Population Models Key to Great Lakes Fishery Success

Population models are an important part of the fisheries management process in the Great Lakes. These models have the ability to summarize the large amounts of information generated on these waters and can help inform fisheries management options to consider including harvest limits and harvest allocation among the various user groups. The accuracy of population models is only as good as the data that goes into them and fisheries managers and researchers are constantly working to refine and improve data inputs. A recently completed study by researchers at our Marquette Fisheries Research Station has led to improved estimates of catch-and-release (hooking) mortality for lake trout in the Great Lakes. Prior to the study the catch-and-release mortality rate used in lake trout models was 15%, based on an evaluation in the late 1980s. Marquette researchers worked with local commercial and recreational anglers in lakes Superior and Huron to capture, tag and release lake trout caught in commercial fishing gear and in the recreational hook-and-line fishery. Tag returns were then monitored for several years and differences in return rates between commercially-caught versus hook-and-line caught fish were used to estimate catch-and-release mortality. The result of the new study showed catch-and-release mortality for lake trout is about 40%. This improved estimate is being used across the upper Great Lakes and has dramatically improved the management of Great Lakes lake trout.

How many Walleye do we have?

Hubbard Lake in Alcona County has been known to have a substantial walleye population but no official population estimate had ever occurred. That is until 2017 when the 8,850 acre lake was surveyed by the Northern Lake Huron Management Unit. Between the staff in this and several other fisheries management units, three survey crews were deployed to set trap nets in the lake to conduct the marking phase of the project. Fish were caught and marked and then a recapture effort was done, all in April. A total of 3,763 adult walleye were marked while the recapture run captured 959 adults, including 141 marked fish. This resulted in an estimate of more than 27,000 adult walleye; more than three walleye per acre. The local unit continues to receive angler reports of tagged walleye caught, and the effort was certainly appreciated by the Hubbard Lake anglers and the Hubbard Lake Association.

A Big Effort on Important Waterbody Completed

At more than 13,000 acres, Lake Gogebic is the largest lake in the U.P. and the 6th largest inland lake in the state. Doing a survey on such a big lake takes a ton of effort, generates a lot of data, and requires lots of coordination and follow up. But in 2017, it all came together. More than anything, anglers are interested in Lake Gogebic's walleye fishery. The 2017 estimated population size is 45,453 adult walleyes (3.5 fish per acre). This abundance is near the middle in the range of previous estimates dating back to 1976, but one thing we know for sure from creel survey data is that fishing and harvest were very good in 2017. With extensive input from passionate Lake Gogebic anglers and resort owners and special analyses by the Quantitative Fisheries Center at Michigan State University, we instituted several innovative regulations over the years to enhance fishing experiences on the lake.

Illustration by Joseph R. Tomelleri ©

From Paper Fish to E-Fish

Sound fisheries management requires a lot of data. From those who catch fish, to those who buy or sell fish, many venues are required to report their activity to Fisheries Division. That information is used to ensure Michigan's fish populations will be available for generations to come. Not long ago, fisheries information was recorded and tracked on paper which involved several staff and a substantial investment in time and funding. Technological advances in electronics have greatly increased efficiency and accuracy of data reporting. Fisheries Division has been preparing a new electronic reporting platform for Michigan's commercial fishers, charter boat captains, and wholesale fish dealers -- switching from paper-based to electronic reports of fish being caught. Staff from the division's Research Section, Aquatic Species and Regulatory Affairs Unit, and Tribal Coordination Unit have made significant progress working with a contracted company to make this vision a reality. The new, user-friendly system will improve the accuracy and timeliness of the information used to manage Michigan's resources, while also saving staff time previously spent handling, organizing and entering the paper forms. Testing of the new system will begin in 2018.

How many Fish are Caught, and by Whom?

Since 1985, the DNR has been interviewing and counting anglers at many of the state's most popular fishing ports on the Great Lakes, as well as various inland lakes and rivers. This information, collected through our Statewide Angler Survey Program, is used to help the DNR account for fish harvest, measuring stocking success, and examining fisheries management actions including the effectiveness of fishing regulations. The work is done by more than 40 creel clerks, who are on the front line of public interaction; averaging about 50,000 interviews a year! This makes them the perfect messengers for serving information to the public and relaying the public's comments back to DNR managers.

The DNR, Fisheries Division strives to protect and enhance Michigan's aquatic life and habitats for the benefit of current and future generations. Its vision is to provide world-class freshwater fishing opportunities, supported by healthy aquatic environments, which enhance the quality of life in Michigan.

Learn more about how we're working to manage your fisheries at *Michigan.gov/fishing*.

