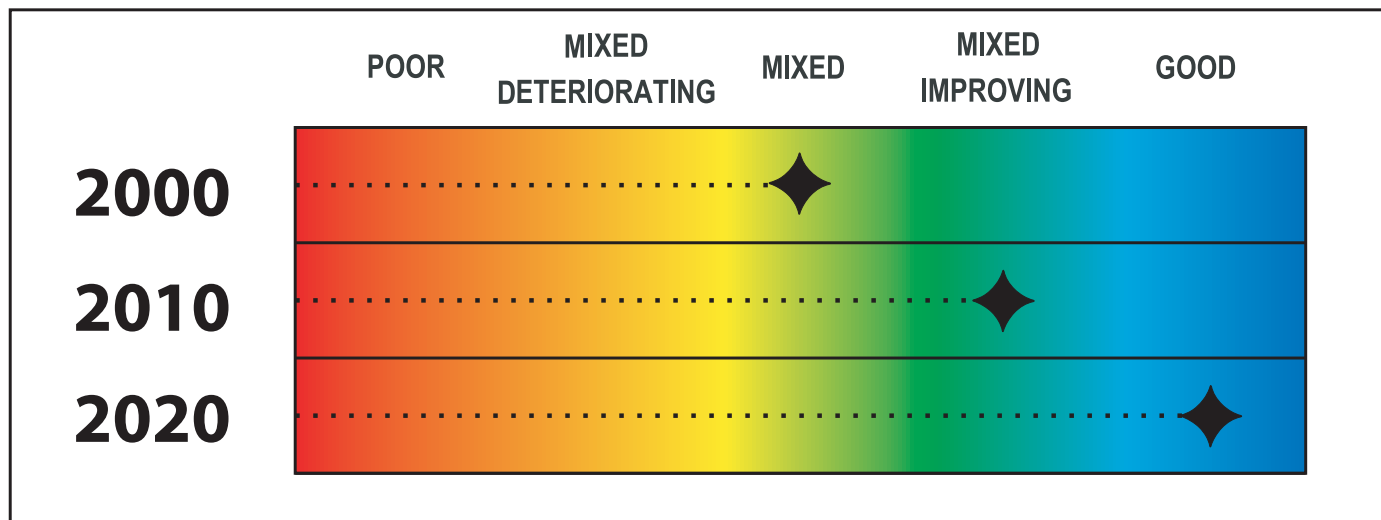




Subgoal 8

Are exotic species controlled and managed?



Status

The record of exotic species prevention and control in Lake Michigan is mixed. While there are success stories for the control of sea lamprey and the potential to prevent future introductions, zebra mussels and other new species continue to proliferate and are competing for food and habitat with native species. In the last 2 years, a new exotic, the spiny water flea, was introduced to Lake Michigan. Furthermore, there is a danger that other new exotics, the bighead and silver carp from Asia, accidentally released into the Mississippi River, could enter Lake Michigan during the next few years through the Illinois River system.

These trends highlight the need for more effective action in preventing the unintentional introduction of new species and controlling the nuisance species already established. In summer 2001, the Great Lakes Governors and Premiers signed an Action Plan for Preventing and Controlling Nonindigenous Aquatic Nuisance Species. This agreement builds on actions such as installation of barriers for exotic species, performance of demonstration projects, and passage of new legislation to address the problem. These actions will help to move the status of this goal to mixed/improving by 2010 and to good by 2020.

Challenge

- To eliminate further ANS introductions by 2010.

The History of Exotics in the Great Lakes

One of the greatest threats to the restoration and viability of native aquatic species in Lake Michigan is aquatic nuisance species (ANS), or invasive exotic species. Sea lampreys entered the Great Lakes following construction of the Welland Canal in the 1950s, which provided oceangoing vessels with access to all the Great Lakes. More recent arrivals such as the zebra mussel, round goby, and ruffe entered the lake through ballast water releases. Governments have been using various integrated measures to control exotic species, including use of barriers to prevent movement of the exotics into tributary rivers and streams. Specially formulated chemicals are used to target and kill young exotics, but these chemicals sometimes also kill native invertebrates and fish.

