

HABITAT TASK GROUP EXECUTIVE SUMMARY REPORT MARCH 2015



Introduction - The following provides a brief encapsulation of information presented in the annual report of the Lake Erie Committee (LEC) Habitat Task Group (HTG). The complete report is available from the GLFC's Lake Erie Committee Habitat Task Group website at <http://www.glfc.org/lakecom/lec/HTG.htm>, or upon request from an LEC, Standing Technical Committee (STC), or HTG representative.

Four charges were addressed by the HTG during 2014-2015: (1) Document habitat related projects. Identify and prioritize relevant projects to take advantage of funding opportunities; (2) Assist member agencies with the use of technology (i.e., sidescan, GIS) to better understand habitat in Lake Erie; (3) Support other task groups by compiling metrics of habitat use by fish; and (4) Develop strategic research direction for Environmental Objectives.

Task 1: Project Documentation – Information pertaining to habitat related initiatives taking place throughout the Lake Erie and Lake St. Clair basins is compiled and made available as an interactive “clickable map” which allows for geographic sorting of projects (by watershed or lake basin). You can access the spatial inventory of projects at: www.glfc.org/lakecom/lec/spatial_inventory/inventoryindex.htm. Details of many notable projects can be found in the HTG Full Annual Report. The HTG is also developing a ‘wish-list’ of potential research and enhancement projects for this charge, which will be integrated into the spatial inventory. The HTG anticipates that organizations looking for gaps in information needs and opportunities to fund this type of work should find this list useful.

Reef Construction, St Clair/Detroit River System – Since 2004, artificial spawning reefs were constructed in the SCDRS to compensate for historic losses of critical fish spawning substrates. In 2014, water depths and velocities were measured with an acoustic Doppler current profiler (ADCP) to assess the availability of appropriate water depths (> 4.5 m), velocities (> 0.5 m/s), and identify zones of scour within candidate artificial fish spawning reef construction areas and assess flow patterns over existing artificial reefs in the SCDRS (Figure 1). Measurements were conducted at 3 existing artificial reef sites (Fighting Island, Belle Isle, and the Middle Channel Reefs) and 4 candidate reef sites (Grassy Island, East Belle Isle, Pointe Aux Chenes, and Harts Light). This information, in conjunction with side-scan sonar and underwater video documentation of substrate types, helped guide reef placement at the Pointe Aux Chenes (2014, 1.5 acres), Hart's Light (2014, 3.8 acres), and Grassy Island (in permitting process) sites. Post construction monitoring of physical habitat and early life stages of fishes will begin spring 2015 at the new reefs and will continue at 3 existing reefs (Middle Channel in SCR; Belle Isle and Fighting Island in DR). Future reef restoration is focused on the Detroit River (DR), with site assessment underway at Belle Isle and Fort Wayne.

Coastal Wetland Restoration, West Basin, OH – Restoration activities at various coastal wetlands continue, including construction of water and fish

passage structures between managed wetlands and Lake Erie. Additional research is underway to evaluate whether fish use these structures. Wetlands selected for evaluation include Toussaint Marsh, The Blausey Unit, Great Egret Marsh, and Winous Point.

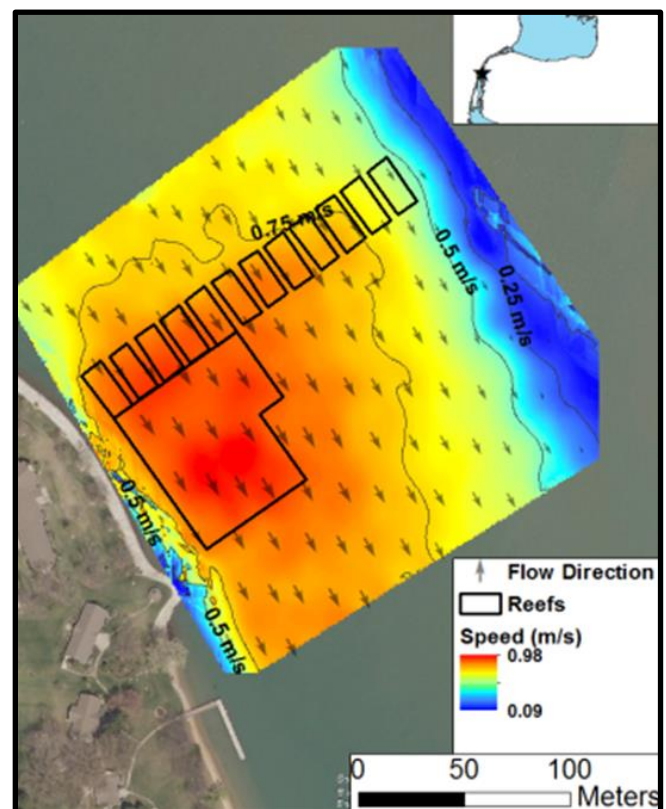


Figure 1. Average water current velocities at Fighting Island Reef, Detroit River, as recorded by ADCP.

