Inland Seas Angler

GREAT LAKES BASIN REPORT©

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Ohio urges Congress to renew Great Lakes funding before deadline

Ohio officials are pressing Congress to reauthorize the Great Lakes Restoration Initiative (GLRI) before it expires in September 2026, warning that a lapse could undermine decades of environmental and economic progress in the region.

Launched in 2010, the GLRI is a $475 million-a-year federal program administered by the USEPA, supporting multi-agency efforts to restore habitats, improve water quality, and combat invasive species. It has funded projects such as:

- Rebuilding Maumee River islands to filter phosphorus and block invasive carp
- Restoring wetlands and reopening polluted areas for fishing and swimming
- Improving harmful algal bloom forecasting to help managers respond earlier

Ohio's Key Arguments

At a Senate Environment and Public Works Committee hearing, Ohio DNR Director Mary Mertz emphasized that the Great Lakes hold 20% of the Earth's surface fresh water and supply drinking water to 40 million people. She highlighted:

- **Economic value**: Lake Erie alone is worth tens of billions annually
- **Environmental protection**: Habitat restoration, invasive species control, and water quality improvements
- **Public health**: Safeguarding drinking water sources

Risks of a Funding Lapse

Without renewal, experts warn that:

- Invasive species threats (zebra & quagga mussels) could worsen, harming native fish
- Degraded habitats and water quality issues could escalate
- Economic losses tied to tourism, fisheries, and recreation could grow

Lawmakers have pledged to fight for reauthorization before the September deadline. Conservation leaders stress that consistent funding is critical for long-term management, as even small budget cuts can limit early detection and large-scale control efforts.

Bottom line: Ohio is urging Congress to act swiftly to protect drinking water, restore ecosystems, and sustain the trillions in economic activity tied to the Great Lakes before the September 2026 funding expiration. ✧

In this issue…

Environment Canada announces end of Weatherradio Canada

Environment Canada's VHF radio forecast Weatherradio Canada and its weather telephone service Hello Weather are no longer in service, as of March 16, 2026. Launched in 1976, Weatherradio Canada broadcast local and regional forecasts across the nationwide network of 185 VHF radio transmitters, and was upgraded in 2004 with integrated SAME technology to transmit digitally-encoded signals forecasting impending weather emergencies. Hello Weather was launched in 2021, delivering automated weather information through national toll-free lines.

The end of Weatherradio Canada will not impact marine weather broadcasts provided by the Canadian Coast Guard; however, Canadians who currently use emergency weather radios to get alerts about potential severe weather will have to find an alternative notification source. While many of the services and information provided by the VHF radio forecasts can be found online, the end of Weatherradio Canada will impact those who have relied on the system when they are out of cell service. ✧

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The Grand Inquisitor will tolerate no criticism!

"When they took our Fourth Amendment, I was quiet, because I didn't deal drugs. When they took our Fifth Amendment, I was quiet, because I was innocent. When they took our Second Amendment, I was quiet, because I didn't own a gun. Now, they've taken our First Amendment, and I can say nothing....." ✧

Trout, Lower Peninsula walleye and pike seasons now open

New, interactive map makes inland trout regulations easier to navigate this season

Break out that rod and tacklebox: Michigan's trout and Lower Peninsula

inland walleye and northern pike seasons opened April 25. Find your fishing spot and invite an old fishing buddy – or a new one – to enjoy some spring fishing!

With the DNR's new, interactive Inland Trout and Salmon Regulations map, it's easier than ever to check the regulations for the areas you plan to fish. Find the map online at Michigan.gov/FishingMaps or in the Michigan DNR Hunt Fish app, so you always have it on hand.

Anglers should be aware that in Upper Peninsula waters, the walleye and northern pike possession seasons open May 15, which falls on a Friday this year. Michigan's muskie possession season on all Great Lakes, inland waters, the St. Marys River, Lake St. Clair, and the St. Clair and Detroit rivers opens Saturday, June 6 (catch-and-immediate-release fishing for muskellunge is open all year).

The catch-and-immediate-release season for largemouth and smallmouth bass is open all year on nearly all waters (unless otherwise closed to fishing—check the current Michigan Fishing Regulations for specifics). The possession season for bass opens statewide Saturday, May 23, except for on Lake St. Clair, the St. Clair River and the Detroit River, which open Saturday, June 20.

Know before you go

Many areas of Michigan are experiencing high water levels and flooding due to spring rain and snowmelt. Exercise caution when navigating, wading in or walking near swollen streams and avoid fishing in floodwaters, as there may be new hazards in the waterway. For the latest information about DNR facility closures, including boating access sites, visit Michigan.gov/DNRClosures and search "recent flooding."

Protect our waters

Michigan's trout streams are under increasing threat from harmful species that affect habitat and food sources for trout and other fish. Both didymo (rock snot) and New Zealand mudsnail can unintentionally be moved to new locations on waders, nets and gear. To protect our waters, be prepared and take the time to decontaminate before moving to a new river or stream. Learn more about actions anglers and boaters can take to prevent the spread of invasive species.

The 2026 Michigan Fishing Regulations and Inland Trout & Salmon Maps are available online at Michigan.gov/Fishing, along with a lot of other helpful fishing information. Buy your license online or download the Michigan DNR Hunt Fish app to purchase your licenses, report harvests, access regulations and get the latest hunting and fishing updates. ✧

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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.

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Walleye tag reward study continues in the Bay of Green Bay

Green Bay, WI – The Wisconsin DNR, together with Walleyes for Tomorrow, has announced the continuation of the walleye reward tag study in the Bay of Green Bay and its major tributaries.

The Bay of Green Bay and its tributaries support a world-class walleye fishery that has grown in popularity in recent years. To better understand the walleye fishery and gain estimates of walleye exploitation rates (i.e., the percentage of the walleye population that anglers harvest in a year), the DNR launched a reward tag study in spring of 2024.

The DNR will continue the study by tagging up to 5,000 walleyes with yellow floy tags and 400 red reward tags throughout five major spawning areas around Green Bay (Sturgeon Bay and the Fox, Menominee, Oconto and Peshtigo rivers) this spring. Any reports of capturing or harvesting tagged walleyes will help guide walleye management throughout Green Bay and its tributaries.

What Happens When I Catch A Tagged Walleye?
Anglers are encouraged to report all walleyes that are caught with any color floy tag to the DNR via email to DNRFHGBFish@wisconsin.gov or 920-662-5411. We ask anglers to report the following information regarding their tagged fish: tag number, tag color, species, length, location caught, date caught and if the fish was harvested or released.

Reward tags will be red and say, "REWARD: $100." All red reward tags will have a date printed directly on the tag with a reward valid date. While the tagged walleye does not need to be harvested to receive the $100 reward, an angler must provide proper verification that they caught a walleye with a reward tag to receive the $100. Verification must be one of the following:
►Presenting the physical tag to the DNR if the walleye is harvested, or
►A close-up picture of the tag, including the three-digit tag number and a picture of the angler holding the walleye with the reward tag attached to the walleye if the walleye is released.

