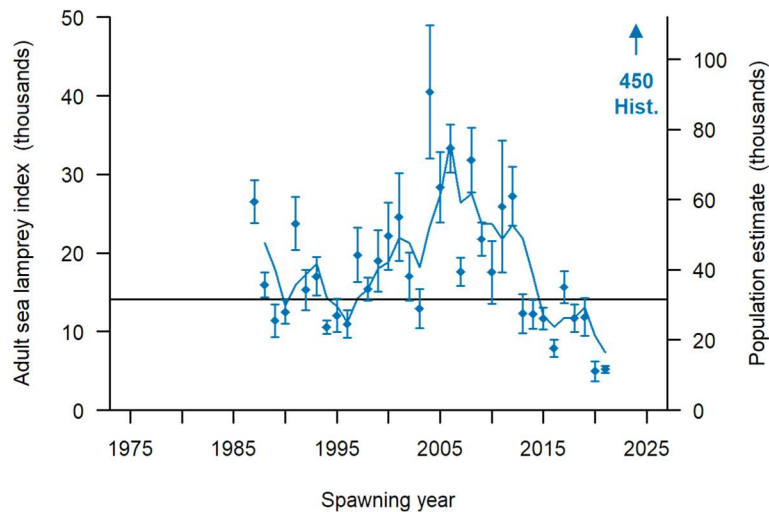
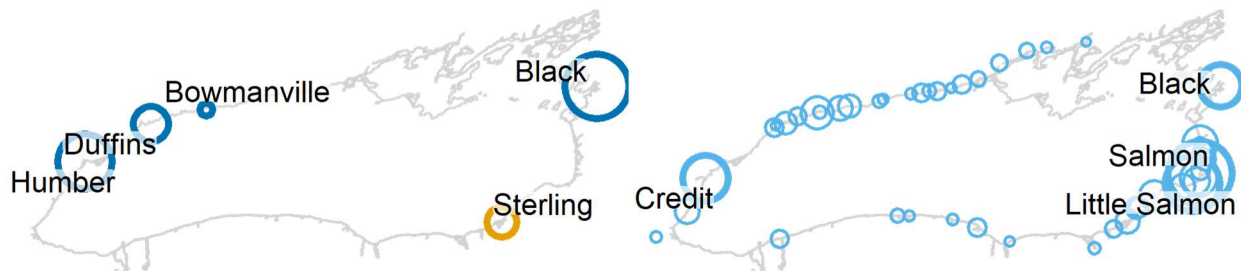


# STATUS OF SEA LAMPREY CONTROL IN LAKE ONTARIO

## Adult Sea Lamprey:



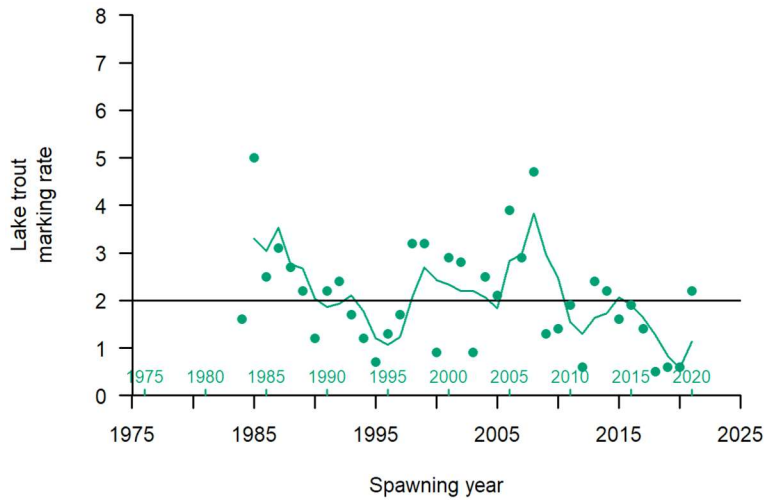
**Figure 1.** Index estimates with 95% confidence intervals (vertical bars) of adult sea lampreys, including historic pre-control abundance (as a population estimate) and the three-year moving average (line). The population estimate scale (right vertical axis) is based on the index-to-PE conversion factor of 2.24. The adult index in 2021 was 5,200 with 95% confidence interval (4,700-5,600). The three-year (2019-2021) average of 7,300 met the target of 14,000. The index target was estimated as the mean of indices during a period with acceptable marking rates (1993-1997).



