Inland Seas Angler

# GREAT LAKES BASIN REPORT©

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# Keeping anglers fishing

While the total number of anglers who enjoy fishing remains fairly consistent year-in and year-out, the number of anglers who actually bought a license in ten consecutive years remains amazingly small — 4% of the 33 million anglers in the United States to be exact. This was the startlingly discovery revealed by a recent study conducted for the American Sportfishing Association by Southwick Associates.

"The fact that overall fishing participation numbers are quite stable from year to year could lead to the erroneous conclusion that anglers consistently renew their licenses," stated Tom Allen, Vice President of Research at Southwick Associates. "This is the first in a series of reports to be released on the topic. Upcoming reports will show which types of anglers are at greatest risk of not coming back, how to keep them engaged and lifestyles of various angler segments."

In the study, Southwick Associates examined fishing license data over a 10-year period, from 2004 to 2013, from 12 states. Those states included Colorado, Florida, Georgia, Maine, Mississippi, Minnesota, Missouri, Montana, New Hampshire, New York, Utah, and Wisconsin. The goal was to determine how many anglers transition in and out of the sport from year to year, a phenomenon also known as "churn."

Key findings of the report included:

- The largest portion of anglers, 49%, purchased a license only one out of 10 years.
- Only 4% bought a license in each of the ten years.
- In any given year, close to half of anglers do not renew their fishing licenses.
- The "typical" angler buys a fishing license just 2.9 out of every 10 years.
- When looking at 5-year periods, that number drops to most anglers buying a license just every 2.1 years out of 5.
- Those groups most likely to lapse each year include female anglers, urban residents and people between the ages of 18 and 24.
- Forty-four to 48% of anglers each year represent a group that had not bought a fishing license the previous year.

So what does this high rate of churn mean for state and federal fishing agencies? Or even the fishing industry as a whole?

**Keep anglers fishing**

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## Monroe Lake anglers must take precautions against Asian carp

Invasive Asian carp are knocking on Monroe Lake's door, and Indiana DNR officials are warning anglers not to let them in. Silver and bighead carp have been found in Salt Creek, directly below the Monroe Lake dam. The dam prevents the carp from entering the lake.

But biologists are concerned that anglers collecting baitfish from Salt Creek might mistake juvenile Asian carp for gizzard shad and introduce the carp into Monroe Lake. Using live gizzard shad is a common way to fish for hybrid striped bass at Monroe Lake. The method is legal at Monroe Lake as long as the fish were collected in the lake.

Collecting live gizzard shad in Salt Creek and using them at Monroe Lake is against the law. It is also difficult to distinguish gizzard shad from juvenile Asian carp. Earlier, DNR researchers cast a net in Salt Creek below the dam to determine the prevalence of Asian carp and how easy it would be to catch them. In just six casts, they caught 52 juvenile Asian carp.

Anglers are reminded to collect their bait fish in Monroe Lake only. Do not transport fish from one body of water to another. Anglers also should dispose of all unused baitfish, on shore, in a trash can. Never release bait into the water.

Asian carp can cause enormous damage to native species by outcompeting existing fish for food, specifically plankton. By consuming so much plankton, the carp affect the entire aquatic food chain, including sport fish that feed on plankton-eating fish. ✧

# Science confirms successful strategy to protect threatened steelhead from virus

A new and highly effective approach to control a viral pathogen that affects threatened steelhead trout in an Idaho hatchery is documented in a new paper. Researchers confirmed that the water supply from a reservoir could be used in such a way that juvenile steelhead were not exposed to river water at a time when infected adult steelhead fish contaminated the river water, drastically reducing mortality in juvenile fish.

The virus, infectious hematopoietic necrosis virus, infects both adult and juvenile fish but causes disease and sometimes death in juvenile fish. There is a well-known form of this virus that is particularly deadly for steelhead trout. There are no treatments for fish infected with IHNV, and it can be a difficult pathogen to manage and a devastating one if juvenile fish start to suffer epidemic disease.

After experiencing severe losses to IHNV in the steelhead trout program at Dworshak National Fish Hatchery in Idaho for years, managers and fish health specialists from the U.S. Fish and Wildlife Service worked with researchers from the U.S. Geological Survey to identify the source of the problem and developed a strategy to control it.

"This virus has been devastating to our hatchery steelhead," said Steve Rodgers, Manager for the Dworshak Fisheries Complex. "These losses have meant far less adult steelhead for harvest by sport and tribal anglers, which is the very reason the hatchery is here. This study will help us reach our goals."

Analysis of virus samples taken from juvenile and adult fish in and around the hatchery provided evidence that the source of infection was from IHNV-infected adult trout in the river where the hatchery gets water for rearing juvenile fish. Based on this evidence, hatchery personnel worked with the Army Corps of Engineers, who own the facility, to modify the water delivery system. This modification allowed for extended rearing of juvenile steelhead trout on Dworshak Dam reservoir water, which does not contain adult fish infected with the virus. This strategy was implemented in 2010 and has resulted in an immediate and dramatic reduction in virus-caused death among Dworshak juvenile steelhead trout ever since.

"Our analysis provided evidence for how the new strategy worked. Since the virus and fish can adapt to their environment, the strategy may not always work. Now, the managers are better prepared if that ever happens," said Rachel Breyta, virus ecologist with the USGS and lead author on the paper.

By conducting a genetic analysis of virus samples, USGS researchers confirmed that the reason this delayed exposure to river water strategy had worked was that adult steelhead infected with the highly virulent virus were no longer in the river acting as a transmission source by the time the juveniles were exposed to the river water. Since IHNV infected Chinook salmon were in the river at the later time and were able to transmit a less deadly form of the virus to hatchery juvenile steelhead trout, managers and fish health staff will continue to monitor IHNV in the Clearwater River.

"This long-term study, which confirmed returning adults shedding virus into the water source as the cause for all those lost juveniles in the hatchery, is critically important information," said Rodgers. "I'm not aware of this being confirmed over a long period anywhere else as it has been here. We can apply this knowledge across other programs in the Columbia Basin, to maximize the value of our hatcheries in helping recover anadromous fish and maintain important fisheries."

The paper "Successful mitigation of viral disease based on a delayed exposure rearing strategy at a large-scale steelhead trout conservation hatchery" was published in the journal of Aquaculture. ✧

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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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# DNR answers questions about the status of Lake Michigan Fishery

## Answering the most Frequently-Asked-Questions about Lake Michigan's fishery

**1. What is going on with salmon in Lake Michigan?**

The current status of salmon is that the population is down 75% from the peak in 2012. The decline can be attributed to two factors: (1) the DNR has reduced stocking rates since 1999 while maintaining higher possession limits since 2005, and (2) natural reproduction and recruitment of salmon has declined substantially since 2013 because there is less prey in the lake.