Anglers that report a yellow or green floy tag will receive the history of DNR encounters with that walleye, including the date, location, size, sex and possibly age at time of tagging. Picture verification or mailing in the physical tag is not needed when reporting walleyes with yellow or green floy tags.

Any tagged fish can be harvested if it is legal to do so or released. All fishing regulations apply. Tags should be left intact on all walleyes that are released, and anglers are encouraged to follow responsible catch and release practices. ✧

Minnesota DNR finalizes long range muskie plan

The Minnesota Department of Natural Resources has finalized its multi-year effort to update the state's long-range plan for muskellunge. The plan is available on the DNR muskie webpage (mndnr.gov/muskie) and will be used to guide muskie management in Minnesota through 2040.

The plan uses information from recently completed studies focused on muskie survival and ecology, along with community interactions and extensive stakeholder input. Updates to the plan include revised management goals, objectives and strategies centered on:

- Improving existing muskie populations
- Shifting approaches in the production of muskies to be stocked
- Continuing hybrid (tiger) muskellunge management in the metro area
- Broadening research and education efforts

"This plan marks a shift in our focus and a significant pivot in our approaches," said Leslie George, northeast region fisheries manager. "We know there will be successes and challenges as we begin to put the plan into practice, but starting with a shared vision will position us well as we move forward."

Among the most significant changes to muskie management is the increased use of yearling muskie stocking, or young muskies raised into a second year and stocked in the fall, which have much higher survival rates after being stocked. The plan also calls for increased focus on the muskie fisheries in Mille Lacs Lake, Lake Vermilion and Lake Minnetonka, an approach that received strong support during the public input process.

Muskies are a large, popular predator fish native to Minnesota. The Minnesota DNR manages muskies by protecting critical habitat on native muskie waters, stocking them into select other waters, setting harvest and season regulations, population monitoring and research, and outreach and education about muskies.

Minnesota has 101 waters managed for muskies, comprising 2% of the state's fishable lakes and rivers and 22% of the total surface area that is fishable. Muskies have been introduced in 48 lakes and are maintained in these lakes through stocking.

More information about muskie and the long-range muskie plan is available on the DNR muskie webpage (mndnr.gov/muskie). ✧

RV Lake Char beginning Spring Surveys on Lake Superior

Covering a surface area of roughly 31,700 square miles, holding 10% of the Earth's surface fresh water and housing more than 177 species of fish, Lake Superior is a fascinating site for exploration, research and discovery.

This spring, the Michigan Department of Natural Resources research vessel *Lake Char* will launch from

Marquette to conduct essential lake trout research in Lake Superior.

The spring surveys will collect data on adult lake trout populations across the nearshore areas of Michigan, including the west side of the Keweenaw Peninsula near Ontonagon, Isle Royale, outer Keweenaw Bay from Bete Grise to the Huron Islands, Big Bay, Marquette, Au Train, Munising and Grand Marais. Anglers and boaters in those areas in late April through May are advised stay at least 500 feet from survey nets marked with black and orange flagged buoys and to avoid traveling between buoys.

These surveys occur during a narrow seasonal window when lake trout can be most accurately assessed, forming the foundation for long-term management of the species across Michigan waters. From its home port in Marquette, the RV *Lake Char* monitors Michigan's portion of Lake Superior—which is 50% of the largest freshwater lake on Earth. This work directly informs fisheries management decisions, supports co-management with tribal governments and underpins the long-term sustainability of one of the region's most important natural resources. Exploration like this on Superior, or any of the other Great Lakes, would not be possible without research vessels. ✧

2026 Statewide Spring Hearing results now available

MADISON, Wis. – The Wisconsin DNR and the Wisconsin Conservation Congress (WCC) announced the 2026 Spring Hearing questions and results are now available. More than 6,800 people responded to the 2026 Spring Hearing questionnaire either in person April 13 or online April 13-15. The results and questions are now available on the DNR's Spring Hearing and Public Input Opportunity webpage.

"The Conservation Congress is proud to offer this opportunity for the public to share their ideas on how to responsibly manage Wisconsin's natural resources for present and future generations," said Rob Bohmann, WCC chair. "This year, we saw a variety of ideas presented as citizen resolutions from members of the public as well as considerable participation and feedback on the advisory questions presented both in-person and online."

"It is wonderful to see the public invested in this important process and it tells us how much they value resource management in Wisconsin," added Bohmann. The annual Spring Hearing is an opportunity for the public to provide input on a wide array of natural resources-related advisory questions presented by the DNR and the WCC. It also gives Wisconsinites the opportunity to provide input on resolutions that members of the public submitted.

Public input received through this process is advisory to Natural Resources Board members, DNR staff and anyone working on these issues. Results from the public input will be considered by the Conservation Congress at their annual convention in May and will be forwarded to the DNR and Natural Resources Board in June. ✧

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Thou shalt not steal, for the government hates competition.

Trout Stockings taking place across Indiana

The Indiana DNR stocked nearly 52,000 trout this spring in anticipation of this year's trout fishing season. Trout will be stocked in 37 bodies of water across 22 Indiana counties.

Indiana DNR stocked streams with 20,850 rainbow trout in the weeks leading up to April 25, which was opening day of trout season for inland streams.

In addition to the rainbow trout stockings, several bodies of water in the north and one southern stream are getting additional brown trout stockings. More than 11,000 brown trout should be stocked in early May. The stocked trout are from Curtis Creek Trout Rearing Station near Howe in LaGrange County and average roughly 11 inches in length.

Anglers can fish for trout in lakes year-round, so there's no need to wait; all lake stockings were completed in February and March.

Trout will bite on a variety of artificial baits such as spinners and flies, but natural baits such as worms and bee moths tend to have the most success. The bag limit for trout in inland waters, which are bodies of water other than Lake Michigan and its tributaries, is five per day with a minimum size of 7 inches. No more than one of an angler's catch can be a brown trout. Additionally, any harvested brown trout caught below the Brookville tailwater, Oliver, Olin, or Martin lakes must be 18 inches or larger to be kept.

To fish for trout, anglers age 18 and older need an Indiana fishing license and a trout/salmon stamp. Both can be bought at GoOutdoorsIN.com. To find a stocked stream near you, see the 2026 trout stocking plan at on.IN.gov/fish-stocking. ✧

Lake Michigan Report

Lake Michigan Salmon Stocking Strategies

Lake Michigan is a dynamic ecosystem that is changing rapidly due to the introduction of exotic species. Quagga and zebra mussels have shifted most of the productivity to the bottom of the lake leaving few nutrients for the production of plankton and zooplankton. This shift in productivity has contributed to reduced and sporadic prey fish production, which then results in variable growth and survival of salmon and trout. The most sensitive species in this prey and predator relationship are the alewife and Chinook salmon.

