



## Asian carp would have adequate food to survive in Lake Michigan: USGS study

If invasive bighead carp and silver carp spread into Lake Michigan, there would be enough food available for these particular species of Asian carp to survive, according to [a new study by the U.S. Geological Survey](#).

This information is critical in helping resource managers mitigate effects of an Asian carp invasion. Great Lakes fisheries generate economic activity of approximately \$7 billion annually in the United States alone. Due to the introduction or invasion of many non-native species, Lake Michigan's ecosystem has already undergone broad and rapid change in fish and other aquatic life. If bighead and silver carp were to populate Lake Michigan, they have the potential to adversely affect the ecosystem and fishing industry. Scientists used predictive models to simulate fish growth and food



consumption to determine the suitability of the Great Lakes to Asian carp invasions. USGS scientists used satellite imagery of Lake Michigan showing near-surface algae to determine how much food would be available for Asian carp. Green algae and blue-green algae, specifically floating algal blooms that can be seen on the surface, are a preferred food source for Asian carp. The water temperatures and algal concentrations detected in Lake Michigan from 2009-2011 show that the bighead and

silver carp populations could not only live in this environment, but continue to grow.

"Most areas of the lake had insufficient algal food for bighead and silver carp, but the model indicates that nearshore areas and embayments had plenty of algal food to support survival and growth," said Karl Anderson, USGS scientist and lead author of the study.

These findings imply that if bighead and silver carp were to invade Lake Michigan, they might not spread randomly across the lake, rather follow coastlines where sufficient algal food exists. Coastal areas are particularly important not only for fisheries and biological reasons, but also because human activity is more common near shore

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## Massive Asian carp die-off reported in Kentucky

FRANKFORT, Ky. – On April 23, nearly 500,000 silver carp died within a 24-hour period in the Cumberland River below Lake Barkley in what could be the largest die-off of Asian carp ever recorded in the United States.

The Kentucky Department of Fish and Wildlife Resources says specimens of the invasive silver carp were taken to Kentucky State University for disease testing. State wildlife officials believe the cause of the massive die-off was probably a bacteria or virus.

"Whenever there is one species of fish, you are definitely thinking viral or bacterial," said Paul Rister, a Kentucky fisheries biologist. "It's not anything water quality wise. If it was oxygen related or chemical related you would see other species."

Another possible option could be a lack of oxygen in the water, but Kentucky Fisheries Director Ron Brooks said there's plenty of it in the water where the die-off occurred.

Brooks said state fisheries biologists are currently testing samples of the dead fish for Lactococcosis, a brain pathogen that has been found in Asian carp in previous die-offs. Biologists expect to have the test results completed in one month's time. Evidence of the fish kill was documented to the confluence with the Ohio River.

"It'd be nice for them to be able to isolate that and create a biological bullet to combat Asian carp," Brooks said. Rister says the source could be viral or bacterial. He says if water quality was the cause, other species would be affected. ✧

## Researchers discover new invasive clam

A research team found a new invasive clam of the genus *Corbicula* in the Illinois River near the city of Marseilles, Illinois, about 80 miles west of Lake Michigan—a strange entry point for an invasive Asian clam. The scientists who found it have no idea how it got there. But the discovery—along with genetic tests that confirm its uniqueness—means that a new species or "form" of invasive clam has made its official debut in North America.

This is only the latest invasive aquatic species to settle in North America, said Illinois Natural History Survey aquatic ecologist Jeremy Tiemann, who discovered the new clam with INHS mussel field biologist Sarah Douglass in late 2015. The INHS is a division of the Prairie Research Institute at the University of Illinois.

"In the Midwest, you have invasive bivalves, including zebra mussels, and several species of invasive fish: Asian carp, black carp and even goldfish," Tiemann said. There are exotic plants, like Eurasian milfoil. There is an invasive water flea from Africa, Asia and Australia. There also are several kinds of invasive snails, the researchers said. All of these create problems for the natives.

The new invader is a member of the genus *Corbicula*, which was first observed in Vancouver, British Columbia, in 1924. It likely was brought to North America by immigrants from Asia who used the clams as food, the researchers said. Within a few decades, it had colonized many of the major waterways of North America.

Douglass and Tiemann found the new clams while hunting through a mudflat for a federally endangered native clam, the scaleshell, that had been spotted in the same location two years before. They noticed that this tiny creature, roughly the size of a fingernail, had unusual physical characteristics compared with the other invasive species of *Corbicula* found in this region.

The Illinois team shared the find with researchers at the University of Michigan, who conducted genetic tests that confirmed the new clams were distinct from earlier *Corbicula* invaders.

Despite the genetic and physical differences, the researchers can't say whether the clam is a new species. *Corbicula* have reproductive strategies that make them difficult to classify, the researchers said. To begin with, they are androgenic clones.

"When the sperm fertilizes the egg, it kicks out the maternal nuclear DNA, retaining only the male's, and thus producing clones of the father," Tiemann said. "These offspring, however, retain the mother's mitochondrial DNA, which resides in tiny organelles outside the nucleus."

*Corbicula* also can hybridize with other *Corbicula* taxa, further complicating the task of classifying them, Tiemann said.

"To compound matters even more, *Corbicula* can also be hermaphrodites, so they can fertilize themselves," he said. "This means that it takes only a single clam to spawn a new population." ✧

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than in the vast open areas of Lake Michigan. Silver carp often react to boats by jumping; this activity is a nuisance because silver carp often jump into boats, harming people and property. Concentration of silver carp near the coastline would enhance the propensity of such nuisance interactions with boaters.

Food availability and water temperature are the greatest sources of uncertainty for predicting fish growth potential. Water temperature is a key factor in determining how much bighead and silver carps need to eat. Models developed by USGS scientists helped determine how much algae carps need to eat to survive. ✧



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#### Position Statement

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

### Inland Seas Angler

#### GREAT LAKES BASIN REPORT

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## Muskie egg quota reached at Lake Webster

Despite the low number of adult muskies now present in Lake Webster, DNR biologists were able to catch enough sexually ripe females this spring to obtain nearly 500,000 eggs. That number fills the annual quota needed to support Indiana's muskie stocking program.

Biologists captured 88 muskies in trap nets set over an eight-day period in late March and early April at the 774-acre lake in Kosciusko County. Fifty were adult males and 24 were adult females. From this group, five females were "ripe" enough to provide nearly 11 quarts of eggs that were stripped from the fish, fertilized with milt from males, and then transported to the Fawn River Hatchery in Orland. The eggs were then shipped to the East Fork Hatchery in southwest Indiana where they will hatch and eventually produce 20,000 muskie fingerlings that will be stocked in 14 waters throughout the state.

Biologists have had difficulty trapping enough ripe females in recent years as the population has declined.

To counter the decline, biologists are now stocking larger muskie fingerlings that have a better chance of survival and have put limits on the amount of weed control at the lake to provide more cover for young muskies. Apparently, efforts to boost the population are speeding recovery.

Twenty-seven muskies less than 30 inches long were captured during the trapping operation. "That's the highest number of young muskies we've caught in 10 years," said Jed Pearson, DNR biologist. Five of the young muskies were stocked last spring in a group of 1,500 fingerlings that were tagged before release. They averaged 12" long when stocked and are already 20" long.

"Based on this, anglers should have more muskies to catch in the coming years and egg-taking for us should get a little easier," Pearson said. ✧

## New zebra mussel-sniffing K9s take aim at aquatic invasive species

Two new K9 dogs, trained to quickly locate zebra mussels on boats and trailers, will be helping the Minnesota DNR prevent the spread of aquatic invasive species.

The K9s help by quickly sniffing out any zebra mussels attached to boats or equipment. Newly certified K9s Shelby and Storm join veterans Brady and Reggie on the force.

