

❖ Standard 12: Set overall priorities for conservation action within the ecoregional vision and define institutional roles and priorities.

---

## Case Study: **Identifying Priority Area- and Strategy-Based Actions in the Great Lakes Ecoregion**

by Michele DePhilip, The Nature Conservancy Great Lakes Program, and Jonathan Higgins, The Nature Conservancy Global Conservation Approach Team

### **Purpose and region of analysis**

An ecoregional assessment was completed for the U.S. portion of the Great Lakes ecoregion in 2000<sup>1</sup>. The assessment generated a portfolio that includes 270+ conservation areas (Figure 1). This portfolio was created from integrating areas identified independently for terrestrial species and communities, aquatic ecosystems, declining and vulnerable birds, and reptiles and amphibians assessments (The Nature Conservancy 2000c<sup>2</sup>, The Nature Conservancy 2001, Higgins et al. 1998). Upon completion of the assessment, The Nature Conservancy's Great Lakes Program and state chapters began to implement this ambitious conservation vision. We recognized the need to a) identify a subset of priority action areas within the portfolio (area-based priorities), and; b) develop strategies to address dominant and widespread regional threats to the biodiversity in the portfolio areas (strategy-based priorities).

### **Criteria/Methods**

Criteria were developed and applied to identify place-based and region-wide priorities for strategies, and opportunities for implementing strategies were assessed at the same scales.

### **PRIORITIES**

#### *Place-based Priorities*

Place-based priorities were identified by first defining a sub-set of geographical priorities within the ecoregional portfolio that would represent approximately 20% of the portfolio areas. The Excel-based Action Site Selection Tool<sup>3</sup> was used to organize information on all of the portfolio areas. Areas were assessed for:

---

<sup>1</sup> For planning purposes, we refer to the combined area of the Great Lakes ecoregion *and* the Great Lakes watershed as the Great Lakes region. These two areas are inextricably connected – over 95% of the Great Lakes ecoregion falls within the Great Lakes watershed. We planned for terrestrial species and communities within the ecoregion context and aquatic species and aquatic systems within the watershed context.

<sup>2</sup> Nature Conservancy of Canada is leading efforts to complete the Canadian portion of the plan.

<sup>3</sup> Terrestrial and aquatic sites priority sites were actually developed independently and merged together. The Worksheet was released in early 2000 after terrestrial sites were already prioritized. The terrestrial prioritization was based on the comparable factors. It was therefore appropriate to merge the results from the two prioritization efforts.

- Complementarity (Rank based on degree to which the targets within the conservation area are represented in other conservation areas; in other words, how “unique” is the combination of conservation targets)
- Leverage (Rank based on understanding of clear leverage for conserving other areas in the portfolio)
- Biological contribution (also referred to as “Conservation Value”)
  - Number and diversity of targets (Rank based on number of targets present, presence of both terrestrial and aquatic targets, and presence of targets at all spatial scales)
  - Health of targets (Rank based on size, condition, and landscape context)
- Level of threat/Feasibility
  - Urgency (Rank based on knowledge of threat(s) that is/are likely to destroy or seriously degrade conservation targets at many/most places within the conservation area)
  - Feasibility (Rank incorporates probability of conservation success, cost, and capacity)

After the Great Lakes Program attributed and ranked each area in the portfolio, a draft set of priorities was provided to Nature Conservancy state chapters in the ecoregion for their review and confirmation. This process resulted in 72 areas identified as priority action sites (Figure 2).

After prioritization, state chapters began developing Conservation Area Plans for these places to identify strategies based on the threats and opportunities at each place. TNC is working with partners to promote the assessment of threats, and the development and implementation of strategies. As TNC and partners implement strategies, information about the entire portfolio is used to identify other places where these strategies could be replicated.

