

# The Helm

Illinois-Indiana Sea Grant // October 2024



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# The Helm

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# Swimming Safer:

## Sharing knowledge, data, and resources

*Over the course of a summer, reports of drownings along the shores of the Chicago area and northwest Indiana are not uncommon. As of the end of August, the Great Lakes Surf Rescue Project reported 44 drownings in Lake Michigan.*

*Through a variety of approaches, Illinois-Indiana Sea Grant (IISG) has focused on increasing and sharing information and resources that help promote water safety in the southern Lake Michigan region.*

### Breaking down barriers to learning to swim

**A**S A PEDIATRIC EMERGENCY PHYSICIAN at the Lurie Children's Hospital of Chicago, Michelle Macy has provided care for kids who were drowning victims, experiences that have influenced her work as a scientist. They were a key factor in her decision to focus on identifying ways to prevent drownings in the Chicago area.

With funding from IISG, Macy and her team gathered information about the swimming habits and water safety knowledge of Chicago families and she helped explore and implement a pilot swimming lesson program for Black boys and girls in Evanston, Illinois.

Through this mixed methods project, Macy has collected data through surveys and focus groups. In a 2022 survey of over 1,100 parents throughout Chicago, she examined when and where families are most likely to swim in Lake Michigan, gathered insight into parents' awareness of safety features at Chicago beaches, including lifeguards, water condition flags, and life rings, and explored barriers to swimming lessons for children.

In the survey, 61% of parents reported that they swim at Lake Michigan beaches with their children. Most families reported swimming in the lake when a lifeguard is likely to be on duty. And with regards to safety features, lifeguards were more commonly noticed by parents than safety equipment, such as a rescue board or boat.

"One of the most interesting findings to me in those results was a lack of differences by race and ethnicity," said Macy. "On the other hand, we saw persistent disparities in terms of Black and Hispanic/Latine parents not having kids enrolled in swimming lessons. Some of the barriers that they were facing differed from what we saw with the White parents."



Altogether, parents reported that 74% of children did not engage in swimming lessons in the past year, but this was true for 85% of Black parents and 82% of Latine parents compared to 64% among White parents.

“We had some expected findings around Black and Latine parents in that they didn’t have a place to go for their child to take swimming lessons, but one of the unique findings was that Black and Latine parents were more likely to report they didn’t feel comfortable with swimming themselves as a reason why their kids hadn’t been in lessons,” said Macy.

White parents were more likely to report that they didn’t have their child in lessons in the past year because their child had already learned how to swim.

These results were published in the journal *Pediatrics* in 2024.

Macy was curious about ways that this gap might be bridged, and to that end she found an opportunity to support and assess a new swimming program to teach Black youth to swim in Evanston, a suburb just north of the city, where Camp Kuumba had just opened in 2021.

Camp Kuumba is a summer program for Black boys and girls that provides opportunities to participate in sports, arts, reading, STEM, and more. With a pool on the premises, the camp soon started a swimming program. The focus was on playing water polo, but the goal was for the kids to learn swimming survival skills along the way.

However, Macy and the swimming instructors learned that the kids did not come to this program with enough foundational skills to be able to take on learning survival skills right away. Over time though, they have been able to see progress with these young swimmers, especially when families enrolled their children in the swimming program in 2022 and 2023.

Between 2022 and 2023, the number of participants grew to 65 Black boys and 10 Black girls. Of the rising 3rd and 4th graders who completed the three weeks of swim lessons, 71% of the boys and 30% of the girls learned 16 fundamental swimming skills that would help them to survive a drowning situation. Among the kids who participated in 2024’s smaller swim program, 44% of boys and 78% of girls learned all 16 skills.

Some Kuumba campers have





Leslie Dorworth, aquatic ecology specialist, engages with the public about water safety at the Indiana Dunes National Park Visitor Center and at other venues and events in the region.

gone on to participate in Evanston's aquatics camp and several others joined local swim and water polo teams.

These measures, plus discussions and surveys of participating kids and their parents, are contributing to an evaluation of the swimming program. Macy is also assessing what aspects might be useful for adoption by the Chicago Park District.

For youth in this age group, the introduction of water polo could be a key component to success. "It's more fun and engaging to chase a ball rather than hold onto the side of the pool and kick your legs," she said. "That works for three-year-olds, but for an 8- or 9-year-old, they feel silly about these kinds of activities."

