Inland Seas Angler

GREAT LAKES BASIN REPORT©

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Chicago water pollution may be keeping invasive carp out of Great Lakes

URBANA, Ill. – Invasive silver carp have been moving north toward the Great Lakes since their accidental release in the 1970s. The large filter-feeding fish, which are known to jump from the water and wallop anglers, threaten aquatic food webs as well as the $7 billion Great Lakes fishery. But, for the past decade, the invading front hasn't moved past Kankakee. A new study, led by scientists at the University of Illinois, suggests that Chicago's water pollution may be contributing to this lack of upstream movement.

"It's a really toxic soup coming down from the Chicago Area Waterway, but a lot of those chemicals go away near Kankakee. They might degrade or settle out, or the Kankakee River might dilute them. We don't really know what happens, but there's a stark change in water quality at that point. That's right where the invading front stops," says Cory Suski, associate professor in the Department of Natural Resources and Environmental Sciences and co-author of the study. "And this fish never stops for anything."

The researchers think the fish stall out at Kankakee because they are responding negatively to compounds in the water flowing downstream from Chicago. They formulated their hypothesis after reading a 2017 water quality report from the U.S. Geological Survey. USGS researchers tracked changes in water chemistry in a single pocket of water as it moved from Chicago downstream through the Illinois River. Right near Kankakee, many of the pharmaceuticals, volatile organic compounds, and wastewater indicators dropped off the charts.

Suski says many of these compounds have been shown in other studies to induce avoidance behaviors in fish, but his team didn't look at behavior. Instead, they examined gene expression patterns in blood and liver samples from silver carp at three locations along the Illinois River: at Kankakee, approximately 10 miles downstream near Morris, and 153 miles downstream near Havana.

"We saw huge differences in gene expression patterns between the Kankakee fish and the two downstream populations," Suski explains. "Fish near Kankakee were turning on genes associated with clearing out toxins and turning off genes related to DNA repair and protective measures. Basically, their livers are working overtime and detoxifying pathways are extremely active, which seem to be occurring at the cost of their own repair

Pollution keeping carp out

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$1 mil man-made reef coming to Saginaw Bay

Nearly 23K tons of rocks are being used to create the offshore reef in waters northeast of Bay City. The $1 million project aims to revitalize walleye and other fish populations in Lake Huron and Saginaw Bay. When it's finished, the reef will cover about 3 acres...be about 5' tall in waters that are 18-21'...and provide a rocky habitat to promote fish reproduction.

When walleye only spawn in rivers, a whole generation can be wiped out by river flooding or other environmental factors.

Historically, Saginaw Bay had both reef spawners and river spawners. Today, we principally just have the river spawners left. What we're trying to do is diversify the sources of reproduction and, in doing so, that generates more resiliency in the population. Workers are placing 10 barges of limestone and 2 barges of glacial rock at the site to replicate a reef and are using GPS to track location and rock height. ✧

DNR to host September fly-fishing workshop Sept 27

The Indiana DNR is offering a chance for you to learn to fly fish with two September workshops, both led by DNR fisheries biologists.

The event will be on **September 27** from 1 to 4 p.m. at Salomon Farm Park in Fort Wayne.

Learn to Fly Fish workshops are designed to teach beginners the skills needed to fly fish on their own. Participants will learn about fly-fishing tackle and fishing techniques. Attendees will then gain hands-on instruction and practice casting a fly rod. Finally, participants will use their newly acquired skills and knowledge to go fly fishing with provided equipment.

Participants must be 16 years old or older, and participants under age 18 must be accompanied by a registered and related adult. Participants age 18 and older must have a fishing license, which must be purchased in advance online at on.IN.gov/inhuntfish or a local retailer. A daily license is available for $9.

The workshops are free, but advance registration is required. Fort Harrison participants will be required to pay the state park gate fee of $7 per car for in-state vehicles or $9 for out-of-state vehicles or $2 for pedestrians and cyclists.

Registration for the Indianapolis event ends on **September 5** at midnight. Registration for the Fort Wayne event ends on **September 25** at midnight. To register, see the Indiana DNR education events page at **wildlife.IN.gov/7548.htm**, click on the desired event, and then click the red register icon in the upper right hand corner of the page.

Registration can also be completed by emailing the event coordinators: Corey DeBoom in Indianapolis, **cdeboom@dnr.IN.gov**, or Matthew Linn in Fort Wayne, **mlinn@dnr.IN.gov**. ✧

Join a Master Naturalist Class

Several Master Naturalist classes are being offered around Indiana. Classes provide you with many hands-on opportunities to learn about Hoosier natural resources. They also provide a way for you to share that knowledge, along with your life experiences, through volunteer service.

Sept. 12 – Learn to Kayak Fish, Bloomington
Sept. 14 – Fishing Triathlon, Indpls
Sept. 21 – Family Learn to Shoot and Fish, Kingsbury Fish & Wildlife Area
Sept. 21 – Learn to Catch & Cook, Fort Wayne
Sept. 26–Learn to Kayak Fish, Indpls
Sept. 2 –Learn to Fly Fish, Ft Wayne
Sept. 28 – Learn to Catch & Cook, Krannert Park

Want to learn to hunt or shoot?

Sept. 21 – Learn to Hunt: Waterfowl, Evansville
Sept. 29 – Learn to Shoot: Archery Workshop, Deer Creek F/W Area ✧

DNR meetings to unveil Lake Superior fisheries management plan Sept 16 & 17

Wisconsin DNR will hold two public meetings to discuss a Lake Superior fisheries plan. The meetings will take place at 6 p.m. on **September 16** at the Peter Rich Community Center, 1201 N 8th St. Superior, and at 6 p.m. on **September 17** at the Northern Great Lakes Visitor Center, 29270 County Highway G, Ashland.

Staff will present the draft plan, developed with input from stake-holders. Attendees can also provide comments on the plan. There will be a 30-day comment period through **October 20**.

To learn more: draft Lake Superior Management Plan or submit comments on the draft plan, visit dnr.wi.gov and search keywords "Lake Superior fisheries management" or contact Bradley Ray via phone 715-779-4036 or email at Bradley.Ray@wisconsin.gov. ✧

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Position Statement

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

Inland Seas Angler
GREAT LAKES BASIN REPORT

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Share your thoughts with the DNR at upcoming meetings

The following Michigan boards, commissions, committees and councils will hold public meetings this month. The links below will take you to the webpage for each group, where you will find specific meeting locations and, when finalized, meeting agendas. Check frequently, as details and agendas may change and sometimes meetings are canceled.

September

- Belle Isle Park Advisory Committee – Sept. 19, 9-11 a.m., Belle Isle Nature Center, Detroit (Contact: Barbara Graves, 517-284-6135)
- Lake Erie/St. Clair Citizens' Fishery Advisory Committee – Sept. 24, 10-3 p.m., Belle Isle Nature Center, Detroit (Contact: Jim Francis, 248-666-9157)
- Lake Michigan Citizens' Fishery Advisory Committee – Sept. 17, 10-3 p.m., Michigan United Conservation Corps Hdqtrs, Lansing (Contact: Jay Wesley, 269-204-7057)
- Michigan Historical Commission – Sept. 19, 10 a.m., First Universalist Church of Concord, Concord (Contact: Michelle Davis, 517-335-2585)
- Michigan Natural Resources Commission – Sept. 12, 10:30 a.m., Northern Michigan U - Ballroom, Marquette (Contact: Cheryl Nelson, 517-284-6237)
- Timber Advisory Council – Sept. 20, 8:30-9:30 a.m., conference call; dial 888-557-8511, access code 8718230 (Contact: Kimberley Korbecki, 517-284-5876)
- Underwater Salvage and Preserve – Sept. 11, 1 p.m., Michigan Library and Historical Center, Lansing (Contact: Sheri Giffin, 517-335-2591)
- Upper Peninsula Citizens' Advisory councils – Joint meeting - Sept. 11, 3 p.m., Northern Michigan U - Northern Center - Ballroom 1, Northern Michigan University, Marquette (Contact: Stacy Welling Haughey, 906-226-1331) ✧

New England Fishing Workshops, Oct 19, 22 and 24

NOAA Fisheries' Atlantic Regional Fisheries Office is hosting three workshops to provide an opportunity for stakeholder input on developing potential short- and long-term management approaches for the recreational fishing community. Workshops are scheduled for **October 19, 22 and 24**.

Through a collaborative process, we will develop potential management approaches for the recreational groundfish fishery that balance the need to prevent overfishing with enabling profitability in the for-hire fleet and worthwhile fishing opportunities for anglers. Registration is free, but be sure to register early because space will be limited. The agendas are posted in this link. **October 19–24**

All stakeholders, are encouraged to attend. Stakeholders may request a travel stipend for mileage. Registration is free, though space is limited, so please register in advance through Eventbrite for one of the following workshops:

Oct 19: Plymouth, MA
Oct 22: Portsmouth, NH
Oct 24: Narragansett, RI ✧

Women's Hunter Education Class

New York's BOW program is offering a free Women's hunter ED class **Sept. 14th** at Hudson Valley, Wallkill Rod & Gun Club, 316 Bruyn Turnpike, Wallkill, NY 12549. 8 a.m.-5 p.m. You only need to bring a bagged lunch and water. All other equipment is provided. Learn how to source your own local, free-range organic meat, build confidence and connect with nature through hunting, learn firearm safety and hunting ethics. This course is for women who have never taken a hunter education class. It is taught by experienced, patient and enthusiastic instructors. Call **845-256-3122** or e-mail more information and to register ✧

Wuestefeld named director of DNR Fish & Wildlife

Amanda Wuestefeld, who has worked full-time in the DNR Division of Fish & Wildlife for more than 25 years, was promoted to division director.

Wuestefeld replaces Mark Reiter, who retired in July. She is the first woman to hold the position for Indiana DNR.

