

STATUS OF SEA LAMPREY CONTROL IN LAKE ONTARIO

Adult Sea Lamprey:

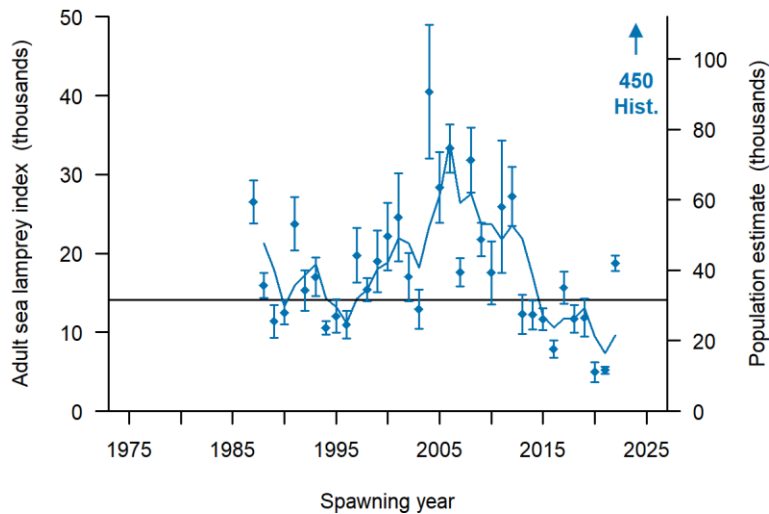


Figure 1. Index estimates with 95% confidence intervals (vertical bars) of adult sea lampreys, including historic pre-control abundance (as a population estimate) and the three-year moving average (line). The population estimate scale (right vertical axis) is based on the index-to-PE conversion factor of 2.24. The adult index in 2022 was 19,000 with 95% confidence interval (18,000-20,000). The three-year (2020-2022) average of 9,600 was above the target of 14,000. The index target was estimated as the mean of indices during a period with acceptable marking rates (1993-1997).

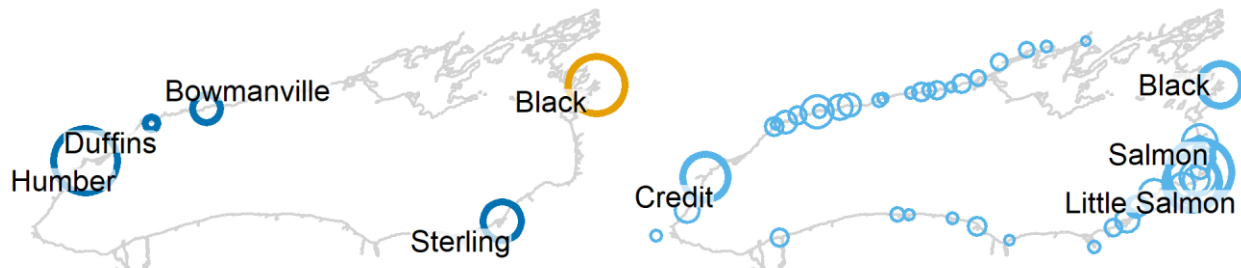


Figure 2. LEFT: Estimated index of adult sea lampreys during the spring spawning migration, 2022. Circle size corresponds to estimated number of adults from mark-recapture studies (blue) and model predictions (orange). All index streams are labelled. RIGHT: Maximum estimated number of larval sea lampreys in each stream surveyed during 1995-2012. Tributaries composing over half of the estimated maximum lake-wide larval population are identified (Salmon 1,400,000; Little Salmon 970,000; Credit 590,000; Black 470,000).

- Beaverdam Brook – A consultant was contracted to evaluate the feasibility of constructing a sea lamprey barrier on a tributary of the Salmon River at the Salmon River Fish Hatchery. The study is expected to be completed in 2023.

Lake Trout Marking and Relative Abundance:

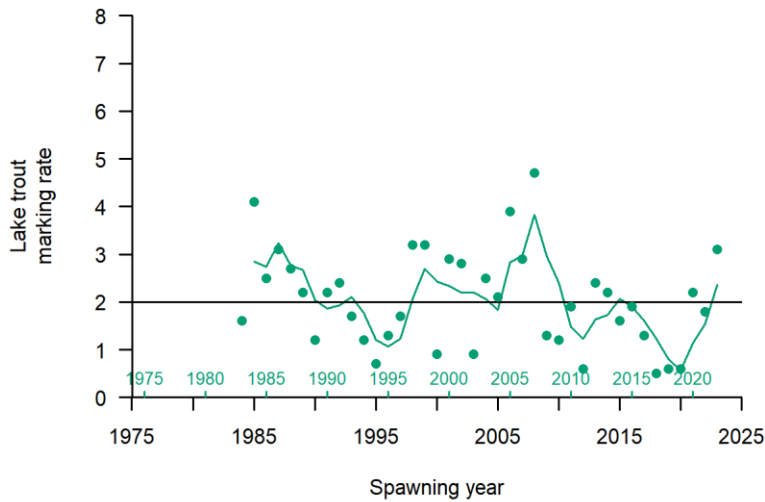


Figure 3. Number of A1 marks per 100 lake trout > 431 mm from standardized assessments plotted against the sea lamprey spawning year, including the three-year moving average (line). The three-year (spawning years 2021-2023) average marking rate of 2.4 was above the target of 2 A1 marks per 100 lake trout > 431 mm (horizontal line). A second x-axis shows the year the lake trout were surveyed.