Macy described another aspect of the program's positive results. "When we talk about the need to build up swimming skills in diverse populations, I hear stories of families who have lost someone a generation or two ago, and I also hear stories around the lack of opportunity and the lack of exposure. This program brings these kids together in a space where they feel safe and in the company of other kids who look like them."

## Connecting with northwest Indiana beach goers

Over in northwest Indiana, IISG's Leslie Dorworth is on the case to promote swimming safety, working in strategic partnerships, developing and sharing information products, and talking one-on-one with residents, including parents and their children.

She works with the Indiana Dunes National Park Service to help maintain the park's visitor center as a source of

water safety information with presentations, posters, and brochures. IISG has also developed a four-part Have Fun, Be Safe video series that encourages safe recreation in Lake Michigan, explaining the risks of dangerous waves and currents for swimmers and sharing ways to survive if you find yourself in dangerously cold water.

Along with other Great Lakes Sea Grant programs, IISG is a member of the Great Lakes Water Safety Consortium. Through the consortium, safety messaging has become uniform. "The message 'Stay Dry when Waves are High,' for example, is used in Illinois and Indiana and also all around the Great Lakes," said Dorworth, who co-leads the consortium's education and training committee.

Dorworth was instrumental in the idea for the consortium's annual water safety poster contest that provides a way for youth to express their creativity while sharing water safety tips with each other. The 2024 contest expanded to include videos as well as posters.

During the summer seasons, you can often find Dorworth at outdoor events talking directly to families, sometimes with assistance in Spanish translation. During the school year, she frequently shares water safety information at school family nights.

"I like to help clear up misconceptions, for example, that you can fight your way out of a rip current. My main message to anyone who finds themselves in a rip current is to not panic. Don't panic! Flip on your back, float, and follow along with the current. It will eventually lose strength and then, if you are able, swim to the side and make your way to the beach or allow the wave to carry you back to the beach," she said.

"It's especially important to talk to kids and their parents. I feel like that's where I can have the most impact," she said.



## Providing real-time water conditions data

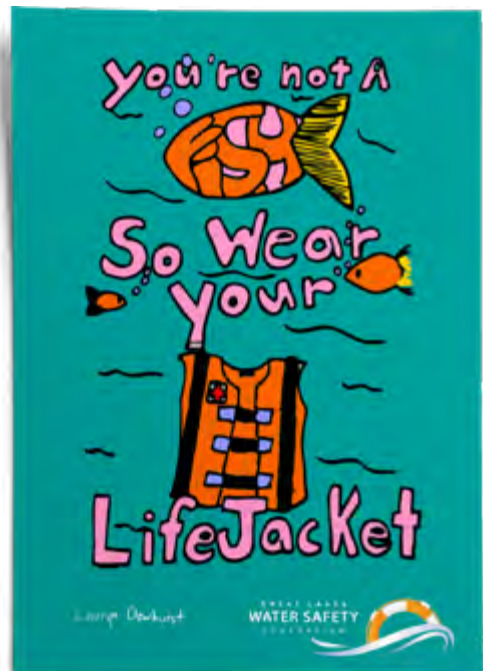
The most popular pages on the IISG website are those that display the latest data from the program's three buoys in southern Lake Michigan waters. The buoys are a treasure trove of data for scientists, but also are a critical resource for the National Weather Service (NWS) as well as for recreationists who can check conditions in real time.

The buoys are located in the nearshore waters of Michigan City, Indiana and in Illinois, off the shores of Wilmette and Chicago's Navy Pier. Navy Pier sits in the largest system of harbors and boats in the country—the Chicago Park District has accommodations for 6,000 boats.

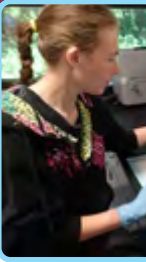
In both states, NWS uses on-the-water buoy data to verify forecasting models, especially with regards to wave height and wind speed and to predict the likelihood of dangerous currents. The buoys help inform Surf Zone Forecasts and play a direct role in Nearshore Marine Forecasts.

“Buoys are the only source of wave period data, which eliminates guesswork related to on-going conditions,” said Megan Dodson, Northern Indiana NWS meteorologist “We also use buoy data after a drowning to document the specific conditions when it happened. As a result, beach hazard statements for Michigan City now occur at a lower benchmark than before because at that beach, dangerous currents occur in lower wave heights.”

