

STATUS OF SEA LAMPREY CONTROL IN LAKE ERIE

Adult Sea Lamprey:

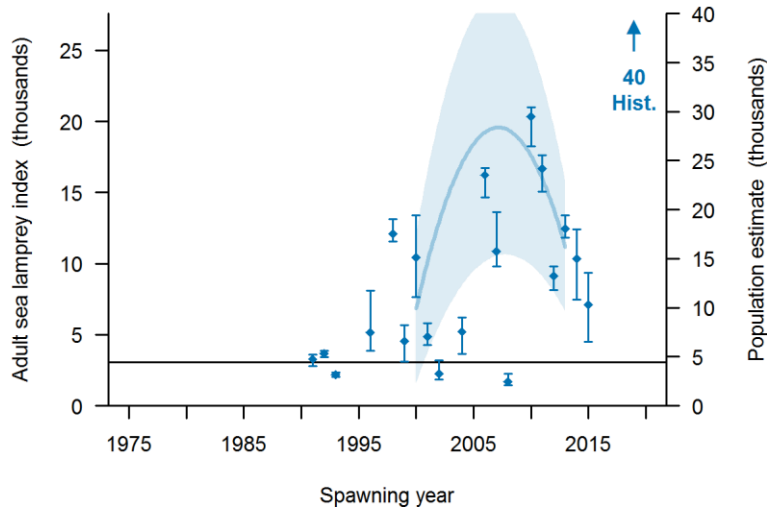


Figure 1. Index estimates with jackknifed ranges (vertical bars) of adult sea lampreys, including historic pre-control abundance (as a population estimate) and the five-year moving average (line) with 95% CIs (shaded area). The population estimate scale (right vertical axis) is based on the index-to-population estimate conversion factor of 1.45. The adult index in 2015 was 7,100 with jackknifed range (4,500-9,300). The point estimate was above the target of 3,000. The index target was estimated as the mean of indices during a period with acceptable marking rates (1991-1995).

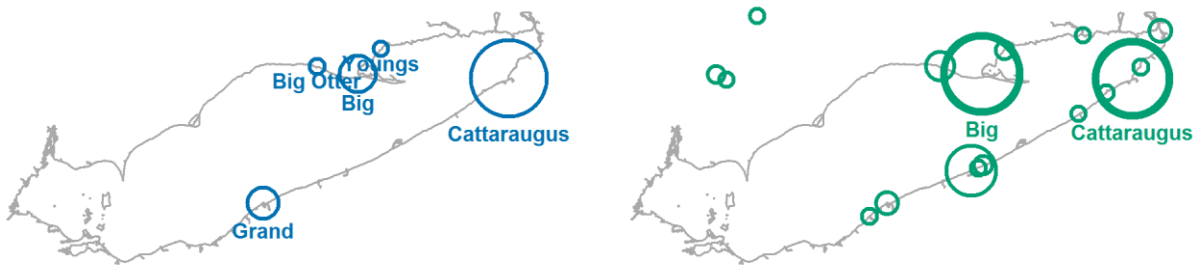


Figure 2. LEFT: Estimated index of adult sea lampreys during the spring spawning migration, 2015. Circle size corresponds to estimated number of adults from mark-recapture studies (blue) and model predictions (orange). All index streams are identified. RIGHT: Maximum estimated number of larval sea lampreys in each stream surveyed during 1995-2012. Tributaries composing over half of the lake-wide larval population estimate are identified (Big 130,000; Cattaraugus 130,000).

- The adult index estimate is above the target.
- Sources to watch include hard to treat tributaries like Cattaraugus Creek and the potential for unidentified sea lamprey producing tributaries and lentic areas (i.e. the Detroit and St. Clair rivers, and western basin of Lake Erie).

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 five-year moving average (line) with 95% CIs (shaded area). The marking rate of 12 in spawning year 2016 was above the target of 5 A1-A3 marks per 100 lake trout > 532 mm (horizontal line).