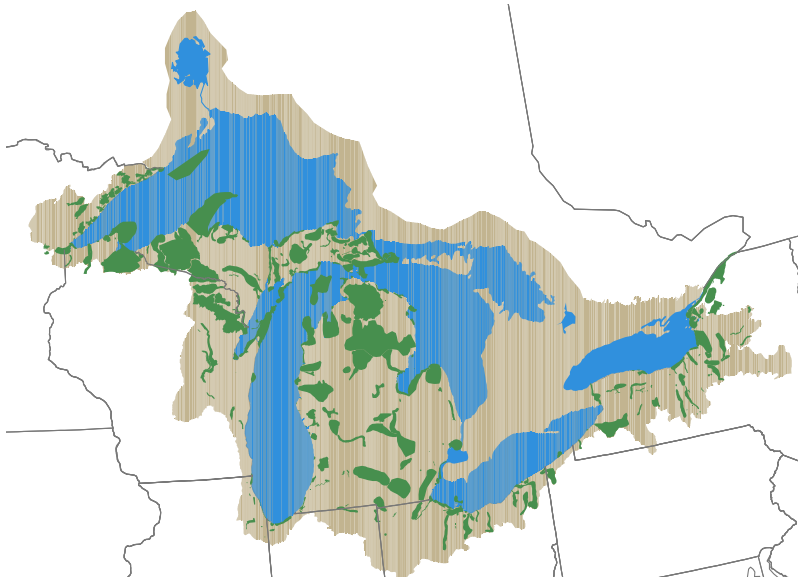


Figure 1. Portfolio for the U.S. portion of the Great Lakes ecoregion

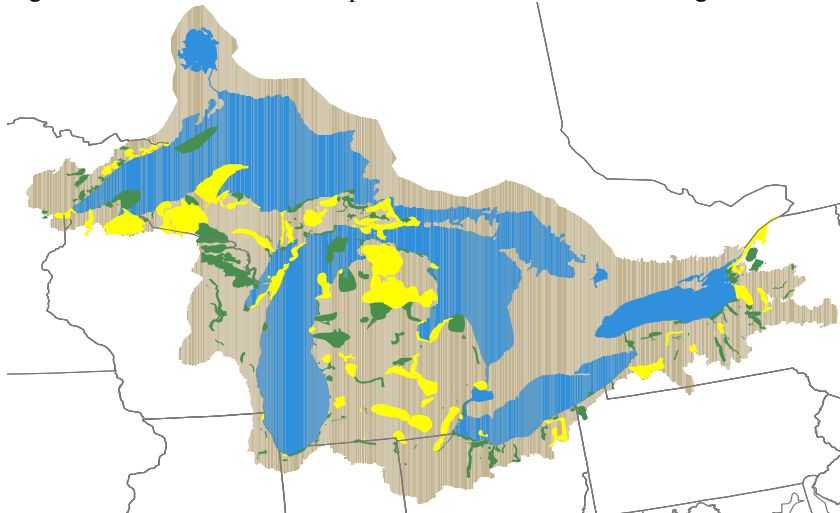


Figure 2. Set of 72 priority action sites selected from the portfolio.

*Region-wide priorities*

Region-wide shared issues and opportunities are being used to develop and implement priority strategies. These issues and opportunities are focused on affecting ecosystem-wide conservation targets and threats.

*Ecoregion-wide targets*

The Great Lakes ecoregion includes wide-ranging and migratory species (e.g. migratory birds, lake sturgeon), targets and unique features that occur widely across the ecoregion (e.g. alvars,

islands). These targets can benefit from region-wide approaches to conservation because a) their effective conservation depends on successfully addressing threats at multiple sites and in between sites (e.g. migratory song birds use different sites for breeding and overwintering, and depend on stopover sites along the migratory route) or b) they have characteristics that make them vulnerable to similar threats or present similar opportunities where a single focused strategy may affect many places at once (e.g. islands).

## THREATS

There are three threats that have been identified as being dominant in scope and severity to biodiversity across the areas in the portfolio. Each of these prevalent threats – altered hydrology, invasive species, habitat destruction, requires both place-based and region-wide approaches to threat abatement. All three ecoregion-wide threats are being partially addressed through strategies that are multi-site in the sense that through their implementation, many sites at once will be affected.