<https://www.lakemichigansafety.org>



Artwork by Lauryn Dewhurst, courtesy of the Great Lakes Water Safety Consortium



## IISG interns can have invaluable *real-world experience*

**I**N THE SUMMER OF 2016, Abigail Garafolo was an IISG intern, working with Kara Salazar, the program’s sustainable community planning specialist who provides information and support to local decision makers and residents as they strive to protect natural resources. Through this internship, Garafolo was mentored by Salazar as she attended community meetings—experiences that gave Garafalo a good sense of how the planning process works.

Fast forward to the present—for the past six years, Garafolo has been an Illinois Extension educator who still uses skills and approaches that she learned during her time with Salazar. “One of the biggest things I learned, which I carry with me today, was that planning ideas need to come from the community members themselves,” she said. “They are the experts—our job is to be the facilitators.”

IISG’s intern program has been providing real-world, on-the-job opportunities for undergraduate students since 2012. Altogether, 59 students have served in this role.

These students assist IISG specialists focused on a range of topics—aquatic

invasive species, water supply planning, coastal resilience, green infrastructure, and Great Lakes Areas of Concern—to name a few. Their tasks might include engaging in outreach and education with people of all ages, developing publications and products, and tracking down critical data, all the while, learning as they go.

IISG’s Campus Engagement Coordinator Angela Archer, who manages the intern program, sees one of the major benefits of this opportunity as opening doors to possibilities. “Often, students are unaware of the variety of job options for students of science—research is not the only career path.”

The intern program also offers professional development opportunities that include further discussion about possible natural resource careers as well as other beneficial training.

In 2024, Erin Schimenti served as an intern with IISG’s stormwater team of Eliana Brown and Layne Knoche. A University of Illinois senior this fall, she is pursuing a dual degree in sustainable design and communication with a minor in game studies and

design. As an intern, Schimenti had the opportunity to grow her skills and explore her talents and passions including leading tours of the Red Oak Rain Garden, engaging in social media, and creating botanical drawings of the rain garden’s species.

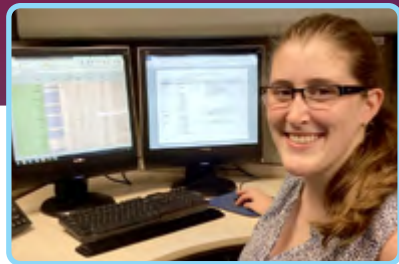
She is hoping her career path will take her where she can combine her areas of study and intern experience, educating people about sustainability. Unlike most interns, Schimenti started well before the summer, so the opportunity allowed her to become a bit of an expert in the rain garden and related issues.

“When I look back on before I started working here, I had the motivation to be involved, but I didn’t know half of what I know now,” she said.

Grey North, finishing their last semester at Bowling Green University studying environmental policy with minor in education, also landed a well-suited internship in 2024 with Megan Gunn, IISG aquatic education associate.

North spent the first half of their internship helping Gunn wrap up the development of a new Lake Michigan-focused curriculum and the





Interns from over the years, left to right, Grey North with Aquatic Education Associate Megan Gunn, Emily Clark, Payton Ginestra, Crystal Hall, Lauren Schnoebelen, Jordan Lillybridge, and Erin Schimenti.

second half creating new lessons and engaging middle and high school students on Great Lakes issues as well as introducing possible careers.

The highlight of North's internship was being mentored by Gunn as well as connecting with the kids, and North sees that as confirming a possible career path. "While I'm not sure of my career goals, engaging in outreach and working with kids will definitely be a part of it."

Sometimes the internship helps students move their goals in a different direction. At one point, Garafolo saw herself as one day being the director of a nature center, teaching youth about local flora and fauna. But after her summer experience in community planning, she realized she liked that work a bit more.

