

# Midwest Region Coastal Program

*Strategic Work Plan - 2017-2021*



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## Strategic Work Plan - 2017-2021

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# Message from the Regional Director Tom Melius



I am pleased to present the U.S. Fish and Wildlife Service's *Midwest Region Coastal Program Strategic Work Plan* for the years 2017 through 2021.

We have learned much in the last five years about implementing Strategic Habitat Conservation, and that new knowledge is reflected in this work plan. Using the Upper Midwest and Great Lakes surrogate species list as our foundation, we have refined our Coastal Program focus areas to ensure our work is conducted in places that will have the greatest impact. Also, we have worked closely with all U.S. Fish and Wildlife Service programs to look for and find synergies that ensure our restoration efforts roll up to have meaningful results. Finally, we continue to work through the Upper Midwest and Great Lakes Landscape Conservation Cooperative to leverage and align our efforts with those of other agencies and organizations through development and implementation of landscape conservation designs.

Midwest Region staff is excited about the vision set forth in this work plan and the benefits to fish and wildlife it will help us realize. The Midwest Region's staff looks forward to working with all of you to achieve the goals and targets set forth in this plan.

T.O.M.

USFWS

# Introduction

The Coastal Program (Program) is a voluntary, partnership-based program of the U.S. Fish and Wildlife Service (Service) that provides technical and financial assistance for habitat conservation in coastal watersheds. The Program develops tools and resources designed to help managers, practitioners, and communities carry out habitat conservation actions. It improves and protects habitat on both public and private lands, which is important in coastal areas where there is often a mosaic of landowner types. The Program's ability to work on private and public lands allows the Service to deliver landscape conservation and maintain habitat connectivity and continuity. The Coastal Program began nationally in 1985, with the Great Lakes Region receiving Program funding and formal recognition in 2000. At the present time, within the Great Lakes basin, only the Midwest Region (Region 3) of the Service receives support through the Program; however, an extension of the Program into the Great Lakes portion of the Northeast Region (Region 5) is desired (Figure 1) to seamlessly treat the U.S. portion of the basin in a holistic fashion.

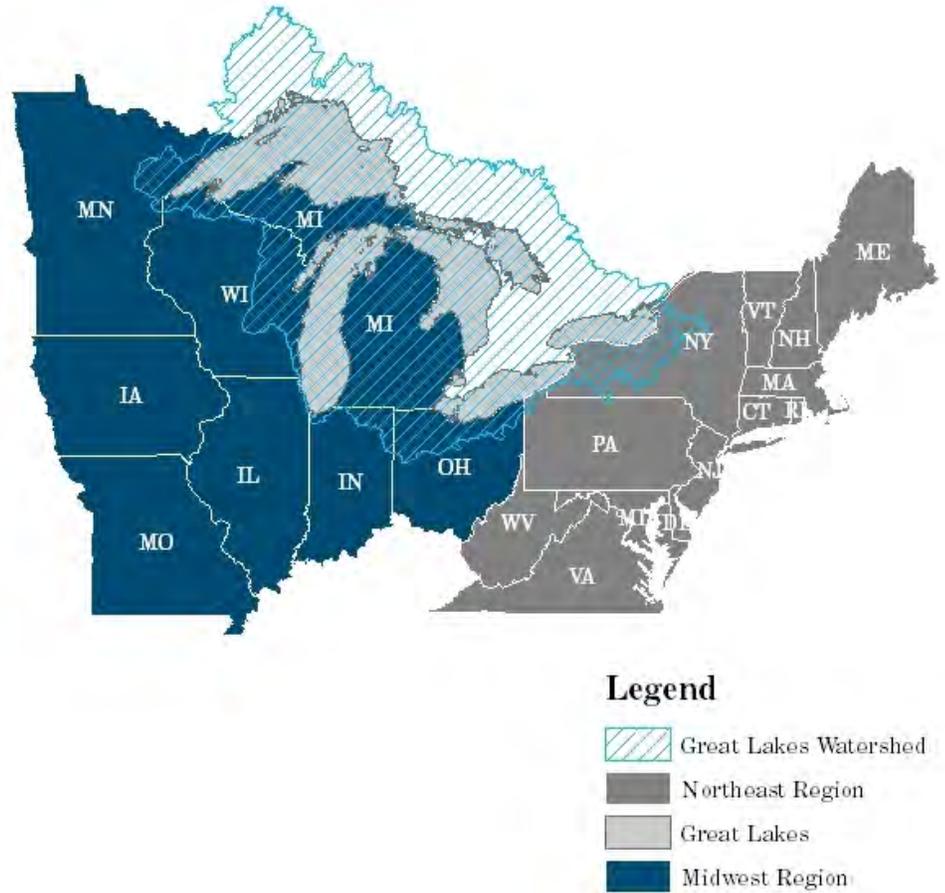


Figure 1. U.S. Fish and Wildlife Service's Midwest Region (Region 3) and Northeast Region (Region 5).

## Regional Context

The Great Lakes ecosystem features an extensive watershed (290,000 square miles) with about 5,000 tributaries, more than 10,000 miles of shoreline, and some 35,000 islands. Representing the world's largest freshwater system and the nation's fourth longest coastline, the Great Lakes basin supports the livelihood and activities of 10% of the U.S. and 25% of the Canadian populations. As an example of the economic importance of this resource, the Great Lakes ecosystem supports coast-related recreational activities valued at \$16 billion annually, of which sport fishing activities contribute \$4 billion.

Ecologically, the Great Lakes' sand dunes, coastal wetlands, islands, rocky shorelines, prairies, savannas, forests, fens, and other landscape features are globally unique, supporting a rich and diverse variety of species. Important migration corridors and critical breeding, feeding, and resting areas are present for numerous species of migratory and resident birds—especially waterfowl, colonial nesting birds, and neotropical migrants. The Great Lakes themselves also support an unrivaled freshwater fishery. In addition, there are 130 globally endangered or rare plant and animal species within the Great Lakes.

Human population growth, and the disturbances in the natural environment that are often a consequence, have impacted federal trust resource species and their habitats. The Great Lakes ecosystem has lost more than half of its original wetlands and 60% of forest lands, and only small remnants of other habitat types, such as savanna or prairie, remain. Changes in habitat type and extent have contributed to numerous plant and animal extirpations throughout the Great Lakes basin. Because coastal areas have the highest population densities in the country and are expected to face continuing population pressures, there is a strong need for action to protect and restore these critical areas.

The Great Lakes are also expected to be affected by climate change. Increased water temperatures, reductions in ice cover, and increases in the frequency and intensity of storms are a few of the physical effects projected for this region. These physical changes may subsequently affect the abundance, distribution and sustainability of trust resource species. Climate change impacts will be integrated into Coastal Program activities to ensure durability of projects and to contribute to the resiliency of coastal resources.

# Strategic Habitat Conservation and Landscape Conservation Design

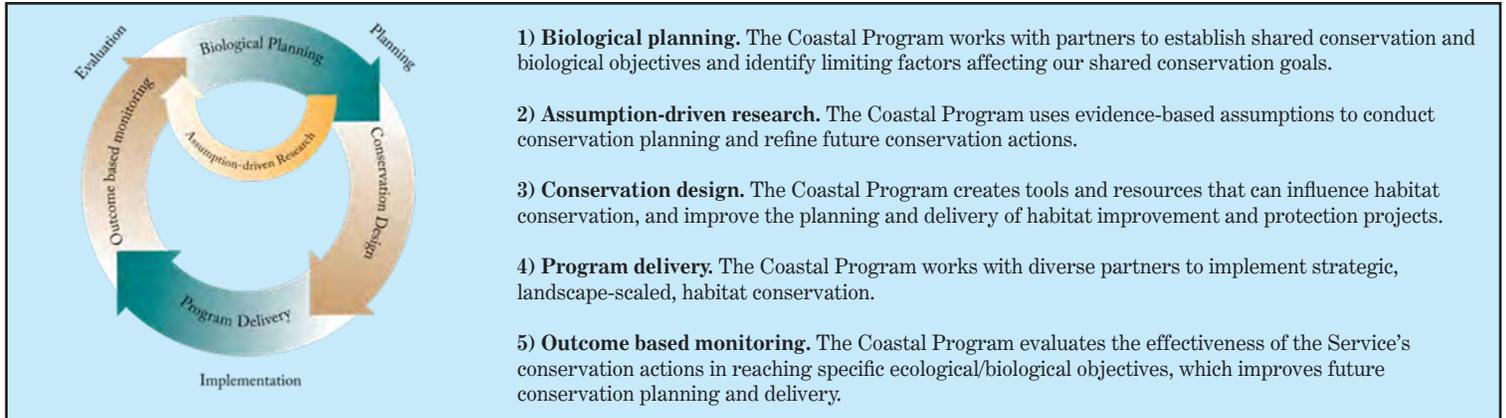


Figure 2. U.S. Fish and Wildlife Service's Strategic Habitat Conservation Framework

The *Midwest Region Coastal Program* has integrated the Service Strategic Habitat Conservation (SHC) framework into this Strategic Work Plan and delivery of all of the projects it supports (Figure 2).

This integration has shifted the Program's conservation delivery from an opportunistic approach to a more science-based and targeted approach driven by benefits to trust species populations. Implementing SHC requires Program staff to support or participate in each step of the adaptive management process, thus prioritizing efforts and improving funding decisions. SHC is the model used by other partner-based programs such as Bird Conservation Joint Ventures (JV) and Landscape Conservation Cooperatives (LCCs). Program staff will collaborate with JV and LCC scientists in sharing information and resources.

Identifying priority species is one way the Program has focused its efforts and embraced the SHC model. The priority species list is largely drawn from the Upper Midwest and Great Lakes surrogate species list. As such, it utilizes and builds off of the extensive internal and external vetting process that was part of the surrogate species effort. Also, some of the selection criteria used in that process align well with the Coastal Program. For example, one of the criteria focused on selecting species that were in need of habitat management or restoration. Habitat conservation work (including restoration, management, and protection) is a priority of the Coastal Program.

The priority species were then used to identify the Coastal Program focus areas for this Strategic Work Plan. More details on how priority species were selected and subsequently how geographic focus areas were selected can be found below under Goal 1: Conserve Habitat.

Through this effort, the *Midwest Region Coastal Program* has aligned with the priorities set by the Midwest Region and that are relevant to delivery of the Coastal Program.

In addition and as a logical extension of SHC, the *Midwest Region Coastal Program* staff is actively involved with integrating and leading Landscape Conservation Designs (LCDs) in coastal areas. At this time, there are no completed LCDs in Great Lakes coastal areas. LCD is a way to implement the SHC process across myriad partners and organizations. It is a collaborative process of identifying shared goals among multiple conservation or development partners, designing landscapes around those goals using geospatial information, setting in motion ways to deliver or implement that design, and evaluating to understand if goals were met.

Through LCD efforts, the Service and Coastal staff can bring priority species forward and integrate them with other species or ecosystem targets brought forward from other partners (e.g., improving water quality). Then the Program and its partners can identify together where to conduct habitat conservation, what type of conservation actions to take, and how many acres/miles will be needed to meet collective goals. Through the process, the LCD identifies which partners are interested, what tools and skills partners bring with them, and which partner is best suited to undertake each conservation action. In this way, conservation efforts can be knitted together for a greater, landscape-scale impact.

The *Midwest Region Coastal Program* will continue to engage in coastally relevant LCD efforts and is dedicated to helping implement LCD products. Currently, the Program is actively involved in LCDs in Saginaw Bay (Lake Huron) to western Lake Erie, and Green Bay (Lake Michigan).

# About this Document

This Strategic Work Plan (Plan) is intended to inform and guide the work of the Coastal Program in the Midwest Region over the next five years. The Plan steps down the national Coastal Program vision document, which identified five main goals (see insert). Habitat conservation (Goal I) reflects the singular purpose of the Coastal Program, while the other four goals (Goals II-V) were selected to support and ensure the effective and efficient delivery of habitat conservation. This Plan is organized around and focused on how the *Midwest Region Coastal Program* will strategically implement actions around these five goals. This document will help direct Program activities from January 2017 through December 2021.

## Coastal Program Goals

- 1) Conserve habitat.** The Coastal Program conserves priority coastal habitats to increase and maintain federal trust species populations, and achieve long-term resiliency for coastal ecosystems.
- 2) Broaden and strengthen partnerships.** The Coastal Program delivers conservation through voluntary partnerships that allow the Service to leverage resources and maximize conservation benefits to federal trust species.
- 3) Improve information sharing and communication.** The Coastal Program shares information with partners and others to maximize conservation benefits to federal trust species.
- 4) Enhance work force.** The Coastal Program strives to improve the technical expertise of Service staff to achieve the best conservation results that benefit federal trust species.
- 5) Increase accountability.** The Coastal Program evaluates and reports on the effectiveness, efficiency, and fiscal fidelity of Service habitat conservation actions to ensure the integrity and accountability of the program.

## Goal I. Conserve Habitat - Regional Overview



Figure 3. Map of U.S. Fish and Wildlife Service's Midwest Region Coastal Program focus areas

The *Midwest Region Coastal Program's* primary objective is to maintain or increase the abundance of federal trust species through technical assistance and habitat improvement and protection projects. To benefit federal trust species, the Program works primarily in three habitat areas: coastal wetlands, coastal uplands, and streams/riparian areas connected to the Great Lakes. The Program works under three ecological principles: 1) maintain natural coastal ecosystem diversity, functions, and productivity; 2) promote natural, self-sustaining populations of native trust species within their historic ranges; and 3) provide for ecologically sound levels of public use, economic benefits, and the enjoyment of natural resources.

While efforts to address the habitat conservation objectives of the *Midwest Region Coastal Program* will be focused in U.S. waters, the Service recognizes that the Great Lakes is a binational ecosystem. As such, guidance, priorities and products stemming from the U.S./Canada Great Lakes Water Quality Agreement of 2012, including individual Lakewide Action and Management Plans and the Nearshore Framework, will inform the work of the *Midwest Region Coastal Program*. This large, landscape-scale view will serve as an additional lens to help focus work on the most pressing habitat and species conservation needs.