LaMP 2000 recognized that ANS have caused irreparable harm to the ecosystem of Lake Michigan. Prevention of unintentional introductions of such species, not only in the Lake Michigan basin but throughout the Great Lakes, is therefore one of the most important actions for achievement of subgoal 4 - "All habitats are healthy, naturally diverse and sufficient to sustain viable biological communities."





Sea Lampreys attaching themselves to native fish*
Photography courtesy of USEPA

Chapter 6 of LaMP 2000 lists the following actions that can restore, enhance, and sustain the health, biodiversity, and productivity of the ecosystem:

- Ballast water management and pollution prevention
- Development of ballast water discharge standards
- Legislation
- Technological efforts
- Research

There has been significant activity in all of these areas in the past 2 years.

Ballast Water Management and Pollution Prevention

There has been a movement to develop clear, concise biological standards or guidelines for treatment of ballast water working toward zero discharge of ANS. These focus on best practical technologies and devise a short-term plan for dealing with the No-Ballast-On-Board (NOBOB) issue (where ballast remains in the ship containing ANS). This will require newly built ships to incorporate pollution prevention technology to address the ballast water problem as well as retrofitting existing ships.

Development of Ballast Water Discharge Standards

The International Maritime Organization's (IMO) Marine Environment Protection Committee is developing draft regulations for ballast water

management to prevent the release of harmful aquatic organisms present in ballast water. The proposed instrument is a new international convention addressing control and management of ships' ballast water and sediments in the water. A diplomatic conference is planned for late 2003 to adopt the new regulations. For more information, visit <http://www.imo.org/index>

The U.S. Coast Guard (USCG) is required by the National Invasive Species Act (NISA) to issue regulations and guidelines for ballast water management practices to prevent introduction of ANS to U.S. waters. In May 2001, the USCG submitted a document titled Potential Approaches to Setting Ballast Water Treatment Standards for public comment. For more information on USCG's progress, visit <http://www.uscg.mil/hq/g-m/mso>

Legislation

In August 2001, Governor Engler signed the Michigan Ballast Water Reporting Program into law. This program requires MDEQ to determine (1) whether all oceangoing vessels operating on the Great Lakes are complying with the ballast water management practices promoted by the Shipping Federation of Canada and (2) whether all nonoceangoing vessels operating on the Great Lakes are complying with the ballast water management practices promoted by the Lake Carriers' Association and the Canadian Shipowners' Association. To help make this determination, MDEQ has distributed a reporting form to all vessel owners and operators. All vessels complying with the applicable ballast water management practices will be so identified on the Michigan Ballast Water Management web site at http://www.michigan.gov/deq/1,1607,7-135-3307_3667_8278--,00.html

As of March 1, 2002, any owner or operator of a vessel that is not identified on the web site and any persons in Michigan with contracts for the transport of cargo with the operator of a vessel that is not identified on the web site will not be eligible for grants, loans, or awards administered by MDEQ. The reporting program also requires MDEQ to evaluate ballast water treatment methods in order to prevent future introduction of ANS and to determine a deadline for use of such treatment



Chicago Sanitary and Ship Canal Dispersal Barrier Study

USACE completed installation of a demonstration dispersal barrier in the Chicago Sanitary and Ship Canal. USACE is using the project to investigate environmentally sound methods for preventing and reducing dispersal of nonindigenous ANS between Lake Michigan and the Mississippi River basin.

The canal forms a unique, manmade link between two major watersheds and provides ANS with a pathway between the two basins. A multi-agency panel agreed to install an electronic dispersal barrier that does not interfere with navigation or the Lake Michigan diversion volume.

The effectiveness of the barrier will be monitored for up to 2 years. A contract for monitoring of the project was awarded in November 2001, and a contract for operation and maintenance of the barrier was awarded in March 2002. Operation and monitoring will continue through fiscal years 2002 and 2003. The total project cost will be \$2.2 million over the lifetime of the project.



