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## **Rapid Ecological Assessment for the Fishery Areas within the Southern Washburn, Polk, and Barron County Planning Group**

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**A Rapid Ecological Assessment Focusing on Rare Plants, Selected Rare Animals, and High-quality Natural Communities**

**Properties included in this report are:**

Bear Lake Fish and Wildlife Area  
Behning Creek Fishery Area  
Parker Creek Fishery Area  
Sawyer Creek Fish and Wildlife Area  
Yellow River Fishery Area

Wisconsin's Natural Heritage Inventory Program  
Bureau of Endangered Resources  
Department of Natural Resources  
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**Cover Photo (clockwise from left):** Prairie skink (*Plestiodon septentrionalis*), Photo by A.B. Sheldon; showy lady’s-slipper (*Cypripedium reginae*), Photo by Thomas Meyer; golden-winged warbler (*Vermivora chrysoptera*), Photo by Brian Collins;

# Table of Contents

<b>Acknowledgments</b> .....	<b>2</b>
<b>Introduction</b> .....	<b>7</b>
Purpose and Objectives .....	7
Overview of Methods .....	7
Background on Past Efforts .....	10
Special Management Designations .....	10
Public Lands .....	10
<b>Regional Ecological Context</b> .....	<b>12</b>
Forest Transition Ecological Landscapes .....	12
Regional Biodiversity Needs and Opportunities.....	13
Rare Species of the Forest Transition Ecological Landscape .....	15
<b>Description of the Study Area</b> .....	<b>16</b>
Location and Size.....	16
Ecoregion.....	18
Physical Environment .....	20
Vegetation .....	21
Rare Species and High Quality Natural Communities of the Southern Washburn, Polk, and Barron County Planning Group .....	24
<b>Management Considerations and Opportunities for Biodiversity Conservation...</b>	<b>25</b>
Breeding Bird Diversity .....	25
Wetlands and Aquatic Features .....	26
Rare Herptiles .....	26
High Conservation Value Forests .....	27
Wisconsin’s Statewide Forest Strategy.....	28
Ecological Priorities for SGCN .....	29
Natural Community Management Opportunities.....	29
Invasive Species.....	29
<b>Primary Sites: Site-specific Opportunities for Biodiversity Conservation</b> .....	<b>31</b>
<b>Future Needs</b> .....	<b>33</b>
<b>Glossary</b> .....	<b>34</b>
<b>Species List</b> .....	<b>35</b>
<b>Reference List</b> .....	<b>36</b>
<b>Additional Resources</b> .....	<b>38</b>

## List of Figures

Figure 1. Location of Properties within the Fishery Areas within the Southern Washburn, Polk, and Barron County Planning Group .....	9
Figure 2. Ecological Landscapes of Wisconsin and the study area. ....	13
Figure 3. Landcover for the Fishery Areas of the Southern Washburn, Polk, and Barron County Planning Group from the Wisconsin DNR Wiscland GIS coverage (WDNR 1993).....	17
Figure 4. Landtype Associations for the Fishery Areas of the Southern Washburn, Polk, and Barron County Planning Group. ....	19
Figure 5. Vegetation for the Fishery Areas within the Southern Washburn, Polk, and Barron County Planning Group prior to Euro-American settlement. Data are from Finley (1976). ....	22
Figure 8. Primary Sites of the Fishery Areas within the Southern Washburn, Polk and Barron County Planning Group .....	32

## List of Tables

Table 1. Major Natural Communities Management Opportunities in the Forest Transition Ecological Landscape (EMPT 2007 and WDNR 2006) .....	14
Table 3. Listing Status for rare species in the Forest Transition Ecological Landscape as of 2009. Source is the NHI database. Listing Status is based on the Working List published April 2009. ....	15
Table 5. Documented rare species and high-quality natural communities for the Southern Washburn, Polk, and Barron County Planning Group. For an explanation of state and global ranks, as well as state status, see Appendix A. State status, tracking status, and ranks are based on the working list published June 1, 2011. Species with a “W” in the “Tracked by NHI” column are on the Watch List (see Appendix F) and are not mapped in the NHI database. Various sources were used to determine the Watch List species and SGCN present and this may not be a complete list.....	24

## Appendices

- A. Natural Heritage Inventory Methods Overview
- B. Map of Conservation Opportunity Areas for the North Central Forest and Northeast Sands Ecological Landscapes
- C. Documented rare species and high-quality natural communities for the Fishery Areas within the Southern Washburn, Polk, and Barron County Planning Group listed by property
- D. Descriptions for Rare Species and High Quality Natural Communities Documented on the Fishery Areas within the Southern Washburn, Polk, and Barron County Planning Group
- E. Fishery Areas within the Southern Washburn, Polk, and Barron County Planning Group Species of Greatest Conservation Need
- F. Wisconsin Natural Heritage Working List Explanation

G. Primary Sites within the Fishery Areas within the Southern Washburn, Polk, and Barron County Planning Group

H. Documented rare species and high-quality natural communities for the Fishery Areas within the Southern Washburn, Polk, and Barron County Planning Group listed by primary site.

## The Southern Washburn, Polk, and Barron County Planning Group At a Glance

### **Exceptional Characteristics of the Study Area**

- **Rare Animals and Plants.** The diverse habitats of the Southern Washburn, Polk, and Barren County Planning Group (SWPB) support numerous rare species. Twenty-four rare animal species are known from the SWPB, including, four State Threatened and 20 Special Concern species. Two rare plant species are known from the SWPB, including one State Threatened, and one Special Concern species.
- **Breeding Bird Diversity.** The upland and lowland forests and shubby, open, and marshy wetlands all support unique breeding bird assemblages that represent the heterogeneity of habitats within these small properties.
- **Wetlands and Aquatic Features.** Streams within the SWPB are prominent features on these properties and greatly influence the habitats around them. Wetlands are common along the streams, including both open and closed-canopied types. Springs and Spring Ponds are also unique aquatic resources that add to the overall diversity of the SWPB. Threats to wetland communities include disruption of hydrology, runoff from roads and adjacent agricultural areas, and invasive species.
- **Rare Herptiles.** The SWPB, located along the tension zone (Curtis 1959), has the potential to support a number of herptile species near their range limits. Other species that have the potential to be supported by these properties include salamanders, frogs, and reptiles.

### **Site Specific Opportunities for Biodiversity Conservation**

Five ecologically important sites were identified on the SWPB. These “Primary Sites” were delineated because they generally encompass the best examples of 1) rare and representative natural communities, 2) documented occurrences of rare species populations, and/or 3) opportunities for ecological restoration or connections. These sites warrant high protection and/or restoration consideration during the development of the property master plan.

- **Sawyer Creek – Beaver Lodge Pond.** This small site has diverse habitats along Sawyer Creek, including open, shrubby, and forested wetlands, seeps with spring ponds, and upland forests. These habitats have the potential to support numerous herptile species.
- **Sawyer Creek Springs.** This site surrounds Sawyer Creek Springs, a spring pond with an outlet tributary to the headwaters of Sawyer Creek. This site has the potential to support numerous herptile species.
- **Bear Lake Sedge Meadow.** This site is part of a complex of wetlands on Bear Lake. At the far south end of Bear Lake, outside of this Primary Site, is Bear Lake Sedge Meadow State Natural Area (SNA). This complex supports important habitat for grassland and marsh birds.
- **Yellow River Hardwood Swamp.** This site is dominated by wetland forests with many seeps along the Yellow River, a tributary to the Red Cedar River. These forests are very important to northern waterthrush and golden-winged warblers.
- **Parker Creek Sedge Meadow.** This small site is located on the western side of Parker Creek and includes a sedge meadow with black ash scattered throughout. This site supports habitat for declining grassland birds, in addition, the habitat just outside of the site also supports rare grassland birds.

# Introduction

## Purpose and Objectives

This report is intended to be used as a source of information for developing a new master plan for the Southern Washburn, Polk, and Barron County Planning Group (SWPB; Figure 1). The regional ecological context for the SWPB is also provided to assist in developing the Regional and Property Analysis that is part of the master plan. This assessment included only the Bureau of Fisheries Management managed properties. Properties managed by the Bureau of Wildlife Management will be inventoried at a later date. Properties included in this assessment are:

- Bear Lake Fish and Wildlife Area (REM-Bear Lake)
- Behning Creek Fishery Area
- Parker Creek Fishery Area
- Sawyer Creek Fish and Wildlife Area
- Yellow River Fishery Area

The primary objectives of this project were to collect biological inventory information relevant to the development of a master plan for the SWPB and to analyze, synthesize and interpret this information for use by the master planning team. This effort focused on assessing areas of documented or potential habitat for rare species and identifying natural community management opportunities.

Survey efforts for the SWPB were limited to a “rapid ecological assessment” for 1) identifying and evaluating ecologically important areas, 2) documenting rare species occurrences, and 3) documenting occurrences of high quality natural communities. This report can serve as the “Biotic Inventory” document used for master planning although inventory efforts were reduced compared to similar projects conducted on much larger properties such as state forests. There will undoubtedly be gaps in our knowledge of the biota of this property, especially for certain taxa groups; these groups have been identified as representing either opportunities or needs for future work.

## Overview of Methods

The Wisconsin Natural Heritage Inventory (NHI) program is part of the Wisconsin DNR’s Bureau of Endangered Resources and a member of an international network of natural heritage programs representing all 50 states, as well as portions of Canada, Latin America, and the Caribbean. These programs share certain standardized methods for collecting, processing, and managing data for rare species and natural communities. NatureServe, an international non-profit organization (see [www.NatureServe.org](http://www.NatureServe.org) for more information), coordinates the network.

Natural heritage programs track certain elements of biological diversity: rare plants, rare animals, high-quality examples of natural communities, and other selected natural features. The NHI Working List contains the elements tracked in Wisconsin. They include endangered, threatened, and special concern plants and animals, as well as the natural community types recognized by NHI. The NHI Working List is periodically updated to reflect new information about the rarity and distribution of the state’s plants, animals, and natural communities. The most recent Working List is available from the Wisconsin DNR website (*Wisconsin Natural Heritage Working List*).

The Wisconsin NHI program uses standard methods for biotic inventory to support master planning (Appendix A). Our general approach involves collecting relevant background information, planning and conducting surveys, compiling and analyzing data, mapping rare species and high quality natural

community locations into the NHI database, identifying ecologically important areas, and providing interpretation of the findings through reports and other means.