**2. Why is the DNR managing for less salmon in Lake Michigan?**

Salmon populations are highly stressed because alewives, their primary prey, have been declining since the mid-1990s and have never stabilized since the start of the decline. Alewives are declining because they are being out-competed by zebra and quagga mussels for the same nutrients in the lake (zebra and quagga mussels invaded the Great Lakes in the mid-1990s). Also, high stocking rates by state agencies responsible for managing Lake Michigan in the early 1990s led to very high predation on an already unstable alewife population. The combination of increased salmon predation and the competition from zebra and quagga mussels squeezed the alewife population from the top and bottom and was likely the reason we saw salmon crash in Lake Huron in the mid-2000s.

**3. Will Lake Michigan follow Lake Huron?**

DNR biologists do not want Lake Michigan to follow the same path as Lake Huron. That is why DNR fisheries staff worked with Lake Michigan anglers to reduce annual stocking levels from 7 million to 2.5 million Chinook salmon through coordinated lakewide stocking cuts in 1999, 2006 and 2013. These reduced stocking levels have helped to decrease the predation pressure on alewife by salmon. Additionally, the DNR has maintained higher possession limits in an attempt to use angling as another method to relieve even more predation pressure on alewives.

**4. Will the stocking cuts and possession limits be enough?**

In theory, populations are most stable when there is enough prey to feed all the predators. If predators become too abundant and prey too scarce, then predators will eat all the prey, starve and not survive. Stocking cuts and possession limits only work if they reduce predators in the lake to levels that prey can sustain. But what if prey continues to decrease no matter how few predators are out there?

This is the question DNR biologists are focusing on right now. Fisheries management agencies do not have ability to directly influence the number of alewives in Lake Michigan but can only indirectly affect pressure by reducing predation. DNR can, however, apply new approaches for assessing the salmon and alewife balance through population modeling. The modeling allows us to utilize all of the available data on fish populations, produce estimates of absolute abundance of salmon and alewives, and ultimately determine the exact ratio of predator to prey. DNR biologists believe the only way to keep Lake Michigan from following Lake Huron is to manage the fisheries by balancing predator (salmon) and prey (alewife) so neither collapse.

**5. What about the other predators?**

In addition to Chinook salmon, the Lake Michigan fishery is supplemented by stockings of brown trout, coho salmon, steelhead, and lake trout. Although the primary prey for Chinook salmon is alewives, the other predators have a much more diverse diet. Since the introduction of zebra and quagga mussels, the round goby has established abundant populations in the Great Lakes. Round gobies are able to consume mussels and can spawn multiple times in a single season. In Lake Michigan specifically, the abundance of round gobies has skyrocketed, and they are now being eaten by almost every predator, except Chinook salmon. Therefore, reductions in stocking levels for other predators may not be as effective for reducing alewife consumption if the prey consumed is mostly gobies. In addition, we manage for a diversity of both prey and predators in the Lake Michigan fishery.

**6. How abundant are the gobies in Lake Michigan?**

It has been suggested that they are the top prey species in Lake Michigan today and may have reached levels comparable to alewives when they were at their peak levels in the 1960s and 1970s. However, the absolute abundance of gobies is hard to estimate because of their patchy distribution (they prefer rocky habitats), their reproductive strategy (they spawn multiple times in a year), and because their mortality rates are very high (the population of gobies changes substantially throughout the year). What we do know is that they are being consumed at a high rate by most of the other predators.

**7. Why won't Chinook salmon eat gobies?**

Chinook salmon are biologically designed to feed on open-water prey such as alewives. They are not, however, designed to feed on the bottom. In the 20+ years of dissecting the stomach contents of Chinook salmon in Lake Michigan, the DNR has only found two instances where gobies were consumed by Chinook salmon and it was less than 1% of the diet composition.

**8. What will the 2015 Lake Michigan fishery look like?**

There will be lower Chinook salmon catch rates but more diverse fisheries represented. Brown trout, steelhead, and lake trout catch rates should increase. Nearshore predators, such as bass, walleye, and pike will increase. Even nearshore species such as rock bass and yellow perch will benefit from the goby buffet. ✧

## Pennsylvania unveils Select Stocked Trout Waters

Trout anglers who want an experience targeting bigger fish will have the opportunity to catch 14"-20" trout in eight Keystone Select Stocked Trout Waters, unveiled at the quarterly meeting of the Pennsylvania Fish and Boat Commission.

Under the program, 3,200 large trout will be distributed among the eight waters, one in each district. The trout will be stocked at a rate of up to 250 trout per mile, comparable to the numbers of fish of this size in Pennsylvania's best wild trout waters.

The eight waters include:

- Chester Cty., Middle Branch White Clay Creek, Section 3 (1.67 miles)
- Dauphin County, Wiconisco Creek, Section 3 (0.74 miles)
- Lackawanna/Wyoming Counties, South Branch Tunkhannock Creek, Section 4 (0.99 miles)
- Lawrence County, Neshannock Creek, Section 3 (2.67 miles)
- Lycoming County, Loyalsock Creek, Section 5 (1.49 miles)
- Potter County, First Fork Sinnemahoning Creek, Section 4 (1.67 miles)
- Somerset County, Laurel Hill Creek, Section 3 (2.33 miles)
- Westmoreland County, Loyalhanna Creek, Section 3 (1.67 miles)

Under program regulations, waters are open to fishing year-round. But anglers may harvest trout only between June 15 and Labor Day and the trout have to be a minimum of nine inches. From the day after Labor Day until June 15, these waters are managed on a catch-and-release-only basis and the creel limit is zero. Tackle is limited to artificial lures and flies. Similar programs have proven very popular on other waters, such as Pine Creek in Lycoming County.

The waters in Dauphin and Chester counties will be stocked with the larger trout in advance of the regional opening day of trout season on April 2. The other waters will be stocked prior to the April 16 state-wide opener for trout. Each of the eight waters will also receive an in-season stocking in late April. Both stockings will include a number of these larger fish. ✧

## Indiana DNR oks new catfish rules

The Indiana Natural Resources Commission gave final approval to new rules that raise the minimum size from 10 to 13" for catfish caught in rivers and streams, including the Ohio River, and limit the number of large catfish caught in lakes, reservoirs, streams and rivers (including the Ohio River) to no more than one each per day of channel catfish at least 28" long, blue catfish at least 35" long, and flathead catfish at least 35" long. The rules also limit the number of large channel catfish, blue catfish and flathead catfish that anglers can take per day. The changes apply to both commercial fishing and sport fishing.

Research has shown that many factors associated with the catfish population decline have motivated anglers to push for regulation reform. The popularity of both sport and commercial fishing of catfish has increased recently, causing a drop in the wild populations. There are particular apprehensions about overharvesting of large individuals to support pay lake operations. Another reason for catfish decline is not permitting adolescent catfish to reach reproductive maturity before harvesting.