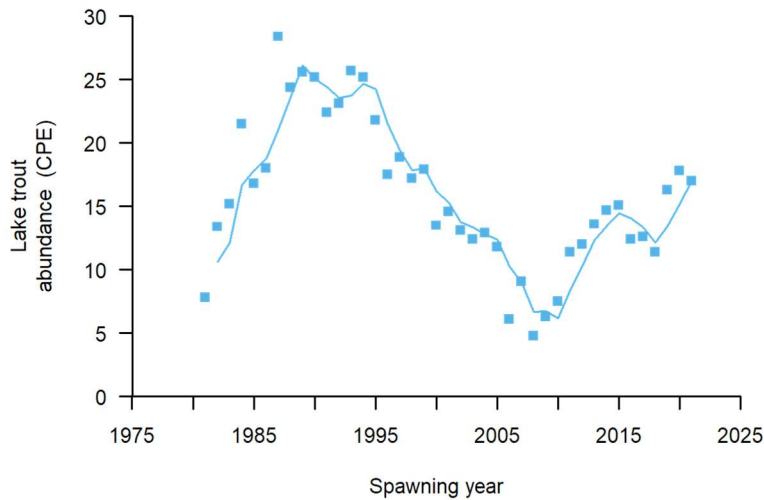
**Figure 2.** LEFT: Estimated index of adult sea lampreys during the spring spawning migration, 2021. Circle size corresponds to estimated number of adults from mark-recapture studies (blue) and model predictions (orange). All index streams are labelled. RIGHT: Maximum estimated number of larval sea lampreys in each stream surveyed during 1995-2012. Tributaries composing over half of the estimated maximum lake-wide larval population are identified (Salmon 1,400,000; Little Salmon 970,000; Credit 590,000; Black 470,000).

- The 3-year average adult index estimate is meeting the target and the adult index has been holding steady over the past 5 years.
- Mark-recapture estimates were generated for four of the five index streams and the fifth estimate was modeled.
- There are no known sources of concern to report. The Niagara River and Niagara Bar were evaluated in 2009 and harbor very low density populations of sea lamprey larvae. This source will continue to be monitored for increased production.

### Lake Trout Marking and Relative Abundance:



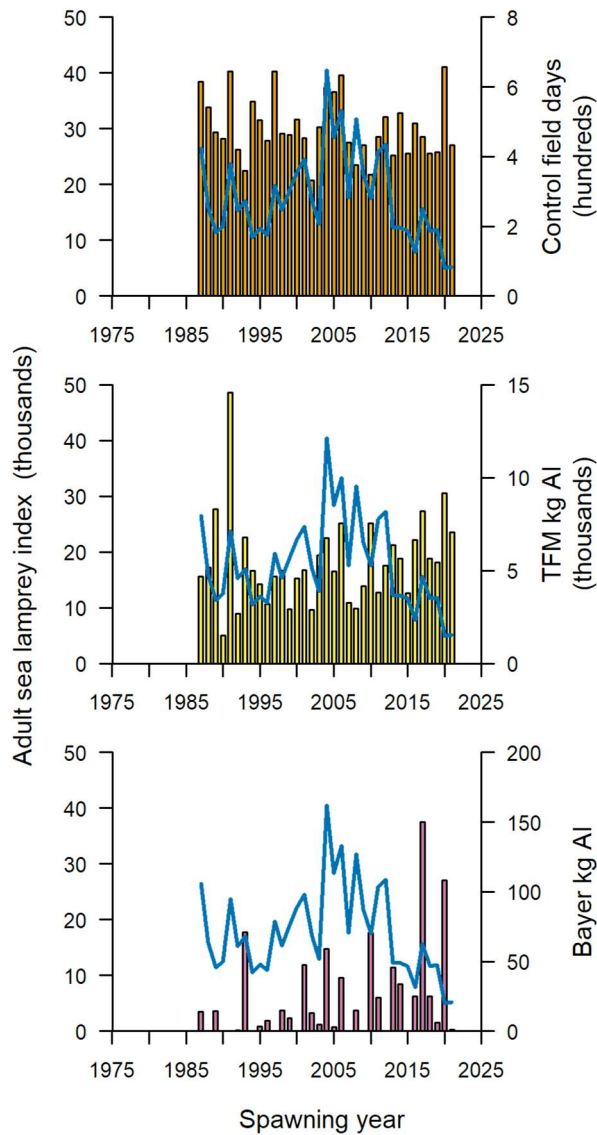
**Figure 3.** Number of A1 marks per 100 lake trout > 431 mm from standardized assessments plotted against the sea lamprey spawning year, including the three-year moving average (line). The three-year average marking rate of 0.57 met the target of 2 A1 marks per 100 lake trout > 431 mm (horizontal line). 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.

- The 3-year average marking rate is meeting the target and the marking rate has been holding steady over the past five years.
- Lake trout abundance has been steady over the past five years.
- Marking rates on steelhead and chinook have been increasing and are a concern.
- The Commission, in collaboration with management agencies, maintains lake trout marking and abundance data sets to advance assessment and guidance of the program.
- 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).

- In consultation with the Commission’s control agents, colleagues from the NYSDEC and USFWS Lake Champlain Cooperative were able to complete three lampricide treatments on U.S. tributaries during 2021.
- 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).
- Eight tributaries were treated during 2017, 16 during 2018, and ten during 2019 (2019 to 2021 sea lamprey spawning years).
- One lentic area was treated with granular Bayluscide during 2018 (2020 sea lamprey spawning year).
- Control effort has remained steady for more than 25 years.