## Focus Area Selection Process

The *Midwest Region Coastal Program* intends to implement 80% of its Coastal Program projects in six focus areas over the next five years. The first step in identifying focus areas was to define the “coastal” work area. Based on migratory bird stop-over literature (<http://glmigratorybirds.org/>), the Program set the boundary at 15 miles inland to capture the priority stop-over habitat found along Great Lakes shorelines. Program staff also extended “coastal” areas upstream along tributaries to the first known fish passage barrier (regardless of 15-mile buffer) to capture many of the streams and rivers used by interjurisdictional fish. Staff also considered coastal areas to include the nearshore zones of each of the Great Lakes (<https://www.epa.gov/gl-wqa>). Then, a simple species “layering” approach was used to identify hot spots along the Great Lakes coasts where conservation activities could benefit multiple species.

The following sequential actions were taken to identify focal species and subsequently the geographic focus areas for this Strategic Work Plan:

1. Started with Upper Midwest and Great Lakes Surrogate Species List (Appendix A), which had already undergone an extensive internal Service vetting process.
2. *Initial list.* Narrowed the surrogate species list to those species whose habitat requirements overlapped significantly with coastal areas.
3. *Modified list.* Added two coastally relevant, federally threatened or endangered species (Hine’s Emerald Dragonfly and Dwarf Lake Iris), which were not identified as surrogate species due to their small range, specific habitat requirements, etc.

4. *Final list.* Identified Coastal Focus Species (see Table 1 for final list).

5. Collected shapefiles representing the focal species and important migratory bird stop-over habitat; overlaid these shapefiles.

6. Identified hotspots where multiple species/shapefiles overlapped.

7. Selected geographies based on overlays and Coastal Program knowledge and experience.

8. Added metropolitan areas to help reach a broader constituent base and connect youth with nature.

## Strategic Habitat Conservation

### *Conservation Planning and Design Tools*

The Coastal Program is leading development of LCD in the Green Bay, Saginaw Bay, and Western Lake Erie areas. These efforts include a collaborative process where shared goals are being identified, and designed around, and where future collaborative project implementation is planned. As LCD efforts are initiated in other focus areas, Program staff plan to engage. Additional planning tools include: Fishwerks (University of Wisconsin), Fish Xing (U.S. Forest Service), Midwest Avian Data Center (Point Blue Conservation Science), Upper Midwest Great Lakes Joint Venture planning tools, Coastal Wetland Decision Support Tool (Great Lakes Coastal Wetland Consortium), Restorable Wetland Tool (U.S. Geological Survey), and Great Lakes Migratory Bird Stopover Portal (The Nature Conservancy).

### *Conservation Partners and Partnerships*

Many Great Lakes partnerships exist, but a significant partnership effort is the Great Lakes Restoration Initiative (GLRI). The GLRI is the largest investment in the Great Lakes in two decades. Since 2011, the *Midwest Region Coastal Program* has received approximately \$3,385,066 and supported 32 projects through GLRI funding. These projects have contributed to the habitat and species targets identified in GLRI Action Plans while also furthering the goals of the Coastal Program. The five-year targets identified in this Plan are based on continued GLRI contributions.

## Geographic Focus Areas

1. Western Lake Superior
2. Green Bay (Lake Michigan)
3. Straits of Mackinac (Lake Huron, Lake Michigan)
4. Saginaw Bay (Lake Huron)
5. Western Lake Erie/Lake St. Clair
6. Urban Opportunity Area

## Midwest Region Five-Year Targets

The five-year targets below were set by Coastal Program staff and are based on previous experiences implementing projects over the last 10 years, provided a similar level of Coastal Program and GLRI funding is allocated annually.

Projects implemented in focus areas: 80% of Coastal Program-funded projects are within the six identified geographic focus areas and will work on habitat identified as important to coastal-relevant surrogate species. The other 20% of projects could occur outside of focus areas.

The following targets have been set for the next five years (Appendix B):

- Wetland Restoration/Enhancement/Protection: 1,030 acres
- Upland Restoration/Enhancement/Protection: 260 acres
- Stream Channel Restoration/Enhancement: 6 miles
- Aquatic Organism Passage Structures: 7 restorations
- Engaging Youth: 5 events

**Table 1. Focal species selected, their habitats, and focus areas where they occur**

<i>Species and Status</i>	<i>Federal Status</i>	<i>Coastal Habitats</i>	<i>Green Bay</i>	<i>Saginaw Bay</i>	<i>Straits of Mackinac</i>	<i>Western Lake Erie/ Lake St. Clair</i>	<i>Western Lake Superior</i>	<i>Urban Opportunity Areas</i>
Black Tern <i>Chlidonias niger</i>		Coastal wetlands	■	■	■	■		
Blue-winged Teal <i>Anas discors</i>		Coastal wetlands, stopover	■	■	■	■	■	
Brook Trout <i>Salvelinus fontinalis</i>		Cold streams			■		■	
Canada Warbler <i>Cardellina canadensis</i>		Stopover	■	■	■	■	■	■
Common Tern <i>Sterna hirundo</i>		Islands	■	■	■	■	■	■
Dwarf Lake Iris <i>Iris lacustris</i>	Threatened	Coastal forests	■		■			
Hine's Emerald Dragonfly <i>Somatochlora hineana</i>	Endangered	Dune/swale, coastal wetlands	■		■			
Houghton's Goldenrod <i>Solidago houghtonii</i>	Threatened	Wet beaches, coastal wetlands			■			
Lake Sturgeon <i>Acipenser fulvescens</i>		Tributaries and connecting channels of Great Lakes	■	■	■	■	■	■
Monarch <i>Danaus plexippus</i>		Stopover	■	■		■		■
Piping Plover <i>Charadrius melodus</i>	Endangered	Dunes and beaches	■	■	■		■	■
Snuffbox <i>Epioblasma triquetra</i>	Endangered	Riparian				■		

# Western Lake Superior Focus Area

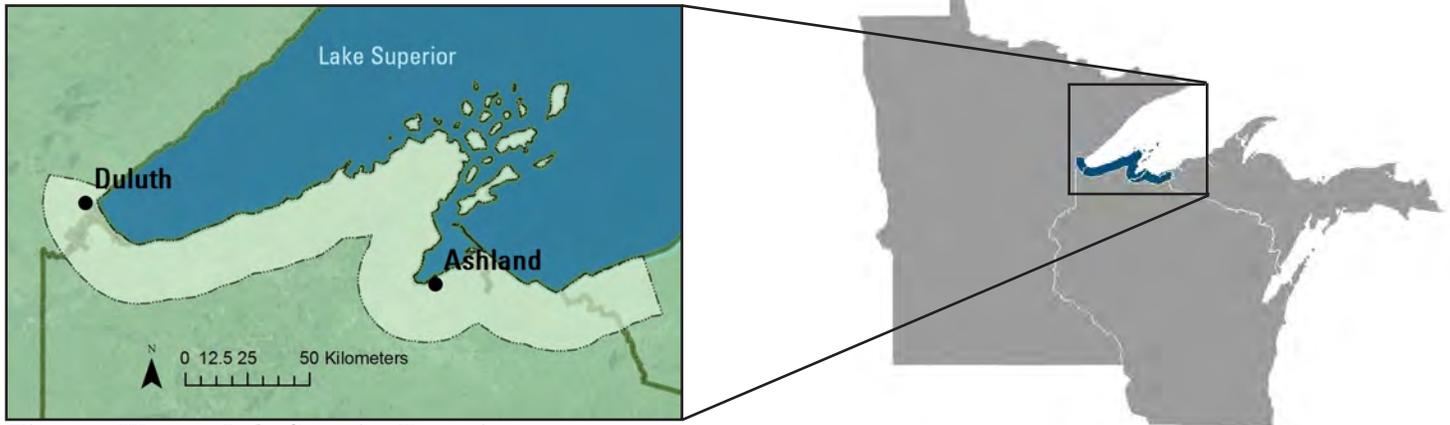


Figure 4. Western Lake Superior Focus Area.

## Introduction and Overview

This focus area is approximately 3,358 square miles in size and extends from the St. Louis River watershed on its western border in Minnesota to the Wisconsin portion of the Montreal River watershed on its eastern border (Figure 4). The area includes unique, blue-ribbon trout streams containing migratory Coaster Brook Trout, drowned river-mouth wetlands and lakes, numerous miles of remote Lake Superior shoreline, and a variety of focal species (Table 2).

Within the focus area, 15 coldwater streams and their watersheds have been identified as important to Brook Trout, a Coastal Program focal species, through various planning processes. An additional 20 sub-watersheds were identified to focus restoration activities. Similarly, two tributaries and their watersheds, the St. Louis and the Bad Rivers, have been identified as important to Lake Sturgeon.

The focus area provides valuable migratory bird stopover habitat. All natural islands and some man-made islands, which are important to migratory and colonial nesting waterbirds, are within the focus area, including the Apostle Islands at the tip of the Bayfield Peninsula. Many of these are under the jurisdiction of the Apostle Islands National Lakeshore. Man-made islands, such as Tern Island off the City of Ashland, are also included. Tern Island is one of two places where Common Terns nest in Lake Superior and is vitally important to the sustainability of this species, which is listed as threatened in Wisconsin.

The area is also the ancestral home of the Red Cliff and Bad River Bands of Lake Superior Chippewa. The Bad River/Kakagon coastal wetland complex of the Bad River Reservation is the largest ecologically intact estuary in the upper Great Lakes and has been designated as a National Natural Landmark by the U.S. Department of the Interior.

The development of the Duluth-Superior Harbor significantly altered the St. Louis estuary by decreasing water quality and eventually resulted in an Area of Concern designation. Elsewhere in the focus area, historical farming, logging, and mining activities altered the landscape by increasing sedimentation. Restoration efforts are necessary to enhance and restore degraded habitat to conserve remaining resources. Opportunities for cross-program integration and restoration efforts exist between the Coastal Program, National Fish Passage Program, Partners for Fish and Wildlife Program, and Whittlesey Creek National Wildlife Refuge.

<p style="text-align: center;"><b>Western Lake Superior Focus Area Five-Year Targets</b></p> <ul style="list-style-type: none"> <li>■ Wetland Restoration/Enhancement/Protection: 150 acres</li> <li>■ Upland Restoration/Enhancement/Protection: 625 acres</li> <li>■ Stream Channel Restoration/Enhancement: 1 mile</li> <li>■ Aquatic Organism Passage Structures: 2 structures</li> </ul>
<p style="text-align: center;"><b>Conservation Partners</b></p> <p>Partners include, but are not limited to:</p> <ul style="list-style-type: none"> <li>■ Ducks Unlimited</li> <li>■ St. Louis River Alliance</li> <li>■ Bad River Watershed Association</li> <li>■ West Wisconsin Land Trust</li> <li>■ Red Cliff and Bad River Bands of Lake Superior Chippewa</li> <li>■ U.S. Forest Service Chequamegon-Nicolet National Forest</li> <li>■ States of Wisconsin and Minnesota</li> <li>■ Federal agencies</li> </ul>
<p style="text-align: center;"><b>Focus Area Habitat Types</b></p> <ul style="list-style-type: none"> <li>■ Cold Water Tributary Streams</li> <li>■ Great Lakes Coastal Wetlands</li> <li>■ Coastal Forests</li> </ul>

**Table 2. Western Lake Superior focal species, conservation plans, and strategic activities.**

Name	Federal Status	Applicable Plans	Key Strategies/Conservation Actions
Blue-winged Teal <i>Anas discors</i>		<ul style="list-style-type: none"> <li>■ Upper Mississippi River and Great Lakes Region Joint Venture – Waterfowl Conservation Strategy – USFWS 2007</li> </ul>	<ul style="list-style-type: none"> <li>■ Restore and protect coastal wetlands</li> <li>■ Improve water quality</li> </ul>
Brook Trout <i>Salvelinus fontinalis</i>		<ul style="list-style-type: none"> <li>■ Brook Trout Rehabilitation Plan for Lake Superior – Great Lakes Fishery Commission (GLFC) 2003</li> <li>■ Fish Community Objectives for Lake Superior – GLFC 2003</li> <li>■ Conserving the Eastern Brook Trout: Action Strategies – Eastern Brook Trout Joint Venture 2008</li> </ul>	<ul style="list-style-type: none"> <li>■ Establish or increase stream buffers</li> <li>■ Reduce inputs of sediment in critical habitat through channel modification</li> <li>■ Stabilize stream banks through riparian plantings</li> <li>■ Re-establish large woody debris volumes</li> <li>■ Re-establish fish passage through barrier removal where appropriate</li> </ul>
Canada Warbler <i>Cardellina canadensis</i>		<ul style="list-style-type: none"> <li>■ Upper Mississippi River and Great Lakes Region Joint Venture – Landbird Conservation Strategy – USFWS 2007</li> <li>■ Partners in Flight Bird Conservation Plan for the Boreal Hardwood Transition – PIF 2009</li> </ul>	<ul style="list-style-type: none"> <li>■ Preserve large tracts of mature coniferous and mixed forest contiguous to the Great Lakes</li> <li>■ Promote forest structural diversity</li> <li>■ Increase dead woody material in forests</li> </ul>
Common Tern <i>Sterna hirundo</i>		<ul style="list-style-type: none"> <li>■ Upper Mississippi River and Great Lakes Region Joint Venture – Waterbird Conservation Strategy – USFWS 2007</li> <li>■ Upper Mississippi Valley/Great Lakes Waterbird Conservation Plan - 2010</li> </ul>	<ul style="list-style-type: none"> <li>■ Creation of artificial islands</li> <li>■ Conserve and manage natural nesting areas through stabilization projects to prevent further erosion</li> <li>■ Limit human access near nesting sites</li> </ul>
Lake Sturgeon <i>Acipenser fulvescens</i>		<ul style="list-style-type: none"> <li>■ Lake Sturgeon Rehabilitation Plan for Lake Superior – Great Lakes Fishery Commission 2003</li> <li>■ Michigan’s Lake Sturgeon Rehabilitation Strategy – Michigan DNR 2012</li> <li>■ Wisconsin’s Lake Sturgeon Management Plan – Wisconsin DNR 2000</li> </ul>	<ul style="list-style-type: none"> <li>■ Reduce inputs of sediment</li> <li>■ Remove sediments in spawning habitat and replace with large woody debris or washed riprap</li> <li>■ Reforest stream banks</li> </ul>
Piping Plover <i>Charadrius melodus</i>	Endangered	<ul style="list-style-type: none"> <li>■ Recovery Plan for the Great Lakes Piping Plover – USFWS 2003</li> <li>■ Piping Plover 5-Year Review: Summary and Evaluation – USFWS 2009</li> </ul>	<ul style="list-style-type: none"> <li>■ Reduce visitor, dog, and/or ATV/ORV traffic on nesting beaches</li> <li>■ Protect and monitor current nesting sites at Apostle Islands National Lakeshore</li> <li>■ Investigate feasibility of habitat projects in the Duluth/Superior area, including potential beach stabilization projects, vegetation removal, cobble placement</li> <li>■ Search additional beach areas each season for nesting piping plovers and protect nests if found</li> </ul>