Catfish do not normally reach reproductive maturity levels until they are between 13 and 15" long. A third instigator in the catfish population decline has been the spread of invasive Asian carp into the native habitats of catfish. The carp compete with the catfish for valuable habitat space and resources, slowly reducing the native species' population.

The changes still need approval from Gov. Mike Pence's office and Indiana attorney general's office. State wildlife officials say they're needed to boost the survival of younger catfish and ensure there's a continued supply of large "trophy" catfish that anglers can hook. ✧

## 21 states getting grants for higher ethanol blend pumps

The U.S. Department of Agriculture is spending $100 million to add 5,000 blender pumps in 21 states in an effort to handle E15, or gasoline blended with 15% ethanol. The USDA estimates the investment will more than double the number of stations that offer intermediate blends of ethanol, mainly E15 fuel levels.

The move, which USDA Secretary Tom Vilsack announced September 10, is part of a department grant program, the Biofuel Infrastructure Partnership. "The Biofuel Infrastructure Partnership authorized the agency to invest $100 million to double the number of renewable fuel blender pumps that can supply consumers with higher ethanol blends, such as E15 and E85.

The announcement was made as the Environmental Protection Agency proposed increasing the amount of ethanol required in the overall fuel supply, although it lowered the amounts required by the Clean Air Act, angering both critics and supporters of ethanol.

The boating industry has long opposed introducing E15 into the main fuel supply because it has been shown to damage boat engines, and it is in fact prohibited by the EPA for fueling boats.

The National Marine Manufacturers Association spoke out against the move, saying it includes the popular boating states of Florida, Illinois, Louisiana, Maryland, Michigan, Minnesota, North Carolina and Wisconsin.

"As more and more E15 enters the market, the likelihood of misfueling increases. NMMA remains steadfast in our efforts to oppose the development of E15," said the NMMA in a newsletter. "We are currently working with our stakeholder partners on a strategy that counters the government's award program and continue to call on Congress to make the legislative changes to fix the dangerous ethanol mandate." ✧

# Invasive Silver Carp Respond Strongly to Sound

## Could Noise Help Protect the Great Lakes Basin?

Silver carp, a species of invasive Asian carp, demonstrated a strong aversion to certain noises during a recent study on the potential use of sound for silver carp control.

Scientists with the U of Minnesota Duluth and the U.S. Geological Survey recently studied silver carps' reaction to sound at the USGS Upper Midwest Environmental Sciences Center (UMESC) in La Crosse, Wisconsin. The researchers found that silver carp reacted strongly to complex noises such as underwater recordings of boat motors, consistently swimming away up to 37 times in succession. The results are published in the journal *Biological Invasions*.

"Silver carp threaten many waterways in the Great Lakes basin by competing with native species," said USGS UMESC Director Mark Gaikowski. "Understanding silver carp behavior is critical for determining effective techniques to minimize the ecological and economic damage of this invasive species."

Brooke Vetter, a UMD graduate student and lead author of the report, positioned speakers at both ends of outdoor concrete ponds. She compared the carps' response to pure tones, which sound like a dial tone, to their response to more complex noises. The fish adjusted to the pure tones, never swimming away more than two consecutive times, but continuously responded negatively to complex sound.

"Our complex noise findings suggest that certain sounds could be used to divert silver carp away from strategic points on waterways or herd them into nets," Vetter said.

Results from this study have provided the foundation for the UMD, USGS and Illinois Natural History Survey to conduct field trials testing the efficacy of complex noise as a silver carp control tool in the Illinois River. Silver carp are reshaping river ecosystems through competition with native fish and mussels for the plankton that form the base of aquatic food webs. In regions of the Illinois River where carp populations are the most abundant, carp account for a large percentage of the river's biomass.

Silver carp also present a danger to boaters because fish as large as 20 lbs. can jump 10' out of the water, causing injury and damaging boats. For more info about silver carp research: USGS UMESC, UMD, Asian carp sound research project and asiancarp.us websites. ✧

## Lake trout survey to assist DNR decisions

An online survey, two public meetings and a public comment period that runs through October 15 are part of efforts by the Wisconsin DNR to develop new rules that protect lake trout populations while minimizing economic and recreational angler impacts.

The two meetings that were held September 29 & October 1 covered options developed by the DNR to help lake trout numbers recover and improve the long-term sustainability of the fishery. Terry Margenau, DNR Lake Superior supervisor, said anglers are being encouraged to provide feedback on the options through an online survey. The survey lists options in order of risk to meet or exceed the safe harvest quota, with the options least likely to result in an early closure of the fishery at the top.

After reviewing public input, the fisheries team will develop an emergency rule covering the recreational lake trout open season that runs from Dec 1, 2015 – Sept. 30, 2016. The current rule expires Sept. 30. Options for consideration:

- Keeping two fish from 20 to 22 inches with a trophy opportunity to keep one fish 40 inches or greater.
- Keeping three fish from 22 to 25 inches and with a trophy opportunity to keep one fish 40 inches or greater.
- Keeping one fish from 20 to 25 inches with a trophy opportunity to keep one fish 40 inches or greater.
- Keeping two fish from 20 to 25 inches with no trophy opportunity.
- Keeping two fish from 20 to 25 inches with a trophy opportunity to keep one fish 40 inches or greater.
- Keeping one fish from 15 to 25 inches with a trophy opportunity to keep one fish 40 inches or greater.

Margenau stressed that more liberal regulation options may result in reaching the quota prior to September 30, 2016 and require a season closure. Assessments over the last six to eight years indicate that the decline in lake trout abundance is largely due to harvest. Research shows lake trout numbers remain well below historical averages.

Lake trout often live more than 40 years and do not reach sexual maturity until they are eight to 10 years old. As a result, the lake trout stock must be carefully managed to address the needs of many stakeholders including commercial fishers, sport anglers and a host of associated businesses that all depend on a strong lake trout fishery in the Wisconsin waters of Lake Superior.

The survey can be found at: 22.selectsurvey.net/DNR/LakeTroutRegOptions. Anglers can also provide feedback by e-mailing Terry L. Margenau, Lake Superior supervisor, terry.margenau@wisconsin.gov.

For more info: "Lake Superior fisheries management." For more information about the Lake Superior fishery, search: "fishing Lake Superior." ✧

## Betsie River spawning closure lifted, effective immediately

The Michigan Natural Resources Commission, on September 10 lifted a spawning closure on the Betsie River in Benzie County. The lift went into effect immediately.

In 2012, the closure was put in place when the Betsie River experienced historically low water levels that left migrating Chinook salmon and steelhead vulnerable to illegal harvest. Recent weather patterns have resulted in water levels returning to normal conditions, so the spawning closure placed on the Betsie River mouth is no longer necessary.

