallow
			Stelgidopteryx	*serripennis*	Northern Rough-winged Swallow
			Riparia	*riparia*	Bank Swallow
			Petrochelidon	*pyrrhonota*	Cliff Swallow
			Hirundo	*rustica*	Barn Swallow
	PARIDAE				
			Poecile	*atricapillus*	Black-capped Chickadee
			Baeolophus	*bicolor*	Tufted Titmouse
	SITTIDAE				
		Sittinae			
			Sitta	*canadensis*	Red-breasted Nuthatch
			Sitta	*carolinensis*	White-breasted Nuthatch
	CERTHIIDAE				
		Certhiinae			
			Certhia	*americana*	Brown Creeper
	TROGLODYTIDAE				
			Thryothorus	*ludovicianus*	Carolina Wren
			Troglodytes	*aedon*	House Wren
			Troglodytes	*troglodytes*	Winter Wren
			Cistothorus	*platensis*	Sedge Wren
			Cistothorus	*palustris*	Marsh Wren
	REGULIDAE				
			Regulus	*satrapa*	Golden-crowned Kinglet
			Regulus	*calendula*	Ruby-crowned Kinglet
	SYLVIIDAE				
		Polioptilinae			
			Polioptila	*caerulea*	Blue-gray Gnatcatcher

Bird Species Found on St. Croix Wetland Management District (Continued)

Order	Family	Subfamily	Genus	Species	English name
	TURDIDAE				
			Sialia	*sialis*	Eastern Bluebird
			Catharus	*fuscescens*	Veery
			Catharus	*minimus*	Gray-cheeked Thrush
			Catharus	*ustulatus*	Swainson's Thrush
			Catharus	*guttatus*	Hermit Thrush
			Hylocichla	*mustelina*	Wood Thrush
			Turdus	*migratorius*	American Robin
	MIMIDAE				
			Dumetella	*carolinensis*	Gray Catbird
			Mimus	*polyglottos*	Northern Mockingbird
			Toxostoma	*rufum*	Brown Thrasher
	STURNIDAE				
			Sturnus	*vulgaris*	European Starling
	MOTACILLIDAE				
			Anthus	*rubescens*	American Pipit
			Anthus	*spinoletta*	Water Pipit
	BOMBYCILLIDAE				
			Bombycilla	*garrulus*	Bohemian Waxwing
			Bombycilla	*cedrorum*	Cedar Waxwing
	PARULIDAE				
			Vermivora	*pinus*	Blue-winged Warbler
			Vermivora	*peregrina*	Tennessee Warbler
			Vermivora	*celata*	Orange-crowned Warbler
			Vermivora	*ruficapilla*	Nashville Warbler
			Dendroica	*petechia*	Yellow Warbler
			Dendroica	*pensylvanica*	Chestnut-sided Warbler
			Dendroica	*magnolia*	Magnolia Warbler
			Dendroica	*tigrina*	Cape May Warbler
			Dendroica	*caerulescens*	Black-throated Blue Warbler
			Dendroica	*coronata*	Yellow-rumped Warbler
			Dendroica	*virens*	Black-throated Green Warbler
			Dendroica	*fusca*	Blackburnian Warbler

Bird Species Found on St. Croix Wetland Management District (Continued)

Order	Family	Subfamily	Genus	Species	English name
			Dendroica	*pinus*	Pine Warbler
			Dendroica	*palmarum*	Palm Warbler
			Dendroica	*castanea*	Bay-breasted Warbler
			Dendroica	*striata*	Blackpoll Warbler
			Dendroica	*cerulea*	Cerulean Warbler
			Mniotilta	*varia*	Black-and-white Warbler
			Setophaga	*ruticilla*	American Redstart
			Protonotaria	*citrea*	Prothonotary Warbler
			Seiurus	*aurocapilla*	Ovenbird
			Seiurus	*noveboracensis*	Northern Waterthrush
			Seiurus	*motacilla*	Louisiana Waterthrush
			Oporornis	*formosus*	Kentucky Warbler
			Oporornis	*agilis*	Connecticut Warbler
			Oporornis	*philadelphia*	Mourning Warbler
			Geothlypis	*trichas*	Common Yellowthroat
			Wilsonia	*citrina*	Hooded Warbler
			Wilsonia	*pusilla*	Wilson's Warbler
			Wilsonia	*canadensis*	Canada Warbler
			Icteria	*virens*	Yellow-breasted Chat
	THRAUPIDAE				
			Piranga	olivacea	Scarlet Tanager
	EMBERIZIDAE				
			Pipilo	erythrophthalmus	Eastern Towhee (Rufous-sided)
			Spizella	*arborea*	American Tree Sparrow
			Spizella	*passerina*	Chipping Sparrow
			Spizella	*pallida*	Clay-colored Sparrow
			Spizella	*pusilla*	Field Sparrow
			Chondestes	*grammacus*	Lark Sparrow
			Passerculus	*sandwichensis*	Savannah Sparrow
			Ammodramus	*savannarum*	Grasshopper Sparrow
			Ammodramus	*henslowii*	Henslow's Sparrow
			Ammodramus	*leconteii*	Le Conte's Sparrow
			Passerella	*iliaca*	Fox Sparrow
			Melospiza	*melodia*	Song Sparrow

Bird Species Found on St. Croix Wetland Management District (Continued)

