



## DEC Statewide Trout Stream Management Plan

*Science-based plan with angler input will improve management of wild and stocked trout; draft regulations proposed to implement key plan provisions including year-round catch-and-release season and revising regulations to make them easier to understand*

New York State Department of Environmental Conservation (DEC) Commissioner Basil Seggos recently released the State's final [Trout Stream Management Plan](#) that will improve the management of trout streams across the state. The final plan is the product of extensive public engagement and sound science that embraces simplicity, encourages angler participation, and recognizes the value of managing trout streams for self-sustaining populations of wild trout. In addition, to support

implementation of the Trout Stream Management Plan, DEC issued proposed regulations that are available for public comment until **January 25, 2021**.

"DEC has reimagined the management of one of New York's most prized and renowned natural resources to ensure our trout streams continue to be healthy and provide excellent fishing opportunities for years to come," Commissioner Seggos said. "For the best possible management plan, DEC sought out the

input of anglers, biologists, and other fisheries experts. The result is a balanced approach to manage these varied resources in accordance with their biological and recreational potential to meet the desired outcomes of a broad and diverse trout stream angling public. DEC looks forward to implementing the new Trout Stream Management Plan to enhance wild and stocked trout management and the habitats that support them to benefit current and future anglers."

### **Trout Stream Management Plan**

*Continued on page 7*



### ***In this issue...***

ODNR to offer \$3M in grants .....	2
Cisco listed as state endangered .....	2
Proposed changes to black bass regs....	3
Drift Gillnet Bill approved .....	3
Water flea mauling the Great Lakes.....	4
Morgan Bluff WMA now open .....	4
Input on walleye regs for Minocqua Chain .....	5
Investigating natural walleye reproduction .....	5
\$1.85M for grant funding available .....	6
New Ind. public access site now open....	6
Caution with open water, new ice.....	7
Trout Stream Management Plan cont.....	7
Predator/Prey Ratio Analysis .....	8-10



Wishing you all the warm and special times the holiday season brings.

### **GLSFC Election Results**

These men will serve as officers and directors for the 2021-2022 term.

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### **Coming Milestone**

*We are looking forward to 2021 — a milestone year for the Council: 50 years of educating and serving the sportfishing-conservation community. We are truly blessed with all our friends.*

*Thanks to all the members who have continually supported us financially with their dues and donations these many years.*

## ODNR to offer \$3M in grants to improve local motorized boating access

*Competitive grant program offers 100% reimbursement to eligible political subdivisions*

**COLUMBUS, OH** – The Ohio DNR will offer \$3 million in grant funding to improve motorized boat access at public facilities across the state.

“Ohio has experienced record-breaking boat registrations and boating facility usage the past year,” said ODNR Director Mary Mertz. “The Cooperative Boating Facility grant will provide much-needed funding for our community partners to make important investments for local boating facilities.”

Managed by ODNR’s Division of Parks and Watercraft, the Cooperative Boating Facility grant is a competitive grant program offering 100% reimbursement to eligible political subdivisions, such as municipalities, townships, counties, joint recreational districts, park districts, and conservancy districts, and state and federal agencies.

Eligible projects include launch ramps, lighting, and restrooms as well as designated ramp parking areas and docks including courtesy, boarding, and transient. The grant period runs from July 1, 2021, through June 30, 2023.

The application must be submitted by April 1, 2021. The application covers all criteria related to eligible projects. Although most projects will not require a match, projects that charge a user fee will only be eligible for 75% reimbursement for launch ramp projects and only 50% reimbursement for marina projects.

Funding for all boating grants is provided by Ohio watercraft registration fees and motor vehicle tax collected by ODNR for the Ohio Waterways Safety Fund. This fund supports construction and improvements to public facilities that support increased recreational boating safety on navigable waters of the state.

For more information on the Cooperative Boating Facility grant

## Cisco fish populations listed as state endangered

Anglers should note that, starting December 17, it will be unlawful to take or possess the cisco species of fish, per IC 14-22-34-12, which protects state-endangered species.

The change is a result of action taken this fall by the Natural Resources Commission (NRC). Previously, this native fish was listed as a species of special concern.

Cisco (*Coregonus artedii*) is the only native fish from the salmon family found in Indiana waters other than Lake Michigan. It is a cold-water species that requires exceptional water quality to thrive. The glacial lakes of northern Indiana represent the southernmost extent of the species’ range in North America.

Failing Lake (Steuben County), Indiana Lake (Elkhart County), North Twin and South Twin lakes (LaGrange County), Lake Gage (Steuben County), Eve Lake (LaGrange County), and Crooked Lake (Noble/Whitley counties) are the only remaining Indiana lakes containing cisco. The listing of cisco as state endangered will prioritize and incentivize conservation actions in areas near lakes containing cisco to protect existing water quality.

“The preservation of water quality at these lakes is vital because once degraded, water quality is costly and difficult to restore,” said Matthew Linn, fisheries research biologist.

Future cisco management will focus on collaborative efforts with regional partners to preserve cold-water habitat through the application of best management practices (BMPs) that reduce the quantity of nutrients entering the remaining lakes with cisco.

For more information on cisco in Indiana, visit [wildlife.IN.gov/10438.htm](http://wildlife.IN.gov/10438.htm). ✧



program, please contact Melissa Moser at (614) 265-6518 or [melissa.moser@dnr.ohio.gov](mailto:melissa.moser@dnr.ohio.gov). ✧



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### Position Statement

Representing a major interest in the aquatic resources of the Great Lakes states and the province of Ontario, the Great Lakes Sport Fishing Council is a confederation of organizations and individuals with a concern for the present and future of sport fishing, our natural resources and the ecosystem in which we live. We encourage the wise use of our resources and a search for the truth about the issues confronting us.