Previously, the lower portion of the Betsie River from the Betsie Valley Trail Bridge west to a line in Betsie Bay between the westernmost dock of the Northstar Marina and the westernmost dock of the Eastshore Marina was closed to fishing.

New restrictions on artificial lures have been implemented on the Betsie River and a few other locations, so be sure to check online for the most up-to-date regulations information. Other spawning regulations are in effect in various parts of the state at certain points of the year. For more info: 2015 Michigan Fishing Guide. ✧

## Reminder: ILL fishing license just $1 for residents over 75

Just a reminder: on August 1 last year, Illinois passed a law that reduces sport fishing and hunting license fees to $1 for Illinois residents over 75. House Bill 4329, not only reduces the sport fishing and hunting license fee to $1 for residents over 75, but also waives the fee for Salmon, Inland Trout, State Migratory Waterfowl, State Habitat, Pheasant and State Furbearer Stamps for Illinois residents who are over 75. Maintaining the $1 fee allows Illinois to capture federal funds that are apportioned to the states according to how many licenses are sold, the state's land area and other factors. ✧

## Wisconsin sets permanent walleye bag limit in Ceded Territory

BOWLER, Wis. – The Wisconsin Natural Resources Board, on September 23, approved a rule establishing a daily bag limit of three walleye with varying size limits on most waters of the Ceded Territory.

The rule covers walleye (walleye, sauger and hybrids) with varying size limits and is designed to prevent a total harvest of more than 35% of the adult walleye population, which preserves a sustainable walleye fishery. Under the rule, which takes effect for next spring's fishing season, walleye in most waters in the Ceded Territory will have a minimum size limit of 15", except walleye between 20-24" may not be kept and only one walleye larger than 24" may be kept.

The department developed the rule to manage the walleye fishery after listening to citizens and stakeholders eager for more predictable and uniform angling regulations on lakes in the region. In approving the rule, the board asked the department to keep monitoring the walleye populations in the Ceded Territory lakes and continue working with lake associations and the tribes on this matter.

The board action also creates a catch-and-release only walleye fishery in the Minocqua and Tomahawk chain of lakes in Oneida County. Representatives of the Lac du Flambeau Band of Lake Superior Chippewa, the Headwaters Basin Chapter of Walleyes for Tomorrow, DNR and the Great Lakes Indian Fish and Wildlife Commission have developed a plan for a cooperative rehabilitation project for these waters, which seeks to restore healthy, self-sustaining walleye populations.

For background information on the tribal and recreational fishery in the Wisconsin Ceded Territory, walleye population estimates and creel survey summaries for all game fish, search the DNR website, dnr.wi.gov, for "Ceded Territory." ✧

## Whitefish and tullibee sport-netting to open on northern lakes

Recreational netting for whitefish and tullibee opens Oct. 9, on designated lakes that are less susceptible to sudden changes that impact water temperature, according to the Minnesota DNR. These lakes (Schedule II lakes) offer recreational netting on the following schedule:

- Schedule II A lakes open Friday, Oct. 9, and close Sunday, Dec. 6.
- Schedule II B lakes open Friday, Nov. 6 and close Sunday, Dec. 13.
- Schedule II C lakes open Friday, Nov. 13, and close Sunday Dec. 13.

Schedule I Lakes, which are more susceptible to factors that impact water temperatures, will be opened and closed on a 48-hour notice posted at lake accesses, other public places and the DNR website.

The DNR recommends drying nets for 10 days or freezing for two days before moving a net to a new lake, or netting only one lake in a season. Netting in infested waters may be restricted or closed to sport netting of whitefish and tullibee. For more info: www.mndnr.gov/invasives/ais/infested.html.

A complete list of all Schedule I and II lakes is available online at www.mndnr.gov/regulations/fishing or by calling the DNR Information Center at 651-296 6157 in the Twin Cities metro area or toll-free at 1-888-646-6367 in greater Minnesota.

Netting is allowed when there is little chance that game fish populations would be negatively impacted by recreational netting in shallow water.

State law restricts the size of the net and its openings; requires that netting be done in water not deeper than 6' unless specifically authorized; and requires that any game fish caught must be immediately returned to the lake. State law also limits net size to 100' long and 3' deep; allows one person to use no more than one net; and forbids recreational netters from possessing angling equipment when netting whitefish and tullibee. ✧

## $730,000 in funding for Hudson River projects

Approximately $630,000 in new NYSDEC grant funding is available to help communities in the Hudson River estuary with increasing resiliency to prepare for the new reality of extreme weather. In addition, New York provided a $100,000 grant to perform stream barrier outreach and assessments in Hudson River tributaries.

DEC is now accepting applications for projects that help communities in the Hudson River estuary watershed replace or right-size culverts and bridges, or remove dams to better cope with flood events, protect water quality and restore aquatic habitat connectivity for migratory fish and other species of concern in tributary streams of the estuary.

To be eligible for this funding, projects must conserve and restore aquatic habitat connectivity for Species of Greatest Conservation Need (SGCN) found in the tributary streams of the Hudson River estuary watershed.

The minimum grant award is $10,500 and the maximum award is $630,000. Additional points are given to projects in environmental justice areas and projects which support regional economic development strategies. Projects must be completed by October 31, 2017.

The DEC Hudson River Estuary Program 2015 Request for Applications (RFA) and the application form for the Tributary Restoration and Resiliency Grants are available online through the NYS Grants Gateway at www.grantsreform.ny.gov. General information about the grants is also available on the DEC website at http://www.dec.ny.gov/lands/5091.html. Completed grant applications must be submitted online by close-of-business November 13, 2015.

For general questions about the grants application process: Susan Pepe, DEC's Estuary Grants Manager, susan.pepe@dec.ny.gov. ✧

## Free tours at Michigan weirs during egg-take program

The DNR is offering free tours to the public and school groups this fall at the Boardman River Weir, located in downtown Traverse City; the Little Manistee River Weir, located in Manistee County; and the Platte River Weir, located in Benzie County. Tours are available throughout September and October.

Tours are being offered this fall at the Boardman River, Little Manistee River, and Platte River weirs by staff from the DNR's Fisheries Division and Carl T. Johnson Hunt and Fish Center. Students and visitors will learn all about salmon, how weirs and fish ladders work, invasive species, state fish hatcheries, and the DNR's annual egg collection efforts impact on Michigan's fisheries. The programs tie in components of history, ecology, biology and stewardship.

Tours at the Boardman River Weir began the week of September 14 and will run through mid-October. Tours will be offered at various times on Fridays, Saturdays and Sundays. Group tours are available by appointment.