Order	Family	Subfamily	Genus	Species	English name
			Melospiza	*lincolnii*	Lincoln's Sparrow
			Melospiza	*georgiana*	Swamp Sparrow
			Zonotrichia	*albicollis*	White-throated Sparrow
			Zonotrichia	*querula*	Harris's Sparrow
			Zonotrichia	*leucophrys*	White-crowned Sparrow
			Junco	*hyemalis*	Dark-eyed Junco
			Calcarius	*lapponicus*	Lapland Longspur
			Plectrophenax	nivalis	Snow Bunting
	CARDINALIDAE				
			Cardinalis	*cardinalis*	Northern Cardinal
			Pheucticus	*ludovicianus*	Rose-breasted Grosbeak
			Passerina	*cyanea*	Indigo Bunting
			Spiza	*americana*	Dickcissel
	ICTERIDAE				
			Dolichonyx	*oryzivorus*	Bobolink
			Agelaius	*phoeniceus*	Red-winged Blackbird
			Sturnella	*magna*	Eastern Meadowlark
			Sturnella	*neglecta*	Western Meadowlark
			Xanthocephalus	*xanthocephalus*	Yellow-headed Blackbird
			Euphagus	*carolinus*	Rusty Blackbird
			Euphagus	*cyanocephalus*	Brewer's Blackbird
			Quiscalus	*quiscula*	Common Grackle
			Molothrus	*ater*	Brown-headed Cowbird
			Icterus	*spurius*	Orchard Oriole
			Icterus	*galbula*	Baltimore Oriole
	FRINGILLIDAE				
		Carduelinae			
			Pinicola	*enucleator*	Pine Grosbeak
			Carpodacus	*purpureus*	Purple Finch
			Carpodacus	*mexicanus*	House Finch
			Loxia	*curvirostra*	Red Crossbill
			Loxia	*leucoptera*	White-winged Crossbill
			Carduelis	*flammea*	Common Redpoll
			Carduelis	*hornemanni*	Hoary Redpoll

Bird Species Found on St. Croix Wetland Management District (Continued)

Order	Family	Subfamily	Genus	Species	English name
			Carduelis	*pinus*	Pine Siskin
			Carduelis	*tristis*	American Goldfinch
			Coccothraustes	*vespertinus*	Evening Grosbeak
	PASSERIDAE				
			Passer	*domesticus*	House Sparrow

Prairie Plants Found on St. Croix Wetland Management District

Common Name	Scientific Name
Arrow Leaved Aster	*(Aster sagittifolius)*
Aspen	*(Populus tremuloides)*
Beard tongue	*(Penstomen digitalis)*
Bergamot	*(Monarda fistulosa)*
Black Eyed Susan	*(Rudbeckia hirta)*
Blue Vervain	*(Verbena hastata)*
Boneset	*(Eupatorium perfoliatum)*
Broom Sedge	*(Carex scoparia)*
Canada Goldenrod	*(Solidago canadensis)*
Canada Milkvetch	*(Astragalus canadensis)*
Common Milkweed	*(Asclepias syriaca)*
Common Plaintain	*(Plantago major)*
Common Ragweed	*(Ambrosia artemisifolia)*
Cup Plant	*(Silphium perfoliatum)*
Curly Dock	*(Rumex crispus)*
Daisy Fleabane	*(Erigeron strigosus)*
Early Goldenrod	*(Solidago juncea)*
Figwort	*(Scrophularia lanceolata)*
Fireweed	*(Epilobium angustifolium)*
Five Fingered Cinquefoil	*(Potentilla recta)*
Fox Sedge	*(Carex vulpinoidea)*
Giant Goldenrod	*(Solidago gigantea)*
Giant Hyssop	*(Agastache Hyssopus)*
Giant St. John's Wort	*(Hypericum grandiflorum)*
Golden Alexanders	*(Zizia aurea)*
Grass Leaved Goldenrod	*(Euthamia graminifolia)*
Gray Headed Coneflower	*(Ratibida pinnata)*
Hedge Nettle	*(Stachys palustris)*
Hoary Vervain	*(Verbena stricta)*
Horse weed, marestail	*(Conyza canadensis)*
Indian Grass	*(Sorghastrum nutans)*

Prairie Plants Found on St. Croix Wetland Management District (Continued)

Common Name	Scientific Name
Ironweed	*(Vernonia fasciculata)*
Little Bluestem	*(Schizachyrium scoparius)*
New England Aster	*(Aster novae-angliae)*
Oval Sedge	*(Carex scoparia)*
Ox Eye Sunflower	*(Heliopsis helianthoides)*
Path Rush	*(Juncus tenuis)*
Prairie Bush Clover	*(Lespedeza capitata)*
Prairie Cinquefoil	*(Potentilla arguta)*
Prairie Tickseed, crowfoot	*(Coreopsis palmata)*
Raspberry	*(Rubus idaeus/strigosus)*
Rigid Goldenrod	*(Solidago rigida)*
Sawtooth Sunflower	*(Hilianthus grosseserratus)*
Sheep Sorrel	*(Rumex acetosella)*
Shepherd's Purse	*(Capsella bursar pastoris)*
Showy Goldenrod	*(Solidago speciosa)*
Showy Tick Trefoil	*(Desmodium canadense)*
Silver Cinquefoil	*(Potentilla argentea)*
Sky Blue Aster	*(Aster azureus)*
Switch Grass	*(Panicum virgatum)*
Tall Lettuce	*(Lactuca canadensis)*
Wild Lettuce	*(Lactuca canadensis)*
Wild Rye	*(Elymus canadensis)*
Yarrow	*(Achillea millefolium)*
Yellow Avens	*(Geum aleppicum)*
Yellow Rocket	*(Barbarea vulgaris)*

Plants Found in WPA Wetlands, St. Croix Wetland Management District

Common Name	Scientific Name
Emergent Plants	
Arrowhead	*Sagittaria spp.*
Bedstraw	*Galium spp.*
Beggar-ticks	*Bidens spp.*
Blue flag	*Iris versicolor*
Bulrush	*Scirpus spp.*
Bur-reed	*Sparganium eurycarpum*
Cattail	*Typha spp.*
Cyperus sedges	*Cyperus spp.*
Grasses	*Family: Gramineae*
Horsetail	*Equisetum spp.*
Loosestrife	*Lysimachia spp.*
Mint	*Mentha spp.*
Reed canary grass	*Phalaris arundinacea*
Rushes	*Juncus spp.*
Sedges	*Carex spp.*
Skullcap	*Scutellaria lateriflora*
Spike-rush	*Eleocharis spp.*
Stichwort	*Stellaria longifolia*
Stinging nettle	*Urtica spp.*
Swamp milkweed	*Asclepias incarnata*
Sweet-flag	*Acorus calamus*
Three-way sedge	*Dulichium arundinaceum*
Water-hemlock	*Cicuta bulbifera*
Water-horehound or Bugleweed	*Lycopus spp.*
Water-parsnip	*Sium suave*
Willows	*Salix spp.*
Wool-grass	*Scirpus cyperinus*
Submersed Plants	
Bladderwort	*Utricularia spp.*
Buttercup or Crowfoot	*Ranunculus spp.*

