

FORAGE TASK GROUP

EXECUTIVE SUMMARY REPORT

MARCH 2019



Introduction

The Lake Erie Committee Forage Task Group report addresses progress made in 2018 on five 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.
3. Continue hydroacoustic assessment of the pelagic forage fish community in Lake Erie, incorporating new methods in survey design and analysis while following the GLFC's Great Lakes Hydroacoustic Standard Operating Procedures where possible/feasible.
4. Report on the use of forage fish and new invasive species in the diets of selected commercially or recreationally important Lake Erie predator fishes.
5. Develop and maintain a database to track new or emerging Aquatic Invasive Species in Lake Erie that exhibit the potential to directly impact economically important fisheries.

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

Interagency Lower Trophic Level Monitoring

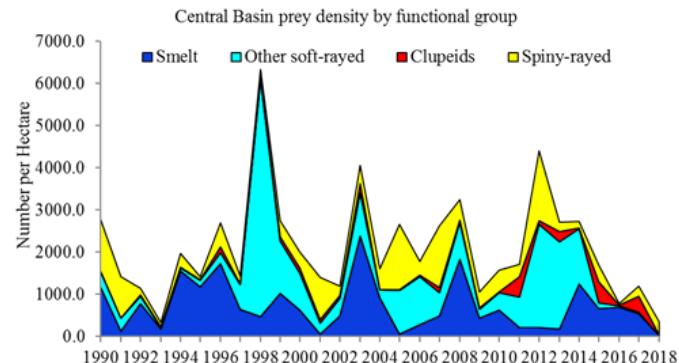
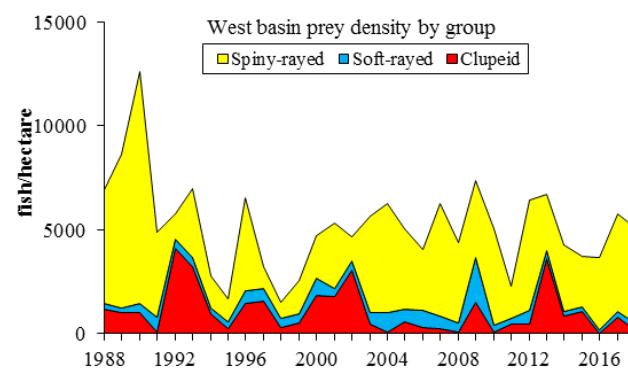
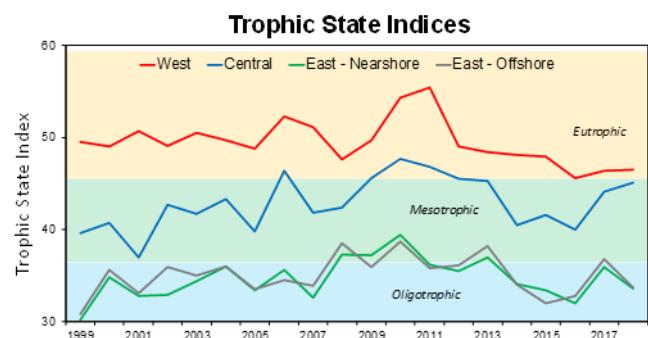
The lower trophic level monitoring (LTLA) program has measured nine environmental variables at 18 stations around Lake Erie since 1999 to characterize ecosystem trends. The Trophic State Index, which is a combination of phosphorus levels, water transparency, and Chl *a* measures, indicate that the western basin is slightly above the targeted mesotrophic status, the central basin is within targeted mesotrophic status, which favors percid production, 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 2018, hypolimnetic dissolved oxygen levels were below the 2 mg per liter threshold at three sites during the August trawling survey (all located near the eastern interface with the central basin). In total, data from 71 sites were used in 2018. Total forage abundance declined but was near the ten-year mean. Total forage biomass increased 33%. Age-0 Walleye relative abundance in 2018 was the highest ever recorded in the time series (255/ha), twelve times greater than the ten-year mean (21/ha) and 40% higher than the historic 2003-year class. Young-of-the-year (age-0) Yellow Perch (959/ha) was well above the long-term mean (340/ha). Young-of-the-year Gizzard Shad declined 75% from 2017 and remain highly variable. Young-of-the-year Rainbow Smelt (0.1/ha) and yearling-and-older (age-1+) Rainbow Smelt densities (0.3/ha) returned to minimal levels after high densities in 2017. Age-0 Freshwater Drum and all ages of Troutperch densities were well above ten-year averages. Densities of age-0 and age-1+ Emerald Shiners have increased for two years straight but remain very low (~20% of the ten-year mean). Round Goby abundance was the lowest since the fish was first detected in the west basin (1997).

