

HABITAT TASK GROUP EXECUTIVE SUMMARY REPORT MARCH 2013



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.

Five charges were addressed by the HTG during 2012-2013: (1) Document habitat related projects. Identify and prioritize relevant projects to take advantage of funding opportunities; (2) Support Lake Erie GIS development and deployment; (3) Assist the Coldwater Task Group with the lake trout habitat assessment initiative; (4) With the assistance of the Walleye Task Group, identify metrics related to walleye habitat for the purpose of re-examining the extent of suitable adult walleye habitat in Lake Erie and (5) Develop strategic research direction for Environmental Objectives.

Habitat 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/inventory_index.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 opportunities to fund this type of work should find this list useful.

Lake Erie GIS - The Lake Erie GIS has been incorporated into a larger initiative, the 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 a Great Lakes aquatic habitat database and classification framework to integrate and track data from habitat monitoring, assessment, indicator development, ecological forecasting, and restoration activities across the Great Lakes. Data from the Great Lakes GIS is being incorporated into the GLAHF.

In 2012 the updated substrate maps created by HTG was incorporated into GLAHF. The HTG recognizes the need for more regular updates to the lower trophic level and fisheries data components of the GLAHF and will be investigating ways of annually integrating data from LEC member agencies. The current plan is to share a data table template with the LEC agencies. The data table template should allow for easy data preparation by agencies and quick incorporation into the GLAHF. Information about GLAHF, and the overall Great Lakes GIS initiative, can be found at: <http://ifrgis.snre.umich.edu/projects/GLAHF/glahf.shtml>.

Identifying Potential Lake Trout Spawning Habitat

- In 2012 direct actions related to this past work included: i) using areas identified as having spawning habitat potential to stock fish and ii) conducting gillnet surveys during lake trout spawning period (late fall) to document presence/absence of lake trout; as an indication of attraction to these areas (if not actual successful spawning).

Nanticoke Shoal, Ontario

Boat stocking of yearling lake trout over Nanticoke Shoal occurred on April 17-19, 2012; representing the 5th consecutive annual stocking event at this location. Gillnetting during late fall, to detect the presence and condition of lake trout during spawning period, occurred for the third consecutive year at Nanticoke Shoal in November 2012. Gillnet locations were chosen based on the location of the cleanest cobble substrate, a shallow ridge that runs NW-SE across the shoal. Four gangs of gillnet were used to "surround" the ridge and fishing took place on three separate occasions (November 15, 21, and 27; Figure 1).

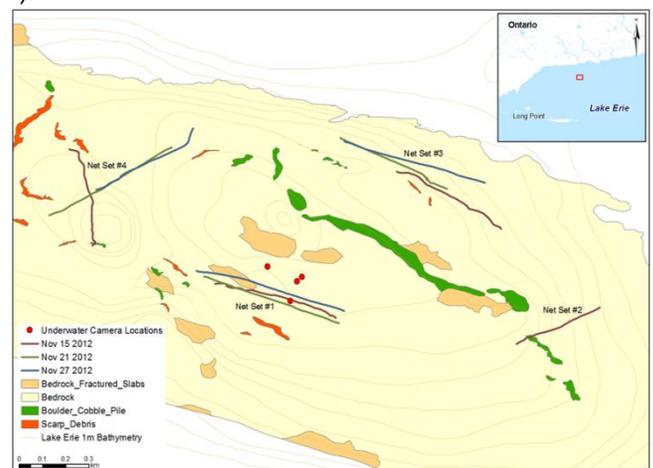


Figure 1. Locations of gillnet sets relative to key substrate and habitat features, during fall lake trout assessments at Nanticoke Shoal, ON, 2012.

Lake trout were caught on the 15th and 21st; the first observations of lake trout since the fall assessment began at this location in 2010. Ten of the twelve lake trout captured were originally stocked at this location

between 2008 and 2012. Male and female lake trout were sampled during gillnetting. Continuous underwater video logging which took place concurrent with gillnetting only captured smallmouth bass on camera (< 7 minutes of smallmouth bass occurrences in > 51 hours of surveillance).

18 Mile Creek Shoal, New York

Underwater video surveys revealed a potential high quality lake trout spawning area off Eighteen Mile Creek (Figure 2). This nearshore site is relatively large and appears to possess many of the necessary attributes that lake trout need for successful reproduction, including cobble sized rock piles, a substrate relatively clean of silt, and large interstitial spaces. However, it is subject to the strong westerly winds and waves that buffet the area during fall and winter months. Since this site is shallow and closer to the eastern end of the lake, it often becomes ice covered during winter, potentially diminishing some of these effects.



Figure 2. Underwater photo of bottom habitat off 18 Mile Creek in Lake Erie, July 2011

Fall gillnetting in both 2011 and 2012 found that spawning-phase lake trout visited this site, and while the numbers of lake trout caught were not as high as on other nearshore sites sampled in recent years, sampling confirmed that spawning lake trout did find this habitat and were apparently using it despite its distance (25 miles) from the nearest stocking locations. Moreover, the presence of ripe female lake trout indicates that it is a probable spawning area. To date, this site appears to have the best quality habitat for spawning lake trout that we have surveyed in the NY waters of Lake Erie.

Identify metrics related to walleye habitat - 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 (Management Units 1-3; Figure 3).

With the assistance of the Walleye Task Group and lead by researchers at the University of Windsor, we utilized a logistic regression approach to establish the relationships between a variety of abiotic conditions and the probability of occurrence of walleye (presence / absence) from a set of fishery

and environmental variable linked datasets (Ontario Partnership Index Gillnet). Consistent with the literature, the probability of encountering walleye increased in shallower, warmer and more turbid waters. In general, the west basin had more suitable habitat than the east basin. There was less of habitat in epibenthic waters compared to subsurface waters in the east, but there was little difference in the west. In 2012, a manuscript (Pandit et al.) was accepted for publication in the *Journal of Great Lakes Research*.



Figure 3. Present quota sharing allocation ($\leq 13\text{m}$; light blue) by jurisdiction (red).

Strategic research direction for Lake Erie's Environmental Objectives (EOs) - The EO's for Lake Erie describe the ecological conditions necessary for realizing the lake's Fish Community Goals and Objectives (FCGOs, Ryan et al. 2003). As part of a strategic approach to habitat management, the HTG is proposing to summarize the current state, trends, and potential threats for each of the Environmental Objectives in order to better understand the types of research questions and answers that will be required by the Lake Erie Committee to achieve the FCGOs.

In 2012, members of the HTG used a stressor matrix to identify factors influencing the current and future status of the EO's. Our results suggest that certain physical stresses on the EO's, particularly stress caused by climate change and anthropogenic sources, can be addressed directly through current authorities and programs. The HTG anticipates that it will focus on these physical stressors, identifying current knowledge and data gaps, and direct us towards designing an implementation strategy for in-water habitat enhancement. This will guide agencies and researchers to design data collection efforts to identify habitat projects, particularly in the Lake Erie nearshore, tributaries, and other priority habitats.

The HTG also recognizes that many non-fisheries agencies are not aware of the EO's. We anticipate the need to promote the consideration of the EO's among partner agencies for current and future restoration projects. This will require the development of a strong, science-based outreach strategy to be actively distributed to other agencies and programs.

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