Plants Found in WPA Wetlands, St. Croix Wetland Management District (Continued)

Common Name	Scientific Name
Coon's-tail or Hornwort	*Ceratophyllum demersum*
Curly pondweed	*Potamogeton crispus*
Flat-stemmed pondweed	*Potamogeton zosteriformis*
Floating pondweed	*Potamogeton natans*
Pondweeds	*Potamogeton spp.*
Sago pondweed	*Potamogeton pectinatus1*
Stonewort or Muskgrass	*Chara spp.*
Variable-leaved pondweed	*Potamogeton gramineus*
Water-milfoil	*Myriophyllum sibiricum*
Water-nymph	*Najas flexilis*
Waterweed	*Elodea canadensis*
Waterwort	*Elatine spp.*
White-stemmed pondweed	*Potamogeton praelongus*
Floating-leaved Plants	
Giant duckweed	*Spirodela polyrrhiza*
Liverwort	*Riccia fluitans*
Small duckweed	*Lemna minor*
Smartweed	*Polygonum spp.*
Star duckweed	*Lemna trisulca*
Water-meal	*Wolffia spp.*
Water-shield	*Brasenia schreberi*
Yellow water-lily	*Nuphar spp.*

Weeds Found/Non-native Species, St. Croix Wetland Management District

Common Name	Scientific Name
Alfalfa, Vernal	*(Medicago sativa)*
Alsike Clover	*(Trifolium hybridum)*
Bladder Campion	*(Lychnis alba)*
Bull Thistle	*(Cirsium vulgare)*
Canada Thistle	*(Cirsium arvense)*
Cheeses	*(Malva neglecta)*
Common Brome	*(Bromus inermis)*
Common St. John's Wort	*(Hypericum perforatum)*
Curly Dock	*(Rumex crispus)*
Dandelion	*(Taraxacum officinale)*
Hawks-Beard	*(Crepis tectorum)*
Hoary Alyssum	*(Berteroa incana)*
Kentucky Blue Grass	*(Poa pratensis)*
Ladino Clover	*(Trifolium repens)*
Maximillian Sunflower	*(Helianthus maximilianii)*
Mouse-ear Chickweed	*(Stellaria media)*
Mugwort	*(Artemisia vulgaris)*
Nodding Thistle	*(Carduus nutans)*
Pineapple Weed	*(Matricaria discoidea)*
Poor Man's Pepper	*(Lepidium virginicum)*
Red Clover	*(Trifolium pratense)*
Red Fescue	*(Festuca rubra)*
Redtop	*(Agrostis stolonifera)*
Reed Canary Grass	*(Phalaris arundinacea)*
Rough Fruited Cinquefoil	*(Potentilla norvegica)*
Siberian Elm	*(Ulmus pumila)*
Sow Thistle, field	*(Sonchus arvensis)*
Sweet Clover, Yellow	*(Melilotus officinalis)*

Weeds Found/Non-native Species, St. Croix Wetland Management District (Continued)

Common Name	Scientific Name
Tansy	*(Tanacetum vulgare)*
Timothy	*(Phleum pratense)*
Velvet Leaf	*(Abutilon theophrasti)*
Wood Sorel	*(Oxalis stricta)*

Appendix D: Regional Conservation Priority Species

Regional Conservation Priority Species, St. Croix Wetland Management District

Comman Name	Scientific Name	Habitat	Rare/ Declining	Recreational/ Economic Value	Nuisance	Tribal/ Trust
Amphibians						
Hellbender	*Cryptobranchus allenganiensis*		✔			
Birds						
American Bittern	*Botaurus lentiginosus*	Grasslands	✔			
American Woodcock	*Scolopax minor*	Shrublands/ Wet Meadow	✔	✔		
Bald Eagle	*Haliaeetus leucocephalus*	Marshes				✔
Black Tern	*Chlidonias niger*	Marshes	✔			
Black-billed Cuckoo	*Coccyzus erythropthalmus*	Shrublands/ Savanna	✔			
Blue-winged Teal	*Anas discors*	Grasslands		✔		
Bobolink	*Dolichonyx oryzivorus*	Grasslands	✔			
Buff-breasted Sandpiper	*Tryngites subruficollis*	Grasslands/ Marshes	✔			
Canada Goose – Eastern Prairie population	*Branta canadensis*	Marshes		✔		
Canada Goose – Giant population	*Branta canadensis*	Marshes		✔		
Canada Goose – Urban giants	*Branta canadensis*	Marshes		✔	✔	
Canada Warbler	*Wilsonia canadensis*	Forest	✔			
Canvasback	*Aythya valisineria*	Marshes		✔		
Common Loon	*Gavia immer*	Marshes	✔			
Common Moorhen	*Gallinula chloropus*	Marshes	✔			
Common Tern – Great Lakes pop.	*Sterna hirundo*	Marshes	✔			
Connecticut Warbler	*Oporornis agilis*	Shrublands	✔			
Dickcissel	*Spiza americana*	Grasslands	✔			
Double-crested Cormorant	*Phalacrocorax auritus*	Marshes			✔	
Eastern Meadowlark	*Sturnella magna*	Grasslands	✔			

Regional Conservation Priority Species, St. Croix Wetland Management District (Continued)

