

Mid-Lake Assessment In The U.S. Waters Of Lake Ontario, 2005

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Introduction

In late June 2005 the USGS R/V Kaho conducted an exploratory survey of the deep water area (>150 m, 492 ft) on the U.S. side of the international boundary of Lake Ontario (abyss). There were two main objectives: 1) develop and evaluate sampling techniques for assessing the mid-lake profundal fish community; and 2) assess the fish community composition in mid-lake, an area not sampled during annual surveys. The logistics of sampling great depths in mid-lake are problematic because large amounts of time are needed to travel to sites located well offshore and to set and retrieve gear at extreme bottom depths.

Methods

During June 23-29, 2005 we fished gillnets and trawls on bottom in mid-lake at four locations spaced relatively equidistant along the international boundary off Thirty Mile Pt, Rochester, Sodus, and Oswego (Figure 1). At each location, two gillnets were set overnight at the approximate site of the trawl hauls. Gillnets consisted of ten, 15.2 x 2.4 m (50 x 8 ft) panels of 38 to 152 mm (1.5 to 6 in) stretch mesh in 12.8 mm (0.5 in) increments. A trawl net reel was used to lift gillnets instead of our usual bandolier-type gillnet lifter to speed net retrieval from great depth.

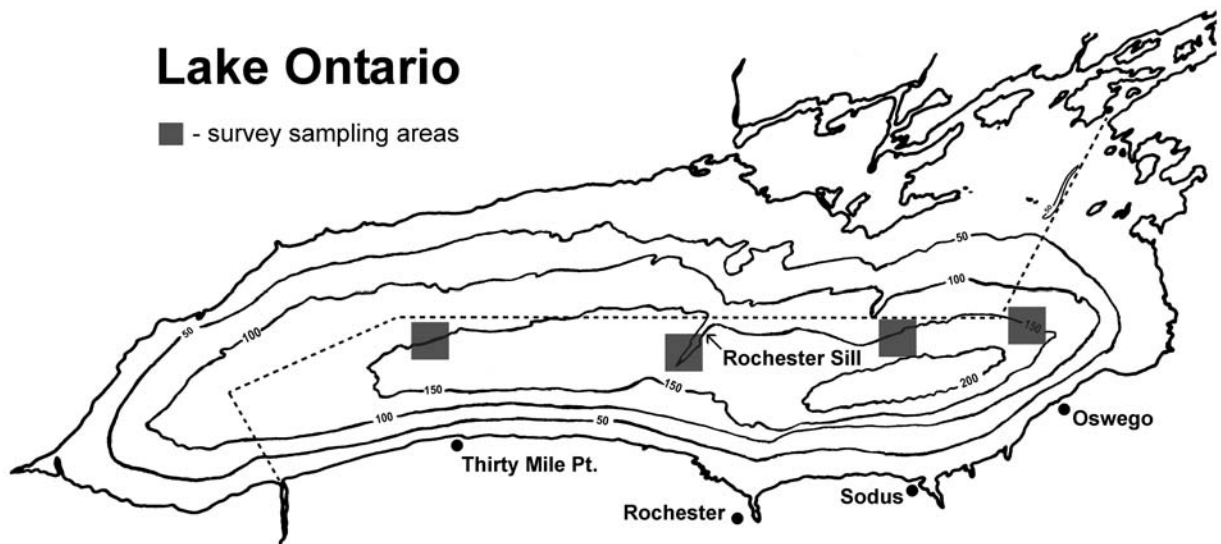


Figure 1. Lake Ontario showing 4 areas sampled with bottom trawls and gillnets during the mid-lake assessment in 2005. Depth contours in meters (1 m = 3.28 ft).

Table 1. Description of sampling during the mid-lake assessment in 2005.

| Site | Date Sampled June 2005 | Gillnet Depths (m/ft) | Bottom Trawl Depths (m/ft) | Tow Time (min) | Trawl Warp Ratio |
|-----------------|------------------------|-----------------------|----------------------------|----------------|------------------|
| Oswego | 23 | 190/625 | 160/525 | 10 | 2:1 |
| | | 210/695 | 180/590 | 10 | 2:1 |
| | | | 225/740 | 10 | 2:1 |
| Rochester | 25 | 150/495 | 155/510 | 20 | 2:1 |
| | | 164/540 | 165/545 | 20 | 2:1 |
| | | | 180/590 | 20 | 2:1 |
| Thirty Mile Pt. | 26 & 27 | 158/520 | 170/560 | 20 | 2:1 |
| | | 175/580 | 160/525 | 2* | 3:1 |
| | | | 150/495 | 20 | 3:1 |
| | | | 177/580 | 20 | 3:1 |
| Rochester | 28 | None | 150/495 | 12.5** | 3:1 |
| Sodus | 29 | 156/515 | None | | |
| | | 166/550 | | | |

* trawl dug into bottom, aborted

** trawl snagged bottom, destroyed

We used the same 18-m (59 ft. headrope) 3-in-1 bottom trawl used for all other USGS standard trawling surveys conducted in Lake Ontario (O’Gorman et al. 2005). Initial towing time of 10 min was later increased to 20 min in an effort to increase catches and utilize time more efficiently. In an effort to reduce time shooting and retrieving the trawl warp, the ratio of warp length to water depth was initially reduced from 3:1 to 2:1, a ratio thought sufficient to get the trawl on bottom. Repeated trawl hauls with no fish indicated poor or no contact with the bottom; therefore, the 2:1 warp to depth ratio was changed to 3:1 (Table 1).

Results and Discussion

Using gillnets to sample the fish community in mid-lake proved to be ineffective. The

only fish caught were a few alewives (*Alosa pseudoharengus*), obviously entangled at mid-depths as the net was retrieved. Fish of the size likely to be ensnared in gillnets (i.e. deepwater ciscoes, *Coregonus spp.*) were either absent or in low abundance and unlikely to be caught with the limited effort expended. In hindsight, sacrificing a net reel to retrieve gillnets proved of less value than storing an extra trawl which ultimately was needed to continue the survey after destroying the only net onboard.

Only two rainbow smelt (*Osmerus mordax*) were caught with the trawl when fished with the 2:1 ratio of warp length to water depth. Switching to a 3:1 ratio resulted in an immediate increase in the catch, however only two complete 20 minute tows were made before the net hung up on the bottom at Rochester and was destroyed. Overall, a

total of 58 slimy sculpin (*Cottus cognatus*), 29 rainbow smelt, 32 alewife, and 5 deepwater sculpins (*Myoxocephalus thompsoni*) were caught in all of the trawl tows combined. The small numbers of fish caught with the bottom trawl in mid-lake generally reflects the low fish density that we normally see at great depths on our annual bottom trawl assessments conducted on the south side of the abyss. A total catch of five deepwater sculpins from widely separated locations (Rochester and Thirty Mile Point) confirms the existence of a widely dispersed, low density population in

mid Lake Ontario. Due to time and budget constraints there are no plans to continue this survey in the future.

References

O’Gorman, R., Owens, R. W. and T. H. Eckert. 2005. Status of major prey fish stocks in the U.S. waters of Lake Ontario, 2004. In: Annual Report, Bureau of Fisheries Lake Ontario Unit and St. Lawrence River Unit to the Great Lakes Fishery Commission Lake Ontario Committee, March 2005.