

USFWS Great Lakes Coastal Program

USFWS initiated a Coastal Program in the Great Lakes region in Fiscal Year 2000 and has made tremendous strides with numerous partners on conservation and habitat restoration projects across the basin. Together with its lake partners, USFWS undertook first-year projects that focused on island habitat restoration, monitoring, invasive species control, erosion prevention along tributaries, and education. Using a nonregulatory partnership approach in the short time since its inception, the Coastal Program has played a key role in:

- Funding dozens of projects in its first 2 years that were associated with coastal habitats of Lake Superior, Lake Michigan, Lake Huron, the Detroit River, and Lake Ontario. These cooperative projects have produced measurable benefits to coastal ecosystems by conserving fish, wildlife, plants, and their habitats in coastal lands and waters.
- Restoring or protecting more than 906 acres of coastal fish and wildlife habitat
- Protecting approximately 3 miles of riparian habitat and restoring 8 miles of riparian habitat
- Removing three fish passage barriers in Great Lakes tributaries, thus reopening 8 miles of stream to allow passage of anadromous trout and salmon.

Projects in the Lake Michigan basin include the following:

Native Aquatic Species Habitat Restoration, Antrim County, Michigan

Streambank restoration and culvert replacement projects to reduce sediment loading to Antrim Creek were completed with 2 years of project funding by the Coastal Program under the direction of the Antrim Conservation District. Located in the northern part of Antrim County, Michigan, Antrim Creek is a tributary of Lake Michigan and is a major spawning ground for numerous species of native fish. A major fish-restricting culvert prevented 99 percent of fish from reaching the upper 4 miles of prime habitat. Erosion was also impacting stream quality. Unstable banks resulting from foot traffic and sandy soils delivered harmful sediment loads yearly. The sediment covered spawning habitat and eliminated invertebrates from parts of the stream. The partners have developed and are implementing a plan to improve the quality of Antrim Creek. With the Coastal Program's funding, over 3 acres of riparian land has been improved. First, the fish-restricting culvert on Old Dixie Highway was replaced with an open-bottom culvert. Secondly, over a dozen erosion sites located throughout the 5-mile span of Antrim Creek were restored. Additionally, project funds were used to remove tons of sediment covering spawning grounds. Biotechnical erosion control is the focus of the restoration. Living and nonliving materials are used to help direct the water's force in order to eliminate toe and upper bank erosion. Overall, stream improvements have increased the fish population and the spawning habitat for a variety of fish species.

Eastern Prairie Fringed Orchid Habitat Enhancement, Illinois Beach State Park, Illinois

Within this park, the North Dunes Nature Preserve contains 31 state-listed threatened and endangered species and 14 high-quality natural communities. The preserve is also a target reintroduction site for the federally listed threatened Eastern prairie fringed orchid. It contains appropriate habitat, but non-native and invasive woody species have encroached on the site, rendering it unsuitable for orchids. The project will control invasive species and make the site suitable for orchid reintroduction.

Springfield Fen Restoration, LaPorte County, Indiana

This project will complete the restoration of Springfield Fen, a 45-acre nature preserve in Indiana's Lake Michigan watershed. Invasive species that degrade habitat value will be removed from approximately 4.5 acres of the fen by means of mechanical and chemical treatment. The effectiveness of the treatments will be monitored, and the area will be used as a demonstration project.

Spread of Aquatic Nuisance Species Between the Great Lakes and Mississippi River Basin via Interconnecting Waterways - A Summary of Existing Information

Recent increases in world trade and the transport of goods have led to rapid increases in the intentional and unintentional transfer of species between continents. When a nonindigenous species enters a new ecosystem, natural enemies and diseases are absent, the species' population expansion is rapid, and the impacts on the receiving ecosystem are devastating. The interconnecting waterways between Lake Michigan and the Mississippi River basin provide convenient pathways for the exchange of such species. This project will identify potential invaders, evaluate the threats that they pose to native ecosystems, and identify potential actions that could help prevent their spread into the Great Lakes.

Watershed Assessment in the Baird Creek Watershed, Wisconsin

Baird Creek is a tributary of the Fox River. USFWS will assess erosion and sediment loadings into Baird Creek through a nonpoint pollution reduction feasibility study. This project will help the Brown County Land and Water Conservation Department to develop proper BMPs and will provide the background for future projects that will monitor BMP effectiveness over time.

