

STATUS OF SEA LAMPREY CONTROL IN LAKE MICHIGAN

Adult Sea Lamprey:

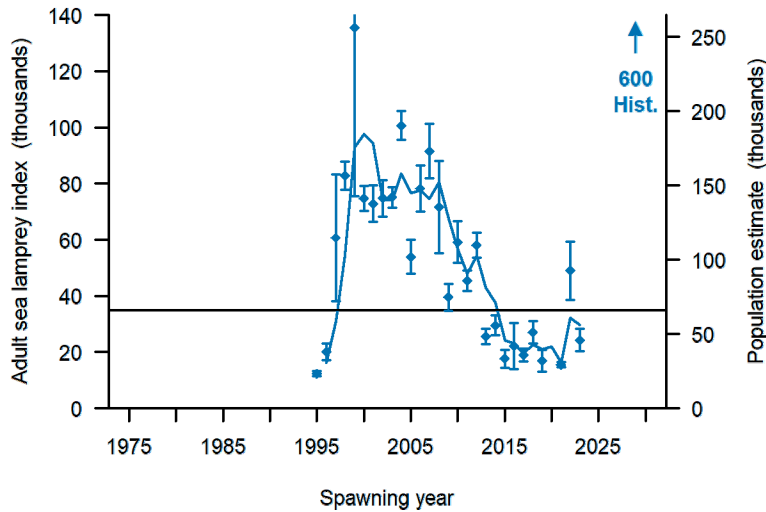


Figure 1. Index estimates with 95% confidence intervals (vertical bars) of adult sea lampreys, including historic pre-control abundance (as a population estimate) and the three-year moving average (line). The population estimate scale (right vertical axis) is based on the index-to-PE conversion factor of 1.89. The adult index in 2023 was 24,000 with 95% confidence interval (20,000-28,000). The three-year (2021-2023) average of 30,000 met the target of 35,000. The index target was estimated as 5/8.9 times the mean of indices (1995-1999).

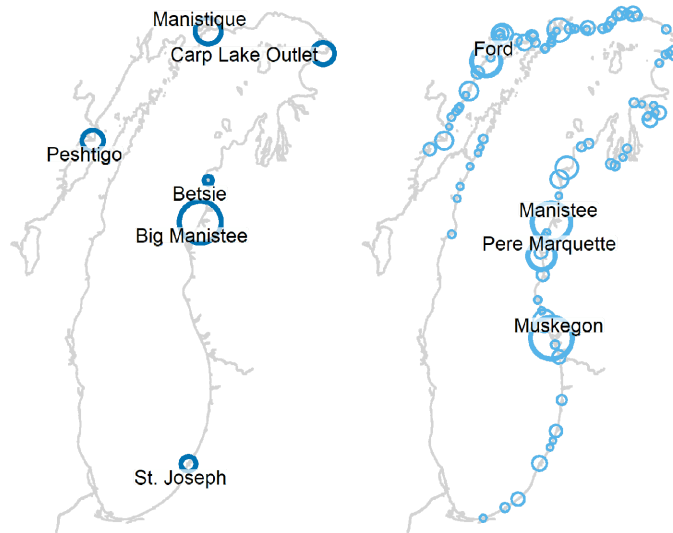


Figure 2. LEFT: Estimated index of adult sea lampreys during the spring spawning migration, 2023. Circle size corresponds to estimated number of adults from mark-recapture studies (blue) and model predictions (orange). All index streams are labelled. RIGHT: Maximum estimated number of larval sea lampreys in each stream surveyed during 1995-2012. Tributaries composing over half of the estimated maximum lake-wide larval population are identified (Muskegon 4,500,000; Manistee 3,600,000; Ford 1,800,000; Pere Marquette 1,400,000).

- Population estimates were generated for all 6 index streams for Lake Michigan using mark-recapture data.
- The stream specific estimate for the Big Manistee River contributed most to the lake-wide index estimate in 2022 (81%) and 2023 (47%). The Big Manistee was treated with lampricide this year.

Lake Trout Marking and Relative Abundance:

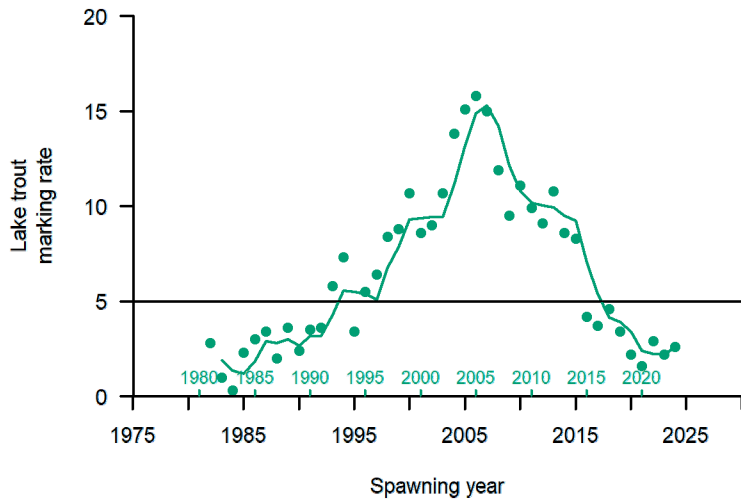


Figure 3. Number of A1-A3 marks per 100 lake trout > 532 mm from standardized assessments during August-November plotted against the sea lamprey spawning year, including the three-year moving average (line). The three-year (spawning years 2022-2024) average marking rate of 2.6 met the target of 5 A1-A3 marks per 100 lake trout > 532 mm (horizontal line). A second x-axis shows the year the lake trout were surveyed.