Platte River Weir tours will run during the egg-take season slated for October 14-16 and 19-20. Public tours also will be offered on Saturdays and Sundays while the weir is in place.

Tours will tentatively be offered at the Little Manistee River Weir October 5-9. Public tours are also offered each day of the egg-take operation. To check the status of activity, call the weir hotline at 231-775-9727, ext. 6072. This year's egg-take efforts will be impacted by the readiness of the fish – it's best to call the weir hotline to determine activity level.

To schedule a tour at any of the locations, visit michigan.gov/huntfishcenter and click on any of three locations under the "School Group Programs" section. Please note: all tour dates are subject to change based on fish movement. ✧

## DNR completes 45th annual Saginaw Bay fish community survey

This month the Michigan DNR completed its 45th annual survey of the fish community of Saginaw Bay. The survey included both trawling and gillnetting and will gauge the abundance and health of fish populations in the bay.

"The timing of late summer or early fall allows us to assess how much reproduction or recruitment has taken place for the year, as well as the overall abundance of older age groups," said Dave Fielder, DNR fisheries research biologist.

While the DNR does other work in Saginaw Bay – such as walleye tagging projects, creel surveys and habitat work – this fish community study is the department's primary look at the status of the fish populations.

This study has supplied much of the information that recently led the DNR to recommend new regulation changes for walleye and yellow perch. For example, this survey's trawling (conducted by staff from the Lake St. Clair Fisheries Research Station) revealed poor survival of young perch and continuing low abundance of native forage species. "This information drove our decision to recommend liberalizing the recreational walleye fishery," said Fielder.

This year's survey is the last sampling activity for the R/V Chinook, which is retiring after 68 years of service on Lake Huron and is to be replaced in 2016 by the new R/V Tanner.

Preliminary observations showed improved yellow perch numbers at two sampling sites in the inner bay, a strong group of young walleye, and continued low abundances for native forage species including spottail shiners and trout-perch. ✧

# Lake Erie algae bloom spreads to Cleveland

GIBRALTAR ISLAND, Ohio – Scientists who study Lake Erie say this summer's growing toxic bloom is almost certain to be the worst on record. The bloom, which started in the western part of the lake in June, has stretched to Cleveland and could still grow. The mass peaked late last month.

Scientists originally thought the bloom would be about average this year, but heavy, sustained rains in June and July washed large amounts of phosphorus into the watersheds that feed the lake. "All that rain just increased the load," said Chris Winslow, director at Ohio Sea Grant and Ohio State University's Stone Laboratory, which study the lake.

Algae feed, in part, on phosphorus, a key ingredient in manure, farm fertilizers and sewage. When phosphorus levels began to rise, scientists say, it became clear that this year's algae bloom would be bad. Still, they originally thought the bloom would be smaller than the record-setting one in 2011. The levels of phosphorus were high this year, but not as high as 2011 levels.

But new data about the amount of phosphorus that ended up in the lake show that this summer's bloom likely will top 2011's bloom. The data show that dissolved reactive phosphorus reached the lake in the largest amounts in recent history. Dissolved phosphorus is blue-green algae's favorite form of phosphorus to consume, said Laura Johnson, a research scientist at Heidelberg University's National Center for Water Quality Research, which monitors watersheds around Lake Erie.

The more fuel for algae, the larger the bloom. Large blooms can sicken people and hurt the summer tourism season at the lake, which already suffers from bacterial issues on its beaches. Blue-green algae produce microcystin, a toxin that makes people sick and can kill pets. Microcystin contaminated Toledo's drinking water in August 2014, forcing the city to tell nearly 500,000 people to stop using their taps.

Scientists, including former Stone Laboratory director Jeff Reutter, met recently to work on to the lake's perennial algae problem. Those scientists have recommended cutting the amount of phosphorus that reaches Lake Erie by 40 percent from 2008 levels in order to reduce algae. To do that, farmers will have to change the way they operate. Scientists say manure and fertilizers that wash from farm fields are responsible for a large portion of the phosphorus that gets into the lake.

Ohio State and other universities are studying ways farmers can keep phosphorus out of the Lake Erie watershed. Winslow said soil testing could help. If farmers know how much phosphorus already exists in their soil, he said, they won't need to add more than the soil needs to grow crops. The state could also expand wetlands around the rivers and streams that feed Lake Erie. And farmers could install special "two-stage ditches" that would filter phosphorus from runoff.

Reutter said farmers, scientists and policymakers have to work together: "The goal has to be (to) keep agricultural production high, but keep phosphorus on the fields." ✧

## EPA offers $13.2 million to clean up Brownfields Sites across the country

The USEPA, on September 23 announced $13.2 million in supplemental funding to help transform communities by cleaning up contaminated Brownfields properties. Supplemental funding of the Revolving Loan Funding (RLF) will be given to 31 successful RLF grantees helping 44 communities carry out cleanup and redevelopment projects. These projects will help communities create jobs while protecting people's health and the environment. Many of the cleanups are in under-served and economically disadvantaged neighborhoods — places where environmental cleanup and new jobs are most needed.

The grantees receiving supplemental funding this year continue to demonstrate a high level of preparedness to undertake specific shovel-ready projects and have the committed leveraged funds necessary to move projects forward. This year's supplemental funds will support an array of cleanup and redevelopment projects across the country. For example:

- Detroit/Wayne County will make a loan to the Henry Ford Community Heath project in Michigan. The reuse will support buildings for Henry Ford Hospital as well as mixed-use development including retail near the hospital. The project will create jobs in a community economically disrupted by the closure of auto plants and other manufacturing.
- The City of Rockford, Ill. will make a loan to clean up the Rockford Watch Factory. The site will be home to a downtown sports complex. The project has $18 million in state grants, local bonds and City funding.

There are an estimated 450,000 abandoned and contaminated sites in the United States. EPA's Brownfields program targets these sites to encourage redevelopment, and help to provide the opportunity for productive community use of contaminated properties. Since the inception of the EPA's Brownfields Program in 1995, cumulative brownfield program investments have leveraged more than $23.3 billion from a variety of public and private sources for cleanup and redevelopment activities. This equates to an average of $17.79 leveraged per EPA brownfield dollar expended. These investments have resulted in approximately 109,787 jobs nationwide.

More information on EPA's Brownfields program: http://www.epa.gov/brownfields/. ✧

## ODNR and U.S. Army Corps of Engineers reach out to anglers

A partnership has led to enhanced fishing opportunities at Mosquito Creek Lake in Trumbull County, Ohio. On September 10, the Ohio DNR partnered with the U.S. Army Corps of Engineers-Mosquito Lake Office to place eleven Porcupine Crib Junior structures in the lake. These structures imitate natural woody debris and provide anglers with locations to focus on since fish will associate with this type of structure. The structures were placed across the face of the dam in eight to 14' of water. GPS coordinates are N 41° 18' 1.0" / W 80° 45' 29.0" to N 41° 18' 4.4" / W 80° 45' 19.7" using the NAD83 map datum.