Comman Name	Scientific Name	Habitat	Rare/ Declining	Recreational/ Economic Value	Nuisance	Tribal/ Trust
Field Sparrow	*Spizella pusilla*	Grasslands/ Shrublands	✔			
Forster's Tern	*Sterna forsteri*	Marshes	✔			
Golden-winged Warbler	*Vermivora chrysoptera*	Shrublands	✔			
Grasshopper Sparrow	*Ammodramus savannarum*	Grasslands	✔			
Greater Yellowlegs	*Tringa melanoleuca*	Shrublands/ Marshes/Wet Meadow	✔			
Hudsonian Godwit	*Limosa haemastica*	Marshes	✔			
Kentucky Warbler	*Oporornis formosus*	Forest	✔			
Le Conte's Sparrow	*Ammodramus leconteii*	Grasslands/ Wet Meadow	✔			
Least Bittern	*Ixobrychus exilis*	Marshes	✔			
Lesser Scaup	*Aythya affinis*	Marshes	✔	✔		
Loggerhead Shrike	*Lanius ludovicianus*	Grasslands/ Shrublands	✔			
Long-eared Owl	*Asio otus*	Savanna	✔			
Louisiana Waterthrush	*Seiurus motacilla*	Forest	✔			
Mallard	*Anas platyrhynchos*	Grasslands		✔		
Marbled Godwit	*Limosa fedoa*	Grasslands/ Marshes/Wet Meadow	✔			
Nelson's Sharp-tailed Sparrow	*Ammodramus nelsoni*	Marshes/Wet Meadow	✔			
Northern Flicker	*Colaptes auratus*	Forest/grass-lands	✔			
Northern Goshawk	*Accipiter gentilis*	Forest	✔			
Northern Harrier	*Circus cyaneus*	Grasslands	✔			
Northern Pintail	*Anas acuta*	Grasslands	✔	✔		
Olive-sided Flycatcher	*Contopus cooperi*	Forest	✔			
Orchard oriole	*Icterus spurius*	Shrublands/ Savanna	✔			
Peregrine Falcon	*Falco peregrinis anatum*	Grasslands/ Marshes	✔	✔		

Regional Conservation Priority Species, St. Croix Wetland Management District (Continued)

Comman Name	Scientific Name	Habitat	Rare/ Declining	Recreational/ Economic Value	Nuisance	Tribal/ Trust
Prothonotary warbler	*Protonotaria citrea*	Forest/ Marshes	✔			
Red-headed woodpecker	*Melanerpes erythrocephalus*	Forest	✔			
Red-shouldered hawk	*Buteo lineatus*	Forest	✔			
Sedge wren	*Cistothorus platensis*	Wet Meadow	✔			
Short-billed dowitcher	*Limnodromus griseus*	Marshes	✔			
Short-eared owl	*Asio flammeus*	Grasslands	✔			
Snow Goose	*Chen caerulescens*	Marshes		✔	✔	
Stilt sandpiper	*Calidris himantipus*	Marshes	✔			
Trumpeter swan	*Cygnus buccinator*	Marshes	✔	✔		
Upland sandpiper	*Bartramia longicauda*	Grasslands	✔			
Western meadowlark	*Sturnella neglecta*	Grasslands	✔			
Whimbrel	*Numenius phaeopus*	Grasslands/ Marshes	✔			
Whip-poor-will	*Caprimulgus vociferus*	Savanna	✔			
Wilson's phalarope	*Phalaropus tricolor*	Marshes	✔			
Wood duck	*Aix sponsa*	Forest/ Marshes		✔		
Wood thrush	*Hylocichla mustelina*	Forest	✔			
Yellow rail	*Coturnicops noveboracensis*	Wet Meadow	✔			
Rusty crayfish	*Orconectes rusticus*	Marshes/Riverine			✔	
Brook trout - Inland population	*Salvelinus fontinalis*	Riverine	✔	✔		✔
Dakota skipper	*Hesperia dacotae*	Grasslands	✔			
Karner blue butterfly	*Lycaeides melissa samuelis*	Grasslands				
Ottoe skipper	*Hesperia ottoe*	Grasslands	✔			
Gray wolf	*Canis Lupus*	Forest/Grasslands				✔

Regional Conservation Priority Species, St. Croix Wetland Management District (Continued)

Comman Name	Scientific Name	Habitat	Rare/ Declining	Recreational/ Economic Value	Nuisance	Tribal/ Trust
Prairie bush-clover	*Lespedeza leptostachya*	Grasslands				
Roundstem foxglove	*Agalinus gattingeri*	Grasslands/ Savanna	✔			
Snail (V.bollesiana)	*V.bollesiana*		✔			
Snail (V. cristata)	*V. cristata*		✔			
Snail (V. morsei)	*V. morsei*		✔			
Snail (V. paradoxa)	*V. paradoxa*		✔			

Appendix E: Compliance Requirements

Compliance Requirements

Rivers and Harbor Act (1899) (33 U.S.C. 403)

Section 10 of this Act requires the authorization by the U.S. Army Corps of Engineers prior to any work in, on, over, or under a navigable water of the United States.

Antiquities Act of 1906. 16 U.S.C. 431 et seq.

Authorizes the scientific investigation of antiquities on Federal land and provides penalties for unauthorized removal of objects taken or collected without a permit.

Migratory Bird Treaty Act, 16 U.S.C. 703 et seq.

Designates the protection of migratory birds as a Federal responsibility. This Act enables the setting of seasons, and other regulations including the closing of areas, Federal or non Federal, to the hunting of migratory birds.

Migratory Bird Conservation Act, 16 U.S.C. 715 et seq.

Establishes procedures for acquisition by purchase, rental, or gift of areas approved by the Migratory Bird Conservation Commission.

Fish and Wildlife Coordination Act 16 U.S.C. 661 et seq. (1934)

Requires that the Fish and Wildlife Service and State fish and wildlife agencies be consulted whenever water is to be impounded, diverted or modified under a Federal permit or license. The Service and State agency recommend measures to prevent the loss of biological resources, or to mitigate or compensate for the damage. The project proponent must take biological resource values into account and adopt justifiable protection measures to obtain maximum overall project benefits. A 1958 amendment added provisions to recognize the vital contribution of wildlife resources to the Nation and to require equal consideration and coordination of wildlife conservation with other water resources development programs. It also authorized the Secretary of Interior to provide public fishing areas and accept donations of lands and funds.