For the past five years, Wuestefeld has served as the assistant division director. Before that, she served as the Hoosier Outdoor Heritage coordinator for eight years. In that capacity, she led the launch of the division's first hunting recruitment program to introduce young adults to the sport.

Wuestefeld, who holds a B.S. in Wildlife Science from Purdue University, also served as the DFW's Go FishIN coordinator for eight years. In that role, she led a program responsible for teaching thousands of participants the sport of fishing and oversaw the development and 2005 opening of the Fishin' Pond at the Indiana State Fair.

She started her DNR career in 1991 while still a college student as an intermittent employee at Hardy Lake, bringing her combined part-time and full-time service at DNR to 28 years.

Wuestefeld grew up in the town of Commiskey in Jennings County, spending her leisure time fishing, hunting, camping and boating. A lifelong Hoosier, she has dedicated her life to conservation both personally and professionally through her love of the outdoors and enjoys sharing her passion for conservation with others. One of the ways she has done so is by mentoring young outdoor enthusiasts, including those new to hunting, fishing and even mushroom hunting. ✧

Asian carp capable of surviving in much larger areas of Lake Michigan than previously thought

Asian carp are capable of surviving and growing in much larger portions of Lake Michigan than scientists previously believed and present a high risk of becoming established, according to a new modeling study from University of Michigan researchers and their colleagues.

Some previous studies suggested that low food levels in Lake Michigan could be a barrier to the establishment of bighead and silver carp, which typically feed on algae and other types of plankton. Bighead and silver carp are the two Asian carp species of greatest concern for the Great Lakes.

But earlier studies did not consider the fact that bighead and silver carp are opportunistic feeders capable of surviving on a wide variety of diets, including dead organic matter called detritus. In Lake Michigan, detritus includes bits of resuspended fecal pellets from countless quagga and zebra mussels on the lake bottom.

In addition, previous studies did not evaluate potential carp habitat more than a meter below the lake's surface.

When diet flexibility and subsurface habitat were factored in, the amount of suitable Asian carp habitat in Lake Michigan increased dramatically, according to study lead author Peter Alsip, who conducted the research for his master's thesis at U-M's School for Environment and Sustainability.

Silver carp habitat was confined to nearshore, nutrient-rich areas. The study was published online August 12 in the journal ***Freshwater Biology.*** "Subsurface habitat and the fishes' diet flexibility were not evaluated in previous studies, and our findings indicate that these considerations had a noticeable effect on our suitability assessment," Alsip said. "Lake Michigan's low supply of plankton may not be as strong a barrier as previously thought."

The study also found that:

- Allowing the fish to feed on the broadest possible diet (phytoplankton, zooplankton and detritus) throughout the water column resulted in suitable habitat volumes that were 4.6 times greater than the narrowest diet (phytoplankton only) for bighead carp and 2.3 times greater for silver carp.
- The team's model found suitable year-round habitat (which other models suggest is capable of supporting spawning and egg development) near the mouths of several rivers, including the Milwaukee and St. Joseph.
- Maps generated by the team's model identified Asian carp establishment hot spots and the potential for cross-lake migration corridors "that may facilitate and accelerate lake-wide movements," the authors wrote. Those maps could aid surveillance efforts by identifying areas to which bighead and silver carp might spread upon entering the lake.
- The relatively plankton-rich "deep chlorophyll layer" that forms each summer in offshore Lake Michigan waters is capable of supporting bighead carp growth. Previous carp studies did not evaluate growth potential in this layer, which forms at an average depth of about 100 feet.

The progressive loss of nutrients in Lakes Michigan's water column, a process called oligotrophication, has generated skepticism among some scientists around the likelihood of Asian carp establishment there. But laboratory experiments have demonstrated that Asian carp are capable of surviving—and even gaining weight—while feeding only on quagga mussel biodeposits.

In their study, Alsip and his colleagues used simulated food abundance and water temperature values from a three-dimensional biophysical model of Lake Michigan to study the growth rate potential of bighead and silver carp.

They looked at how well individual adults of the two carp species could grow in Lake Michigan when feeding on various combinations of the three food types—phytoplankton, zooplankton and detritus—at various depths. Areas where bighead and silver carp could either maintain or increase their body weight were classified as suitable habitat.

They found suitable habitat for bighead carp is widespread in Lake Michigan, and that's a result of fundamental ecological importance for many reasons.

The new study showed that the widespread availability of quagga mussel fecal pellets in Lake Michigan would likely help keep Asian carp alive, enabling them to migrate through plankton-depleted open waters and eventually spreading throughout the lake. Bighead and silver carp are collectively known to scientists as bigheaded carp, or BHC.

Currently, bighead and silver carp are established in watersheds close to the Great Lakes but not in the lakes themselves.

In May, the head of the U.S. Army Corps of Engineers sent Congress a $778 million plan to install carp defenses at the Brandon Road Lock and Dam near Joliet, Illinois, about 40 miles from Lake Michigan. In July, the region's eight U.S. governors and two Canadian premiers endorsed the plan.

The Freshwater Biology study is titled "Lake Michigan's Suitability for Bigheaded Carp: The Importance of Diet Flexibility and Subsurface Habitat." DOI: 10.1111/fwb.13382.

Alsip and colleagues are currently studying how Asian carp habitat suitability is affected by meteorology, lakewide phosphorus loads, and quagga and zebra mussels. Their findings could provide a clearer picture of how a warming climate will affect Lake Michigan's vulnerability to Asian carp and how habitat suitability has changed over time in response to nutrient-load reductions and the mussel invasion. ✧

Program provides fourth grade students free entrance to public lands

Includes the kids' family/friends to national parks, wildlife refuges, marine sanctuaries, and forests

Fourth grade students can get a free annual pass to visit more than 2,000 federal recreation areas with their families and friends. The Every Kid Outdoors Program is an interagency collaboration between the Department of the Interior, U.S. Army Corps of Engineers, NOAA, and U.S. Forest Service that provides fourth graders with free access to explore, learn, and recreate in spectacular settings, including national parks, wildlife refuges, marine sanctuaries, and forests.

Introducing fourth grade students to America's public lands provides them with opportunities to have fun, be active, improve fitness, and learn critical skills Visits on class trips or family vacations to the rich variety of astonishing landscapes and historic treasures located on public lands will result in unforgettable experiences and, hopefully, forge lifelong connections to the outdoors.

The John D. Dingell, Jr. Conservation, Management and Recreation Act, which was signed into law by President Trump, authorized funding for Every Kid Outdoors for the next seven years.

To obtain the free pass, fourth grade students visit the Every Kid Outdoors website, participate in a short educational activity, and download a voucher. The voucher is valid for multiple uses between Sept. 1, 2019 and Aug. 31, 2020. The voucher may be exchanged for a keepsake pass at various participating federal lands.

The voucher or pass grants free entry for fourth graders, all children under 16 in the group and up to three accompanying adults (or an entire car for drive-in parks) to most federally managed lands and waters. The pass does not cover expanded amenity fees such as camping or boat rides.

The great outdoors make a great classroom. Fourth grade educators are encouraged to take advantage of the wide range of educational programs and tools associated with the Every Kid Outdoors Program. Educational activities, field trip options, information and tools in English and Spanish, and the ability to print vouchers for passes for students are all available on the website.

The Every Kid Outdoors Program replaces the Every Kid in a Park Program that was established in 2015. The program focuses on children 10 years of age who are at a unique developmental stage in their learning where they begin to understand how the world around them works in more concrete ways. The program aims to ensure every child in the United States has the opportunity to visit their Federal lands and waters by the time he or she is 11 years old, thereby establishing a lifelong connection to enjoy and protect our American heritage.

There are seven federal agencies participating in the Every Kid Outdoors Program. You can search for participating lands and waters (by agency) through the links below:

U.S. Fish and Wildlife Service

U.S. Forest Service

National Park Service

U.S. Bureau of Land Management

U.S. Bureau of Reclamation

National Oceanic and Atmospheric Administration

U.S. Army Corps of Engineers

✧

'We need everybody's help': Anglers asked to report Asian carp sightings

Officials at the Invasive Species Centre are asking the public for help to identify and locate Asian carp in the Great Lakes. Commercial fishermen, anglers, cottage owners and boaters have been asked to actively search for the invasive fish while out on the waterways.

According to Becky Cudmore, regional manager of the Aquatic Invasive Species Program at the Department of Fisheries and Oceans (DFO), the Asian carp are an imminent threat.

"We really feel like they're starting to come through the door and we need everybody's help to try and shut that door," said Cudmore. Thirty Asian carp have been found since 2005, although none have been found in 2019. If Asian carp make it into the Great Lakes, the DFO said it will cost about $13 billion a year, including job losses.

Too little too late

Some commercial fishermen, like Tim Purdy, worry it's too late to stop the fish from getting into the Great Lakes. Purdy caught two Asian carp in traps on Lake Huron in the last year. "You keep hearing about it, but when it's actually at your back door, you can see them ... it's a bit scary," said Purdy.

Purdy said DFO had previously told them what to look for. Once he caught the fish, he called the Ministry of Natural Resources and the fish were shipped for analysis. "We're reacting too late," said Purdy. "We're playing catch up."

While public attention has proven useful in the past, shoreline angler Chris Jakob doesn't think asking the public to help is the answer.

"We're already dealing with high water and nobody wants that ... now with this?" said Jakob, who attended a Monday night information meeting at Point Pelee National Park to get more details on what's expected of him.

"They're not really giving us much on what the public should do. I just hope [the Asian carp] don't come."

Don't throw back caught Asian carp

Asian carp are illegal to possess and shouldn't be thrown back if caught. Instead, report the catch to the Ministry of Natural Resources, the DFO or your DNR and follow instructions on how to dispose of the fish. It is against the law to keep Asian carp as pets or use as bait. ✧

Angling pressure, catch rates combine to close Mille Lacs walleye fishing

Walleye fishing on Mille Lacs Lake closed September 6, so state anglers do not exceed a safe walleye harvest level. "We're glad anglers had the opportunity to harvest walleye in May and fish for walleye through much of the open water season," said Brad Parsons, fisheries chief for the Minnesota DNR. "Because angling pressure and walleye catch rates were high, the coming closure is necessary to stay within established limits."