Characterization of Potential Coaster Brook Trout Populations in Northern Lake Michigan Tributaries, Michigan

USFWS has recently become aware of an unconfirmed population of native coaster brook trout in a Lake Michigan tributary. USFWS will work with the Michigan Department of Natural Resources, and local conservation agencies to inventory brook trout populations in this and other potential coaster streams in northern Michigan.



Wisconsin Wetland Law

On May 9, 2001, Wisconsin Governor Scott McCallum signed the nation's first state law designed to protect wetlands from the effects of the Supreme Court ruling that left some categories of wetlands largely unprotected. The Wisconsin law is expected to become a template for other states' efforts to step up wetland preservation. The law covers at least 1 million acres of wetlands, among them sedge meadows, shallow marshes, and seasonal wetlands that are among some of the state's most productive in providing waterfowl and amphibian habitat, storing flood waters, and helping to protect water quality. The law will not impose any new regulations on landowners but allows the state to continue following the same process that was used for the past decade to decide whether a project that potentially affects wetlands can proceed.

Since the January 9, 2001, Supreme Court ruling, USACE has informed 37 Wisconsin applicants that it has no jurisdiction over wetlands that the applicants projects affected. A handful of applicants had already filled or excavated the wetlands by May 1, 2001. Those applicants who had been notified that the USACE did not have jurisdiction over their wetlands but who had not yet filled or dredged their wetlands must now await approval from WDNR and any applicable local government body before beginning any filling or dredging.

Wisconsin's law gives WDNR the authority to protect isolated wetlands in Wisconsin that the USACE has no jurisdiction over as a result of the Supreme Court's ruling. No person can fill or dredge such a wetland unless the state certifies that the project meets Wisconsin's water quality standards for wetlands.

Antrim County, Michigan, Wetland Protection Ordinance

The Antrim County Board of Commissioners adopted an Ordinance for the Protection and Regulation of Wetland Areas in the county at its regular meeting on December 13, 2001. The passage of the ordinance means that the county will have local control over the protection of wetlands as a valuable resource. Additionally, the ordinance will not only provide the authority to regulate the wetlands contiguous to lakes and streams, but it will also provide the authority to regulate other wetlands that are not connected to a water body. The preamble to the ordinance includes the following text:

The Board of Commissioners of the County of Antrim finds that wetland areas are indispensable and fragile natural resources. They also find that wetland areas provide many public benefits, including maintenance of water quality through nutrient cycling and sediment trapping, and flood and storm water runoff control through temporary water storage, slow release, and groundwater recharge. In addition, wetlands provide open space; passive outdoor recreation opportunities; fish and wildlife habitat for many forms of wildlife, including migratory waterfowl, and rare, threatened or endangered wildlife and plant species; and pollution treatment by serving as biological and chemical oxidation basins.

Preservation of the remaining County wetlands in a natural condition is necessary to maintain hydrological, economic, recreational, and aesthetic natural resource values for existing and future residents of the County of Antrim. Therefore the County Board of Commissioners declares a policy of no net loss of wetlands. Furthermore, the County Board of Commissioners declares a long-term goal of net gain of wetlands to be accomplished through review of degraded or destroyed wetlands within the County and through cooperative work with landowners, using incentives and voluntary agreements to restore wetlands.

Recognizing that much must be accomplished before the ordinance can become effective, the Board of Commissioners tasked the County Planning Commission with implementation of the ordinance. The implementation steps that must take place include provision of a 90-day public review period for the "Wetland Inventory Maps," notification of all Antrim County residents that the ordinance has been adopted, adoption of a fee schedule, and action by the Board of Commissioners to include the inventory maps as part of the ordinance. A citizens' group petitioned the Board of Commissioners, asking for a referendum. A number of legal issues concerning this proposal are currently being researched.



USFWS Designated Critical Habitat for Endangered Great Lakes Piping Plovers on May 7, 2001

Under the Endangered Species Act, critical habitat refers to geographic areas that are essential for the conservation of a threatened or endangered species and that may require special management considerations or protection. A critical habitat designation does not create a preserve or refuge and only applies to situations where federal funding or a federal permit is involved. Designation of critical habitat does not affect private landowners undertaking a project on private land that does not involve federal funding or require a federal permit or authorization.

