

Develop Strategically Focused Assessment & Decision Support Tools

Lake Michigan Zonal Management

Zonal management, a concept developed through focus groups, was implemented in 2018 to prioritize salmon and trout stocking. Zonal management considers regional differences in Lake Michigan, such as water temperature, depth, nutrients, reefs, harbors and human use when developing stocking and regulation recommendations. Lake Michigan is a huge body of water and there are large differences in habitat – especially between the southern and northern portions. The southern half tends to be shallower, warmer and has large, warm rivers that are higher in nutrients. It has a sandy bottom with sandy shorelines mixed with dunes and highly-populated harbors. Meanwhile, the northern half tends to be deeper, cooler and have colder rivers with fewer nutrients. The bottom contains rock reefs with multiple islands that create diverse and complex habitat. Because of these differences, future brown trout stocking will be concentrated between Ludington and Glen Arbor – courtesy of this zonal management concept. This new brown trout zone is expected to make stocking more efficient and create an area where anglers can expect better fishing opportunities.

Environmental DNA - Another Way to Find Fish

Determining what fish species live where and in what abundance is a difficult question to fully answer. Traditional fish sampling techniques such as netting, hook-and-line and electrofishing only capture part of the fish community and can't fully assess the fish or other aquatic species in that location. To help fill the information gaps about fish and other aquatic communities, fisheries scientists are increasingly using environmental DNA (eDNA). All organisms and plants leave traces of DNA in the water where they are living or recently have lived through cell loss, mucus and excretion. We can now use this genetic information to help answer questions about who is living where and when. Applications of eDNA have greatly expanded in recent years from rare species and aquatic invasive species detection to having the ability to accurately estimate the relative abundance of each species in a location. Fisheries Division works with the Partnership for Ecosystem Research and Management at Michigan State University to use eDNA to gather information like the locations of red swamp crayfish and round goby. We expect to continue to employ eDNA methods to supplement information from traditional fisheries sampling methods and will likely gain unique insights from this new information source.

Lake Michigan Research Vessel Celebrates 50 Years

The year 1968 is often described as one of the most momentous in American history. In a year that included an Apollo moon orbit and the introduction of the Big Mac hamburger, an event on Lake Michigan marked a turning point for resource management and conservation on the Great Lakes. It was in 1968 that the Survey Vessel *Steelhead* set forth from Charlevoix for her first year of fisheries surveys on the lakes. This vessel, built in Escanaba, was completed in 1968 and soon set out for its first fisheries assessment operations – investigating the distribution, abundance, growth and diet of major fish stocks on lakes Michigan and Huron. Like any of us who've reached our 50th year, the *S/V Steelhead* has occasional aches and pains. However, this vessel launched with such foresight in 1968 that it is still paying huge dividends for the people and fish of Lake Michigan. Work conducted on the *S/V Steelhead* is truly the foundation of Lake Michigan fisheries management.

Foster Efficient Division Operations

Responding to a Disaster

Following the spring 2018 storm that hit Houghton County hard, Fisheries Division staff engaged in response efforts along with diverse teams drawn from all corners of the state. Residents, local units of government, DNR, DEQ and state emergency management experts collaborated to address pressing needs to public safety and infrastructure protection. Once the most daunting threats to health and safety were addressed, efforts were directed to help get Copper Country on track (and trail) as soon as possible for residents and visitors. Expertise in infrastructure, logistics, road-stream crossings and numerous other areas was required, and coordination was needed at all levels to ensure machine operators and workers had the equipment and resources they needed to accomplish the difficult task of stabilizing and repairing damaged areas. Folks quickly recognized the urgent needs of Houghton County, and all involved understood and helped in any way they could to get their neighbors to safety and a new normal. While work continues, the relationships and collaboration formed during this response will bring increased efficiency, preparedness and success.

The Value of Electronic Reporting

Starting in 2018, the DNR implemented a new electronic reporting system for the commercial fishing industry, wholesale fish dealers and charter boat operators. This system, called the Fishing Activity & Catch Tracking System (FACTS), is currently being used successfully by the National Oceanic and Atmospheric Administration and the State of Maryland in their fisheries industry and we were happy to bring it here to Michigan. The former electronic reporting platforms have been replaced with FACTS, which brings many improvements, including using smartphones to report!