## Inland Seas Angler GREAT LAKES BASIN REPORT

### Publisher

Dan Thomas, 630/941-1351

### Editor

Jeanette Thomas

### Webmaster

Chad Lapa

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## DEC proposes changes to streamline, simplify black bass fishing regulations

Proposal replaces "any size" and 10-inch minimum size limit regulations for smallmouth and largemouth bass with statewide 12-inch minimum

Public Comments accepted through [Jan. 23, 2021](#)

The New York State Department of Environmental Conservation (DEC) is proposing changes to black bass (smallmouth and largemouth bass) fishing regulations to make these regulations easier to understand while continuing to successfully manage these species for future angler enjoyment. DEC is accepting public comment on the proposed elimination of "any size" and 10-inch minimum size limit regulations for black bass from many rivers throughout the state, as well as Lake Colby in Franklin County, Moose Pond in Essex County, and Lake Champlain. The proposal replaces these unnecessary special size limits with the statewide 12-inch minimum black bass size limit.

"DEC is continuing our efforts to eliminate special fishing regulations that do not serve a species management purpose," said Commissioner Basil Seggos. "This announcement encourages increased

fishing participation by streamlining the State's black bass fishing regulations and making them easier to follow without impacting fishing opportunity."

Some rivers and streams in New York are currently managed under a 10-inch minimum size limit regulation to allow harvest of black bass populations generally believed to not grow as large as their lake and pond counterparts. However, a recent [Black Bass 10-inch Minimum Size Limit Evaluation \(PDF\)](#) study found no differences in the size structures or growth of smallmouth bass in rivers managed under this regulation and those from rivers and lakes managed under the statewide 12-inch minimum size limit. Smallmouth bass were the focus of the evaluation because they are more prevalent in rivers and streams than largemouth bass. There is no need to maintain the reduced minimum size limit in these rivers.

Lake Champlain is recognized as one of the best black bass lakes in the country and DEC found no justification to continue to regulate it with a minimum size limit less restrictive than the statewide 12-inch minimum size limit. "Any size" regulations for black bass in Lake Colby (Franklin County), Moose Pond (Essex County), Catatunk Creek (Tioga County), and Fall Creek (Tompkins County) are also considered unnecessary.

The regulatory proposal is [available on the DEC website](#) for review and public comment. Comments on the proposal should be submitted via e-mail to [dec.sm.regulations.fish@dec.ny.gov](mailto:dec.sm.regulations.fish@dec.ny.gov) or via mail to the Inland Fisheries Section, NYSDEC, 625 Broadway, Albany, NY 12233-4753; subject line "Black Bass Regulations." Comments will be accepted through **January 23, 2021**. ✧

## Drift Gillnet Bill approved with bipartisan support

**Alexandria, VA – Dec. 10, 2020** – The U.S. House of Representatives passed the bipartisan Driftnet Modernization and Bycatch Reduction Act ([S. 906](#)) to phase out large-scale driftnet fishing in federal waters off California. Authored in the Senate by Sens. Dianne Feinstein (D-Calif.) and Shelley Moore Capito (R-W.V.), and in the House by Reps. Ted Lieu (D-Calif.) and Brian Fitzpatrick (R-Pa.), the bill passed the U.S. Senate in July and now heads to President Donald Trump's desk for his signature.

The Driftnet Modernization and Bycatch Reduction Act will align commercial swordfish fishing in California with other U.S. and international swordfish fisheries by ending the use of mile-long large-mesh drift gillnets. Phasing out this indiscriminate gear and replacing it with a more sustainable fishing practice will result in increased economic benefits and less bycatch,

including marine mammals and many recreationally important fish species.

"We at the [American Sportfishing Association](#) are excited that our multi-year effort to advocate for the Driftnet Modernization and Bycatch Reduction Act is nearing a successful finish," said Danielle Cloutier, Pacific Fisheries Policy director for ASA.

"The recreational fishing and boating community has long advocated for transitioning away from large-mesh drift gillnets which needlessly kill non-target species including sportfish," said Jeff Angers, president of the [Center for Sportfishing Policy](#). "Today marks a significant victory for marine conservation."

Although California state law has established a program to help financially the state's drift gillnet permit holders make the transition to alternative gear, this federal law is needed to officially end large-scale

driftnet fishing in federal waters—where the activity occurs.

The Act also authorizes a market-based mechanism to transfer Alaska halibut quota shares from the commercial fishing sector to the charter fishing sector. This provision was added by Sen. Dan Sullivan (R-Alaska) and enjoys the broad support of Alaska's fishing community—recreational and commercial.

"Stakeholders have been anticipating congressional approval of a halibut Recreational Quota Entity since the North Pacific Council's authorization in 2016," said Ben Mohr, executive director of the [Kenai River Sportfishing Association](#). "Passage of the RQE provision supports Alaska's charter fleet and the thousands of anglers who fish Alaska's waters each year. We're excited to have this tool to support a critical sector of Alaska's economy." ✧



# This ferocious water flea is mauling the Great Lakes

Recent studies have found that populations of native plankton in some of Minnesota's lakes have fallen by as much as 60 percent since the arrival of the spiny water flea. The plankton die-off in turn has affected yellow perch, walleye, and other native game fish.

