Report of the

Lake Erie
Habitat Task Group

Big Creek Marsh, Long Point Wetlands Complex

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Presented to:
Standing Technical Committee
Lake Erie Committee
Great Lakes Fishery Commission

Table of Contents

Section 1. Charges to the Habitat Task Group 2004-2005

1. Document habitat related projects (e.g. critical information collection, habitat rehabilitation projects, habitat quantification, etc.) being conducted or proposed by LEC agency members and partners in the Lake Erie Basin

2. Develop strategies to work with the Lake Erie LaMP as a vehicle to resolve environmental issues, beyond the mandates of fisheries agencies.

3. Develop strategy and support for Lake Erie GIS development and deployment. Provide assistance to Dr. Edward Rutherford during the development of the GIS and assist with training of Lake Erie Committee personnel in the use of the GIS database.

4. Complete the final draft of the Environmental Objectives document

Section 2. Document habitat related projects

The documentation of habitat related projects, associated with Lake Erie and Lake St. Clair, continues to be updated and appended.

A total of 25 projects involving monitoring or evaluation of habitat were identified by HTG members. Projects ranged from annual programs such as the Michigan DNR sturgeon habitat surveys to shorter term projects such as a study to characterize suspended sediment plumes associated with dredging developed by the Corps of Engineers and the Ohio Division of Wildlife. New projects planned for 2005 include an OMNR assessment of north shore coastal wetlands (Rondeau Bay) and a binational mapping initiative planned for Maumee River, Ohio and Grand River, Ontario.

One such initiative, the Integrated Habitat Classification and Map of the Lake Erie Basin is headed up by a Scudder Mackey, a task group member, with the objective of the project being to develop an integrated habitat map for the Lake Erie basin. The integrated map will be used in tracking improvements in habitat quantity and quality resulting from preservation, conservation, and restoration efforts and to guard against further loss or degradation from land-use alterations. This project will provide a GIS-based framework to which additional data layers can be added to describe the important attributes of classes within each habitat zone (e.g., natural value, biodiversity, susceptibility to degradation, restoration potential, nutrient export potential, water retention potential, etc.). Such information is necessary for the development of dynamic models of habitat management and will be integrated with the ongoing Lake Erie GIS project.

Several previously identified assessment projects have been completed or are currently in the reporting stage. For example, final reporting on a series of assessment projects associated with the OMNR's eastern basin 5-yr rehabilitation plan, which concentrated on habitat quality and access to habitat within the lower Grand River (Ont), will offer direction and impetus for future habitat rehabilitation initiatives. Linking the problem of access to fish habitat with impoundment water quality issues, will helps to focus rehabilitation efforts. Recognition of water quality issues within the river has led directly to engineering/design initiatives which will consider the feasibility of using process wetlands to polish water treatment control plant effluent beyond what is currently required by provincial guidelines.

A total of 9 projects were identified in the basin that were directed at developing rehabilitation strategies in Lakes Erie and St. Clair and connecting channels. One of these projects, the GLFC funded Huron-Erie Corridor (HEC) project will create a framework and design a process to systematically identify, coordinate, and implement binational aquatic and fish habitat restoration opportunities in the Lake Huron to Lake Erie Corridor (Huron-Erie Corridor, HEC) within a context of water level change resulting from direct anthropogenic hydromodification and/or long-term effects of global climate change. In consultation with the Lake Erie Habitat Task Group, agency and academic researchers, and the Lake Erie Millennium Network (LEMN), the University of Windsor and the Ohio State University will host three LEMN research needs workshops to assist with development of a long-term strategy to identify and assess high-quality fish habitats using existing HEC datasets and dynamic modeling tools to predict the distribution of future habitats in response to climate-induced changes in water level and flow regime.

