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ASC
Aquatic Sciences Chronicle

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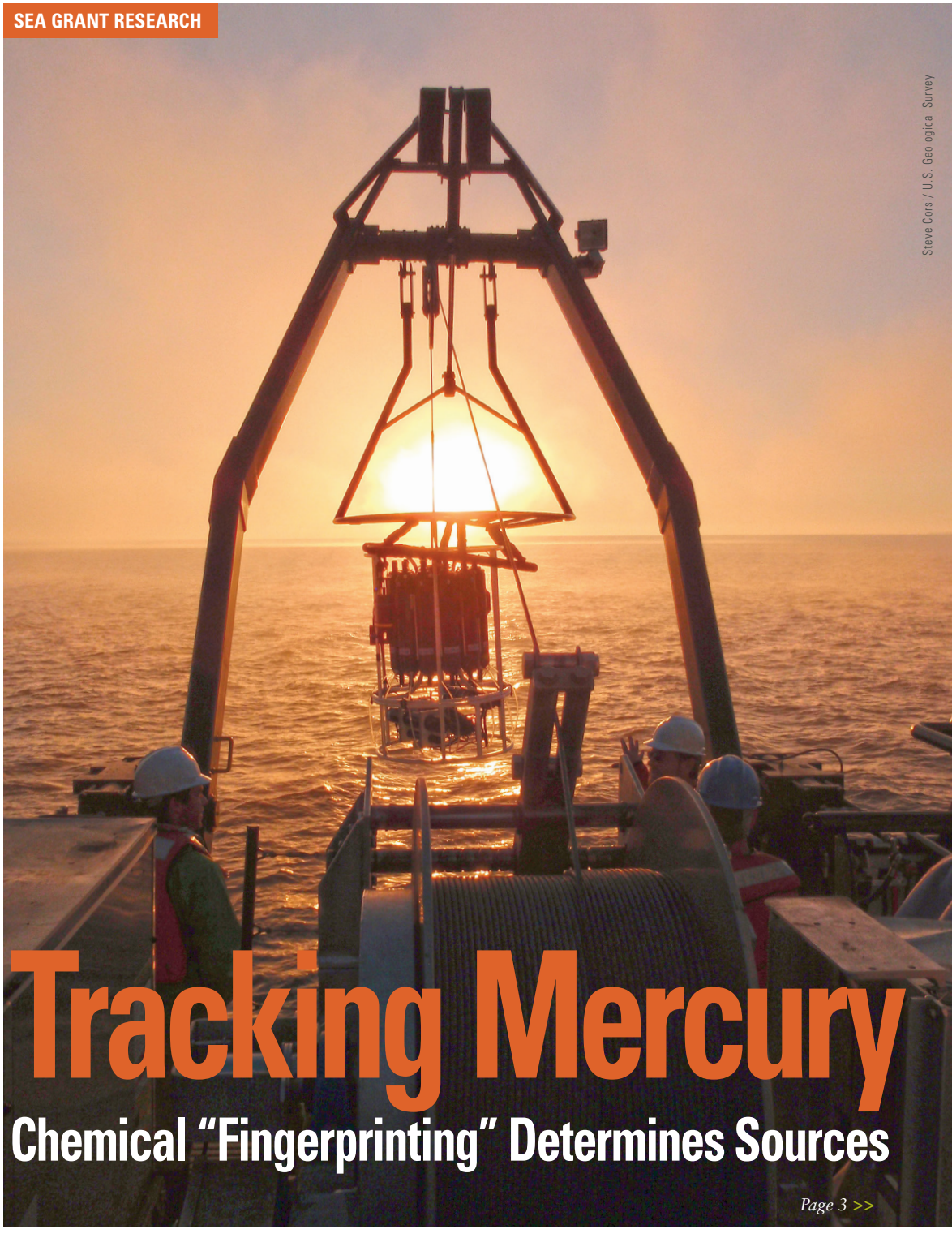
UNIVERSITY OF WISCONSIN SEA GRANT INSTITUTE UNIVERSITY OF WISCONSIN WATER RESOURCES INSTITUTE

INSIDE:

SEA GRANT RESEARCH



Steve Corsi/ U.S. Geological Survey

Tracking Mercury

Chemical "Fingerprinting" Determines Sources

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Aquatic Sciences Chronicle
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FEATURED **SOCIAL MEDIA + WEB**

The Student Side of Sea Grant

go.wisc.edu/560120

When Wisconsin Sea Grant funds a project, it changes more than a field of research. Students are an important part of almost every project it supports — including more than 700 graduate students since the program began in 1968.

Jennifer Hauxwell, assistant director for research and student engagement, said, "Students not only perform much of the field work, laboratory work, data analyses and outreach related to the research that is funded by Sea Grant, they will become the future leaders for water science, education and policy in Wisconsin and beyond. An important outcome of our research grants is the student training and expertise that results."

Through their experiences with Sea Grant, those students gain life-changing experience in their fields as well as forming connections with other scientists.

To further those connections, Amulya Rao, a current graduate student, conducted a survey of past Sea Grant-funded students, combined the results with an earlier alumni survey and created a resource that contains profiles and an interactive map showing locations and profiles of more than 100 former students, categorized by academic, government and private-sector positions. These profiles include a description of the former student's current job, his/her advice to students interested in pursuing a similar career, and skills and experiences sought after in that field. A search function allows users to locate a specific person, place, organization or career. Additional articles about students are also available (go.wisc.edu/6911eu).