High angling pressure and catch rates in July and August when water temperatures were at their warmest increased hooking mortality, resulting in a larger-than-expected walleye kill. Hooking mortality, which is more likely as water temperatures warm, occurs when a fish is caught and returned to the water but dies anyway.

The state of Minnesota and Ojibwe tribal authorities with fishing rights on Mille Lacs agreed on a 2019 safe harvest level of 87,800 lbs. for state anglers and 62,200 lbs. for tribal fishing. "Mille Lacs Lake walleye regulations allowed some harvest this year but it's still important to proceed with caution to ensure continued recovery of the lake's walleye," Parsons said. "The restrictive regulations we enacted in previous years protected young walleye, allowing the population to increase to a number not observed since before 2007. Continuing to manage the Mille Lacs walleye fishery for recovery will allow us to provide good angling opportunities in the future."

Starting September 6 at 12:01 a.m., anglers are not allowed to target walleye when fishing on Mille Lacs Lake. Anglers may fish for other species and use live bait.

Walleye regulations for the winter of 2019-2020 on Mille Lacs Lake will be announced in November after data from fall walleye assessments are available. Winter regulations become effective on Sunday, Dec. 1. For more info: mndnr.gov/millelacslake. ✧

Interior Secy Makes Endangered Species Act More Transparent

Secretary of the Interior David Bernhardt signed new Endangered Species Act rules that increase transparency, make it easier for the USFWS to work with the states and give landowners more opportunities to promote conservation for imperiled species. Specifically, the new rules include a provision for protections for the Service to identify, at the time a threatened species is listed, the beneficial actions already being taken by states and private entities to help declining species. Additionally, the rules clarify the responsibilities of the Service, designation of unoccupied critical habitat, standards for delisting, bundling of related analyses, and basic definitions, all designed to eliminate confusion and misguided litigation. ✧

DEC reopens North Sandy Pond Boat Launch Site

New York (DEC) recently reopened the North Sandy Pond boat launch located in the town of Sandy Creek. Oswego County is now open following record-high water levels on Lake Ontario. During the closure, DEC implemented several site repairs to ensure safe and convenient public access to the launch. A full list of state- and municipally-operated Lake Ontario/St. Lawrence River boat launch facilities and their statuses can be found on DEC's website. As water levels continue to decrease, launches will be reopened when considered safe. In the past month, Oak Orchard West (OPRHP) in Orleans County, Grass Point's Fisher's Landing (OPRHP) in Jefferson County, and Wright's Landing (City of Oswego) in Oswego County; the City of Rochester launch on the Genesee River in the Port of Rochester; the Sandy Creek Boat Launch; and the Irondequoit Bay State Marine Park have reopened. ✧

Pollution keeping carp out

Continued from page 1

mechanisms. We didn't see that in either of the downstream populations."

Suski stresses that his study wasn't designed to demonstrate a cause-and-effect relationship between water pollution and silver carp movement, but the results hint at a compelling answer to a decade-old mystery. The researchers hope to follow up to show how the fish are metabolizing the pollutants, which will give them a better understanding of which compounds are having the biggest effects. Right now, it's a black box — the USGS study documented approximately 280 chemicals in the Chicago Area Waterway and downstream sites.

Regardless of which specific pollutants may be responsible for stopping silver carp—if that hypothesis is later proven—the results could have interesting implications for management.

"We're not saying we should pollute more to keep silver carp out of the Great Lakes," Suski says. "Right now, things are stable, but that might not always be the case. There's a lot of work in Chicago to clean up the Chicago Area Waterway. Already, water quality is improving, fish communities are getting healthier. Through the process of improving the water quality there's a possibility that this chemical barrier could go away. We don't need to hit the panic button yet, but at least we should be aware."

The article, "Physiological status of silver carp in the Illinois River: An assessment of fish at the leading edge of the invasion front," is published in *Comparative Biochemistry and Physiology Part D: Genomics and Proteomics*I: 10.1016/j.cbd.2019. 100614]. Authors include Jennifer D. Jeffrey, Ken Jeffries, and Cory Suski. Suski and Jeffrey are affiliated with the Department of Natural Resources and Environmental Sciences in the College of Agricultural, Consumer and Environmental Sciences at the University of Illinois. Jeffries is in the Dept. of Biology at the University of Manitoba. ✧

The Iconic Image of the Global Warming Movement Is a Fraud

It's official: No U.S. warming since at least 2005

New NOAA measuring system complies with federal standards

Global warming alarmist Dr. Michael Mann of Penn State University has lost his multimillion dollar libel suit in British Columbia. Not only did he lose; the suit was thrown out *and* Mann was ordered to pay defendant Dr. Tim Ball's legal costs. The judge threw out the case "with prejudice" meaning Mann cannot not refile it.

Some years ago, Dr. Tim Ball wrote that climate scientist Michael Mann "belongs in the state pen, not Penn State." At issue was Mann's famous "hockey stick" graph that purported to show a sudden and unprecedented 20th century warming trend. The hockey stick featured prominently in the IPCC's Third Assessment Report (2001), but has since been shown to be wrong. The question, in my view, is whether it was an innocent mistake or deliberate fraud on Mann's part. (Mann, I believe, continues to assert the accuracy of his debunked graph.) Mann sued Ball for libel in 2011. Principia Scientific now reports the court in British Columbia dismissed Mann's lawsuit with prejudice, and assessed costs against him.

What happened was that Dr. Ball asserted a truth defense. He argued that the hockey stick was a deliberate fraud, something that could be proved if one had access to the data and calculations, in particular the R2 regression analysis, underlying it. Mann refused to produce these documents. He was ordered to produce them by the court and given a deadline. He still refused to produce them, so the court dismissed his case.

The rules of discovery provide that a litigant must make available to opposing parties documents that reasonably bear on the issues in the case. Here, it is absurd for Mann to sue Ball for libel, and then refuse to produce the documents that would have helped to show whether Ball's statement about him—he belongs in the state pen—was true or false. The logical inference is that the R2 regression analysis and other materials, if produced, would have supported Ball's claim that the hockey stick was a deliberate fraud on Mann's part.

Mann is considering an appeal. He can appeal to his heart's content, but there is not a court in North America that will allow a libel case to proceed where the plaintiff refuses to produce the documents that may show whether the statements made about him were true or false.

Mann responded to the dismissal of his lawsuit in typically mean-spirited and dishonest fashion: "The dismissal involved the alleged exercise of a discretion on [sic] the Court to dismiss a lawsuit for delay." The dismissal was for failure to obey a court order, and the delay went on for eight years.

The difficulty of accurately measuring average temperatures around the globe and across the United States has helped fuel the conflicting claims regarding climate change. Purveyors of the belief that mankind is catastrophically impacting the global climate insist it's getting warmer year by year. But a new, improved system to assess surface temperatures established in 2005 by NOAA indicates otherwise.

In fact, the U.S. Climate Reference Network — comprised of 114 pristinely maintained temperature stations spaced relatively uniformly across the lower 48 states — finds there has been no warming for the past 14 years at least, noted the Powerline blog. While historically the U.S. has been considered to have the best records, surveys show that over half of the nation's weather stations do not comply with written standards, pointed out Powerline contributor John Hinderaker. Some are next to airport runways and many are in cities, where temperatures are artificially inflated.

"And on top of all of that, the alarmists who curate weather records have systematically fiddled with them, lowering temperatures that were recorded decades ago and raising recent ones, to exaggerate the supposed phenomenon of global warming," he wrote.

Climate-change skeptics have pointed to examples such as Penn State Professor Michael Mann's iconic "hockey stick" graph purporting to show a spike in average global temperatures in the 20th century. Mann lost a defamation suit after failing to present evidence to back his claim. Critics argue his graph doesn't take into account periods such as the Little Ice Age and the Medieval Warming Period.

NOAA's system utilizes locations far away from urban and land-development impacts, eliminating the need to adjust the data.

James Taylor, director of the Center for Climate and Environmental Policy at the Heartland Institute, writes at Real Clear Energy that there's "also good reason to believe U.S. temperatures have not warmed at all since the 1930s."

"Raw temperature readings at the preexisting stations indicate temperatures are the same now as 80 years ago," he writes.

"All of the asserted U.S. warming since 1930 is the product of the controversial adjustments made to the raw data. Skeptics point out that as the American population has grown, so has the artificial warming signal generated by growing cities, more asphalt, automobiles, and machinery."

Taylor contends that, if anything, the raw temperature readings "should be adjusted downward today relative to past temperatures (or past temperatures adjusted upward in comparison to present temperatures) rather than the other way around." "If raw temperature readings are the same today as they were 80 years ago, when there were fewer artificial factors spuriously raising temperature readings, then U.S. temperatures today may actually be cooler than they were in the early 20th century," he reasons. ✧

DEC announces Fall Angling Opportunities in Great Lakes Tributaries

Fall migrations of trout and salmon offer world-class angling

The New York State DEC announced that approaching fall weather will trigger trout and salmon migrations into Lake Ontario and Lake Erie tributaries. DEC encourages anglers to visit Great Lakes tributaries this year and experience some of the best trout and salmon fishing in North America. In addition to their recreational value, New York's Great Lakes tributary fisheries supported more than 835,000 angler days in 2017, generating more than $38 million to local economies.

"Each fall, New York's Great Lakes tributaries support migrations of salmon and trout that afford anglers outstanding opportunities to pursue trophy-size fish for a variety of species," DEC Commissioner Seggos said.

