

STATUS OF SEA LAMPREY CONTROL IN LAKE HURON

Adult Sea Lamprey:

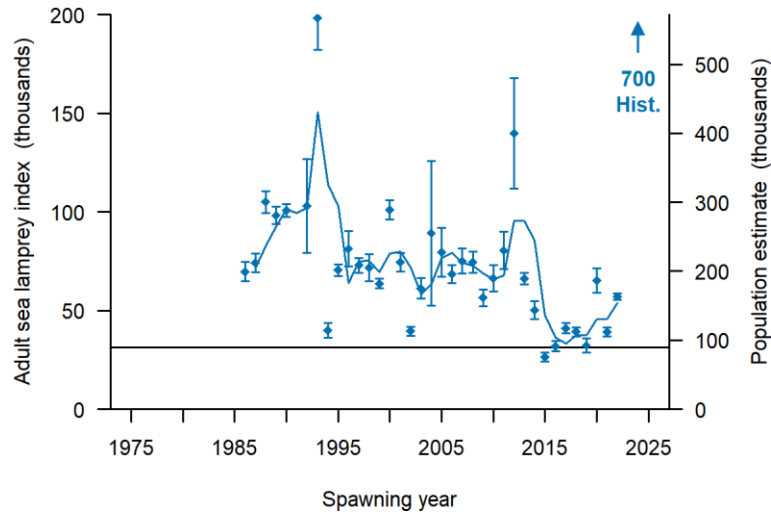


Figure 1. Index estimates with 95% confidence intervals (vertical bars) of adult sea lampreys, including historic pre-control abundance (as a population estimate) and the three-year moving average (line). The population estimate scale (right vertical axis) is based on the index-to-PE conversion factor of 2.86. The adult index in 2022 was 57,000 with 95% confidence interval (55,000-59,000). The three-year (2020-2022) average of 54,000 was above the target of 31,000. The index target was estimated as 0.25 times the mean of indices (1989-1993).

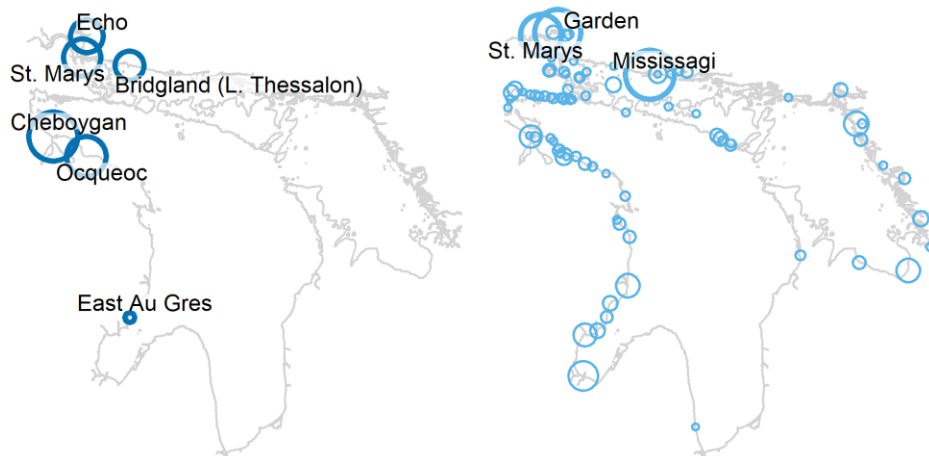


Figure 2. LEFT: Estimated index of adult sea lampreys during the spring spawning migration, 2022. Circle size corresponds to estimated number of adults from mark-recapture studies (blue) and model predictions (orange). All index streams are labelled. RIGHT: Maximum estimated number of larval sea lampreys in each stream surveyed during 1995-2012. Tributaries composing over half of the estimated maximum lake-wide larval population are identified (Mississagi 8,100,000; Garden 7,000,000; St. Marys 5,200,000).

- The combination low-head/electrical barrier in the Ocqueoc River was activated April 1, through April 28, 2022 to prevent sea lamprey passage during elevated stream discharge. The electrical barrier operated continually during this time. Improvements in 2022 included the installation of a new battery backup system and water level

sensor. The streambank adjacent to the electrical weir was filled and graded to improve drainage when the weir is inundated during elevated stream discharge events.

Lake Trout Marking and Relative Abundance:

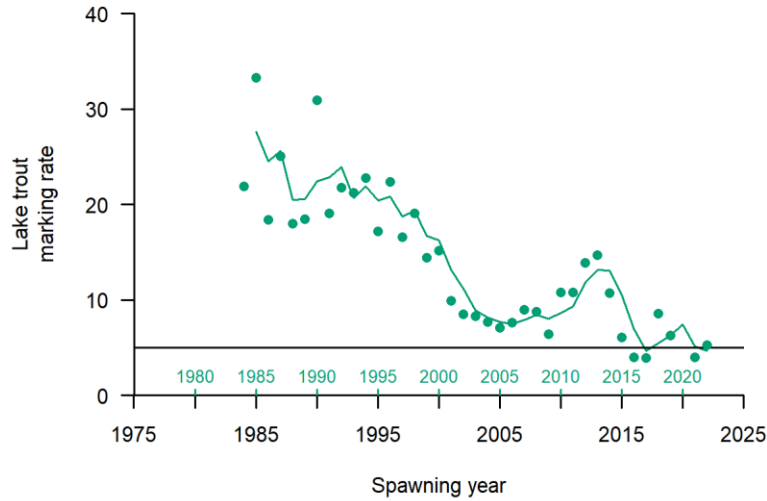


Figure 3. Number of A1-A3 marks per 100 lake trout > 532 mm from standardized assessments plotted against the sea lamprey spawning year, including the three-year moving average (line). The three-year (spawning years 2020-2022) average marking rate of 4.6 met the target of 5 A1-A3 marks per 100 lake trout > 532 mm (horizontal line). A second x-axis shows the year the lake trout were surveyed.