Agencies Staff members built structures out of hardwood and weighed them down with cinder blocks. These structures will last for many years and anglers should be able to locate them fairly easily by using their depth finders. For more info call: 330-644-2293. ✧

## Surplus salmon available to public

The public again is invited to purchase surplus salmon that has been harvested at Michigan DNR weirs around the state. Seasonal salmon runs include large numbers of fish returning to their native streams to spawn and die. The DNR maintains multiple sites (weirs) where fisheries biologists and technicians collect eggs and milt (sperm) from Chinook and coho salmon for use in state hatcheries. Once egg-take needs are met, fish in prime physical condition are made available to the public by American-Canadian Fisheries, a private vendor that assists the DNR with the salmon harvest.

For a list of Michigan retailers: michigan retailers selling salmon. ✧

## DNR makes Lake Gogebic walleye recommendation

### Change would allow more harvest opportunity for anglers

Michigan DNR has recommended a change in the sportfishing regulations for walleyes in Lake Gogebic in the Upper Peninsula. The current walleye minimum size limit on Lake Gogebic is 15", with a daily possession limit of five fish. The proposed change would allow anglers the option of keeping two smaller walleyes – from 13 to 15" – within their five-fish daily possession limit. The proposed rule change would not require anglers to keep fish smaller than 15". The Michigan Natural Resources Commission could act on the recommendation at its November 5 meeting in Lansing. If approved by the NRC, the regulation changes in the order would have immediate effect. www.michigan.gov/fishing. ✧

### Keep anglers fishing

*Continued from page 1*

For most, it translates into lost dollars as people who would otherwise be considered prime candidates for participating in fishing step away from the sport. These lost dollars not only impact the companies that make boats, tackle, rods and other fishing gear, but also guide services, hotels and local communities that cater to anglers.

"Perhaps the biggest impacts are realized by state game and fish departments who directly lose revenue from lost license sales, along with the lost excise taxes collected in the sale of fishing gear and boat fuels," says Rob Southwick, president of Southwick Associates.

Ultimately, by realizing the reasons to which anglers step away from fishing each year, the ASA hopes to help agencies and other stakeholders develop strategies that will improve fishing interest and access among those groups—young people, women and urban residents-and keep them participating in angling every year. ✧

## Au Gres River boating ramp replacement under way

The Michigan DNR has started construction on the Au Gres River Mouth boat launch in Arenac County. The site, located east of U.S. 23 on Riverside Drive, will have partial ramp closures until construction is completed sometime in November. During construction the ramp will be reduced to one pier with two launch/retrieve lanes. The new ramp will provide improved access to Lake Huron at the Au Gres river mouth. This $65,000 project is being funded by the DNR. For more info: Chuck Allen: allenc9@michigan.gov or 989-362-5041. ✧

## Lake Carlos State Park to offer snowshoe-lacing workshop

The workshop is November 21-22 from 9 a.m. to 4 p.m. both days. Workshop presenters will teach participants how to string the laces on pre-built Ojibwe-style (pointed end) wooden snowshoe frames and then demonstrate how to use them.

"For just $75 and a few hours of your time, you can make and take home your very own pair of traditional Ojibwe-style snowshoes," said Ryan Sansness, assistant park manager at Lake Carlos State Park. "The snowshoes will not only give you the ability to explore Minnesota's winter wilderness, but will give you the added satisfaction of knowing you made them yourself."

The $75 registration fee includes the snowshoe kit, materials, and instruction, along with coffee, tea, water and snacks. Rubber bindings are available to purchase at the park for $5 per pair. Lunch will not be provided for the weekend workshop, so participants are encouraged to bring a sack lunch.

Class size is limited to 12 people with a minimum of eight. Registration deadline is November 2, by 4 p.m. To register, or for more info: 320-852-7200. The workshop will take place at the park visitor center. ✧

# New IDNR fishing tournament permitting system now online

## Tournament organizers will be able to apply for a permit and enter catch data online

A new permitting system for the organizers of fishing tournaments is now live on the IFishIllinois.org website. The new online system creates a quick, easy mechanism for applying for a tournament permit and gathering the anglers' catch data afterwards. With the increase in the number of tournaments in recent years, the DNR needs to be able to assess the effects of tournaments on the state's fisheries (over 1,300 tournaments have been approved this year). Information collected will help site managers maintain a balance between tournaments and the public.

The application is available here: Tournament Information System.

• All public waters of the State now require a permit before the event can take place. State-owned waters also have required an Activity Permit in the past. That is incorporated into the online tournament permitting process, and a separate application is no longer required.

• As in the past, for those tournaments launching out of a ramp not owned by the State, permission needs to be gained from that entity prior to the event. Permission is in addition to the requirement to have a tournament permit from the online IDNR system.

• Tournament organizers or directors will create an account at: Tournament Information System.

• The application will ask for tournament dates and location.

• That application will be sent to the biologist and the site superintendent (if the water is state-owned). Within two weeks the organizer will receive approval or denial.

• For those waters not owned by the State, the Tournament Director will need permission from the owner.

• Tournaments for the following year may be scheduled on or after November 1 of each year.

• For all who have applied for a tournament permit in the past, an account will be created for you. There will be no need to create a new account. Each tournament director will receive an e-mail notification.

• A tournament is defined as an organized, competitive fishing event in which two or more individuals participate.

• The event is sponsored or promoted by an individual or organization.

• Participants compete for trophies, cash, or other recognition for participation in the event.

• The event is conducted during a specified time period.

• This definition is narrowly written to exclude impromptu groups of friends meeting to fish together.

• Boats must have an aerated livewell with recirculating water. No regulation exemptions will be granted except for youth tournaments and tournaments held on Lake Michigan.

• Tournament permits are required for all game species. In addition, bow-fishing tournaments will require permits. ✧

# Sea Lamprey reach 30-year low in Lake Huron, 20-year low in Lake Michigan, trend down in other lakes

The Great Lakes Fishery Commission reported that abundances of destructive, invasive sea lampreys have been knocked down to a 30-year low in Lake Huron, a 20-year low in Lake Michigan, and to below the target level in Lake Ontario. The commission also reported that although sea lampreys are above the target levels in Lakes Erie and Superior, the trends in both lakes follow a steady 5-year decline. Sea lampreys are and always will be a constant battle in the Great Lakes. Today, the Great Lakes fishery is worth $7 billion to the people of Canada and the U.S. Without sea lamprey control, the fishery would suffer significant harm.

"This new information about sea lamprey abundances is outstanding news," said Dr. Robert Hecky, the commission's chairman. "We still have work to do in Lakes Superior and Erie, but sea lampreys there are on a steady downward trend."