Chinook and coho salmon runs in Lake Ontario tributaries generally begin in mid-September and continue through early November. Brown trout are also present in the tributaries during this time and remain in some waters until spring. Atlantic salmon provide a summer fishery in the Salmon River and are caught occasionally at other times of the year in the Salmon River and Oak Orchard Creek. Steelhead begin their tributary runs in earnest in both Great Lakes in mid-October and provide for fishing excitement through springtime. Since anglers will encounter a variety of species, DEC advises anglers to review fish identification outlined in the instructional video on YouTube.

Abbreviated descriptions of fisheries are available in limited selected tributaries, including:

Black River: The Black River from the Mill Street Dam in Watertown downstream to Lake Ontario supports runs of Chinook and coho salmon, steelhead and brown trout. Two fish ladders provide fish access around dams at Dexter and Glenn Park. A map of areas along the river where the public can fish (PDF) can be found on DEC's website.

Salmon River: New York's most heavily fished Great Lakes tributary, the Salmon River, stretches 17 miles from the Lighthouse Hill Reservoir in Altmar to Lake Ontario. There are 12 miles of public fishing rights along the river, offering some of the finest sportfishing in the country. Two major fish records were taken from the Salmon River: Great Lakes record Chinook salmon (47 lbs. 13 oz.) and the world record coho salmon (33 lbs. 4 oz.). This world-famous river also supports an excellent steelhead fishery from late fall into May. A map of state land and public fishing rights where the public can access the river (PDF) to fish is available on DEC's website.

Oak Orchard Creek: Oak Orchard Creek flows through Orleans County emptying into Lake Ontario at Point Breeze. Marsh Creek is a prominent tributary to Oak Orchard Creek and joins "The Oak" at an area known as "The Bridges." Both tributaries offer excellent fishing for coldwater species, with opportunities to catch brown trout, steelhead, Chinook and coho salmon, and Atlantic salmon. A map of publicly accessible areas (PDF) is available on DEC's website.

Lower Niagara River: The Niagara River's outflow into Lake Ontario is a powerful attraction to trout, salmon and other highly sought sportfish. The Lower Niagara can be fished from shore or by boat all year, with different opportunities during each season. The lower river is well known for its Chinook salmon, steelhead, brown trout, and lake trout. The Lower Niagara is considered one of New York's finest trout and salmon fisheries, also offering tremendous overall fishing diversity.

Cattaraugus Creek (Lake Erie): Cattaraugus Creek supports a high-quality tributary steelhead fishery that consistently produces the highest angler catch rates among all of New York's Great Lakes tributaries. Steelhead begin entering the creek in September and provide fishing opportunities that extend almost 10 months of the year. Peak fishing effort occurs in October and November, with the best quality angling typically found in the lower sections on the Seneca Nation of Indians lands. A map of publicly accessible areas along the creek (PDF) is available on DEC's website.

For more information on Great Lakes tributary fishing, visit DEC's website or contact the DEC Fisheries office in Regions 6 - 9.

✧

Striped Bass Draft Public Hearing Sept 12

Atlantic States Marine Fisheries Commission has approved and released Atlantic Striped Bass Draft Addendum VI (PDF) for public comment. There will be two public hearings held in New York to announce the details of the addendum and gather public input.

The meeting will be held at NYSDEC region headquarters, 21 South Putt Corners Rd, New Paltz, **September 12** at 6 PM. (The first meeting was held September 4th in Farmingdale).

NYSDEC encourages you to review the draft addendum and submit written comments by **October 7 at 5 p.m.** For additional questions or to submit comments, please use this contact information: **Mail:** Max Appelman, FMP Coordinator, Atlantic States Marine Fisheries Commission, 1050 North Highland St, Suite 200A-N, Arlington, VA 22201, **E-mail:** comments@asmfc.org (subject: Striped Bass Draft Addendum VI) **Phone:** (703) 842-0740. For more information visit, DEC's Saltwater Fishing web page. ✧

Are the Great Lakes next? Video shows hundreds of Asian carp shocked in Kentucky lake

A new video showing thousands of invasive carp splashing in a Kentucky lake, posted by the Kentucky Department of Fish and Wildlife Resources, should set off alarms for states to the north. **Read the full story by WJBK-TV – Detroit, MI.**

The video starts out harmless enough—three men in a modest raft holding nets on large poles. Everything feels very still. Then a countdown commences. When the voice says "one," hundreds of silver-colored fish breach the water's surface and jump into the air, the sounds of splashes fill the air like running rapids. The fishermen frantically wave their nets trying to catch as many as they can.

The next 30 seconds feature an all-out frenzy of fish jumping out of the water, before lying still and surrounding the boat as the fisherman scoop as many as they can. The fish aren't dead, merely stunned—but for the millions of people and fish that inhabit the Great Lakes hundreds of miles away, it should set off alarms.

That's because the video, put up by the Kentucky Department of Fish and Wildlife Resources show just how bad the state's Asian carp problem has gotten, and what lies in wait for bodies of water north if the appropriate measures aren't put in place.

Kentucky's fish and wildlife department is deploying a tactic used by researchers for counting fish populations in rivers and lakes, known as 'electrofishing'. While it won't kill the fish, any trapped in the video will be disposed of.

All four subspecies of Asian carp – Bighead, silver, black and grass – present the perfect cocktail of catastrophe for environmentalists. Bighead and silver carp feed on plankton, a key foundation in the food web. Black carp eat mollusks and snails, of which the Great Lakes has an abundance. Grass carp naturally eat the vegetation that many native species use as shelter.

If you're going to understand the (Asian carp) problem, you have to understand what's been going on in Lake Michigan for the last 40-50 years," said Peter Alsip, of Cooperative Institute for Great Lakes Research. "We've seen declines in the amount of productivity in the lake over that time period."

The amount of plankton, a key base in the Great Lakes food web has declined due to a dearth in phosphorus in the water. If the invasive plankton eaters make it to the Great Lakes, Alsip said it could wreak havoc on fisheries in the region.

"Already, there's not a lot of food left in the lake," he said. "If they can come in and survive on this food, they will make it much tougher for fish that already rely on a limited supply of plankton."

This threat to biodiversity and fish populations isn't just theoretical either. Take the video put up by the Kentucky Fish and Wildlife Department, which focuses on silver carp, who have a tendency to jump when shocked.

9/7/2019The department's director told CNN the fish present a potential threat to the recreational tourism industry in the state. If the fish aren't consuming food and growing at an exponential rate, they are jumping out of the water and colliding with boaters — really.

"(There's) studies showing 60 percent of the fish biomass in the Illinois river are bighead carp," Alsip said. "In smaller sections, 80-90 percent can be big head and silver carp."

To stave off more invasion, officials have proposed solutions to keep the carp out of the Great Lakes, namely an electric fence and bubble screens in Chicago to deter them from entering Lake Michigan. One of those includes a $778 million plan at the Brandon Road Lock. ✧

2019-20 Hunting Licenses and Permits on sale now

New York hunting and trapping licenses and permits for the 2019-2020 season are **now on sale**. Hunters can make a purchase at any one of DEC's 1,300 license issuing outlets, by phone at 866-933-2257, or online through the DEC website (allow up to two weeks for receipt of hunting licenses and permits ordered by phone or online).**October 1** is the deadline to apply for deer management permits.

For additional information, visit the General Sporting License Information web page on DEC's website. ✧

Bobcat Permits

Hunters and trappers may apply for a 2019-2020 Illinois Bobcat Hunting and Trapping Permit online through **September 30**. Applicants must submit a $5.00 non-refundable fee. A total of 1,000 permits will be allocated during a lottery and mailed to successful applicants. Successful applicants who receive a permit for the 2019-2020 season will NOT be able to receive a permit the next year to allow unsuccessful applicants a better chance to get a permit. The area open to bobcat hunting and trapping for the 2019-2020 season will be the boundary from the 2016-2017 season (see the map on Page 44 of the Digest of Hunting and Trapping Regulations https://www.dnr.illinois.gov/hunting/Documents/HuntTrapDigest.pdf). Season dates are November 10, 2019 through February 15, 2020. ✧

Non-Resident Archery Deer Permits

Illinois Non-Resident Archery Deer combination permits are available over-the-counter from DNR Direct license and permit vendors. The Illinois Archery Deer Season is October 1, 2019 through January 19, 2020 (except closed during firearm deer season in counties open to firearm deer hunting). ✧

FAMOUS LAST WORDS

Mark Twain (Samuel Clemens) said: "In the typical American household, there is no commonly-found item quite so dangerous as an 'unloaded' gun. ✧

President Trump Signs Historic 'Range Bill'

President Donald Trump signed H.R. 1222, the Target Practice and Marksmanship Training Support Act (Public Law No. 116-17). Also known as the "Range Bill," the legislation gives states more flexibility to use Pittman-Robertson funds, an excise tax paid by firearms and ammunition makers, to build new public recreational shooting ranges or improve existing ones. NSSF's Larry Keane said in a press release statement, "This administration understands the value and investment the firearms and ammunition industry make to safe recreational shooting and to sustained conservation to benefit wildlife and habitat restoration across the United States." ✧

Changes coming to IN public access sites

Newly reopened sites include Ashby Pit on Sugar Ridge Fish & Wildlife Area and Loon Pit on Blue Grass Fish & Wildlife Area. These sites have newly updated boat launch sites and are open to the public. The older concrete launch ramps at these sites were removed and replaced with updated concrete slab ramps. For more information about public fishing and boating opportunities see: **wildlife.IN.gov/3591.html.** ✧

Youth Deer Permits

Resident and non-resident Illinois Youth Firearm Deer permits are available over-the-counter from DNR Direct license and permit vendors. The Youth Deer Hunt is Columbus Day weekend, **October 12-14, 2019**. ✧

Do Asian carp actually taste good?

