

Forage Task Group Executive Summary

March 2020

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Introduction

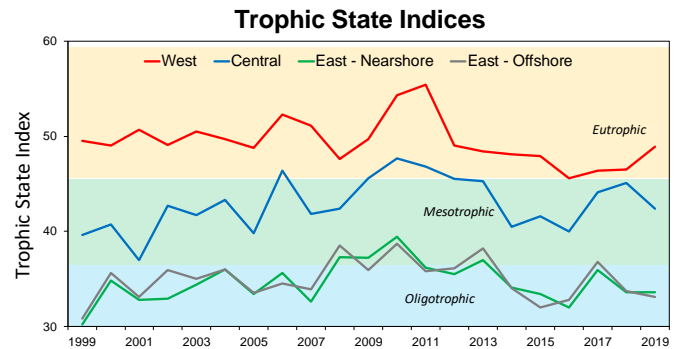
The Lake Erie Committee Forage Task Group (FTG) report addresses progress made on four charges:

1. Report on the results of the interagency lower trophic level monitoring program and status of trophic conditions as they relate to the Lake Erie Fish Community Goals and Objectives.
2. Describe the status and trends of forage fish in each basin of Lake Erie and evaluate alternate data sources and methods to enhance description of forage fish abundance.
3. Continue hydroacoustic assessment of the pelagic forage fish community in Lake Erie, incorporating new methods in survey design and analysis, while following the Great Lake Fishery Commission's Great Lakes Hydroacoustic Standard Operating Procedures where possible/feasible. Support the Standing Technical Committee (STC) review of hydroacoustics.
4. Act as a point of contact for any new/novel invasive aquatic species.

The complete report is available from the Great Lakes Fishery Commission's Lake Erie Committee Forage Task Group website (<http://www.glfsc.org/lake-erie-committee.php>) or upon request from a Lake Erie Committee, STC, or FTG representative.

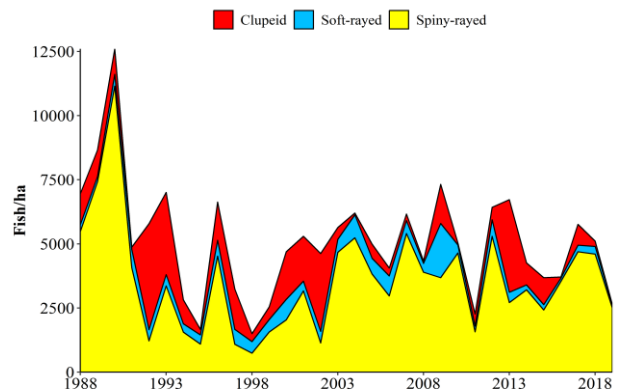
Interagency Lower Trophic Level Monitoring

The lower trophic level monitoring (LTLA) program has measured nine environmental variables at 18 stations around Lake Erie since 1999 to characterize ecosystem trends. The Trophic State Index, which is a combination of phosphorus levels, water transparency, and chlorophyll *a* concentration, indicate that the western basin is slightly above the targeted mesotrophic status, the central basin is within targeted mesotrophic status, and both the nearshore and offshore waters of the eastern basin are oligotrophic. Trends across Lake Erie in recent years indicate that overall productivity has slowly declined since 2010. Low hypolimnetic dissolved oxygen continues to be an issue in the central basin during the summer months.



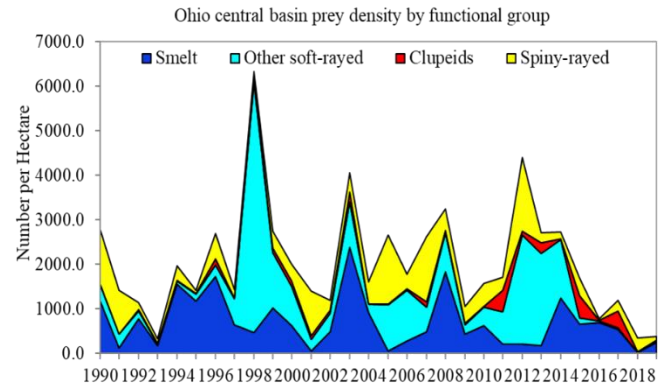
West Basin Status of Forage

In 2019, hypolimnetic dissolved oxygen levels were below the 2 mg/L threshold at twenty sites during the August trawling survey and, as a result, data from only 56 sites were used in 2019 (down from 71 in 2018). Total forage density averaged 2,633 fish per hectare across the western basin, which is a decline of 48% from 2018 and near half of the ten-year mean (5,029 fish/ha). Age-0 Walleye relative abundance in 2019 remained high and was the second greatest in the time series (225/ha). Young-of-the-year Yellow Perch (555/ha) declined 42% from 2018 but remained above the ten-year mean (400/ha). Young-of-the-year White Perch (1,573/ha) declined 50% from 2018 and is currently half the ten-year average (2,961/ha). Young-of-the-year White Bass (80/ha) was similar to 2018 and below the ten-year mean (130/ha). Young-of-the-year Gizzard Shad abundance (39/ha) was the lowest in the time series, well below the ten-year mean (914/ha). Densities of age-0 (0.4/ha) and age-1+ Emerald Shiners (0.1/ha) were also the lowest in the time series.