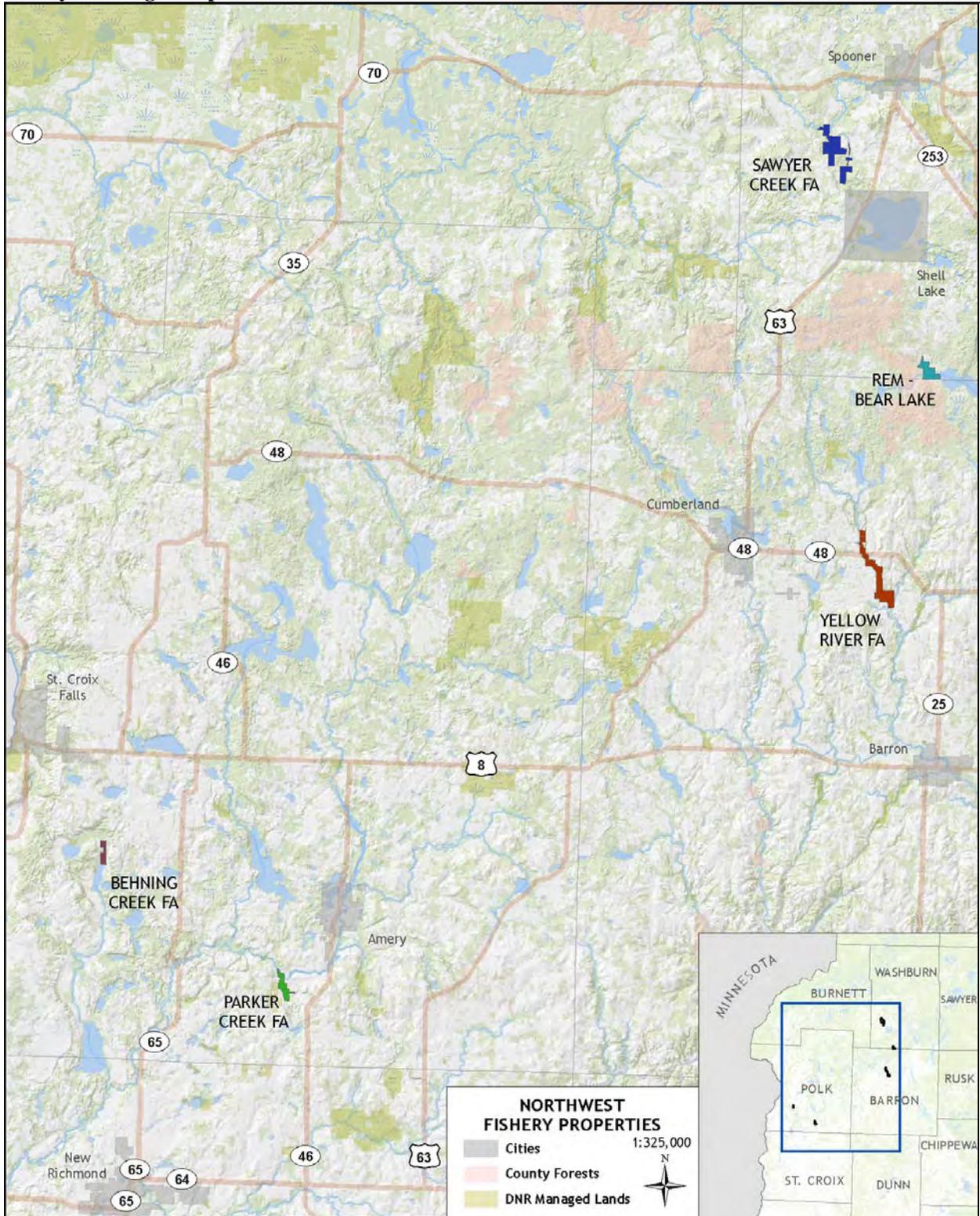
Existing NHI data are often the starting point for conducting a biotic inventory to support master planning. Prior to this project, NHI data for the SWPB were limited to: 1) the Statewide Natural Area Inventory, a county-by-county effort conducted by WDNR's Bureaus of Research and Endangered Resources between 1969 and 1984 that focused on natural communities but include some surveys for rare plants and animals and 2) taxa specific surveys.

The most recent taxa-specific field surveys for the study area were conducted during 2010. Surveys were limited in scope and focused on documenting high quality natural communities, rare plants, breeding birds, herptiles, aquatic and terrestrial invertebrates, and forest raptors. The collective results from all of these surveys were used, along with other information, to identify ecologically important areas (Primary Sites) on the SWPB.

Survey locations were identified or guided by using recent aerial photos, USGS 7.5' topographic maps, various Geographic Information System (GIS) sources, information from past survey efforts, discussions with property managers, and the expertise of several biologists familiar with the properties or with similar habitats in the region. Based on the location and ecological setting of properties within the SWPB, key inventory considerations included the identification of high quality wetlands and the location of habitats that had the potential to support rare species. Private lands, including easements, surrounding the SWPB were not surveyed.

Scientific names for all species mentioned in the text are included in a list on page 37.

**Figure 1. Location of Properties within the Fishery Areas within the Southern Washburn, Polk, and Barron County Planning Group**



## Background on Past Efforts

Various large-scale research and planning efforts have identified a number of locations within the SWPB as being ecologically significant. The following are examples of such projects and the significant features identified.

### Important Bird Area

Important Bird Areas (IBA; WDNR 2007) are critical sites for the conservation and management of Wisconsin's birds.

- Bear Lake Sedge Meadow, which includes Bear Lake Fish and Wildlife Area and Bear Lake Sedge Meadow SNA, is recognized for its extensive, high-quality sedge meadow habitats that support large populations of high conservation priority species.

### Wisconsin Wildlife Action Plan: Conservation Opportunity Areas

The Wisconsin Wildlife Action Plan (WAP; WDNR 2006) recognized one Conservation Opportunity Area (COA) within the SWPB (see Appendix B). Conservation Opportunity Areas are places in Wisconsin that contain ecological features, natural communities, or Species of Greatest Conservation Need (SGCN) habitat for which Wisconsin has a unique responsibility for protection when viewed from the global, continental, upper Midwest, or state perspective.

- The Yellow River, which crosses the Sawyer Creek Fish and Wildlife Area, was recognized as an aquatic COA because of the diverse aquatic communities present.

### Wisconsin Wetland Association Wetland Gems

No properties within the SWPB were recognized by the Wisconsin Wetlands Association (WWA) as "wetland gems" (WWA 2010), although the nearby Bear Lake Sedge Meadow SNA was. "Wetland gem" habitats are critically important to Wisconsin's biodiversity, provide nearby communities with valuable functions and services, and serve as recreational and educational opportunities. Bear Lake Sedge Meadow SNA was recognized as a wetland gem because of the extensive sedge meadow that provides important stopover habitat for migratory and rare birds.

### Forest Certification

All DNR-managed lands, including state parks, wildlife areas, and natural areas, are recognized by the Forest Stewardship Council and the Sustainable Forestry Initiative as being responsibly managed (WDNR 2009). This certification emphasizes the state's commitment to responsibly managing and conserving forestlands, supporting economic activities, protecting wildlife habitat, and providing recreational opportunities.

## Special Management Designations

**State Natural Areas** are places on the landscape that protect outstanding examples of native natural communities, significant geological formations, and archaeological sites. Designation confers a significant level of land protection through state statutes, administrative rules, and guidelines. State Natural Areas within the SWPB are:

- Bear Lake Sedge Meadow

## Public Lands

The Western Prairie Habitat Restoration Area (WPHRA) includes Parker Creek Fishery Area. The Western Prairie Habitat Restoration Area was established in 1999 and encompasses 350,000 acres within 15 townships in St. Croix and Polk Counties. The state-acquisition acreage goal of 15,000 acres will permanently protect approximately 10% of the historic grassland acreage within the project. Other public

lands within the area include county forests and DNR owned and eased lands. Within the WPHRA is the proposed Star Prairie Bird Conservation Area. Bird Conservation Areas attempt to encompass a block of at least 10,000 acres of public and/or private lands that includes approximately 25% of the area as key bird habitat.

# Regional Ecological Context

## Forest Transition Ecological Landscapes

*This section is largely reproduced from the Ecological Landscapes of Wisconsin Handbook (WDNR In Prep. a).*

The WDNR has mapped the state into areas of similar ecological potential and geography called Ecological Landscapes. The Ecological Landscapes are based on aggregations of smaller ecoregional units (Subsections) from a national system of delineated ecoregions known as the National Hierarchical Framework of Ecological Units (NHFEU) (Cleland et al. 1997). These ecoregional classification systems delineate landscapes of similar ecological pattern and potential for use by resource administrators, planners, and managers.

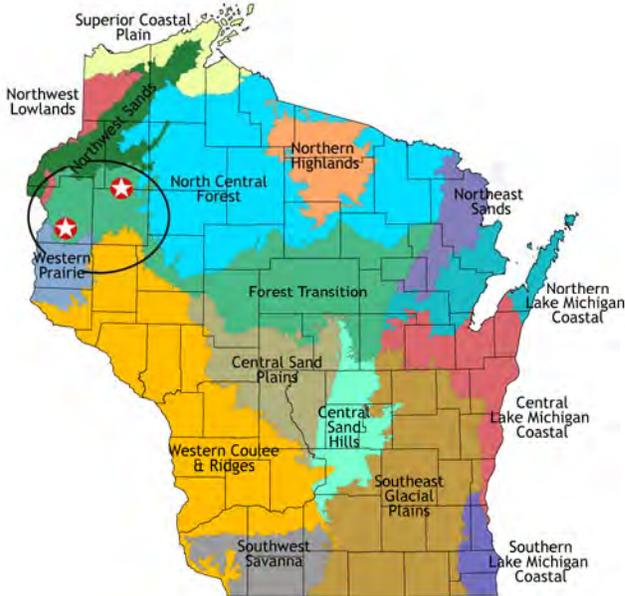
The majority of the SWPB is located in the Forest Transition Ecological Landscape (WDNR In Prep. a) (Figure 2). A very small part of the Sawyer Creek Fish and Wildlife Area is located in the Northwest Sands Ecological Landscape and a very small part of Behning Creek Fishery Area is located in the Western Prairie Ecological Landscape. The Forest Transition Ecological Landscape is the fourth largest Ecological Landscape in the state and stretches east to west across most of Wisconsin north of the Tension Zone. There are many lakes and wetlands; glacial till, in the form of till planes or moraines is deposited throughout.

The Forest Transition Ecological Landscape has lost approximately half of its historic forests, and is one of the most deforested landscapes north of the Tension Zone. Areas to the east remain heavily forested, the central areas are open and intensively farmed, and the western end is a mosaic of agricultural land, recreational land, and forest.