### *Altered hydrology*

Altered hydrology affects many of the areas in the portfolio (Figure 3). With the likelihood of increased water withdrawals and the possibility of diversions from the Great Lakes basin, virtually all freshwater and freshwater-dependent species, communities, and ecosystem targets have potential to be affected.

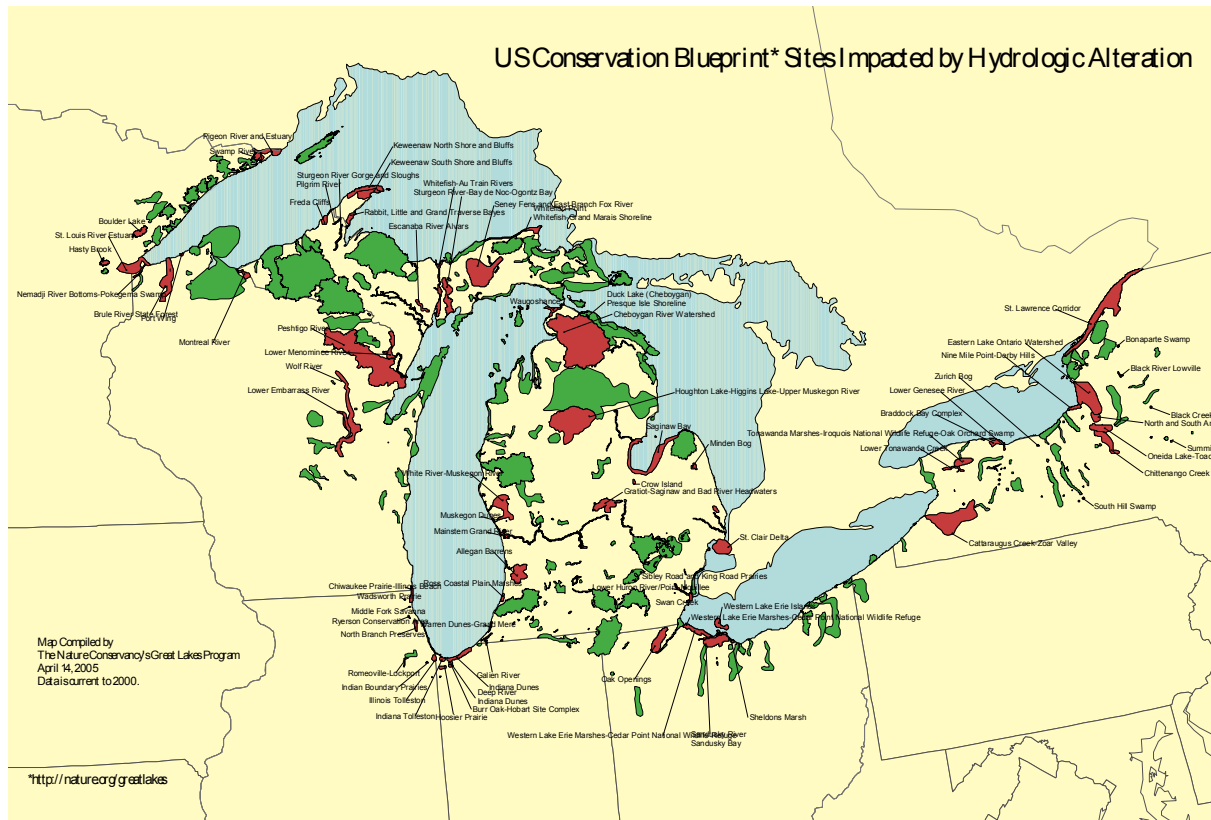


Figure 3. Portfolio areas currently affected by hydrologic alteration.

*Invasive species*

Invasive species have had significant impacts on the biodiversity of the Great Lakes ecoregion. Dominant vectors include cargo ship ballast, recreational boats and bait buckets for freshwater species, and international packing and shipping materials, roads/automobiles and landscaping plants for terrestrial species (Figure 4).