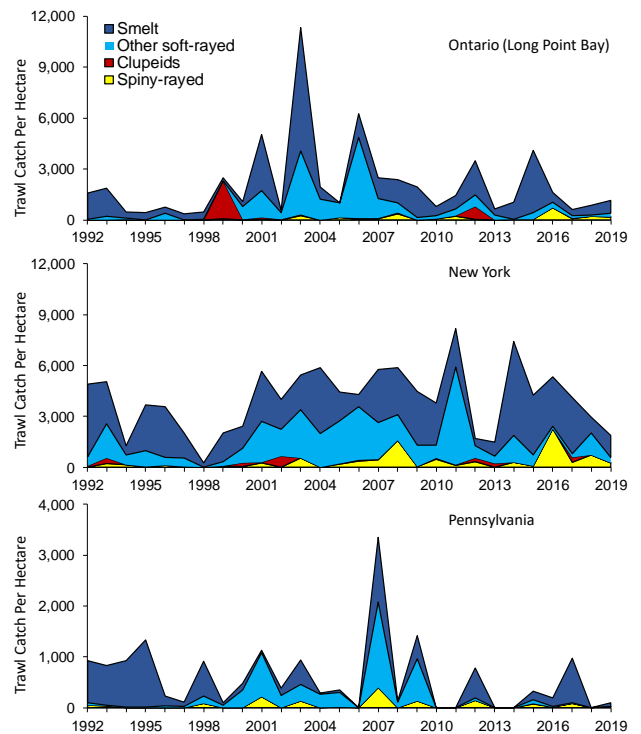
Central Basin Status of Forage

Forage abundance in Pennsylvania increased from 2018 and was primarily composed of Rainbow Smelt and spiny-rayed species. Forage densities in Ohio were similar to 2018, but species composition switched from spiny-rayed species to primarily Rainbow Smelt in 2019. Forage densities remain well below long-term means in both Pennsylvania and Ohio. Young-of-the-year Rainbow Smelt was the only species that increased from 2018 across the basin. In contrast, age-1+ Rainbow Smelt indices declined from 2018 and were some of the lowest indices in the time period. Round Goby increased in Ohio trawls but decreased in Pennsylvania. Gizzard Shad and Emerald Shiner indices were similar to 2018. Emerald Shiners have only been sampled occasionally since 2015. Since 2005, Yellow Perch cohorts in the central basin have tended to be strongest in the east relative to the west. In 2019, Yellow Perch age-0 indices increased in Pennsylvania but decreased in Ohio. Yearling-and-older Yellow Perch indices in the central basin decreased from 2018 and were well below long-term means. Ohio indices for age-1+ Yellow Perch have been generally below long-term means since 2013.



East Basin Status of Forage

Total forage fish abundance in 2019 increased in Ontario over 2018 but remained well below the long-term mean. Abundance decreased for the third consecutive year in New York. Total forage fish abundance was one of the lowest values recorded in Pennsylvania waters. Catches of age-0 Rainbow Smelt were below long-term means in all jurisdictions. Abundance of age 1+ Smelt and Emerald Shiners (all life stages) were very low in all jurisdictions. Catches of age-0 Yellow Perch were above average in Long Point Bay, but below average in both New York and Pennsylvania. Round Goby densities were generally consistent with long-term means. Catches of all other species were low.



Hydroacoustic Assessments

The Forage Task Group introduced fisheries hydroacoustic technology on Lake Erie to provide a more comprehensive assessment of pelagic forage fish species abundance and distribution. In 2019, the east basin survey was conducted from July 8-18, the central basin survey from July 8-12, and the west basin survey on July 8-11. East basin forage fish density was the lowest in the time series, with a mean of 180 fish the size of age-1+ Rainbow Smelt per hectare. Similarly, hydroacoustic densities and midwater trawl catch rates of age-1+ Rainbow Smelt in the central basin were some of the lowest in the time series. Emerald Shiner have been generally declining in the central basin since 2011 and have been in very low abundance in the survey since 2015. In the west basin, average forage fish densities were highest along the transect bordering the central basin (9687 fish/ha). Average western basin forage fish densities (8,335 fish/ha) were slightly higher than 2018 densities (6,435 fish/ha), but below the time series average (14,298 fish/ha).

Aquatic Invasive Species

No new invasive fish species were reported in Lake Erie or its' connected waterways in 2019. Grass Carp reporting is now handled by the Grass Carp Working Group, which includes representatives from all Lake Erie jurisdictions and participating agencies. We continue to track populations of Rudd in the Lake Erie watershed. Tench is an emerging species of concern given its rapid expansion in the St. Lawrence River and recent entrance into Lake Ontario.