Sign up for email updates from the DNR! Just visit *Michigan.gov/dnr* and click on the red envelope to get started.

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The Michigan Department of Natural Resources is committed to the conservation, protection, management, use and enjoyment of the state's natural and cultural resources for current and future generations.

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Fisheries Division Fiscal Year 2017

ANNUAL REPORT

DEPARTMENT OF NATURAL RESOURCES · DNR · MICHIGAN ™

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Some of the best freshwater fishing in the world can be found in Michigan; home to 3,000 miles of Great Lakes shoreline, more than 11,000 inland lakes, and tens of thousands of miles of rivers and streams. These fisheries and their remarkable settings are enjoyed by more than 1 million anglers every year who head out to experience their wonder and create life-long memories.

In the following 2017 annual report you'll read about how the Michigan Department of Natural Resources, Fisheries Division works tirelessly to maintain and enhance our world-class fisheries for today and tomorrow. This report's content aligns with our 2013-2017 strategic plan (*Charting the Course: Fisheries Division's Framework for Managing Aquatic Resources*) that provides the direction for how we will manage and support Michigan's fish and aquatic communities, habitat, anglers and the division itself.

• HEALTHY AQUATIC ECOSYSTEMS & SUSTAINABLE FISH POPULATIONS •

Vital Response Efforts for Prohibited Aquatic Invasive Species

Grass carp, an invasive carp imported to the U.S. several decades ago for aquatic weed control, were recently captured in the Michigan waters of Lake Erie prompting action from the DNR. Fisheries Division staff initiated projects to fill knowledge gaps related to the life history of grass carp in Lake Erie that will increase the effectiveness of control actions. For example, grass carp seasonal movements and habitat use were evaluated to inform where and when to implement control efforts including providing new data on grass carp distributions to commercial fisherman that lead to increased captures of this species. Additionally, red swamp crayfish were detected in two Michigan locations in 2017. We led response efforts in Kalamazoo and Novi to confirm and evaluate distributions of this highly invasive crayfish. Outreach efforts revealed several other infestations in southeast Michigan and staff have now confirmed the presence of this crayfish in 15 locations. The development and implementation of control options for red swamp crayfish will be a collaborative effort between the DNR, land owners, Michigan State University and the Federal Government.

Putting Impaired Systems Back Together

Restoring river connectivity and providing full fish passage at or removing obsolete barriers is an on-going priority for fisheries management in Michigan. In the Southern Lake Huron Management Unit, 2017 was particularly fruitful for those efforts. With the help of our Habitat Management Unit, dam removal or other modifications have been completed on the Chippewa River (Millpond West Dam), Shiawassee River (Chesaning Dam), and the Cass River (Vassar and Frankenmuth dams). Plans were developed for future removals including: Hamilton and Fabri dams on the Flint River; Shiatown and Corunna dams on the Shiawassee River; and Dow Dam on the Tittabawassee River. Additionally, we have been working with the U.S. Fish & Wildlife Service to document fish passage at the Frankenmuth Rock Ramp Fishway on the Cass River and the results are exciting. To date, many fish species have been documented passing this rock ramp including multiple sucker species, smallmouth bass, walleye and flathead catfish.

Viral Hemorrhagic Septicemia (VHSv) Rapid Response

VHSv is a virus responsible for numerous large fish kills in the Great Lakes region since the mid-2000's. In early 2017, VHSv again struck in the St. Clair-Detroit River System, causing wide-spread mortality of fish throughout the St. Clair River, Lake St. Clair, the Detroit River, and its many canals and connecting channels. Staff from the Lake St. Clair Fisheries Research Station collaborated with our Lake Erie Management Unit and Michigan State University's Aquatic Animal Health Lab to examine the extent of the VHSv outbreak and to educate the public on preventing its spread. Thanks to extensive and coordinated outreach efforts with private homeowners, marinas and the DNR's Law Enforcement Division, we were able to carefully track the spread of the virus and implement preventative measures to minimize the risk of spread to non-infected waters. This work was instrumental in furthering the knowledge of the 2017 VHSv outbreak and implementing efforts to help forecast the virus' potential activity in future years.

• DIVERSE FISHING OPPORTUNITIES •

Angling to be in Master Angler Program

Anglers who catch unusually large fish have the opportunity to receive a Master Angler Award from Fisheries Division. This program launched in 1973 and currently recognizes 46 fish species in the two categories: catch-and-keep and catch-and-release fishing. In the past few years, participation in the program has doubled, with 2,176 entries submitted and approved in FY2017. Those who meet the program's requirements, based on fish length, receive a collectible patch in recognition of their efforts. One state record was also broken in FY2017 for bigmouth buffalo. The new record fish weighed 27 pounds and measured 35.25 inches and was caught in the River Raisin (Monroe County) by bowfishing.