A total of 26 rehabilitation projects were identified in the basin ranging from the lakewide Lake Erie LaMP Habitat Strategy to a bank stabilization project on Spooner Creek, New York. New rehab projects, beginning in 2005, include the Middle Harbor fish habitat restoration project (ODNR, Division of Wildlife and Division of State Parks) and NYSDEC's migratory access Improvement project on Cattaraugus Creek. The Middle Harbor Fish Habitat Restoration Project will target nearshore fish community restoration in a 400 acre connected coastal wetland by restoring lateral connectivity between Lake Erie and a coastal wetland, and promoting the re-establishment of submerged aquatic vegetation using an island feature to reduce wind fetch and sediment resuspension.

Section 3. Develop strategy to work with Lake Erie LaMP as vehicle to resolve environmental issues, beyond the mandates of fisheries agencies.

One strategy that the Habitat Task Group has pursued in regards to this charge has been in implementation since the early 1990s. Fish management agencies have been involved in the development of the Lake Management Plan since its inception, at all levels of organization. Fisheries agencies have helped to ensure that the focus of the plan was on ecosystem integrity. We have led key exercises in development of the LaMP (assessment of impairment of beneficial uses, development of ecosystem objectives). Fisheries management agencies are now involved in the multi-agency implementation of the Lakewide Management Plan, including strategy (Habitat Strategy) and implementation (eg Canada-Ontario Agreement) through participation in the LaMP Management Committee, LaMP Workgroup, and Indicators Workgroup.

The Indicators Workgroup has made progress towards developing a suite of indicators that would measure ecosystem state and link to management levers or objectives. The indicators that are being explored include both pressure and state indicators across five different habitat categories. The pressure indicators include both management objective indicators as well as process indicators. Management objective indicators include metrics associated with amount of natural land cover, chemical contamination, biological contamination and resource use and disturbance. These are the four ecosystem stressor axes identified by the fuzzy cognitive map approach. Process indicators include metrics associated with flow, energy and economic disruption. Lastly state indicators identified by the group include metrics that describe trends in plant cover, food web base, lower food web, and upper food web. Metrics for all of these indicator categories will be developed for the five habitat classes identified in other exercises. The habitat classes include terrestrial, stream, coastal wetland, nearshore, and offshore habitats.

A second strategy is based on the LEC's capacity to issue position statements concerning issues that are beyond the scope of member management agencies. The agency has released six significant statements as listed below and the Habitat Task Group participated in the drafting of the current Water Level Position Statement. These have been appended to the Environmental Objectives document.

1. 2005: Water Level Position Statement
2. 2002: LaMP Rehabilitation of Near shore Habitat and Lower Tributaries
3. 2000: Position Statement on Ballast Water Management
4. 1999: LEC Position Statement re Structuring Native Fish Communities in the Twenty-first Century

5. 1998: Lake Erie Committee Position Statement concerning Lower Trophic Level Changes and their implications to fish community composition and productivity in Lake Erie.
6. 1995: Lake Erie Committee Interim Position Statement on Phosphorus Management in Lake Erie. Some of these need to be added to the LEC materials on the GLFC web page.

Section 4. Develop strategy and support for Lake Erie GIS development and deployment. Provide assistance during the development of the GIS and assist with training of Lake Erie Committee personnel in the use of the GIS database.

This is an ongoing activity, and Habitat Task Group members are contacts for their agencies. Dr. Ed Rutherford (University of Michigan) and Chris Geddes are moving forward on compilation of data layers for the Lake Erie GIS and are working in collaboration with Dr. Scudder Mackey on the Habitat Classification and Map of Lake Erie such that duplication of effort does not occur.

Section 5. Complete Lake Erie Environmental Objectives

Progress was made in 2004 toward the completion of the Environmental Objectives document. The document has been through Task Group and LEC review and the document will be revised by May 2005. Subsequent to revision, the document will be submitted to the GLFC for review and publication as a technical note. In addition to work on the draft Environmental Objectives, Task Group members convened a workshop to brainstorm fish habitat policy and research priorities for listing by CLC. The goal of this meeting was to produce a prioritized list of environmental objectives that could be used by the CLC to direct Restoration Act proposals and funding. To this end, we developed a list of broad categories that were important across the Great Lakes relative to fish habitat restoration. The guidance document produced follows.