On a mild September morning on the aft deck of the research vessel *Blue Heron*, Donn Branstrator sniffed the contents of a sampling bottle that some graduate students had just hauled up from the depths of Lake Superior. "That's why fish smell the way they do," said Branstrator, an ecologist at the University of Minnesota in Duluth. The fishy odor came from planktonic crustaceans just a few millimeters long, a primary food source for all the fish in the lake.

The most important are *Daphnia*—a genus that comprises some 100 freshwater species. These tiny animals are critical to lake health: Besides providing food for fish, they graze on floating algae, beating their legs constantly to create micro currents that pull the algae toward their miniature maws. By keeping algae in check, *Daphnia* help keep the system in balance.

But *Daphnia* are declining in Lake Superior and nearly every other body of water in the Great Lakes region. Their numbers have been decimated by a fierce invasive predator, the spiny water flea.

*Bythotrephes longimanus* is a crustacean several times larger than *Daphnia*—about half an inch long, making it a titan of the plankton world. It's a visual predator, with a single black eyespot, prominent mandibles, and a barbed tail that makes up about 70 percent of its length. Native to Lake Ladoga, near the Baltic Sea in Russia, it arrived in Lake Ontario in the early 1980s after ships from European ports discharged ballast water into the St. Lawrence River. By 1987 it had reached Lake Superior. It's now established in dozens of smaller lakes across the entire region, where it feeds on

*Daphnia* and other zooplankton, ripping them apart with its mandibles.

Fish in lakes invaded by the spiny water flea grow more slowly during their first year of life, which makes them more vulnerable to predators. "The spiny water flea is really a voracious predator of plankton," said Branstrator. "So it's a direct hit on the energy and nutrition that support fish. All young fish feed on plankton."

Inside a cramped lab in the *Blue Heron's* forecabin, Megan Corum, one of Branstrator's grad students, used a microscope hooked to a widescreen monitor to show me a few of these creatures, captured in a drop of Lake Superior water. There were no spiny water fleas in view, but Corum pointed out *Daphnia*, with their bristly antennae and black compound eyes. She focused on one of them for a few moments. Through its glassy shell we could see its delicate, reddish-brown, tubular heart, gently quivering.

The plankton-shredding flea is just one of many intruders into the Great Lakes, which host more invasive species—more than 180—than any other freshwater system on the planet. Lampreys navigated from the Atlantic through newly built shipping canals, reaching Lake Ontario in the mid-1800s. These long-established predators latch onto trout with their toothy, disc-shaped mouths and drain the trout's bodily fluids. Barriers, poisons, and traps have successfully prevented lampreys from destroying the Great Lakes' multi-billion-dollar fishery.

Other invaders arrived by the same route as the spiny water flea, in the ballast tanks of oceangoing freighters. Quagga mussels, another Baltic interloper, have completely transformed the ecology of Lakes Michigan and Huron over the past 30 years. Now numbering in the hundreds of trillions in Lake Michigan alone, the mussels filter about half the lake's water every few

days, sucking up microscopic algae. Unlike *Daphnia* and other native grazers, the mussels strain nearly everything from the water column.

"Lake Michigan now almost looks like open Caribbean water," said Hugh MacIsaac, an invasive species biologist from the University of Windsor in Ontario. As recently as two decades ago, its waters were brownish and chock-full of plankton. Today the lake's limpid waters look inviting, but the clarity is a symptom of lifelessness—the plankton population crash has rippled across the food web. ✧



## Morgan Bluff WMA now open for recreation

Earlier this year, the Indiana Department of Transportation transferred a 455-acre property to the Division of Fish & Wildlife. This new addition to Indiana public lands is known as Morgan Bluff Wildlife Management Area. Located in southwestern Greene County, the unique property borders the West Fork White River with bottomland hardwoods, wooded wetlands, and an oxbow lake. The area is now open for public use; all standard regulations for Fish & Wildlife properties apply. Access to the area crosses private land; be sure to drive only on the gravel access lane and park in the designated parking lot. Morgan Bluff Wildlife Management Area is managed by Goose Pond Fish & Wildlife Area (FWA). A property map can be found here. ✧

## DNR receives public input on walleye regulations for Minocqua Chain

*Proposal would extend walleye catch-and-release season to 2022*

MADISON, Wis. – The Wisconsin Department of Natural Resources (DNR) is seeking public input on a proposal to extend the walleye catch-and-release regulations on the Minocqua Chain of Lakes in Oneida County.

Each spring, the DNR conducts critical population estimates to determine if population goals have met their target as defined by a collaborative management plan



*A DNR walleye monitoring crew member measures a walleye before releasing it.*

developed by the DNR and a local stakeholder group. Last April, the DNR extended the walleye catch-and-release only season on the Minocqua Chain to reestablish its natural walleye populations. Due to COVID-19 safety precautions, the DNR did not conduct walleye population estimates on Lake Tomahawk, the chain's largest lake.

"The DNR did not conduct crucial walleye population estimates on Lake Tomahawk last spring, which would have provided data on whether the walleye fishery is responding to the management plan," said Mike Vogelsang, DNR North District Fisheries Supervisor. "While local fishing reports have been good, we simply don't have the data to accurately assess if we've hit the two adult walleye per acre mark in Lake Tomahawk."