✦Salmon stocking by state

Year	Illinois	Indiana	Wisconsin	Michigan
2025	213,869	243,974	1,300,053	1,147,560
2024	100,877	281,195	1,361,857	1,040,146
2023	225,104	276,440	1,386,492	1,013,661
2022	210,070	224,753	1,038,745	702,620

Chinook salmon management was fairly simple through the 1980s. As managers increased Chinook stocking, angler catch and harvest increased. Eventually, the number of Chinook salmon exceeded the available prey and the fish became stressed. This then led to an outbreak of Bacterial Kidney Disease (BKD) that caused large die offs of Chinook salmon in the late 1980s. Studies in the 1990s confirmed the relationship between predator-prey balance and susceptibility to disease, which led to the first major reduction in Chinook stocking in 1999.

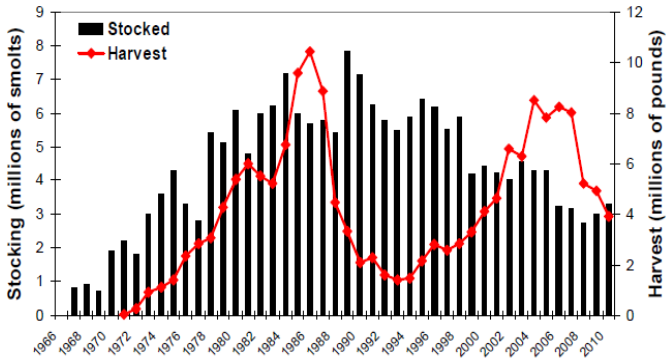
As Lake Michigan's productivity continued to decrease because of invasive mussels, managers continued to see signs of low prey biomass and over-abundance of Chinook and again reduced stocking in 2006. The Lake Michigan Committee (LMC) consulted with angling groups, general public, and federal agencies to make the stocking reductions in 1999 and 2006. An additional outcome of the 2005 stocking meeting (2006 stocking reduction) was that a lakewide study of Chinook salmon natural reproduction should be implemented to better estimate the abundance of predators. It was also decided that agencies would bring this information back to the public along with an evaluation of the 2006 stocking reduction and current status of the fishery. It is time again to review the state of Lake Michigan and develop a stocking strategy that will meet our objectives for the lake.

✦Chinook Salmon Abundance

Lake Michigan has been stocked with Chinook salmon by the state agencies since 1967. From the start of stocking until 1990, there was a direct relationship between the number of Chinook salmon stocked and the angler harvest – higher stocking levels meant higher harvest **(Figure 1).** Chinook salmon harvest crashed in 1988 and bottomed out in 1995 due to the loss of adult Chinook salmon due to bacterial kidney disease (BKD). The rapid decline in harvest even with increased stocking was our first warning sign that something was changing in Lake Michigan. Prey abundance was decreasing at the same time. So in 1999 and then again in 2006 Chinook salmon stocking numbers were decreased to bring predator numbers into better balance with available prey. Harvest rebounded through 2008 but had been decreasing since.

Biomass catch rates increasing since '2020. Average Weight of Age-3 Female Chinook Salmon is15 lbs., since '2020, but going down quickly and now below 15 pounds with a 2 pound drop in one year.

Figure 1. Lake Michigan Chinook salmon stocking and harvest from 1966 to 2010.



Objectives for the fishery (e.g., harvest and fish health) have become less predictable with declining and variable prey abundance and with increasing natural reproduction. From 1967 through the early 1980s, hatcheries were the source of most of the Chinook salmon in the lake. Even with the 1999 and 2006 stocking reductions, Chinook salmon numbers have remained high due to an increase in natural reproduction through time (**Figure 2).**

This increase in natural reproduction can be attributed to increased water quality in rivers, increased connectivity to spawning habitat, and movement of wild fish from Lake Huron. The planned benefit of the two stocking reductions (i.e., predator-prey balance) has been virtually lost due to increasing natural reproduction.

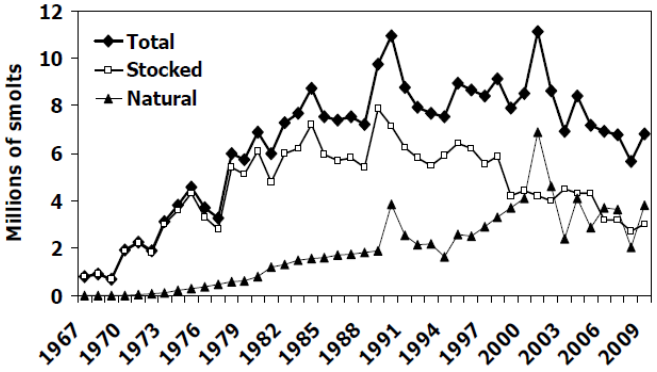


Figure 2. Total, stocked, and natural abundance of Chinook salmon smolts in Lake Michigan

✦Chinook Salmon Health

The BKD era lead to more studies related to fish health and growth. Currently, 98% of Chinook salmon inspected during egg take show no signs of disease (**Figure 3**). One theory as to the decline in disease incidence is that selecting eggs from healthy fish over several years resulted in a natural (genetic) predisposition for immunity. In addition, disease surveillance at hatcheries has increased and led to stocking healthier fish. Growth of fish typically goes up or down when prey abundances or environmental conditions change in the lake. Weight of age-3 Chinook salmon from harvest weirs is one of the growth indicators used by managers.

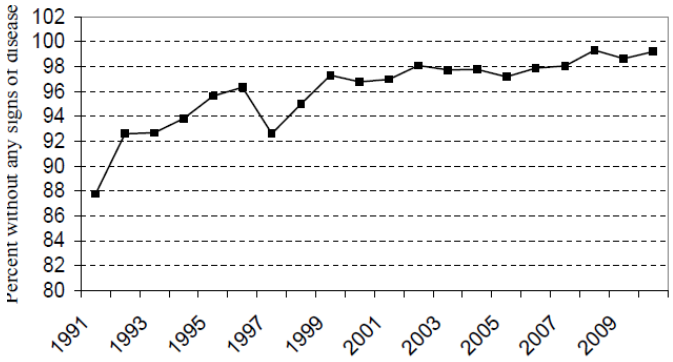
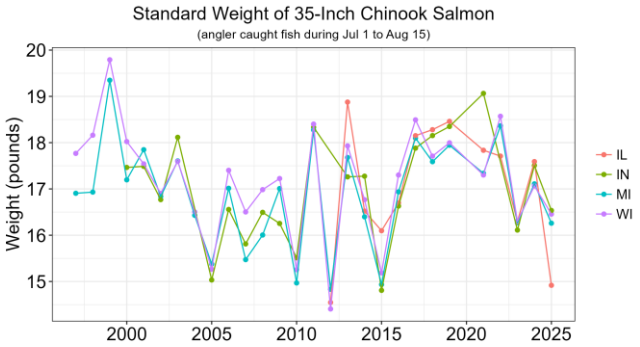


Figure 3. Percent of Chinook salmon from Lake Michigan without visual signs of disease