Chef Tammi Cook sure thinks so. "This is one of the easiest fish I've ever cooked. It has a very neutral flavor; it takes on the flavor of whatever you put on it and you can also cook it in a variety of ways. We're frying it today. "It tastes like no other fish I've ever had and I've been...developing recipes for fish for 10 years now. I've never tasted a fish that's as clean-tasting as this one." Getting rid of 'em one 'Friday Fish Special' at a time lol. ✧

Public hearings Sept 12 to review proposed DNR rules for assessing health of Wisconsin waters

MADISON, Wis. – The public will have an opportunity to learn more about and comment on two proposed administrative rules concerning the assessment of overall health of Wisconsin lakes and streams at a joint public hearing on September 12 in Madison and Green Bay. Public participation is a critical component of agency rulemaking. The proposed language is available by searching the DNR website, dnr.wi.gov, for "proposed permanent rules" under Board Orders WY-23-13 and WT-17-12. The public hearing will be held at 10 a.m. on **September 12** at the DNR, 101 S. Webster St, Room G09, in Madison. To allow greater participation, the public may also attend in Green Bay, where the hearing will be simulcast to the Green Bay DNR Service Center, 2984 Shawano Ave. Written comments may be submitted at the public hearings or to Kristi Minahan by email at kristi.minahan@wisconsin.gov. The deadline for comments is September 20, 2019. ✧

Lake Ontario Alewife Annual Status Report

The preliminary results of the spring 2019 Lake Ontario Alewife Bottom Trawl Survey, conducted annually by the U.S. Geological Survey, DEC and the Ontario Ministry of Natural Resources and Forestry, are now available. The 2019 alewife survey was the most extensive fish survey ever conducted on Lake Ontario with 252 bottom trawls in the main lake and embayments at depths from 16.5 to 742 feet. Results of the survey indicate that the biomass indices for adult (age 2 and older) and yearling (age 1) alewife declined relative to 2018. DEC will hold public meetings later this year to discuss alewife population status and information on Chinook salmon growth and condition.

Summary

● The 2019 spring prey fish trawl survey was the most extensive fish survey ever conducted on Lake Ontario with 252 bottom trawls collecting 214,569 fish from 39 species, in main-lake and embayment habitats, at depths ranging from 5 to 225 meters (16.5 – 742.5 ft.).
● Alewife distribution was similar in U.S. and Canadian portions of the lake, which differs from the previous three years of whole-lake surveys when alewife in April were more abundant in either U.S. (2017) or Canadian (2016, 2018) waters.
● The 2019 lake-wide average biomass index for adult alewife (age2+) declined 29% relative to 2018.
● The lake-wide biomass index for age-1 alewife in 2019 (2.2 kg/ha) declined relative to 2018 (2.6 kg/ha) and was the lowest age-1 biomass observed since whole-lake sampling began in 2016.
● The current biomass, size structure, and age structure of the adult alewife population reflect the lower than average alewife reproductive success observed in the 2013- and 2014-year classes.
● Reproductive success was also lower than average in 2017 and 2018, suggesting the adult alewife biomass may continue to decline.

Introduction

Alewife are the dominant prey species supporting Lake Ontario's multi-million dollar native and stocked salmonid fisheries. Management decisions depend on the status and trends of the alewife population in concert with other indicators to balance predator stocking levels with available prey (Great Lakes Fishery Commission Lake Ontario Committee, 2016; New York State Department of Environmental Conservation, 2018; Ontario Ministry of Natural Resources and Forestry, 2019). This report informs stakeholders, the Great Lake's Fishery Commission's Lake Ontario Committee (LOC), regional fisheries managers and advisors on the preliminary status of Lake Ontario's alewife population based on the 2019 spring prey fish trawl survey. Discussions on Lake Ontario fish populations occur among stakeholders, biologists, and managers throughout the year, requiring the most recent information be available as early as possible. Survey and analytical methods are described at the end of this report.

Results

The 2019 Lake Ontario Spring Prey Fish Survey collected 252 bottom trawls at depths from 5 to 225m from April 3 to May 3 **(Fig 1**). The survey captured 214,569 fish from 39 different species.

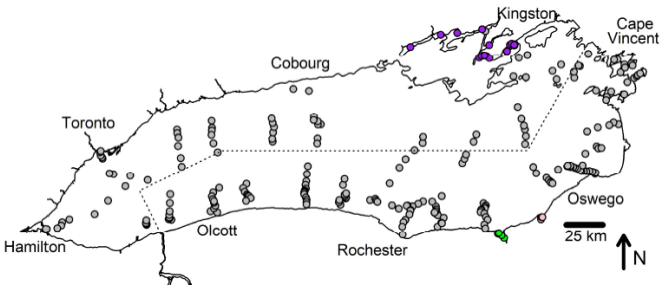

Fig 1-Lake Ontario bottom trawl locations from the 2019 Spring Prey Fish Survey. Three vessels participated in the survey and new trawl sites sampled this year included the Bay of Quinte (purple), Sodus Bay (green) and Little Sodus Bay (pink). Sampling embayments with the same sampling gear as the main lake allows us to check for early inshore migrating alewife and measure how different the fish communities are in these diverse habitats relative to the main lake.

Alewife Distribution

This survey historically sampled only U.S. waters of Lake Ontario from 1978-2015 but was expanded lake-wide in 2016. Four years of lake-wide surveys have dramatically changed our understanding of how the spatial distribution of alewife can vary during the survey in April. This variability in lake-wide alewife distribution influences how we interpret the previous survey results, since alewife may have been aggregated in either the U.S. or Canadian portions of the lake in any given year **(Fig 2**).

Alewife Population Status

Estimates for whole-lake adult (Age-2 and up) and Age-1 Alewife biomass declined in 2019 relative to 2018 **(Fig 3).** The 2019 estimate follows a general trend of declining biomass over the past five years and is likely among the lowest biomasses estimated in Lake Ontario over the past two decades. Observations from 2006 and 2010 were similarly low, but subsequent year's data illustrated those survey estimates were biased low. In those years a large proportion of the Alewife population was likely in Canadian waters, where the trawls did not sample.

We measure Alewife reproductive success in a year or the strength of an Alewife "year class" when the fish are Age-1. The current observed decline in adult Alewife biomass is the result of the lower than average year classes produced in 2013 and 2014, and likely higher than average predation on the remaining adult Alewife. Lower than average Alewife reproduction in both 2017 and 2018 (**Fig 3**, **right side**) suggests that adult biomass will continue to decline through 2019 and into 2020.

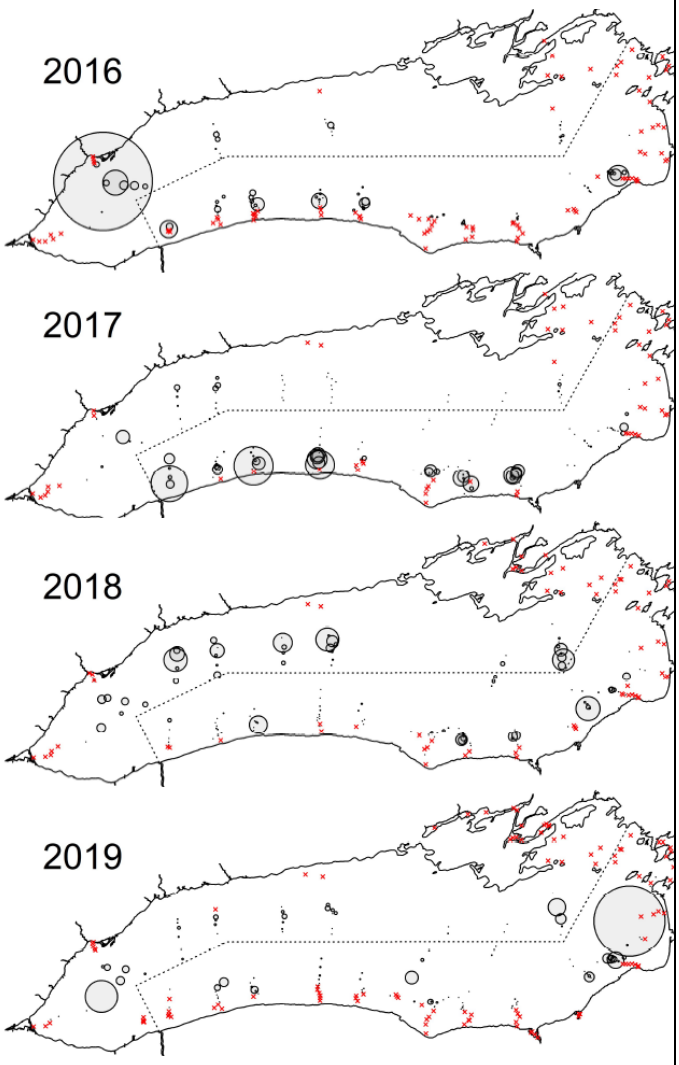

Fig 2-Spatial distribution of Lake Ontario alewife biomass, 2016-2019. The area of a gray circle is proportional to the biomass caught (standard scale across all plots). Red 'x' symbols denote where trawls did not catch any alewife. The largest catch (2016) represented a biomass of approximately 2100 kilograms per hectare (kg/ha). One kilogram (kg) is approximately equal to 2.2 lbs. and a hectare (ha) is approximately 2.5 acres.

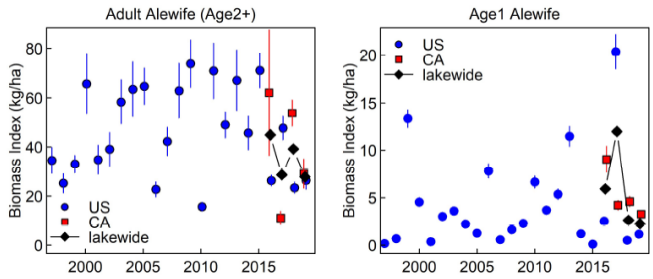

Fig 3-Lake Ontario average adult Alewife biomass index (above left in kilograms per hectare) and the average Age 1 Alewife biomass index (above right), 1997-2019. Error bars represent two standard errors. The term 'index' is used because trawl catchability is not accounted for in the estimates

The reproductive success of Alewife in Lake Ontario and other Great Lakes has been shown to be influenced by the number of adults, climate, and predation. Alewife typically spawn in July, and warm conditions allow the spawn to occur earlier and provide more time for Alewife to grow before their first winter. In contrast, cold springs delay spawning and reduce growth of young fish, and colder than average winters can potentially reduce survival. Accurately predicting Alewife reproductive success is difficult, but the colder than average spring experienced in 2019 suggests the 2019 Lake Ontario Alewife reproductive success may be lower than average.