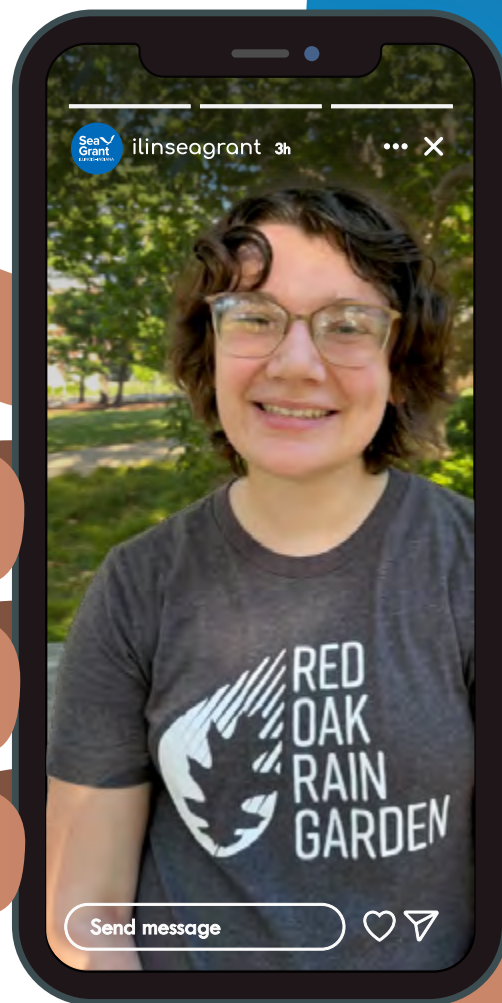
"The internship kind of shifted me to a community perspective as opposed to a content perspective," she explained.

Gillian Flippo was a 2018 intern, working with the program's pollution

prevention team, led by Sarah Zack. She continued helping Zack develop publications and translate technical reports for a broader audience for an additional semester before moving to the Northwest where she held several positions focused on coastal stewardship and community science. Now, she is a toxics reduction specialist for the State of Washington.

"I feel like the internship gave me a really great introduction to pollution prevention, but it also made me realize I wanted a more hands-on approach" said Flippo. "Although I really enjoyed updating outreach materials and it's a valuable skill that I still use, I wanted to try doing more activities where I could physically see pollution being removed from the environment."

Helping interns find their way also makes Archer's job more satisfying. "When we expose students to these experiences and they find their path, especially one that they didn't know was there before, well, it's a proud moment for me." 🍀



## Spelling out nature's benefits helps inform land use decisions

**I**T'S A FAMILIAR STORY. Local decision-makers consider plans to clear a stand of old trees to install a parking lot or some other development and residents unexpectedly, strongly push back. What may have seemed like a bottom-line decision suddenly pits different needs and values in the community against each other.

While the value of development can often be quickly summed up in dollars that enhance the local economy, the value of a stand of trees is not so easily calculated. And yet, natural environments, such as the trees in question, most certainly offer benefits to people—they reduce carbon dioxide in the atmosphere, absorb rainwater, and provide a nice place to recreate, to name just a few.

These benefits can be described as ecosystem services—a term developed as part of a process to help communities enumerate and quantify the many services that nature provides that benefit people.

“Understanding and assessing ecosystem services can improve decision-making by providing a more complete picture of the benefits and potential tradeoffs involved in making land use choices,” said Margaret Schneemann, IISG water resource economist.

Schneemann along with Leslie Dorworth, IISG aquatic ecologist, have developed a program to introduce the concept of ecosystem



services to local decision-makers and to walk them through the steps involved in defining and assessing the value of nature's benefits as part of the planning process.

“Recognizing and valuing these services encourages decision-makers to implement best management practices to make sure these benefits continue to be available,” said Dorworth.

For local resource managers or land managers, the process begins with identifying and mapping local ecosystems that are used by the community—to compile an inventory.

“The next step is to develop an understanding of the value of local ecosystem services to the community and how the community is actually using those ecosystems,” said Schneemann. “When

you're looking at a potential action that would impact those ecosystem services, you can convey the tradeoffs to the public in a transparent way.”

Making better decisions with regards to ecosystems and their benefits to people includes understanding how they work from a biological perspective. Many community members, or even decision-makers, might value local brook trout, for example, but are unaware of the need for sufficient habitat and the organisms that make up a healthy food web that support these fish.