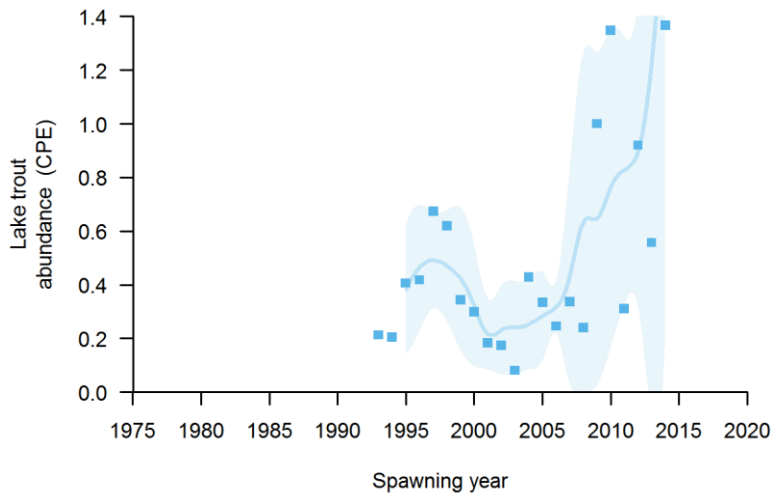


Figure 4. Lake trout relative abundance from standardized spring surveys plotted against sea lamprey spawning year, including the five-year moving average (line) with 95% CIs (shaded area). CPE = number per lift of lean lake trout age 5 and older.

- The marking rate is greater than the target.
- Lake trout abundance has been variable and increasing for the last decade.
- Marking rates on burbot and steelhead have been increasing and are a concern.
- The Commission, in collaboration with management agencies, is building lake trout marking and abundance databases to advance the assessment and guidance of the program.

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

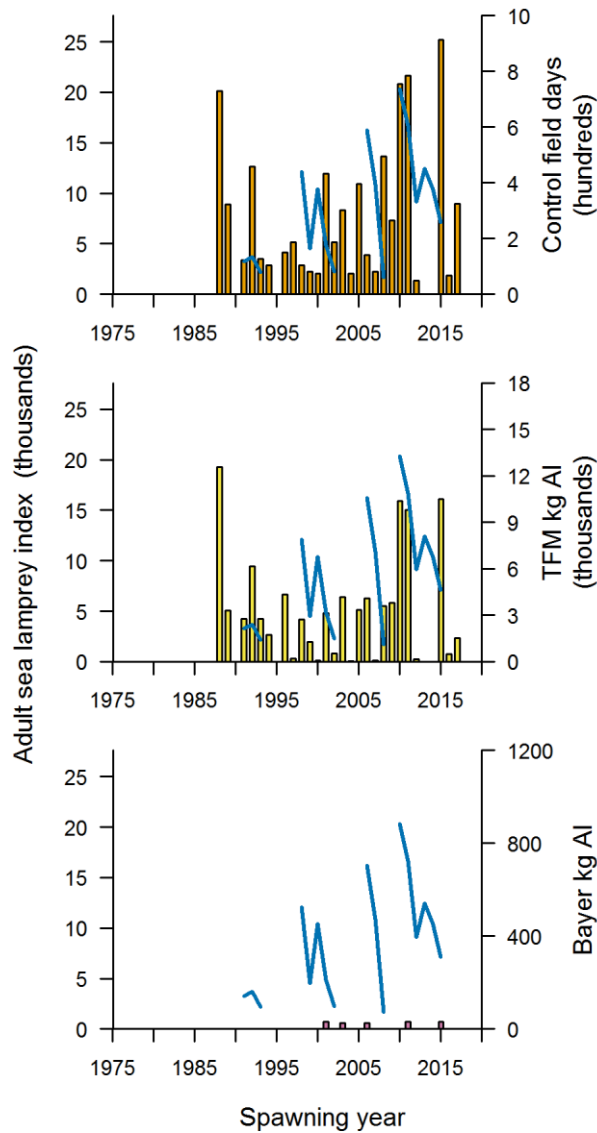


Figure 5. Index of adult sea lampreys (blue lines) and number of control field days (orange bars), TFM used (kg active ingredient; yellow bars), and Bayluscide used (kg active ingredient; purple bars). Field days, TFM, and Bayluscide are offset by 2 years (e.g., field days, TFM, and Bayluscide applied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

- 12 tributaries were treated during 2013, two during 2014, and seven during 2015 (2015 to 2017 spawning year).
- Increased control effort has been implemented since 1999 (2001 spawning year) and a large-scale treatment strategy in which all known sea lamprey producing streams are treated in consecutive years was implemented during 2008 - 2010.
- Unidentified sources of sea lampreys remains a concern and more intense assessment survey plans have been proposed, especially in the Huron – Erie Corridor.