The historical vegetation of the Forest Transition was primarily northern hardwood and hemlock hardwood forests. These mesic forests were dominated by sugar maple (*Acer saccharum*) and hemlock (*Tsuga canadensis*), and contained some yellow birch (*Betula alleghaniensis*), red pine (*Pinus resinosa*), and white pine (*P. strobus*). Currently, 44% of this Ecological Landscape is forested compared to 86% forested before Euro-American settlement. Forested areas now consist primarily of northern hardwoods and aspen (*Populus* spp.), with smaller amounts of oak (*Quercus* spp.) and lowland hardwoods. Conifer and deciduous swamps are scattered throughout the Ecological Landscape and are often found near the headwaters of streams, and associated with lakes in kettle depressions on moraines. The eastern portion of the Ecological Landscape differs from the remainder being primarily forested and including numerous ecologically significant areas, some of which are extensive. The Ecological Landscape's flora shows characteristics of both northern and southern Wisconsin, corresponding to its position along the north side of the Tension Zone (Curtis 1959).

Small kettle lakes are common on the moraines in the western and eastern parts of the Ecological Landscape, but there are few lakes in the central glacial till plain. Several streams have their headwaters in the moraines. Many small creeks and rivers flow across the plain including the Big Rib, Little Rib, Trappe, and Wisconsin rivers. The St. Croix River is on the western edge of the Ecological Landscape.

**Figure 2. Ecological Landscapes of Wisconsin and the study area.**



## Regional Biodiversity Needs and Opportunities

Opportunities for sustaining natural communities in the Forest Transition Ecological Landscape were developed by the Ecosystem Management Planning Team (EMPT 2007) and later presented in the Wisconsin Wildlife Action Plan (WDNR 2006). The goal of sustaining natural communities is to manage for natural community types that 1) historically occurred in a given landscape and 2) have a high potential to maintain their characteristic composition, structure, and ecological function over a long period of time (e.g., 100 years). This list can help guide land and water management activities so that they are compatible with the local ecology of the Ecological Landscape while maintaining important components of ecological diversity and function. Based on EMPT’s criteria, these are the most appropriate community types that could be considered for management activities within the Forest Transition Ecological Landscape.

There are management opportunities for 23 natural communities in the North Central Forest Ecological Landscape. Of these, 8 are considered “major” opportunities (Table 1). A “major” opportunity indicates that the natural communities can be sustained in the Ecological Landscape, either because many significant occurrences of the natural community have been recorded in the landscape or major restoration activities are likely to be successful in maintaining the community’s composition, structure, and ecological function over a longer period of time. An additional 15 natural communities are considered “important” in this landscape. An “important” opportunity indicates that although the natural community does not occur extensively or commonly in the Ecological Landscape, one to several occurrences are present and are important in sustaining the community in the state. In some cases, important opportunities may exist because the natural community may be restricted to just one or a few Ecological Landscapes within the state and there may be a lack of opportunities elsewhere.

**Table 1.** Major Natural Communities Management Opportunities in the Forest Transition Ecological Landscape (EMPT 2007 and WDNR 2006)

Coldwater streams	Northern Mesic Forest	Warmwater rivers
Coolwater streams	Northern Wet Forest	Warmwater streams
Impoundments/Reservoirs	Northern Wet-mesic Forest	

## Rare Species of the Forest Transition Ecological Landscape

Numerous rare species are known from the Forest Transition Ecological Landscape. “Rare” species include all of those species that appear on the WDNR’s NHI Working List (*Wisconsin Natural Heritage Working List*) classified as “Endangered,” “Threatened,” or “Special Concern.” Table 3 lists the number of species known to occur in the North Central Forest based on information stored in the NHI database as of 2009.

**Table 2.** Listing Status for rare species in the Forest Transition Ecological Landscape as of 2009. Source is the NHI database. Listing Status is based on the Working List published April 2009.

Listing Status	Birds	Fishes	Herptiles	Invertebrates	Mammals	Plants	Total Fauna	Total Flora	Total Rare
WI Endangered	4	2	1	9	0	3	16	3	19
WI Threatened	5	8	2	7	0	9	22	9	31
WI Special Concern	11	9	3	28	6	43	57	43	100
U.S. Endangered	0	0	0	3	1	0	4	0	4
U.S. Threatened	0	0	0	0	0	0	0	0	0
U.S. Candidate	0	0	0	1	0	0	1	0	1

The Wisconsin Wildlife Action Plan denoted Species of Greatest Conservation Need (SGCN). Species of Greatest Conservation Need are animals that have low and/or declining populations that are in need of conservation action. They include various birds, fish, mammals, reptiles, amphibians, and invertebrates (e.g. dragonflies, butterflies, and freshwater mussels) that are:

- Already listed as threatened or endangered;
- At risk because of threats to their life history needs or their habitats;
- Stable in number in Wisconsin, but declining in adjacent states or nationally.
- Of unknown status in Wisconsin and suspected to be vulnerable.

There are 32 vertebrate SGCN significantly associated with the Forest Transition Ecological Landscape (See Appendix E). This means that the species is (and/or historically was) significantly associated with the Ecological Landscape, and restoration of natural communities this species is associated with in the Ecological Landscape would significantly improve conditions for the species.

# Description of the Study Area

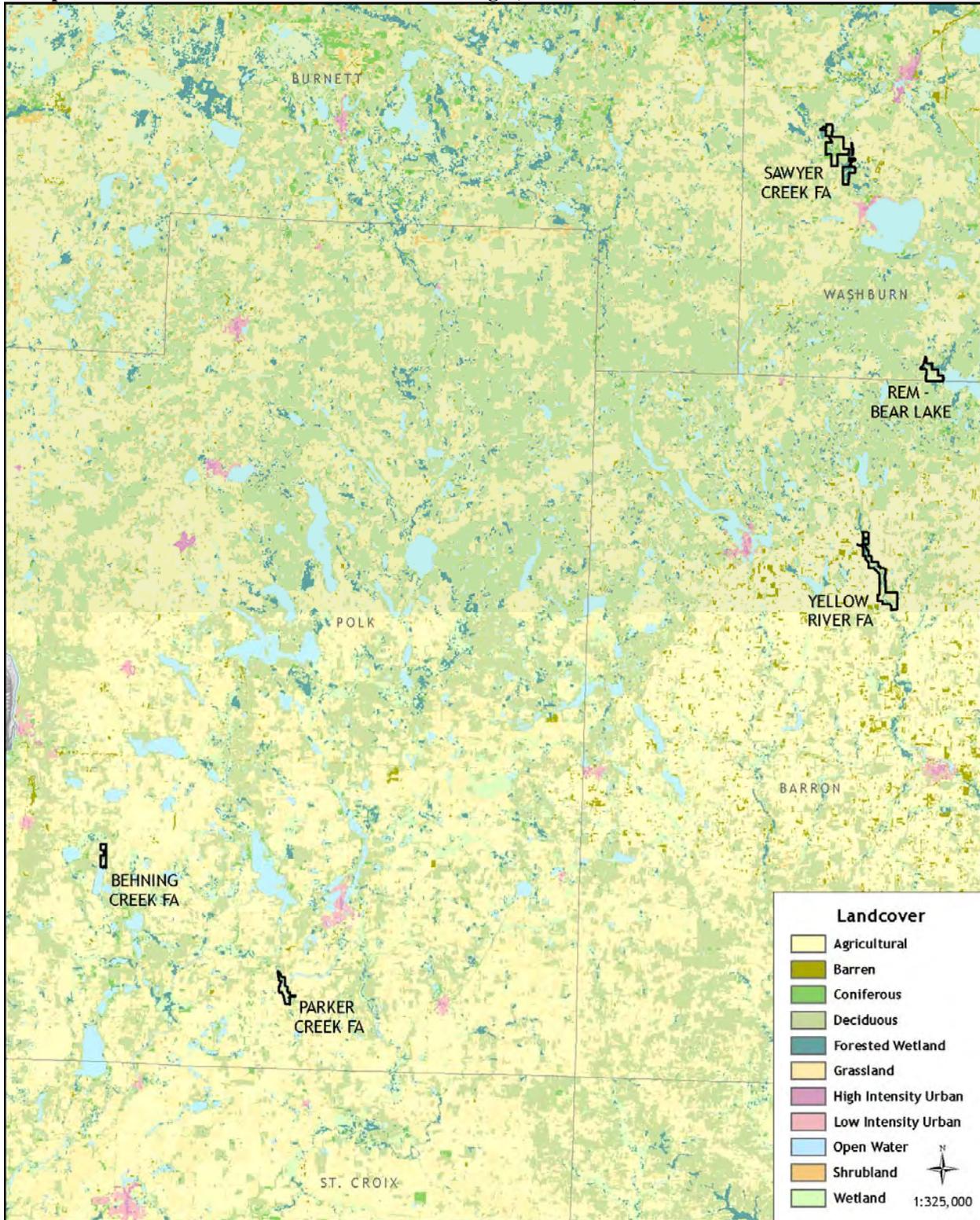
## Location and Size

Comprising ca. 2,069 acres, the SWPB is located in Washburn, Polk, and Barron counties in a morainal landscape that is a mix of forests and agricultural lands with lakes and rivers common (Figure 3).

Properties included in the SWPB are:

- **Bear Lake Fish and Wildlife Area** (262 acres) is located in south central Washburn County, on the west side of Bear Lake, about 5 miles northwest of the village of Haugen.
- **Behning Creek Fishery Area** (131 acres) is located in southwest Polk County about four miles southeast of the village of Dresser.
- **Parker Creek Fishery Area** (219 acres) is located in south central Polk County about 3 miles southwest of the city of Amery.
- **Sawyer Creek Fish and Wildlife Area** (744 acres) is located in southwest Washburn County about four miles southwest of the city of Spooner and one mile northwest of the city of Shell Lake.
- **Yellow River Fishery Area** (713 acres) is located in north central Barron County about 4 ½ miles east of the city of Cumberland.