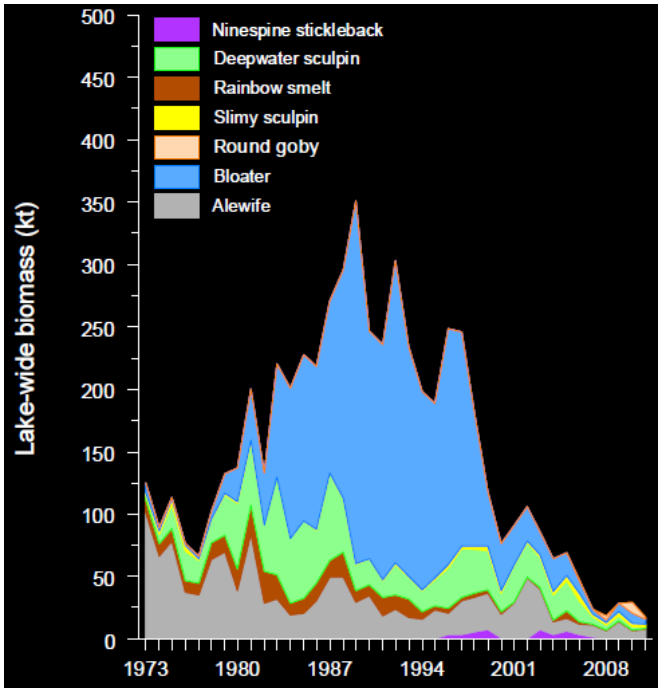
The size of age-3 fish peaked at over 22 pounds in the early 1990s, during the BKD die-off. Fewer adult fish in the lake resulted in higher portions of available forage for the fish that survived the disease. Growth declined steadily from 2001 to 2007 and bottomed out at 11 pounds for age-3 Chinook in 2007. Since then, growth has increased to 16 pounds for age-3 Chinook in 2011, which is attributed to the strong 2010 alewife year class. Changes in alewife abundance are likely responsible for the recent changes in Chinook salmon growth.



✦Prey Fish Abundance

The total prey fish biomass in 2011 was 17.5 kt, which is the lowest on record for the USGS bottom trawl survey **(Figure 4).** Low bloater recruitment compared to the 1980s and 1990s; reduced productivity due to invasive zebra and quagga mussels; and Chinook salmon predation on alewife contribute to low prey fish biomass. Bottom trawl gear is more effective at catching larger and older alewife. An acoustic survey is also completed by Michigan DNR and USGS and is more effective at sampling younger alewife and fish in the water column than the trawl survey.

Figure 4. Bottom trawl biomass of Lake Michigan prey species



✦Prey Fish in Lake Michigan - Current Status and Trends

Recent (USGS assessments show that **Lake Michigan's prey fish populations are showing mixed signs of recovery**, with some species improving and others still struggling.

Key survey methods

Annual fall bottom trawl (BT) and lakewide acoustic (AC) surveys estimate densities of major prey fish species. The BT survey, run since 1973, samples depths 9–110 m across seven transects, while the AC survey, since 2004, covers 16–173 m depths and midwater tows

2024–2025 findings

- **Biomass trends**: The 2024 AC survey recorded one of the highest prey fish biomass estimates since 2004, second only to 2023, with most gains coming from bloater and alewife.
- **Alewife**: Numbers are up slightly overall, though still far below pre-1970s levels
- **Bloater**: A key native prey fish, bloater biomass is among the highest in recent years, supporting predator species like lake trout and salmon
- **Rainbow smelt**: Adult smelt remain very rare in the Chicago/Northwestern Indiana area and overall biomass is low. Young smelt are caught mainly in northern parts of the lake, but these catches have not translated into adult population increases
- **Benthic prey**: Many native benthic species (e.g., slimy sculpin, deepwater sculpin) remain in very low abundance
- **Other species**: Round gobies and ninespine sticklebacks are present but not major biomass drivers; wild juvenile lake trout are now occasionally caught in the BT
- **Historical context:** Prey fish biomass in the 1970s–1990s was much higher than today. The current levels are still well below those decades, but the recent rise in bloater and alewife suggests some positive momentum Chicago Sun-Times.

Management implications

State and tribal agencies use these indices to guide predator fish management, stocking, and ecosystem monitoring. Continued monitoring is critical, as prey fish are the foundation of the lake's food web.

Summary table of 2024–2025 status:

Species	Trend	Notes
Alewife	Slight increase	Highest biomass since 2004, but still below historical highs
Bloater	Strong increase	Major contributor to recent biomass rise
Rainbow smelt	Declining	Adults rare; young mostly in northern lake
Slimy sculpin, deepwater sculpin	Very low	Native benthic prey in poor condition
Round goby, ninespine stickleback	Stable/low	Minor biomass impact

If you're fishing Lake Michigan, the best prey fish for predators right now are alewife and bloater, with smelt and native sculpins remaining scarce

✦Current Status of Sea Lamprey in Lake Michigan

As of the latest 2024–2025 reports, sea lamprey populations in Lake Michigan remain above historical control targets, but recent Great Lakes-wide surveys indicate a decline from pandemic-era highs as control efforts have resumed. Lake trout marking rates below goal.

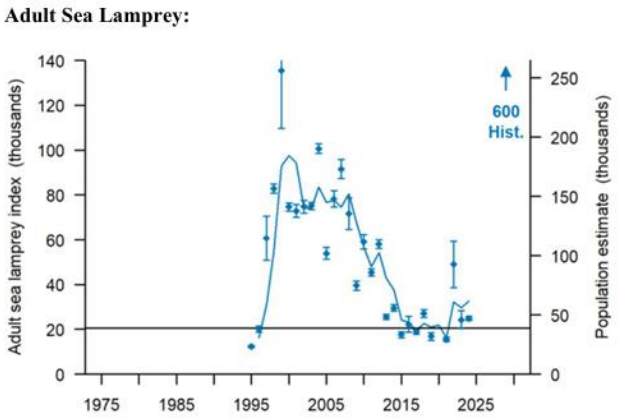
Adult population levels

The 2024 adult sea lamprey index in Lake Michigan was estimated at 25,000 (95% CI: 24,000–26,000), with a three-year average (2022–2024) of 33,000, still above the revised target of 20,526 adults. This reflects ongoing challenges in reducing numbers despite intensive control programs.

Larval populations

Larvae are concentrated in major tributaries such as the Muskegon (4.5 million), Manistee (3.6 million), Ford (1.8 million), and Pere Marquette (1.4 million). These streams are prime targets for lampricide treatments to kill larvae before they mature into parasitic juveniles. 2026 lampricide control - 20 treatments.

Status of Sea Lamprey Control in Lake Michigan



Control measures

Lampricide treatments (e.g., PFM) are applied to infested tributaries to kill juvenile lampreys before they migrate into the lake. Barriers (bubble and electric) are used to block lamprey movement into fish habitats. Regular treatments are needed because each larva that survives can kill up to 40 pounds of fish in its 12–18 month feeding period.