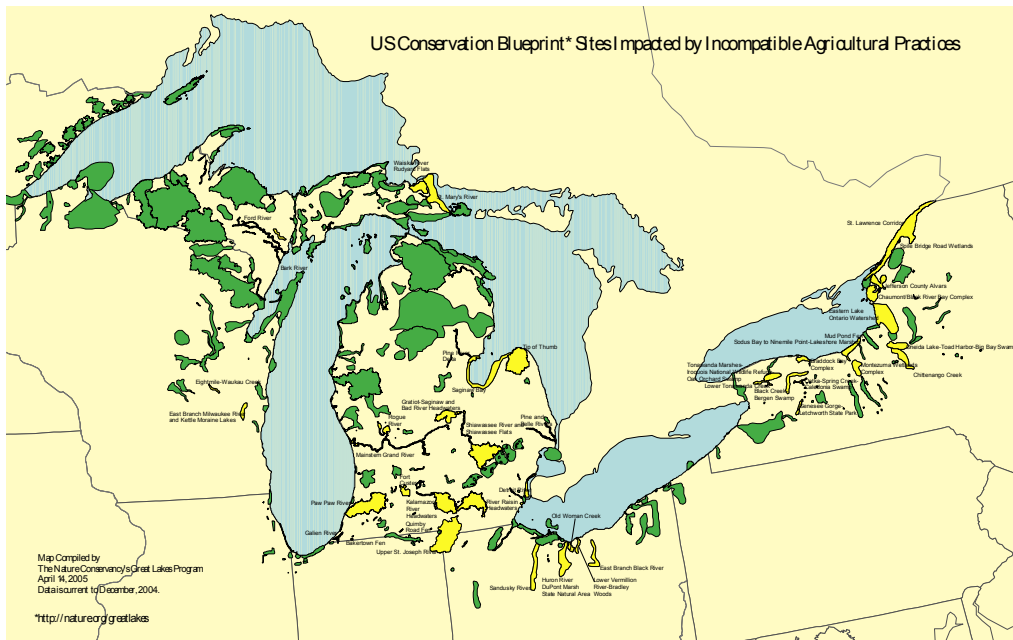


Figure 5 . Portfolio areas currently affected by threats from agriculture.