**Figure 3. Landcover for the Fishery Areas of the Southern Washburn, Polk, and Barron County Planning Group from the Wisconsin DNR Wisland GIS coverage (WDNR 1993).**



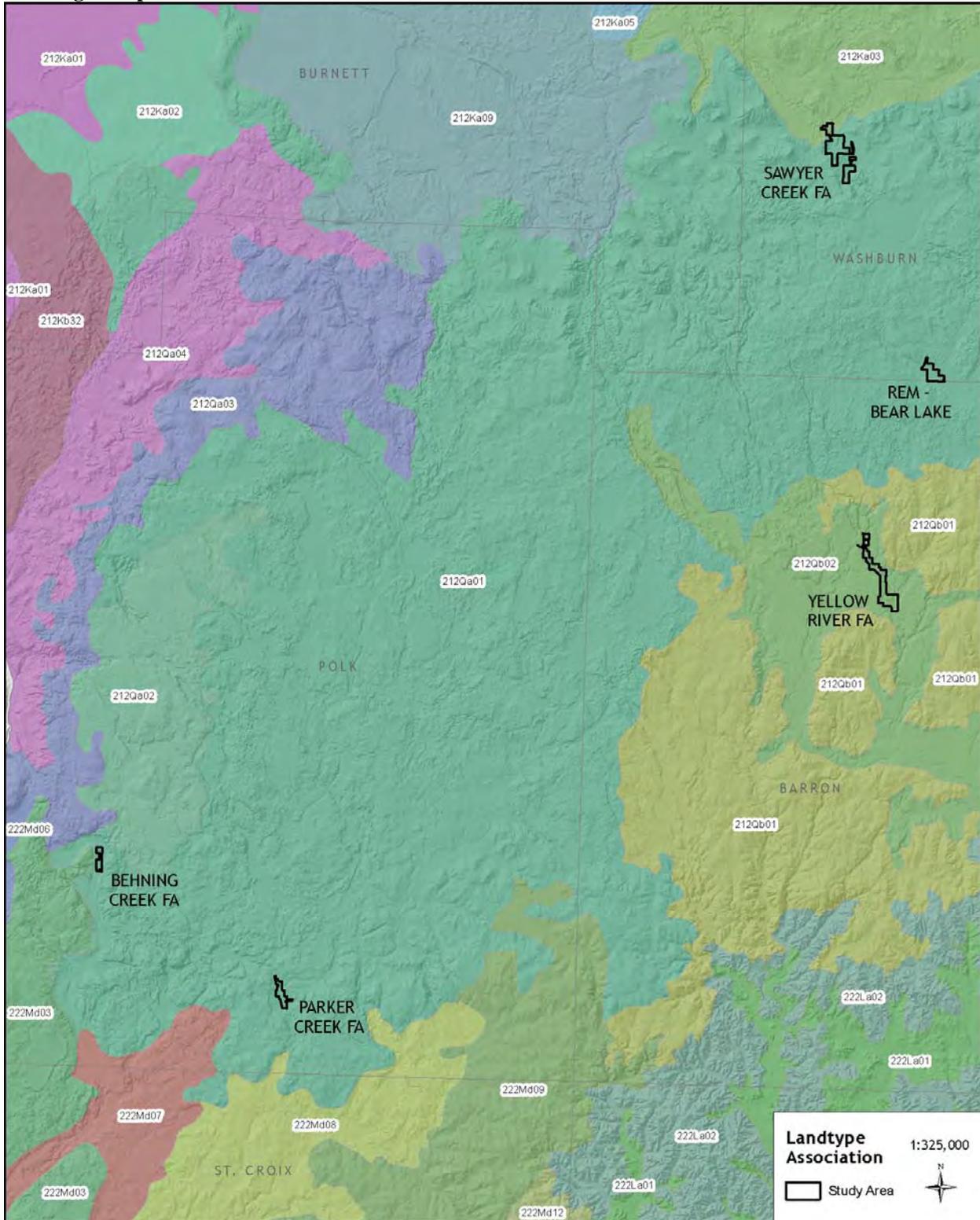
## Ecoregion

From the NHFEU, the St. Croix Moraine and Lincoln Formation Till Plain, Mixed Hardwoods Subsections are the most significant to this study area. Four Landtype Associations (LTA; Figure 4) are present within the study area. Landtype Associations represent an area of 10,000 – 300,000 acres and contain similarities of landform, soil, and vegetation.

The following Landtype Associations are within the study area:

- **Late St. Croix Moraines (212Qa01).** The characteristic landform pattern is rolling collapsed moraine interlaced with outwash terraces and intermixed with ice-walled lake plains. Soils are predominantly moderately well drained sandy loam over dense, acid sandy loam till. This LTA is approximately 61% of the SWPB.
- **Barron-Dobie Plains (212Qb02).** The characteristic landform pattern is nearly level outwash plain, with terraces and fans common. Soils are predominantly well drained silt loam over outwash. This LTA is approximately 34% of the SWPB.
- **Spooner Plains (212Ka03).** The characteristic landform pattern is undulating outwash plain with isolated morainic hills and ridges. Soils are predominantly well drained sand over outwash. This LTA is approximately 4% of the SWPB.
- **Somerset Moraines (212Jd07)** occupies an insignificant amount of the study area. This LTA is <1% of the SWPB.

**Figure 4. Landtype Associations for the Fishery Areas of the Southern Washburn, Polk, and Barron County Planning Group.**



# Physical Environment

## Geology, Landforms, and Glacial Geology

*This section is largely reproduced from the Ecological Landscapes of Wisconsin Handbook (WDNR In Prep. a).*

The St. Croix Moraine Subsection (Subsection 212Qa) includes much of the SWPB, except the Yellow River Fishery Area. It is predominantly a moraine and associated collapsed outwash of the Copper Falls Formation, Sylvan Lake Member. It was deposited by the southern part of the Superior Lobe during the latter part of the Wisconsin Glaciation, at approximately 18,500 to 15,000 years ago (timeframes are uncertain due to a lack of radiocarbon dates). The Superior Lobe was melting back at the time the land surface was formed, and there are at least 12 locations in Polk County where the ice margin stalled and built small morainal ridges (Johnson 2000). The till surface is hummocky due to the uneven deposition of till as it melted out of the ice sheet, and from the collapse of the surface after buried stagnant ice blocks melted. Sediment deposited by braided proglacial streams formed pitted (where deposited over stagnant ice) and unpitted outwash plains, terraces, and fans over much of the Subsection. Ice-walled and ice-dammed lake plains, formed from sediment deposited into glacial lakes within the ice margin, are common near the eastern edge of Polk County. Eskers were formed of gravel deposits by rivers flowing in subglacial tunnels.

The Yellow River Fishery Area is within the Lincoln Formation Till Plain, Mixed Hardwoods Subsection (Subsection 212Qb). This formation is a long narrow area in the central portion of the Forest Transition Ecological Landscape that is extremely variable and characterized by eroded till and outwash with sandstone outcrops. It is transitional between the Wisconsin Glaciation and the Illinoian, with some materials clearly linked to the Wisconsin glaciers, and others of uncertain origin that could be early Wisconsin or Illinoian deposits.

## Soils

*This section is largely reproduced from the Ecological Landscapes of Wisconsin Handbook (WDNR In Prep. a).*

In the St. Croix Moraine Subsection (Subsection 212Qa) most upland soils formed in reddish-brown non-calcareous dense sandy loam till on moraines, in loess over the till on moraines, in loamy alluvium over outwash sand and gravel on moraines and glacial drainageways, and in loamy to silty lacustrine material on lake plains. The dominant soil in this Subsection is moderately well drained and loamy with a sandy loam surface, moderately slow permeability, and moderate available water capacity. The soils range from well drained to somewhat poorly drained and generally have sand loam to silt loam surface textures, rapid to very slow permeability, and moderate to very high available water capacity. Most lowland soils are very poorly drained acid peat or non-acid muck, while some are poorly drained outwash sands and gravels, loamy till, or lacustrine deposits. The major river valleys have soils formed in sandy to loamy alluvium or non-acid muck, drainage classes that range from moderately well drained to very poorly drained, and areas subject to periodic flooding.

In the Lincoln Formation Till Plain, Mixed Hardwoods (Subsection 212Qb) most of the soils formed in outwash and in non-calcareous loamy till. The dominant soil in this Subsection is moderately well drained and loamy with a silt loam surface, moderate permeability, and moderate available water capacity. Most of the morainal upland soils on the north end of the Subsection formed in loess over reddish-brown non-calcareous dense sandy loam till. They range from well drained to somewhat poorly drained and generally

have silt loam surface textures, moderate to very slow permeability, and moderate available water capacity. Most lowland soils are very poorly drained acid peat or non-acid muck, poorly drained outwash sand and gravel, or loamy till. The major river valleys have soils formed in sandy to loamy alluvium or non-acid muck, range from moderately well drained to very poorly drained, and have areas subject to periodic flooding.

## Hydrology

The SWPB is within the Mississippi River basin and four watersheds. Behning and Parker Creek Fishery Areas are within the Lower Apple River watershed, a tributary to the St. Croix River; the Yellow River Fishery Area is within the Yellow River watershed; Bear Lake Fish and Wildlife Area is within the Brill and Red Cedar Rivers watershed; and Sawyer Creek Fish and Wildlife Area is within the Shell Lake and Upper Yellow River watershed.

Behning Creek and parts of Sawyer Creek are classified as a Class 1 trout streams, meaning they sustain a natural trout population and doesn't receive any stocking of hatchery trout. The Yellow River and parts of Sawyer Creek are classified as Class 2 trout streams, meaning they don't have enough natural reproduction and stocking is required to maintain the sport fishery. Parker Creek is classified as a Class 3 trout stream, meaning that there is no natural reproduction of trout and stocking is required to maintain the sport fishery.

Spring ponds are present at Sawyer Creek Fish and Wildlife Area and include Beaver Lodge Pond and Sawyer Creek Springs.