Guidance for Proposals Linked to Environmental Objectives under the F&W Restoration Act

The Strategic Plan for Management of Great Lakes Fisheries (I,II) identified the need to develop Fish Community Goals and Objectives (FCGOs) for each lake, and to identify Environmental Objectives to support achievement of the FCGOs. These exercises have been implemented to various degrees across the Great Lakes. . Representatives from each Great Lake met in October 2004 to identify common areas of interest, and to recommend research and restoration priorities (GLFC web page) relative to their Environmental Objectives. The four major areas of research and restoration focus identified follow with descriptions of research and restoration that should be a high priority for funding through the GLFWRA. The GLFWRA is directed to restoration activities. Priority should be given to projects that set up restoration and implementation, in preference to research which is supported by other GLFC funds. Some project areas in bold below clearly meet this criteria. Projects involving research must clearly document their relevance to strategy or "hands on" restoration.

1. **Physical integrity of hydrological processes and water level fluctuations**
   a. Projects identifying impacts of lake circulation patterns, water exchange rates, lake level, tributary inflows, and materials transport on fish/aquatic communities, production
   b. Basic research on physical processes at scales linked to fish/aquatic communities, production.
   c. Projects targeted at restoration of natural circulation patterns, water exchange rates, or tributary inflows (natural hydrograph) etc, with associated monitoring.

2. **Inventory and mapping to support achievement of FCGOs**
   a. Projects that identify baseline fish habitat conditions, fish community index sites, long-term datasets, GIS applications etc.
   b. Projects that describe reference environmental and fish community conditions.
   c. Projects that develop databases that support comparative analyses and address multiple gear sampling issues

3. **Suitable physical/chemical/biological habitat to support achievement of FCGOs**
   a. Projects that focus on synthesis, analysis, or interpretation of mapping and inventory data by fish life history stage, community type, or FCGO species using some type of habitat dimension such as:
      i) Physical habitat (i.e. Substrate, temperature, aquatic plants etc.)
      ii) Chemical habitat (i.e. contaminants, pH, DO, TSS, water quality)
      iii) Biological habitat (i.e. food web structure, trophic transfer etc.)
   b. Projects that develop fish habitat classification schema based upon the above criteria or integrate criteria into Habitat Supply or HSI analyses.
   c. Projects that use above mapping, inventory, or classification schema to identify Priority Management Areas

d. Projects that restore suitable physical, chemical, or biological habitat (as outlined above) based upon existing information on habitat requirements for FCGO species.

4. Suitable connectivity to support achievement of FCGOs

a. Projects that address physical connectivity between habitat units such as:

i) Restore lateral connectivity between large rivers and floodplains

ii) Restore lateral connectivity between the Great Lakes and coastal wetlands

iii) Restore connectivity relative to alongshore currents and coastal drift

iv) Restore longitudinal connectivity relative to dams as impediments to fish access

v) Restore flows etc. that ensure connectivity of habitats for different life history stages of FCGO species

b. Research that addresses effects of habitat contiguity (fragmentation, patch size, alongshore barriers such as thermal plumes) on FCGO species

c. Research relative to effective sea lamprey barriers that cause minimal restriction to other fish migration.

Protocol for Use of Habitat Task Group Data and Reports

- The Habitat Task Group (HTG) has used standardized methods, equipment, and protocol in generating and analyzing data; however, the data are based on surveys that have limitations due to gear, depth, time and weather constraints that vary from year to year. Any results or conclusions must be treated with respect to these limitations. Caution should be exercised by outside researchers not familiar with each agency's collection and analysis methods to avoid misinterpretation.

- The HTG strongly encourages outside researchers to contact and involve the HTG in the use of any specific data contained in this report. Coordination with the HTG can only enhance the final output or publication and benefit all parties involved.

- Any data intended for publication should be reviewed by the HTG and written permission received from the agency responsible for the data collection.