Finding a Better Way to Collect Information from the Public

As part of a joint effort between the Fisheries, Wildlife and Marketing and Outreach divisions, as well as the Michigan Department of Technology, Management and Budget, a brand new, online reporting tool was launched in 2018 called *Eyes in the Field*. While previously divisions had individual observational reporting forms available – such as reporting a marked and tagged fish – now all these forms are housed under one roof to provide ease of access and use by the public. This new tool also enhances the department's ability to respond to those who submit forms and track actions taken after the fact. Additional fisheries-related forms now in *Eyes in the Field* include reporting an invasive (Asian) carp, a lake sturgeon sighting, and sick or dead aquatic species. Following the launch of *Eyes in the Field*, an off-shoot of the system was also developed – the *Harvest Reporting System*, which allows anglers to provide mandatory reports online after harvesting a lake sturgeon or muskellunge in Michigan.



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.

Fisheries Division Fiscal Year 2018

ANNUAL REPORT



Michigan.gov/Fishing

Michigan has no shortage of exceptional freshwater fishing – supported by copious amounts of water and more than 150 different species of fish. With great opportunity comes great responsibility, something the Michigan Department of Natural Resources, Fisheries Division does not take lightly.

In the following 2018 annual report you'll read about the work of Fisheries Division, aligned with our 2018-2022 strategic plan (*Charting the Course: Fisheries Division's Framework for Managing Aquatic Resources*) that provides guidance for how we manage and support Michigan's world-class fisheries for today and tomorrow.

Ensure Healthy Aquatic Ecosystems & Sustainable Fisheries

Invasive Carp Challenge

Invasive (Asian) carp, in particular bighead and silver carp, continue to threaten the Great Lakes. These invasive fish are established and abundant in the Illinois River in Illinois, which is connected to Lake Michigan through the Chicago Area Waterway System (CAWS). An electric barrier is in place in the CAWS, but there are continued concerns about fish passage. To address these issues and promote new ideas, DNR staff worked with Governor Snyder's office to implement the Great Lakes Invasive Carp Challenge. The Carp Challenge, which concluded in March 2018, selected 10 solutions to be pursued as potential technologies to prevent movement of invasive carp into the Great Lakes. The global search for solutions garnered more than 350 responses from 27 countries. The winning ideas included a wall of painful cavitation bubbles as a deterrent, retrofitting a lock with a velocity barrier, a chemical lock treatment concept, and an automated visual process to select and trap carp moving through an area. The DNR is working with federal research labs, interested parties and resource agencies to promote the advancement of these ideas in hopes they will be implemented to protect the Great Lakes from the introduction of invasive carp.



Rearing the Fish of 10,000 Casts

One of the toughest species reared by the DNR's fish production system is the Great Lakes muskellunge – done so exclusively at Wolf Lake State Fish Hatchery in Mattawan by staff dedicated to the process. The Great Lakes muskellunge-rearing program began in 2011. The process begins with an electrofishing trip on the Detroit River in late May and is followed by extensive rearing efforts at the facility throughout the summer and fall months, including plenty of time in circular indoor rearing tanks and then a trip to outdoor ponds. When the time comes to send these fish on their way, they'll head to one of several destinations. Two stocking locations, Thornapple Lake in Barry County and Lake Hudson in Lenawee County, will eventually serve as broodstock lakes. This means when the muskellunge populations have reached the appropriate level in those lakes, eggs will be collected from the adult fish, taking the place of the Detroit River electrofishing efforts. This program has developed over the years as staff gained a better understanding of the most effective way to rear these sportfish. The 2018 rearing efforts were particularly fruitful, with more than 22,000 fish averaging nearly 10 inches in length stocked for future angling opportunities – a great triumph considering the program was on hold in 2017 due to a viral hemorrhagic septicemia virus outbreak in Lake St. Clair that threatened to contaminate future efforts.



Lake Kathleen Dam Removal

The Maple River near Pellston is now flowing free. The Maple River Dam, which formed Lake Kathleen, was removed in 2018 by Conservation Resource Alliance and a group of partners, including Fisheries Division. This dam was a 1,200-foot long and about 15-foot high earthen embankment, that created the 42-acre Lake Kathleen. Both the east and west branch of the Maple River flowed into the impoundment. When the Maple River Dam was removed, the sill and spillway of the dam was also removed, restoring a more natural, riverine channel. This project would not have been possible if not for the collaboration of all partners involved and the support of past and present dam owners. There were several complexities associated with this removal, including the presence of Hungerford's Crawling Water Beetle (an endangered aquatic insect) and the Michigan Monkey Flower (a threatened plant), as well as the fact the dam served as a sea lamprey barrier. An environmental assessment helped address these concerns and kept the project moving forward. Additional support came in the form of funding, through the DNR's Aquatic Habitat Grant Program to the tune of \$430,168.