James Bouse/USFWS



USFWS

# Green Bay Focus Area

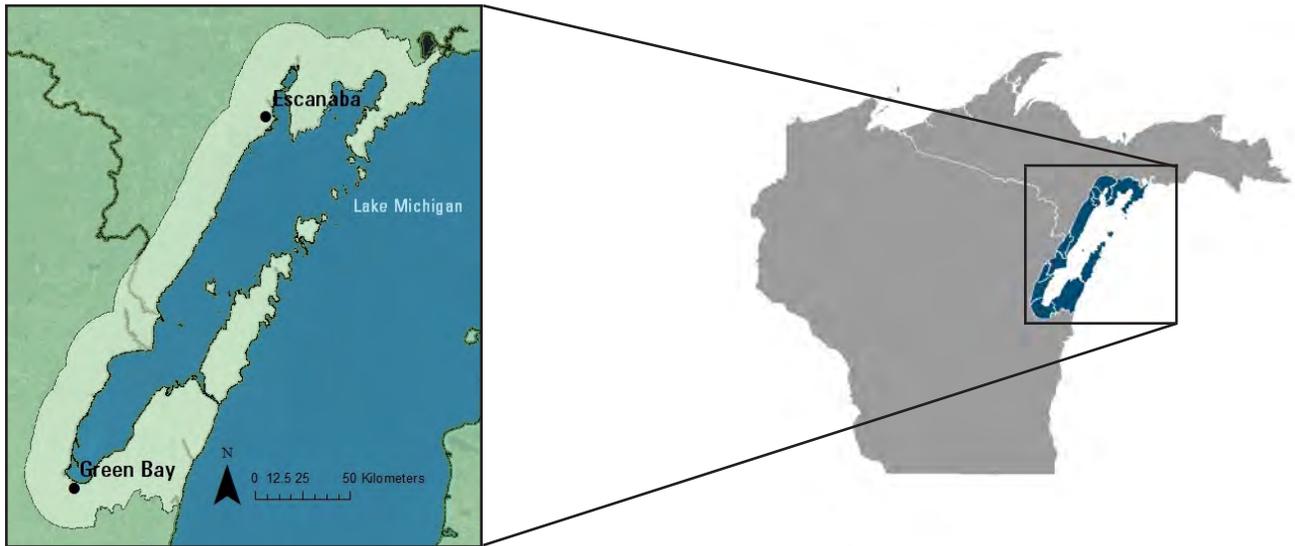


Figure 5. Green Bay Focus Area.

## Introduction and Overview

One of the largest freshwater estuaries in the world, the Green Bay focus area encompasses approximately 5,389 square miles, which is about 7.3% of the Lake Michigan basin (Figure 5). The focus area includes important stopover habitat for migratory birds and colonial nesting waterbirds. The waters of Green Bay and its tributaries including the Fox, Menominee, and Peshtigo Rivers provide important spawning habitat for Lake Sturgeon. Native American tribes in this focus area include: The Menominee, Oneida, Stockbridge-Munsee, Sokaogon Chippewa, and Hannahville Indian Community.

The focus area includes parts of the Hiawatha National Forest and multiple Wisconsin and Michigan state parks and forests. The Door County Peninsula, a major feature of this focus area, consists of a rocky limestone peninsula. The unique natural habitats present in this area contain numerous globally rare plant communities and plant and animal species, including numerous focal species (Table 3). Peninsula Point located in Michigan’s Stonington Peninsula is a well-known migratory bird and Monarch Butterfly stopover location.

There is an extensive system of coastal wetlands in the focus area including the western shore of lower Green Bay and the northern portion of the focus area in Michigan. These wetlands serve as nursery grounds for many interjurisdictional fish and important breeding areas for migratory birds. Some of the noteworthy sites include Atkinson’s Marsh, Duck Creek Delta, Cat Island Chain, Little and Big Bay de Nocs, Ogontz Bay, and Indian Point.

Urbanization, land use, overfishing, invasive species (especially *Phragmites australis*), contamination, and poor water quality have impacted the system. Public and private organizations, along with concerned citizens, are working to restore the health of the system. Partners are engaged in an LCD planning process to strategically plan future conservation actions. The LCD covers parts of Door County, the Lower Fox River sub-watershed, and the west shore of Green Bay, and may be expanded to other areas of the geography in the future. The Service has many active programs and initiatives within this focus area with integration with Fisheries, Refuges, Ecological Services, and Partners for Fish and Wildlife Programs.

### Green Bay Focus Area Five-Year Targets

- Wetland Restoration/Enhancement/Protection: 150 acres
- Upland Restoration/Enhancement/Protection: 55 acres
- Stream Channel Restoration/Enhancement: 2 miles
- Aquatic Organism Passage Structures: 2 structures

### Conservation Partners

- Partners include, but are not limited to:
- Northeast Wisconsin Land Trust
  - Lakeshore Natural Resource Partnership
  - Ducks Unlimited
  - National Audubon Society
  - Tribes
  - Federal agencies
  - Local municipalities
  - Universities

### Focus Area Habitat Types

- Cold Water Tributary Streams
- Great Lakes Coastal Wetlands
- Coastal Forests

**Table 3. Green Bay focal species, conservation plans, and strategic activities.**

<i>Name</i>	<i>Federal Status</i>	<i>Applicable Plans</i>	<i>Key Strategies/Conservation Actions</i>
Black Tern <i>Chlidonias niger</i>		<ul style="list-style-type: none"> <li>■ Upper Mississippi Valley/Great Lakes Waterbird Conservation Plan -2010</li> </ul>	<ul style="list-style-type: none"> <li>■ Installation of nesting platforms in marshes subject to frequent nest flooding</li> <li>■ Protect coastal wetlands</li> <li>■ Manage wetland flooding/drawdowns</li> <li>■ Manage dense cattail stands through discing, water level-control measures, or prescribed burning</li> <li>■ Control invasive species (<i>Phragmites</i>)</li> </ul>
Blue-winged Teal <i>Anas discors</i>		<ul style="list-style-type: none"> <li>■ Upper Mississippi River and Great Lakes Region Joint Venture – Waterfowl Conservation Strategy – USFWS 2007</li> </ul>	<ul style="list-style-type: none"> <li>■ Restore and protect coastal wetlands</li> <li>■ Improve water quality</li> </ul>
Canada Warbler <i>Cardellina canadensis</i>		<ul style="list-style-type: none"> <li>■ Upper Mississippi River and Great Lakes Region Joint Venture – Landbird Conservation Strategy – USFWS 2007</li> <li>■ Partners in Flight Bird Conservation Plan for the Boreal Hardwood Transition – PIF 2009</li> </ul>	<ul style="list-style-type: none"> <li>■ Preserve large tracts of mature coniferous and mixed forest contiguous to the Great Lakes</li> <li>■ Promote forest structural diversity</li> <li>■ Increase dead woody material in forests</li> </ul>
Common Tern <i>Sterna hirundo</i>		<ul style="list-style-type: none"> <li>■ Upper Mississippi River and Great Lakes Region Joint Venture – Waterbird Conservation Strategy – USFWS 2007</li> <li>■ Upper Mississippi Valley/Great Lakes Waterbird Conservation Plan - 2010</li> </ul>	<ul style="list-style-type: none"> <li>■ Creation of artificial islands</li> <li>■ Conserve and manage natural nesting areas through stabilization projects to prevent further erosion</li> <li>■ Limit human access near nesting sites</li> </ul>
Dwarf Lake Iris <i>Iris lacustris</i>	Threatened	<ul style="list-style-type: none"> <li>■ Dwarf Lake Iris Recovery Plan – USFWS 2013</li> </ul>	<ul style="list-style-type: none"> <li>■ Invasive species management</li> <li>■ Reduce encroaching forest succession</li> <li>■ Limit ATV/ORV and foot traffic</li> <li>■ Provide public education</li> <li>■ Promote shoreline protection (acquisition or easements)</li> </ul>
Hine's Emerald Dragonfly <i>Somatochlora hineana</i>	Endangered	<ul style="list-style-type: none"> <li>■ Hine's Emerald Dragonfly Recovery Plan – USFWS 2001</li> </ul>	<ul style="list-style-type: none"> <li>■ Limit ATV/ORV traffic in critical habitat areas</li> <li>■ Monitor known populations</li> <li>■ Survey for additional populations</li> <li>■ Manage invasive species</li> <li>■ Minimize impacts to hydrology of known Hine's Emerald Dragonfly habitat</li> </ul>
Lake Sturgeon <i>Acipenser fulvescens</i>		<ul style="list-style-type: none"> <li>■ Lake Sturgeon Rehabilitation Plan for Lake Superior – Great Lakes Fishery Commission 2003</li> <li>■ Michigan's Lake Sturgeon Rehabilitation Strategy – Michigan DNR 2012</li> <li>■ Wisconsin's Lake Sturgeon Management Plan – Wisconsin DNR 2000</li> </ul>	<ul style="list-style-type: none"> <li>■ Re-establish fish passage through barrier removal</li> <li>■ Reduce inputs of sediment</li> <li>■ Remove sediments in spawning habitat and replace with large woody debris or washed riprap</li> <li>■ Reforest stream banks</li> <li>■ Continue annual rearing and stocking of juvenile Lake Sturgeon in the Milwaukee River through collaborative partnerships</li> </ul>
Monarch Butterfly <i>Danaus plexippus</i>		<ul style="list-style-type: none"> <li>■ Monarch Joint Venture July 2009-May 2014 – Monarch JV 2014</li> <li>■ North American Monarch Conservation Plan – Commission for Environmental Cooperation 2008</li> <li>■ Conservation Status and Ecology of the Monarch Butterfly in the United States – Jepsen et al., 2015</li> </ul>	<ul style="list-style-type: none"> <li>■ Enhancement and improved management of milkweed or nectar sources</li> <li>■ Protect existing breeding Monarch habitat</li> </ul>
Piping Plover <i>Charadrius melodus</i>	Endangered	<ul style="list-style-type: none"> <li>■ Recovery Plan for the Great Lakes Piping Plover – USFWS 2003</li> <li>■ Piping Plover 5-Year Review: Summary and Evaluation – USFWS 2009</li> </ul>	<ul style="list-style-type: none"> <li>■ Reduce visitor, dog, and/or ATV/ORV traffic on nesting beaches</li> <li>■ Protect and monitor current nest site on Cat Island Chain</li> <li>■ Remove vegetation at Cat Island to keep the site suitable for nesting piping plovers</li> <li>■ Addition of cobble to Cat Island Chain to improve habitat as needed</li> </ul>

# Straits of Mackinac Focus Area

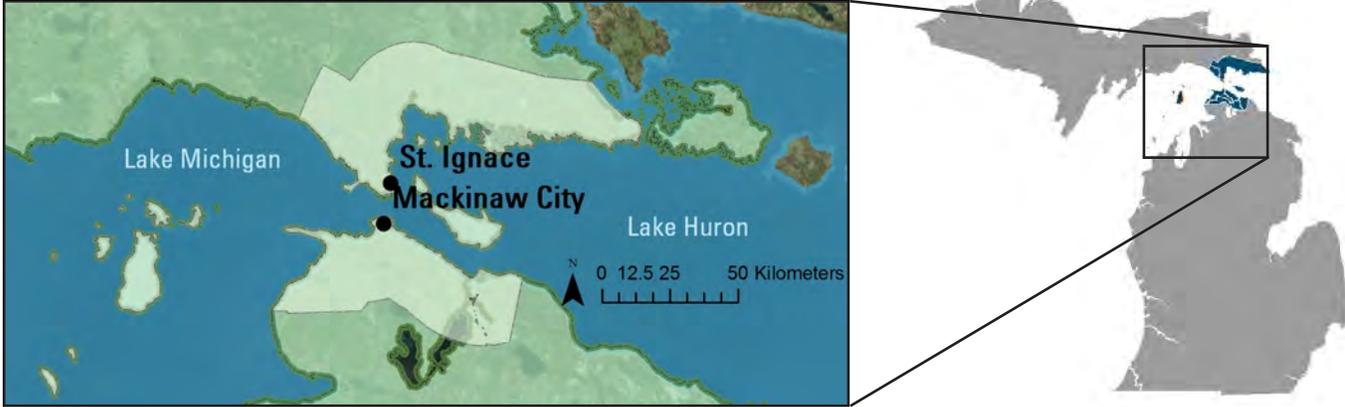


Figure 6. Straits of Mackinac Focus Area.

## Introduction and Overview

This focus area encompasses approximately 2,415 square miles and centers on the Straits of Mackinac, a narrow strait that connects Lake Michigan and Lake Huron (Figure 6). In the northern Lower Peninsula of Michigan, the focus area stretches from Sturgeon Bay and Waugoshance Point on the west side to Grass Bay in the east. In the Upper Peninsula, the focus area lies between Brevort and the Les Cheneaux Islands. The focus area also includes islands within the Straits, such as Bois Blanc Island and Mackinac Island. In addition to the Straits area, the focus area includes the Beaver Island Archipelago in Lake Michigan, which is made up of Beaver Island, Garden Island, High Island, North and South Fox Islands, as well as many other smaller islands.