"The invasive species program is excited to have two more K9 officers ready to detect zebra mussels on water-related equipment in the field and to educate people about aquatic invasive species and what each of us can do to stop the spread," said Heidi Wolf, invasive species unit supervisor.

More DNR-trained watercraft inspectors, more decontamination units, expanded training efforts and greater public engagement all help prevent the spread of zebra mussels, starry stonewort and other aquatic invasive species.

"We need anglers, and everyone who enjoys Minnesota's waters, to follow three simple steps: Clean, Drain, Dispose," said Jackie Glaser, DNR enforcement operations manager. "It's not only the best way to prevent the spread of aquatic invasive species, but it's also the law in Minnesota. **Clean** aquatic plants and prohibited invasive species from watercraft; **Drain** lake or river water and keep drain plugs out during transport; and **Dispose** of unwanted bait in the trash, not in the water."

In addition to these required steps, especially after leaving infested waters, the DNR recommends that anglers:

- Spray boat and trailer with high-pressure water.
- Rinse boat and trailer with very hot water (120 degrees for two minutes; or 140 degrees for 10 seconds).
- Dry boat and equipment for at least five days. ✧

## DNR confirms virus in Lake St. Clair fish kill

Test results on fish collected in the [ongoing fish kill event on Lake St. Clair](#) were confirmed to be positive for VHSV. Fish were collected during late March and early April and included gizzard shad, bluegill, and black and white crappie.

"A total of 165 fish have been tested thus far using samples of five fish, and of the 33 samples, 31 of them have been positive for VHSV," said Gary Whelan, DNR research program manager. "Ten gizzard shad were tested individually and all were positive for the virus. These results confirm what we initially suspected, given the external signs on the fish, species involved, and timing of the fish kill, all strongly implicating VHSV as the cause of this fish kill."

The current distribution of the fish kill event is from Algonac to Lake Erie, with many of the reports from Harrison Township to St. Clair Shores. Initially, the kill was mostly gizzard shad, but now is widening to more species and is likely to affect tens of thousands of fish. This event is an unusually large fish kill but is smaller than an earlier VHSV-related fish kill in 2006.

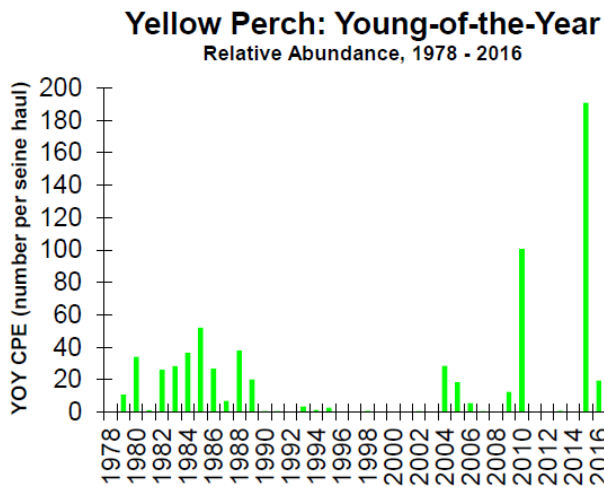
VHSV is known to infect more than 30 species of Great Lakes fish and has been found in lakes Superior, Huron, Erie and Ontario, along with a few inland lakes.

"The public has been essential in helping the DNR efficiently track and sample this event and is encouraged to continue to provide us with reports of fish kills with a focus on kills of more than 25 fish," Whelan said. "The public can provide the reports to [DNR-FISH-Report-Fish-Kills@michigan.gov](mailto:DNR-FISH-Report-Fish-Kills@michigan.gov)."

Anglers are reminded to refrain from moving live fish between water bodies and to properly dispose of bait. Boaters need to make sure their bilges and live wells are emptied prior to leaving a boat launch, and equipment must be cleaned and disinfected after use. For more info: [viral hemorrhagic septicemia](#) and [michigan.gov/fishhealth](http://michigan.gov/fishhealth). ✧



## Adult Yellow Perch Abundance Remains Low, Second Year of Perch Recruitment Detected



Catches of adult yellow perch (total catch = 35 perch) remained low at our two annual sampling sites similar to the low catches in 2014 and 2015. We like to see a yellow perch population comprised of multiple year classes including older, larger individuals that anglers prefer and that may have higher reproductive success.

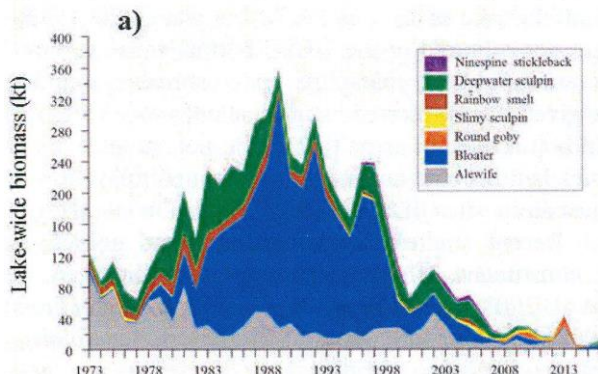
Yellow perch seining in 2016 yielded a good catch of young-of-year. While not as strong as the record number of age-0 yellow perch sampled in 2015, this is a significant change from the relatively poor recruitment that we had seen over the previous 4 years (2011-2014) and during the 1990s.

These results are encouraging; however, additional strong year classes will be needed for a recovered and stabilized yellow perch population and fishery. Additionally, these young perch will need to find adequate food, survive and grow over the next few years before they reach a harvestable size and contribute to the angler harvest. ✧

## Alewife Numbers Continue to Decline in Lake Michigan *Lakewide biomass trending downward also*

Forage fish assessments are conducted by the USGS Great Lakes Science Center. Two lakewide surveys are conducted annually—a bottom trawl survey with multiple tows at seven sample stations (trawl depths from 30 to 420 ft. in 2016) and an acoustics/mid-water trawl survey sampling at multiple transect locations around the lake (34 acoustics transects and 68 trawl tows in waters 13 to 767 feet deep in 2016). The lakewide estimates of forage fish abundance and biomass (weight), including alewife, derived from these surveys is used by the Lake Michigan Technical Committee to estimate recruitment of alewife and other forage species and assess the potential impacts of stocked and natural salmon and trout on the forage community.

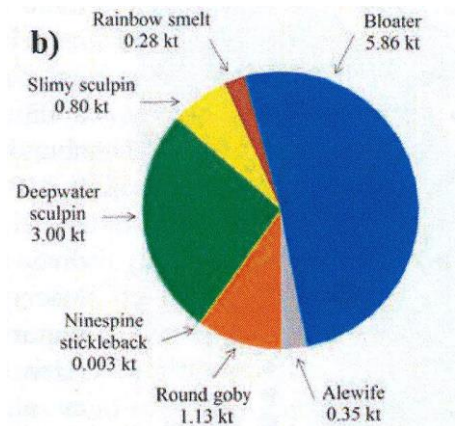
*Figs A&B - Estimated lake-wide biomass of prey fishes in Lake Michigan, 1973-2016 and species composition in 2016 (h).*



From the bottom trawl survey, the estimated lakewide biomass of alewife was 0.35 kilotonnes (~772,000 lbs.) which was a record low and a 30% decline from 2015. From the acoustic survey, the abundance of alewife  $\geq$  age 1 was

similar to 2015 and an increase in age-0 alewife (2016 year class) was observed. It is important to note that these two assessment

methods sample different areas of the water column and differ in their ability to sample age-0 fish. Estimates from both surveys are incorporated into a lakewide model of alewife abundance for management purposes.