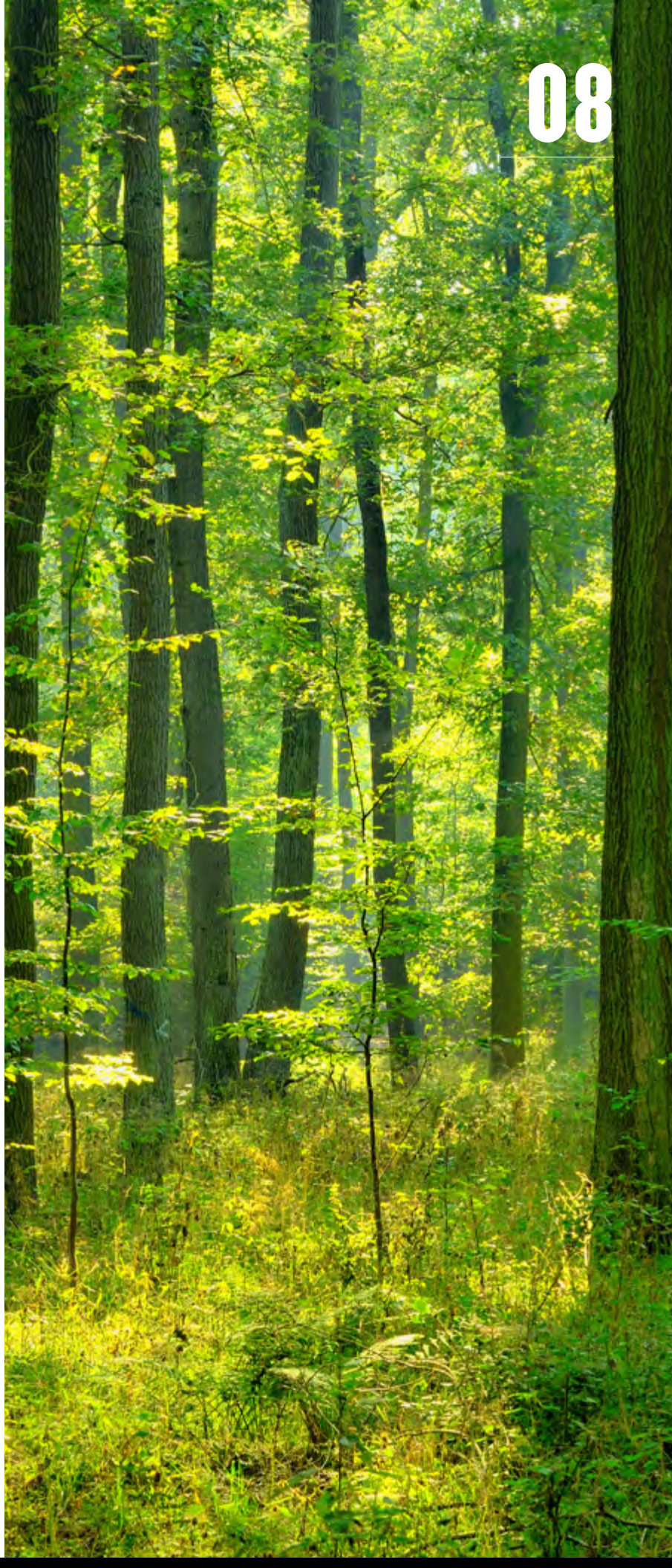
“Because people may not understand the biological relationships in an ecosystem, they might support a plan or decision that is counterproductive to the ecosystem services they want,” said Dorworth.

Schneeman sees value in doing an economic study, but if a community's efforts stop short of that, the work is still useful for addressing tradeoffs and making informed decisions. Important questions and answers can be brought forth.

“If we cut down an oak forest, what are we impacting? What's going to change in the community? The frequency of flooding? The bird watching? People's heritage or cultural values? Writing all that down and mapping that all out can help unpack all those connections,” said Schneemann.

Schneemann and Dorworth are designing a pilot workshop to start at the basics—identifying and mapping ecosystems, defining ecosystem services, and understanding whether a potential action involves ecosystem services. The first workshop will take place in 2025. The website, Valuing Ecosystem Services, also provides an introduction to related concepts and links to resources. ✓

🔗 <https://greatlakesecosystemservices.org>





# LARGEMOUTH BASS IN THE BUSY CHICAGO RIVER ARE SEEKING OUT NATURAL AREAS

**E**FFORTS IN RECENT YEARS to clean up the Chicago River system have led to increases in fish numbers and diversity in this waterway. But in this highly urban environment, do fish have the conditions they need to thrive?

An ongoing study is monitoring fish in the river using a system of sensors and receivers, in other words, a tracking system that allows fish to tell us what habitats are important to them, according to Austin Happel, research biologist at the John G. Shedd Aquarium, who is leading this effort.