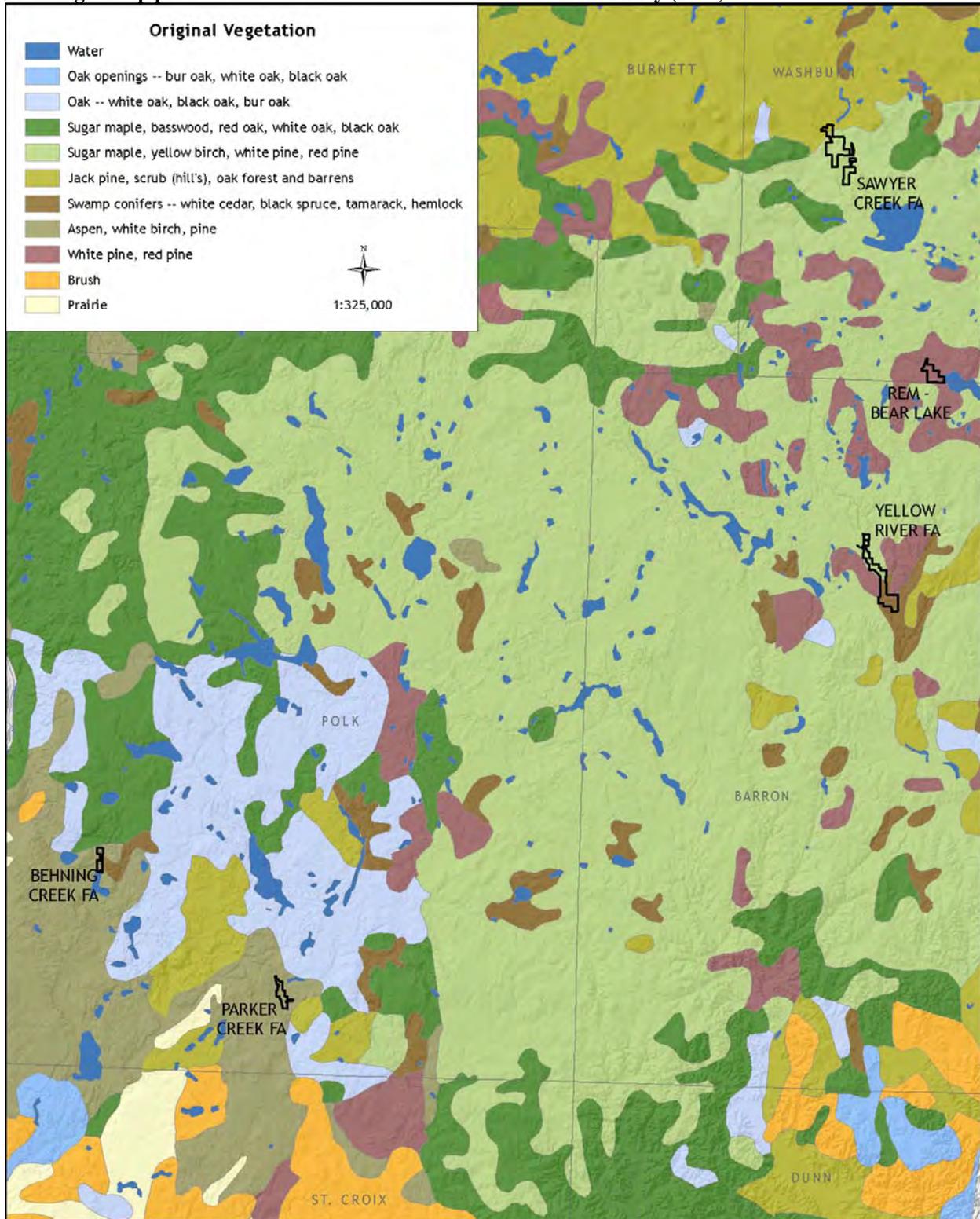
## Vegetation

### Historical Vegetation

Data from the original Public Land Surveys are often used to infer forest composition and tree species dominance for large areas in Wisconsin prior to widespread Euro-American settlement. The purpose of examining historical conditions is to identify ecosystem factors that formerly sustained species and communities that are now altered in number, size, or extent, or which have been changed functionally (for example, by constructing dams, or suppressing fires). Although data are limited to a specific snapshot in time, they provide valuable insights into Wisconsin's ecological capabilities. Maintaining or restoring some lands to more closely resemble historic systems and including some structural or compositional components of the historic landscape within actively managed lands can help conserve important elements of biological diversity (WDNR In Prep. a). Public Land Surveys for the area comprising the SWPB were conducted between 1846 and 1850.

The SWPB is located both north and south of the tension zone, a zone that separates two floristic provinces, the prairie-forest and the northern hardwoods (Curtis 1959). Finley's (1976) Pre-settlement Vegetation map (Figure 5) identifies the historical vegetation of the SWPB as diverse. Almost half of the area was described as a sugar maple, yellow birch, white pine, and red pine forest. Of almost equal importance were swamp conifers (northern white-cedar [*Thuja occidentalis*], black spruce [*Picea mariana*], tamarack [*Larix laricina*], hemlock); aspen, white birch (*Betula papyrifera*), and pine forests; and white and red pine forests. Of lesser importance were jack pine (*Pinus banksiana*) and Hill's oak (*Quercus ellipsoidalis*) forest and barrens. All of the aspen, white birch, and pine forests were found on Behning Creek and Parker Creek Fishery Areas.

Figure 5. Vegetation for the Fishery Areas within the Southern Washburn, Polk, and Barron County Planning Group prior to Euro-American settlement. Data are from Finley (1976).



## Current Vegetation

Many of the factors that historically impacted current vegetation, such as timber management and impacts from fires, continue to impact the study area today. Environmental factors including geology, soils, hydrology, and climate and emerging threats, such as exotic-invasive species also impact vegetation.

Yellow River and Sawyer Creek Fish and Wildlife Areas are the largest properties within the SWPB and the only ones for which WDNR forest reconnaissance data is available through the WisFIRS data system. According to WDNR forest reconnaissance data, 60% of Yellow River and Sawyer Creek Fish and Wildlife Areas is forested and 40% is non-forested. Within the forested acres, 32% of the stands are aspen, 26% are swamp hardwoods, 13% are white pine, and the remaining 30% of stands are comprised of seven different forest types.

The highest-quality natural communities currently on the SWPB are Hardwood Swamp and Northern Sedge Meadow. Hardwood Swamps are present on many of the SWPB properties with the forest at Yellow River Fishery Area being the highest quality. This forest is predominately black ash (*Fraxinus nigra*) dominated with tamarack (a few are dead-standing). One area of almost all black ash has canopy closure >80%. Other canopy species include white birch, green ash (*Fraxinus pennsylvanica*), yellow birch, American elm (*Ulmus americana*), box elder (*Acer negundo*), bur oak (*Quercus macrocarpa*), basswood (*Tilia americana*), and black cherry (*Prunus serotina*). The largest trees are 16-18" dbh tamarack. The tall shrub layer (mostly speckled alder [*Alnus incana*]) is moderately abundant. Cinnamon fern (*Osmunda cinnamomea*) is abundant. Canopy openings are common, some caused by die-off of tamarack, and typically have abundant speckled alder with reed canary grass (*Phalaris arundinacea*), common lake sedge (*Carex lacustris*), some cat-tail (*Typha* sp.), Joe-pye-weed (*Eupatorium maculatum*), common skullcap (*Scutellaria galericulata*), water smartweed (*Polygonum amphibium*), marsh fern (*Thelypteris palustris*), northern bedstraw (*Galium boreale*), northern blue flag (*Iris versicolor*), Canada anemone (*Anemone canadensis*), and orange jewelweed (*Impatiens capensis*).

Northern Sedge Meadow is best represented at Parker Creek Fishery Area and Bear Lake Fish and Wildlife Area. These areas are dominated by common lake sedge, woolly-fruit sedge (*Carex lasiocarpa*), and some bluejoint grass (*Calamagrostis canadensis*) with scattered tamarack, shrubs (willow [*Salix* spp. and speckled alder), black ash, and broad-leaved cat-tail (*Typha latifolia*). Other species present include joe-pye-weed, northern blue flag, bellflower (*Campanula aparinoides*), and the invasive purple loosestrife (*Lythrum salicaria*).

# Rare Species and High Quality Natural Communities of the Southern Washburn, Polk, and Barron County Planning Group

Multiple rare species and high-quality examples of native communities have been documented within the SWPB. Table 5 shows the rare species and high-quality natural communities currently known from the SWPB. Appendix C shows the rare species and high-quality natural communities currently known from the SWPB listed by property. See Appendix D for summary descriptions for the species and natural communities that occur on the SWPB.

**Table 3.** Documented rare species and high-quality natural communities for the Southern Washburn, Polk, and Barron County Planning Group. For an explanation of state and global ranks, as well as state status, see Appendix A. State status, tracking status, and ranks are based on the working list published June 1, 2011. Species with a “W” in the “Tracked by NHI” column are on the Watch List (see Appendix F) and are not mapped in the NHI database. Various sources were used to determine the Watch List species and SGCN present and this may not be a complete list.

Common Name	Scientific Name	Last Observed Date	State Rank	Global Rank	State Status	SGC N	Tracked by NHI
<b>Animal</b>							
American bittern	<i>Botaurus lentiginosus</i>	2009	S3B	G4	SC/M	Y	Y
American woodcock	<i>Scolopax minor</i>	2010	S3S4B	G5	SC/M	Y	W
bald eagle	<i>Haliaeetus leucocephalus</i>	2008	S4B,S4 N	G5	SC/P	Y	Y
black-billed cuckoo	<i>Coccyzus erythrophthalmus</i>	2010	S3S4B	G5	SC/M	Y	W
Blanding's turtle	<i>Emydoidea blandingii</i>	2010	S3S4	G4	THR	Y	Y
blue-winged warbler	<i>Vermivora pinus</i>	2010	S4B	G5	SC/M	Y	W
bobolink	<i>Dolichonyx oryzivorus</i>	2010	S3S4B	G5	SC/M	Y	W
Canada warbler	<i>Wilsonia canadensis</i>	2010	S3S4B	G5	SC/M	Y	W
eastern hog-nosed snake	<i>Heterodon platirhinus</i>	2010	S3S4	G5	SC/H	N	W
field sparrow	<i>Spizella pusilla</i>	2010	S3S4B	G5	SC/M	Y	W
golden-winged warbler	<i>Vermivora chrysoptera</i>	2010	S3S4B	G4	SC/M	Y	W
greater redhorse	<i>Moxostoma valenciennesi</i>	1993	S3	G4	THR	Y	Y
Le Conte's sparrow	<i>Ammodramus leconteii</i>	2010	S2S3B	G4	SC/M	Y	Y
least flycatcher	<i>Empidonax minimus</i>	2010	S4B	G5	SC/M	Y	W
merlin	<i>Falco columbarius</i>	2010	S3B,S2 N	G5	SC/M	N	W
northern goshawk	<i>Accipiter gentilis</i>	1981	S2B,S2 N	G5	SC/M	Y	Y
osprey	<i>Pandion haliaetus</i>	2010	S4B	G5	SC/M	Y	W
prairie skink	<i>Plestiodon septentrionalis</i>	2010	S3	G5	SC/H	Y	Y
pugnose shiner	<i>Notropis anogenus</i>	1975	S2	G3	THR	Y	Y
veery	<i>Catharus fuscescens</i>	2010	S3S4B	G5	SC/M	Y	W
weed shiner	<i>Notropis texanus</i>	1976	S3	G5	SC/N	N	Y
wood thrush	<i>Hylocichla mustelina</i>	2010	S4B	G5	SC/M	Y	W
wood turtle	<i>Glyptemys insculpta</i>	1981	S2	G4	THR	Y	Y
<b>Plants</b>							
bog bluegrass	<i>Poa paludigena</i>	2010*	S3	G3	THR	NA	Y
showy lady's-slipper	<i>Cypripedium reginae</i>	2010	S4	G4	SC	NA	W
<b>Natural Community</b>							
							Y

Hardwood Swamp		2010	S3	G4	NA	NA	Y
Northern Sedge Meadow		2010	S3	G4	NA	NA	Y
Stream--Slow, Hard, Cold		1982	SU	GNR	NA	NA	Y

# Management Considerations and Opportunities for Biodiversity Conservation

## Breeding Bird Diversity

The SWPB supports a breeding bird assemblage that represents the heterogeneity of the habitats within these small properties.