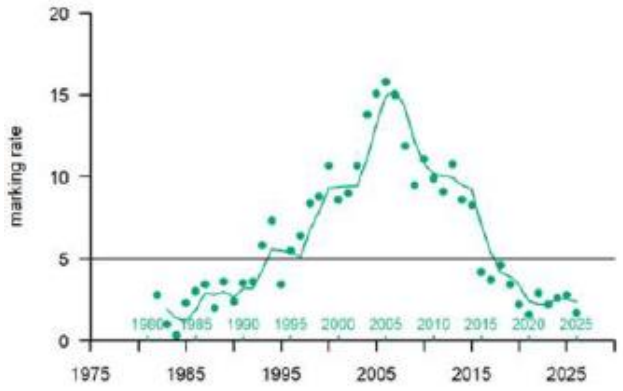
Recent trends

- The Great Lakes Fishery Commission reports that sea lamprey numbers have returned to pre-pandemic levels after treatment restrictions during COVID-19.
- However, the population remains high compared to the long-term target, and continued control is essential to protect fish stocks and the commercial/sport fishing industry.

Summary

Today, sea lamprey in Lake Michigan are still present in significant numbers, with adult counts above the revised target and large larval populations in key tributaries. Control programs are active, but sustained effort is needed to reduce numbers to sustainable levels. Lakewide biomass of alewife increase since 2015

✦*Lake Trout marking rates*



✦***Lake Trout***

2.2 million lake trout were stocked in Lake Michigan Nov 2025

Spring Lake Trout CPUE was 12.4 fish/1000 ft. of net in 2025. This was the highest CPUE observed since 2016 (14.5 fish/1000 ft. of net), but still only 50% of the target (25 fish/1000 ft.) which has only been achieved once in 24 years of spring sampling. Thus, Evaluation Objective 1 of the Stocking Strategy has not been achieved in Illinois waters.

A total of 45 Lake Trout (37.8%) were not fin-clipped and presumed to be of wild origin. This is nearly the same proportion of wild fish observed in the spring survey in 2024 (37.5%) and below the highest recorded proportion of wild fish (41%) that occurred in 2023. The percentage of unmarked fish in spring catches increased after 2010 and has averaged 24% (2011-2025 average) since that time. The CPUE of wild fish was 4.7 wild fish/1000 ft. of net, which represents the highest CPUE of wild fish observed in the spring survey, though is still only 25% of the 19 wild fish/1000 ft. target. Thus, Evaluation Objective 7 has not been achieved in Illinois waters.

Sixty-four Lake Trout had an adipose fin clip, and their snout was collected for tag retrieval. One CWT was lost during extraction and another snout had no tag detected at the lab. A total of 62 CWTs were successfully decoded. A majority (43) were stocked on Julian's Reef (4 to 21 years old at capture), 18 were stocked on the Mid-lake Reef Complex (7 to 22 years old at capture), and one was stocked in northern Lake Michigan (from shore in Charlevoix, MI; 6 years old at capture).

Four strains of lake trout were represented in the catch of stocked fish (containing CWTs) during the spring 2025 survey: 40 were Lewis Lake (64.5%), 12 were Seneca Lake (19.3%), nine were Klondike (14.5%) and one was Green Lake (1.7%). Strain composition of the spring catch has been generally consistent since 2016 after a steep decline in the abundance of the Green Lake strain, which ceased to be stocked at Julian's Reef after 2006. Prior to 2016, Green Lake fish averaged 70% of the annual spring catch but have since only averaged 5%. Lewis Lake strain comprised an average of 60% of spring catch on an annual basis since 2016, compared to 30% for Seneca Lake strain. This is despite having been stocked in roughly equal numbers at nearby Julian's Reef since 2011. Because Seneca Lake strain fish are typically more common than Lewis Lake strain in the fall survey (see below), the discrepancy in spring catches between the strains does not necessarily reflect differential survival.

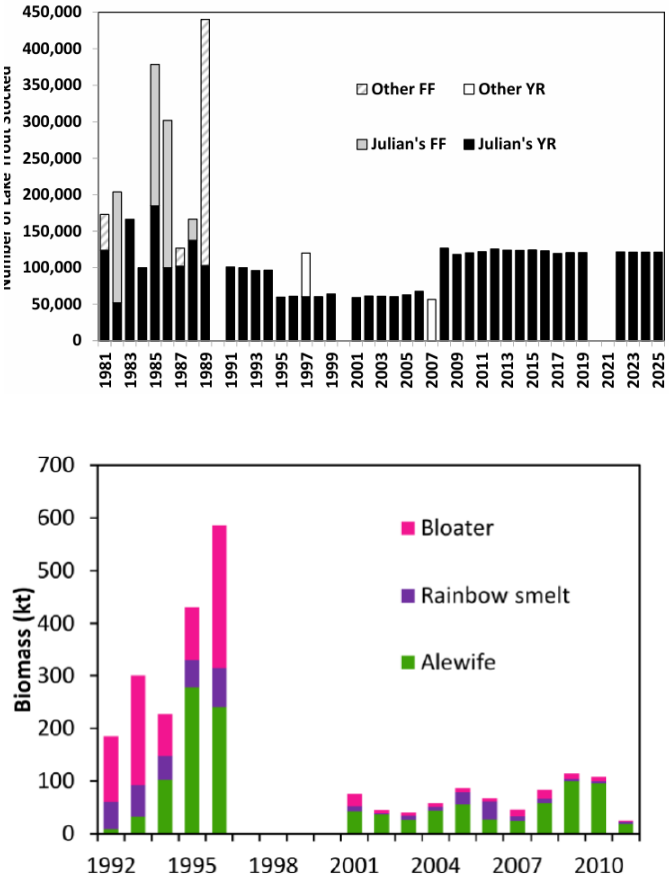
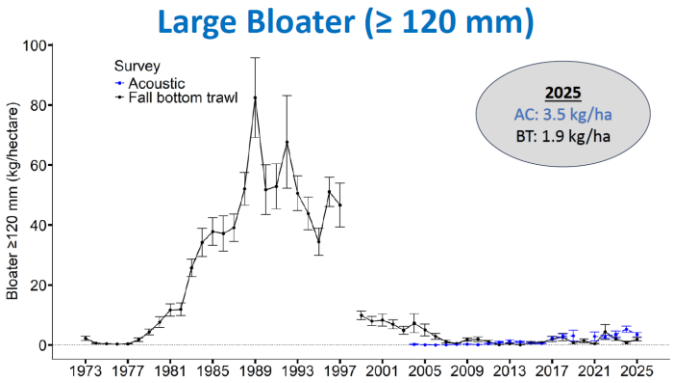


Figure 5. Bottom trawl biomass of Lake Michigan prey species

The 2005 and 2010 year classes of alewife were the strongest in the last ten years, but they were still only half as much as the 1995 year class (**Figure 5).** With such low prey abundance, the risk of depleting the alewife population in Lake Michigan continues to increase.