While the level of contaminants in the Chicago River is lower than it's been in maybe a century, the environment still poses challenges to fish living in the river system—it's busy, noisy and sometimes polluted.

For example, the Chicago wastewater system is designed for stormwater and sewage to travel in the same pipes. When big storms hit, the combined sewer overflow system can become overwhelmed and untreated sewage can leak out, or in several locations, is pumped into the river to alleviate pressure on the system. Water quality plummets, at least temporarily.

Another challenge is structural. In places, this hectic, urban river flows right up against high rises, some that make up the Chicago skyline. Rather than having a natural shoreline, which can provide fish habitat, most of the downtown river's edge is comprised of steel walls.

Efforts to improve fish habitat have led to the development of the Wild Mile in the river's North Branch Canal in addition to floating wetlands in the South Branch. Shedd Aquarium, along with Urban Rivers, a non-profit organization, have created a floating "ecopark" of tiny islands complete with wetland plants native to Illinois. The underwater root systems are meant to provide safe areas for spawning and for young fish and other river organisms.

It's not clear the extent to which fish are using this habitat, so Shedd Aquarium is collaborating with IISG, the Purdue University Department of Forestry and Natural Resources, and the Metropolitan Water Reclamation District of Greater Chicago to answer questions about where river fish go and when.

In late spring of 2023, the researchers set up 32 receivers in the river and equipped 80 fish with sensor tags, including largemouth bass, common carp, some panfish species and walleye. The acoustic telemetry receivers can hear

and identify the unique sound emitted from each tagged fish.

"We have put listening devices in strategic locations that allow us to not only track where fish are, but how quickly they move through the system and maybe what might cause them to move and relocate to other areas," said Happel.

For the first year or so of the project, Happel has been assisted by Luke McGill, an IISG graduate student at Purdue University whose advisors are IISG's Tomas Höök and Paris Collingsworth. McGill has been focused on the movement of the 32 tagged largemouth bass for his master's thesis. As he wraps up his contribution to the larger project, McGill has some preliminary insights into some study questions.

McGill found that the bass mostly spend their time in areas of the river that have more natural habitat and minimal boat traffic. The most populated sites for bass, especially over the winter, are offshoots of the river's South Branch—the waters at Chicago's Park 571 and a nearby site with barge slips.

"The barge slips are kind of overgrown with overhanging tree branches that can create shade. Also, fallen branches and other structures in the water provides habitat for bass and the baitfish that bass prey on," said McGill. "Nearby



Purdue University grad student Luke McGill releases tagged fish into the Chicago River at the Wild Mile.

Park 571 has some floating islands and natural sloping shorelines that are better for bass than the steel corrugated walls that line most of the river.”

Monitoring the bass’ movement has provided some hints as to where they are spawning, which are likely to be sites with lower pollution levels. During the spring, many migrated to several of the river’s North Branch locations, including the Wild Mile.

“The Upper North Branch has more natural sloping shorelines and shallow areas that are suitable for bass to make nests, and the Wild Mile, with its floating islands, may be providing rearing habitat for the larval and yearling fish,” explained McGill.

Back in the South Branch and adjacent to the barge slips and Park 571, the river’s Bubbly Creek tells quite a different story about the bass’ movements. This

infamous section of the river is still recovering from many decades of pollution from Chicago’s meatpacking industry. Last June, the number of bass here dropped when, in response to a large rainstorm, raw sewage was pumped into these waters.

“As sewage entered Bubbly Creek, the dissolved oxygen in that area dropped to zero and we saw the bass almost immediately leave,” said McGill. “It wasn’t until April of this year that they returned to this area.”

As the monitoring of fish movement moved into its second year and batteries in smaller fish stopped working, 75 new fish have been added to the study and it will continue for at least another year. Happel hopes the study will help answer a range of questions with regards to Chicago River fish, from understanding what they do in the winter to how they cope with busy boat traffic. 🍷