Upland forested habitats of the SWPB are important to many species, including those that are cavity-nesters such as great crested flycatcher and those that use dense shrubs such as golden-winged warbler. Other species present in the upland forests are wood thrush (*Hylocichla mustelina*), black-billed cuckoo (*Coccyzus erythrophthalmus*), Blackburnian warbler (*Dendroica fusca*), pileated woodpecker (*Dryocopus pileatus*), and yellow-throated vireo (*Vireo flavifrons*).

The overall bird community of the lowland forest is different than that of the upland, with a higher bird density and bird species diversity in the lowland forests. Dominant species of greater than 2% of the lowland forest community included 18 species. Many of the bird species these forests are important to are Species of Greatest Conservation Need and include veery (*Catharus fuscescens*), northern waterthrush (*Seiurus noveboracensis*), blue-winged warbler (*Vermivora pinus*), golden-winged warbler (*Vermivora chrysoptera*), sedge wren (*Cistothorus platensis*), Canada warbler (*Wilsonia canadensis*), and wood thrush. Snags within these lowland forests are important for great crested flycatchers (*Myiarchus crinitus*) and other cavity-nesting species. Maintaining vertical structural diversity within these forests is important for conservative species like the Canada warbler, veery, and wood thrush all of which require a dense shrub layer for nesting (WDNR 2006). Deer browse could pose a potential issue for these bird species if it results in the loss of a suitable shrub component (WDNR 2006).

Speckled alder dominated areas are common along the streams and rivers within the SWPB. These areas are important to northern waterthrush, golden-winged warbler, blue-winged warbler, alder flycatcher (*Empidonax alnorum*), and veery. Northern waterthrush, a neotropical migrant that is most common in Wisconsin north of the Tension Zone and associated with the boreal forests of Canada and Alaska, is a species that may be impacted due to climate changes.

Sedge meadows provide habitat for grassland birds including the Special Concern Le Conte's sparrow (*Ammodramus leconteii*). Other species associated with these bluejoint grass and sedge dominated areas are Wilson's snipe (*Gallinago delicata*), American bittern (*Botaurus lentiginosus*), sedge wren, yellow warbler (*Dendroica petechia*), common yellowthroat (*Geothlypis trichas*), clay-colored sparrow (*Spizella pallida*), swamp sparrow (*Melospiza georgiana*), and bobolink (*Dolichonyx oryzivorus*). Population declines of grassland birds are a concern for biologists and birders. Since the Federal Breeding Bird Survey began in 1966, grassland birds have declined more steeply than any other group of birds in North America and the Midwest (Askins et al. 2007; Sample and Mossman 1997).

Open, marshy areas within the wetland complexes provide habitat for common yellowthroat, sedge wren, swamp sparrow, song sparrow and red-winged blackbird. Baltimore oriole (*Icterus galbula*) and warbling

vireo (*Vireo gilvus*) were using larger trees at the edges of these marshy openings during surveys (Collins 2010).

## Wetlands and Aquatic Features

Streams within the SWPB are prominent features on these properties and greatly influence the habitats around them. Wetlands are common along the streams, including both open and closed-canopied types. Open wetlands are generally described as sedge meadows with high-quality examples found at Bear Lake Sedge Meadow and Parker Creek Sedge Meadow Primary Sites. Bog bluegrass (*Poa paludigena*), a State Threatened plant species, is known from sedge meadows of the SWPG. Often these high-quality examples are within a wetland complex that includes low-quality sedge meadow invaded by non-native invasives such as glossy buckthorn (*Rhamnus frangula*) and reed canary grass. Closed-canopy wetlands include Northern Hardwood Forests dominated by black ash and smaller areas of tamarack and black spruce dominated forests. Showy lady's-slipper (*Cypripedium reginae*), a Special Concern plant species, is known from these forests. A high-quality example of this type is at the Yellow River Hardwood Swamp Primary Site. As with the open wetlands, these forests are within a wetland complex that includes low-quality habitat. Non-native invasive plant species and tree die-off due to hydrological changes influence these areas.

Springs and Spring Ponds are also unique aquatic resources that add to the overall diversity of the SWPB. More research is needed to better understand the impacts previous management has had on the biotic diversity of these systems and how best to manage them in the future. Springs typically have high water clarity, low sedimentation, and are a stable system with very little change in water temperature, water flow, or chemical composition. They also contribute to high water quality of the streams they feed. These features are highly susceptible to damage, and land use practices that lead to soil or hydrological disturbance should be avoided. Recharge areas need to be identified and managed carefully if the springs and seeps are to remain functional.

Threats to wetland communities include disruption of hydrology, runoff from roads and adjacent agricultural areas, and invasive species. Especially problematic are non-native shrubs such as glossy buckthorn which convert diverse, open, graminoid-dominated wetlands to shrub thickets. Reed canary grass and non-native cat-tail (*Typha angustifolia* and *T. X glauca*) pose a particular threat to sedge meadows. Management to reduce invasive species in these areas is critical. Monitoring of invasive species before and after management would be beneficial to ensure activities are helping to meet overall restoration objectives.

## Rare Herptiles

The SWPB, located along the tension zone (Curtis 1959), has the potential to support a number of herptile species near their range limits. These species include both northern species at their southern range limit, including spotted salamander (*Ambystoma maculatum*), redback salamander (*Plethodon cinereus*), mink frog (*Lithobates septentrionalis*), and northern ring-necked snake (*Diadophis punctatus*), and more southern species at the northern extent of their global range, including eastern hog-nosed snake (*Heterodon platirhinos*), western fox snake (*Elaphe vulpina*), and brown snake (*Storeria dekayi*). At range limits species are generally thought to be encountering physical or physiological limits to successful competition, and are therefore more sensitive to stressors which may tip the balance of success at these limits. Because of this strong association and range limit status, these species should be excellent indicator species for environmental monitoring, including monitoring the effects of ongoing climate change. These species should receive high priority for inventory, monitoring and management (Casper 2010).

Salamanders that are potentially on the SWPB are associated with mesic hardwood forests, and spotted salamanders additionally require ephemeral ponds for breeding, as do Special Concern four-toed salamanders (*Hemidactylum scutatum*). Habitat of the SWPB may also support redback salamanders which prefer hardwood forests with coarse downed woody debris and are at a range limit in this region. Most of the amphibians of conservation concern utilize ephemeral wetlands within a forest matrix and mapping these often tiny wetlands would supply managers with potential core amphibian breeding sites.

Wetland complexes of the SWPB, including spring ponds, provide potential habitat for Blanding's turtles (*Emydoidea blandingii*) and many amphibians, including salamanders and aquatic frogs (American bullfrog [*Lithobates catesbeianus*], mink frog, and pickerel frog [*L. palustris*]). Wet forests of the SWPB are often embedded within these complexes and have groundwater seeps that are good summer foraging habitat for many herpetile species, including wood turtle (*Glyptemys insculpta*) and pickerel frog.

Most streams of the SWPB are too small to support common mudpuppy (*Necturus maculosus*) or wood turtle as primary habitat, however, the larger Yellow River in Washburn County, a tributary to the St. Croix River, may be capable of supporting these species and the northern water snake, a species at a range limit in this region. The Yellow River in Barron County, a tributary to the Red Cedar River, is medium sized and probably does not permanently support common mudpuppy or wood turtle, although wood turtles may occasionally use it coming from larger populations downstream in the Red Cedar River. The stream could also support northern water snake.

Prairie skinks (*Plestiodon septentrionalis*) would benefit from a larger extent of barrens habitat in this region. Grasslands may also have potential for supporting prairie skinks. Barrens and grassland habitat would also benefit snakes such as Special Concern northern ring-necked snake and eastern hog-nosed snake as well as other significant herpetiles such as Cope's gray treefrog (*Hyla chrysoscelis*) and smooth greensnake (*Liochlorophis vernalis*).

## High Conservation Value Forests

The Wisconsin DNR manages 1.5 million acres that are certified by the Forest Stewardship Council (FSC) and the Sustainable Forest Initiative (SFI). Forest certification requires forests to be managed using specified criteria for ecological, social, and economic sustainability. Principle 9 of the *Draft 7 FSC-US Forest Management Standard* concerns the maintenance of High Conservation Value Forests (HCVF). High Conservation Value Forests are defined as possessing one or more of the following High Conservation Values:

- Contain globally, regionally, or nationally significant concentrations of biodiversity values, including rare, threatened, or endangered species and their habitats
- Globally, regionally, or nationally significant large landscape level forests, contained within, or containing the management unit, where viable populations of most if not all naturally occurring species exist in natural patterns of distribution and abundance
- Are in or contain rare, threatened, or endangered ecosystems
- Provide basic services of nature in critical situations (e.g., watershed protection, erosion control)
- Are fundamental to meeting basic needs of local communities (e.g., subsistence, health)
- Are critical to local communities' traditional cultural identity (areas of cultural, ecological, economic, or religious significance identified in cooperation with such local communities)

Based on the current draft criteria for defining HCVFs (Forest Stewardship Council 2009) the best opportunities for HCVF on the SWPB are the Primary Sites, as well as high quality natural communities and rare species habitat areas that are outside of the Primary Sites.

## Wisconsin’s Statewide Forest Strategy

Wisconsin’s Statewide Forest Assessment (WDNR 2010b) was based on Wisconsin’s Forest Sustainability Framework (“Wisconsin Forest Sustainability Framework”) and was designed to assess the current state of Wisconsin’s public and private forests and analyze the sustainability of our forested ecosystems. Wisconsin’s Statewide Forest Strategy (WDNR 2010c) contains a collection of strategies and actions designed to address the management and landscape priorities identified in the Statewide Forest Assessment. The strategies are broad guides intended to focus the actions of the forestry community.

All three of these documents include topics related to biological diversity in Wisconsin’s forests, and provide information useful for department master planning and management activities. The following strategies, organized using their number in the Statewide Forest Strategy document, are particularly pertinent to the PPSE planning efforts in regard to opportunities to maintain or enhance biological diversity (WDNR 2010c). These strategies may not be applicable to areas of the SWPB.

