

## Status of the Lake St. Clair Fish Community and Sport Fishery

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### *Background*

Lake St. Clair has supported a renowned sport fishery for Smallmouth Bass, Muskellunge, Walleye, and Yellow Perch for many decades. This extensive sport fishery generates important socioeconomic benefits. During the past 30 years, the lake has been colonized by numerous invasive species. The long-term effects of these exotics on the Lake St. Clair fish community and sport fishery remain uncertain as the lake is in constant flux from these invaders. While the importance of the sport fishery in these waters is high due to the remarkable fisheries resources available in the system and proximity to the metropolitan Detroit area, a creel survey on Lake St. Clair and the connecting waters is expensive. Thus, unique sport fisheries for Great Lakes Muskellunge and Smallmouth Bass are poorly measured. Michigan's statewide black bass sport fishing regulations were liberalized in 2006 and again in 2015. For Lake St. Clair, the changes have legalized targeted bass fishing year-around, with harvest limited from the third Saturday in June to the end of December. The long-term effect of the regulation change on the Smallmouth Bass population in Lake St. Clair is not known.

This project collects fishery-independent abundance, age, and growth data for adult sport fish species using a spring trap net survey (Photo 1). A spring and fall trawl survey collects abundance, age, and size data for yellow perch and numerous forage species (Photo 2). The fall portion of the trawl survey also provides an annual index of spawning success for yellow perch and smallmouth bass in Anchor Bay. Finally, a volunteer angler diary program is used to collect catch rate data for the major sport fish species. Monitoring trends in the adult populations and angler catch rates of major sport fish species will provide fisheries managers with early indications of changes or possible problems in the fishery. Monitoring trends in forage fish and exotic species abundances can help managers make wise resource management decisions.



Photo 1. Collecting fish from the spring trap net survey.



Photo 2. Example trawl catch.

### *Key current study results*

Numbers of adult fish captured in the trap net survey in Anchor Bay, Lake St. Clair declined from 2010 to 2014. Water clarity has continued to increase over this period and gear avoidance has likely become an issue. Rock Bass, Smallmouth Bass, Channel Catfish, and Northern Pike were the most abundant species in the trap net catch in 2014. A total of nine trawl tows were

conducted at the Anchor Bay index trawling site in 2014. The spring samples were dominated by Yellow Perch and Spottail Shiner. The species with highest mean densities in the fall samples were Sand Shiner, Trout-perch, Round Goby, and Logperch. Alewife catches have been low since 2003, likely a result of the Alewife population crash in Lake Huron.

Yellow Perch age-specific catch rates from the trawl survey indicate highly variable recruitment in Lake St. Clair. Yellow Perch reproduction in 1998, 2003, 2007, 2008, 2010, and 2013 was strong, with over 1,000 fish per tow catches for those year classes. Alternatively, reproduction was poor in 1999, 2000, and 2002, 2011, and 2012. September trawling in Anchor Bay provides early indications of spawning success for Yellow Perch and Smallmouth Bass. Catch rates for young Yellow Perch from September trawls indicate the 2014 year class was a weak, similar to those produced in 2011 and 2012.

For Smallmouth Bass, the fall trawl catch rate indicated the 2014 year class was below the long-term average, but improved over the low rates recorded in 2009, 2011, and 2012.

Angler catch rates were calculated for the combined Ontario and Michigan data, for the four major sport fish species sought by Lake St. Clair anglers: Walleye, Yellow Perch, Smallmouth Bass, and Muskellunge. For the four species combined, 534 fishing trips were recorded by participants. Catch rates for all four species declined for a second consecutive year in 2014. While the Walleye and Yellow Perch fishery remain harvest-oriented, anglers reported releasing 80% of the Smallmouth Bass and 100% of the Muskellunge caught during targeted fishing effort in 2014.

#### *Where can I find the detailed results?*

The Michigan Department of Natural Resources Fisheries Division's Lake St. Clair Fisheries Research Station publishes an annual report describing the results of ongoing surveys including those on Lake St. Clair. This report is available on the web by visiting <http://www.michigan.gov/dnr/fishresearch> and clicking on "Lake St. Clair". Survey results are also shared at the annual Michigan Sea Grant Lake St. Clair fishery workshop. Additional information is available at: [http://www.michigan.gov/dnr/0,4570,7-153-10364\\_52259\\_19056-333302--,00.html](http://www.michigan.gov/dnr/0,4570,7-153-10364_52259_19056-333302--,00.html).

#### *What does this project do for fisheries managers and anglers?*

Fisheries managers use the information from this project to evaluate and adjust fishing regulations, such as minimum size limits and daily possession limits, which specify the size and number of fish that an angler can harvest in one day. Fishing regulations for Michigan's waters of Lake St. Clair and its connecting waterways can be found by clicking "Rules & Regs" on the Michigan Department of Natural Resources' Fisheries Division website at <http://www.michigan.gov/fishing>.