The Upper Mississippi and Illinois River systems and lock locations
Courtesy of U.S. Army Corps of Engineers

methods, should it be determined that they are available for use.

On the national level, the National Invasive Species Act (NISA) is scheduled to be reauthorized in 2002. As the reauthorization process begins, the opportunity exists to strengthen the NISA by addressing programmatic and policy gaps, including gaps associated with ballast water requirements.

The Department of Transportation has published the Saint Lawrence Seaway Development Corporation - Seaway Regulations and Rules: Ballast Water, Final Rule (33 CFR Part 401). Under agreement with the St. Lawrence Seaway Management Corporation of Canada, the Saint Lawrence Seaway Development Corporation amended the joint regulations to make compliance with the ballast water management practices a mandatory prerequisite for clearance of a commercial vessel for transit of the Seaway system in support of assuring the continued control of the introduction of aquatic nuisance species (ANS) in the Great Lakes Seaway System.

The St. Lawrence Seaway Handbook will now include the following:

Ballast Water Management Practices

Effective with the 2002 navigation season:

- a. every vessel entering the Seaway after operating beyond the exclusive economic zone must agree to comply with the "Code of Best Practices for Ballast Water Management" of the Shipping Federation of Canada dated September 28, 2000, while operating anywhere within the Great Lakes and the Seaway; and
- b. every other vessel entering the Seaway that operates within the Great Lakes and the Seaway must agree to comply with the "Voluntary Management Practices to Reduce the Transfer of Aquatic Nuisance Species Within the Great Lakes by U.S. and Canadian Domestic Shipping" of the Lake Carriers' Association and the Canadian Shipowners Association dated January 26, 2001, while operating anywhere within the Great Lakes and the Seaway.

Technological Efforts

The Great Lakes Ballast Technology Project was established in 1996 to accelerate development of practical and effective ballast treatment technology for ships. The project, which is led by the Northeast-Midwest Institute and the Lake Carriers' Association, is supported by grants from the Great Lakes Protection Fund and several state and federal agencies. The centerpieces and ongoing emphasis



of the project are its high-flow field trials of commercially available ballast treatment equipment. Treatment technologies tested on working ships include high-volume filtration, cyclonic separation, and ultraviolet radiation. For more information, visit the Northeast-Midwest Institute's web site at <http://www.nemw.org/biopollute.htm>

Research

Under the Michigan Ballast Water Reporting legislation, the Michigan Department of Environmental Quality is in the process of determining whether ballast water treatment methods could be used by vessels to prevent future aquatic nuisance species introductions. If treatment methods are identified as available for use, the MDEQ will determine a time period for vessel use of the treatment method. After the time period determined by MDEQ, all vessels must then verify the use of the treatment method. The MDEQ is currently evaluating treatment methods through an on-board ship evaluation process.

Various research projects involving nonindigenous species are being conducted throughout the Great Lakes by governmental and academic entities. Information on the results of research into ANS impacts and prevention can be found at the following web sites:

- <http://www.sgnis.org>
- <http://www.glerl.noaa.gov/res/Programs/nsmain.html>

Other Actions

The ANS Task Force is an intergovernmental organization dedicated to preventing and controlling dispersal of ANS and charged with implementing the Nonindigenous Aquatic Nuisance Prevention and Control Act (NANPCA) of 1990. The various NANPCA mandates were later expanded with the passage of NISA in 1996. For a list of actions taken by the ANS Task Force to prevent the introduction and spread of ANS, visit the web site at <http://www.anstaskforce.gov/>.