Migratory Bird Hunting Stamp Act. Also known as the Duck Stamp Act, 16 U.S.C. 718 et seq. (1934)

Requires every waterfowl hunter 16 years of age or older to carry a stamp and earmarks proceeds of the Duck Stamps to buy or lease waterfowl habitat. A 1958 amendment authorizes the acquisition of small wetland and pothole areas to be designated as 'Waterfowl Production Areas,' which may be acquired without the limitations and requirements of the Migratory Bird Conservation Act.

Historic Sites, Buildings and Antiquities Act. Also known as the Historic Sites Act of 1935, 16 U.S.C. 461 et seq.

Declares it a national policy to preserve historic sites and objects of national significance, including those located on refuges. Provides procedures for designation, acquisition, administration, and protection of such sites.

Refuge Revenue Sharing Act,16 U.S.C. 715s (1935)

Requires revenue sharing provisions to all fee-title ownerships that are administered solely or primarily by the Secretary through the Service.

Transfer of Certain Real Property for Wildlife Conservation Purposes Act, 16 U.S.C. 667b-667d (1948)

Provides that upon a determination by the Administrator of the General Services Administration, real property no longer needed by a Federal agency can be transferred without reimbursement to the Secretary of Interior if the land has particular value for migratory birds, or to a State agency for other wildlife conservation purposes.

Federal Records Act of 1950, 44 U.S.C. 31

Directs the preservation of evidence of the government's organization, functions, policies, decisions, operations, and activities, as well as basic historical and other information.

Fish and Wildlife Act of 1956, 16 U.S.C. 742a et seq.

Established a comprehensive national fish and wildlife policy and broadened the authority for acquisition and development of refuges.

Refuge Recreation Act, 16 U.S.C. 460k et seq. (1962)

Allows the use of refuges for recreation when such uses are compatible with the refuge's primary purposes and when sufficient funds are available to manage the uses.

Wilderness Act of 1964, 16 U.S.C. 1131 et seq.

Directed the Secretary of Interior, within 10 years, to review every roadless area of 5,000 or more acres and every roadless island (regardless of size) within National Wildlife Refuge and National Park Systems and to recommend to the President the suitability of each such area or island for inclusion in the National Wilderness Preservation System, with final decisions made by Congress. The Secretary of Agriculture was directed to study and recommend suitable areas in the National Forest System.

Land and Water Conservation Fund Act of 1965, 16 U.S.C. 460 et seq.

Uses the receipts from the sale of surplus Federal land, outer continental shelf oil and gas sales, and other sources for land acquisition under several authorities.

National Wildlife Refuge System Administration Act of 1966, 16 U.S.C. 668dd, 668ee

Defines the National Wildlife Refuge System and authorizes the Secretary to permit any use of a refuge provided such use is compatible with the major purposes for which the refuge was established. The Refuge Improvement Act clearly defines a unifying mission for the Refuge System; establishes the legitimacy and appropriateness of the six priority public uses (hunting, fishing, wildlife observation and photography, or environmental education and interpretation); establishes a formal process for determining compatibility; established the responsibilities of the Secretary of Interior for managing and protecting the System; and requires a Comprehensive Conservation Plan for each refuge by the year 2012. This Act amended portions of the Refuge Recreation Act and National Wildlife Refuge System Administration Act of 1966.

National Historic Preservation Act, 16 U.S.C. 470 et seq. (1966)

Establishes as policy that the Federal Government is to provide leadership in the preservation of the nation's prehistoric and historic resources. Section 106 requires Federal agencies to consider impacts their undertakings could have on historic properties; Section 110 requires Federal agencies to manage historic properties, e.g., to document historic properties prior to destruction or damage; Section 101 requires Federal agencies to consider Indian tribal values in historic preservation programs, and requires each Federal agency to establish a program leading to inventory of all historic properties on its land.

Architectural Barriers Act of 1968, 42 U.S.C. 4151 et seq.

Requires federally owned, leased, or funded buildings and facilities to be accessible to persons with disabilities.

National Environmental Policy Act of 1969, 42 U.S.C. 4321 et seq.

Requires the disclosure of the environmental impacts of any major Federal action significantly affecting the quality of the human environment.

Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970, 42 U.S.C. 4601 et seq.

Provides for uniform and equitable treatment of persons who sell their homes, businesses, or farms to the Service. The Act requires that any purchase offer be no less than the fair market value of the property.

Endangered Species Act of 1973, 16 U.S.C. 1531 et seq.

Requires all Federal agencies to carry out programs for the conservation of endangered and threatened species.

Rehabilitation Act of 1973, 29 U.S.C. 701 et seq.

Requires programmatic accessibility in addition to physical accessibility for all facilities and programs funded by the Federal government to ensure that anybody can participate in any program.

Archaeological and Historic Preservation Act 16 U.S.C.469-469c

Directs the preservation of historic and archaeological data in Federal construction projects.

Clean Water Act of 1977, 33 U.S.C. 1251

Requires consultation with the Corps of Engineers (404 permits) for major wetland modifications.

Surface Mining Control and Reclamation Act of 1977, 30 U.S.C. 1201 et seq.

Regulates surface mining activities and reclamation of coal-mined lands. Further regulates the coal industry by designating certain areas as unsuitable for coal mining operations.

Executive Order 11988 (1977)

Each Federal agency shall provide leadership and take action to reduce the risk of flood loss and minimize the impact of floods on human safety, and preserve the natural and beneficial values served by the floodplains.

Executive Order 11990

Executive Order 11990 directs Federal agencies to (1) minimize destruction, loss, or degradation of wetlands and (2) preserve and enhance the natural and beneficial values of wetlands when a practical alternative exists.

Executive Order 12372 (Intergovernmental Review of Federal Programs)

Directs the Service to send copies of the Environmental Assessment to State Planning Agencies for review.

American Indian Religious Freedom Act, 42 U.S.C. 1996, 1996a (1976)

Directs agencies to consult with native traditional religious leaders to determine appropriate policy changes necessary to protect and preserve American Indian religious cultural rights and practices.

Fish and Wildlife Improvement Act of 1978, 16 U.S.C. 742a

Improves the administration of fish and wildlife programs and amends several earlier laws including the Refuge Recreation Act, the National Wildlife Refuge System Administration Act, and the Fish and Wildlife Act of 1956. It authorizes the Secretary to accept gifts and bequests of real and personal property on behalf of the United States. It also authorizes the use of volunteers on Service projects and appropriations to carry out a volunteer program.