This focus area is home to a wide variety of focal species (Table 4). Wilderness State Park, which includes both Sturgeon Bay and Waugoshance Point, was historically one of the most important breeding areas for the critically endangered Great Lakes Piping Plover. Piping Plovers still occasionally nest at this location and other spots in the focus area, including Pointe Aux Chenes, Beaver and High islands. Several federally listed plant species, including Houghton’s Goldenrod and Dwarf Lake Iris are widespread within the focus area, as is the federally listed Hine’s Emerald Dragonfly. The focus area includes important breeding and stopover habitat for migratory birds, with breeding colonies of Common Tern and Black Tern and stopover habitat for migrants such as Canada Warbler and Blue-winged Teal. Lake Sturgeon occur within in the focus area in the Cheboygan River, and Brook Trout also can be found within the focus area.

The Straits are threatened by increasing development through the construction of second homes and increased tourism in the area. Development of the area and establishment of invasive *Phragmites australis* have altered habitat and, therefore, many opportunities for restoration, research, improved management, and education exist.

The focus area includes a recently completed Coastal Program project at Wilderness State Park that restored Great Lakes Piping Plover breeding habitat. Additional opportunities exist for cross-program integration between the Coastal Program and the Fish Passage Program.

### Straits of Mackinac Focus Area Five-Year Targets

- Wetland Restoration/Enhancement/Protection: 350 acres
- Upland Restoration/Enhancement/Protection: 50 acres
- Stream Channel Restoration: 2 miles

### Conservation Partners

- Partners include, but are not limited to:
- Michigan Department of Natural Resources
  - Little Traverse Bay Band of Odawa Indians
  - U.S. Forest Service Hiawatha National Forest
  - The Nature Conservancy
  - Little Traverse Bay Conservancy
  - Huron Pines

### Focus Area Habitat Types

- Cold Water Tributary Streams
- Great Lakes Coastal Wetlands
- Coastal Dune and Swale Complex

**Table 4. Straits of Mackinac focal species, conservation plans, and strategic activities.**

<i>Name</i>	<i>Federal Status</i>	<i>Applicable Plans</i>	<i>Key Strategies/Conservation Actions</i>
Black Tern <i>Chlidonias niger</i>		<ul style="list-style-type: none"> <li>■ Upper Mississippi Valley/Great Lakes Waterbird Conservation Plan - 2010</li> </ul>	<ul style="list-style-type: none"> <li>■ Installation of nesting platforms in marshes subject to frequent nest flooding</li> <li>■ Protect coastal wetlands</li> <li>■ Manage dense cattail stands through discing, water level-control measures, or prescribed burning</li> <li>■ Control invasive species (<i>Phragmites</i>)</li> </ul>
Blue-winged Teal <i>Anas discors</i>		<ul style="list-style-type: none"> <li>■ Upper Mississippi River and Great Lakes Region Joint Venture – Waterfowl Conservation Strategy – USFWS 2007</li> </ul>	<ul style="list-style-type: none"> <li>■ Restore and protect coastal wetlands</li> <li>■ Improve water quality</li> </ul>
Brook Trout <i>Salvelinus fontinalis</i>		<ul style="list-style-type: none"> <li>■ Brook Trout Rehabilitation Plan for Lake Superior – Great Lakes Fishery Commission (GLFC) 2003</li> <li>■ Conserving the Eastern Brook Trout: Action Strategies – Eastern Brook Trout Joint Venture 2008</li> </ul>	<ul style="list-style-type: none"> <li>■ Establish or increase stream buffers</li> <li>■ Reduce inputs of sediment in critical habitat through channel modification</li> <li>■ Stabilize stream banks through riparian plantings</li> <li>■ Re-establish large woody debris volumes</li> <li>■ Re-establish fish passage through barrier removal where appropriate</li> </ul>
Canada Warbler <i>Cardellina canadensis</i>		<ul style="list-style-type: none"> <li>■ Upper Mississippi River and Great Lakes Region Joint Venture – Landbird Conservation Strategy – USFWS 2007</li> <li>■ Partners in Flight Bird Conservation Plan for the Boreal Hardwood Transition – PIF 2009</li> </ul>	<ul style="list-style-type: none"> <li>■ Preserve large tracts of mature coniferous and mixed forest contiguous to the Great Lakes</li> <li>■ Promote forest structural diversity</li> <li>■ Increase dead woody material in forests</li> </ul>
Common Tern <i>Sterna hirundo</i>		<ul style="list-style-type: none"> <li>■ Upper Mississippi River and Great Lakes Region Joint Venture – Waterbird Conservation Strategy – USFWS 2007</li> <li>■ Upper Mississippi Valley/Great Lakes Waterbird Conservation Plan - 2010</li> </ul>	<ul style="list-style-type: none"> <li>■ Creation of artificial islands</li> <li>■ Conserve and manage natural nesting areas through stabilization projects to prevent further erosion</li> <li>■ Limit human access near nesting sites</li> </ul>
Dwarf Lake Iris <i>Iris lacustris</i>	Threatened	<ul style="list-style-type: none"> <li>■ Recovery Plan for the Dwarf Lake Iris – USFWS – USFWS 2013.</li> </ul>	<ul style="list-style-type: none"> <li>■ Invasive species management</li> <li>■ Reduce encroaching forest succession</li> <li>■ Limit ORV and foot traffic</li> <li>■ Provide public education</li> <li>■ Promote shoreline protection (acquisition or easements)</li> </ul>
Hine's Emerald Dragonfly <i>Somatochlora hineana</i>	Endangered	<ul style="list-style-type: none"> <li>■ Recovery Plan for the Hine's Emerald Dragonfly – USFWS 2001.</li> </ul>	<ul style="list-style-type: none"> <li>■ Limit ORV traffic in critical habitat areas</li> <li>■ Monitor known populations</li> <li>■ Survey for additional populations</li> <li>■ Manage invasive species</li> <li>■ Minimize impacts to hydrology of known Hine's Emerald Dragonfly habitat</li> </ul>
Houghton's Goldenrod <i>Solidago houghtonii</i>	Threatened	<ul style="list-style-type: none"> <li>■ Recovery Plan for the Houghton's Goldenrod – USFWS 1997.</li> </ul>	<ul style="list-style-type: none"> <li>■ Limit foot and ORV traffic</li> <li>■ Restore large areas of beach flats, rocky and cobble shores, dunes, interdunal wetlands, or alvars</li> </ul>
Lake Sturgeon <i>Acipenser fulvescens</i>		<ul style="list-style-type: none"> <li>■ Michigan's Lake Sturgeon Rehabilitation Strategy – Michigan DNR 2012</li> <li>■ Wisconsin's Lake Sturgeon Management Plan – Wisconsin DNR 2000</li> </ul>	<ul style="list-style-type: none"> <li>■ Re-establish fish passage through barrier removal</li> <li>■ Remove sediments in spawning habitat and replace with large woody debris or washed riprap</li> <li>■ Reforest stream banks</li> </ul>
Piping Plover <i>Charadrius melodus</i>	Endangered	<ul style="list-style-type: none"> <li>■ Recovery Plan for the Great Lakes Piping Plover – USFWS 2003</li> <li>■ Piping Plover 5-Year Review: Summary and Evaluation – USFWS 2009</li> </ul>	<ul style="list-style-type: none"> <li>■ Protect current or recent nest sites in the straits area including Wilderness State Park, Pointe Aux Chenes, and Brevort River</li> <li>■ Continue to expand habitat restoration efforts at Wilderness State Park, including vegetation removal, cobble placement, and invasive species control</li> <li>■ Investigate possible habitat improvement projects at other locations in the Straits area</li> <li>■ Survey other critical habitat units within the focal area for nests each year; protect nests when found</li> </ul>

# Western Lake Erie/Lake St. Clair Focus Area

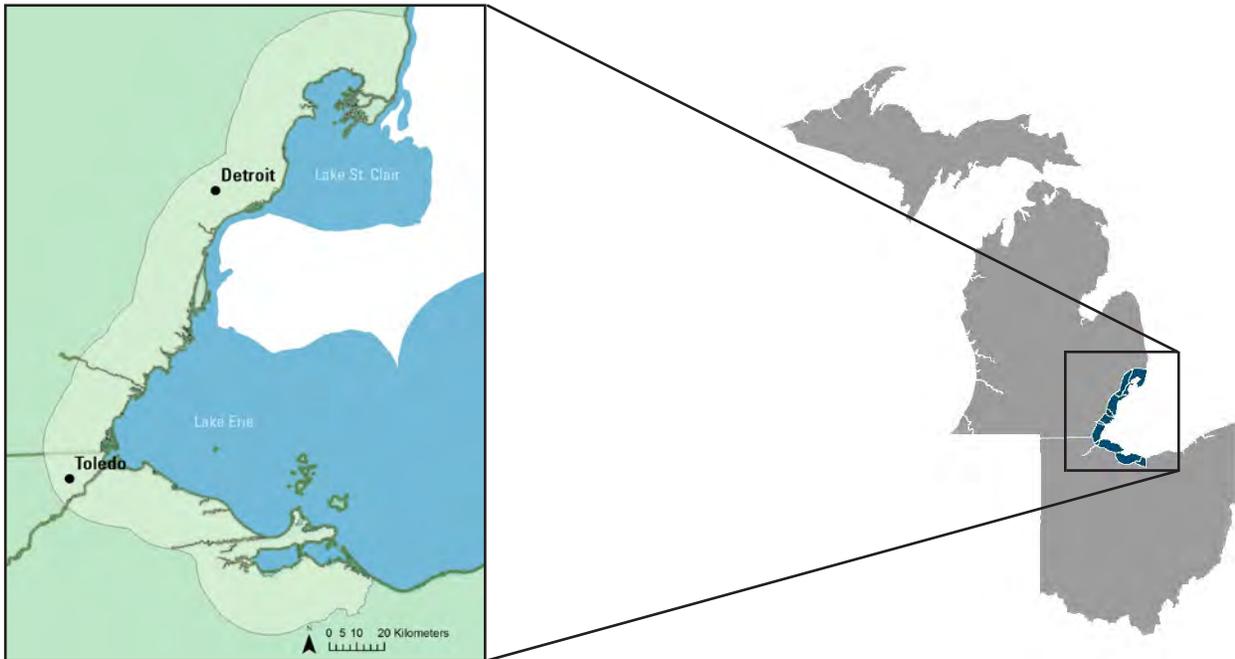


Figure 7. Western Lake Erie/Lake St. Clair focus area.

## Introduction and Overview

The approximately 3,393 square miles encompassed by this focus area are mostly urban, surrounded by a landscape primarily dominated by agriculture (Figure 7). The land is generally flat with predominantly hydric, or wetland, soils. The Detroit-Toledo Metropolitan Statistical Area, an urban opportunity area, falls within this focus area, and an estimated 13 million people live within a three-hour drive of Detroit. The focus area includes what was traditionally known as the Great Black Swamp, which once extended from Lake Erie to Fort Wayne, Indiana. Less than 10% of this original wetland habitat remains, yet it supports a tremendous diversity of wildlife, including many focal species (Table 5). The St. Clair Flats in the northernmost region of the focus area provide suitable nesting habitat for one of the largest colonies of nesting Black Terns in the region.

The Detroit River consists of a 32-mile-long channel bordered by a poorly drained, clay lakeplain and heavy industrial development. The river includes 79 miles of U.S. shoreline and 16 wetlands spanning 3,415 acres. Due to its location at the western end of Lake Erie, the Detroit River area serves as a funnel used as an important stopover point by migrating birds.

Urbanization has significantly impaired fish and wildlife habitat within this focus area, but conservation interest is growing. Degraded areas need restoration, and remaining sites and species need protection. The establishment of invasive plants, especially *Phragmites australis*, have altered habitat within the focus area. Citizens, community organizations, government agencies, and natural resource-oriented non-government organizations are working in this watershed to restore and protect fish and wildlife species and their habitats.

The focus area is located in the Saginaw Bay to Western Lake Erie LCD geography, and local stakeholders will have the opportunity to identify shared goals and project opportunities that will restore, protect, or enhance important coastal wetlands. Additional opportunities exist in this focus area to work with the Service Fisheries Program on reef construction and Lake Sturgeon projects in the Detroit River. The local Ottawa National Wildlife Refuge and Detroit River International Wildlife Refuge also provide opportunities for collaboration on Coastal Program projects.

## Western Lake Erie/Lake St. Clair Focus Area Five-Year Targets\*

- Wetland Restoration/Enhancement/Protection: 110 acres
- Aquatic Organism Passage Structures: 2 structures

\* No Coastal Program staff in this area

## Conservation Partners

Partners include, but are not limited to:

- Ducks Unlimited
- Friends of the Detroit River
- International Wildlife Refuge Alliance
- Ottawa National Wildlife Refuge Association
- Toledo Naturalists Association
- The Nature Conservancy
- Black Swamp Bird Observatory
- National Audubon Society