STRUCTURED DECISION ANALYSIS

Structured decision analysis is simply a process used to inform a decision. In this case the process is being used to help managers and stakeholders make decisions regarding stocking strategies for Lake Michigan salmon. The process began with the identification of objectives for the fishery. Stocking options were then collaboratively identified. These options were evaluated through a complex quantitative computer model to see how alewife abundance and Chinook harvest would change by employing different stocking options. A key component of the computer model is that it accounts for the uncertainty in the existing population by providing a range of potential outcomes. An example of an uncertainty is the variability in alewife recruitment. The computer model produced outcomes that were evaluated by managers and stakeholders to help rank preferred options and evaluate risk. An example of risk evaluation is identification of an individual's comfort with a strategy that threatens alewife abundance. Too much predation could cause an alewife collapse and too little predation could cause unhealthy increases in the alewife population. The tradeoffs of each option were thoroughly reviewed and discussed collaboratively to come up with a suite of acceptable options to move forward for public review.

STOCKING POLICY REVIEW

The Lake Michigan Committee reviewed 26 potential stocking options that included increases, decreases, or no change in stocking as well as policies that evaluated stocking changes annually to every five years. These options were reduced to 16 with outcomes of 20% or less risk of low alewife abundance, which was a stated risk tolerance of the stakeholders. The Lake Michigan Technical Committee and Core Stakeholder Group participants were given the opportunity to provide feedback on these 16 options. Based on their comments, options that reduced the risk of low alewife abundance and that involved a policy that incorporated changes more frequently than every five years were preferred.

✦*Alewives in Lake Michigan*

Today, alewives are still present in Lake Michigan but in much lower numbers than in the mid-20th century. Die-offs still occur, but they are less frequent and smaller in scale. The Michigan DNR notes that these events are often "natural" – linked to poor winter survival, temperature swings, and spawning stress – rather than pollution or disease. They can still be found from Muskegon to the northern beaches, including areas like Cross Village and the Beaver Islands.

Ecological Role

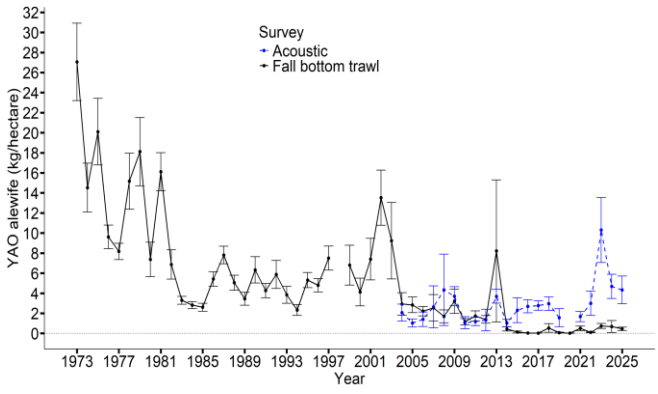
While once a pest, alewives are a good source of protein and omega-3s. They are also part of the food web, serving as prey for larger fish and birds. However, their invasive nature and historical dominance make them a cautionary example of how non-native species can disrupt ecosystems.

Alewives in Lake Michigan are a legacy of the 20th-century Great Lakes invasion era. Once a major ecological and economic problem, they are now a much-reduced but still present species, with occasional die-offs that remind us of their past dominance.

Recent assessments indicate that the annual biomass of age-1 and older alewives in Lake Michigan during 2016–2021 ranged from 165 to 322 million pounds, with a mean of 266 million pounds, generally meeting or exceeding the target biomass of 220 million pounds set by fisheries managers. These estimates are derived from statistical catch-at-age models using acoustic and bottom trawl surveys, as well as predator consumption data, since there is no direct commercial or recreational harvest of alewives in the lake.

In 2025, Lake Michigan bloater (Coregonus hoyi) populations were assessed through annual fall bottom trawl (BT) and lakewide acoustic (AC) surveys, which have been ongoing since 1973 and 2004 respectively. These surveys sample fixed transects across the lake to estimate densities of key prey fish, including bloater, alewife, and rainbow smelt.

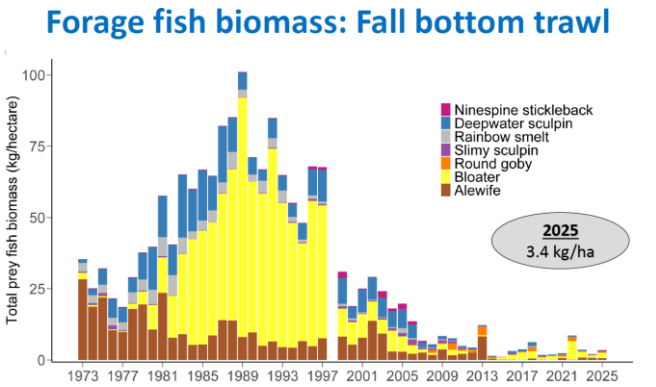
Survey methods and scope



- **Fall BT**: 12-m trawls at depths 9–110 m across seven transects, estimating densities of seven prey species, including bloater.

- **AC survey**: Late summer/early fall transects (2024 had 24 transects, 468 km) and midwater tows, estimating densities of alewife, bloater, and rainbow smelt.
- **Spring BT** (2024): Additional spring sampling across six transects to compare seasonal biomass.

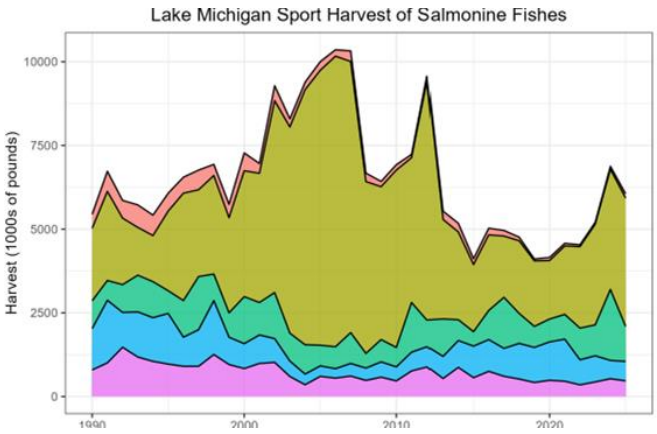
2025 findings



- The 2024 AC survey (used to inform 2025 trends) showed stable alewife densities and increased bloater populations, though young alewife abundance was notably low.
- Bottom trawl data indicated bloater remained a significant component of the pelagic and benthic prey fish community, supporting predator species like lake trout and salmon.
- Invasive species such as round gobies and ninespine sticklebacks were also monitored alongside bloater.

Ecological context: Bloaters are a key forage fish in Lake Michigan, influencing the health of predator populations. Their increased abundance in 2025 suggests favorable conditions for recruitment and survival, though challenges from invasive species and competition with other prey remain.

Lake Michigan Sport Harvest 1990-2025



Orange: Brown Trout Sage Green: Chinook Salmon
Green: Coho Salmon Blue: Lake Trout
Pink: Steelhead

✦Arlee vs Skamania Steelhead Strains

Arlee and Skamania steelhead are both stocked in the Great Lakes and tributary streams, but they differ in origin, run timing, and physical characteristics.