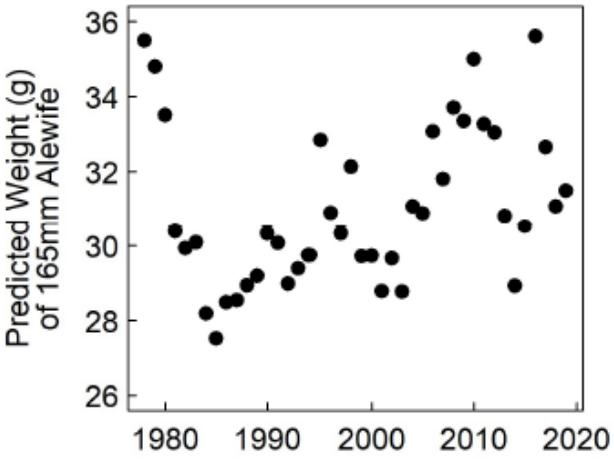

Fig 4-The predicted weight of a 165mm Lake Ontario Alewife (6.5"), 1978-2019.

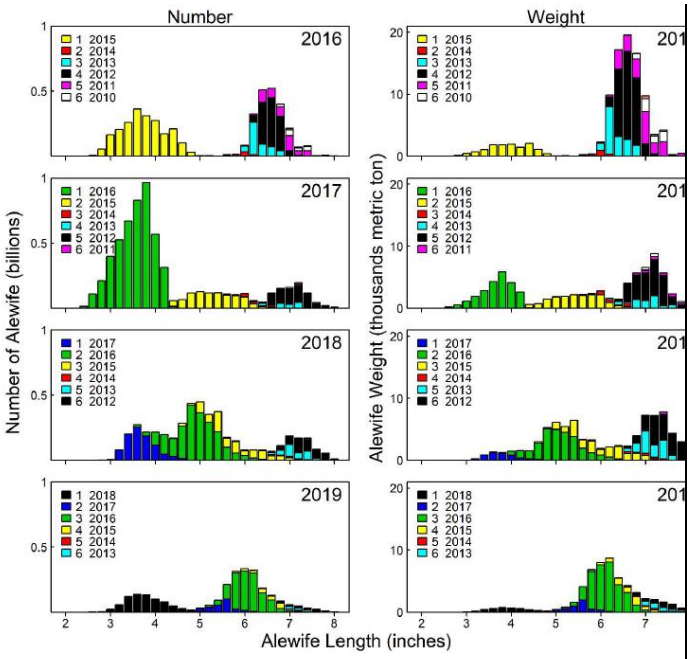

Fig 5-Lake Ontario Alewife size and age structure based on whole-lake survey results, 2016-2019. The horizontal position of a bar indicates Alewife length, while the bar height illustrates the number or weight. The year in which Alewife are born (year class) is depicted by the different colors and is the same across each panel

Fig 5 illustrates how Alewife size and age structure have changed over the past four years. Small or non-existent red and turquoise bars in the 2019 panels **(Fig 5 lower panels**) reflect the lower the average reproduction observed in 2013 and 2014 (**Fig 3**). The substantial decline in large Alewife from 2018 to 2019 suggests predation pressure may have been higher than average in that time period. Additionally, we have observed the maximum age of Alewife has declined slightly in recent years **(Fig 6).** This also indicates predation on the oldest, largest Alewife may have increased.

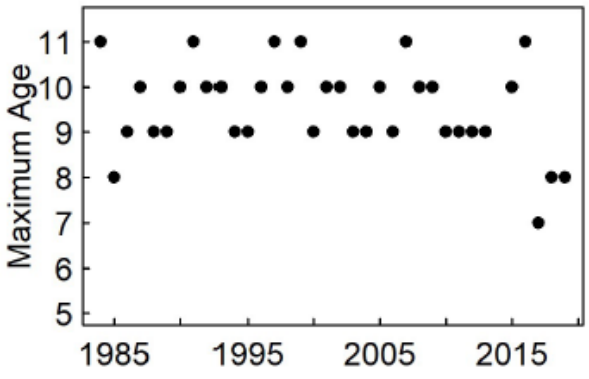

Fig 6-Maximum age of Lake Ontario Alewife based on whole saggitae otolith, 1984-2019.

Why use Alewife biomass as a population index?

As the Lake Ontario Alewife population changes it becomes increasingly important to understand how current abundance estimates relate to predator consumption levels, to historic values in the time series, and to other lakes where Alewife have experienced declines. Understanding how the Alewife population responded to previous declines may provide insight into how the population may respond in the future. Historic abundance indices reported total Alewife number or combined Alewife weight per 10- minute trawl. Herein, we report survey results using biomass (kilograms per hectare) and/or density (number of fish per hectare) units. These 'per area' metrics are more widely accepted and used in fisheries science, account for fish size changes, and account for differences in how much area the bottom trawl sweeps which is not consistent with depth.

The importance of biomass metrics is further highlighted due to the dramatic changes in Lake Ontario Alewife growth and size at age over the past four decades. Initial analyses suggest that growth variability may be due to changes in the number of non-native predatory zooplankton (i.e. fish hook fleas). When these zooplankton are abundant they comprise a large portion of Alewife diets, especially in the fall.

We feel biomass provides a more integrated description of Alewife population dynamics as it includes both measures of density and fish size. Adult Alewife size can vary substantially from year to year **(Fig 5**). Many small adult Alewives may not provide as much forage potential to predators as an Alewife population with fewer but larger individuals. **Fig 7** illustrates how the density, average size, and biomass of adult Alewife has changed in Lake Ontario over the past four years. While density increased markedly from 2017-2018, the decrease in average weight from 2017-2018 meant that the biomass increased slightly, then declined.

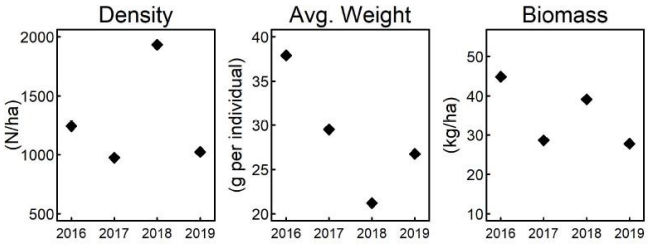

Fig 7. Lake Ontario adult Alewife density (number of fish per hectare), average weight (individual fish in grams) and biomass (total combined weight per hectare), 2016-2019. Biomass is the product of multiplying density with the average weight and is a more relevant metric to use when comparing Lake Ontario Alewife to other lakes and to understanding predator-prey balance.

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June Working Group Asian Carp monthly summary

Bottom Line: Multiple agencies participated in monitoring Asian Carp (Bighead Carp, Black Carp, Grass Carp, and Silver Carp) in the upper Illinois Waterway downstream and upstream of the Electric Dispersal Barrier during June 2019. **NO LIVE BIGHEAD CARP, BLACK CARP, GRASS CARP, or SILVER CARP were found in any new locations immediately downstream or upstream of the Electric Dispersal Barrier.**

Fixed, Random, and Targeted Site Sampling Downstream of the Electric Dispersal Barrier

Electrofishing:

- During the month of June 2019, United States Army Corps of Engineers (USACE) crews conducted 1.5 hours of boat mounted electrofishing in Lower Lockport Pool and Brandon Road Pool.
- A total of 480 fish were captured.
- **No Bighead Carp, Black Carp, Grass Carp or Silver Carp were caught Lower Lockport Pool or Brandon Road pool in June during fixed and random site electrofishing.**

Hoop netting:

- Due to changes in the monitoring response plan this effort will be reported during July following the end of the first sampling period (June 15 through July 31).

Mini fyke netting:

- Due to changes in the monitoring response plan this effort will be reported during July following the end of the first period of sampling (June 15 through July 31).

Commercial Netting:

- Contracted commercial fishers along with assisting Illinois Department of Natural Resources (IDNR) biologists set 40.1 miles of gill/trammel net at fixed and targeted sites in Lockport Pool, Brandon Road Pool, and Dresden Island Pool (including Rock Run Rookery) of the Illinois River in June 2019.
- 513 fish representing 11 species were captured cumulatively in the three pools during June 2019.
- Two Bighead Carp and 20 Silver Carp were captured in Dresden Island Pool below the I55 bridge during June 2019.
- No Bighead Carp and 3 Silver Carp were captured in Dresden Island Pool above I55 bridge during June 2019.
- Two Bighead Carp and 1 Silver Carp were captured in Rock Run Rookery during June 2019.
- **No Bighead Carp, Grass Carp, or Silver Carp were captured or observed in Lockport Pool or Brandon Road Pool during contracted commercial netting during June 2019.**

Sampling results below the electric dispersal barrier by pool through June 2019, along with the same time period in 2017 and 2018 for comparison (caution should be applied when comparing hoop net and mini fyke results among years due to changes in protocols):

Lockport Pool

	2017	2018	2019
Yards of Net Fished	25,000	42,700	16,400
Miles of Net Fished	14.2	24.3	9.3
Hoop Net Nights	17.9	16.8	0.0
Mini Fyke Net Nights	10.2	9.0	0.0
Electrofishing Runs	56	91	30
Electrofishing Time (hrs)	14.0	22.8	7.5
Total Asian Carp (AC)	0	0	0
Tons of AC Harvested	0	0	0