Task 2: Use of Technology

Sidescan Sonar Comparison – The Habitat Task Group (HTG) has identified the use of sidescan technology as an increasingly popular and important tool for evaluating habitat in aquatic systems. Sidescan has been used on Lake Erie to map substrate distributions, target potential Lake Trout spawning habitat, and evaluate habitat in the nearshore. Integrated sidescan systems have become more affordable, and many agencies around Lake Erie have begun using these systems to collect

data. The HTG encourages these activities, but understands that integrated sidescan systems may perform differently at various depths, ranges, and frequencies compared to traditional, stand-alone systems. To promote the use of the technology and share information on the implementation of these systems, the HTG has initiated a series of exercises comparing various types of sidescan systems and software to establish guidelines for collecting, processing, and analyzing sidescan data in Lake Erie. The first of these exercises took place in July, 2014, and used two systems (Klein 3000, Lowrance LSS-1) to collect identical data at 3 locations around Sandusky, OH. These data have not been processed to date, but initial views of raw imagery have provided additional insight into the relative strengths of each system (Figure 2). Additional collections and comparisons are being planned for 2015. These exercises will provide the HTG the opportunity to develop guidance documentation identifying recommended sidescan sonar systems and setting for particular data collection needs with plans to hold a workshop for those interested in the technology.

Great Lakes Aquatic Habitat Framework (GLAHF) – The GLAHF is a GIS database of geo-referenced data for Great Lakes coastal, large rivermouth, and open water habitats. The goal of the GLAHF is to develop provide access to a Great Lakes aquatic habitat database and classification framework to provide a consistent geographic framework to integrate and track data from habitat monitoring, assessment, indicator development, ecological forecasting, and restoration activities across the Great Lakes. Additional work to develop a web-based Decision Support Tool was undertaken in 2014. In July and October, GLAHF staff with help from the HTG hosted workshops with biologists in the U.S. and Canada to identify what kinds of DSTs would help managers in their work and provide information at appropriate scales useful for decision making. A conceptual manuscript for the GLAHF has been accepted with the Journal of Great Lakes Research, and should be available by mid-2015. The GLAHF is scheduled to release the Spatial Framework and Database, Aquatic Habitat Classification, and DSS-viewer by the end of summer, 2015. Information about GLAHF, and the overall Great Lakes GIS initiative, can be found at: <http://ifrgis.snre.umich.edu/projects/GLAHF/qlahf.shtml>

Task 3: Identify metrics of habitat use by fish –

The fishery quota for Lake Erie walleye is currently allocated based on a sharing formula (% surface area) that defines walleye habitat as nearshore water ($\leq 13\text{m}$ deep) in Michigan, Ohio and Ontario. Partnership Index Gillnet). Members of the HTG have attempted to use abiotic relationships to improve this definition of walleye habitat in the past (Pandit et al. 2013); with walleye location data through the Great Lakes Acoustic Telemetry Observation System becoming available, the HTG plans on partnering with the Walleye Task Group

again to examine this habitat definition using data from walleye movement and habitat use.

Research on the effects of seasonal hypoxia in the central basin on fish distribution, particularly yellow perch, continues. A manuscript, entitled “Dynamic Hypoxic Zones in Lake Erie Compress Fish Habitat, Altering Vulnerability to Fishing Gears”, documents these effects and has recently been accepted for publication in an upcoming issue of Canadian Journal of Fisheries and Aquatic Sciences.

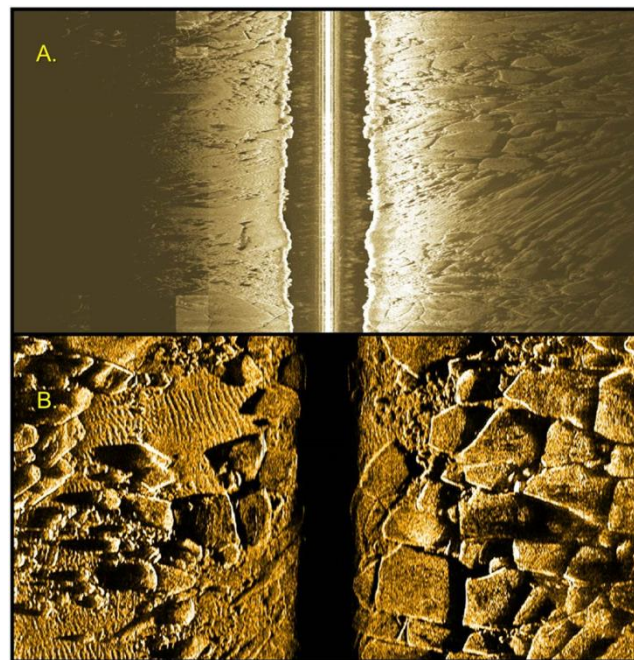


Figure 2. Comparison of raw sidescan sonar images collected off the Marblehead Lighthouse, Marblehead, OH, on August 26th, 2014. Images were collected using a Lowrance LSS-1 (455 kHz; A.) and Klein 3000 systems (500 kHz; B.).

Task 4: Strategic research direction for Lake Erie’s Environmental Objectives (EOs) –

The HTG believes the LEC’s EOs and Fish Community Goals and Objectives can be accomplished by providing science-based information and guidance as a key outreach strategy to those with regulatory authority. This will require identifying and filling current knowledge and data gaps, particularly nearshore habitat and fish community associations, and developing restoration techniques that can be applied in riverine, coastal, and nearshore environments. This will direct us towards designing an implementation strategy for in-water habitat enhancement. The development of guidance materials to be actively distributed with the EOs will be a necessary outcome of this approach. This will guide those with regulatory authority to incorporate beneficial design elements into habitat projects in the Lake Erie nearshore, tributaries, and other priority habitats.

The EO document can be found at: <http://www.glfc.org/lakecom/lec/lechome.php>