

FISHERY RESEARCH PRIORITIES: LAKE ERIE Great Lakes Fishery Commission

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This listing was compiled based on input from the Lake Erie lake committee and its technical committee and from discussions within the Council of Lake Committees (for more information go to <http://www.glf.com/lakecom.php>). Order of listing does **not** imply relative ranking of priorities for the Fishery Research Program funding.

Research Priorities

These Lake Erie Fisheries Research Priorities were developed to encourage progress towards meeting the published Lake Erie Fish Community Objectives (FCO's). We wish to emphasize here that specific FCO's must be interpreted in the context of the developed Goals for Lake Erie and the Guiding Principles used to frame specific objectives. Interested researchers should review the Lake Erie Fish Community Goals and Objectives (Ryan et al. 2003 link to http://www.glf.com/pubs/SpecialPubs/Sp03_2.pdf) for additional background information concerning these research priorities.

Bold font indicates the **highest priorities** and *italics font* indicates *medium priorities*. Remaining priorities are lower priorities.

Ecosystem Conditions Objective

- *How can we best monitor, manage, and maintain optimum mesotrophic conditions in the west, central, and nearshore east basin?*
- *How can we best develop bathy/thermographic (and other habitat) maps that facilitate our understanding of the size, dynamics, and impact of river or tributary plumes in Lake Erie?*
- *How can we best describe important habitat characteristics, complete mapping of Lake Erie habitat, and distribute this information to managers, researchers, stakeholders, and the public?*
- How can we best map or model known disease dynamics in Lake Erie?

Productivity and Yield Objective

- **What are appropriate biological reference points and fisheries reference points for fished populations and how can they be estimated?**
- **How can we best describe, map, evaluate and maintain suitable nearshore habitats that can support high quality fisheries for smallmouth bass, northern pike, muskellunge, yellow perch, and walleye using hydroacoustics/GIS software?**
- What is the influence of size or slot limits on fish population dynamics?
- What is the impact of fishing sanctuaries on fish populations of interest and are the goals of sanctuaries being met?
- How can we optimize the potential for sustainable harvests of highly valued fish species?

- What changes in catchability have occurred in the commercial and sport fisheries operating on Lake Erie over time?
- What are the spatial and temporal dynamics of invasive species in Lake Erie and what are their impacts on desired fisheries productivity and yields?

Nearshore Habitat Objective

- **How can we best describe, map, evaluate and maintain suitable nearshore habitats that can support high quality fisheries for smallmouth bass, northern pike, muskellunge, yellow perch, and walleye using hydroacoustics/GIS software?**
- *How can we best describe important habitat characteristics, complete mapping of Lake Erie habitat, and distribute this information to managers, researchers, stakeholders, and the public?*

Western Basin Objective

- **What are the stock structures of walleye, yellow perch, smallmouth bass and other desired fish?**
- **How can we identify, rehabilitate, conserve, or protect locally adapted stocks?**
- *How can we best provide sustainable harvest of desirable fish species of fish?*
- What are the stock/spawner-recruitment relationships in desired fish populations?
- What are the natural mortality (M) rates in desired fish populations?
- What are the limiting factors and causes leading to reduced or lost recruitment of desired fish species and what are the solutions to remedy this lost recruitment?

Central Basin Objective

- **What are the stock structures of walleye, yellow perch, smallmouth bass and other desired fish?**
- **How can we identify, rehabilitate, conserve, or protect locally adapted stocks?**
- *How can we best provide sustainable harvest of desirable fish species of fish?*
- What are the stock/spawner-recruitment relationships in desired fish populations?
- What are the natural mortality (M) rates in desired fish populations?
- What are the limiting factors and causes leading to reduced or lost recruitment of desired fish species and what are the solutions to remedy this lost recruitment?

Eastern Basin Objective

- **What are the stock structures of walleye, yellow perch, smallmouth bass and other desired fish**
- **How can we identify, rehabilitate, conserve, or protect locally adapted stocks?**

- *How can we best provide sustainable harvest of desirable fish species of fish?*
- What are the stock/spawner-recruitment relationships in desired fish populations?
- What are the natural mortality (M) rates in desired fish populations?
- What are the limiting factors and causes leading to reduced or lost recruitment of desired fish species and what are the solutions to remedy this lost recruitment?
- How can we best restore self-sustaining populations of lake trout to historic levels of abundance in the east basin?

Fish Habitat Objective

- *What are the best methods for evaluation, protection, and enhancement of fish habitat throughout the Lake Erie watershed?*
- How can we update the Great Lakes Spawning Atlas to reflect recent changes in the Lake Erie basin?

Genetic Diversity Objective

- **What are the stock structures of walleye, yellow perch, smallmouth bass and other desired fish**
- **How can we identify, rehabilitate, conserve, or protect locally adapted stocks?**

Food Web Structure Objective

- How can we best manage the food web structure of Lake Erie to optimize production of highly valued fish species?