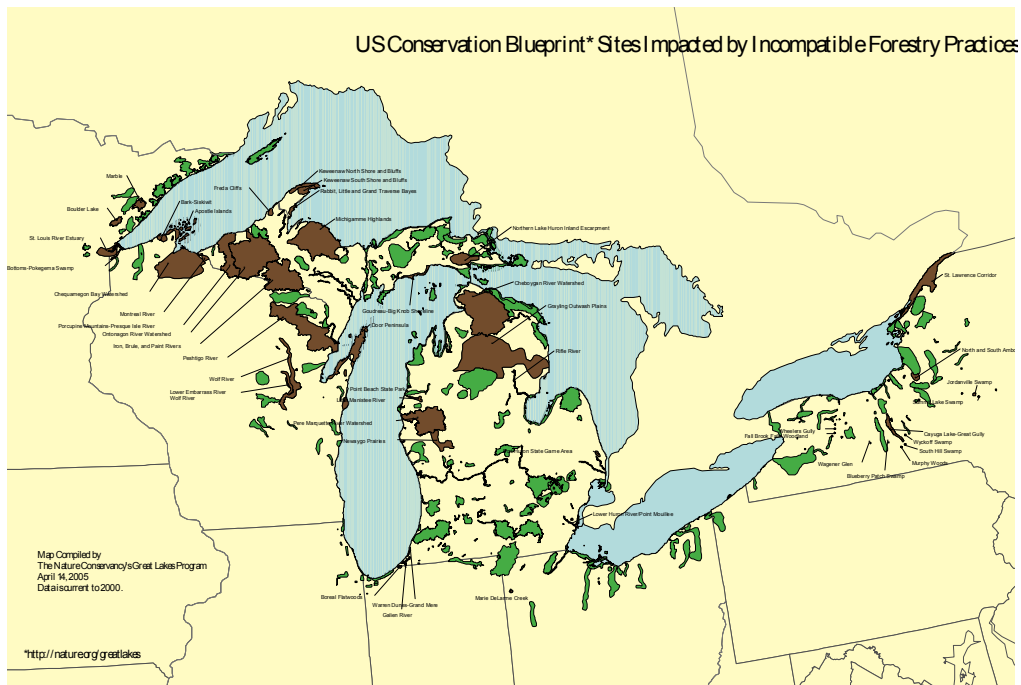


Figure 5c. Portfolio areas currently affected by threats from forestry management.

## OPPORTUNITIES

Opportunities for developing and implementing conservation strategies are presented here around area-based opportunities and ecoregion-wide target and threats opportunities.

### *Area-based opportunities.*

There is a wide range of threats to areas in the portfolio and many specific strategies that affect the biodiversity at these areas. Focus has been given to strategies that affect the three dominant ecoregion-wide threats, strategies that provide opportunities for leverage to other sites, and activities that provide learning opportunities to improve strategies and their implementation.

### Agriculture

There are several opportunities to address impacts from agriculture. NRCS is funding the Conservation Reserve Enhancement Program, which provides funding to farmers to put portions of their land, including stream buffer easements, into natural vegetation cover to enhance wildlife habitat. TNC state programs are working with their regional NRCS offices to implement CREP funding and activities to places that influence portfolio areas and their biodiversity. Another opportunity is to work with individual farmers on their agricultural practices to lessen sediment delivery, through low-till practices and through maintaining grass buffers near streams.

### Forestry

TNC is working with timber companies and the USDA Forest Service to develop more biodiversity compatible management plans and practices for specific areas.

### Habitat Destruction

Habitat destruction is being addressed primarily through land acquisition.

### Hydrologic alteration

TNC is applying analytical methods and tools for larger-scale strategies at specific areas in order to learn more about the methods and tools, and to develop specific strategies for those areas to address hydrologic alteration.

### Ecoregion-wide opportunities

These opportunities are organized around targets, threats and region-wide organizational opportunities.

### *Wide-ranging and widely distributed targets*

#### Stop-over sites for migratory birds.

The Nature Conservancy is working with the US Fish and Wildlife Service and Ducks Unlimited to develop and implement strategies to protect and enhance migratory bird stop-over sites in Western Lake Erie. This region is one of the largest stop-over sites in North America. Once strategies become more developed, they will be expanded to other portions of the ecoregion.

### Island conservation

The Nature Conservancy is working with the US FWS and the Northeast-Midwest Institute to refine priorities for island conservation, identify threats to those islands and to develop and implement strategies.

### Alvar Initiative

Alvars are an ecoregional conservation target that occur across northern parts of lakes Michigan, Lake Huron, Lake Ontario and in western Lake Erie. An extensive group of partners in the U.S. and Canada has been created and maintained to heighten awareness and focus conservation actions for alvars. There has been about a decade of activities to identify site-specific priorities, dominant threats, strategies and partnerships for implementation of strategies. One of the dominant strategies is working with current land owners, which include state, federal and provincial governments, NGOs and individual land owners, to effectively manage alvars. The Couching Conservancy is a local Canadian nonprofit organization that is developing community-based alvar conservation with private land owners. Another strategy is land acquisition to increase protected areas for alvars.

### *Threat-based opportunities*

#### Hydrologic alteration.

Currently the Great Lakes Governors and Premiers are collaborating to develop a new water management standard for water withdrawals from the Great Lakes basin called for in the Great Lakes Charter Annex (Annex 2001). The Conservancy serves as an advisor to the Governors and Premiers' Water Management Working Group, promoting the use of sound science in the water management decision-making process and encouraging the consideration of how water management affects water levels and flows in the Great Lakes and tributary watersheds. TNC has a complementary project underway to demonstrate how flow regimes have changed from historical conditions and how they may potentially change as a result of water withdrawal scenarios.