### Lake- Wide Biomass

The USGS estimated a total lake-wide biomass of prey fish available to the bottom trawl in 2016 of 11.4 kilotonnes (kt) (1 kt =1000 metric tons. Total prey fish biomass was the sum of the population biomass estimates for alewife, bloater, rainbow smelt, deepwater sculpin, slimy sculpin, ninespine stickleback, and round goby. Total prey fish biomass in Lake Michigan has trended downward since 1989, primarily due to a dramatic decrease in bloater biomass (Fig a). Total biomass first dropped below 30 kt in 2007, and has since remained below that level with the exception of 2013 (when the biomass estimates for alewife and round goby were highly uncertain). ✧

## New boat ramp, parking open at Bixler Lake

KENDALLVILLE, Ind. – A new boat ramp and larger parking area are now available for anglers at a public access site on Bixler Lake in Noble County. The improvements at the 117-acre lake were made possible through an agreement between the DNR and the Kendallville Park Department.

The DNR leased an existing access site on park property off Sherman Street. Last fall, the agency replaced the ramp with funds generated from fishing license sales and taxes on boat fuel. Additional upgrades scheduled for this spring include paving the parking area, designating space for accessible parking, installing a loading pier, and signage. The site brings to 24 the number of public access sites provided by the DNR in Noble County. No fees are charged for using access sites provided by the DNR.

An additional site, managed by the DNR, is available inside Chain O'Lakes State Park, near Albion. Many Noble County DNR access sites are on lakes connected to other lakes by boat-able channels. In all, the DNR provides boating access to 41 lakes that represent 3,234 acres of water and 70 percent of the surface area of all lakes in the county. The Kendallville Park Department also provides a fishing pier next to the Bixler Lake access site. Plenty of shoreline areas are also open to fishing in the park.

Based on a DNR fish survey conducted last summer, Bixler Lake is considered a good fishing lake. Bluegills, largemouth bass and yellow perch are the main sport fish. A few walleyes, channel catfish and northern pike are present. Carp, a less-desirable non-native fish, are also abundant and ranked second in the survey by weight.

In the 1970s, carp were so abundant that biologists eradicated the entire fish population and restocked the lake. The DNR will continue to monitor the carp

## Skamania steelhead to boost diverse Lake Michigan fishing opportunities

The Wisconsin DNR is moving forward with an initiative to reintroduce Skamania steelhead into the Wisconsin waters of Lake Michigan.

The fry, now at Kettle Moraine Springs State Fish Hatchery, were hatched from eggs provided by the state of Indiana as part of cooperative interstate management efforts. The fish represent the first batch of Skamania steelhead to be reared in the state hatchery system since 2008. A redesign of the Kettle Moraine Springs hatchery is currently underway with plans calling for a biosecure area large enough to rear all three strains of steelhead. The fish now being raised are scheduled for stocking in the spring of 2018 with anticipated maturity ranging from 2020 to 2022.

Over the next three to five years, DNR fisheries managers intend to continue collecting eggs from Indiana to stock the Kewaunee and Root rivers with some 35,000 fish each.

The Skamania strain is particularly prized because the fish may reach 32 inches and 12 pounds at age five—larger than either the Ganaraska or Chambers Creek strains. Skamania also extend in-stream and nearshore fishing opportunities because they become more active when the water starts to cool in mid-September and spawn from mid-December through mid-March with the peak occurring in January and February.

As with other strains of steelhead, Skamania have the capacity to spawn more than once; unlike Chinook and coho salmon, they do not die after spawning. For more info: visit the DNR website, [www.dnr.wi.gov](http://www.dnr.wi.gov), and search "steelhead" ✧

population and may consider options in the future to keep their numbers in check. ✧

## Take a child fishing, urged at Charter Captains Conference

Speakers at the 36th Annual Ohio Charter Captains Conference on March 4<sup>th</sup> urged the 178 charter captains to introduce the next generation to Lake Erie fishing.

The conference, which was held at the Bowling Green State University Firelands Campus in Huron, Ohio, is co-sponsored by Ohio Sea Grant, Ohio State U., the Ohio DNR and the Lake Erie Charter Boat Association.

“Judging from what we heard from the captains, this was one of the best Charter Captains Conferences we’ve ever had. The speakers were all fantastic and there’s no doubt the information they shared will help the captains with their businesses this summer,” said Ohio Sea Grant Fisheries Outreach Coordinator and Program Leader Tory Gabriel, who organizes the conference.

Travis Hartman, Lake Erie program administrator for the ODNR, opened the event by presenting a positive outlook for walleye fishing in the next few years due to a series of good hatches. He noted there should be a good mix of year classes, including a number of trophy fish.

Other highlights included Bryan Edwards from Lake Erie Shores & Islands, who urged charter captains to increase their web and social media presence in order to reach younger anglers, and Ray Petering, chief of ODNR Division of Wildlife, who told captains that getting children interested in the outdoors – specifically in hunting and fishing – is vital for the future of conservation.

“If there’s one big takeaway I have from Saturday, it’s that the fishing in Lake Erie will be world class this year, and we should all enjoy it,” Gabriel said. “That world class fishery will also be a great opportunity to get kids excited about the outdoors, so everyone who reads this should make it a goal to take a kid fishing this year.”

For info about the 2018 conference, contact Tory Gabriel, [gabriel.78@osu.edu](mailto:gabriel.78@osu.edu). ✧

## Lake Michigan meetings to discuss next steps in fisheries mgmt

MILWAUKEE – The Wisconsin DNR is again seeking participation from Lake Michigan anglers and other interested stakeholders to discuss the latest trends in the fishery and lay the groundwork for management decisions for 2018.

Public information meetings will be held 6 - 9 p.m. on **June 7** in Room 3080 at the UW-Milwaukee School of Freshwater Sciences, 600 E. Greenfield Ave., Milwaukee, WI 53204 and on **June 8** in the Lake Michigan Conference Room at Lakeshore Technical College, 1290 North Ave, Cleveland, WI 53015.

Todd Kalish, DNR deputy fisheries bureau director, said the meetings will highlight a number of actions DNR has taken in the past year, provide information about the current state of the fishery and allow for the exchange of ideas as stakeholders provide comments and suggestions about future management actions.

"Working closely with our

stakeholders, we've made tremendous strides in our management including efforts to improve the early survival of stocked fish and a new rule expanding recreational lake trout harvest opportunities," Kalish said. "In addition, we are excited about efforts to create extended nearshore angling opportunities with the first batch of skamania steelhead to be reared in the state hatchery system since 2008. We look forward to the continued exchange of information at these upcoming stakeholder meetings to help guide us moving forward."

Presentations will include recent findings of the Lake Michigan Committee, the multistate collaborative charged with aggregating and assessing Lake Michigan fishery data. Among the details:

- Better-than-expected survival of the 2012 alewife year-class.
- In 2015, alewives again produced a measurable year class that provided needed forage for salmon and trout.

- There are indications that the Chinook stocking reduction starting in 2013 (including the 30% reduction by Wisconsin) helped reduce predation pressure on alewives.

- There is evidence that there were more and larger rainbow trout and coho salmon in the lake in 2016. (In fact, DNR's 2016 sport fishing harvest estimates show anglers harvested more than 125,000 coho, the highest number since 1992.)

The Lake Michigan Committee continues to improve its predator-prey ratio model and one of the latest series of calculations appears to show increasing fluctuations in the ratio as well as in auxiliary indicators such as the weight of age 3-plus Chinook females, Kalish said.

To learn more, visit [dnr.wi.gov](http://dnr.wi.gov) and search "[Fishing Lake Michigan](#)." Background information including a copy of a presentation to stakeholders from 2016 can be found by visiting the DNR website and searching "[Lake Michigan salmon and trout meetings](#)."

✧

## DNR, partners support projects to expand boating and angling access

FLORENCE, Wis. – Construction of a new Florence County boat launch represents one of the many ways the Wisconsin DNR works with partners to improve access to great fishing and other outdoor recreation opportunities.