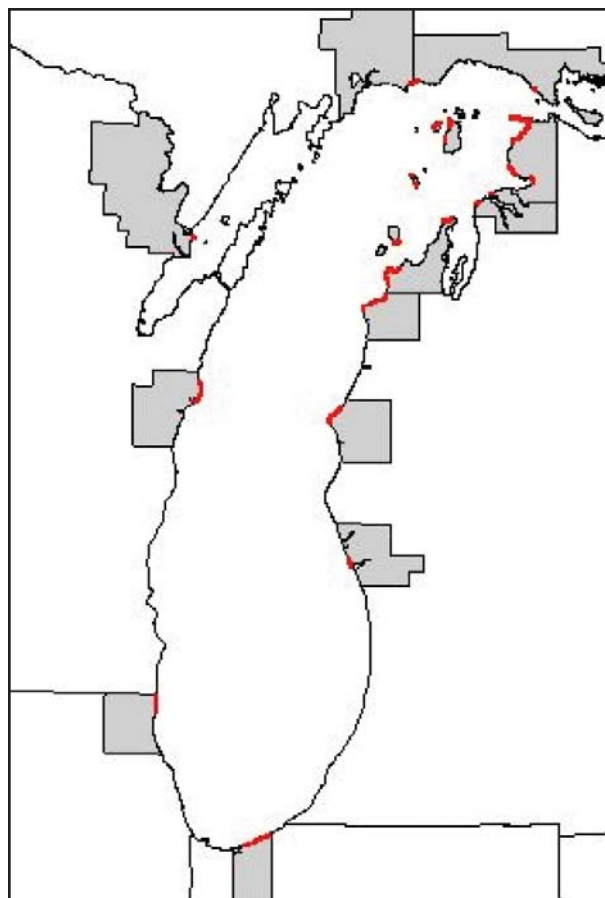
In the Lake Michigan basin, USFWS's designation affects mainland and island shoreline in Michigan, Illinois, Indiana, and Wisconsin as shown on the left. The inland boundary for critical habitat areas extends 500 meters (1,640 feet) from the normal high water line. Of the 35 Great Lakes piping plover individual habitat units, 21 were designated as critical habitat in the Lake Michigan basin.

There may be a need to temporarily restrict use of some federally managed beaches during spring and early summer to allow piping plovers to nest. However, most beaches within critical habitat do not come under federal authority and thus are not affected by the designation.

Although USFWS designated miles of shoreline as critical habitat, not all areas within the critical habitat boundaries are essential for the conservation of the species. For example, roads, lawns, paved areas, and other artificial structures will not be considered critical habitat for the species even though they may fall within critical habitat boundaries.

As a listed species under the Endangered Species Act, the piping plover is already protected wherever it occurs, and federal agencies are required to consult on any action they take that might affect the species. The critical habitat designation will help the species by ensuring that federal agencies and the public alike are aware of the plover's habitat needs and that consultation with the USFWS by federal agencies is conducted when required. Actions that occur within designated critical habitat do not require consultation if they do not affect critical habitat.

The complete description of the final critical habitat designation for the Great Lakes breeding population of the piping plover was published in the Federal Register on May 7, 2001. These descriptions and additional information on the piping plover and other endangered species are also available on the Service's website at <http://midwest.fws.gov/angered/pipingplover>



Approximate location of piping plover critical habitat units in the Lake Michigan basin

(Not for regulatory purposes)

See *Federal Register*

May 7, 2001; Vol. 66, No. 88, pp. 22938-22969



Clean Water Act Section 305(b) and 303(d) Lists of Impaired Water Bodies in Lake Michigan States

Under Clean Water Act (CWA) Section 305(b), the states report on the status of their surface and ground waters. Specifically, the states report on the number of river miles or lake acres meeting their designated uses and the sources of water quality impairment. The State 305(b) reports are ultimately compiled together to develop a National Water Quality Inventory Report to Congress.

Under CWA Section 303(d), States are to identify impaired water bodies that either do not meet or are threatened to not meet water quality standards. The states are then required to develop a schedule for completing TMDLs for the “303(d) list” waters. The 303(d) list identifies causes of impairment and likely sources of pollutant load.