Brandon Road Pool

	2017	2018	2019
Yards of Net Fished	27,600	43,000	4,200
Miles of Net Fished	15.7	24.4	2.4
Hoop Net Nights	21.7	15.6	0.0
Mini Fyke Net Nights	11.9	6.9	0.0
Electrofishing Runs	59	72	30
Electrofishing (hours)	14.8	18.0	7.5
Total Asian Carp (AC)	0	0	0
Tons of AC Harvested	0	0	0

Dresden Island Pool (Including Rock Run Rookery)

	2017	2018	2019
Yards of Net Fished	43,350	105,200	50,000
Miles of Net Fished	24.6	59.8	28.4
Hoop Net Nights	311.7	15.3	0.0
Mini Fyke Net Nights	15.4	7.9	0.0
Pound net night	0	4	0
Electrofishing Runs	102	91	0
Electrofishing (hrs)	17.0	19.8	0.0
Bighead Carp	243	283	19
Grass Carp	4	37	2
Silver Carp	380	649	106
Total AC	627	969	127
Asian Carp (AC) Rookery Lake (RR)	161	107	17
AC upstream I-55 (not in RR)	14	5*	3
AC downstream I-55	452	857	107
Tons AC Harvested	7.2	8.3	2.0
AC/1000 yds gill net	14.1	9.2	2.5

***** indicates AC captured upstream of I-55 included Grass Carp.

Seasonal Intensive Monitoring

Seasonal Intensive Monitoring (SIM) took place above the electric dispersal barrier the weeks of June 3th and June 10th. Electrofishing and commercial netting occurred in the North Shore Channel, North and South Branches of the Chicago River, Chicago River, Chicago Sanitary and Ship Canal, Cal-Sag Channel, Little Calumet River, Calumet River, and Lake Calumet (Fig. 1). Commercial seining occurred exclusively in Lake Calumet (Fig 1).

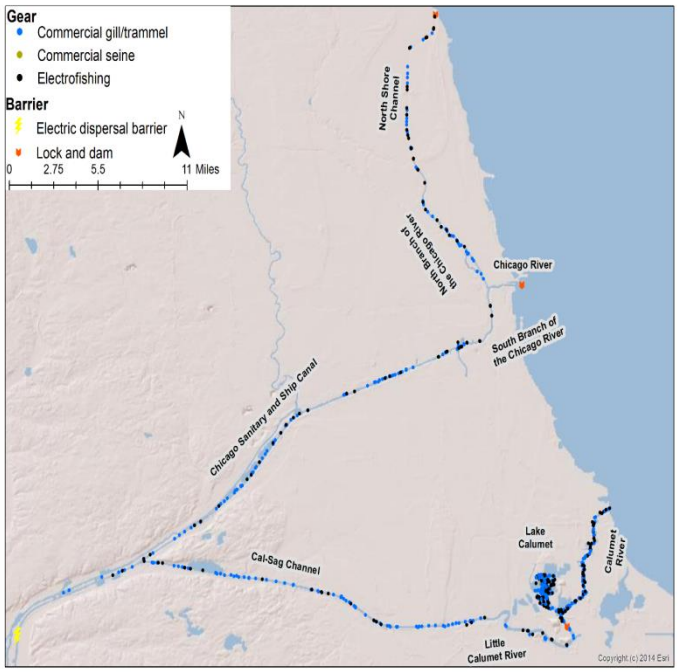

Fig 1-Spatial distribution of commercial gill/trammel net sets (blue dots), commercial seining samples (green dots), and electrofishing runs (black dots) within the Chicago Area Waterway during the 2019 spring Seasonal Intensive Monitoring event.

Electrofishing:

- Crews from IDNR, USACE, and the United States Fish and Wildlife Service (USFWS) completed 238 electrofishing runs at fixed and random sites (59.5 hours total).
- Crews collected 9,526 fish representing 42 species

Commercial Seine:

- Contracted commercial fishers along with assisting IDNR biologists completed four 800-yard commercial seine hauls (3,200 yards) in Lake Calumet.
- Crews collected 7,457 fish representing 14 species.

Commercial Netting:

- Contracted commercial fishers along with assisting IDNR biologists set 40.9 miles of gill net (360 sets) at fixed and random sites.
- Crews collected 1,156 fish representing 17 species and 1 hybrid group.
- Two Grass Carp were captured in Lake Calumet (41.68663, -87.58829 & 41.68700, -87.58231) during commercial netting.

Overall:

- **A total of 18,139 fish representing 49 species and 1 hybrid group were collected cumulatively with all gear types during the two week SIM event.**
- **No Bighead Carp or Silver Carp were observed or collected during the June SIM event.**

Asian Carp Removal Project

Removal took place in Marseilles Pool and Starved Rock Pool of the Illinois River. Below is a summary of all IDNR removal activities through June 2019, including 10 weeks of contracted fishing and two unified fishing methods (UFM). For comparison purposes, data from the same time period in 2017 and 2018 are included.

Overall

	2017	2018	2019
# Days Fished	44	41	52
# Net Crew Days	131	160	255
Yards Net Fished	204,980	155,600	278,165
Miles Nets Fished	116.5	88.4	158.0
# Pound Net Nights	74	22	26
# Hoop Net Nights	879.8	1217.1	0.0
# Bighead Carp	1,490	1,610	1,028
# Silver Carp	70,134	57,744	117,303
# Grass Carp	592	562	2,305
# Asian Carp (AC)	72,216	59,916	120,636
Tons AC Harvested	249.1	227.0	486.8
1000 yds of gill net	283.7	352.4	432.2

Monitoring Bigheaded Carp Movement and Density in the Illinois River

Acoustic Telemetry

Active tracking for the surrogate fish project [Southern Illinois University (SIU) & USACE collaboration] occurred June11th and 12th in Starved Rock Pool. Of the 32 Common Carp at large in this pool, 15 were located. High water levels somewhat limited our tracking ability. Active tracking of surrogate fish in and around Starved Rock Pool will occur monthly, weather permitting. Additionally, downloads of stationary receivers will occur in July and August if water levels are sufficiently low.

During the week of June 17th, the first ponds were drained and fish necropsied in the studies evaluating 1) healing and the effects of acoustic tag implantation and 2) loop tag and jaw tag effects on growth, survival, and healing. Additionally, sutures on fish implanted with dummy acoustic transmitters had dissolved and dummy tag placement was evaluated. Some bacteriological and histological samples were collected and were sent to USFWS La Crosse. Pond draining and necropsies for the 2 month time point will occur in mid-July.

Hydroacoustic Sampling

Mobile hydroacoustic sampling was conducted in the Dresden Island and Marseilles Pools from June 21-25, 2019. Density heatmaps (Fig 2) were generated to update contracted harvest efforts on the spatial distributions of bigheaded carp and were submitted to IDNR

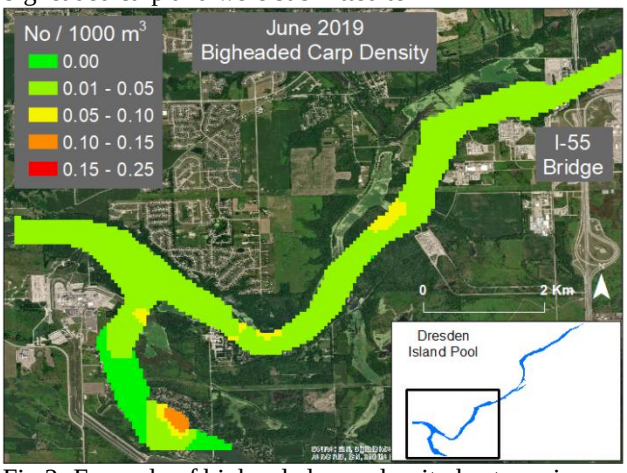

Fig 2- Example of bigheaded carp density heatmap in Dresden Island Pool from mobile hydroacoustic surveys conducted in late June 2019.

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During spring 2019, the USFWS – Columbia Fish and Wildlife Conservation Office implemented year two of a fisheries-independent, standardized sampling protocol to update parameter estimates and address data gaps associated with the Spatially Explicit Asian carp Population (SEAcarP) model. Data collections include Silver Carp length and sex structure, maturity status, and relative abundance during spring and fall in the Alton, La Grange, Peoria, Starved Rock, Marseilles, and Dresden Island (2019 only) pools of the Illinois River. Peoria and La Grange pools were sampled during the weeks of 10 June and 17 June respectively. Catch rates averaged about 1 fish per 5 minute trawl in both pools (Table 1). Although not fully recruited to the dozer trawl, a total of 29 Silver Carp measuring less than 10 mm total length were captured in the La Grange Pool (Fig 3). In contrast, no Silver carp less than 380 mm total length were captured from Peoria Pool the previous week of sampling. Aside from young-of-year Silver Carp captured from La Grange Pool, Silver Carp length distributions in the two pools spanned a comparable size range. Due to on-going flooding, sampling was not conducted in the Alton Pool in spring 2019. Fall sampling will begin in September 2019.

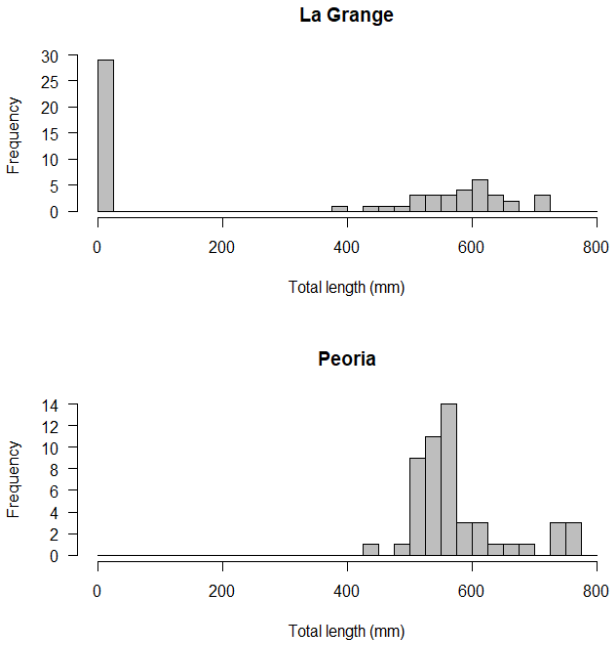

Fig 3-Length frequency distributions of Silver Carp captured from La Grange and Peoria pools of the Illinois River during the weeks of 10 and 17 June 2019 using electrified dozer trawl (N = 50-5 minute trawls per pool). Note that y-axes have different scales.