## Educators explore water quality along the Wild Mile



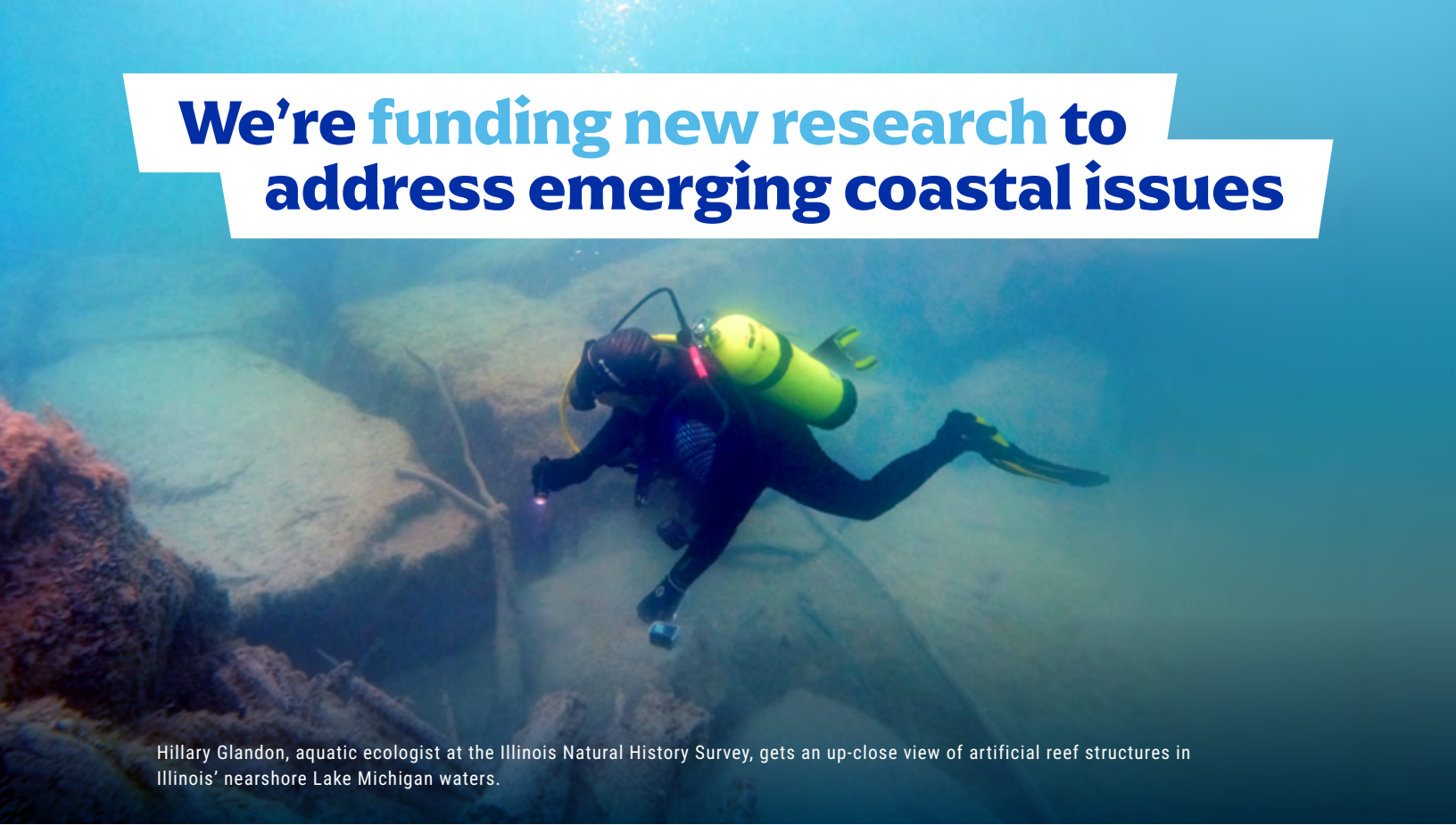
Educators from Illinois and Indiana gathered this summer along the Chicago River’s Wild Mile for an immersive two-day workshop designed to bring water quality education to life. Hosted by IISG and Urban Rivers, the training in July offered 5–12 grade teachers a unique opportunity to explore the river and its floating gardens, while also equipping them with hands-on tools to integrate these experiences into their classroom.

The educators learned practical skills in water quality monitoring as they were introduced to the ecology of the Chicago River. The workshop was capped off with an opportunity to kayak along the river and learn about the Wild Mile’s innovative design.

Teachers were trained to use an all-in-one data collection device—this training provides them access to borrow the equipment through the Limno Loan program so they can bring these experiences directly to their classrooms. The program also offered a pathway for educators to engage their students through hands-on field trips to the Wild Mile. 🍷

👉 <https://limnoloan.org>

# We're funding new research to address emerging coastal issues



Hillary Glandon, aquatic ecologist at the Illinois Natural History Survey, gets an up-close view of artificial reef structures in Illinois' nearshore Lake Michigan waters.