*The new Kingsford Flowage boat launch is expected to draw additional visitors to the area thanks to easier access to the local fishery. Environmentally protective features including stormwater collection and infiltration elements were incorporated into the design.*

The launch, which involved a \$157,331 grant from the state, was matched with funds from the federal Sport Fish Restoration program as well as support from Florence County to provide road access and funds for ongoing maintenance. While the Kingsford Flowage project was awarded during the 2015 grant cycle, in 2016, DNR provided funding for 38 projects. The deadline for the next funding cycle of recreational boating facilities grants is June 1, 2017.

"The new Florence County boat launch reflects years of dedicated effort by DNR, the county and outdoor enthusiasts

who committed their time and talent to make the project a reality," said Mary Rose Teves, director of the DNR Bureau of Community Financial Assistance. "Access to the Kingsford Flowage, part of the Menominee River running between Wisconsin and Michigan's Upper Peninsula, opens up nearly 500 acres on the Kingsford Flowage to anglers and other visitors who will bring tourism dollars to the area. The new landing also will help DNR staff better monitor fish populations and the lake's ecology."

"Previously, the only access to the flowage on the Wisconsin side involved driving down a one-lane dirt road to an unimproved landing on the Pine River, which was still one mile upstream from the flowage. Given the great northern pike fishery, solid bass populations and developing musky fishery, we know this launch will be welcomed by anglers."

State recreational boating facilities grants may be applied for by counties, towns, cities, villages, tribes, sanitary districts, public inland lake districts and qualified lake associations for a variety of projects. Examples include ramps and service docks to gain access to the water, feasibility studies, purchase of aquatic weed harvesting equipment, navigation aids and dredging waterway channels.

For more info on recreational boating grants: [dnr.wi.gov](http://dnr.wi.gov) and search "[recreational boating facilities](#)." ✧



## 2017 Family Fishing Festivals set for May and June

HARRISBURG, Pa – The Pennsylvania Fish and Boat Commission (PFBC) is holding three Family Fishing Festivals in May and three in June. These events lead up to the two statewide Fish-for-Free Days – the Sunday before Memorial Day, **May 28**, and Independence Day, **July 4**.

PFBC Family Fishing Festivals will be held at these locations:

- May 13**, SE Region: Tohickon Access, Nockamixon State Park, Bucks County, 9 a.m. - 1 p.m. ([for info or to register](#))
- May 20**, SW Region: North Park County Park, Allegheny County, 2 - 6 p.m. ([for info or to register](#))
- **June 3**, NW Region: M. K. Goddard State Park – Launch #3, Mercer County, 9 a.m. - 1 p.m. ([for info or to register](#))
- **June 11**, NC Region: Bald Eagle State Park – Pavilion #6 & #7, Centre County, 3 - 7 p.m. ([for info or to register](#))
- **June 25**, NE Region: Frances Slocum State Park – Environmental Education Center, Luzerne County, 1 - 5 p.m. ([for info or to register](#))

The PFBC is waiving the fishing license requirement during the program for registered Family Fishing Festival participants 16 and older. The program is open to all ages, including children ages 5 and older. The PFBC provides equipment, bait, and tackle. PFBC staff will be present to teach skills and assist those who fish.

Preregistration is required, space is limited, and there will be no registrations accepted the day of the events. In addition, PFBC partners will be hosting programs throughout the summer. For more info or to register: [www.GoneFishingPA.com](http://www.GoneFishingPA.com).

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## Black Carp Alert! *Black carp in upper LaGrange Reach*



A black carp was reported April 26 2017 by a commercial fisherman caught near Copperas Creek

Lock on the Illinois River RM 136.8. This detection will extend the known detections of black carp in the Illinois River over 110 miles upstream. This is approximately 17 miles south of Peoria Lock and Dam. While the fisherman immediately froze this specimen (making ploidy analysis difficult/impossible) the fish may be valuable for otolith microchemistry and diet.

IDNR/SIU will award the fisherman \$100 for surrendering the fish for analyses. This relatively small fish may be of similar size to diploids and likely 2015 cohort found in other locations. The fish did appear skinny in the photos. IDNR will hold the fish until SIU comes through the area. IDNR will remind processors and fisherman that black carp may be in these new areas.

Please contact the below if a fish is caught ASAP, do not freeze!  
Kevin Irons (IDNR) 217.557.0719 desk, 217.685.3103 cell  
Duane Chapman (USGS) 573.876.1866 ◇

## Indiana's trout stream season open

The 2017 Indiana trout stream season is open and runs through December 31. There is a daily bag limit of five fish with a 7" minimum size limit. Anglers 18 years of age and older must have a trout stamp in addition to a valid fishing license to fish for trout. More: [Where to Fish](#). ◇

## Asian carp found in South Dakota's James River

Low water levels in the James River have kept the Asian carp population in check, but it's human intervention that can help protect other bodies of water from the invasive species.

Massive floods in 2010 and 2011 gave the carp an opportunity to spawn more successfully and move up the Missouri River and its three eastern South Dakota tributaries, creating one of the largest annual classes of two species of Asian carp, big head and silver carp, ever seen in the Missouri basin.

Those fish are old enough to reproduce, and that concerns the state Game, Fish and Parks Department. "They could absolutely outcompete any other species," said the department's aquatic invasive species coordinator, Mike Smith.

The takeover has happened in the Illinois River south of the Great Lakes, where Asian carp now make up about 95 percent of that river's biomass, Smith said.

In South Dakota, the carp were able to invade all of the James River within the state and have been found all the way up to Jamestown, N.D. In the Big Sioux and Vermillion rivers, carp have reached as far north as Sioux Falls and Lake Vermillion. The species was stopped only by the Sioux Falls and Vermillion dams.

"Those are the only two barriers standing between Asian carp and spreading north," said GFP regional fisheries manager Todd St. Sauver.

The carp invasion has prompted GFP officials to close almost all flowing water below Sioux Falls on the Big Sioux and Vermillion Rivers and all water in the James River watershed to bait capture in an effort to prevent their spread. The department also created new regulations aimed at preventing the spread of aquatic invasive species and has started an advertising campaign aimed at educating outdoors enthusiasts about them. ◇

## Caught a tagged walleye? Report it to DNR

The Michigan DNR recently jaw tagged 3,000 walleyes in a number of Saginaw Bay tributary rivers. Anglers who catch any tagged fish are asked to collect information from the fish and report it to the DNR.

The DNR has tagged more than 100,000

walleyes in the Saginaw Bay area since 1981. Jaw tagging is part of a long-term research project to monitor survival and harvest rates and to learn about walleye movement. The program depends on anglers to report when they catch a tagged walleye, catch location, as well as the fish's



length, weight (if known) and tag identification number. Once reported, anglers will receive a letter back detailing the history of their fish.

This year about 20% of the tags include a \$100 reward for reporting the tag. Each tag is stamped with a unique identifying number and a P.O. box address. If anglers prefer, they can report a tagged walleye online at [michiganandnr.com/taggedfish/](http://michiganandnr.com/taggedfish/).

Anglers can keep or release the fish. Anglers are reminded that to be eligible for a reward, photos of the flattened tag are required. If the fish is released and anglers are not interested in being eligible to receive a reward, anglers should leave the tag in the fish's jaw and not remove it. Also new this year is a brightly colored disk tag used on some fish to test how well anglers notice and report the tags.

“This information is essential to

measuring the health of the population and is critical data that is directly used in planning the future management direction needed to protect and enhance this important fishery,” said David Fielder, research biologist out of the DNR's Alpena Fisheries Research Station. “Besides ensuring the walleye fishery remains sustainable, we also annually estimate the population size with the aid of these tag reports.”