Central Basin Status of Forage

Forage abundance in Ohio waters has generally decreased since 2012. In 2018, most forage species continued to decline and are at the lowest densities since 1993. Spiny-rayed species increased slightly from 2017 but remain well below average. Emerald Shiner



indices continue to be well below long-term means throughout the basin. In 2018, indices for the primary forage species, Rainbow Smelt, Emerald Shiner, Round Goby and Gizzard Shad were all well below long-term means in Ohio. Young-of-the-year and age-1+ indices for all species were some of the lowest in the last ten years. In 2018, Yellow Perch age-0 indices in Ohio increased over the last two years and are slightly above long-term means.

East Basin Status of Forage

Total forage fish abundance in 2018 increased in Ontario over 2017 but remained well below the long-term mean. Abundance decreased in New York. Pennsylvania did not sample due to vessel constraints. Catches of age-0 and age-1+ Rainbow Smelt were below long-term means in both jurisdictions. Young-of-the-year Emerald Shiner catches were low in both jurisdictions. Yearling-and-older catches were low in Ontario but high in New York, above long-term means. Catches of age-0 Yellow Perch have generally been above long-term means in recent years. 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. Beginning with surveys of the eastern basin in 1993, coverage was expanded to the central basin in 2000 and western basin in 2004. In 2018, the east basin survey was conducted from July 8-11, the central basin survey from July 16-20, and the west basin survey on July 12 and 19. East basin forage fish density was low (17th percentile in the time series), with a mean of 642 forage fish the size of age-1+ Rainbow Smelt per hectare. In the central basin, hydroacoustic densities and midwater trawl catch rates of Rainbow Smelt were some of the lowest in the time series. Emerald Shiner have been generally declining since 2011 and have been in very low abundance in the survey since 2015. In the west basin, average forage fish densities were highest on the middle transect (7,300 fish/ha), while densities peaked at the northern and southern ends of the eastern transect. Average western basin forage fish densities (6,435 fish/ha) were slightly higher than 2017 densities (4,726 fish/ha), but below the time series average (15,143 fish/ha).

Aquatic Invasive Species

The Aquatic Invasive Species charge was developed in recognition of the need for a systematic, centralized, lake-wide effort to track records of new, non-native species that might become invasive. In 2018, FTG members reported 3 species on the Injurious Species list or other unusual non-native species. Two Rudd were captured 8 August by electrofishing in Ashtabula Harbor, which is within the known geographic range of Rudd in the Great Lakes. Fifty-seven Grass Carp were captured in Lake Erie or its tributaries in 2018. Forty-three were reported from Ohio, nine in Michigan, two in Pennsylvania, two in Ontario and one in New York. The number of diploid, triploid, and total Grass Carp captured in Lake Erie has increased since recording began in 2012. The increase in 2014 reflects the first year state agencies began targeting capture of Grass Carp. Tubenose Goby has been captured in Ontario and Michigan waters of western Lake Erie every year since 2015. Tubenose Goby captured since 2015 have been in deeper waters and farther south and east since 2011, representing an expansion of known habitats used by this non-native species. Annual fish community surveys (electrofishing, gill nets, trawls, seines, and trap nets) provide extensive spatial coverage on Lake Erie. There were no Bighead or Silver carp captured in assessment surveys in 2018. In addition, neither species was reported from commercial or recreational fisheries.