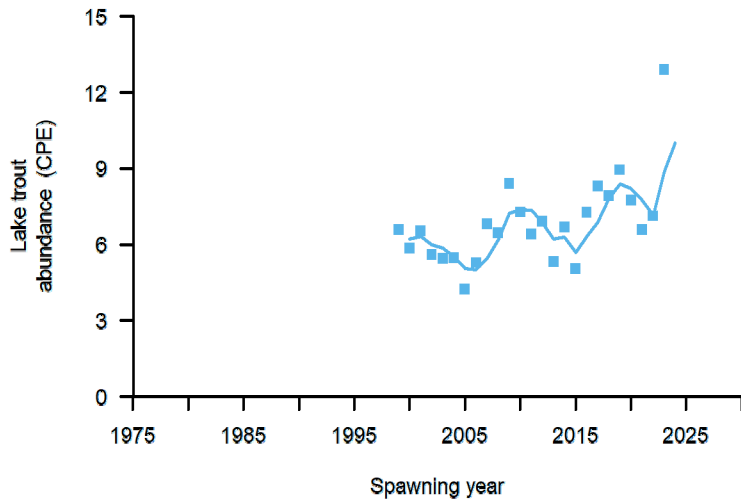


Figure 4. Lake trout relative abundance plotted against sea lamprey spawning year, including the three-year moving average (line). CPE = fish/1000'/net night of lean lake trout > 532 mm (21") total length caught in the Lake Wide Assessment Plan nets (the plan began in the late 1990s).

- Marking rates in Michigan continue to be low.
- Lake trout CPE data was not available at the time of report generation.

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

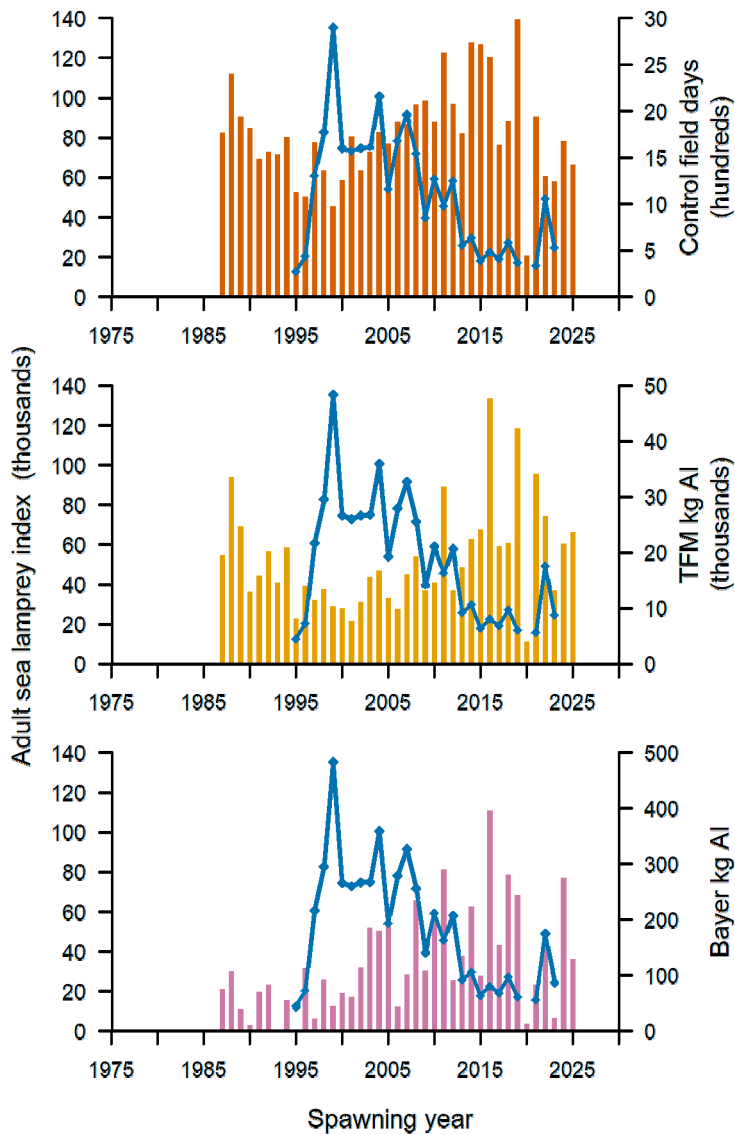


Figure 5. Index of adult sea lampreys (blue lines) and number of control field days (orange bars), TFM used (kg active ingredient; yellow bars), and Bayluscide used (kg active ingredient; purple bars). Field days, TFM, and Bayluscide are offset by 2 years (e.g., field days, TFM, and Bayluscide applied 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 conducted in 19 tributaries and 1 lentic area.
- Department and Service personnel collaborated to treat the Manistee River.
- Low water conditions presented challenges throughout the field season. Several streams were treated under historically low stream discharge. Marblehead and Seiners creeks were not treated due to insufficient discharge and have been rescheduled for 2024.