**I**SG IS FUNDING FIVE NEW RESEARCH PROJECTS in 2024–25 that will inform decision-making for some of the region's pressing coastal issues, including the vulnerable shorelines, the prevalence of contaminants, and water supply planning.

For each of these two-year projects, the research team will share data and results with broad audiences, whether through developing web tools, meeting with and informing key organizations or agencies, or engaging with the public.

Jason Rohr, a biologist at the University of Notre Dame, is using public datasets to better inform and estimate the environmental effects of contaminants in Lake Michigan tributaries. These water bodies are exposed to high levels of pollution from industry, agriculture, stormwater, and air pollution, which then flow into the lake. The researchers will create a web-based tool to help in addressing pollution-related hazards in the southern Lake Michigan region.

Another Notre Dame biologist, Gary Lamberti and his team will quantify PFAS distribution in the lake's tributaries in northwest Indiana to assess the primary routes of PFAS exposure to sportfish and possible connections to local anglers. Daniele De Almeida Miranda, a research professor, is leading this work as the team documents the main routes by which PFAS is transported into streams connected to Lake Michigan.

David Lampert, an environmental engineer at the Illinois Institute of Technology, is testing known contaminated waterways in the Chicago and northwest Indiana region to better understand the bioaccumulation of PFAS from sediments and groundwater into benthic organisms. This project will develop an improved understanding of PFAS transport and the risks to these organisms and coastal communities.



Scientists at the University of Illinois' Prairie Research Institute are focused on coastal resiliency, specifically, the impacts of two artificial reef complexes installed in Lake Michigan's shallow nearshore to stabilize northern Illinois shorelines. Hillary Glandon, an aquatic ecologist at the Illinois Natural History Survey, and C. Robin Mattheus, a coastal geologist at the Illinois State Geological Survey, will measure species diversity and abundance and assess lake bottom and beach changes resulting from water-level variability and storms, which may be influenced by the reef structures.

Researchers at the Illinois State Water Survey (ISWS) and the Chicago Metropolitan Agency for Planning are helping address growing concerns about water sustainability in the Chicago region. Vlad Iordache, an ISWS hydrogeologist, will lead this effort to produce interactive groundwater models and decision support systems to help the south suburbs of Chicago understand water supply risks and plan for the future. 📍



# The Helm

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## Quick Splashes

### Quality of Place and Community Development

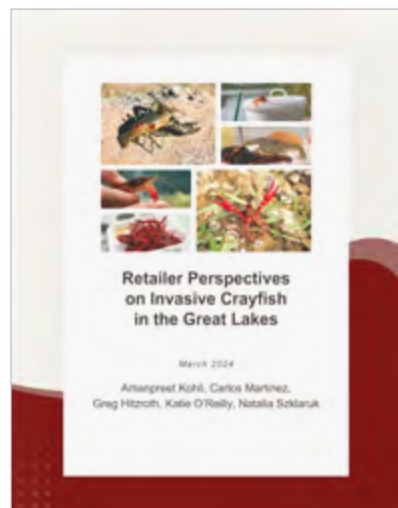
Quality of life and quality of place are intricately connected—quality of place involves creating welcoming, safe, and accessible public spaces that support people's ability to thrive socially and economically. This factsheet outlines ten smart growth strategies that help promote community quality of life.



<https://iiseagrant.org/publications/quality-of-place-and-community-development/>

### Retailer Perspectives on Invasive Crayfish in the Great Lakes

The sale of live organisms as pets, food, and bait is a primary pathway for the introduction of invasive crayfish in the Great Lakes region. This publication reveals survey results of aquarium and bait retailers in the region regarding the sale, use, and sources of crayfish in their shops.



<https://iiseagrant.org/publications/retailer-perspectives-on-invasive-crayfish-in-the-great-lakes/>

### Seafood Basics

This toolkit for educators looking to supplement existing programs covers the health benefits of seafood, sourcing, and seafood safety. In addition, to help you educate and inspire clients, the toolkit includes recipes as well as social media resources for promoting your next cooking demonstration.



<https://iiseagrant.org/publications/seafood-basics/>



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