Archaeological Resources Protection Act of 1979, 16 U.S.C. 470aa et seq.

Protects materials of archaeological interest from unauthorized removal or destruction and requires Federal managers to develop plans and schedules to locate archaeological resources.

Farmland Protection Policy Act, Public Law 97-98, 7 U.S.C. 4201 (1981)

Minimizes the extent to which Federal programs contribute to the unnecessary and irreversible conversion of farmland to nonagricultural uses.

Emergency Wetlands Resources Act of 1986, 16 U.S.C. 3901 et seq.

Promotes the conservation of migratory waterfowl and offsets or prevents the serious loss of wetlands by the acquisition of wetlands and other essential habitats.

Federal Noxious Weed Act of 1974, 7 U.S.C. 2801 et seq.

Requires the use of integrated management systems to control or contain undesirable plant species, and an interdisciplinary approach with the cooperation of other Federal and State agencies.

Native American Graves Protection and Repatriation Act, 25 U.S.C. 3001 et seq. (1990)

Requires Federal agencies and museums to inventory, determine ownership of, and repatriate cultural items under their control or possession.

Americans with Disabilities Act of 1990, 42 U.S.C. 12101 et seq.

Prohibits discrimination in public accommodations and services.

Executive Order 12898 (1994)

Establishes environmental justice as a Federal government priority and directs all Federal agencies to make environmental justice part of their mission. Environmental justice calls for fair distribution of environmental hazards.

Executive Order 12996 Management and General Public Use of the National Wildlife Refuge System (1996)

Defines the mission, purpose, and priority public uses of the National Wildlife Refuge System. It also presents four principles to guide management of the System.

Executive Order 13007 Indian Sacred Sites (1996)

Directs Federal land management agencies to accommodate access to and ceremonial use of Indian sacred sites by Indian religious practitioners, avoid adversely affecting the physical integrity of such sacred sites, and where appropriate, maintain the confidentiality of sacred sites.

National Wildlife Refuge System Improvement Act of 1997, 16 U.S.C. 668dd

Considered the "Organic Act of the National Wildlife Refuge System. Defines the mission of the System, designates priority wildlife-dependent public uses, and calls for comprehensive refuge planning. Section 6 requires the Service to make a determination of compatibility of existing, new and changing uses of Refuge land; and Section 7 requires the Service to identify and describe the archaeological and cultural values of the refuge.

National Wildlife Refuge System Volunteer and Community Partnership Enhancement Act of 1998, 16 U.S.C. 742a Amends the Fish and Wildlife Act of 1956 to promote volunteer programs and community partnerships for the benefit of national wildlife refuges, and for other purposes.

National Trails System Act, 16 U.S.C. 1241 et seq. (1968)

Assigns responsibility to the Secretary of Interior and thus the Service to protect the historic and recreational values of congressionally designated National Historic Trail sites.

Treasury and General Government Appropriations Act, Pub. L. 106-554, §1(a)(3), Dec. 21, 2000, 114 Stat. 2763, 2763A–125

In December 2002, Congress required federal agencies to publish their own guidelines for ensuring and maximizing the quality, objectivity, utility, and integrity of information that they disseminate to the public (44 U.S.C. 3502). The amended language is included in Section 515(a). The Office of Budget and Management (OMB) directed agencies to develop their own guidelines to address the requirements of the law. The Department of the Interior instructed bureaus to prepare separate guidelines on how they would apply the Act. The U.S. Fish and Wildlife Service has developed "Information Quality Guidelines" to address the law.

Cultural Resources and Historic Preservation

The National Wildlife Refuge System Improvement Act of 1997, Section 6, requires the Service to make a determination of compatibility of existing, new and changing uses of Refuge land; and Section 7 requires the Service to identify and describe the archaeological and cultural values of the refuge.

The National Historic Preservation Act (NHPA), Section 106, requires Federal agencies to consider impacts their undertakings could have on historic properties; Section 110 requires Federal agencies to manage historic properties, e.g., to document historic properties prior to destruction or damage; Section 101 requires Federal agencies consider Indian tribal values in historic preservation programs, and requires each Federal agency to establish a program leading to inventory of all historic properties on its land.

The Archaeological Resources Protection Act of 1979 (ARPA) prohibits unauthorized disturbance of archeological resources on Federal and Indian land; and other matters. Section 10 requires establishing "a program to increase public awareness" of archeological resources. Section 14 requires plans to survey lands and a schedule for surveying lands with "the most scientifically valuable archaeological resources." This Act requires protection of all archeological sites more than 100 years old (not just sites meeting the criteria for the National Register) on Federal land, and

requires archeological investigations on Federal land be performed in the public interest by qualified persons.

The Native American Graves Protection and Repatriation Act of 1990 (NAGPRA) imposes serious delays on a project when human remains or other cultural items are encountered in the absence of a plan.

The American Indian Religious Freedom Act (AIRFA) iterates the right of Native Americans to free exercise of traditional religions and use of sacred places.

EO 13007, Indian Sacred Sites (1996), directs Federal agencies to accommodate access to and ceremonial use, to avoid adverse effects and avoid blocking access, and to enter into early consultation.

Appendix F: Compatibility Determinations

In accordance with the Refuge Improvement Act of 1997, no uses for which the Service has authority to regulate may be allowed on a unit of the Refuge System unless it is determined to be compatible. A compatible use is a use that, in the sound professional judgment of the refuge or wetland management district manager, will not materially interfere with or detract from the fulfillment of the National Wildlife Refuge System mission or the purposes of the national wildlife refuge or wetland management district. Managers must complete a written compatibility determination for each use, or collection of like-uses, that is signed by the manager and the Regional Chief of Refuges in the respective Service region. Draft compatibility determinations applicable to uses described in this CCP were published with the Draft CCP and EA and received 30 days of public review.