The tagging operation occurs each spring on the Tittabawassee River and other Saginaw Bay tributaries during the walleye spawning run. They are collected with electrofishing boats that temporarily stun the fish to allow fisheries biologists and technicians to collect vital statistics, tag the fish, and release them back into the river after the fish has recovered. After spawning, walleyes migrate back into Saginaw Bay and a large number migrate out of the bay into Lake Huron. The fish that migrate out of the bay have been found ranging to the Straits of Mackinac to the north and Lake Erie to the south. ✧

## Proposals to restore Onondaga Lake

The USFWS and New York State are considering a series of projects to restore and protect wildlife habitat and water quality and increase recreational opportunities at Onondaga Lake, as outlined in a draft restoration plan and environmental assessment released for public comment through **June 2, 2017**. The draft plan may be found at [Lake Onondaga draft plan](#).

The agencies analyze 20 restoration projects in the draft restoration plan and environmental assessment. These projects, in total, include the following benefits:

- Extension of the Erie Canalway Trail from Camillus to the Loop the Lake Trail (3.2 miles) and from the Honeywell Visitor Center to Harbor Brook (1.2 miles);
- Preservation, habitat restoration

and public access to over 1,400 acres along Ninemile and Onondaga Creeks in the Onondaga Lake watershed, including public fishing rights and parking areas;

- Installation of structures within over 275 acres of Onondaga Lake to provide habitat for fish, amphibians and invertebrates;
- Fifteen years of funding for the identification and removal of invasive species within about 1,700 acres of wetlands, lake/river littoral zone and riparian habitat;
- Restoration of wetland and fish habitat at Onondaga County parklands;
- 100 acres of warm season grassland restoration;
- Deepwater fishing pier on Onondaga Lake;
- Enhancement of jetties at the

Onondaga Lake outlet to improve access for all;

- Boat launch to be developed along the Seneca River;
- Transfer of the Honeywell Visitor Center to a public agency;
- Future Restoration Projects Fund.

The agencies are soliciting comments on this draft plan through **June 2, 2017**. Comments may be submitted by mail to Anne Secord, U.S. Fish and Wildlife Service, 3817 Luker Road, Cortland, New York 13045 and by email to [anne\\_secord@fws.gov](mailto:anne_secord@fws.gov).

After the comment period closes, feedback will be closely reviewed and any necessary changes made to a final document identifying the chosen restoration.

<https://www.fws.gov/northeast/ecologicalservices/nrdar.html>. ✧



## Final comments on Lake Michigan fisheries management plan update

The deadline for comments is **May 20, 2017**

MADISON – The Wisconsin DNR has completed the final draft of its long-term fisheries management plan for Wisconsin's Lake Michigan waters and invites citizens to provide final input. Lake Michigan has seen drastic ecological changes in recent years and the new plan will guide fisheries management through the next 10 years. The deadline for comments is **May 20, 2017**.

"We listened to what the public said during public input sessions and incorporated this feedback along with our own thoughts into the draft 10-year plan," said Brad Eggold, DNR Great Lakes district fisheries supervisor. "Now, it's time to see whether we are on track with the expectations and desires of the public."

DNR manages Lake Michigan fisheries in partnership with other state, federal and tribal agencies and in consultation with the public, particularly sport and commercial fishers. The draft 2017-2026 Lake Michigan Integrated Fisheries Management Plan focuses on five areas:

- **A balanced, healthy ecosystem.** This vision focuses on protecting and maintaining habitat while minimizing the effects of invasive species.

- **A multi-species sport fishery.** This vision includes sustaining a salmon and trout species mix that supports sport harvests. Another key element of this goal includes improvements to the statewide fish hatchery system that produces fish for Lake Michigan.

- **A sustainable and viable commercial fishery.** This aspect of the plan centers on maintaining the current number of commercial fishing licenses at 65 while adjusting harvest limits to enhance populations of key commercial species such as lake whitefish, yellow perch, round whitefish, rainbow smelt and bloater chubs over time.

- **Application of science-based management principles.** This vision acknowledges the ongoing need for staff training, the ability to employ continually evolving tools and modeling technologies, inter-jurisdictional cooperation and the involvement of trained scientists as well as public stakeholders.

- **Effective internal and external communication.** This vision focuses on maintaining a full and open exchange of information and ideas among the public, elected officials, fisheries managers and neighboring states.

"Over the last 10 years, we've made good progress and accomplished much of what we set out to do based on the previous plan," Eggold said. "We've managed Chinook populations to fuel a decade of fantastic fishing while enhancing walleye and northern pike habitat in the Milwaukee and Menominee rivers as well as Green Bay. Supplies of trout and salmon for stocking have been enhanced following renovation of the Wild Rose State Fish Hatchery while sturgeon and musky stocking also has been improved."

However, there are still challenges to address including the ecological changes in Lake Michigan due to the proliferation of invasive species, diminished forage base and the need to upgrade and maintain the department's fish production system.

"Given the challenges and opportunities before us, input from anglers and others is critical in developing a plan that keeps Lake Michigan healthy and reflects stakeholder interests," Eggold said.

Find the draft plan and summary info at: [dnr.wi.gov](http://dnr.wi.gov), by searching for "[Lake Michigan Plan](#)." Send comments to [DNRLAKEMICHIGAN.PLAN@wisconsin.gov](mailto:DNRLAKEMICHIGAN.PLAN@wisconsin.gov). The deadline for comments is **May 20, 2017**. ✧

## DEC wants new anglers for Finger Lakes Diary Program

Will help shape future fisheries management decisions

As the 2017 open water fishing season draws near, the New York State Department of Environmental Conservation (DEC) encourages anglers to participate in its Finger Lakes Volunteer Angler Diary Program.

The program aims to collect data from fishing trips on all of New York's Finger Lakes and selected Lake Ontario embayments of DEC Regions 7 and 8. This is a year-round program, so anglers pursuing all types of fish and fishing on these waters are encouraged to enlist. Typical program participants fish the lakes anywhere

from once to multiple times in a given season, so even occasional anglers are welcome to participate.

"Fisheries management in the Finger Lakes of Central and Western New York is in part guided by angler experiences, success rates, and desires," said Region 7 Fisheries Biologist Ian Blackburn. "This program is an excellent chance for members of the angling public to take an active role assisting DEC to make well-rounded and informed management decisions for the Finger Lakes."

Anglers who fish the Finger Lakes and are willing to contribute to the program by keeping a fishing diary for DEC can contact the Region 7 and Region 8 Fisheries offices at (607) 753-3095 and (585) 226-5343, respectively, or at [fwfish7@dec.ny.gov](mailto:fwfish7@dec.ny.gov). More information on the diary programs, along with annual reports for each lake, can be found online at the [Angler Diary Cooperator Program](#) web page and the [West Central New York Angler Diary Program](#) web page on DEC's website. ✧

## Free Fishing Days

### Wisconsin free fishing weekend [June 3 & 4](#)

Free Fishing Weekend – [June 3 & 4](#) – many statewide events are being scheduled.

### Indiana Free fishing day [May 20](#)

[May 20](#) is the second of four Free Fishing Days in 2017. The other dates are [June 3-4](#). Indiana residents do not need a fishing license or a trout/salmon stamp to fish the state's public waters on Free Fishing Days. On all other days, only youth (age 17 and younger) and a few other special anglers are exempt from the license requirement.