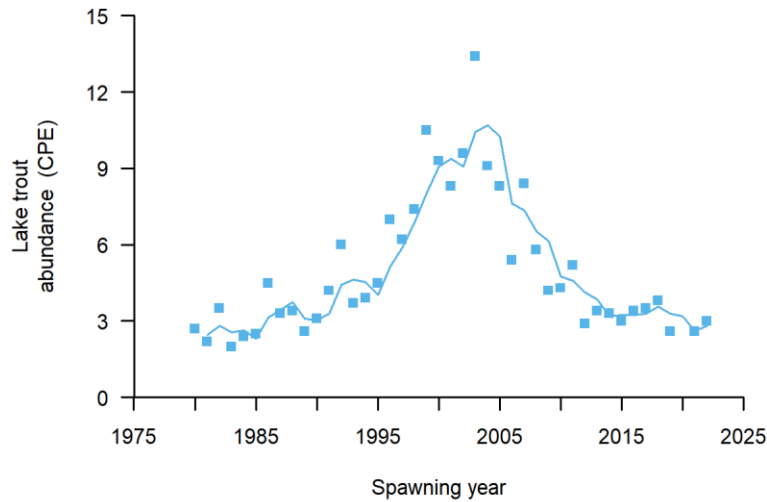


Figure 4. Lake trout relative abundance from standardized surveys (spring 2-6 inch mesh) in U.S. waters of the main basin plotted against sea lamprey spawning year, including the three-year moving average (line). CPE = geometric mean of fish/km/net night of lean lake trout > 532 mm (21") total length.

Lampricide Control - Adults vs. Field Days, TFM, and Bayluscide:

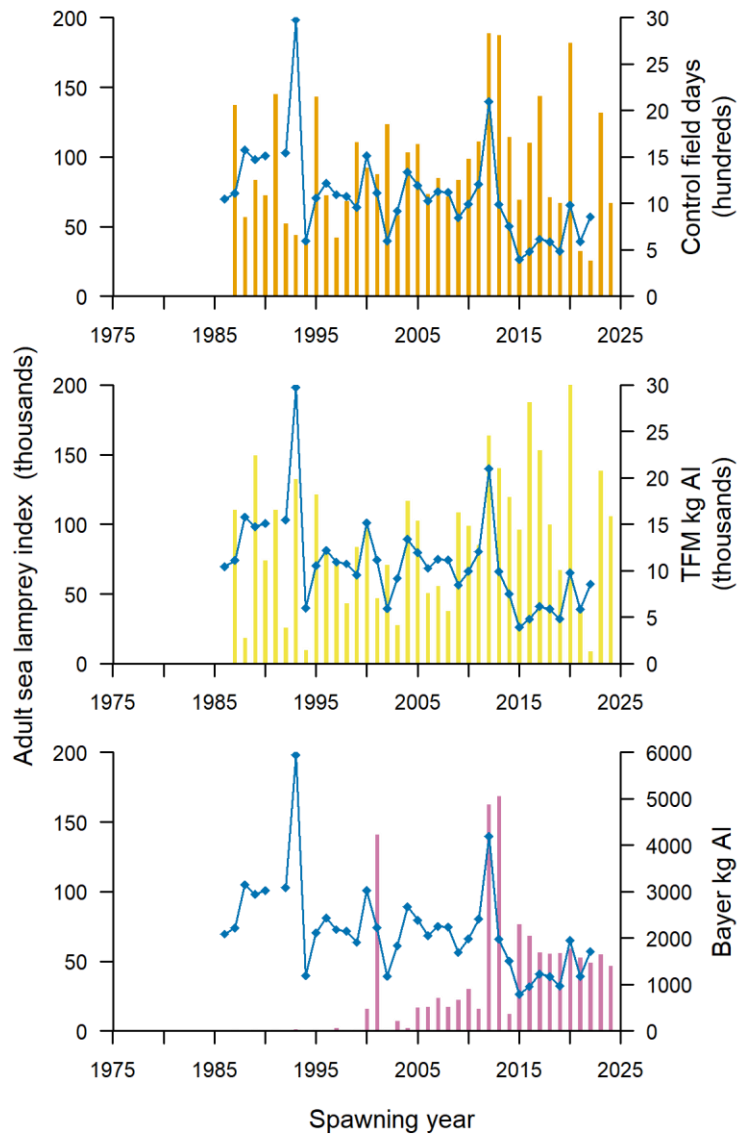


Figure 5. Index of adult sea lampreys (blue lines) and number of control field days (orange bars), TFM used (kg active ingredient; yellow bars), and Bayluscide used (kg active ingredient; purple bars). Field days, TFM, and Bayluscide are offset by 2 years (e.g., field days, TFM, and Bayluscide applied during 1985 is plotted on the 1987 spawning year, when the treatment effect would first be observed in adult sea lamprey populations).

- Lampricide treatments were completed in 16 tributaries (8 Canada, 8 U.S.) and in 1 lentic area (1 Canada, 0 U.S).
- Naiscoot and Nottawasaga rivers and Beaudin Creek (Spanish River) were not treated during 2022 due to insufficient discharge and have been scheduled for treatment during 2023.
- Two lentic gB plots in the Mississagi River delta area were only partially completed due mechanical failure of application equipment and have been scheduled for treatment during 2023.
- Two hundred and seventy hectares of the St. Marys River were treated using gB.