As a result, the Minocqua Chain stakeholder group is seeking public input on a proposal to implement another year of catch-and-release regulations for anglers and tribal members. The stakeholder group includes representatives from the DNR's fisheries and law enforcement staff, Walleyes For Tomorrow, Great Lakes Indian Fish and Wildlife Commission, Lac du Flambeau tribal representatives,

Minocqua/Kawaguesaga/Lake Tomahawk Lake Association and Wisconsin Valley Improvement Company. The DNR completed a public survey – [2020 Minocqua Chain Walleye Fishery Stakeholder Survey](#) – late last month.

Depending on the survey results and approval from the Wisconsin Natural Resources Board, this proposal would extend the walleye catch-and-release season on the Minocqua Chain to May 7, 2022, allowing the DNR to conduct its planned survey to estimate the walleye population in the spring of 2021.

"The stakeholder group has been closely following the progress of the chain's walleye fishery in response to annually stocking extended growth walleye and having a no-harvest regulation in place," Vogelsang said. "The stakeholder group is actively seeking public input to determine the best way forward."

Find more information on the proposed plan and the most recent [population survey results](#) on the DNR's [Minocqua Chain of Lakes fisheries webpage](#) ✧



## Investigating natural walleye reproduction

Walleye are among the top 10 most sought-after sportfish in Indiana. These fish also have specialized spawning habitat requirements: they prefer to deposit eggs on clean, coarse surfaces such as large rocks and gravel in areas with current or wave action that provides an abundant supply of oxygen. These specialized habitat conditions are relatively rare in Indiana's inland lakes, creating an annual stocking need met by DNR. Investigating natural recruitment in these lakes can be difficult. Differentiating naturally spawned walleye from stocked fish requires intensive work to chemically mark and recapture large numbers of young-of-year fish.

The pandemic canceled this year's walleye egg collection efforts at Brookville Lake. Those efforts supply fry and fingerlings for the state hatchery system. While this interruption prevented many normal walleye stockings from occurring in 2020, the lack of stocking provided a rare opportunity to investigate natural recruitment more easily than in past years. Several central Indiana lakes, including Prairie Creek Reservoir, Summit Lake, Brookville Lake, and Cagles Mill Lake are being surveyed for evidence of natural walleye reproduction. Understanding levels of natural reproduction can help biologists prioritize habitat enhancement efforts, set proper stocking rates, and better understand walleye population dynamics in these lakes. A public report detailing project findings will be produced in 2021.

Find information on walleye fishing and regulations on [our website](#) or in the [Indiana Fishing Guide](#). Questions about walleye fishing near you? Contact your [district fisheries biologist](#). ✧

## \$1.85 million in grant funding available for fisheries habitat conservation, dam removal, etc.

The Michigan Department of Natural Resources Fisheries Habitat Grant program is offering an expected \$1.85 million in funding for a variety of activities, including fish habitat conservation, dam removal and repair, resource assessment studies, and providing access to recreation.

Distributed through three themes — aquatic habitat conservation, dam management, and aquatic habitat and recreation in the Au Sable, Manistee and Muskegon river watersheds — funding is available through an open, competitive process to local, state, federal and tribal governments and nonprofit groups for single- and multiple-year projects.

“Protection and rehabilitation of fish and other aquatic animals’ habitats are common to all three Fisheries Habitat Grant themes, because habitat degradation threatens Michigan’s fish and aquatic resources,” said Joe Nohner, a resource analyst with the DNR Fisheries Division. “The DNR prioritizes habitat conservation that targets the causes of habitat decline, such as barriers to connectivity, altered water levels or flow, and degraded water quality and riparian land—those transitional areas between land and water, like riverbanks.”

Proposed projects addressing the causes of habitat decline might include efforts to:

- Improve the management of riparian land.
- Restore natural lake levels.
- Improve or create passage for aquatic organisms by removing culverts, dams and other barriers.
- Improve water quality.
- Implement watershed-based approaches to improving both the quality and quantity of water.
- Develop projects that demonstrate habitat conservation.
- Restore stream function.
- Add structural habitats, like woody habitat or aquatic vegetation.

- Conduct assessments that will guide conservation projects.
- Complete other projects that meet program goals.

### Grant and application guidelines

➤ Grant applicants may apply for and receive funding from all three themes with one application, if eligible for each. Funding is derived from:

- An expected \$1,250,000 from the Game and Fish Protection Fund, supporting the aquatic habitat conservation theme.
- An expected \$350,000 from the state’s General Fund, supporting the dam management theme.
- \$251,083 from a hydropower license and settlement agreement between Consumers Energy and several entities including the DNR, supporting aquatic habitat and recreation in the Au Sable, Manistee and Muskegon river watersheds

➤ Grant amounts will start at a minimum of \$25,000 and have the potential to be as large as the total amount of funding available in all theme areas for which a project is eligible. If necessary, smaller projects within the same region addressing similar issues and system processes can be bundled into a single grant proposal package to reach the minimum grant amount.

➤ The DNR identifies specific priority projects, through its fisheries priority habitat projects list, which will receive preference during proposal review. Applications for projects on this list still will need to be competitive in other aspects, such as cost, appropriate methods and design, and applicant expertise, so the grants are not expected to exclusively fund projects on this list. In the previous grant cycle, about half of all funded projects were fisheries habitat priority projects.

➤ All applicants must complete and submit a short pre-proposal for DNR review. Pre-proposals must be submitted by email to Chip Kosloski at [KosloskiC3@Michigan.gov](mailto:KosloskiC3@Michigan.gov) no later

than January 8, 2021. Applicants will be notified of the outcome of their pre-proposal by February 5, 2021, and will be invited to submit a full application if successful. An invitation to submit a full application does not guarantee project funding. Final funding announcements are expected to be made by May 31, 2021. ✧

## New Ind. public access site near Madison now open

Hoosiers can now enjoy access to the Ohio River via the Brooksbury Public Access Site near Madison.