### Illinois Free Fishing Days: [June 16 – 19, 2017](#)

The 2017 Illinois Free Fishing Days celebration coincides with Father's Day weekend – June 16-19. During this four-day celebration of fishing in Illinois, anglers can fish without purchasing a fishing license, salmon stamp or inland trout stamp. Discover the fun of fishing or introduce your kids to the outdoor adventure of fishing during these free fishing days! ✧

## Provide public access and earn extra income

The Voluntary Public Access and Habitat Incentive Program is the perfect way to earn extra income and provide opportunities for others to enjoy the outdoors. Enrolled landowners earn income in return for opening their land to year-round public hunting, fishing, trapping and wildlife observation. Lease rates vary by land cover, ranging from \$3/acre for agricultural land, \$10/acre for grassland or wetland and \$15/acre for forest land. VPA leases will expire on August 31, 2020. Contact Anne Reis, DNR VPA-HIP Coordinator, for more info: 608-279-6483 or [Anne.Reis@wisconsin.gov](mailto:Anne.Reis@wisconsin.gov). For general info: [www.dnr.wi.gov](http://www.dnr.wi.gov) and search keyword "[VPA](#)". ✧

## Muskie egg quota reached at Lake Webster

Despite the low number of adult muskies now present in Lake Webster, DNR fisheries biologists collected enough sexually ripe females this spring to obtain nearly 500,000 eggs. That fills the annual quota needed to support Indiana's muskie stocking program. ✧

## Ford Hoosier Outdoor Experience [June 10-11](#)

The Ford Hoosier Outdoor Experience returns to Fort Harrison State Park on [June 10 and 11](#). Grab the family for this FREE event featuring more than 50 different activities like fishing, mountain biking, off-road rides, horseback riding and archery. It's the perfect way to discover your new favorite family activity and enjoy #getINoutdoors together.

The Ford Hoosier Outdoor Experience is Indiana's largest, hands-on outdoor recreation event. It is hosted on the grounds of [Fort Harrison State Park](#). It is two days of "experiencing" FREE, hands-on, outdoor fun. The DNR partnered with grassroots groups to supply all equipment and teaching expertise. For example, for the "Basic Fishing" activity, poles, hooks, bobbers, bait, and instruction from trained anglers will be provided. This event goes beyond simple teaching about outdoor recreation. We want you to actually EXPERIENCE the activities. ✧

## Fiberglass outboard sales up 23.28%

Sales of fiberglass outboards between 16 and 30' were up 23.28% in the 12-month rolling period ending January 2017, according to Statistical Surveys, Inc. At least two regions were up over 100% from the previous year. Los Angeles and Wilmington, NC, were up 233.33% and 130.76%, respectively. Sales in Fort Myers, FL, were also very strong, up 67.39%. ✧

## Record NY Channel Catfish

The New York State Department of Environmental Conservation (DEC) has confirmed that a new state record has been established for channel catfish.



Using just a nightcrawler, Eric Scordo of Watertown caught a 35-pound, 3-ounce channel catfish measuring 38¾ inches in Lake Ontario in Jefferson County on April 29. The fish broke the previous state record caught from Brant Lake (Warren County) in 2002 by nearly 2½ pounds.

Channel catfish are the largest members of the catfish species that live in New York and can be found statewide. They feed primarily on the bottom and are most easily caught using live bait such as worms or baitfish. ✧

## Camping World Holdings Inc. buys Gander Mountain with \$390 Million Bid

After a bankruptcy auction, the largest U.S. recreational vehicle dealer, Camping World Holdings Inc., has taken over Gander Mountain, all of its intellectual property and its Overton's boating business, sources said. The winning bid for the sporting goods retailer was reported to be about \$390 million. Camping World owner, Marcus Lemonis, plans to operate 17 Gander Mountain stores. Another auction for Gander Mountain's 100+ leases will be held on a later date, yet to be determined. ✧

## State of Lake Michigan Conference **Nov. 6-10**

The 2017 State of Lake Michigan Conference will be held **Nov. 6-10** at the Hyatt Regency in Green Bay, Wisconsin. The event will also feature the annual meeting of the Great Lakes Beach Association, and other associated workshops and field trips. An informal opening reception will be held on the evening of Nov. 6, all workshops and presentations will be Nov. 7-10, with the conference ending midday on Nov. 10. **Registration:** June 20 - Oct. 23 (early bird rate ends Sept. 18). ✧

## Lower Locks on the Saranac Lake Chains remain closed

The Lower Locks on the Saranac Lake Chains remain closed while [extensive repair and rehabilitation work, begun in the fall of 2016](#), is being completed. DEC expects to have the repairs completed and the locks reopened by the end of June. Meanwhile, boaters will need to launch their boats at the Second Pond Boat Launch along State Route 3 to access the waters upstream of the locks. Boaters seeking to access the waters downstream of the locks will need to launch at the Lake Flower Boat Launch in Saranac Lake. ✧

## 2017 MI fur harvester license and kill tags now available

Fur harvesters can now purchase 2017 fur harvester licenses and get kill tags for bobcat, fisher, marten and otter for the 2017 seasons.

The license is valid until April 30, 2018. You can purchase licenses at a [license agent](#) or [DNR Customer Service Center](#) or [online at E-License](#). Kill tags are issued to 2017 fur harvester license-holders, free of charge, at license agents or DNR Customer Service Centers. Don't forget that bobcat kill tags only will be available through November 30, 2017. For more info: [mi.gov/trapping](http://mi.gov/trapping). ✧

## Fish stocking creates numerous fishing opportunities throughout Michigan

The Michigan DNR is in the middle of its new fish stocking season. This spring you'll find DNR fish stocking trucks releasing their prized recreational cargo at hundreds of lakes and streams throughout the state.

Fish stocking is a valuable tool used by fisheries managers to restore, enhance and create new fishing opportunities in Michigan's inland lakes and streams and the Great Lakes. The DNR's Fisheries Division accomplishes this task by rearing fish at its six fish production facilities located throughout the state, cooperatively managing up to 46 rearing ponds and eight Great Lakes imprinting net pen locations, and maintaining a fleet of 18 specialized fish stocking vehicles.

Over the course of a typical year the DNR will stock roughly 26 million fish weighing nearly 350 tons, including eight species of trout and salmon and three coolwater strains of walleye and muskellunge. Beginning in mid-March and ending in early June, the DNR fish stocking trucks will travel well over 100,000 miles to stock between 700 and 1,100 locations.

Michigan anglers have access to four Great Lakes, 3,000 miles of Great Lakes shoreline, more than 11,000 inland lakes and tens of thousands of miles of rivers and streams. That puts residents and visitors no more than 10 minutes away from quality angling opportunities and world-class fisheries. [michigandnr.com/fishstock/](http://michigandnr.com/fishstock/). ✧



There's a lake in Massachusetts named Chaggoggagoggmanchaggagoggchau bunagungamaugg. Translation: "You fish on your side. I fish on my side. Nobody fish in the middle."



## PFBC adds streams to wild trout list

Commissioners recently added 99 waters to the list of wild trout streams, revised the section limits of six waters and removed one water from the list. The list can be found on the PFBC [website](#).

Another 41 stream sections were added to the list of Class A wild trout streams. See the PFBC [website](#). Also, Commissioners added Mercer County's Lake Wilhelm to the Brood Stock Lakes Program. Lakes managed under this program are used by PFBC fish production staff to collect brood stock for Muskie, Tiger Muskie, Northern Pike and Chain Pickerel. From **April 1 through May 31**, fishing for these species is permitted on a catch and release basis only.

At the same time, four lakes were removed from the program, including Duck Harbor and Miller ponds, Wayne County; Lake Wallenpaupack, Pike County; and Union City Reservoir, Erie County.

These changes to the Brood Stock Lakes Program will take effect on January 1, 2018. ✧

## Anyone can hunt wild turkey during Michigan's spring season

Michigan's long-awaited guaranteed spring turkey hunt – Hunt 234 – is open through **May 31**. Hunt 234 is a great way for anyone to get out hunting this spring, with a month of hunting and the ability to buy your license over the counter without an application. Hunt 234 is a statewide hunting license valid for all open areas, except public lands in the southern Lower Peninsula (Hunt Unit ZZ). The Hunt 234 license can be purchased at any time throughout the **May 1-May 31** season. For more info: [Spring Turkey Digest](#) and watch this [DNR spring turkey regulations video](#). ✧



## Anglers, boaters key to preventing the spread of aquatic invasive species

MADISON — As fishing activity ramps up in waters with early season opportunities and anticipation builds for the general inland season, the Wisconsin DNR reminds anglers that a few extra minutes spent emptying live wells and cleaning plant debris from anchors and trailers plays a critical role in preventing the spread of aquatic invasive species.