## Focus Area Habitat Types

- Lakeplain Prairie
- Riverine Wetlands
- Hardwood Swamps

**Table 5. Western Lake Erie/Lake St. Clair focal species, conservation plans, and strategic activities.**

Name	Federal Status	Applicable Plans	Key Strategies/Conservation Actions
Black Tern <i>Chlidonias niger</i>		<ul style="list-style-type: none"> <li>■ Upper Mississippi Valley/Great Lakes Waterbird Conservation Plan - 2010</li> </ul>	<ul style="list-style-type: none"> <li>■ Installation of nesting platforms in marshes subject to frequent nest flooding</li> <li>■ Protect coastal wetlands</li> <li>■ Manage wetland flooding/drawdowns</li> <li>■ Manage dense cattail stands through discing, water level-control measures, or prescribed burning</li> <li>■ Control invasive species (<i>Phragmites</i>)</li> </ul>
Blue-winged Teal <i>Anas discors</i>		<ul style="list-style-type: none"> <li>■ Upper Mississippi River and Great Lakes Region Joint Venture – Waterfowl Conservation Strategy – USFWS 2007</li> </ul>	<ul style="list-style-type: none"> <li>■ Restore and protect coastal wetlands</li> <li>■ Improve water quality</li> </ul>
Canada Warbler <i>Cardellina canadensis</i>		<ul style="list-style-type: none"> <li>■ Upper Mississippi River and Great Lakes Region Joint Venture – Landbird Conservation Strategy – USFWS 2007</li> <li>■ Partners in Flight Bird Conservation Plan for the Boreal Hardwood Transition – PIF 2009</li> </ul>	<ul style="list-style-type: none"> <li>■ Preserve large tracts of mature coniferous and mixed forest contiguous to the Great Lakes</li> <li>■ Promote forest structural diversity</li> <li>■ Increase dead woody material in forests</li> <li>■ Lights Out program and project Safe Passage</li> </ul>
Common Tern <i>Sterna hirundo</i>		<ul style="list-style-type: none"> <li>■ Upper Mississippi River and Great Lakes Region Joint Venture – Waterbird Conservation Strategy – USFWS 2007</li> <li>■ Upper Mississippi Valley/Great Lakes Waterbird Conservation Plan - 2010</li> </ul>	<ul style="list-style-type: none"> <li>■ Creation of artificial islands</li> <li>■ Conserve and manage natural nesting areas through stabilization projects to prevent further erosion</li> <li>■ Limit human access near nesting sites</li> </ul>
Lake Sturgeon <i>Acipenser fulvescens</i>		<ul style="list-style-type: none"> <li>■ Lake Sturgeon Rehabilitation Plan for Lake Superior – Great Lakes Fishery Commission 2003</li> <li>■ Michigan’s Lake Sturgeon Rehabilitation Strategy – Michigan DNR 2012</li> <li>■ Wisconsin’s Lake Sturgeon Management Plan – Wisconsin DNR 2000</li> </ul>	<ul style="list-style-type: none"> <li>■ Re-establish fish passage through barrier removal</li> <li>■ Remove sediments in spawning habitat and replace with large woody debris or washed riprap</li> <li>■ Reforest stream banks</li> </ul>
Monarch Butterfly <i>Danaus plexippus</i>		<ul style="list-style-type: none"> <li>■ Monarch Joint Venture July 2009-May 2014 – Monarch JV 2014</li> <li>■ North American Monarch Conservation Plan – Commission for Environmental Cooperation 2008</li> <li>■ Conservation Status and Ecology of the Monarch Butterfly in the United States – Jepsen et al., 2015</li> </ul>	<ul style="list-style-type: none"> <li>■ Enhancement and improved management of milkweed or nectar sources</li> <li>■ Protect existing breeding monarch habitat</li> </ul>
Snuffbox <i>Epioblasma triquetra</i>	Endangered	<ul style="list-style-type: none"> <li>■ Snuffbox Species Factsheet – MNFI 2004</li> <li>■ USFWS Recovery Outline</li> <li>■ SARA Recovery Strategy – Ontario 2012</li> <li>■ SARA Recovery Strategy Progress Report – Ontario 2013</li> </ul>	<ul style="list-style-type: none"> <li>■ Reduce silt loading and run-off in rivers</li> <li>■ Maintain and increase riffle habitat with gravel beds</li> <li>■ Remove dams</li> </ul>



Tina Shaw/USFWS



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# Saginaw Bay Focus Area

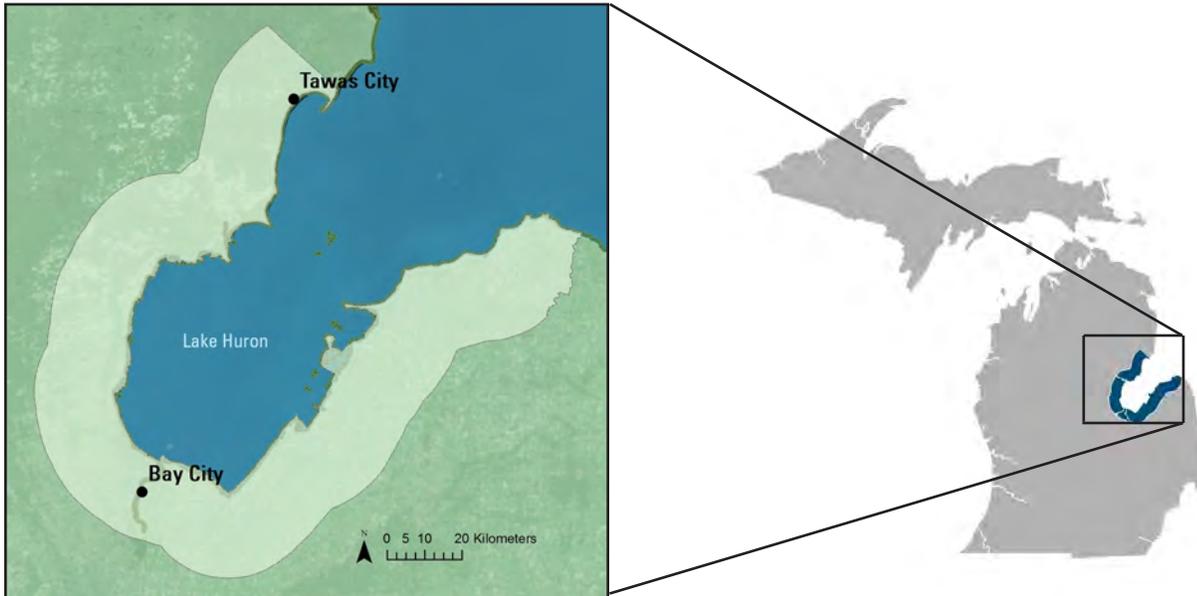


Figure 8. Saginaw Bay Focus Area.

## Introduction and Overview

With a surface area of more than 1,100 square miles, Lake Huron’s Saginaw Bay is the second largest bay in the Great Lakes system and is divided equally into a shallow inner bay (15 feet average depth) and a deeper outer bay (51 feet average depth). The approximately 2,683 square-mile focus area and nearby lands support numerous species of waterfowl, raptors, shorebirds, reptiles, amphibians, insects, and fish. The area’s natural communities, marshes, islands, shoals, waterfront lands, streams, and lakeplain remnants provide habitat for rare plant species as well as many common plant and animal species. The area is nationally acclaimed for its recreational fishing opportunities for walleye and smallmouth bass. Waterfowl hunting has had a long tradition in this focus area and remains popular today.

Tawas Point, in the northernmost region of the focus area, is a well-known migratory bird and Monarch Butterfly stopover location. The Saginaw River, the associated watershed, and the inner Saginaw Bay have been significantly impacted by contaminants, eutrophication, and habitat destruction and fragmentation. As a result, the International Joint Commission has listed the area as an Area of Concern.

Intense agriculture and urbanization has seriously impaired fish and wildlife habitat within the coastal areas and adjoining watersheds. Development, excavation in wetlands, and other alterations and disturbance of the coastal area have accelerated expansion of invasive plants, especially *Phragmites australis*. Many opportunities for monitoring, restoration, research, improved management, and education exist. The focus area also encompasses sites where coastal processes, functions, and biological diversity remain high, and these locations should be protected and promoted for their value to fish, wildlife, and people.

The focus area is included in the Saginaw Bay to Western Lake Erie LCD geography, and local stakeholders will have the opportunity to identify shared goals and project opportunities that will restore, protect, or enhance important coastal wetlands. Although greater than 15 miles from Saginaw Bay, Shiawassee National Wildlife Refuge contains hundreds of acres of Great Lakes coastal wetlands and is an important potential partner within the focus area. Many cross-program integration opportunities are available through the Service’s Fish Passage or Partners for Fish and Wildlife Programs.

<p style="text-align: center;"><b>Saginaw Bay Focus Area Five-Year Targets</b></p> <ul style="list-style-type: none"> <li>■ Wetland Restoration/Enhancement/ Protection: 50 acres</li> <li>■ Upland Restoration/Enhancement/ Protection: 10 acres</li> </ul> <p><b>* No Coastal Program staff in the area</b></p>
<p style="text-align: center;"><b>Conservation Partners</b></p> <p>Partners include, but are not limited to:</p> <ul style="list-style-type: none"> <li>■ Ducks Unlimited</li> <li>■ National Audubon Society</li> <li>■ The Nature Conservancy</li> <li>■ Huron Pines</li> <li>■ Saginaw Basin Land Conservancy</li> <li>■ Saginaw Chippewa Indian Tribe</li> <li>■ Michigan Department of Natural Resources</li> </ul>
<p style="text-align: center;"><b>Focus Area Habitat Types</b></p> <ul style="list-style-type: none"> <li>■ Lakeplain Prairie</li> <li>■ Great Lakes Coastal Wetlands</li> <li>■ Riverine Wetlands</li> </ul>

**Table 6. Saginaw Bay focal species, conservation plans, and strategic activities.**

<i>Name</i>	<i>Federal Status</i>	<i>Applicable Plans</i>	<i>Key Strategies/Conservation Actions</i>
Black Tern <i>Chlidonias niger</i>		<ul style="list-style-type: none"> <li>■ Upper Mississippi Valley/Great Lakes Waterbird Conservation Plan - 2010</li> </ul>	<ul style="list-style-type: none"> <li>■ Installation of nesting platforms in marshes subject to frequent nest flooding</li> <li>■ Protect coastal wetlands</li> <li>■ Manage wetland flooding/drawdowns</li> <li>■ Manage dense cattail stands through discing, water level-control measures, or prescribed burning</li> <li>■ Control invasive species (<i>Phragmites</i>)</li> </ul>
Blue-winged Teal <i>Anas discors</i>		<ul style="list-style-type: none"> <li>■ Upper Mississippi River and Great Lakes Region Joint Venture – Waterfowl Conservation Strategy – USFWS 2007</li> </ul>	<ul style="list-style-type: none"> <li>■ Restore and protect coastal wetlands</li> <li>■ Improve water quality</li> </ul>
Canada Warbler <i>Cardellina canadensis</i>		<ul style="list-style-type: none"> <li>■ Upper Mississippi River and Great Lakes Region Joint Venture – Landbird Conservation Strategy – USFWS 2007</li> <li>■ Partners in Flight Bird Conservation Plan for the Boreal Hardwood Transition – PIF 2009</li> </ul>	<ul style="list-style-type: none"> <li>■ Preserve large tracts of mature coniferous and mixed forest contiguous to the Great Lakes</li> <li>■ Promote forest structural diversity</li> <li>■ Increase dead woody material in forests</li> <li>■ Lights Out program and project Safe Passage</li> </ul>
Common Tern <i>Sterna hirundo</i>		<ul style="list-style-type: none"> <li>■ Upper Mississippi River and Great Lakes Region Joint Venture – Waterbird Conservation Strategy – USFWS 2007</li> <li>■ Upper Mississippi Valley/Great Lakes Waterbird Conservation Plan - 2010</li> </ul>	<ul style="list-style-type: none"> <li>■ Creation of artificial islands</li> <li>■ Conserve and manage natural nesting areas through stabilization projects to prevent further erosion</li> <li>■ Limit human access near nesting sites</li> </ul>
Lake Sturgeon <i>Acipenser fulvescens</i>		<ul style="list-style-type: none"> <li>■ Lake Sturgeon Rehabilitation Plan for Lake Superior – Great Lakes Fishery Commission 2003</li> <li>■ Michigan’s Lake Sturgeon Rehabilitation Strategy – Michigan DNR 2012</li> <li>■ Wisconsin’s Lake Sturgeon Management Plan – Wisconsin DNR 2000</li> </ul>	<ul style="list-style-type: none"> <li>■ Re-establish fish passage through barrier removal</li> <li>■ Remove sediments in spawning habitat and replace with large woody debris or washed riprap</li> <li>■ Re-forest stream banks</li> </ul>
Monarch Butterfly <i>Danaus plexippus</i>		<ul style="list-style-type: none"> <li>■ Monarch Joint Venture July 2009-May 2014 – Monarch JV 2014</li> <li>■ North American Monarch Conservation Plan – Commission for Environmental Cooperation 2008</li> <li>■ Conservation Status and Ecology of the Monarch Butterfly in the United States – Jepsen et al., 2015</li> </ul>	<ul style="list-style-type: none"> <li>■ Enhancement and improved management of milkweed or nectar sources</li> <li>■ Protect existing breeding monarch habitat</li> </ul>
Piping Plover <i>Charadrius melodus</i>	Endangered	<ul style="list-style-type: none"> <li>■ Recovery Plan for the Great Lakes Piping Plover – USFWS 2003</li> <li>■ Piping Plover 5-Year Review: Summary and Evaluation – USFWS 2009</li> </ul>	<ul style="list-style-type: none"> <li>■ Protect current nesting site at Tawas Point State Park and other nearby locations</li> <li>■ Survey former nesting sites like Linwood each season for signs of nesting plovers, protect nests when found</li> <li>■ Investigate possible habitat restoration areas at suitable sites within the focal area</li> </ul>



Ken Sturm/USFWS



Amanda Boyd/USFWS

# Urban Opportunity Focus Area

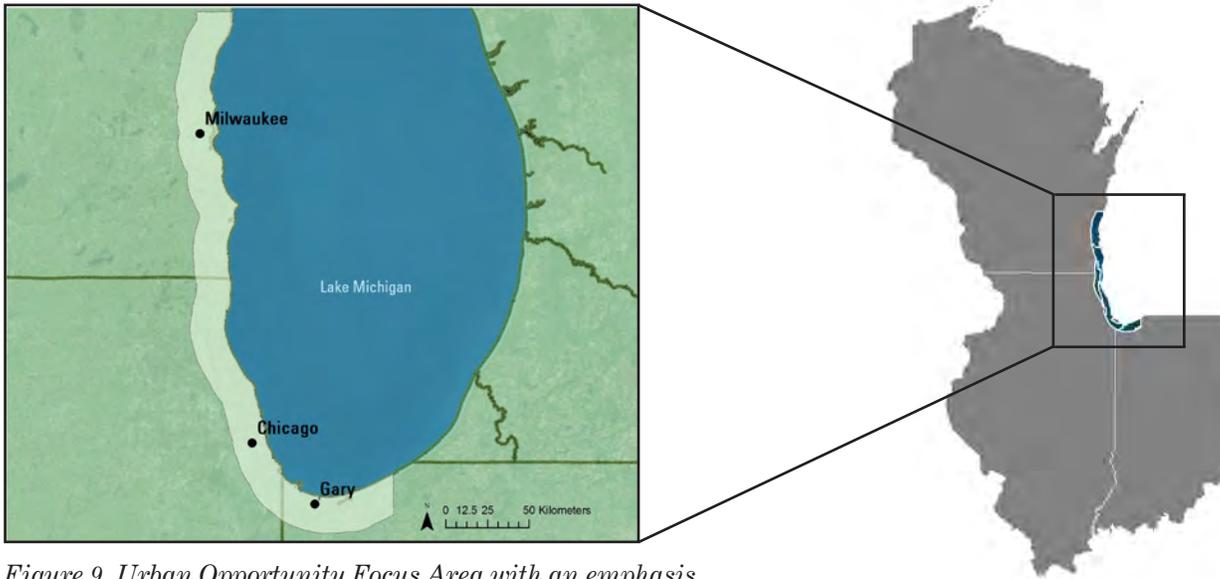


Figure 9. Urban Opportunity Focus Area with an emphasis on the Chicago-Milwaukee-Gary area.