The site, at 531 South Brooksbury Main Street, is the Indiana DNR Division of Fish & Wildlife’s 439th public access site.

The new access site was made possible by a \$1.2 million investment of DNR funding and through a strong partnership with Jefferson County Parks, who approached Fish & Wildlife about the site in 2016. Land was donated by Jefferson County and Bill Knoblock.

An official dedication ceremony is being planned for spring.

All Fish & Wildlife public access sites are open 24 hours a day, seven days a week, at no cost to visitors.

Funding for the Public Access Program, which acquires and develops public access sites across the state, is provided by the Wildlife & Sport Fish Restoration Program (WSFR). WSFR funds are collected through excise taxes by manufacturers and importers of hunting, fishing, and shooting equipment and some boats, as well as fuel taxes. Match is provided by the State of Indiana through fishing license sales.

The Where to Fish interactive map includes information on public access sites, fish consumption advisories, and low-head dam locations in rivers and streams: [on.IN.gov/where2fish](http://on.IN.gov/where2fish). ✧

## Take caution around open water, newly formed ice

With the continued surge in the number of people recreating outdoors this year, the Minnesota Department of Natural Resources reminds everyone that lakes and ponds across the state have started to freeze, and where there isn't ice, the water is dangerously cold.

Ice thickness is highly variable at this time of year and subject to Mother Nature's whims. Even where there isn't ice, the water is so cold that an unexpected fall in can be deadly. It is vital to talk with children, who are naturally curious about the water, about staying safe.

"The first ice-fishing trip of the season is exciting, but there's no fish that is worth falling through the ice," said Rodmen Smith, director of the DNR Enforcement Division. "Vigilance around the water at this time of year isn't just a good idea – it's an absolute necessity."

Anglers and others who recreate on the ice should stay on shore until there's at least 4 inches of new, clear ice. Anytime people are on the ice,

they should check its thickness every 150 feet. Smith urges people to check ice thickness for themselves rather than deciding to walk on the ice based on what they've heard or read.

Each year, unexpected falls into cold water lead to serious injury and death. Wearing a life jacket is the best way to avert tragedy, since the initial shock of falling into cold water can incapacitate even strong swimmers. Carrying a good set of ice picks can help a person get out if they fall through the ice, and a cell phone, whistle or other communications device makes it more likely they will be able to call for help.

### General ice safety guidelines

No ice can ever be considered "safe ice," but following these guidelines can help minimize the risk:

- Always wear a life jacket or float coat on the ice (except when in a vehicle).
- Carry ice picks, rope, an ice chisel and tape measure.

The plan also takes into consideration the hundreds of thousands of New York anglers who enjoy the State's ongoing stocking efforts and balances protecting natural populations while supporting a robust hatchery network and partnerships that expand recreational opportunities and meet anglers' diverse needs. The plan extends the duration of stocking on select stream reaches, increases the size of stocked fish, and ensures that each stocking contains some fish that are 12 inches or larger. It also seeks to improve the vigor of hatchery brown trout for increased survival.

Anglers would also be provided with the ability to fish year-round through the creation of a statewide catch-and-release season. DEC has preliminarily concluded that fishing during the spawning season will not result in negative fishery impacts, and DEC will evaluate the potential impact of the catch-and-release season with a study on select streams.

- Check ice thickness at regular intervals; conditions can change quickly.
- Bring a cell phone or personal locator beacon.
- Don't go out alone; let someone know about trip plans and expected return time.
- Before heading out, inquire about conditions and known hazards with local experts.

The minimum ice thickness

[guidelines](#) for new, clear ice are:

- 4 inches for ice fishing or other activities on foot.
- 5-7 inches for a snowmobile or all-terrain vehicle.
- 8-12 inches for a car or small pickup.
- 12-15 inches for a medium truck.
- Double these minimums for white or snow-covered ice.

For more information, visit the [ice safety page](#) and the [cold water danger page](#) ✧

### Trout Stream Management Plan

*Continued from page 1*

Significant aspects of the plan are the result of more than 20 public meetings held with anglers in 2017 to identify desired outcomes for the state's numerous and diverse trout streams. The plan covers a broad spectrum of management areas and angler interests associated with trout stream management in New York. To view the plan and the categorization of managed trout stream reaches visit: <https://www.dec.ny.gov/outdoor/111015.html>.

The management plan draws a distinct line between stocked and wild trout management and prioritizes habitat management as the primary tool to improve and restore wild populations of trout. It also creates the foundation to learn and build upon for continuous improvement of the State's trout stream fisheries resources, solidifying DEC's commitment to protecting and promoting the health of wild trout fisheries.

**Joe Fisher, Chairman of the New York State Conservation Council (NYSCCC)**, said, "The NYSCC and the NYSCC fish committee applaud DEC's Trout Stream Management Plan and the regulations proposal. It is an excellent plan and will make New York State one of the leaders in trout management in North America for years to come!"

DEC seeks continued angler engagement to support efforts moving forward, including developing a new angler-friendly interactive map for information on stream reach management and fishing access locations. DEC will also expand public outreach about the significance of wild trout populations and the water they inhabit.