Origin and Development

- **Arlee**: Developed in the 1950s at the Arlee Fish Hatchery in Washington, USA. It is a well-established strain used in large-scale stocking programs in Michigan, Indiana, and other states.
- **Skamania**: Developed at the Skamania State Fish Hatchery in Washington, USA, by selecting early-run fish from the Washougal River. First introduced to Lake Michigan via the St. Joseph River in 1971.
- ***Run Timing***
- **Arlee**: Stocking programs in Michigan and Indiana use Arlee for both summer and winter runs, but the exact run timing depends on the stocking plan. In Michigan, Arlee is often part of winter-run programs
- **Skamania**: Known as the summer run strain. Spawning migration begins in late June to early July, with good stream fishing starting in mid-September. Spawning occurs from mid-December through mid-March, peaking in January–February
- ***Size and Condition***
- **Arlee**: Stocked fish are generally large and robust, with typical sizes around 25–30 inches and 6–10 pounds depending on age
- **Skamania**: Also large, with four-year-olds averaging 28 inches and 8 pounds, and five-year-olds averaging 32 inches and 12 pounds. Some anglers note Skamania can be "long and skinny" compared to other strains.

Identification

- **Physical traits**: Skamania often have bright red lateral stripes in males, and can appear dark or "kangaroo-like" in fall. Arlee is generally more uniformly colored and robust.
- **Genetic markers**: Both strains have distinct microhaplotypes, allowing genetic monitoring to track movement and origin
- **Fin clips**: Stocked steelhead (including both strains) are often marked with adipose fin clips; wild fish lack this mark.

Stocking Volumes

- **Arlee**: Stocked in large numbers in Michigan and Indiana, with millions of fish annually.
- **Skamania**: Also stocked in large volumes, with similar stocking totals to Arlee in some years.

In summary: Arlee and Skamania are both productive, large-bodied steelhead strains stocked in the Great Lakes region. Skamania is specifically a summer-run strain with an early spawning window, while Arlee is used in multiple run programs depending on stocking plans. Physical condition, run timing, and genetic markers can help distinguish them in the field. ✧

End

Lessons from a long fight:
The global relevance of the Great Lakes sea lamprey control program

Imagine a creature that latches onto a fish with a suction cup mouth ringed with more than 100 teeth and that uses a file-like tongue to rasp through scales and flesh and feed on the fish's blood and body fluids. Now imagine 2.5 million of these parasites swimming throughout the world's largest surface freshwater system, devastating fish populations that millions of people depend on for food and their livelihoods. This was the reality facing the Great Lakes in the mid-twentieth century, when invasive sea lampreys completed their establishment in all five lakes and triggered one of the most dramatic fishery collapses in North American freshwater history.

But what followed was one of the most ambitious, sustained, and ultimately successful invasive species control efforts ever undertaken. Now, more than 75 years after that effort began, a team of scientists and practitioners from universities, indigenous governments, federal agencies, and the binational Great Lakes Fishery Commission ("Commission") has distilled the hard-won lessons of the sea lamprey control program into a paper published in the journal *BioScience*: "Ten lessons for controlling invasive species: Wisdom from the long-standing sea lamprey control program on the Laurentian Great Lakes."

The Great Lakes sea lamprey control program relies on a suite of integrated methods, including the application of the lampricides TFM (top left photo) and Bayluscide (top right) that target the larval stage of sea lampreys, barriers (bottom left) that block adult sea lampreys during spawning migrations, and traps (bottom right) that capture adult sea lampreys for program assessment and research.

A Crisis That Sparked Cooperation

Sea lampreys are native to the Atlantic Ocean and its tributaries. They entered the Great Lakes through shipping canals in the mid-1800s and early 1900s, and by 1938 had spread through all five lakes. Unlike in their native range, where sea lampreys are considered a beneficial species, invasive sea lampreys in the Great Lakes are a menace, with swift and severe consequences. Populations of lake trout, a keystone predator that supported indigenous and commercial fisheries for generations, collapsed under the combined pressure of ongoing overfishing and intense parasitism by sea lampreys. Other native fish, such as lake whitefish, burbot, walleye, and cisco, experienced dramatic declines. Fishing communities and indigenous nations watched their livelihoods, food security, and traditions unravel.

Invasive sea lampreys from the Great Lakes.

The crisis ultimately created the political will to do something unprecedented: the United States and Canada signed a treaty in 1954 establishing the Great Lakes Fishery Commission. The Commission was mandated to develop control methods for invasive sea lampreys along with coordinating fisheries research and facilitating cooperative fishery management among the state, provincial, tribal, and federal agencies of the region. Since then, the Commission and its partners have fulfilled this mandate with a moonshot spirit that has yielded considerable success.

This origin story is itself the first lesson in the paper: act boldly in times of crisis. The remaining nine lessons—learned from a collective 275-plus years of experience in sea lamprey research and control shared by the authors of the paper—are to maintain the social license, invest in capacity building, break down the silos, support fundamental science, diversify your portfolio of control measures, strive for continuous improvement, confront the trade-off between information and action, keep your foot on the gas, and keep your eyes on the prize. These lessons from sea lamprey control, though rooted in the Great Lakes, offer insights that resonate well beyond the shores of these vast systems.

Ten lessons for controlling invasive species learned from more than seven decades of experience controlling invasive sea lampreys in the Great Lakes.

Ten Lessons from a Great Lakes Success Story

The long-term suppression of sea lampreys in the Great Lakes did not arise from a single breakthrough, but rather an iterative process of research, management, and monitoring. Over decades of innovation, trial, collaboration, and persistence, the sea lamprey control program built a body

of practical wisdom. The ten lessons below synthesize that knowledge, translating a complex history into guidance applicable to invasive species programs worldwide.

1. Act boldly in times of crisis. The urgency of catastrophe is a powerful force: unintended crisis can result in unity to take decisive, lasting action. In the early stages of a species invasion, now is the time to act, before the invader establishes and ever reaches the point where ongoing control is necessary.

2. Maintain the social license. Keeping policymakers, stakeholders, rights holders, and the public genuinely informed about why control efforts matter – and actively listening to their concerns – is just as essential as the underlying science and management.

3. Invest in capacity building. Enhancing the skills of individuals, organizations, and communities; training the next generation of scientists, control program staff, and communicators; and actively diversifying who enters the field, strengthens a program's ability to solve problems and sustain itself across decades.

4. Break down the silos. When scientists, control program staff, communicators, and decision makers work in the same rooms, sit on the same committees, and share the same goals, science bridges the "knowledge-action gap" – moving from the "lab to the lake" – far faster.

5. Support fundamental science. Curiosity-driven research with seemingly few connections to the practical problems of today, such as studying sea lamprey genomics, sensory behavior, and physiology, can become the foundation for tomorrow's most powerful control tools. Fundamental science is a worthwhile investment that can pay dividends in the future.

6. Diversify your portfolio of control measures. Relying on a single control tool is a vulnerability; an integrated program that combines, for instance, lampricides, barriers, traps, and emerging techniques, is far more resilient and adaptable to changes in the environment as well as societal context.