## Introduction and Overview

The 15-mile coastal ribbon of the Great Lakes includes significant portions of several of the largest Metropolitan Statistical Areas (MSAs) in the region. While the development of these major urban areas has replaced large tracts of formerly viable coastal habitat, urban areas often continue to provide benefits to Service trust resources and even coastal focal species (Table 7), even if their capacity to support breeding habitat is diminished.

The Chicago-Milwaukee-Gary Urban Opportunity Area includes the 15-mile coastal ribbon within the combined Chicago and Milwaukee MSAs and covers 3,152 square miles (Figure 9). In addition to having the potential to reach an underrepresented urban population, well known coastal resource opportunities in this area include the Chiwaukee Prairie-Illinois Beach Lake Plain (recognized as a RAMSAR wetland complex of global importance), the urban Chicago River; Calumet River; Thorn Creek and Plum Creek systems, and numerous small greenspaces that provide crucial stopover habitat for migratory birds within the city of Chicago. Urban greenspaces along the coastline of Lake Michigan in Chicago have long been known to provide important stopover habitat for migratory birds. In addition, some passerines fly long distances over the Great Lakes. When these birds arrive over land, they are often exhausted, and if this occurs in an urban center, they flock to small greenspaces to forage and rest before continuing migration.

Portions of the Great Lakes coastal ribbon that fall within urban areas may provide unique opportunities to connect the nation’s growing urban population with nature. Concentrating attention and funding on natural resource-rich areas away from urban centers may have the indirect effect of disenfranchising urban people from connections with nature and the remnant natural environments around them. For this reason, the Program has identified high-priority Urban Opportunity Areas within the coastal ribbon. While only the Chicago-Milwaukee-Gary Urban Opportunity Area is described in detail here, opportunities exist for projects in the Detroit-Toledo (part of the Western Lake Erie/Lake St. Clair Focus Area) and Cleveland MSAs as well. Across Urban Opportunity Areas, cross-program integration is encouraged between urban refuges (e.g., Detroit International Wildlife Refuge), urban wildlife refuge partnerships (Forest Preserves of Cook County), and the Coastal Program.

Urban Opportunity Focus Area Five-Year Targets*
<ul style="list-style-type: none"> <li>■ Wetland Restoration/Enhancement: 20 acres</li> <li>■ Upland Restoration/Enhancement: 20 acres</li> <li>■ Aquatic Organism Passage Structures: 2 structures</li> <li>■ Unique Urban Habitats: 15 acres</li> <li>■ Youth Engagement: 5 events</li> </ul> <p><b>*80% of projects will connect youth with nature</b></p>
Conservation Partners
<p>Partners include, but are not limited to:</p> <ul style="list-style-type: none"> <li>■ Chicago Wilderness</li> <li>■ Chicago Park District</li> <li>■ Forest Preserve Districts in Cook, Lake, and Will Counties, Illinois</li> <li>■ Indiana Dunes National Lakeshore</li> <li>■ National Audubon Society</li> <li>■ States of Indiana and Wisconsin</li> </ul>
Focus Area Habitat Types
<ul style="list-style-type: none"> <li>■ Great Lakes Coastal Wetlands</li> <li>■ Coastal Dune and Swale Complex</li> <li>■ Unique Urban Opportunity Habitats</li> </ul>

**Table 7. Urban Opportunity Area focal species, conservation plans, and strategic activities.**

Name	Federal Status	Applicable Plans	Key Strategies/Conservation Actions
Blue-winged Teal <i>Anas discors</i>		<ul style="list-style-type: none"> <li>■ Upper Mississippi River and Great Lakes Region Joint Venture – Waterfowl Conservation Strategy – USFWS 2007</li> </ul>	<ul style="list-style-type: none"> <li>■ Restore and protect coastal wetlands</li> <li>■ Improve water quality</li> </ul>
Canada Warbler <i>Cardellina canadensis</i>		<ul style="list-style-type: none"> <li>■ Upper Mississippi River and Great Lakes Region Joint Venture – Landbird Conservation Strategy – USFWS 2007</li> <li>■ Partners in Flight Bird Conservation Plan for the Boreal Hardwood Transition – PIF 2009</li> </ul>	<ul style="list-style-type: none"> <li>■ Preserve large tracts of mature coniferous and mixed forest contiguous to the Great Lakes</li> <li>■ Promote forest structural diversity</li> <li>■ Increase dead woody material in forests</li> <li>■ Lights Out program and project Safe Passage</li> </ul>
Common Tern <i>Sterna hirundo</i>		<ul style="list-style-type: none"> <li>■ Upper Mississippi River and Great Lakes Region Joint Venture – Waterbird Conservation Strategy – USFWS 2007</li> <li>■ Upper Mississippi Valley/Great Lakes Waterbird Conservation Plan - 2010</li> </ul>	<ul style="list-style-type: none"> <li>■ Conserve and manage natural nesting areas through stabilization projects to prevent further erosion</li> <li>■ Limit human access near nesting sites</li> </ul>
Lake Sturgeon <i>Acipenser fulvescens</i>		<ul style="list-style-type: none"> <li>■ Lake Sturgeon Rehabilitation Plan for Lake Superior – Great Lakes Fishery Commission 2003</li> <li>■ Michigan’s Lake Sturgeon Rehabilitation Strategy – Michigan DNR 2012</li> <li>■ Wisconsin’s Lake Sturgeon Management Plan – Wisconsin DNR 2000</li> </ul>	<ul style="list-style-type: none"> <li>■ Re-establish fish passage through barrier removal</li> <li>■ Remove sediments in spawning habitat and replace with large woody debris or washed riprap</li> <li>■ Reforest stream banks</li> </ul>
Monarch Butterfly <i>Danaus plexippus</i>		<ul style="list-style-type: none"> <li>■ Monarch Joint Venture July 2009-May 2014 – Monarch JV 2014</li> <li>■ North American Monarch Conservation Plan – Commission for Environmental Cooperation 2008</li> <li>■ Conservation Status and Ecology of the Monarch Butterfly in the United States – Jepsen et al., 2015</li> </ul>	<ul style="list-style-type: none"> <li>■ Enhancement and improved management of milkweed or nectar sources</li> <li>■ Protect existing breeding monarch habitat</li> </ul>
Piping Plover <i>Charadrius melodus</i>	Endangered	<ul style="list-style-type: none"> <li>■ Recovery Plan for the Great Lakes Piping Plover – USFWS 2003</li> <li>■ Piping Plover 5-Year Review: Summary and Evaluation – USFWS 2009</li> </ul>	<ul style="list-style-type: none"> <li>■ Reduce visitor, dog, and/or ATV/ORV traffic on nesting beaches</li> <li>■ Protect current nesting site at Illinois Beach State Park and nearby properties</li> <li>■ Survey likely habitat each season for signs of possible nesting attempts, protect nesting plovers when found</li> </ul>



Ryan Hagerthy/USFWS



Amanda Boyd/USFWS



Greg Thompson/USFWS



Tom Koerner/USFWS

## Goal II. Broaden and Strengthen Partnerships

### Objective: Cultivate new and maintain existing partnerships

Partnerships are maintained or are created via relationships born of common purpose and cooperation. New partnerships often arise when new restoration needs or challenges are identified. As relationships mature, Program staff are better able to recognize how to bring different abilities and expertise to complex conservation issues. The Service needs to support both the development of new partnerships as well as maintain existing partnerships.

#### *Five-Year Target*

Through on-the-ground projects, *Midwest Region Coastal Program* will support 25 new or ongoing Coastal Program partnerships with private landowners, tribes, states, federal agencies, non-governmental organizations or industry.

### Objective: Leverage Funds

Sharing the cost of project implementation demonstrates regional collaboration and commitment of all the partners to strive towards common goals.

#### *Five-Year Target*

Across all on-the-ground projects, *Midwest Region Coastal Program* will work with partnering organizations to leverage Coastal Program funding with at least 50% funding or in-kind contributions from other sources.

### Objective: Provide technical assistance

Some partners may not possess the time or skills necessary for all aspects of a coastal conservation effort. Program staff can identify key individuals for help in site assessment and evaluating proposal concepts, as every coastal location is unique in processes and characteristics. Program staff can also assist with grant writing, obtaining permits (such as those required by National Environmental Policy Act, Endangered Species Act and State Historic Preservation Office), coalition building, or project planning. Program staff will engage with and bring together expertise from state, federal, and local partners as needed.

#### *Five-Year Target*

Cumulatively, Program staff will respond to a minimum of eight technical assistance requests annually. This could include participation in meetings, site visits with scientific experts and local managers, or providing written comments. Individual staff will track responses to technical assistance requests in HabITS.

## Goal III. Improve Information Sharing and Communication

Communication and information sharing are critical to conservation success and serve to support all other Strategic Work Plan goals and activities. Sharing information broadens the impact on conservation by informing resource managers and restoration practitioners who are responsible for regulating, managing, and implementing habitat conservation.

Communication is also focused internally within the Service and among other agencies to promote the Coastal Program and to facilitate collaboration.



## **Objective: Improve communication and coordination within the Service and with external partners**

Communication internally across Service on-the-ground restoration programs and externally with partners helps to ensure resources are leveraged and accomplish the most for federal trust species. The Program goal is to provide seamless delivery of conservation using the strengths and specific capabilities of partners and each of the Service's programs. This takes continuous communication, coordination, and development of relationships internally and externally across diverse programs and partners. The Program will improve communication in a multitude of ways, including conducting regular project meetings, participating in local and regional partnership efforts (e.g., Sustain Our Great Lakes), giving presentations at events, and regularly updating the Service website, brochures, and factsheets.

### *Five-Year Target*

Within geographic focal areas, identify and implement 10 complementary or integrated projects with Partners for Fish and Wildlife, Fish Passage, Joint Venture, Natural Resource Damage Assessment, or other Service programs.

### *Five-Year Target*

Program staff will enter in HabITS at least two communication "accomplishments" annually that involve Congress, media, other federal agencies, tribes, other Program partners, or youth as target audiences.

## **Objective: Increase communication with Congressional staff**

Communicating with elected officials helps raise awareness of the Service and the Coastal Program. These activities highlight the effective use of appropriated funds and show elected officials how Program partners within their districts (and society at large) are benefitting.

### *Five-Year Target*

Coastal Program staff will lead or participate in at least five events, meetings, briefings, or site tours with members of Congress or their staff to share stories of conservation successes that the Program has forged with local partners.

## **Objective: Engage youth**

Youth engagement is an Interior and Service priority, both nationally and regionally. Engaging youth helps inspire the next generation of conservation professionals and builds a bridge to the natural world. In urbanized areas, these opportunities are especially important, as these children are often more disconnected from nature than rural or suburban youth. One of the Program's focus areas under Goal I: Conserve Habitat is Urban Opportunity Areas, a unique focus area concept that highlights the opportunity for youth engagement in metropolitan areas in the Great Lakes.

### *Five-Year Target*

Coastal Program staff or project partners will engage in at least 10 activities that connect youth to nature, including, but not limited to, community outreach events, environmental education presentations, development of Schoolyard Habitats or outdoor classrooms, or involvement with Boy/Girl Scout events. We expect to draw, at least in part, directly from projects supported in the Urban Focus Area to achieve this regional, five-year target.

# **Goal IV. Enhance Coastal Program Workforce**

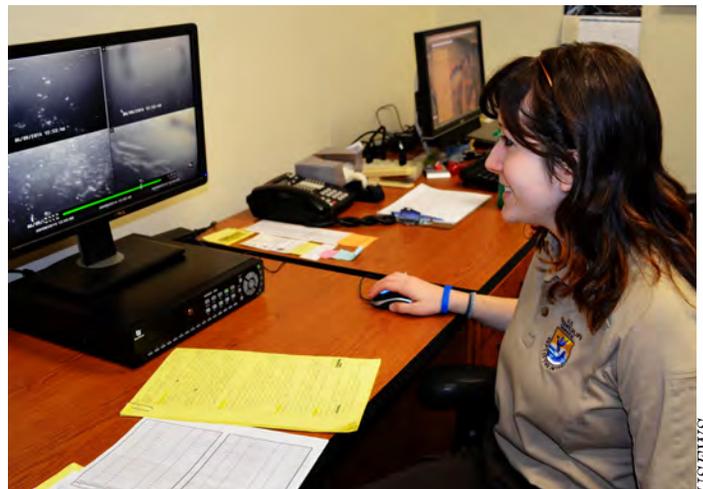
Midwest Region staff represents the Coastal Program's most critical resource. Enhancing workforce capability allows the Program to deliver more and better on-the-ground results for federal trust resource species. Providing personnel with the opportunity to increase knowledge and technical expertise through continued training and experience helps ensure quality coastal conservation.

## **Objective: Ensure professional growth and development of staff**

A skilled and motivated staff represents the front line of communication and program delivery with area partners and stakeholders. Through various training opportunities, staff are exposed to the latest advancements in restoration, decision support, facilitation, planning, or other conservation-relevant fields. Skilled personnel are able to identify, initiate, and implement complex coastal restoration projects effectively and bring in the right expertise to facilitate success.

### *Five-Year Target*

Each Coastal Program staff member receives at least 40 hours of professional development/training each year through formal coursework, attendance at coastal-related workshops or conferences, mentoring new employees, or work details to other offices or programs.



# Goal V. Increase Accountability

The primary goal of the Coastal Program is to implement habitat conservation projects. Goal V ensures to Program staff, partners, and the American public that project impacts are known, accurate, and meet the stated standards. It also ensures that project operations are administratively efficient and fiscally transparent. This Goal is critically linked to the HabITS database.