Signed compatibility determinations are on file at St. Croix Wetland Management District for the following activities:

- Collection of Edible Wild Plant Foods for Personal Use
- Cooperative Farming
- One-time Recognition Dedication Cermemonies on Waterfowl Production Areas
- Disability Access to Waterfowl Production Areas
- Use of WPAs for Fire Department Training: Burning Structures
- Interpretation and Environmental Education
- Recreational Fishing
- Establishing Food Plots for Resident Wildlife
- Controlled Grazing on Waterfowl Production Areas and Conservation Easements
- Haying
- Hunting Resident Game and Furbearers
- Installation of Bird Nest Boxes or Structures by Individuals or Organized Groups
- Wildlife Observation and Photography (Including the Means of Access such as Hiking, Snowshoeing, Cross-country Skiing and Canoeing
- Research by a Third Party
- Placement of New, Small Parking Areas on Waterfowl Production Areas
- Short-term Upland Disturbance for Highway or Other Public Interest Projects with No ROW Expansion and Full Restoration
- Wood Cutting/Timber Harvest
- Trapping of Furbearers
- Placement of Wetland Accesses/Ramps in Support of Priority Public Use

Compatibility determinations were recently approved and are available for review for: 1) hazardous fuels reduction using mechanical methods in the wildland urban interface, and 2) prairie re-establishment on WPAs using short-term farming agreements.

Appendix G: Literature Cited

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Appendix H: RONS and MMS

Unfunded District Projects and Operational Needs, St. Croix WMD

Project Number	Project Title	Estimated Cost ($1,000s)
00001	Enhance Public Use Program	119
00002	Community outreach, Visitor Information and Environmental Education	135
00003	Provide Quality Information to Rapidly Expanding Community and Public Users	108
00004	Tallgrass Prairie Ecosystem Biologist	149
00005	Develop a Time Saving, Quality Index Vegetation Sampling Method for Prairie Grasslands	98
00006	Develop Parking Lots and Foot Access to WPAs to Encourage Public Use	103
00008	Establish Science Based Studies to Monitor Migratory Bird Use of WPAs	113
00009	Establish Biological Laboratory and Library	81
00010	Provide Quality Wildlife Experiences for the Visiting Public and Law Enforcement Protection	129
00012	Minimum Refuge Operations Needs	105
97001	Provide Exceptional Wildlife Viewing with Wheelchair Access	64
97004	Establish Local Origin Native Prairie Seed Nursery for Prairie Restoration	106
97007	Prairie Restoration on WPAs, Conservation and Habitat Easements	119
97012	Reclaiming Wetlands and Upland Habitats on WPAs Plus Conservation and Habitat Easements	87
99008	Archeological Review of Waterfowl Production Areas Scheduled for Development	54
99013	Identify and Monitor Invertebrates, Reptiles, Amphibians and Fish Populations on WPAs	103
99016	Control of Noxious Weeds, Exotic Species and Woody Invaders	136
99017	Facilitating Wetland and Upland Habitat Restoration and Management Within WMD	184
99022	Expand District Prescribed Burning Capability	60

St. Croix WMD Deferred Maintenance and Construction Projects

Project Title	Estimated Cost ($1,000s)
Replace St. Croix Maintenance Shop Building	400
Replace St. Croix District Office and Visitor Information Facilities	632
Replace Calf Barn at Prairie Flats South WPA	83
Rehabilitate Steffens Access Road FHWA	53
Rehabilitate St. Croix WMD Parking Lots (Rte 903)	32
Rehabilitate Betterly WPA Service Trail	45
Residence lead paint removal	5
Fence Removal on St. Croix County WPAs	30
Fence Removal on Polk County WPAs	30
Fence Removal on Dunn county WPAs	30
Replace Equipment Storage Building Prairie Flats South WPA	134
Visitor Information Facilities	168
Expand St. Croix WMD Parking Lots	38
Construct Accessible Viewing Platform	67
Install Boundary Signs on WPAs	40

Appendix I: List of Preparers

List of Preparers

District Staff

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Appendix J: Response to Comments Received on the Draft Comprehensive Conservation Plan

Response to Comments Received on the Draft Comprehensive Conservation Plan

During the comment period for the Draft CCP, two comments, one oral and one written, were received from individuals and a comment letter was received from the Wisconsin Department of Natural Resources (see pages 136-137).

Comments

- The individuals included complimentary comments toward the District program and one expressed endorsement of the preferred alternative.

  Response: We truly appreciate the support.

- An individual expressed concern over the number of acres of cool season grasslands that were being broken up, which results in a loss of nesting cover.

  Response: We presented our plans for breaking up the grass fields on page 42 in the Draft CCP. Cool season grass fields are broken up to prepare fields for conversion to warm season grass/forb cover. Warm season grasses and forbs provide a much more diverse mix of species than cool season exotic grasses such as brome. We have considered the pros and cons of farming 600 acres at a time and concluded that it is better to convert as many acres of cool season grass fields as possible while nesting habitat was available in adjacent idle fields through the Conservation Reserve Program.

- An individual expressed the concern that not enough of the existing oaks will be left standing on the Kostka WPA and the day time deer population will be diminished.

  Response: Most of the trees that will be removed in the oak savanna restoration on the Kostka WPA are non-oak species such as aspen, Siberian elm, box elder, and buckthorn. Some of the red oaks that form a thick understory below the burr oaks will be removed in an effort to return the oak savanna to its historical state. The restored habitat, whether it is native prairie or oak savanna will still provide suitable deer habitat. The Service's goal is to provide waterfowl and grassland bird habitat on the WPAs, and this habitat will also provide many benefits for other wildlife species including deer.

- An individual asked what restrictions, particularly related to dogs, would be in place to protect the summer and spring nesting populations.

  Response: Access to WPAs is limited to foot access only to protect summer and spring nesting populations. Our regulations require that dogs on WPAs must be on a leash unless engaged in legal hunting activities.

Wisconsin Department of Natural Resources

We appreciate the Department's support of our management goals. We will continue to work, as noted in Chapter 5, with the Department and other conservation organizations within our shared conservation mission. We respond below to each of the bulleted points of the Department's letter.