The Great Lakes Panel on Aquatic Nuisance Species is an intergovernmental, multi-stakeholder organization whose charge is to identify Great

Lakes priorities regarding ANS; assist and make recommendations to the ANS Task Force; coordinate exotic species program activities in the region; advise public and private interests on ANS control efforts; and submit an annual report to the task force describing ANS prevention, research, and control activities in the Great Lakes basin. For the most recent list of actions taken by the Great Lakes Panel, visit the web site at <http://www.glc.org/ans/anspanel.html>

The Great Lakes Governors' Ballast Water Initiative was created at the request of Governor Engler and unanimous approval of the Great Lakes Governors, the Council of Great Lakes Governors has convened a Task Force to explore, outline, and advise the Great Lakes Governors and Premiers on the range of options that exist to stop further introduction of exotic species into the Great Lakes. The Task Force is charged to formally recognize the importance the Governors and Premiers place on the threat nonindigenous aquatic nuisance species present to the Great Lakes; to showcase and prioritize state/provincial initiatives to date; to emphasize the importance of a consistent and coordinated effort and legislation throughout the region, and to ultimately provide options as to how the Governors and Premiers can best arrest the introduction and spread of ANS within the region's ecosystem and economy. The structure of the Task Force follows the threefold organization of Michigan's dialogue with the shipping industry: management practices, biocides, and technologies. It is the desire and intention of the Task Force to build upon the efforts already initiated on ANS in the Great Lakes region.

The Hazard Analysis and Critical Control Point process was originally developed to prevent contamination and spoiling of food during preparation and processing. However, through an initiative of the Sea Grant program, the process is being applied to collection and distribution of bait fish and the aquaculture industry, which is often a pathway for ANS. For a description of these initiatives, refer to an article at <http://www.seagrant.umn.edu/seiche/jan.01/art04.html>

Since 1993, the USCG has had mandatory ballast water regulations in place, and it has



recently solicited public comments on approaches to setting standards for ballast water treatment and implementing and enforcing those standards. EPA released a draft report in September 2001 outlining options for addressing ballast water and ANS. Great Lakes Strategy 2001 identifies invasive species as a major threat to the Great Lakes and proposes numerous options, both regulatory and voluntary, for eliminating further ANS introductions by 2010. Finally, several states have introduced legislation to address ANS in ballast water, but thus far Michigan is the only state to adopt any form of ballast water legislation.

Next Steps

- Track and provide information on ANS developments as an important part of the LaMP education and outreach efforts.
- By 2003, a multi-agency “SWAT” Team will be developed to respond to newly discovered invasive species with the latest control technology.
- By 2010, vessels entering the Great Lakes will discharge ballast water free of invasive species.



Sand Sculptures on the Beach

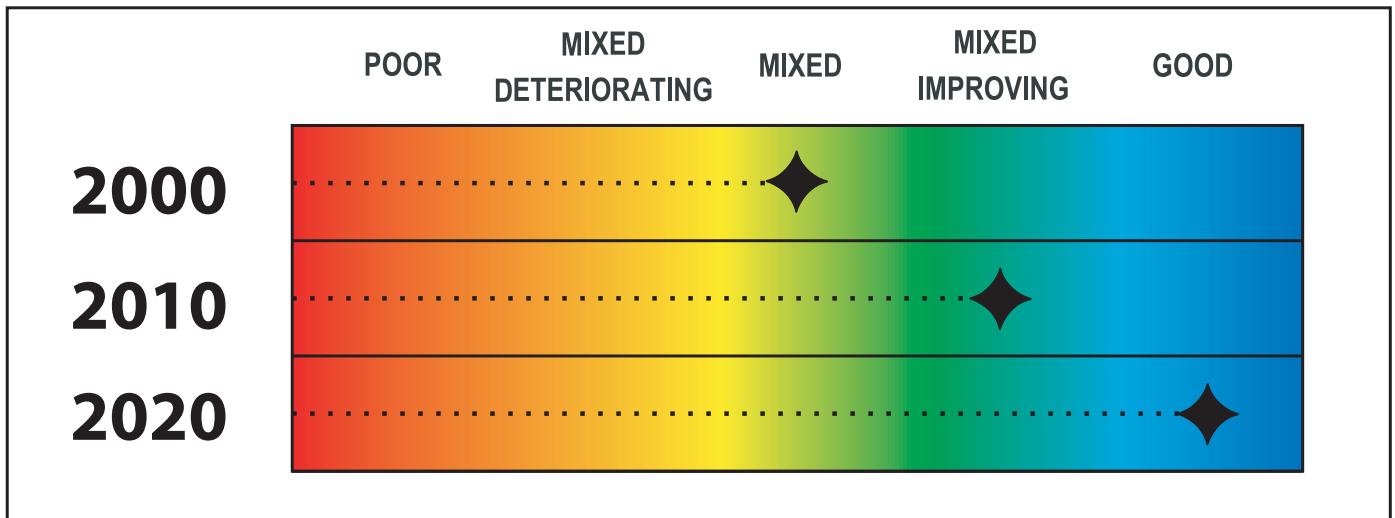
Photo courtesy of the Wisconsin Division of Tourism,
Milwaukee Dept. of City Development*