## Objective: Track and report accomplishments

The Coastal Program will track and report accomplishments from this Strategic Work Plan in the HabITS database. Additional tracking features that capture activities under Goals II-V of this plan will be added in the near future. In addition, on-the-ground accomplishments are predicted and tracked through Government Performance and Results Act (GPRA) at the beginning and end of each fiscal year. Project accomplishments will be shared on the regional Coastal Program website, social media feeds, and in Service newsletters.

### *Five-Year Target*

The Coastal Program regional coordinator will produce an annual accomplishment report that summarizes the region's on-the-ground restoration projects and strategic activities relating to Goals II-V. The report will track the implementation of this Strategic Work Plan, identify potential gaps, and make recommendations to fill those gaps in the upcoming year.

### *Five-Year Target*

Program staff will enter all project (Habitat Improvement module) and related accomplishments (Strategic Planning module) via HabITS annually. The regional coordinator will facilitate a regional roll-up of accomplishments through a QA/QC process and will work with field staff to ensure data entered are complete and accurate.

### *Five-Year Target*

Program staff will meet or exceed Coastal Program GPRA targets set each fiscal year.

## Objective: Monitoring projects and biological outcomes

Monitoring is critical to adaptive management and fully implementing Strategic Habitat Conservation. There are several types of monitoring. Compliance monitoring ensures that stated objectives and activities are completed. It answers questions such as, "Did we restore all 25 acres to prairie?" Compliance monitoring is required with financial assistance agreements and should be readily observable at the time the project is completed. Monitoring can also include how fish and wildlife trust resources respond to project activities; the biological outcomes of the project. This monitoring could answer questions like, "What species of fish were found above the culvert once it was replaced?" Monitoring for biological outcomes usually requires some level of pre-project assessment. Similar post-project assessments then help make a comparison of before- and after-project implementation. The five-year targets below track compliance and take a first step toward biological outcome monitoring both at a project and regional level.

### *Five-Year Target*

Program staff completes implementation and compliance monitoring for all on-the-ground projects (level 1 monitoring as defined by Headquarters).

### *Five-Year Target*

For all projects that are expected to benefit or improve conditions for the endangered Piping Plover, Program staff will note the observed response of the species in HabITS. The response could include changes in number of individuals, nests, or number of fledglings observed. Program staff will coordinate with Ecological Services staff to acquire Piping Plover monitoring information.

### *Five-Year Target*

Working with state, federal, and other partners, develop and implement a Regional Monitoring Plan per guidance from Service headquarters and recommendations of the draft National Coastal Program Handbook.



Jim Hudgins/USFWS

# Stakeholder Involvement

Coastal Program staff obtained input from and involved stakeholders in this Strategic Work Plan revision. Within the Service, the draft Plan was distributed to the various programs for review and comment. Special emphasis was placed on engaging the other Service restoration-focused programs including Fish Passage, Partners for Fish and Wildlife, and Joint Venture. Non-Service stakeholders selected for engagement in the Strategic Work Plan revision process included past Coastal Program partners, coastal/Great Lakes tribes, federal agencies related to the Great Lakes, state fisheries and wildlife offices, and state Coastal Zone Management programs. The role of the stakeholders during this process was to review and provide input with a focus on the newly selected focus areas and species; however, the entire Strategic Work Plan was available for review.

The draft Strategic Work Plan was sent to the stakeholders (listed right) via a webinar in August 2016. Stakeholders were given 30 days for review and feedback, after which Coastal Program staff reviewed comments, interacted with stakeholders one-on-one and made appropriate adjustments to the Plan.

## Midwest Region Coastal Program received input on the draft Strategic Work Plan from the following stakeholders:

- Indiana Department of Natural Resources
- National Audubon Society
- U.S. Fish and Wildlife Service - Science Applications, Ottawa National Wildlife Refuge, Migratory Birds, Fisheries, Partners for Fish and Wildlife, and Joint Venture
- U.S. Geological Survey
- U.S. Geological Survey - Coastal Branch
- Upper Midwest and Great Lakes Landscape Conservation Cooperative
- Wisconsin Department of Natural Resources

This Plan will be distributed via e-mail, website postings, listserves, press releases, or social media to the above stakeholder list and more broadly to the Great Lakes conservation community.





## Appendix A. Midwest Region Upper Midwest Great Lakes Surrogate Species

Habitat System	Common Name	Scientific Name
Forest	Canada Warbler*	<i>Cardellina canadensis</i>
	Pine Warbler	<i>Dendroica pinus</i>
	Wood Thrush	<i>Hylocichla mustelina</i>
Shrubland	American Woodcock	<i>Scolopax minor</i>
	Golden-winged Warbler	<i>Vermivora chrysoptera</i>
Grassland	Bobolink	<i>Dolichonyx orizivorus</i>
	Eastern Meadowlark	<i>Sturnella magna</i>
	Eastern Prairie-fringed Orchid	<i>Platanthera leucophaea</i>
	Henslow's Sparrow	<i>Ammodramus henslowii</i>
	Karner Blue	<i>Lycæides melissa samuelis</i>
	Northern Flicker	<i>Colaptes auratus</i>
	Upland Sandpiper	<i>Bartramia longicauda</i>
	Monarch Butterfly*	<i>Danaus plexippus</i>
Beach and Open Coast	Houghton's Goldenrod*	<i>Solidago houghtonii</i>
	Piping Plover*	<i>Charadrius melodus</i>
Riverine and Riparian	Brook Trout*	<i>Salvelinus fontinalis</i>
	Higgin's Eye Pearlymussel	<i>Lampsilis higginsii</i>
	Lake Sturgeon*	<i>Acipenser fulvescens</i>
	Paddlefish	<i>Polyodon spathula</i>
	Red-shouldered Hawk	<i>Buteo lineatus</i>
	River Redhorse	<i>Moxostoma carinatum</i>
	Smallmouth Bass	<i>Micropterus dolomieu</i>
	Snuffbox*	<i>Epioblasma triquetra</i>
Lacustrine	Wood Duck	<i>Aix sponsa</i>
	Common Loon	<i>Gavia immer</i>
	Common Tern*	<i>Sterna hirundo</i>
	Lesser Scaup	<i>Aythya affinis</i>
	Bloater	<i>Coregonus hoyi</i>
	Cisco/Lake Herring	<i>Coregonus artedii</i>
	Lake Trout	<i>Salvelinus namaycush</i>
Walleye	<i>Stizostedion vitreum</i>	
Palustrine	Black Tern*	<i>Chlidonias niger</i>
	Blue-winged Teal*	<i>Anas discors</i>
	Mallard	<i>Anas platyrhynchos</i>
	LeConte's Sparrow	<i>Ammodramus leconteii</i>

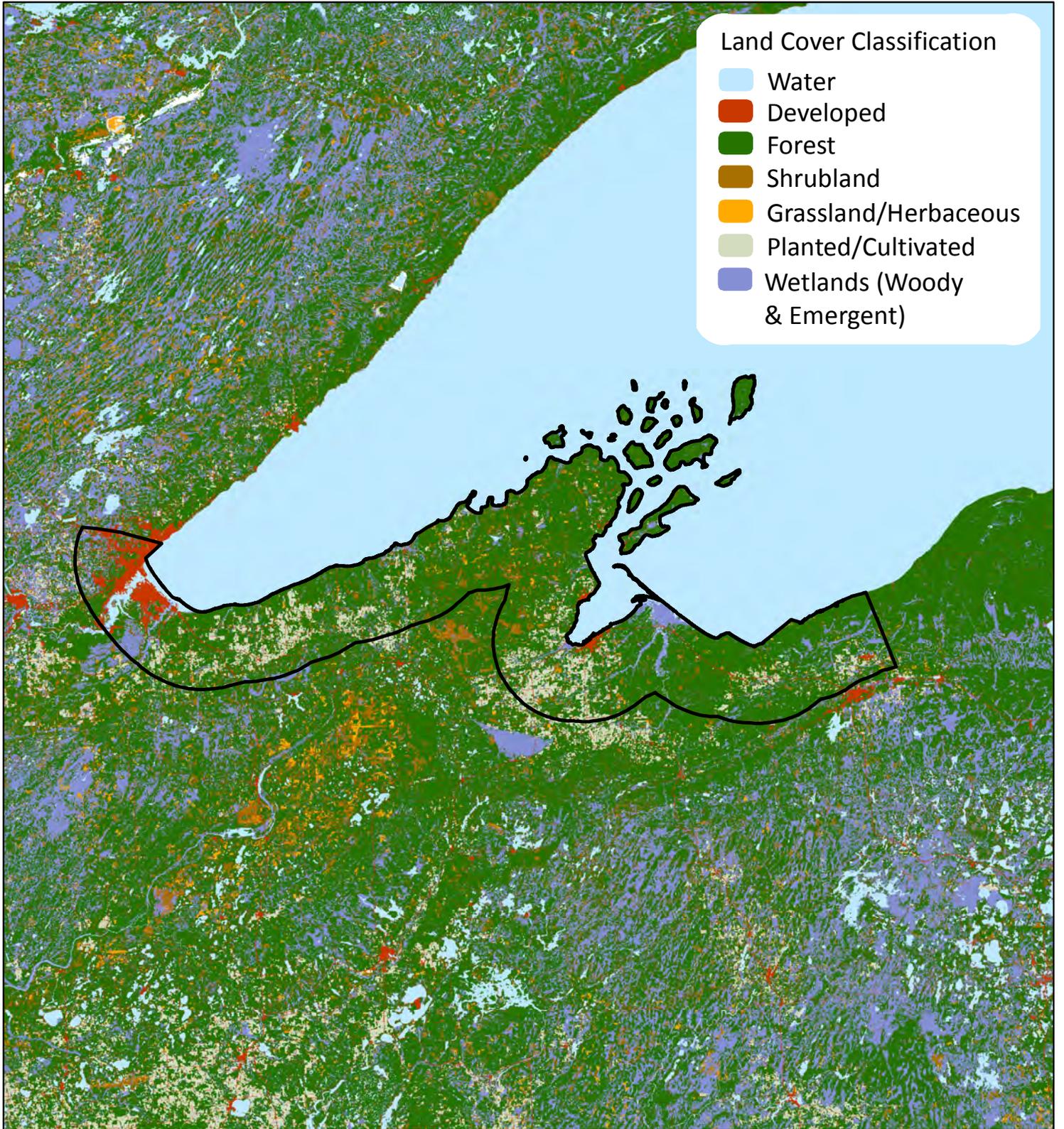
\*Identified as a coastally relevant species based on life history and use of coastal habitats

## Appendix B. USFWS Coastal Program Terms and Habitat Types

<b>USFWS Coastal Program General Terms</b>	<b>Definition</b>
Federal Trust Species	Migratory birds, species that are listed as threatened or endangered under the Endangered Species Act, interjurisdictional fishes, and other species of concern.
Habitat Enhancement	The manipulation of the physical, chemical, or biological characteristics of an area to change specific function(s) or successional stages to provide additional benefits for federal trust species or other priority species.
Habitat Protection	A long-term action to safeguard habitat conditions and functions needed by federal trust species and other priority species during the various stages of their life.
Habitat Restoration	The manipulation of a site with the goal of returning natural/historical function and integrity to a site that has degraded or lost native habitat.
<b>USFWS Coastal Program Habitat Types (Acreage Target Category)</b>	<b>Definition</b>
Coastal Dune and Swale Complex (Wetland and Upland)	A complex of parallel wetland swales (low-lying wetland) and dunes (upland beach ridges) found in coastal embayments along the Great Lakes.
Coastal Forests (Upland)	Deciduous, coniferous, or mixed forest communities located along the Great Lakes.
Cold Water Tributary Streams (Stream Channel)	Flowing waters that are influenced by the Great Lakes and remain at, or around, 22 degrees Celsius. Coldwater streams are generally dominated by trout and sculpin.
Great Lakes Coastal Wetlands (Wetland)	Herbaceous wetland communities found along the Great Lakes that are influenced by water level fluctuations. Coastal wetlands are composed of three zones: wet meadow, emergent marsh, and submergent marsh.
Hardwood Swamps (Wetland)	Seasonally inundated, deciduous forests found in low, level terrain near rivers, lakes, or wetlands.
Lakeplain Prairie (Wetland)	A prairie community found in the southern Great Lakes region that is seasonally inundated. Lakeplain prairies are species-rich and are influenced by flooding, water level changes, beaver flooding, and fire events.
Riverine Wetlands (Wetland)	Wetland communities found in or along stream channel floodplains and riparian zones.
Unique Urban Opportunity Habitats (Wetland, Upland, and/or Stream Channel)	Habitat supporting federal trust species and/or identified focal species located within identified metropolitan statistical areas.