The proposed regulations are published in the State Register and [are available at DEC's website](#). DEC is accepting public comments on the proposed rule changes to **January 25, 2021**, by emailing: [regulations.fish@dec.ny.gov](mailto:regulations.fish@dec.ny.gov). ✧



# Summary of Predator/Prey Ratio Analysis for Chinook Salmon/Alewife in Lake Michigan

## Introduction:

Maintaining balance between predator and prey populations is critical for successful fisheries management. In Lake Michigan, several top predators contribute to important fisheries including native lake trout along with non-native Chinook salmon, coho salmon, rainbow trout and brown trout. These predators are sustained through stocking and wild production, and stocking level adjustments to balance overall predator populations with available forage is a major component of ongoing fisheries management efforts. The Predator/Prey Ratio Analysis for Chinook salmon and alewife in Lake Michigan is a recently developed approach to help guide fisheries management decisions for stocking.

Lake Michigan historically has experienced wide fluctuations in populations of fish predators and prey, due largely to fishing exploitation, changes in habitat quality, and invasive species. Notably, lake trout populations collapsed during the 1950s partly from overfishing and predation by invasive sea lamprey, and subsequently (without a top predator) invasive alewife populations greatly expanded. Sea lamprey control efforts were implemented in the late 1960s and, combined with abundant alewife forage, created opportunity to successfully stock top predators. Fisheries managers began stocking lake trout along with Chinook salmon, coho salmon, rainbow trout and brown trout to utilize available forage and create diverse fishing opportunities. These stocking efforts continue today, and several past stocking level adjustments have been implemented to help sustain a balanced and diverse fishery.

Chinook salmon and alewife are important components of Lake Michigan's recent ecosystem and fishery, but not without challenges. In Lake Michigan, Chinook salmon are a dominant and generally midwater predator whose diet consists mostly of alewives, a generally mid-water prey fish. Chinook salmon and alewives together support an important recreational fishery, and Chinooks are a preferred and targeted species for many recreational and charter anglers. During the late 1980s to early 1990s, this Chinook salmon population and fishery declined (despite high stocking levels) due to mortality from bacterial kidney disease and associated nutritional stress from relatively low alewife abundance. More recently, predator/prey and energy dynamics in Lake Michigan have changed due to bottom-up ecosystem effects (by invasive mussels) and topdown predation effects (by stocked and wild predators). Invasive filter feeding mussels are effective consumers of microscopic plants and animals, which is the same food that alewife and other forage fish eat. Naturally produced Chinook salmon are common, and in combination with stocked Chinooks (plus other trout and salmon species) these predators exert high predation pressure on alewife and other prey.

A "Red Flags Analysis" and the recently developed and implemented "Predator/Prey Ratio Analysis" were both designed to evaluate predator/prey balance and to provide guidance for stocking decisions. The Red Flags Analysis used from 2004-2011 looked at 15-20 individually plotted datasets and evaluated deviations from historic trends to trigger discussions about stocking level adjustments. A critical review of the Red Flags Analysis was completed during 2012 and subsequently a new approach called the Predator/Prey Ratio (PPR) Analysis was developed. These previously mentioned references provided detailed accounts of the Red Flags Analysis and development of the PPR Analysis (e.g., methods, pros, cons, etc.) but the intent of this document herein is to only summarize the PPR Analysis and provide results through 2019.

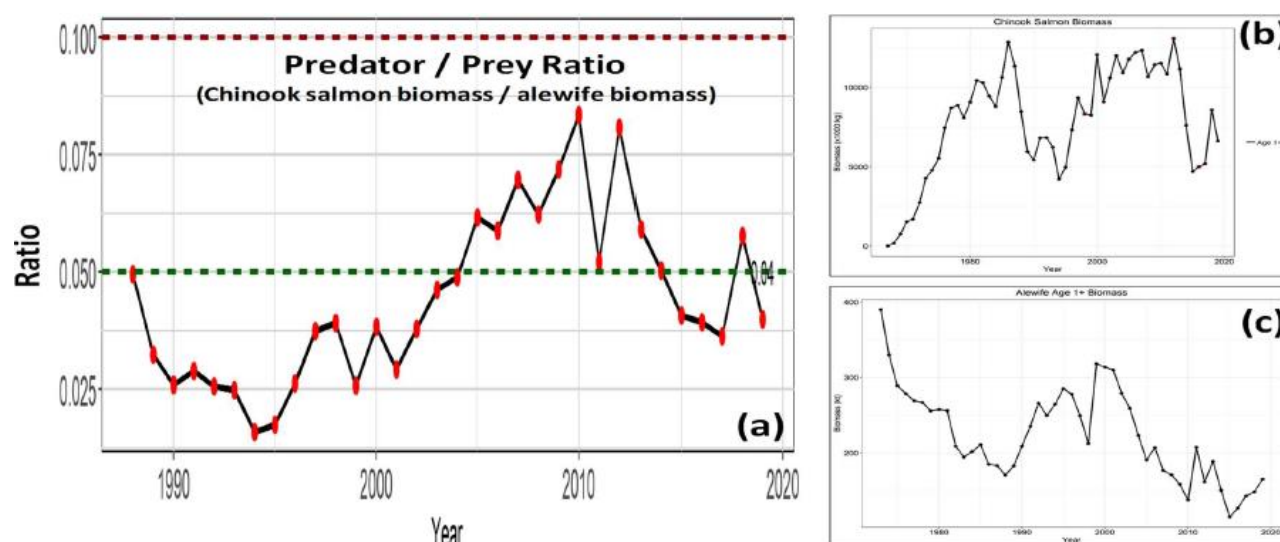
## Predator/Prey Ratio:

The Predator/Prey Ratio Analysis consists of a Predator/Prey Ratio (PPR) for Chinook salmon/alewife and six auxiliary indicators. The PPR is a ratio of total lake-wide biomass (i.e., weight) of Chinook salmon ( $\geq$  age 1) divided by the total lake-wide biomass of alewives ( $\geq$  age 1; **Fig 1a**). A high PPR value indicates too many predators with insufficient prey and a low value suggests too few predators with surplus prey. The PPR is a fairly simple descriptor of balance between Chinook salmon and alewives, however the underlying methods are comprehensive and use statistical catch-at-age analysis that incorporate lake-wide datasets from several surveys and agencies (**Table 1**). Generally, SCAA models estimate fish abundance based on numbers of fish harvested, age of fish harvested, recruitment information (i.e., numbers of fish produced naturally and numbers stocked), and other factors. This modelling process can be explained simply as a mathematical approach to provide the most likely answer to the question of how many fish must have been present to produce the observed data. For the PPR, numbers of Chinook salmon lake-wide are estimated for each age class using a SCAA model, and these abundance estimates are then multiplied by age-specific average weights and summed to calculate total lake-wide biomass (**Fig 1b**).

For example: (abundance of age 1 Chinook  $\times$  avg. weight of age 1 Chinook) + (abundance of age 2 Chinook  $\times$  avg. weight of age 2 Chinook) + (etc. for each age class) = total lake-wide Chinook biomass.

A similar process is used to estimate alewife biomass (**Fig 1c**). The alewife SCAA also incorporates consumption of alewives by several predator species including lake trout, rainbow trout, brown trout and coho salmon, in addition to Chinook salmon.





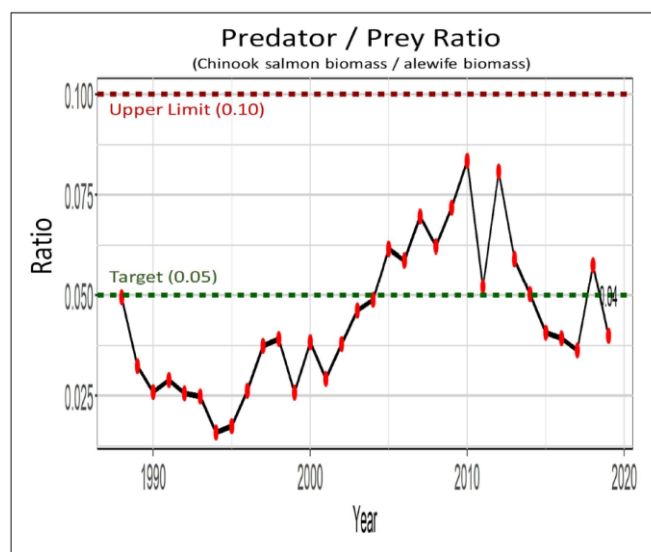
**Figure 1.** Predator/Prey Ratio calculated for Chinook salmon and alewife in Lake Michigan (a) and separate components of this ratio plotted individually as Chinook salmon biomass (b) and alewife biomass (c). (Note: figures b and c have different scales for the y-axis.)

<p><b>*Lake-wide datasets used for Chinook salmon SCAA:</b></p> <ul style="list-style-type: none"> <li>• Number of Chinooks stocked</li> <li>• Percent wild for age-1 Chinooks (mass marking)</li> <li>• Number of Chinooks harvested (charter &amp; creel)</li> <li>• Targeted salmonine boat fishing effort (charter &amp; creel)</li> <li>• Age &amp; maturity of Chinooks harvested (creel &amp; mass marking)</li> <li>• Average weight of Chinooks harvested (creel &amp; mass marking)</li> </ul>	<p><b>*Lake-wide datasets used for alewife SCAA:</b></p> <ul style="list-style-type: none"> <li>• Alewife abundance (trawl &amp; hydro-acoustic)</li> <li>• Alewife proportion by age (trawl)</li> <li>• Numbers of salmon and trout stocked</li> </ul> <p>(*Contributing agencies for Chinook &amp; alewife SCAA data include: Illinois Dept. of Natural Resources (DNR), Indiana DNR, Michigan DNR, U.S. Fish &amp; Wildlife Service, U.S. Geological Survey, &amp; Wisconsin DNR.)</p>
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**Table 1.** Lake-wide datasets used for Chinook salmon and alewife statistical catch-at-age analyses for the PPR.

### Reference Points:

Specific values or reference points have been established to help interpret the PPR. An established target of 0.05 represents a balanced Chinook salmon/alewife ratio, while an established upper limit of 0.10 is a high and unbalanced ratio (**Fig 2**). Several criteria were used to develop these reference points, including examples from other lakes, literature reviews, and risk assessments. For example, the Chinook salmon population in Lake Ontario was relatively stable from 1989-2005 and during this period the average ratio (for Chinook salmon and alewife) was estimated to be 0.065. In Lake Huron, the alewife population collapsed in 2003 following a five year period during which Lake Huron's estimated PPR averaged 0.11 and subsequently the Chinook salmon population collapsed in 2006. From published scientific literature, it is generally accepted there is a 10% efficiency in converting food to body tissue, so it would take 10 pounds of alewife to produce 1 pound of Chinook salmon (i.e., 1 pound Chinook ÷ 10 pounds alewife = 10% or 0.10). Risk levels (i.e., potential to collapse the alewife population) acceptable to fishery managers and stakeholders were also considered from previous public meetings. Although the alewife SCAA incorporates consumption of alewives by several salmonid species, the current predator model includes only Chinook salmon, so another important consideration especially as the PPR increases is that less alewife are available as forage for other predator species.