Promote Effective Communication, Outreach & Education

Live Tours Featured Work of Fisheries Division

In 2018 the DNR harnessed the power of social media by giving its Facebook followers several behind-the-scenes tours of various fisheries management efforts, hosted by Fisheries Division. Live or pre-recorded video tours were filmed at Harrietta and Thompson state fish hatcheries, as well as on board the Research Vessel *Channel Cat*. During the Harrietta visit the brown trout rearing process was highlighted, while at Thompson, rearing of walleye, steelhead and Chinook salmon were showcased. Meanwhile, on the R/V *Channel Cat*, viewers got to see the annual sturgeon setline survey up close with numerous adult lake sturgeon sampled while the cameras were rolling! These videos provide a great outlet to demonstrate how fisheries management works and give those who watch an opportunity to engage with questions or comments and get immediate responses.



Roadmaps for Fishing Michigan's Great Lakes

Michigan is home to more than 3,000 miles of Great Lakes shoreline, dotted with numerous port towns that offer unprecedented access to some of the best freshwater fishing in the world. But to the novice, or unfamiliar angler, all that water can be a little daunting. When should you go fishing at these ports? What species will you find there? To answer these questions, Fisheries Division developed four Great Lakes Fishing Roadmaps intended to serve as starting points for those interested in fishing lakes Erie, Huron, Michigan and Superior, and the St. Clair System. Local staff were happy to share their insider knowledge to produce these maps.

Improve & Build Strategic Resource Partnerships

The Value of Citizen Input

Fisheries Division has Citizen Fishery Advisory Committees for each Great Lake (Michigan, Superior, Huron and Erie/Lake St Clair), as well as a Northern Inland Lakes committee for the rivers and lakes of the Inland Waterway Chain, and the Warmwater and Coldwater resources steering committees. These committees are comprised of representatives from angling organizations, conservation groups and commercial interests. The committees provide input, advice and recommendations to Fisheries Division relating to fisheries management. These groups provide a great opportunity to engage a wide variety of stakeholders to share information and allow groups to share concerns related to fisheries management. This is usually one of the first places consultations take place with the public relating to potential changes in management.



Working Together to Rehabilitate Stream Habitat

Cuttle Creek is a small stream in St. Clair County that runs through the Marysville Municipal Golf Course before entering the St. Clair River. In 2009, a DNR fisheries survey found an abundant and diverse fish community in the lower portion of this creek. Unfortunately, those fish were blocked from accessing areas further upstream due to a perched culvert that stopped all fish passage. Even further upstream, Cuttle Creek had been manipulated into a pond on the golf course that essentially eliminated the normal stream processes.

These impediments reduced fish use and diversity. In 2016, a habitat project was completed to remove the perched culvert and pond area and restore about 3,000 feet of stream habitat through the golf course. This work was a collaborative effort among federal, state and municipal agencies along with engineering consultants. Post-restoration monitoring by Fisheries Division in 2018 found spawning northern pike in the restored area of the stream, as well as a diverse group of minnows and suckers that are often referred to as forage species. This habitat restoration was one of the projects that lead to the St. Clair River being delisted as an Area of Concern with fish and wildlife beneficial use impairments.

Distribution of Cisco in Southwest Michigan

Cisco (also known as lake herring) are a member of the Whitefish family and are, or have been, present in only 153 of Michigan's 11,000 inland lakes. Roughly half of those lakes are found in a band across the southern Lower Peninsula between Cass and Oakland counties. Cisco require cold, well-oxygenated water. This requirement makes them especially vulnerable to habitat loss due to nutrient enrichment and climate change. The cisco is currently listed as a threatened species in Michigan and is identified as a focal species in the state's Wildlife Action Plan. Due to their elevated conservation status, local staff have been updating information on the distribution of this species in Southwest Michigan. Since 2004, fall netting surveys have been conducted on lakes that historically supported these fish. To date, the presence of cisco has been documented in 25 of the southern Lower Peninsula lakes where the species was known to exist. Future work will continue to inventory and document other existing populations in the area.



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