

STATUS OF SEA LAMPREY CONTROL IN LAKE ERIE

Adult Sea Lamprey:

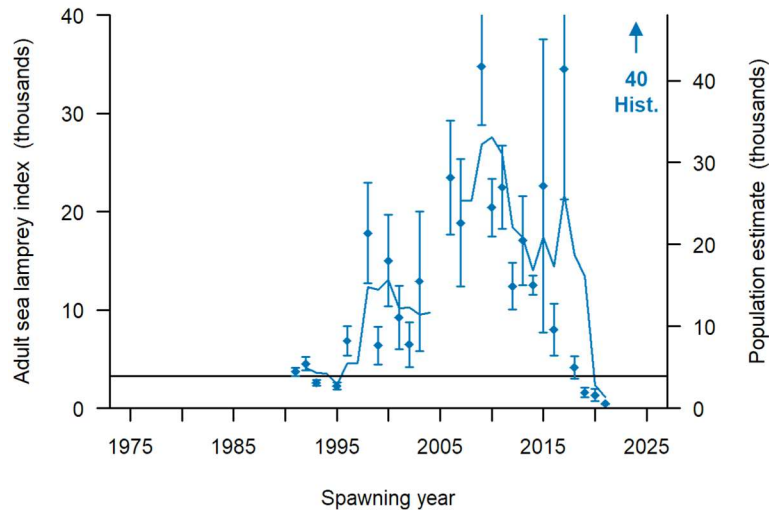


Figure 1. Index estimates with 95% confidence intervals (vertical bars) of adult sea lampreys, including historic pre-control abundance (as a population estimate) and the three-year moving average (line). The population estimate scale (right vertical axis) is based on the index-to-PE conversion factor of 1.2. The adult index in 2021 was 450 with 95% confidence interval (410-490). The three-year (2019-2021) average of 1,100 met the target of 3,300. The index target was estimated as the mean of indices during a period with acceptable marking rates (1991-1995).

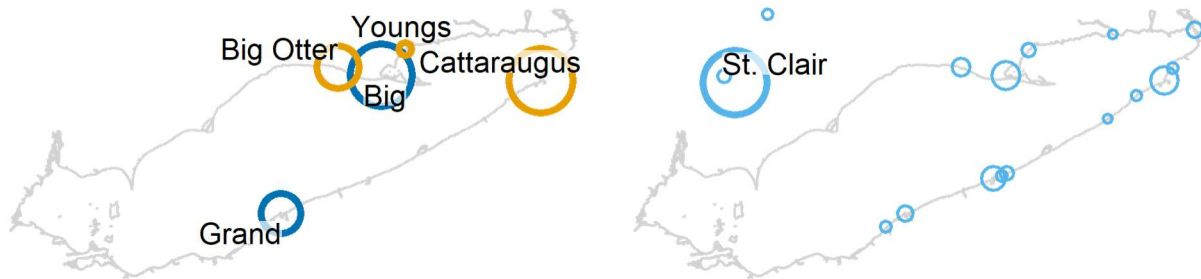


Figure 2. LEFT: Estimated index of adult sea lampreys during the spring spawning migration, 2021. Circle size corresponds to estimated number of adults from mark-recapture studies (blue) and model predictions (orange). All index streams are labelled. RIGHT: Maximum estimated number of larval sea lampreys in each stream surveyed during 1995-2012. Tributaries composing over half of the estimated maximum lake-wide larval population are identified (St. Clair 920,000).

- The 3-year average adult index estimate is meeting the target and the adult index has been holding steady over the past 5 years; the 3-year average is the lowest in the time series.
- Mark-recapture estimates were generated for two of the five index streams and three estimates were modeled.
- Near record walleye year classes may be creating predatory pressure on recently metamorphosed juvenile sea lamprey, especially from the Huron-Erie corridor.
- Due to travel restrictions associated with the COVID-19 pandemic, no sea lamprey treatments were conducted on Lake Erie tributaries during 2020 and 2021. Increases in the adult index may be observed starting in 2022 as a result of these deferrals.

Lake Trout Marking and Relative Abundance:

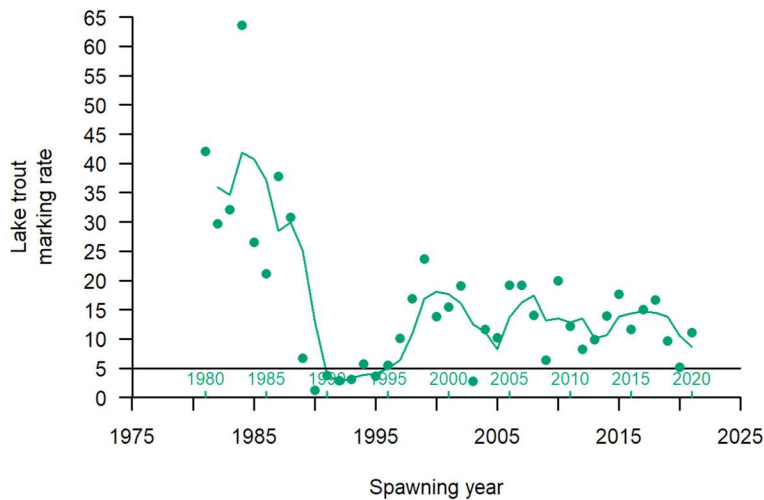


Figure 3. Number of A1-A3 marks per 100 lake trout > 532 mm from standardized assessments plotted against the sea lamprey spawning year, including the three-year moving average (line). The three-year average marking rate of 11 was above the target of 5 A1-A3 marks per 100 lake trout > 532 mm (horizontal line). A second x-axis shows the year the lake trout were surveyed.