Strategy Number	Strategy
1	Encourage planting to enhance, protect, and connect larger tracts of forested land in appropriate locations consistent with ecological landscapes.
6	Strengthen collaborative and large scale planning at the town, county, state and federal levels
7	Increase the functional size of forest blocks by encouraging coordination of management of clusters of forest ownerships
11	Encourage the management of under-represented forest communities
12	Improve all forested communities with a landscape management approach that considers the representation of all successional stages
13	Increase forest structure and diversity
14	Encourage the use of disturbance mechanisms to maintain diverse forest communities
15	Maintain the appropriate forest types for the ecological landscape while protecting forest health and function
22	Strive to prevent infestations of invasive species before they arrive
23	Work to detect new (invasive species) infestations early and respond rapidly to minimize impacts to forests
24	Control and management of existing (invasive species) infestations.
25	Rehabilitate, restore, or adapt native forest habitats and ecosystems
29	Attempt to improve the defenses of the forest and increase the resilience of natural systems to future climate change impacts

## Ecological Priorities for SGCN

The Wisconsin Wildlife Action Plan identifies ecological priorities in each Ecological Landscape. Ecological priorities are the natural communities in each Ecological Landscape that are most important to the Species of Greatest Conservation Need. Appendix E highlights the Ecological Priorities for vertebrate SGCN on the SWPB. Note that these Ecological Priorities include all of the natural communities that we have determined to provide the best opportunities for management on the SWPB from an ecological/biodiversity perspective.

## Natural Community Management Opportunities

The Wisconsin Wildlife Action Plan (WAP) (WDNR 2006) identifies 14 natural communities for which there are “Major” or “Important” opportunities for protection, restoration, or management in the Forest Transition Ecological Landscape. Twelve of these natural communities are present on the SWPB:

Alder Thicket	Northern Dry-mesic Forest	Shrub Carr
Coldwater streams	Northern Hardwood Swamp	Surrogate grassland
Coolwater streams	Northern Mesic Forest	Warmwater rivers
Emergent Marsh	Northern Sedge Meadow	Warmwater streams
Ephemeral Pond	Northern Wet Forest	

## Invasive Species

Non-native invasive species thrive in newly disturbed areas, but also may invade and compromise high-quality natural areas. They establish quickly, tolerate a wide range of conditions, are easily dispersed, and are free of the diseases, predators, and competitors that kept their populations in check in their native range. Invasive plants can out-compete and even kill native plants by monopolizing light, water, and nutrients, and by altering soil chemistry and mycorrhizal relationships. In situations where invasive plants become dominant, they may even alter ecological processes by limiting one’s ability to use prescribed fire, by modifying hydrology, and by limiting tree regeneration and ultimately forest composition (WDNR In Prep. b). In addition to the threats on native communities and native species diversity, invasive species negatively impact forestry (by reducing tree regeneration, growth and longevity), recreation (by degrading fish and wildlife habitat and limiting access), agriculture, and human health (plants that cause skin rashes or blisters).

Non-native invasive plant species of the SWPB are found within both the wetland and upland habitats. Wetland non-native invasive plants include reed canary grass, purple loosestrife, narrow-leaved cat-tail, and glossy buckthorn. Surveys were limited in the lower-quality uplands, thus little is known about the non-native invasive species present. Common buckthorn was noted as abundant in a recent timber harvest and ongoing efforts to reduce this population should continue. Trails, access points for fishing, and other high-use areas are typical entry points for invasive species that are introduced by visitors’ footwear, clothing, vehicle tires, boats, and recreational equipment. Once established, these invasives may continue to spread along natural corridors (e.g. streams) and along recreational corridors (e.g. hunting/fishing walking trails). Invasive species may also be spread inadvertently through management activities such as timber operations and roadside mowing, especially if Best Management Practices (*Invasive Species Best Management Practices*) aren’t followed.

When resources for complete control of widespread invasives are lacking, containment (i.e., limiting further spread) may be considered as an alternative action. Early detection and rapid control of new and/or small infestations, however, may be considered for higher prioritization in an invasive species management strategy (Boos et al. 2010).

### Emerald Ash Borer

The emerald ash borer (*Agrilus planipennis*), an invasive, wood-boring beetle that attacks ash trees, was positively identified for the first time in Wisconsin in 2008, and is now found in six counties. The beetle attacks all species of ash (*Fraxinus* spp.) in Wisconsin, and the risk to forests is high: Models predict that a healthy forest could lose 98% of its ash trees in six years (<http://www.emeraldashborer.wi.gov>).

The lowland forests of the SWPB are vulnerable to the effects of emerald ash borer, as white, green, and black ash are important tree species within this ecosystem. Large-scale loss of ash in this area, whether through EAB-caused mortality or harvesting, could cause a cascade of negative impacts. Degradation of diverse, high-quality forests and loss of forest cover could further lead to diminishment of important habitat for rare plants and animals (especially forest interior birds), elevated water tables, and infestation of disturbance-loving invasives such as reed canary grass (WDNR 2010a). It is important to note that removal of all ash as a stopgap measure against EAB is not recommended; instead maintenance of a healthy forest and ash resource is suggested (WDNR 2010a).

### Exotic Earthworms

The invasion of forests by European earthworms of the families *Acanthodrilidae*, *Lumbricidae*, and *Megascolecidae* is a concern throughout Wisconsin. While native earthworms were absent from this landscape after the last glaciation, exotic earthworms have been introduced since Euro-American settlement, primarily as discarded fishing bait (Hendrix and Bohlen 2002, Hale et al. 2005). Exotic earthworms can have dramatic impacts on forest floor properties by greatly reducing organic matter (Hale et al. 2005), microbial biomass (Groffman et al. 2004), nutrient availability (Bohlen et al. 2004, Suarez et al. 2004), and fine-root biomass (Groffman et al. 2004). These physical changes in the forest floor reduce densities of tree seedlings and rare herbs (Gundale 2002) and can favor invasive plants (Kourtev et al. 1999). In a study of 51 Northern Wisconsin forest stands, Wiegmann (2006) found that shifts in understory plant community composition due to exotic earthworms were more severe in stands with high white-tailed deer densities. Earthworms are likely to be present on the SWPB and education for users of this area on the impact of dumping earthworms may deter further earthworm introduction.

# Primary Sites: Site-specific Opportunities for Biodiversity Conservation

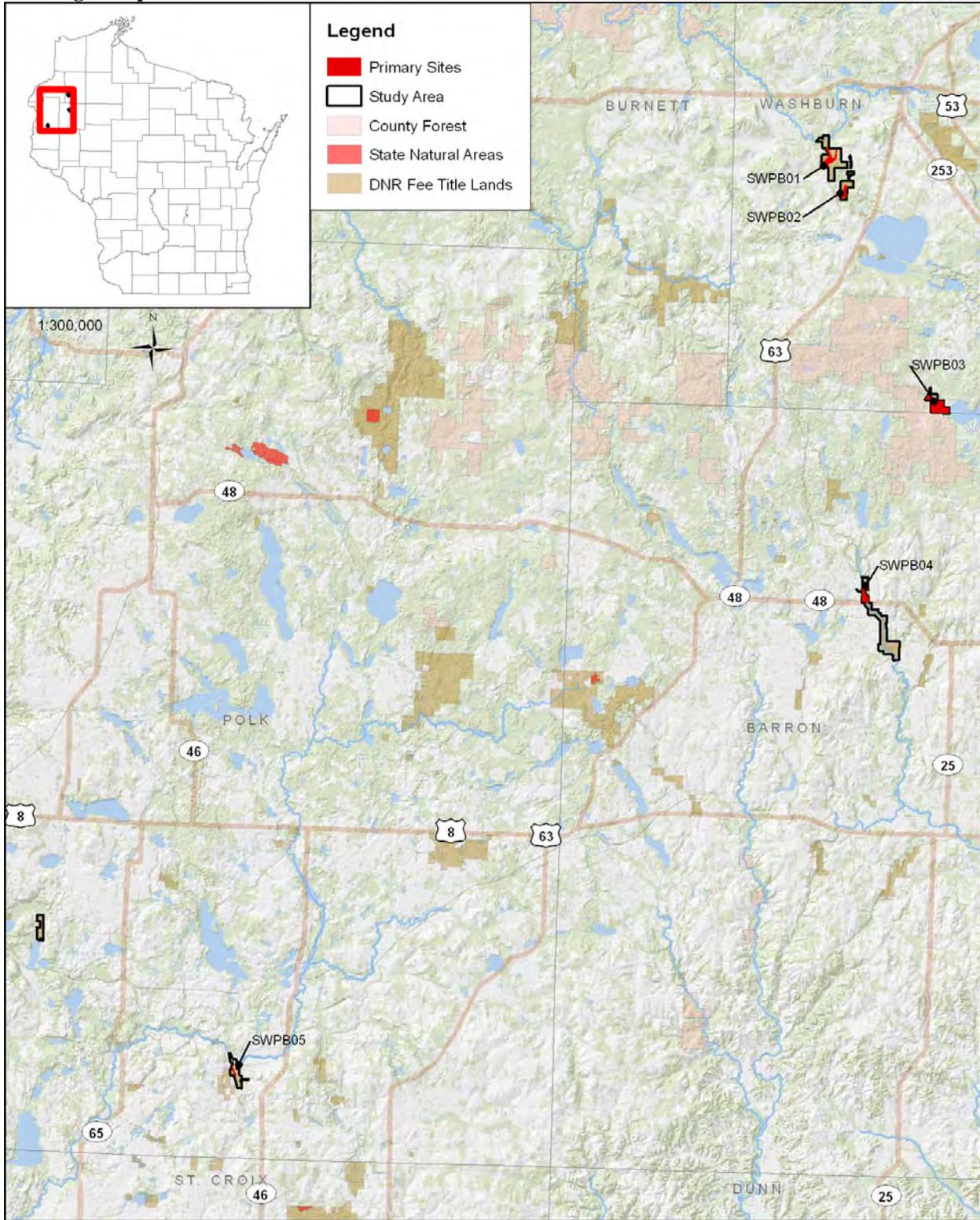
Five ecologically important sites were identified on the SWPB (Figure 8). These “Primary Sites” were delineated because they generally encompass the best examples of 1) rare and representative natural communities, 2) documented occurrences of rare species populations, and/or 3) opportunities for ecological restoration or connections. These sites warrant high protection and/or restoration consideration during the development of the property master plan. This report is meant to be considered along with other information when identifying opportunities for various management designations during the master planning process.