7. Strive for continuous improvement. Treating every setback, surprise, and success as a learning opportunity, as opposed to a failure or endpoint, allows a control program to improve over decades rather than stagnate. Fostering trust among key players through long-term collaboration opens the space to making decisions in the face of uncertainty, maintaining flexibility, and continual refinement.

8. Confront the trade-off between information and action. With limited resources, a balance must be struck between gathering data and taking action. In some cases, ideal data are not worth the cost: a reminder that for invasive species control, the perfect can be the enemy of the good.

9. Keep your foot on the gas. Reductions in sea lamprey control during the COVID-19 pandemic showed starkly that even a single year of reduced effort can unleash a surge of sea lampreys resulting in substantial mortality of fish. Invasive species control cannot afford a pause.

10. Keep your eyes on the prize. Controlling invasive species matters, but the real aim (ultimate goal) is often the maintenance of healthy, thriving populations of native or beneficial species, and the numerous benefits they provide to society. This recognition keeps every action meaningful and every dollar justified.

Young cisco school together in a tank as part of a Great Lakes restoration program. Ciscoes once supported one of the largest fisheries in the Great Lakes until overfishing and invasive species caused dramatic collapses in their populations. Sea lamprey control protects economically valuable fisheries in the Great Lakes and paves the way for many restoration programs.

Wisdom for a World Under Invasion

Invasive species are among the leading drivers of biodiversity loss worldwide, and the problem is growing each year. The annual economic costs of biological invasions globally run into the hundreds of billions of dollars.

The lessons from sea lamprey control are intended to serve as ideas, inspiration, and candid advice (based on successes and failures) for others working on the control of biological invasions. The lessons are not unique to sea lampreys or to freshwater ecosystems. They apply to cane toads in Australia, brown tree snakes in Guam, invasive beetles in Europe, and countless other biological invasions around the world.

Controlling invasive species is not a problem you solve once and walk away from. Maintenance of healthy ecosystems is a commitment measured in generations, requiring sustained funding, sustained science, and sustained public will. The Great Lakes sea lamprey control program – and similar programs around the world – endure because the people and institutions involved understand that natural resources, and the communities that depend on them, are worth protecting. ✧

2nd Amendment issues:

AAG Dhillon reaffirms 2A protects common Semiautomatic Rifles

U.S. Assistant Attorney General (AAG) for Civil Rights Harmeet Dhillon recently stated in a video posted to X that semiautomatic rifles like the AR-15 "are protected by the Constitution," tracking with the Trump administration's broader legal position, including a U.S. Department of Justice (DOJ) challenge to the District of Columbia's ban on certain semiautomatic firearms, which the department described as among the nation's most popular rifles. ✧

Acting U.S. attorney general Todd Blanche outlines sweeping 2nd Amendment overhaul at Trump DOJ - U.S. Senate Confirmation of ATF Director Cekada

NSSF, The Firearm Industry Trade Association, applauds the U.S. Senate for voting to confirm current Bureau of Alcohol, Tobacco, Firearms and Explosives (ATF) Director Robert Cekada to lead the federal agency charged with fighting violent crime, disrupting illegal gun trafficking to prohibited persons and regulating the firearm industry. The Senate confirmed Director Cekada to his role in a bipartisan vote of 59-39. Director Cekada is the first ATF director to be confirmed after being nominated by a Republican president.

Acting U.S. Attorney General Todd Blanche announced a major federal Second Amendment overhaul, signaling a historic shift in gun policy with new regulations, ATF enforcement changes, and a Supreme Court strategy.

Overview of the Overhaul. Blanche described an imminent "sea change" in federal firearm policy, emphasizing that the Trump DOJ's approach would be more expansive, durable, and aggressively defended in court than any prior administration's efforts. The overhaul is designed to embed Second Amendment protections deeply into federal regulations, making them difficult for future administrations to reverse.

Key Regulatory Changes

Blanche confirmed that the DOJ is days away from releasing a sweeping package of new firearms regulations, already approved at the presidential level. Notable changes include:

- **Elimination of in-person signature requirements** for certain firearms transactions, allowing electronic processes similar to tax filing.
- **Rescission of ATF Rule 2021R-05F**, removing restrictions on pistol braces.
- **Suppressor deregulation**, treating silencers as accessories without burdensome tax stamps or delays.
- **Private sales protection**, codifying that occasional transfers between friends and family do not require FFL involvement.
- **Bump stock restoration** in line with the SCOTUS Garcia decision.
- **National reciprocity framework**, paving the way for permitless carry nationwide).

Blanche framed these changes as a **paradigm shift**, elevating the Second Amendment to a "first-class right" on par with other constitutional protections).

Legal and Strategic Approach

Blanche emphasized that the administration is prioritizing regulatory durability over speed, ensuring that changes are legally defensible and require formal rulemaking to reverse. The DOJ has hired a dedicated Second Amendment law expert as general counsel for the ATF to strengthen the legal framework. This approach aims to prevent the typical "two steps forward, eight steps back" pattern seen in prior Republican administrations. The Trump DOJ is also pursuing a Supreme Court strategy, targeting cases such as semi-automatic rifle bans to establish national precedents that could constrain restrictive state laws.✧

Other Breaking News Items:
(Click on title or URL to read full article

Michigan's Great Lakes water levels continue to rise, graphs paint a clear picture

Water level sensors at a few points on Michigan's Great Lakes show a clear picture of accelerated water level rises. While the Great Lakes typically start rising in March, once the snowmelt starts flowing into the Great Lakes and spring rain gets heavier, the magnitude of the water level rise is striking.

Maumee River's walleye run ending as waters warm above spawning temperatures

The annual spring walleye run on the Maumee River is coming to a close as late-April water temperatures climb, prompting the fish to finish spawning and begin their journey back to Lake Erie.

H2Ohio, ODNR celebrate completion of wetland project

With the completion of its latest wetland project, Ohio officials celebrated the enhancement of 43 acres of Lake Erie coastal marsh into high-quality wetlands. The project aims to use natural processes to reduce sediment, phosphorus and nitrogen through the wetland before water returns to nearby ditches and flows back into Lake Erie

NY completes Lake Ontario marsh project to restore fish and bird habitat

The New York State Department of Environmental Conservation, along with conservation partners Ducks Unlimited and the National Audubon Society, recently completed a project to improve 50 acres of Lake Ontario marsh habitat.

Researchers perplexed by growing numbers of 'zombie' fish deep in Lake Superior

In the deepest part of Lake Superior, a quarter mile below the surface, researchers are discovering a growing number of extraordinarily thin lake trout that weigh about half their typical, healthy body weight. Scientists have dubbed them "zombie fish."

Nearly half a million baby steelhead are being released into Lake Erie rivers: What anglers need to know

Almost 500 thousand Castalia Hatchery-raised steelhead trout smolts are being poured into the Lake Erie tributaries of northeastern Ohio. Anglers should help them to acclimate to swimming in open waters before the year-old trout head for the big lake to feed and grow all summer.

End