DNR research covering 1,000 state lakes released in October 2016 shows the spread of aquatic invasive species has not increased, as would be predicted, but rather has remained stable—an indicator that prevention efforts may be playing a role. Given the recent identification of a few highly undesirable species such as starry stonewort and round gobies in a limited number of inland waters, continued prevention efforts are more important than ever, said Bob Wakeman, DNR's aquatic invasive species coordinator.

"Our research shows that many of the most concerning invaders are being successfully kept out of the majority of lakes," Wakeman said. "For example, 90 percent of our lakes remain free of zebra mussels and 75 percent of our lakes remain free of Eurasian water milfoil. With continued vigilance, we hope to prevent the spread of these and other invasives, which will allow for greater focus on eradication of some species where possible."

Key tips for anglers include never using aquatic invasive species as bait and never dumping unused live bait into the water. Wisconsin's bait laws are designed to prevent the spread of both obvious hitchhikers and other, less visible invaders capable of harming waterways and healthy aquatic communities.

"You may take leftover minnows purchased from a Wisconsin bait dealer away from any state water and use them again on that same water," Wakeman said. "You may use leftover minnows on other waters only if no lake or river water, or other fish were added to the container."

When deciding to use minnows, anglers must remember minnow harvest is prohibited on all viral hemorrhagic septicemia known and suspect waters. VHS is a deadly fish virus threatening Wisconsin muskies, walleye, lake whitefish, yellow perch and more. The prohibited area includes Lake Michigan, Lake Superior, the Winnebago system, the Mississippi River, the Wisconsin River up to the Prairie de Sac Dam and all waters connected to these waters up to the first barrier impassable to fish.

Anglers fishing the lower Fox River and Lake Winnebago system are again being asked for special help to guard against further spread of the round goby. Round gobies can survive even in poor quality water, spawn multiple times per season and displace native fish by eating their eggs and young, taking over optimal habitat.

Gobies have become common in some areas of the state such as Lake Michigan and Green Bay but remain on the [Chapter NR 40 list](#) as a restricted invasive species. It is illegal to possess, transport, transfer or introduce live gobies, including using them as bait.

While there is no evidence that gobies have reached Lake Winnebago, DNR continues to encourage Winnebago area anglers to report any goby catches through an [online survey tool](#) to help determine the extent of gobies in the region and develop a management strategy. The online tool also allows anglers to upload photos of suspected gobies for positive identification.

Anglers who catch gobies on Lake Winnebago, other parts of the Winnebago System or the lower Fox River below the Neenah and Menasha dams during the 2017 fishing season are encouraged to kill the fish by putting them on ice and bringing them to the DNR Oshkosh office, 625 E. County Road Y, Suite 700, Oshkosh, Wis., 54901-9731. The office is open 8:30 a.m. - 4 p.m. Monday-Friday.

Anglers also may call 920-424-7880 to report gobies.

Other tips to prevent the spread of AIS include bringing your day's catch home on ice rather than transporting live fish in water. And, it's important to check, clean and/or drain trailers, live wells and anchors to avoid giving other types of unwanted aquatic hitchhikers a lift.

"We're grateful for continued efforts by anglers to 'Inspect, Remove, Drain and Never Move live fish' to help stop aquatic hitchhikers," Wakeman said. "If every boater and angler took a few minutes to perform these actions before leaving a lake or river, new discoveries of AIS could be even lower."

To learn more, visit the DNR website, [dnr.wi.gov](http://dnr.wi.gov), and search "[aquatic invasive species](#)." The general Wisconsin fishing season runs from May 6, 2017 to March 4, 2018. To learn more about statewide fishing regulations and rules that apply on specific lakes, search "[fishing regulations](#)." For a complete calendar, search "[fishing season dates](#)." ✧

### Muskie eggs won't be collected on Detroit River this spring

The Michigan DNR will not collect eggs from Great Lakes muskie in the Detroit River this month due to recent fish kills in Lake St. Clair that are attributed to a confirmed, widespread infection of VHSv. Normally, the DNR collects eggs from the Detroit River's muskie population to be reared at Wolf Lake State Fish Hatchery in Mattawan and stocked each fall in Michigan waters throughout the state. With an increasing number of dead muskie being found in the Detroit River, and the confirmed presence of VHSv in Lake St. Clair, DNR fisheries managers feel the risk of contaminating this hatchery is too great to proceed with this year's rearing efforts. ✧

## Robots, tasers, generic Tylenol join arsenal against invasive species

WASHINGTON – A robot zaps and vacuums up venomous lionfish in Bermuda. A helicopter pelts Guam’s trees with poison-baited dead mice to fight the voracious brown tree snake. A special boat with giant winglike nets stuns and catches Asian carp in the U.S. Midwest.

In the fight against alien animals that invade and overrun native species, the weird and the wired sometime win. Critters are smart – they survive,” said biologist Rob “Goose” Gosnell, head of U.S. Department of Agriculture’s wildlife services in Guam, where brown tree snakes have gobbled up nearly all the native birds. “Trying to outsmart them is hard to do.”

Invasive species are plants and animals that thrive in areas where they don’t naturally live, usually brought there by humans, either accidentally or intentionally. Sometimes, with no natural predators, they multiply and take over, crowding out and at times killing native species.

Now, new technology is being combined with the old methods—weed pulling, trapping and pesticides. Finding new weapons is crucial because invasive species are costly – \$314 billion per year in damages in just the United States, United Kingdom, Australia, South Africa, India and Brazil. It’s also one of the leading causes of extinction on islands, such as Guam, according to Piero Genovesi, an Italian scientist who chairs the invasive species task force for an international organization.

“We have totally new tools that were just unthinkable a few years ago,” Genovesi said. Case in point: There are companies that now market traps for wild pigs that are triggered by cellphones. “There’s enough activity that there’s starting to be an industry,” said University of California, Santa Cruz research biologist Bernie Tershy.

A new underwater robot is targeting the stunning but dangerous

lionfish, which has spread over the Caribbean, the Gulf of Mexico and up the U.S. East Coast as far north as New York’s Long Island, with its venomous spines that are dangerous to touch. With no natural predator in the Atlantic, the voracious aquarium fish devour large amounts of other fish including commercial fish species such as snapper and grouper. The robot is the creation of Colin Angle, chief executive officer of IRobot, which makes the Roomba vacuum cleaner. Along with his wife, Erika, and colleagues, he created a new nonprofit to turn automation into environmental tools.

The robot, called Guardian LF1, uses what Angle says is a gentle shock to immobilize the lionfish before they are sucked alive into a tube. In its first public outing this month, the robot caught 15 lionfish during two days of testing in Bermuda. Top chefs competed in a cook-off of the captured lionfish. Lionfish go for nearly \$10 a pound and Angle is hoping to get the price of the robot down from tens of thousands of dollars to about \$500. “What’s next?” Angle said. “Our ambition is much larger than lionfish.”

### BROWN TREE SNAKES

A few decades ago, native birds started disappearing from the Pacific island of Guam, baffling scientists until they found that non-native brown tree snakes were eating all the birds and their eggs. The snakes, which live in the trees, had no natural enemies and just trapping them wasn’t working, Gosnell said. The snakes did prove to have one enemy: the painkiller acetaminophen, a generic form of Tylenol.