Subgoal 9

Are ecosystem stewardship activities common and undertaken by public and private organizations in communities around the basin?



Status

Each government, institution, organization, and individual within the Lake Michigan basin has a potential role in ecosystem stewardship; however, no single government, institution, organization, or individual has the ability to implement stewardship activities and achieve sustainability in the basin unilaterally. The current status of stewardship is mixed but will improve as more Lake Michigan partnerships are formed.

Challenge

To create a framework for participating organizations to contribute their expertise and resources in a manner that allows all partners to participate in decision-making on an even basis.

The Importance of Partnerships

The past decade of ecosystem management in the basin has seen a profound shift from a top-down, command and control, government-dominated approach to a bottom-up, partnership-based, inclusive approach. This evolution is the manifestation of a number of developments, including changes in federal, state, and local relationships; local community empowerment; increased focus on local partners; and watershed-

based institution building. If a sustainable Lake Michigan ecosystem is to be achieved, it falls to us to rearrange ourselves, our interest groups, and our governments into a new institutional framework—a framework that consists of existing organizations and governments “rafted” together as full partners in the pursuit of the LaMP goals.

Cook County, Illinois Clean Sweep

In 1997, EPA, Illinois EPA, Cook County, the City of Chicago, industry, and other stakeholders created the Cook County PCB and Mercury Clean Sweep Partnership. The partnership, which concluded in December 2000, provided incentives and disposal opportunities for small businesses and local governments in Cook County to properly dispose of their PCB- and mercury-containing materials and equipment. The targeted businesses and government entities were chosen because they were not served by household hazardous waste collection events or national enforcement activities. The result was the collection from voluntary participants of 135 high-intensity discharge mercury bulbs, 57 8-foot boxes and 231 4-foot boxes of fluorescent bulbs, 15 gallons of lab-packed mercury waste for stabilization, 134 gallons of lab-packed mercury for restoring, 640 PCB-containing ballasts, one 55-gallon drum of hexane/PCB oil, one large PCB-containing transformer, and one small and one large PCB-containing capacitor.



Lake Michigan's Watershed Academy

The concept of a Lake Michigan Watershed Academy is to provide a "packaging and delivery system" that brings together the tools, data, and expertise of many federal, state, local, and tribal agencies as well as NGOs and environmental organizations to explore opportunities for new partnerships, thereby impacting the quality of the land use plans in the Lake Michigan watershed.

Many of the stressors on Lake Michigan are driven or prevented by land use decisions made at the local governmental level and/or private property. Lake Michigan LaMP 2000 highlighted the need to promote a series of dialogues with local decision-makers about the status of these decisions that would provide training leading to plans, possible activities, and partnerships that could benefit both the local and lake-wide ecosystems.

Many training materials and tools have been developed including EPA's Watershed Academy Web-Based Training (www.epa.gov/OWOW/watershed/wacademy), Drinking Water Academy, American Water Works Association Source Water Training, Land Trust Alliance training materials, other existing videos and state and local training materials such as Michigan's Department of Environmental Quality's "Developing a Watershed Management Plan for Water Quality."