The sea lamprey is one of the worst human-caused ecological disasters ever inflicted upon the Great Lakes. Sea lampreys invaded through shipping canals and, by 1939, were present throughout the system. They attach to fish with a tooth-filled, suction cup mouth and file a hole through the fish's scales and skin with a razor-sharp tongue. The average sea lamprey will kill up to 40 lbs. of fish. Sea lampreys prefer trout, salmon, whitefish, and sturgeon, but they also attack smaller fish like walleye.

Given the tremendous damage sea lampreys caused, Canada and the U.S., through the 1954 Convention on Great Lakes Fisheries, charged the Great Lakes Fishery Commission with implementing sea lamprey control and research; the commission partners with Fisheries and Oceans Canada, the USFWS, and the USGS to deliver the program. Sea lamprey control consists of several techniques including lampricides, barriers, and traps. The commission also is experimenting with sex pheromones as a way to disrupt spawning behavior. For more information about sea lampreys and control, visit www.sealamprey.org/sealamp/.

"Overall, the sea lamprey control program has been a tremendous success," said Hecky. "Before control, sea lampreys killed an estimated 103 million lbs. of fish per year. Today, sea lampreys kill less than 10 million lbs. of fish per year. This control program provides fish a chance to survive long enough to spawn, be caught by humans, or live a natural life. It also allows agencies to restore stressed species and maintain thriving sport, commercial, and tribal fisheries." ✧

# DNR redoubles Mille Lacs Lake walleye management efforts

The DNR is implementing several concrete steps aimed at improving the Mille Lacs Lake walleye population, while building a closer working relationship with the Mille Lacs community. Mille Lacs Lake, known as a "walleye factory" for many years, has seen a steep decline in its walleye population, which is now at a 30-year low. On August 3, the DNR closed the lake to walleye fishing after state anglers exceeded the quota of 28,600 pounds. The intensified focus on the lake calls for action on several fronts.

Some of this work is already underway:

**Mille Lacs Staffing and Facilities Changes**

►**New Project Leader and Additional Staff**: The DNR will create a new fisheries office to focus exclusively on Mille Lacs; assign a new Mille Lacs project leader; add a new outreach specialist; and provide more staff support for monitoring and technical analysis on the lake. These staff will provide more capacity for monitoring, foster better communication with local stakeholders, help with hatchery and stocking efforts, and assist the community with outreach and marketing efforts.

►**New Fisheries Facility**: The DNR will work with the Legislature to secure funding for a new fisheries management facility that will include a cool-water hatchery. The facility will be built in the Mille Lacs community and will provide room for monitoring equipment and staff. The space will accommodate educational, visitor and interpretive functions as well as serving as a location for public information meetings. Bond funds will be requested during the 2016 legislative session for facility construction. Until a new facility is available, the DNR will lease an office in a community near the lake to house the project leader and other Mille Lacs Lake staff.

**Biological Actions on Mille Lacs**

►**Pilot Stocking Effort**: The DNR will stock walleye fry in Mille Lacs in 2016 in a pilot effort to develop and refine techniques. While stocking is not necessary today with the abundant natural spawning, the DNR wants to be ready to go if and when such stocking becomes necessary. The pilot will help develop techniques to maintain the unique genetics of the lake, ensure that aquatic invasive species in Mille Lacs are not spread to other water bodies, and identify appropriate stocking levels. The DNR staff will chemically mark walleye fry to study their survival throughout their lifecycle. Egg-take, hatching, and stocking will occur in spring of 2016.

►**Cormorant Control**: The DNR is already in discussions with the USFWS to secure control permits for double-crested cormorants.

**Community Outreach on Mille Lacs**

►**New Advisory Committee**: The DNR will create a 12- to 16-member panel representing businesses, anglers, local officials, and others to help guide future management decisions. A draft charter is under development now and the commissioner will appoint members in September.

**Increased Transparency of Quota Setting**: The DNR will increase the transparency of the quota-setting process by inviting two advisory committee members to attend and observe fisheries technical committee meetings.

►**Promote Other Fishing and Outdoor Recreation**: The DNR will promote other great fishing opportunities in the lake, including northern pike, smallmouth bass, and muskellunge, and the many recreational resources in the region. The DNR offers a wide variety of options for outdoor recreation in the Mille Lacs area including other lakes, hunting lands, state parks, bike trails, ATV and snowmobile trails, and paddling opportunities. In an ongoing partnership with Explore Minnesota Tourism, the DNR is collaborating on the *Do the Lake* outreach campaign. ✧

## Wis Free Fishing Weekend - January 16 & 17, 2016

Winter will arrive soon and lakes will freeze over for a season of ice fishing. Start organizing Winter Free Fishing Weekend events in your community and invite adults who missed out as kids! A planning form is available online. Fill it out, send it in and we'll post your event on the DNR's Web site. http://dnr.wi.gov/topic/fishing/anglereducation/FreeFishingWeekend.html. ✧

## Penn reaches $2.5M settlement over fish kill

The Pennsylvania Fish and Boat Commission has reached a $2.5 million settlement with Murray Energy for damages resulting from a 2009 pollution incident in which discharges from a coal mine entered Dunkard Creek, contributing to a massive fish kill spanning nearly 30 miles of stream in West Virginia and Pennsylvania. Ohio-based Murray agreed to pay the settlement in lieu of civil damages for the lost aquatic life and lost fishing opportunities for Pennsylvania anglers as a result of the pollution incident.

The funds will be placed in a restricted revenue account within the Fish Fund to be utilized for the primary purpose of developing and implementing projects that benefit recreational fishing of the Dunkard Creek watershed. Once restoration is complete, the Commission may use the remaining funds for restoration projects in other southwestern Pennsylvania watersheds.✧

# New, ultra-detailed maps of Great Lakes recreational use will inform restoration priorities

ANN ARBOR – University of Michigan researchers and their colleagues have created exceptionally detailed maps of five Great Lakes recreational activities and say the information can be used to help prioritize restoration projects.

They mapped places used for sport fishing, recreational boating, birding, beach use and park visits for all five Great Lakes and included sites in both the United States and Canada. The recreational sites were then compared to the research team's previously published "threat maps," which show the location of 34 Great Lakes environmental stressors.

Taken together, the maps showing intensity of recreational use as well as environmental stress provide federal and regional officials with an unprecedented scientific foundation upon which to sustainably manage the Great Lakes, where current restoration efforts exceed $1.5 billion, the researchers conclude.

"Restoration priorities are typically based on the evidence for environmental degradation without explicitly accounting for the benefits people receive from ecosystems, which include recreational opportunities," said lead researcher David Allan, professor emeritus of aquatic sciences at the U-M School of Natural Resources and Environment.