For more information on 305(b) reports
www.epa.gov/OW/305b

For more information on state 303(d) lists:
www.epa.gov/owow/tmdl

Also see Appendix A to this LaMP.



Piping Plover

Photograph courtesy of the National Park Service
Indiana Dunes National Lakeshore

Lakeplain System

The lakeplain system occupies the area of the ancestral lakebed of Lake Michigan that was formed as the last glaciers receded. This lakeplain system has served two important ecological functions: it provided a refuge during severe weather events, and it was historically important in flood water retention. The system once harbored a rich diversity of plants and animals, several of which appear on the federal endangered species list. Lakeplain prairies and savannas, two of the most imperiled ecological communities in North America, are found in the southern Lake Michigan basin.

The lakeplain system has been largely transformed since European settlement began. Many of the original plants and animals survive only in small, previously protected areas that are no longer viable or sufficient to sustain these historically diverse communities. These communities are still threatened by human development and by invasive species.

Inland Terrestrial System

The inland terrestrial, or upland, system of Lake Michigan includes numerous types of forests, barrens, and prairies. These areas are a result of glaciation and climatic effects. Oak and pine barrens found in the northern part of the basin are globally significant and rare ecological communities.

One of the significant inland terrestrial features of the Lake Michigan basin is the Niagara Cuesta, a rocky outcrop of dolomite and limestone that arcs from the Door County peninsula and the Garden Peninsula to Niagara Falls. Many rare land snails, some of which were only recently discovered, inhabit the thin-layered soils and rocks of the escarpment. Increased tourism in Door County and on the Garden Peninsula has led to increased development on the escarpment, threatening these fragile habitats.

Measuring and Monitoring Lake Michigan’s Ecological Changes

The U.S. EPA Region 5 is undertaking an effort to identify critical ecosystems and their status that are most sustainable in the Great Lakes basin. The





Wolf Populations Recovering in Lake Michigan Basin

Hearing the cries of wolves under a starry northern sky is a unique experience that one doesn't soon forget. Wolves once ranged throughout the Lake Michigan basin, but by the 1960s there were none left in Wisconsin and only a few in Michigan's upper peninsula. For over 100 years, the governments of Michigan and Wisconsin promoted extermination of wolves in the region by placing a bounty on the hides of wolves. Wisconsin repealed its wolf bounty in 1957, and Michigan eliminated its bounty in 1960.

The gray wolf was listed as a federal endangered species in 1967 by USFWS and was again listed in 1974 under the provisions of the 1973 Endangered Species Act. Since that time, wolf populations have slowly increased in the northern Lake Michigan basin, with wolves migrating into Wisconsin and the upper peninsula from Minnesota and Ontario, Canada.

Today, USFWS estimates that about 250 wolves exist in the upper peninsula and about 250 wolves make northern Wisconsin their home. According to the National Wildlife Federation, the northern Great Lakes region, including the Lake Michigan basin, now boasts the highest wolf population in the contiguous United States.

EPA Region 5 Critical Ecosystems Team undertook a three-year study that has produced a physical baseline built on 1994 Land Satellite imagery (Landsat) (see Figure 4). The result is a GIS-based tool that can characterize landscapes based on

three ecological criteria: (1) ecological diversity, (2) sustainability, and (3) rarity of species and landcover. The combination of these criteria identify high quality ecosystems. The modeling can also pinpoint ecosystems that are not protected, in public