Opportunities for freshwater conservation have been elevated through a focus on hydrologic issues in the Great Lakes basin. The implementation of the Indicators of Hydrologic Alteration (IHA) is being used as a tool to assess the types and degrees of changes to natural river flow regimes to support the implementation of Annex 2001 and other water management decision-making processes. In addition, the IHA has been used to evaluate the degree of change in water level regimes in Lake Ontario to make recommendations for dam management flow prescriptions. Water level regimes are critical to maintain natural ecological processes for many shoreline ecoregional conservation targets.

#### Invasive Species

The Nature Conservancy is developing partnerships with academic institutions and agencies, and working with TNC's Invasive Species Initiative to identify dominant strategies to prevent introduction and spread of aquatic invasive by studying species vectors and pathways of invasions. This will support both area-based activities and basin-wide policies and management practices.

### *Organizational and policy opportunities*

There are several ecoregion-wide opportunities that exist to help implement multi-site strategies. There are organizations and policies that exist to provide conservation and restoration of the Great Lakes. The Great Lakes Regional Collaboration was established by an Executive Order of the President and charged with developing a strategic action plan for Great Lakes protection and restoration. The GLRC includes representation from federal, state, local and tribal governments, and private environmental and conservation organizations, academic researchers, and private industries. The ecoregional portfolio is being used to help focus activities from these opportunities to places that will be effective in habitat and species conservation and threat abatement.

Several other policy and collaborative opportunities that would fit under here have been presented in the other target or threats-based opportunities

### **Strengths and Weaknesses**

#### *Strength--Multiple scales*

Strategies are being implemented at a variety of spatial scales. These different scales are addressing scales of priorities, threats and opportunities. There does not seem to be a specific scope and scale which would be most appropriate. Many strategies have region-wide support, and are applicable across most of the ecoregion. We need to learn more about site-level activities, such as whether our CAP is successful, how to conduct adequate monitoring, perform adaptive management, and leverage activities to other sites more effectively.

#### *Strength--Leveraging actions*

Exporting on-the-ground work to other places has worked well. This successful leverage has worked because of partnerships and learning opportunities. Having a portfolio to show to partners to galvanize activities at a set of important places has been fundamental. Many partners have the capacity to implement conservation strategies but do not know where they should focus their activities.

#### *Weakness--Information*

There was a lack of site-specific information. Better information on threats to targets at each portfolio area would have been very informative. More specific information on incompatible land and water uses is needed to inform region-wide application of strategies. Better inventory of actions relative to the conservation of targets is needed as well to evaluate existing conservation management status. We lack a thorough understanding of the current management activities that are hurting and helping conservation targets. Using available GAP classification of management activities is only a start.

### **Tools**

[Action Site Selection Tool](#) is an Excel based tool designed to help planners select action sites within ecoregional conservation portfolios.

## **Bibliography**

Higgins, J., M. Lammert, M. Bryer, M. DePhilip, and D. Grossman. 1998. Freshwater conservation in the Great Lakes basin: development and application of an aquatic community classification framework. Chicago, Illinois: The Nature Conservancy, Great Lakes Program.

The Nature Conservancy. 2000a. Conservation by Design: A Framework for Mission Success. Arlington, Virginia: The Nature Conservancy.

The Nature Conservancy. 2000b. Excel-based Action Site Selection Tool. Arlington, Virginia: The Nature Conservancy. Available at [www.conserveonline.org](http://www.conserveonline.org)

The Nature Conservancy. 2000c. Toward a new conservation vision for the Great Lakes: a second iteration. Chicago, Illinois: The Nature Conservancy, Great Lakes Program.

The Nature Conservancy. 2001. Aquatic ecoregional planning in the U.S. portion of the Great Lakes watershed (CD-ROM) Chicago, Illinois: The Nature Conservancy, Great Lakes Program.