Ecosystems provide numerous goods and services to human society, including harvestable fish and timber, water purification and nutrient recycling, as well as cultural services such as recreational and other nonmaterial benefits. "Knowing the distribution of threats and benefits—the linking of ecosystem service maps with threat maps—is a powerful and under-utilized tool to help us better manage the Great Lakes and other highly valued ecosystems," Allan said.

A paper summarizing the study's findings was published October 1 in Frontiers in Ecology and the Environment, a journal of the Ecological Society of America. Allan and his team used data obtained from agency reports, citizen-science databases and social media for the years 2000 through 2010. Tourism and recreation data were obtained from the National Oceanic and Atmospheric Administration for 78 coastal U.S. counties around the Great Lakes.

The NOAA data showed that $15.4 billion in gross domestic product was generated within the shoreline counties in 2010, with tourism and recreation accounting for $8.3 billion of the total. With help from NOAA economists, the U-M-led team showed a strong correlation between all five recreational activities and the tourism and recreation portion of the gross domestic product for coastal communities.

The researchers found that the most intensive use of the five recreational resources occurred, not surprisingly, near cities and across the southern portion of the Great Lakes region. Locations where both environmental stress and recreational opportunities are above the county median occur mainly around Lake Erie and Lake Ontario. Much of the U.S. shore of Lake Erie falls into this category, which may surprise many who view the shallowest Great Lake as having lost much of its value.

The researchers say the co-occurrence of high environmental stress and high rank in recreational benefits is a conundrum that calls for further research.

"It's possible that these highly stressed locations will deliver even greater benefits if stress is reduced, but it is also possible that these locations are highly resilient," said Peter McIntyre of the University of Wisconsin, one of the study co-authors and a member of the original stress-mapping team. "We need studies that track restoration activities and measure not only whether stressors are reduced, but also whether human benefits are realized."

Producing detailed maps of Great Lakes recreational use required imaginative approaches, said project co-leader Sigrid Smith of the U-M School of Natural Resources and Environment.

The team contacted state agencies to obtain a measure of sport fishing effort, measured as angler hours. Birding activity was acquired from a citizen science database maintained by Cornell University's Laboratory of Ornithology, where birders upload their observations. Except at a few locations, no data are kept on beach visits, so the team exploited a method based on social media, capturing geo-referenced Flickr photo uploads from more than 800 beaches around the Great Lakes. To quantify spatial patterns in boating effort they counted boat slips at marinas, and data were available for visits to state and provincial parks.

In addition to Allan, Smith and McIntyre, the authors of the Frontiers in Ecology and the Environment paper are Christine Joseph, Caitlin Dickinson and Adrienne Marino of the U-M School of Natural Resources and Environment; Reuben Biel of Oregon State University; James Olson of Michigan Technological University; Patrick Doran of The Nature Conservancy; Edward Rutherford of NOAA's Great Lakes Environmental Research Laboratory; and Jeffrey Adkins and Adesola Adeyemo of NOAA's Office for Coastal Management.

The Great Lakes Environmental Assessment and Mapping (GLEAM) project began in 2009 with a $500,000 grant from the Bloomfield Hills, Mich.-based Fred A. and Barbara M. Erb Family Foundation, with continuing funding from the U-M Water Center. Supplemental support was provided by The Nature Conservancy and grants from the National Science Foundation and the Packard Foundation.

greatlakesmapping.org. ✧

## Other Breaking News Items:

(Click on title or URL to read full article)

**Fall a Good time to hook Chinook**
The lake has changed significantly over the decades, including the dominance of introduced and invasive species and the loss of its tremendous yellow perch fishery. One thing that hasn't changed is the persistence and adaptability of anglers.

**Concerns over alewives, salmon spawn debate**
A lot of eyes are focused on this year's salmon spawning run, and plenty of ears await word on just when it's time for a trip to a favorite lakeshore river, but it's the mouths that are already running with rumors of Lake Michigan's salmon fishery in jeopardy of failing.

**Salmon population plummeting in Lake Michigan**
Chinook salmon's numbers are decreasing in Lake Michigan due to a combination of natural forces, invasive species, and the Michigan Department of Natural Resources' efforts to dial back the population and prevent a more permanent population crash.

**Minnesota DNR reviewing draft of revised Lake Superior fishery plan**
The plan, which guides management of the Lake Superior fishery in Minnesota waters, was last revised in 2006. The DNR, with public input, revisits the plan every 10 years.

**Fish farms threaten Great Lakes**
Already the Department of Environmental Quality has approved a permit for a flow through a fish farm, which will put out hundreds of thousands of pounds of fish feces into the Au Sable River.

**Eight Asian grass carp caught in Great Lakes already this year**
Michigan officials are expressing concern but not major alarm at the several large Asian grass carp that were caught this summer in Lake Ontario and Lake Erie.

**Rule sets permanent walleye bag limit in Ceded Territory**
The Wisconsin Natural Resources Board approved a permanent rule to establish a daily bag limit of three walleyes on most waters of the Ceded Territory in northern Wisconsin.

**Meet Canada's Asian carp detective**
The head of the Asian carp program for Fisheries and Oceans Canada is tracking the invasive fish, and looking to solve the mystery of the carp's appearance near Toronto, Ont., this summer.

**Lake Erie walleye and perch hatchlings near record numbers**
Two straight cold winters may have wrought havoc on land, but beneath the waters of Lake Erie, walleye and yellow perch were able to breed in near-record numbers since hatchling monitoring began in 1987

**Lake Michigan lamprey population hits 20-year low**
Lake Michigan's sea lamprey population plummeted to a record-low this year according to a report released by the Great Lakes Fishery Commission

**DNR slashing salmon stock in Lake Michigan**
The state of Michigan is stocking Lake Michigan with two thirds less salmon this year than three years ago, a decision impacting West Michigan businesses that rely on fish in the big lake

**Invasive species Asian carp found near Lake Monroe**
Indiana DNR officials are worried about the possibility that anglers may introduce Asian carp into Lake Monroe near Bloomington, Ind. Carp are nearly identical to another invasive fish – the Gizzard Shad, which is already in Lake Monroe.

**Fisheries and Oceans staff monitors sediments beneath aquaculture cages**
An industry-initiated project is aiming to provide better science on the impact fish farming operations are having on the water and sediment beneath the farms, as well as assist in designing more efficient and accurate testing regimes.

**Walleye hatch confirms those very fishy hearsay**
A recent survey conducted by fisheries biologists of the Ohio Division of Wildlife indicates that the 2015 walleye hatch is one to shout about.

**Battle brewing over fish farming in Great Lakes**
Penned fish farms being advocated for the Great Lakes can bring significant revenue to Michigan. But critics note they also allow fish waste to escape freely into surrounding water.

End