First bullet – The Service WMD offices integrate Joint Venture documents into their planning and implementation of habitat management and restoration activities as discussed under "Migratory Bird Conservation Initiatives" in Chapter 3 of the CCP. Acquisition funding and available properties vary each year, so it is difficult to set specific wetland protection goals by wetland habitat type and acreage in support of the Joint Venture.

The Service considers waterfowl, grassland birds, species of concern, threatened and endangered species, and other trust species in making habitat management decisions. To be more explicit, the rationale under Objective 2.4 has been modified to add the State's Species of Greatest Conservation Need in its management considerations. Other species are also considered in management decisions but the priority is trust species.

Second bullet – We agree that increased coordination to achieve common goals will be beneficial to all parties involved and lead to a landscape approach

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August 22, 2008



Leopold Wetland Management District
Attention: CCP Comment
W10040 Cascade Mountain Road
Portage, WI 53901

St. Croix Wetland Management District
Attention: CCP Comment
1764 95th Street
New Richmond, WI 54017

Subject: Leopold and St. Croix WMD Comprehensive Conservation Plan

Dear Mr. Lenz and Mr. McConnell:

Thank you for the opportunity to comment on the Leopold Wetland Management District (WMD) and St. Croix WMD Comprehensive Conservation Plans (CCP). As these plans note, the two WMD's share issues and a joint planning process was used to develop the individual CCP's. Because of these shared issues, the following comments are made regarding both CCP's, unless otherwise noted.

The Wisconsin Department of Natural Resources (Department) supports the primary management goals listed in Chapter 4 of each plan. We encourage the U.S. Fish and Wildlife Service (Service) to work hand-in-hand with the Department and other conservation land groups to help maintain the integrity of the area's natural resources and in keeping with the legislative mandates within the National Wildlife Refuge System Improvement Act of 1997. In light of the shared mission we have to protect and promote natural resources, the Department and Service can benefit by working together on mutual goals.

More specifically:

- The Department is committed to the "all-bird" habitat goals and objectives of the recently revised Upper Mississippi River and Great Lakes Region Joint Venture (UMRGLRJV). We suggest that each CCP would be strengthened by a more prominent support of the UMRGLRJV goals and objectives by wetland habitat type and acreage. As the Service was heavily involved with the revision of the UMRGLRJV, it stands to reason that Service programs would integrate this important habitat initiative within their planning documents and habitat activities.

  Likewise, habitat work undertaken by the Service, both wetland and upland, should consider benefits to a variety of species, especially those focal species designated in the UMRGLRJV Implementation Plan or as Species of Greatest Conservation Need as designated in the Wisconsin Action Plan.

- Department and Service field staff and regional and state program administrators should meet on a regular basis to coordinate mutually beneficial activities and increase the awareness of each agency's initiatives, concerns, and ideas. Other habitat partners should be included in these meetings as appropriate.

- We support increased resource inventory and research, as the plan states, especially if data is collected by consistent and statistically valid means. Please work with the Department to facilitate, where appropriate, the cooperative collection of this mutually beneficial information to manage wildlife habitat.

- We are pleased that deer hunting continues to be allowed. In light of both the impact excessive deer can have on native species and ongoing concerns about chronic wasting disease (CWD) in Wisconsin, hunting offers a tool to control deer populations. As CWD management in Wisconsin evolves, the Department would seek USFWS cooperation in both research and management activities where applicable on Service properties.

- Modifications meant to improve visitor services on federal lands such as wildlife observation stations, parking lots, trails, or boardwalks should be evaluated as to their effect on key wildlife habitat and the ability of people to participate in other compatible uses, especially hunting. Physical modifications to federal properties should not negatively impact valuable wildlife habitat. Likewise, such modifications should, at a minimum, have a neutral affect on the ability of hunters to use the land or, preferably, should improve hunting opportunities.

- We are pleased that trapping is a compatible use at federal lands within each WMD. Besides providing a valuable resource harvested by Wisconsin trappers, trapping can benefit the production of grassland nesting bird species by the removal of predators.

- The control of non-native invasive species is an ongoing concern for habitat managers. Rather than stating a percentage of invasives to be controlled as is currently shown in the draft CCP's, it may be beneficial to consider a layered approach that takes into account the degree to which invasive species may be controlled, the relative impact presented by certain invasive species, and the quality of the property at which an invasive species may appear.

Again, thank you for the opportunity to comment on each CCP. The Department looks forward to working with the Service within these important areas in Wisconsin.

Sincerely,

Ricky Lien

Ricky Lien
Wetland Habitat Specialist
Bureau of Wildlife Management

cc: Tom Hauge – WM/6
Bill Vander Zouwen – WM/6
Eric Lobner – Fitchburg
Tami Ryan – Milwaukee
Jeff Pritzl – Green Bay
Kris Belling – Eau Claire
Mike Zeckmeister – Antigo

to conservation issues. Our support of coordinated efforts is acknowledged in our discussion of existing and future partnerships.

Third bullet – We, too, see the value in the coordination of data collection, which would provide better data. This is another example of benefits gained through partnerships.

Fourth bullet – The Service will continue to work with the Wisconsin DNR to address CWD concerns or management implications on WPAs.

Fifth bullet – Public uses on WPAs are evaluated for their compatibility with the purpose of the WPA. At the present time, the CCP proposes public use improvements such as trails, boardwalks, and observation platforms on only a limited number of WPAs. The majority of the WPAs will continue to be managed with few public use modifications. When compatible, hunting along with the other big six uses (fishing, wildlife observation, environmental education, interpretation, photography) are encouraged on WPAs. The Service also recognizes that promotion of the value of WPAs to all members of the public is an important part of reconnecting people with nature and supporting the intent of the National Wildlife Refuge Improvement Act of 1997.

Sixth bullet – Your continued support for trapping opportunities is noted.

Seventh bullet – Until complete invasive species inventories are conducted on each WPA it is difficult to determine the specific levels of control and the appropriate priority species. Priority for invasives control is stated in terms of attempting to control or limit invasive species in priority wetland and grassland habitat, because these are the most important habitat types for federal trust species.