More Information

The Lake Michigan LaMP has also developed a "Habitat and Land Use Management Tool Box" that is a collection of hundreds of useful web sites for detailed followup. In Fall 2002, the LaMP in cooperation with the Great Lakes Commission will also preview the Lake Michigan On-Line Habitat Atlas. Planning is underway to hold the first Watershed Academy training in 2003.

For more information, contact: Judy Beck
(beck.judy@epa.gov)

Effective place-based partnerships are the result of the rafting of "full partners." Full partnership implies moving beyond the stakeholder model, wherein citizen committees (stakeholder groups) are briefed about agency plans and projects, to a model based on full collaboration in the definition of basin-wide goals and the sharing of resources to achieve these goals.

The Lake Michigan Forum

The Lake Michigan Forum provides input on the LaMP to EPA from representative stakeholders of the Lake Michigan basin. In recognition of the LaMP statement that every basin resident is a "Lake Michigan Manager," the forum seeks opportunities

to foster ecosystem stewardship through multi-organizational initiatives and partnerships, looking for LaMP implementation opportunities beyond what can be achieved by government efforts.

As the nongovernmental component of the Lake Michigan LaMP, the Forum has a number of responsibilities, including

- Representing the diverse interests and geography of the Lake Michigan basin and creating a communication link between the forum members' constituents and the LaMP process
- Providing input to and review of LaMP updates and assisting in their completion and implementation
- Identifying targets of opportunities for demonstration projects relating to LaMP goals and recommendations
- Promoting the LaMP to the public and building a constituency for its implementation
- Serving as a forum for regional and watershed approaches to accomplish LaMP goals;
- Serving as a forum for identifying, discussing, and conveying critical/priority issues
- Serving as a conduit for public concerns and input to the LaMP process

The forum's membership consists of representatives of local governments, industry, environmental groups, sport fishing interests, academia, agriculture, Native American tribes, sewerage districts, and AOCs.

The forum holds public meetings quarterly at different locations around the Lake Michigan basin

Lake Michigan Basin Stewardship Trust Concept

The Forum is currently developing a "Stewardship Trust" concept for use in helping to support community/watershed-based stewardship initiatives. The Trust would operate similar to community trusts that house and manage several donor-directed and restricted use funds. Fundraising, foundations, and state and federal enforcement action settlements are all possible sources of funds.

For more information, visit www.lkmichiganforum.org



and, in partnership with EPA and Grand Valley State University, sponsors an education and outreach tour. For more information, visit the forum web site at www.lkmichiganforum.org



The W.G. Jackson

Photography courtesy of Grand Valley State University

The “Making Lake Michigan Great” Tour

Each summer since 1998, the ship W.G. Jackson has made its way around Lake Michigan on the Making Lake Michigan Great Tour, spreading the word about the Lake Michigan LaMP. The tour provides hands-on experience in water issues for the public aboard a research vessel operated by the Robert B. Annis Water Resources Institute of Grand Valley State University in Allendale, Michigan. The event includes cruises for students and the public, open houses, and community activities. Since it began, thousands of people have participated in the tour at 26 ports of call around Lake Michigan.

State of Lake Michigan Conference

In November 2001, EPA, Lake Michigan Forum, and Grand Valley State University hosted the State of Lake Michigan conference in Muskegon, Michigan. The conference brought together over 300 attendees and presenters to discuss the status of the lake. A copy of the conference proceedings is available on CD. Contact Janice Carrollo at carrollo.janice@epa.gov



Students getting hands-on experience aboard the W.G. Jackson
Photography courtesy of Grand Valley State University

Next Steps

- Establish the Lake Michigan Watershed Academy
- Publish additional education and outreach materials
- Publish the habitat and land use management tool box
- On-line habitat atlas will be operational
- Hold FY 2003 State of Lake Michigan Conference