Descriptions for each of the Primary Sites can be found in Appendix G. Information provided in the summary paragraphs includes location information, a site map, a brief summary of the natural features present, the site’s ecological significance, and management considerations. Appendix H lists the rare species and high-quality natural communities currently known from the SWPB by Primary Site.

## **Southern Washburn, Polk, and Barron County Planning Group Primary Sites**

- SWPB01. Sawyer Creek - Beaver Lodge Pond
- SWPB02. Sawyer Creek Springs
- SWPB03. Bear Lake Sedge Meadow
- SWPB04. Yellow River Hardwood Swamp
- SWPB05. Parker Creek Sedge Meadow

**Figure 6. Primary Sites of the Fishery Areas within the Southern Washburn, Polk and Barron County Planning Group**



## Future Needs

This project was designed to provide a rapid assessment of the biodiversity values for the SWPB. Although the report should be considered adequate for master planning purposes, additional efforts could help to inform future adaptive management efforts, along with providing useful information regarding the natural communities and rare species contained in the SWPB.

- Continued invasive species monitoring and control is needed. Public lands throughout Wisconsin are facing major management problems because of serious infestations of highly invasive species. Some of these species are easily dispersed by humans and vehicles; others are spread by birds, mammals, insects, water, or wind. In order to protect the important biodiversity values of the SWPB, a comprehensive invasive species monitoring and control plan will be needed for detecting and rapidly responding to new invasive threats.
- Locations and likely habitats should be identified for conducting additional rare plant and animal surveys during appropriate seasons. This should include additional vertebrate and invertebrate animal taxon groups.

# Glossary

**Ecological Landscape** - landscape units developed by the WDNR to provide an ecological framework to support natural resource management decisions. The boundaries of Wisconsin's sixteen Ecological Landscapes correspond to ecoregional boundaries from the National Hierarchical Framework of Ecological Units, but sometimes combine subsections to produce a more manageable number of units.

**element** - the basic building blocks of the Natural Heritage Inventory. They include natural communities, rare plants, rare animals, and other selected features such as colonial bird rookeries, bat hibernacula, and mussel beds. In short, an element is any biological or ecological entity upon which we wish to gather information for conservation purposes.

**element occurrence** - an Element Occurrence (EO) is an area of land and/or water in which a rare species or natural community is, or was, present. An EO should have practical conservation value for the Element as evidenced by potential continued (or historic) presence and/or regular recurrence at a given location. For species, the EO often corresponds with the local population, but when appropriate may be a portion of a population (e.g., a single nest territory or long distance dispersers) or a group of nearby populations (e.g., metapopulation). For communities, the EO may represent a stand or patch of a natural community or a cluster of stands or patches of a natural community. Because they are defined on the basis of biological information, EOs may cross jurisdictional boundaries.

**Landtype Association (LTA)** - a level in the National Hierarchical Framework of Ecological Units (see next entry) representing an area of 10,000 – 300,000 acres. Similarities of landform, soil, and vegetation are the key factors in delineating LTAs.

**natural community** – an assemblage of plants and animals, in a particular place at a particular time, interacting with one another, the abiotic environment around them, and subject to primarily natural disturbance regimes. Those assemblages that are repeated across a landscape in an observable pattern constitute a community type. No two assemblages, however, are exactly alike.

**representative** - native plant species that would be expected to occur in native plant communities influenced primarily by natural disturbance regimes in a given landscape - e.g., see Curtis (1959).

**SGCN (or “Species of Greatest Conservation Need”)** – native wildlife species with low or declining populations that are most at risk of no longer being a viable part of Wisconsin's fauna (from the “Wisconsin Wildlife Action Plan,” WDNR 2006).

# Species List

The following is a list of species referred to by common name in the report text.

Common Name	Scientific Name
<b>Animals</b>	
blue-winged warbler	<i>Vermivora pinus</i>
Canada warbler	<i>Wilsonia canadensis</i>
common yellowthroat	<i>Geothlypis trichas</i>
emerald ash borer	<i>Agrilus planipennis</i>
golden-winged warbler	<i>Vermivora chrysoptera</i>
great crested flycatcher	<i>Myiarchus crinitus</i>
mink frog	<i>Lithobates septentrionalis</i>
northern ring-necked snake	<i>Diadophis punctatus</i>
northern water snake	<i>Nerodia sipedon</i>
northern waterthrush	<i>Seiurus noveboracensis</i>
pickerel frog	<i>Lithobates palustris</i>
prairie skink	<i>Plestiodon septentrionalis</i>
redback salamander	<i>Plethodon cinereus</i>
red-winged blackbird	<i>Agelaius phoeniceus</i>
sedge wren	<i>Cistothorus platensis</i>
song sparrow	<i>Melospiza melodia</i>
spotted salamander	<i>Ambystoma maculatum</i>
swamp sparrow	<i>Melospiza georgiana</i>
veery	<i>Catharus fuscescens</i>
wood thrush	<i>Hylocichla mustelina</i>
wood turtle	<i>Glyptemys insculpta</i>
<b>Plants</b>	
aspen	<i>Populus</i> spp.
black ash	<i>Fraxinus nigra</i>
black spruce	<i>Picea mariana</i>
cat-tail	<i>Typha</i> sp.
common lake sedge	<i>Carex lacustris</i>
glossy buckthorn	<i>Rhamnus frangula</i>
hemlock	<i>Tsuga canadensis</i>
narrow-leaved cat-tail	<i>Typha angustifolia</i>
oak	<i>Quercus</i> spp.
purple loosestrife	<i>Lythrum salicaria</i>
red pine	<i>Pinus resinosa</i>
reed canary grass	<i>Phalaris arundinacea</i>
speckled alder	<i>Alnus incana</i>
sugar maple	<i>Acer saccharum</i>
tamarack	<i>Larix laricina</i>
white birch	<i>Betula papyrifera</i>
white pine	<i>Pinus strobus</i>
yellow birch	<i>Betula alleghaniensis</i>

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# Additional Resources

Numerous online resources are available for learning more about the rare species, natural communities, and ecological concepts contained within this report. These are just a few of the resources that we recommend.

## 1. Bureau of Endangered Resources' Animals, Plants, and Communities Web Pages

Information for plants, animals, and natural communities on the Wisconsin Working List, as well as Species of Greatest Conservation Need from the Wisconsin Wildlife Action Plan. For reptiles and amphibians, information for more common species is also provided here. At this time, the level of detail available varies among species; some have detailed factsheets while others have only a short paragraph or a map. These pages will continue to evolve as more information becomes available and are the Bureau of Endangered Resources' main source of information for species and communities. [dnr.wi.gov/org/land/er/biodiversity/](http://dnr.wi.gov/org/land/er/biodiversity/)

## 2. Wisconsin Natural Heritage Inventory Working List

The Wisconsin Natural Heritage Working List contains species known or suspected to be rare in the state and natural communities native to Wisconsin. It includes species legally designated as "Endangered" or "Threatened" as well as species in the advisory "Special Concern" category. This Web page offers a printable pdf file and a key to the Working List for use in conjunction with the information provided in #1 above. [dnr.wi.gov/org/land/er/wlist/](http://dnr.wi.gov/org/land/er/wlist/)

## 3. Ecological Landscapes of Wisconsin Handbook

Wisconsin's 16 Ecological Landscapes have unique combinations of physical and biological characteristics such as climate, geology, soils, water, or vegetation. This handbook will contain a chapter for each of these landscapes with detailed information about their ecology, socioeconomics, and ecological management opportunities. An additional introductory chapter will compare the 16 landscapes in numerous ways, discuss Wisconsin's ecology on the statewide scale, and introduce important concepts related to ecosystem management in the state. The full handbook is in development as of this writing, and chapters will be made available online as they are published. Currently, a set of Web pages provide brief Ecological Landscape descriptions, numerous maps, and other useful information, including management opportunities for natural communities and Species of Greatest Conservation Need. [dnr.wi.gov/landscapes/](http://dnr.wi.gov/landscapes/)

## 4. The Wisconsin Wildlife Action Plan

This plan is the result of a statewide effort to identify native Wisconsin animal species of greatest conservation need. The plan also presents priority conservation actions to protect the species and their habitats. The plan itself is available online, and there are several online tools to explore the data within the plan. The Web pages are closely integrated with the pages provided in items #1 and #3 above. The Wildlife Action Plan Web pages are quite numerous, so we recommend the following links as good starting points for accessing the information.

- the plan itself: [dnr.wi.gov/org/land/er/wwap/](http://dnr.wi.gov/org/land/er/wwap/)
- explore Wildlife Action Plan data: [dnr.wi.gov/org/land/er/wwap/explore/](http://dnr.wi.gov/org/land/er/wwap/explore/)
- Wildlife Action Plan Implementation: [dnr.wi.gov/org/land/er/wwap/implementation/](http://dnr.wi.gov/org/land/er/wwap/implementation/)

## 5. Wisconsin's Biodiversity as a Management Issue - A Report to Department of Natural Resources Managers

This now out-of-print report presents a department strategy for conserving biological diversity. It provides department employees with an overview of the issues associated with biodiversity and

provides a common point of reference for incorporating the conservation of biodiversity into our management framework. The concepts presented in the report are closely related to the material provided in this report, as well as the other resources listed in this section.

*[dnr.wi.gov/org/es/science/publications/rs915\\_95.htm](http://dnr.wi.gov/org/es/science/publications/rs915_95.htm)*

**6. Wisconsin’s Statewide Forest Strategy**

Wisconsin’s Statewide Forest Strategy is a collection of many strategies and actions designed to address major issues and priority topics over the next five to ten years. It provides a long-term, comprehensive, coordinated approach for investing resources to address the management and landscape priorities identified in the Statewide Forest Assessment. Several of the strategies contain issues related to biodiversity and ecosystem management.

*[dnr.wi.gov/forestry/assessment/strategy/overview.htm](http://dnr.wi.gov/forestry/assessment/strategy/overview.htm)*

**7. 2010 Wisconsin’s Statewide Forest Assessment**

The goal of this project was to assess the “state of affairs” of Wisconsin’s public and private forests and analyze the sustainability of our forested ecosystems. The Statewide Forest Assessment helps to explain trends, identify issues, and present an updated view of the status of forests in Wisconsin. The first chapter deals with biological diversity in Wisconsin’s forests, and the major conclusions from this assessment were used to develop the strategies in # 6 above.

*[dnr.wi.gov/forestry/assessment/strategy/assess.htm](http://dnr.wi.gov/forestry/assessment/strategy/assess.htm)*