Pool	Silver Carp Captured	Sample Size (# of 5 min trawls)	Mean CPUE (Silver Carp /5 min trawl)	Standard Error	Silver Carp Size Range (mm)
La Grange	74	50	1.2	0.37	7-720
Peoria	51	50	1.0	0.23	430-760

Table 1- Sampling effort and preliminary results, June 2019

Zooplankton as dynamic assessment targets for Asian carp removal

Illinois Natural History Survey (INHS) collected zooplankton and water chemistry samples at 12 main channel and backwater sites located in the Brandon Road, Dresden Island, Marseilles, Starved Rock, Peoria, and LaGrange Pools during the weeks of June 3 and June 17. The collected data will be combined with historical and recent data on Illinois Waterway zooplankton communities to inform management agencies of ecosystem responses to Asian carp removals and develop dynamic targets for diminishing the ecological impacts of Asian carp.

Monitoring of Asian carp reproductive productivity

INHS collected ichthyoplankton samples at 7 main channel sites located in the Brandon Road, Dresden Island, Marseilles, Starved Rock, Peoria, and LaGrange Pools during every week of June. Four larval fish samples were collected at each site. Additional samples were collected in Illinois River tributaries to evaluate the potential for Asian carp spawning in these rivers. Much of the Illinois River was above flood stage during the entire month of June, and water temperatures were consistently above the threshold thought to be conducive to Asian carp spawning. However, no Asian carp eggs have been identified thus far from samples

collected during the month of June. Processing of samples and identification of larval fish and eggs is ongoing. Ichthyoplankton sampling will continue to occur biweekly from July to October. Ichthyoplankton data will be used to evaluate changes in the reproductive front of Asian carp populations in the Illinois Waterway, identify reproductive hotspots, and quantify the relationship between Asian carp stock abundance and reproductive output. Results, particularly regarding occurrences of Asian carp eggs or larvae, will be reported as soon as they are available.

Hydroacoustic Fish Surveys at the Electric Fish Dispersal Barrier System, Romeoville, IL

The USFWS conducted two mobile hydroacoustic fish surveys at the Electric Dispersal Barrier System (EDBS) during June 2019. The surveys were completed on June 24, 2019 and June 26, 2019 to monitor for the presence and distribution of large fishes greater than 12 inches (30.5 cm) total length in the vicinity of the EDBS. Surveys scheduled for earlier in the month were postponed due to barrier maintenance. The purpose of these hydroacoustic surveys is to aide in assessing the risk of fish detected in the vicinity of the EDBS being either Bighead or Silver Carp prior to or during barrier operational changes and/or maintenance. Hydroacoustic surveys covered the area between Hanson Material Services Corporation (HMSC) docking slip, approximately 1.3 km below the Romeo Road Bridge, to the upstream side of the Demonstration Barrier (0.6 km above Romeo Road Bridge). For reporting purposes, Romeo Road Bridge is treated as the dividing line between the areas referred to as "within the EDBS" and "downstream of the EDBS."

Preliminary Results:

Five large fish targets were detected within the EDBS on June 24, 2019. One fish was detected upstream of Barrier IIA and downstream of Barrier IIB. One fish was detected within Barrier IIB. Three fish were detected between Barrier IIB and the Demonstration Barrier. Additionally, four large fish targets were detected downstream of the EDBS. The US Army Corps of Engineers electrofished within the EDBS the following day (6/25/2019) and removed Common Carp from the area.

No large fish targets were detected within the EDBS on June 26, 2019. Eight large fish were detected below the EDBS.

Barrier Operational and Maintenance Status

Status as of 30 June 2019

- Demo – Full water (5 Hz, 4 ms, 400 V = 1.0 V/in) & benthic (5 Hz, 4 ms, 100V) operational
- IIA – Online; Narrow (34 Hz, 2.3 ms, 2000 V = 2.3 V/in) & wide (34 Hz, 2.3 ms, 800 V= ~1.0 V/in) arrays operational
- IIB –Online; Narrow (34 Hz, 2.3 ms, 2000 V = 2.3 V/in) & wide (34 Hz, 2.3 ms, 800 V= ~1.0 V/in) arrays operational
- Des Plaines By-Pass Fence - Fully Operational; Turtle Gates are Open

Barrier IIA experienced a minor loss of power to water at both arrays of less than one minute on 2 June 2019. The wide and narrow arrays were powered off on 5 June 2019 in support of annual maintenance, troubleshooting, and repair work and were returned to operation on 19 June 2019 by 17:00. Two minor losses of power to the water occurred on 30 June for less than one minute each at 14:18 and 14:38 due to utility power outages during a storm. Back-up emergency generator power initialized immediately for each event.

Barrier IIB wide and narrow arrays were active throughout the month of June with no interruption to power in the water. The narrow array was outputting approximately 2000 V which equates to a peak voltage gradient of 2.3 V/in at the surface of the water.

Demo Barrier lost power to the water at 10:20 on 15 June 2019 for just over 1.5 hours due to control system issues. The Demo lost power to the water on 26 June at 20:58 for less than one minute due to a power failure.

The Des Plaines Bypass Barrier is fully functional. The turtle gates were opened on 15 March 2019 for the season to allow for passage of amphibians and reptiles. No overtopping events occurred during the month of June and turtle gates remained open.

The Chicago District Army Corps maintained bi-weekly conference calls with the MRWG and stakeholders throughout the month of June to maintain situational awareness on barrier operations and outages. These call provided the opportunity for assessment of the risk of Asian carp presence at the barriers and to take any clearing actions deemed necessary. The following message was provided to the ACRCC and LRC Command on 1 July 2019:

"An opportunity for fish advancement to Barrier IIB and subsequent entrainment above Barrier IIA was identified with the recent changes in operation at the Electric Dispersal Barriers System (EDBS) in support of required maintenance activities. The MRWG, as represented by the co-chairs and leads from USACE, IDNR, and USFWS, has prescribed numerous assessments of fish presence and abundance within the Lower Lockport Pool and within the EDBS in response to this identified risk. The MRWG has reviewed this data in combination with ongoing detection activities in the vicinity. Based on the most current understanding, the MRWG believes there to be an extremely low risk for allowing Asian carp passage and recommends continuation of planned work at Barrier IIB and the Demonstration Barrier. The planned maintenance and repair work will ensure continued efficacy and redundancy of the EDBS. The MRWG appreciates the close coordination and timely communication of Barrier operational changes and requests that collaboration continue throughout the maintenance activity."

Alternate Pathway Surveillance in Illinois - Law Enforcement

An out-of-state pond stocking company investigated and criminally charged by the Invasive Species Unit (ISU) pled guilty to unlawfully importing Viral Hemorrhagic Septicemia (VHS) susceptible species without a permit, which is a Class A Misdemeanor. The court ordered restitution to the Department in the amount of $11,494.00. Records showed the company imported, sold, and stocked live gizzard shad, fathead minnows, bluegill, red ear sunfish, and largemouth bass in Illinois. These fish were sold without a non-resident aquatic life dealer's license and some of the fish were imported without a VHS import permit. Further investigation revealed the gizzard shad came from an Arkansas farm and did not have any health records certifying them as VHS free as required by IDNR.

ISU inspected wholesale and retail fish markets in the Chicagoland area as part of Operation Fishbook. The operation focused on obtaining business records, conducting interviews, and taking enforcement action on aquatic life dealer's operating illegally. A total of 19 businesses were inspected resulting in 13 citations and 13 written warnings issued.

ISU seized over 100 pounds of live red swamp crayfish from an Asian market in the Chicagoland area that were illegally imported into the State. Red swamp crayfish are not on the approved species list and therefore, illegal to ship, transport, or possess without special authorization from the Department. The manager of the store said customers purchased the crayfish for food, but many customers were purchasing them to use as bait for fishing. The owner of a Chicago based company was cited for operating as a wholesale aquatic life dealer without the required license. Business records indicated the company purchased over 450 pounds of Asian carp heads from an Illinois Asian carp processing plant and sold/shipped them to China. ISU assisted the owner with purchasing the required license and answered questions regarding Illinois laws.

ISU drafted an outreach letter as part of an initiative proposed by the Great Lakes Law Enforcement committee to notify distributors throughout the United States of live red swamp crayfish regulations for all the jurisdictions within Great Lakes.

ISU reviewed a series of Commercial Fish Removal Special Use Permits and assisted the Division of Fisheries and Office of Law Enforcement with deciphering administrative rules regulating the live transportation of VHS susceptible species into Illinois from out-of-state commercial fishermen and non-resident aquatic life dealers.

ISU assisted an out-of-state law enforcement agency with surveillance of a suspect believed to be illegally transporting live injurious species from Illinois into the other agency's jurisdiction.

ISU participated in a Great Lakes Fishery Commission funded interview that studies manager priorities and outreach strategies related to invasive species. ISU attended the Wildlife Fraud Investigators Training Conference in Scottsdale, AZ. ✧

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Asian carp hunters first line of defense against invasive species for Great Lakes
Commercial fisherman are targeting invasive carp in the Illinois and Mississippi rivers in an effort to prevent them from entering the Great Lakes

125 lake sturgeon getting released into the Saginaw Bay watershed
The Saginaw Bay watershed will be home to 125 more lake sturgeon when they get released into mid-Michigan rivers during four events next week

Lake Erie algae bloom covers 600 square miles: Report
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End