So biologists came up with a plan: Use a painkiller pill glued to dead fetal mice as bait. The mice are put in tubes, and dropped by helicopter in batches of 3,000. The mice pop out, and the whole contraption dangles in the trees. It’s still experimental but it will soon go

to more regular use. There is one problem. Using dead fetal mice as bait is expensive and they have to be kept cold. But biologists are working on a solution: mouse butter. A new bait mixture smells like mice to snakes, but minus the expense and logistical problems.

### ASIAN CARP

USFWS officials are using souped-up old technology to catch Asian carp. They use a specialized boat – the Magna Carpa – with giant winglike nets that essentially uses electric current as an underwater taser to stun the fish. At higher doses, the fish are killed and float to the surface. In just five minutes, they can collect 500 fish, and later turn them into fertilizer. Using electro-fishing was written about as a possible conservation technique back in 1933.

### WILD GOATS

On the Galapagos Islands, wild goats were a major problem. In less than five years, scientists wiped out tens of thousands with sterile “Mata Hari” females. Biologist Karl Campbell of the nonprofit Island Conservation introduced specialized female goats that researchers sterilized and chemically altered into a permanent state of heat, to lure the male goats into fruitless goat sex. Santiago Island, once home to 80,000 goats, is now goat free and larger Isabella Island is getting close, he said.

And now, Campbell and others are going one step further: Tinkering with the genes of mosquitoes and mice to make them sterile or only have male offspring. That would eventually cause a species to die off on an island because of lack of females to mate with. There are worries about regulating and controlling this technology, along with actually being able to get it done, so it is years away, Campbell said. ✧

## Sex-Shifting Fish: Growth Rate Could Determine Sea Lamprey Sex

Unlike most animals, [sea lampreys](#), an invasive, parasitic species of fish damaging the Great Lakes, could become male or female depending on how quickly they grow, according to a U.S. Geological Survey study published.



This image shows sea lampreys in their larvae phase. Slower sea lamprey growth rates during the larval phase of development may increase the odds of sea lampreys becoming male, according to a USGS study. Sea lampreys are an invasive, parasitic species of fish damaging the Great Lakes. (Credit: R. McDaniels, Great Lakes Fishery Commission)

Scientists with the USGS and Michigan State University, funded by the Great Lakes Fishery Commission, found that slower sea lamprey growth rates during the larval phase of development may increase the odds of sea lampreys becoming male. During the study, environments lacking plentiful food were male-skewed, with 78 percent of sea lampreys becoming male after three years, whereas environments more conducive to growth produced only 56 percent males.

This discovery could be a critical step in developing advanced technologies to control sea lamprey.

“Remarkably, we didn’t set out to study sex determination in sea lampreys—we were planning to study environmental effects on growth rates

only,” said Nick Johnson, a USGS scientist and the lead author of the study. “We were startled when we discovered that these data may also reveal how sex is determined because mechanisms of sex determination in lamprey are considered a holy grail for researchers.”

Sea lampreys are imperiled in Europe and the Pacific Northwest, where they are native, but are invasive and destructive in the North American Great Lakes. With their blood-sucking capability and gaping round mouths, sea lampreys feed on the blood and fluids of native fish, causing population declines in commercially and recreationally important species that are essential to the Great Lakes’ multi-billion dollar per year fishery.



USGS sea lamprey expert Nick Johnson demonstrates the ridge of tissue, called a rope, along the back of a mature male sea lamprey. (Credit: Andrea Miehl, USGS.)

Between 2005 and 2007, the scientists tagged and released sea lamprey larvae into unproductive lakes and productive streams. These environments included tributaries of Lakes Huron and Michigan and areas of those lakes near stream mouths. The researchers then recaptured the tagged fish as adults during their spawning migrations.

The sex ratios in productive and unproductive environments were initially similar but quickly diverged, with unproductive lakes becoming increasingly male-dominated. Once the larvae changed into their parasitic adult stage, their sex did not shift, and their survival rates generally did not differ between productive versus unproductive environments.

“The results of this study could be a critical step toward developing advanced technologies to control sea lampreys in the Great Lakes, which have caused unparalleled damage to fisheries,” said David Ullrich, chair of the GLFC. “Although sea lamprey populations have been reduced by 90 percent, innovation will be key to maintaining strong control into the future. The results of this study could open paths forward to novel technologies that can disrupt or modify gender in sea lampreys, providing the commission with other means to control this noxious predator.”

Invasive sea lamprey prey on commercially important fish species, living off of the blood and body fluids of adult fish. (Credit: Marisa Lubeck, USGS.)

Some sea lamprey populations have skewed sex ratios, but the reasons why have remained a biological mystery for decades. The new study, with its unanticipated sex determination findings, begins to answer a scientific question that has previously eluded researchers.

This study, “Indication that sex determination in sea lamprey is influenced by larval growth rate,” is published in the journal *Royal Society Proceedings B*.

For more information about sea lamprey research in the Great Lakes, please visit the [USGS Great Lakes Science Center website](#) and the [GLFC website](#). ✧



**Other Breaking News Items:**

(Click on title or URL to read full article)

**[Invasive species gang up on native crayfish/](#)**

Invasive species in the Great Lakes are ganging up against native species. A study looking into invasive zebra and quagga mussels' relationship with invasive rusty crayfish illustrates how the harm they cause together can be greater than either of them alone

**[Most feared Asian carp could feast on Lake Michigan](#)**

A federal study says the most feared types of Asian carp would find plenty of food if they reached Lake Michigan.

**[Stopping the invasion](#)**

Two hours. That's the time it takes Fisheries and Oceans Canada aquatic science biologists to determine if an invasive Asian carp is fertile or sterile.

**[Fish die-off in Lake St. Clair not surprising](#)**

Gizzard shad, often the first fish to show signs of disease or distress, recently made headlines for large die-offs in Lake St. Clair due to viral hemorrhagic septicemia.

**[Water levels up on Great Lakes](#)**

Water levels are higher than average on all of the Great Lakes right now, reaching above flood stage on Lake Ontario under calm conditions.

**[Local salmon stock delayed until May](#)**

The Michigan Department of Natural Resources planned to deliver Chinook salmon fingerlings to net pens at the Grand Haven Municipal Marina on Wednesday, but unfavorable conditions will cause the fish to wait a while longer to make their Grand Haven debut.

**[The last ore boat leaves Escanaba](#)**

More than 150 years after the first iron ore dock was built in Escanaba Michigan the last ship that will haul ore out of Escanaba was in port today taking on its cargo.

**[Muskie on the Chicago lakefront: Rare catch draws crowd at Adler](#)**

On April 8, a Chicago resident was fishing for steelhead and coho by the Adler Planetarium when he caught and released a last-cast muskie of 34-36 inches.

**[Lake Ontario property owners prepare for rising lake levels](#)**

People in the Thousand Islands are watching the high spring waters of the St. Lawrence River. Upstream, residents are trying to protect their shoreline property from potential flooding as water levels continue to rise on Lake Ontario.

**[Tecumseh Mayor: Nexus fines for boaters are a cash grab!](#)**

The Mayor of Tecumseh, Ontario, is looking for clarification about recreational boaters soon needing to use Nexus cards if they drift over the international boundary.

**[Shoring up a stream: Angling group spearheads project to benefit Knife River steelhead](#)**

A habitat project completed last summer along 2,200 feet of the upper Knife River in Minnesota aims to reduce sediment loads to the river and improve fish habitat.

**[Smelt fishing enjoys revival on Lake Michigan](#)**

Spring is in the air and the smelt are running. Catches of the small, silvery fish have increased in Milwaukee, Wisconsin, waters over the last two years

**[Fish die-off linked to virus more widespread, Michigan officials report](#)**

A highly contagious virus is more widespread and has been killing off a larger number of Lake St. Clair fish than previously thought, according to testing by government officials in Michigan

End