US EPA Region 5 Critical Ecosystems Team Analysis Lake Michigan basin

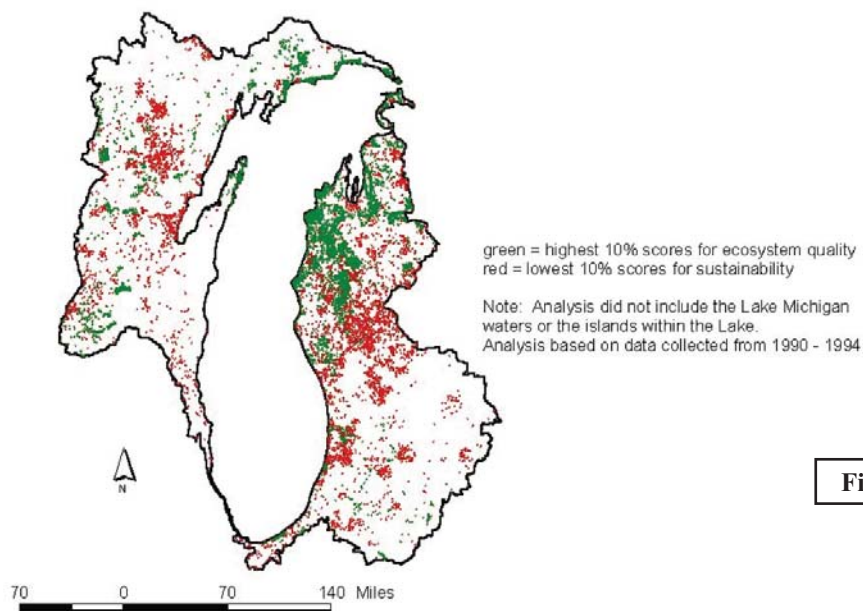


Figure 4



Preserving and Enhancing Biodiversity in Southern Lake Michigan

A consortium of organizations, through an initiative called Chicago Wilderness, has produced the “Biodiversity Recovery Plan” documenting the state of the region’s ecosystems and biodiversity and the actions necessary to restore them. Implementation of the recommendations of the plan has already begun with the Northeastern Illinois Planning Commission’s (NIPC) “Protecting Nature in Your Community: A Guidebook for Preserving and Enhancing Biodiversity.” The guidebook is intended for local government audiences, counties, townships, municipalities, park districts, and other entities to assist them in preserving, enhancing, and restoring biodiversity in their jurisdictions.

In addition to identifying these strategies, the publication identifies economic benefits of protecting nature.

- Natural areas, such as wetlands and floodplains, can detain floodwater and thereby reduce or prevent expensive property damage.
- Natural areas provide opportunities for recreational activities, which generate income and economic activity for communities through local businesses that profit from increased recreational traffic and tourism.
- Parks, open space and natural areas may increase property values due to increased demand for these amenities close to residential areas. Increased property values translate into increased revenue for local governments.
- Open space costs less in community services than residential use.
- Nature provides numerous environmental services than residential use.
- Nature provides numerous environmental services, such as controlling erosion, improving air quality, and protecting water quality and supplies, that would be quite costly to replicate.

More information is available at the NIPC website: www.nipc.cog.il.us/ and the Chicago Wilderness website: www.chiwild.org

ownership or environmental management programs. Areas of highest diversity can be mapped against areas of lowest sustainability to highlight the richest ecosystems that are currently being threatened by chemical, physical or biological stressors. A low sustainability rating results from habitat fragmentation, pavement color, and other impairments.

This information can be used to help refine restoration and protection targets for the Lake Michigan basin as well as document the areas of change and trends. Once the model is peer reviewed and resources are identified to run the model with the new 2000 data, a comparison with the Lake Michigan 1994 baseline status can be made. The National Land Cover Data Base is a cooperative project including USEPA, U.S. Geological Survey (USGS) and the National Oceanographic and Atmospheric Administration (NOAA) (see Figure 4).