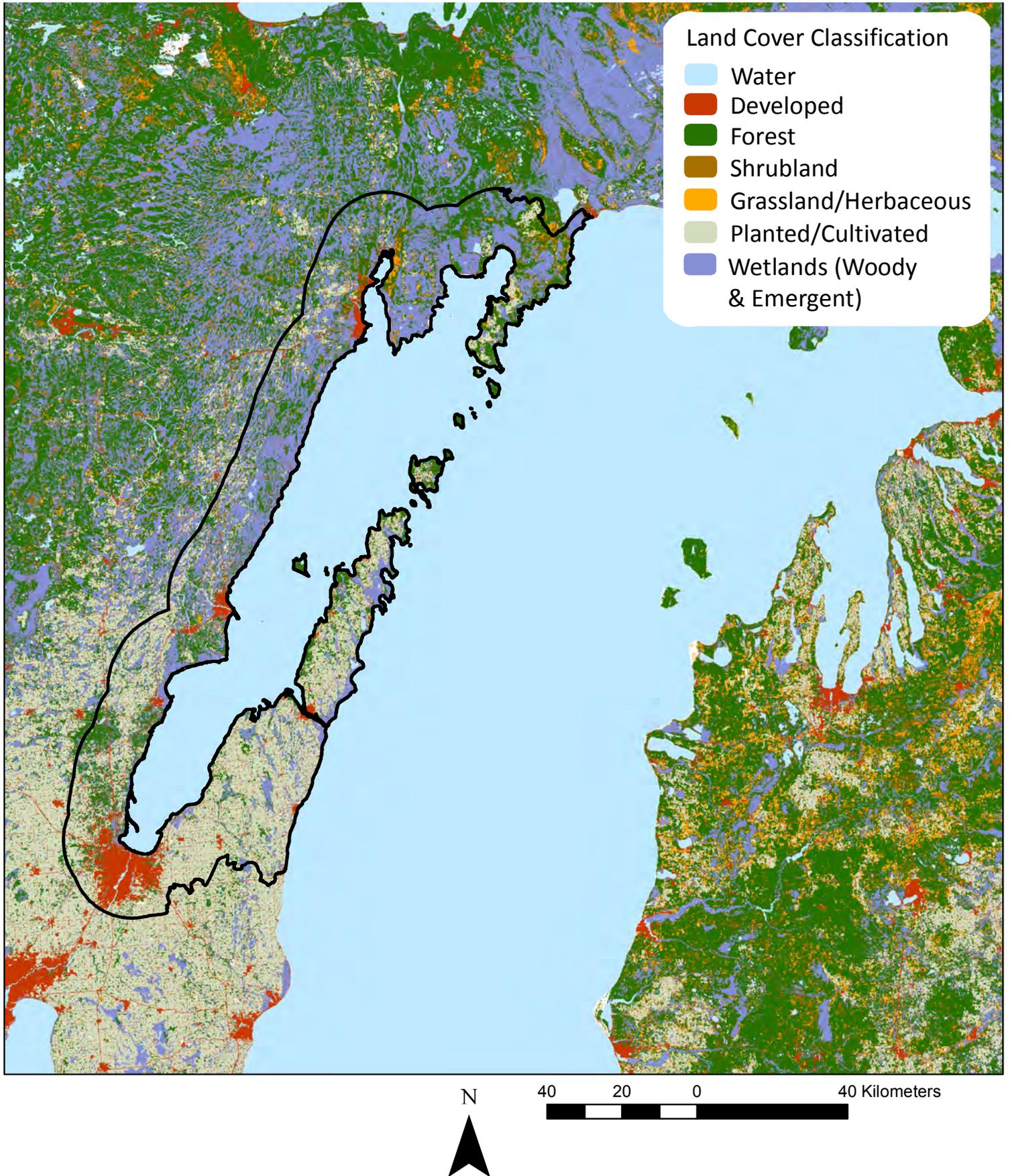
\*Habitat information retrieved from the Michigan Natural Features Inventory (<http://mnfi.anr.msu.edu/communities>) and the Wisconsin Department of Natural Resources (<http://dnr.wi.gov>).

# Appendix C. Western Lake Superior - National Land Cover Data Map

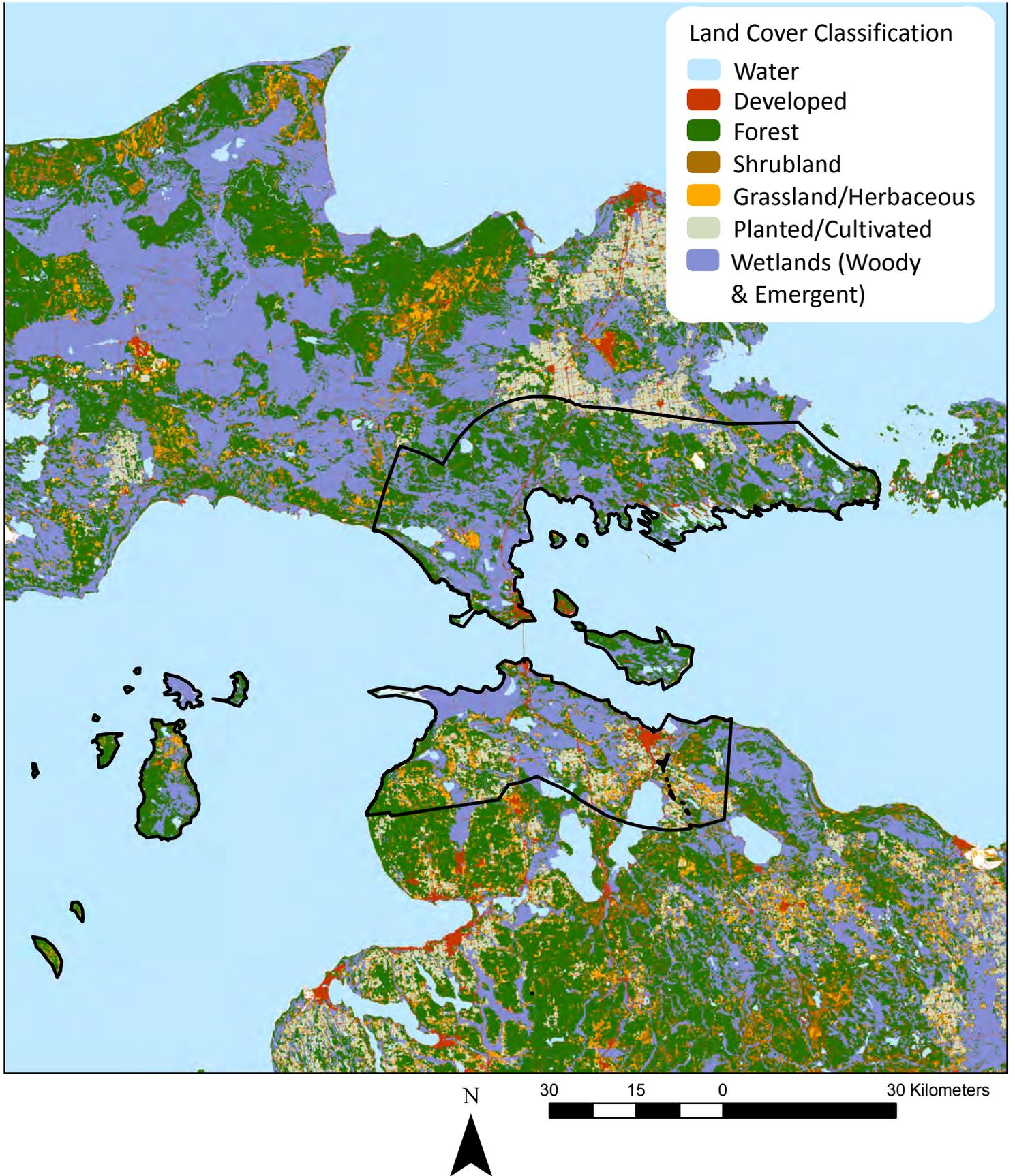


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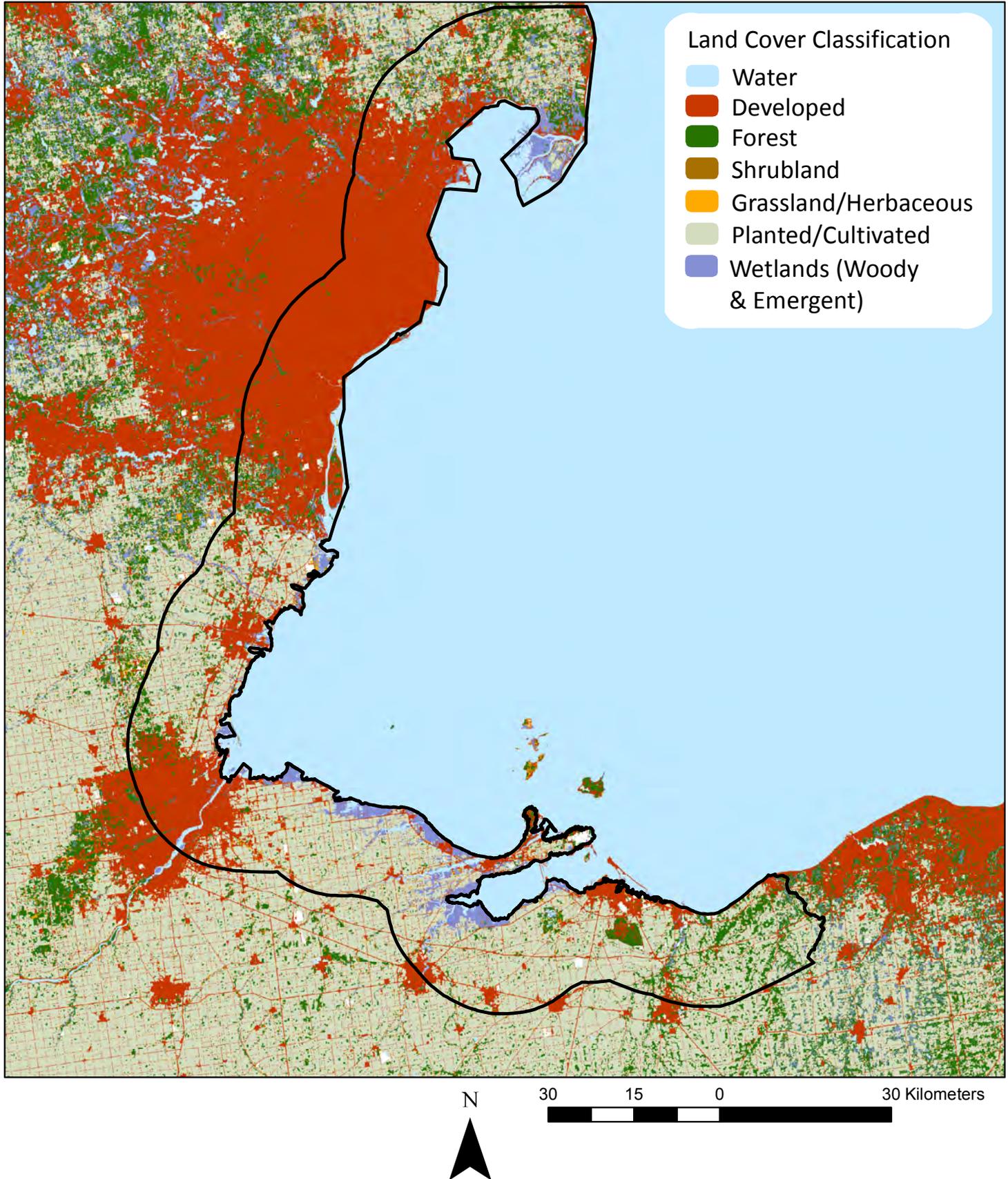
# Appendix D. Green Bay - National Land Cover Data Map



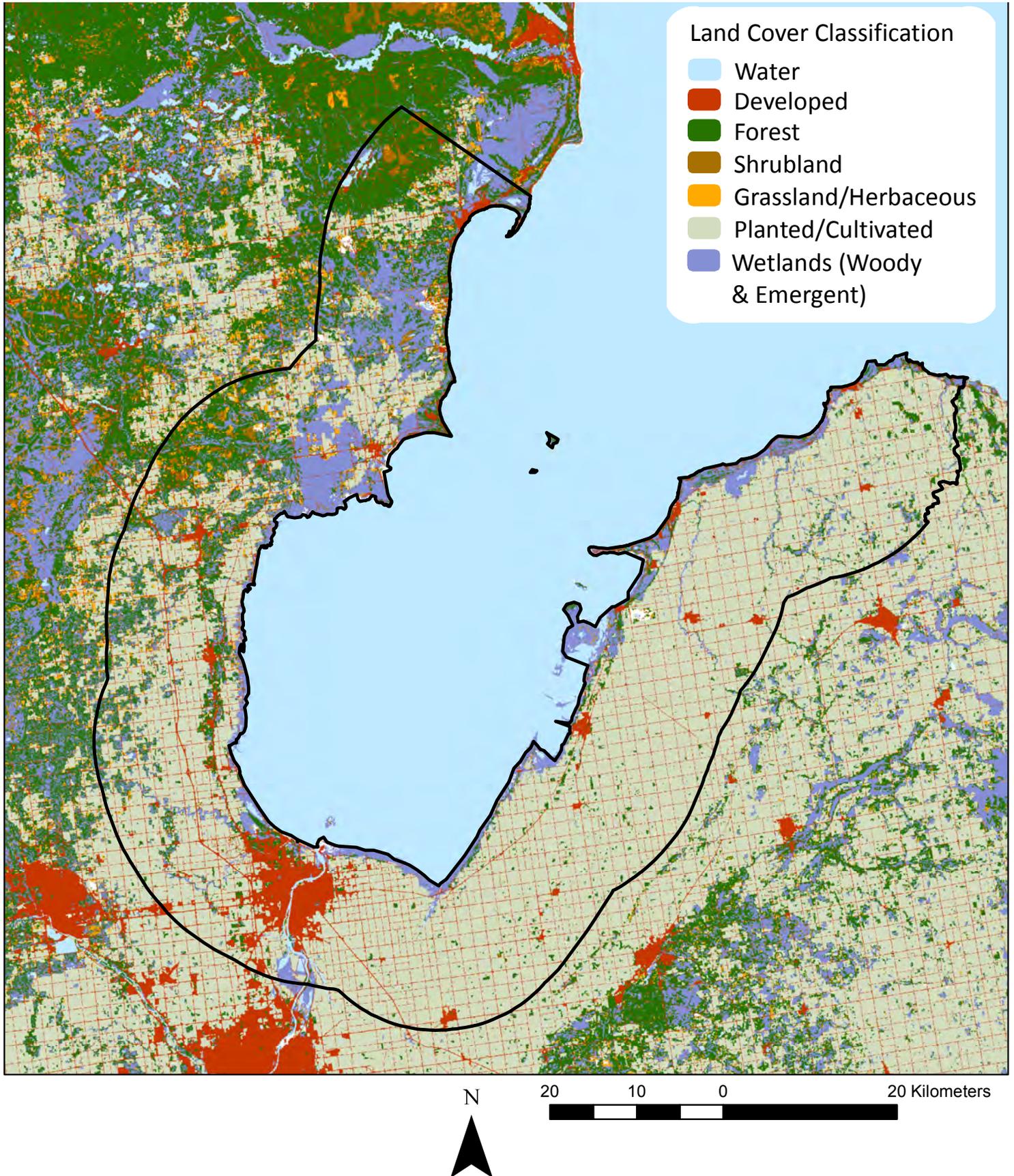
# Appendix E. Straits of Mackinac - National Land Cover Data Map



# Appendix F. Western Lake Erie/Lake St. Clair - National Land Cover Data Map



# Appendix G. Saginaw Bay - National Land Cover Data Map



# Appendix H. Urban Opportunity Area - National Land Cover Data Map