Fixing the Past -- Flint River Rehabilitation

Improving and rehabilitating the Flint River is one of many projects included in the larger revitalization efforts planned for the City of Flint. With the past large changes in land use from urban and industrial development, the quality of the Flint River fish habitat worsened as a result of habitat degradation including the construction of dams. Many partners are now involved in the goal of improving the Flint River so it may provide improved habitat for fish and other aquatic life and an attractive location for the public to recreate. Hamilton Dam, the last remaining "high hazard, high risk" dam in Michigan, is in the process of being removed with funding from the DNR's Dam Management Grant Program. Fisheries Division is also involved in the planning of future projects to naturalize and remove the large concrete seawalls along the river, with the goal of improving fishing and other water sport access to nearly half a mile of riverfront in the downtown area.

Important Information Gathered on Key Fishery

It's official! The hottest spot in the Upper Peninsula for muskellunge is Dollarville Flooding in the Tahquamenon River drainage. The flooding, located in southern Luce County, is a select area of State Forest Land managed cooperatively by the DNR's Wildlife and Forest Resource divisions. Preliminary results of a 2017 inland creel survey have documented that this is a *tremendous* muskie fishery in the numbers of fish caught. Size is important to some anglers and so is trophy potential. But the number of fish, reflected by high catch rates, is far and away the most important factor for a majority of muskie anglers. It's also what separates the Dollarville Flooding from most any other inland water in the state. A noteworthy fact is the Dollarville Flooding muskellunge population has been self-sustaining since our stocking of northern strain muskellunge more than 35 years ago.

WOW! Anglers spend more than **2 million** hours a year fishing the Great Lakes. **Salmon, steelhead, lake trout, walleye, smallmouth bass** and **yellow perch** are the most popular species caught in the Great Lakes. Meanwhile, **panfish, bass** and **northern pike** are the most popular fish species caught in Michigan's inland lakes.

• STRATEGIC RESOURCE PARTNERSHIPS •

Progress made to bring back Arctic Grayling

The year of 2017 was fruitful in the on-going effort to return an extirpated species – Arctic Grayling – to Michigan. Spearheaded by Michigan's Arctic Grayling Initiative, which consists of a foundational partnership between the State of Michigan, the Little River Band of Ottawa Indians, and more than 40 other partners, these efforts included receiving a grant from Consumers Energy Foundation to conduct habitat and fish community surveys and complete an Action Plan that will guide various activities over the next several years. The Action Plan focuses on four main areas; research, management, fish production and outreach and education. The efforts of Michigan's Arctic Grayling Initiative continue to focus on establishing self-sustaining populations of Arctic Grayling within its historical range.

Fish Moving on Menominee River

Fisheries biologists from the Michigan DNR, Wisconsin DNR and the U.S. Fish and Wildlife Service have successfully operated the Menominee River fish lift or elevator for two years. This project re-connects 21 miles of river above the Menominee and Park Mill Hydroelectric dams with the lower river. The construction of the lift was completed in 2015 as part of the federal hydropower license condition for these two dams through the cooperation of Eagle Creek Renewable Energy, Alliance of Wisconsin and the Michigan Hydro Relicensing Coalition. Currently, the project attracts fish into one of the bays at the dam using an attraction flow. Fish in the bay are lifted by an elevator and placed into a holding tank where they are sorted and examined before either being released back downstream or trucked above Park Mill Dam. The elevator has been particularly important for mature and ready-to-spawn lake sturgeon that are taken above the dam so they can successfully spawn in the Menominee River upstream of the lower two dams on this system. During 2017 more than 2,700 fish were collected representing 26 species, and 125 lake sturgeon were captured in the lift.

Keeping it on the Menu...

Whether you broil it, grill it, cover it in dill, butter or even batter, it's hard to beat a lake whitefish dinner. That delectable product is brought to you by one of the many commercial fishing operations in our state. These fisheries are intensively managed, and populations of Great Lakes lake whitefish are closely tracked by State, Federal and Tribal agencies. Lake whitefish numbers have declined in recent years, but not because of overfishing; in fact it appears to be related to the reduced survival of juvenile fish. Fisheries Division's Tribal Coordination Unit and Research Section partnered with 11 other agencies to conduct surveys throughout lakes Michigan and Huron to monitor young lake whitefish. The data collected from these efforts will help us better understand the patterns in reproduction of this important species, and understand why the recent declines have been observed. Our ultimate goal is to ensure a self-sustaining source of this great-eating fish well into the future.