EPA Tool to Support Habitat Assessment and Management

Habitat and Land Use Management Tool Box

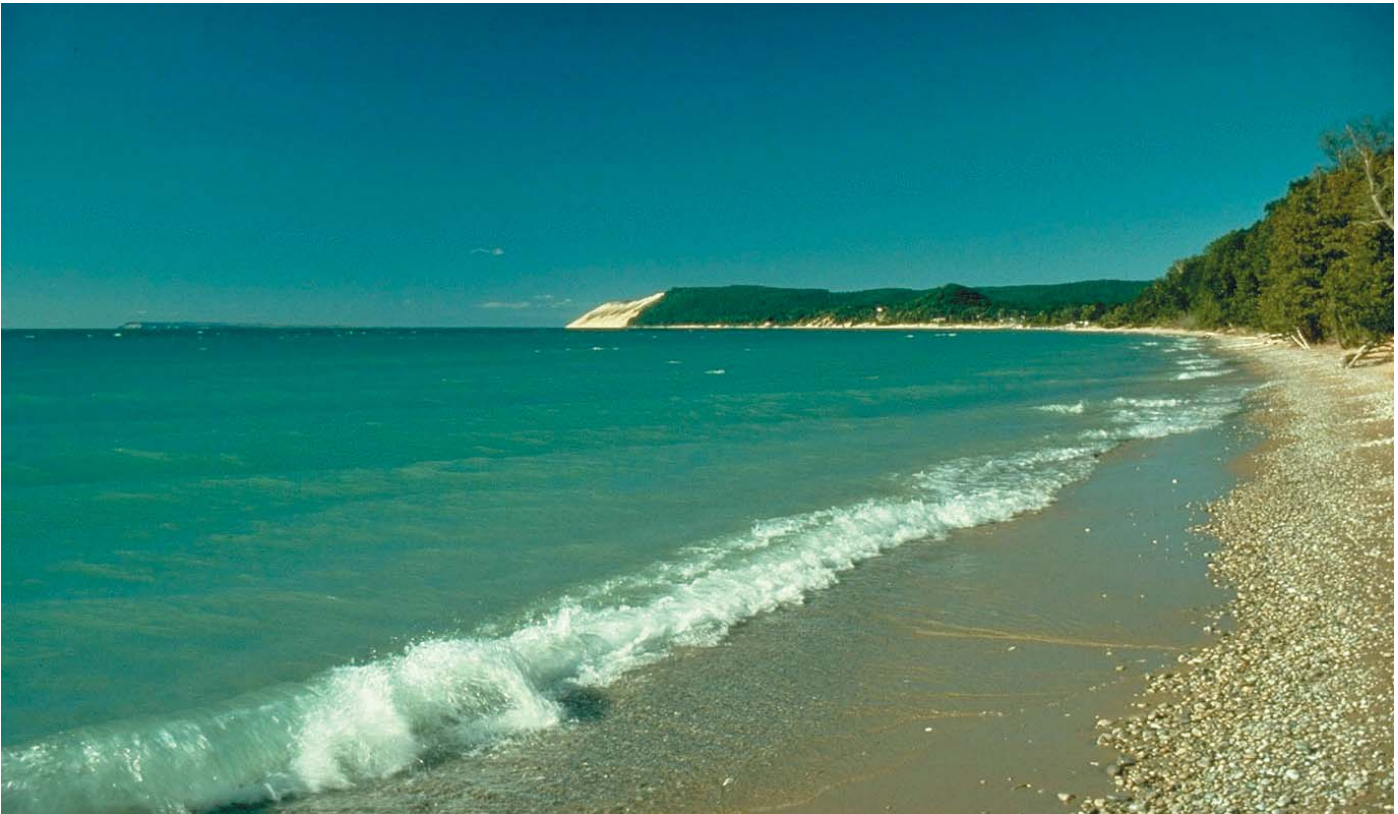
EPA Region 5 has developed an incomplete but informative list of the many web sites that provide information on the cross-cutting issues of development and environmental quality, including some possible sources of project funding. LaMP 2000 documented that human activities have altered the Lake Michigan ecosystem and created physical stressors that threaten the integrity of the ecosystem. LaMP 2000 recommended that information and tools to mitigate these physical stressors be developed and shared with landowners and with governmental units where the authority for land use decisions resides, usually at the local level.

The Tool Box is intended to be a working document and will be revised as more information becomes available or as suggestions for improvement are provided. Please provide comments and suggestions to Laura Evans at EPA Region 5 (e-mail: evans.laura@epa.gov).



Next Steps

- By 2002, a process for developing biodiversity recovery manuals for major ecosystem types in the Lake Michigan basin will be implemented.
- By 2004, set targets for critical areas (fish spawning areas, dune and swale complexes, wetlands, alvars, prairies, and oak savannas) will be identified, mapped, and presented on line.
- By 2005, no net loss of wetland acreage and function will be achieved in the basin.
- By 2012, the 2004 target acreages will be enhanced, restored, or protected: 1,000 acres of spawning areas (islands under water reefs); (example acreages: 12,500 acres of system wetlands; 1,000 acres of isolated wetlands; 1,000 acres of dunes; and 37,500 acres of stream buffers - comments requested).



Beach at Empire, Michigan

Photo courtesy of the Michigan Travel Bureau