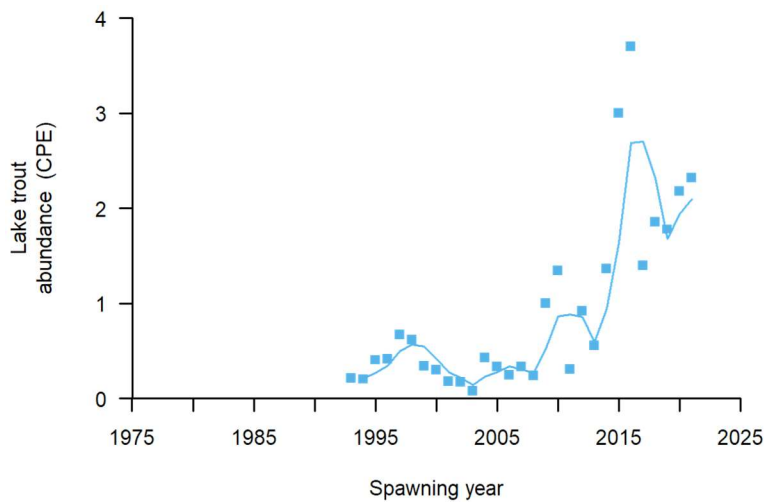


Figure 4. Lake trout relative abundance from standardized spring surveys plotted against sea lamprey spawning year, including the three-year moving average (line). CPE = number per lift of lean lake trout age 5 and older.

- The 3-year average marking rate is above the target and marking rates have been holding steady over the past five years.
- Lake trout relative abundance has been increasing over the past five years.
- Marking rates on burbot and steelhead have been increasing and are a concern.
- The FishLamp workgroup is working to provide clarity to the often murky relationship between sea lamprey abundance, lake trout abundance, and sea lamprey marking rate on lake trout.

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

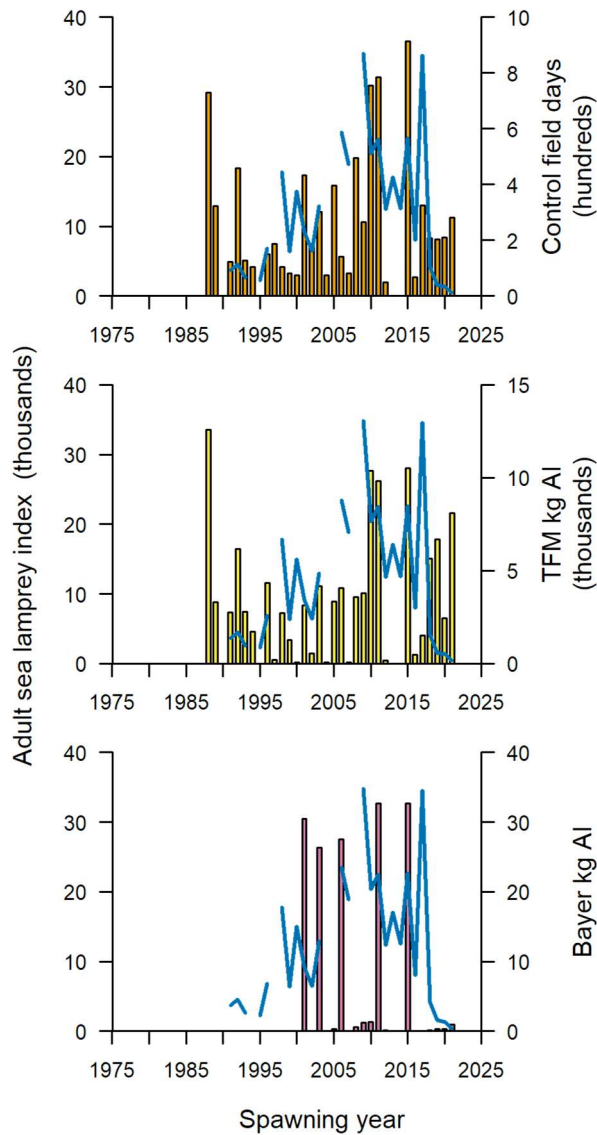


Figure 5. Index of adult sea lampreys (blue lines) and number of control field days (orange bars), TFM used (kg active ingredient; yellow bars), and Bayluscide used (kg active ingredient; purple bars). Field days, TFM, and Bayluscide are offset by 2 years (e.g., field days, TFM, and Bayluscide applied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

- 2021 sea lamprey treatment information will be available soon.
- Due to travel restrictions associated with the COVID-19 pandemic, no sea lamprey treatments were conducted on Lake Erie tributaries during 2020 (2022 sea lamprey spawning year).
- Four tributaries were treated during 2017, three during 2018, and six during 2019 (2019 to 2021 sea lamprey spawning year).
- Increases in the adult index may be observed starting in 2022 due to the COVID-19 pandemic treatment delays.
- Treatment of Lake Erie tributaries are being planned for the 2022 field season.