**Figure 2.** Predator/Prey Ratio calculated for Chinook salmon and alewife (through 2019) with upper limit (0.10) and target (0.05) reference points.

### Auxiliary Indicators:

Six additional datasets or “auxiliary indicators” were established to compliment the PPR and provide additional feedback on predator/prey balance (Figure 3). These auxiliary

indicators are plotted as individual datasets through time (without targets or upper limits) to evaluate trends and recent conditions. Auxiliary indicators are calculated with lake-wide datasets from several agencies and include:

- 1) standard weight of 35 inch Chinook salmon from angler caught fish during July 1 to Aug 15 (Figure 3a),
- 2) average weight of age 3 female Chinook salmon from fall

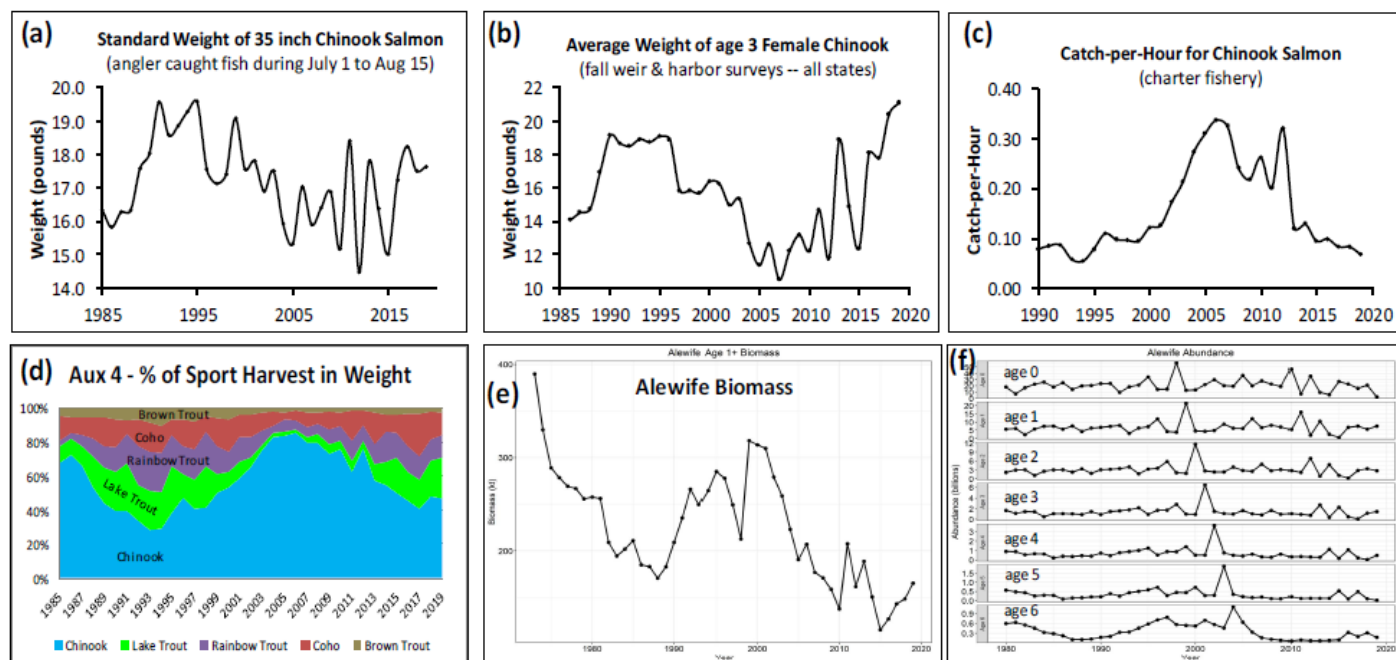
weir and harbor surveys (Figure 3b),

- 3) catch-per-hour for Chinook salmon from charter boats (Figure 3c),

- 4) percent composition of angler harvested weight by species (Figure 3d),

- 5) lake-wide biomass of alewife (3e), and

- 6) age structure of the alewife population (Figure 3f).



**Figure 3. Auxiliary indicators calculated with lake-wide datasets to compliment the Predator/Prey Ratio and provide additional information to guide fisheries management decisions.**

#### Conclusions:

Overall, the PPR Analysis is a relatively new and focused approach to evaluate balance between a top predator (Chinook salmon) and its primary prey (alewife) that will provide guidance for future stocking decisions and should

help achieve overall management goals of a balanced and diverse fishery within Lake Michigan's complex and dynamic ecosystem. ✧

End

#### Other Breaking News Items:

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##### [Invasive spiny water flea disrupting food chain in the Great Lakes](#)

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##### [Army Corps warns of more dangers on Great Lakes](#)

The U.S. Army Corps of Engineers is urging caution around Great Lake piers, breakwaters, and jetties, especially during times of high wind and waves.

End



As we reflect on 2020, our soldiers on active duty around the world, our first responders nationwide, our country and leaders, our own safety, our health, family and all we have to be grateful for...our best wishes for a very Merry Christmas and blessed and wonderful New Year in 2021.

*"...behold, I bring you good tidings of great joy, which shall be unto all people. For unto you is born this day, in the city of David, a Saviour..." Luke 2:10-11*

*Merry Christmas*  
and  
*best wishes for a healthy and  
Happy New Year*