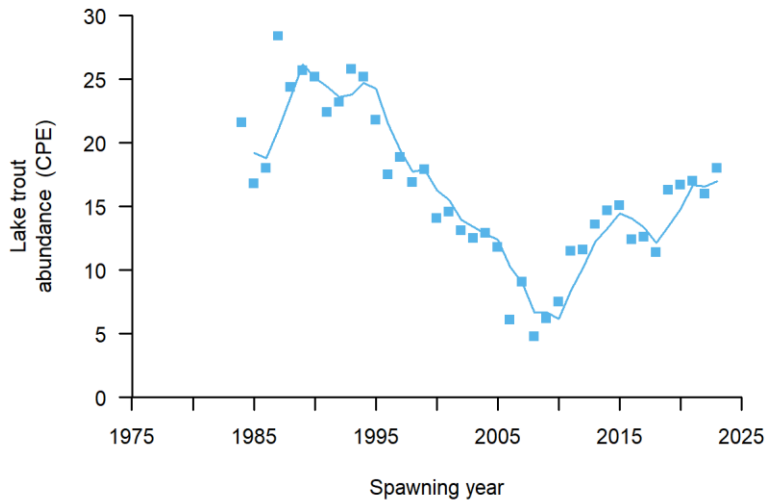


Figure 4. Lake trout relative abundance plotted against sea lamprey spawning year, including the three-year moving average (line). CPE = fish/km/net night of lean lake trout > 431 mm (17") total length.

- In 2022, there were no assessments in September which is the standard mark observation period. In order to provide a 2022 value, observations from August and September were pooled for each year in the series. This change resulted in very little change in the overall trend, while bolstering sample sizes in all years.

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

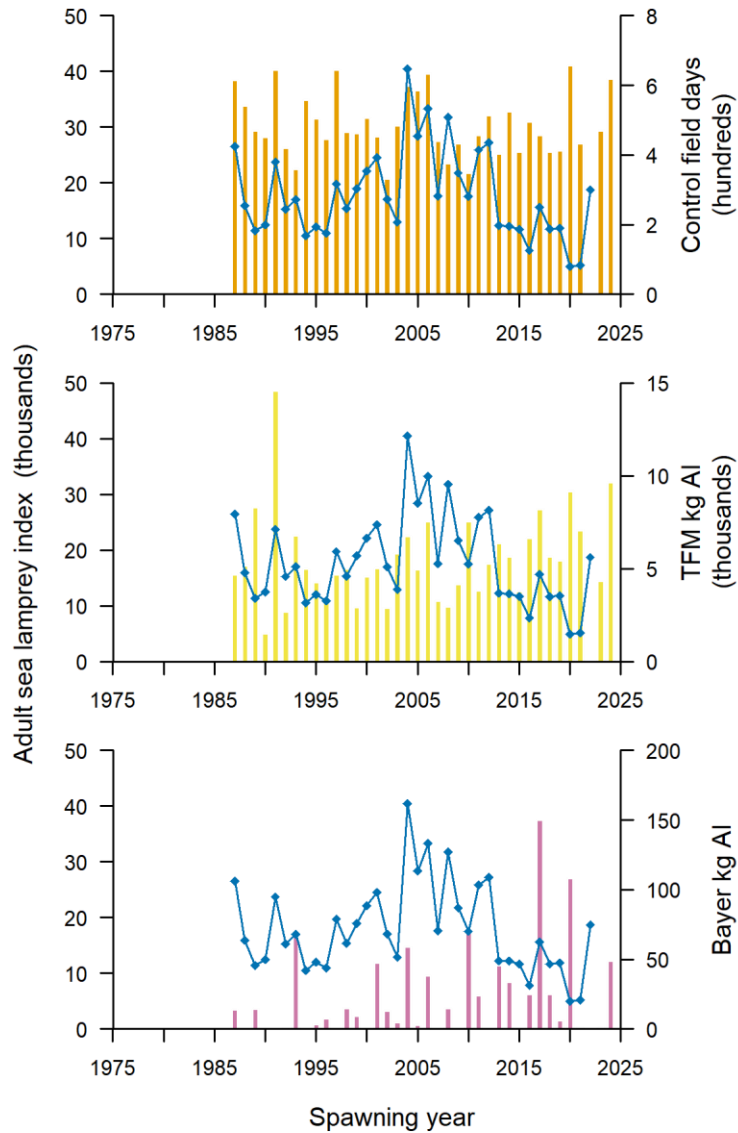


Figure 5. Index of adult sea lampreys (blue lines) and number of control field days (orange bars), TFM used (kg active ingredient; yellow bars), and Bayluscide used (kg active ingredient; purple bars). Field days, TFM, and Bayluscide are offset by 2 years (e.g., field days, TFM, and Bayluscide applied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

- Lampricide applications were completed in 15 tributaries (6 Canada, 9 U.S.).
- The upper section of Little Salmon River was not treated due to insufficient discharge and impoundment issues and has been scheduled for treatment in 2023.
- The Black River gB lentic treatment was not completed due to equipment issues and has been rescheduled for 2023.