

# HABITAT TASK GROUP EXECUTIVE SUMMARY REPORT MARCH 2012



**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.glfcc.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 2011-2012: (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.glfcc.org/lakecom/lec/spatial\\_inventory/inventory\\_index.htm](http://www.glfcc.org/lakecom/lec/spatial_inventory/inventory_index.htm)

Details of some notable projects can be found in the HTG Full Annual Report. The next steps for this charge include integration of a project 'wish-list', where HTG members will identify potential restoration opportunities within the Lake Erie watershed. Organizations looking for funding opportunities should find this list useful.

**Lake Erie GIS** - The Great Lakes GIS, including the Lake Erie GIS (LEGIS), was created in order to facilitate the sharing of data and holistic management of the Great Lakes basin as described in the Joint Strategic Plan for Management of Great Lakes Fisheries. The project includes map-delineated spatial units and associated habitat and biological attribute data for terrestrial, tributary rivers, nearshore, and offshore ecosystems.

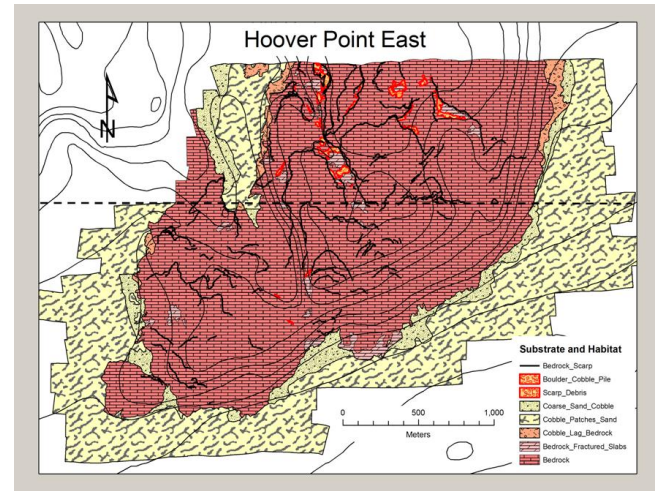


In 2011-2012, the HTG updated several datasets, including substrate and habitat maps and yellow perch and walleye catch and harvest rates. We also will be providing data from the Forage Task Group's Lower Trophic Level Assessment database to the LEGIS. Lastly, a new project, the Great Lakes Aquatic Habitat Framework (GLAHF), was initiated by the University of Michigan and several other agencies. The GLAHF is a GIS database of georeferenced data for coastal and open water habitats, under which the LEGIS will be incorporated. The HTG encourages all interested individuals and groups to visit the GLGIS website (<http://www.glfcc.org/glgis>) and consider how you might be able to use or contribute to this inventory.

### Identifying Potential Lake Trout Spawning Habitat

- As part of its commitment to work with the Coldwater Task Group, the HTG continues to make progress toward identifying potential lake trout

spawning habitat in Lake Erie. Actions on this charge in 2011 focused on validation of substrate condition and interpretation using underwater video, acquisition and interpretation of additional north shore sidescan sonar data, standardization of substrate and habitat classifications, and the development of a method for comparing sites.



**Figure 1. Expanded interpretation of Hoover Point East survey site. Additional sidescan sonar data were acquired below dashed black line in 2011.**

Additional sidescan data collection occurred at Hoover Point East in 2011, identifying more potential lake trout spawning sites on the southern end of the point (Figure 1). Reconnaissance survey work was started at the Maitland Ridge, located east of previously investigated shoals. This large (15 x 25 km) feature appears to be covered with mostly sandy substrates, although bad weather forced the survey to be reduced. Further investigation is planned for 2012.



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

An underwater video survey of 18 Mile Creek Shoal, NY, in July found large cobble substrates that are valuable lake trout spawning habitat (Figure 2). These substrates were relatively free from silt and dreissenids, with adequate interstitial spacing. Fall gillnetting on the shoal found lake trout utilizing this site

**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 (Pandit et al.) 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). This species-habitat model for adult walleye uses environmental variables that were not only deemed appropriate for walleye but also for which datasets currently exist and provide somewhat broad-scale (location and time) coverage, including temperature, dissolved oxygen, and light attenuation (Secchi depth). Consistent with the literature, the probability of

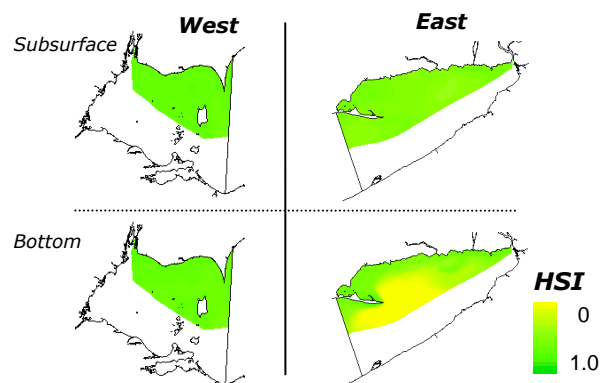


**Figure 3. Present quota sharing allocation ( $\leq 13\text{m}$ ; light blue) by jurisdiction (red).**

encountering walleye increased in shallower, warmer and more turbid waters. Continuous, rasterized (interpolated) maps for each environmental variable for the Ontario waters of the east and west basins were generated. A walleye suitability index (0 to 1) was calculated for each cell (50 m) using the species-habitat model and the total area of weighted walleye habitat for each region was derived. 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 (Figure 4).

To date, a lakewide analysis, including examination of seasonal and inter-annual dynamics that may result in changes in the amount of habitat by jurisdiction, is difficult without the availability of a comprehensive database of the necessary abiotic variables. We will work towards collating various

databases in order to make them more readily-



**Figure 4. Habitat Suitability Index (HSI) maps derived from the species-habitat model for adult Lake Erie walleye at the subsurface and the bottom in Ontario waters of the West and East basins. Maps represent the average HSI over three years (2006-2008), ranging from 0 (unsuitable) to 1 (suitable).**

available for such use.

**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 a White Paper 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. We will utilize a scenario process designed to systematically identify and address data gaps, lack of knowledge, and lack of understanding by evaluating current and potential future threats and trends for each of the Environmental Objectives, and how those threats and trends may impact our ability to achieve the FCGOs.

As a first step, a matrix has been distributed to HTG members that will be used to identify and rank a potential stressor's impact on the Environmental Objectives. For example, will altered precipitation patterns caused by climate change effect Environmental Objective 1 (restore natural coastal systems and nearshore hydrological processes), and how large will the effect be? Once this matrix is completed, the HTG will identify what data will be necessary to answer these questions, and future research and collections will be directed proactively. The HTG anticipates completion of this exercise by the beginning of 2013.

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