Rao said, "This networking tool will be so useful for students who are exploring different career options…It was fascinating for me to see how the Sea Grant experience translated to so many different types of careers."

We really appreciate all of the alumni who have responded so far. If you were supported by Sea Grant as a graduate student and haven't yet participated, please take the 5- to 10-minute survey at **aqua.wisc.edu/alumnisurvey**.

SEA GRANT RESEARCH

Tracking Mercury


Steve Corsi / U.S. Geological Survey

Atmospheric mercury needs to be emphasized, even when lake sediment shows relatively little accumulation.

Researchers around the world now have a new tool for determining the source of mercury contamination, and the results so far have been surprising.

Wisconsin Sea Grant Director James Hurley was part of a team of researchers with the U.S. Geological Survey (USGS) and the University of Wisconsin-Madison responsible for the tool.

"Determining where mercury comes from is important because it helps us figure out the best way to minimize inputs of this harmful element into the environment," Hurley said.

The two-year study found that in lakes Superior and Huron, most mercury comes from the atmosphere. In lakes Erie and Ontario most mercury comes from industrial activity or runoff from the land surrounding the lakes and the other waters that flow into the lakes (also known as watershed sources). Lake Michigan is beset in general by relatively equal combinations of all three contributing sources: atmospheric, industrial and watershed. The results were published in December 2015 in "Environmental Science & Technology Letters."

"This project is our first opportunity to show what our lab is capable of," said Ryan Lepak, a graduate student in civil and environmental engineering at UW-Madison advised by Hurley. "The instrument we're working with is new, the techniques are new to our group, and the science itself is fairly new."

Researchers collected sediment samples from 58 locations around the Great Lakes for the project. They analyzed them for stable isotopes of mercury and used those chemical "fingerprints" to determine sources. They compared the mercury signatures in the lakes against those previously found in lake trout and burbot collected in lakes Michigan, Superior and Ontario. Results showed the mercury in the fish more closely resembled mercury from the atmosphere than mercury from lake sediment.

That surprised Dave Krabbenhoft, a mercury researcher from the USGS. "This shows that atmospheric mercury needs to be emphasized, even when the sediments in the lakes show relatively little atmospheric mercury accumulation."

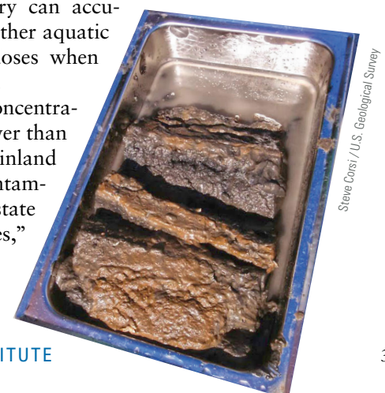
The mercury fingerprinting tool can also help resource managers distinguish mercury deposited by past industrial practice, known as "legacy mercury," from newer sources.

A naturally occurring element, mercury can have toxic effects on people's brains, kidneys and lungs. In certain environments, with the right microbes, it transforms into methylmercury, which is far more toxic. In addition, methylmercury can accumulate in the tissues of fish and other aquatic organisms, resulting in higher doses when people or other animals eat them.

"In general, methylmercury concentrations in Great Lakes trout are lower than in top predatory fish in many inland lakes, but due to other organic contaminants, it is important to follow state consumption advisory guidelines," said Lepak. — MEZ

On the cover, a rosette sampler is deployed into Lake Michigan off the U.S. EPA's Lake Guardian research vessel. A crew member assists with the rosette sampler (above), which collects water samples from any depth. Prior to deployment, the Niskin bottles are thoroughly cleaned.

A sediment sample from the bottom of Lake Michigan awaits testing for mercury content.


Steve Corsi / U.S. Geological Survey

wisconsinwaterlibrary

Ponds — A Great Place to Live (And Read About!)

Ponds are defined as a still body of water smaller than a lake, shallow enough for rooted plants to grow throughout. And they are teeming with life — from bullfrogs and bass to herons and dragonflies. Authors are also drawn to ponds, and there are a great number of books about them for children of all ages. Here are a few that are included in our "Once a Pond a Time" STEM Kit, described in the right-hand column on this page.

THE DARK, DARK NIGHT

By M. Christina Butler; illustrated by Jane Chapman. Intercourse, Pa.: Good Books, 2008.

Upon awakening from his long winter's nap, Frog spends a happy day playing with his friends. When he reaches his pond after dark, he sees a huge pond monster and needs his friends' help to face it.

IN THE SMALL, SMALL POND

By Denise Fleming.
New York: Harry Holt and Co, 1993.

The rhyming text and vibrant illustrations will have the very young enraptured by the exciting life in and around a pond.

POND CIRCLE

By Betsy Franco; illustrated by Stefano Vitale. New York: Margaret K. McElderry Books, 2009.

In the pond by Anna's house, a food chain begins with algae that is eaten by a mayfly nymph that is eaten by a beetle that is eaten by a bullfrog…

SONG OF THE WATER BOATMAN & OTHER POND POEMS

By Joyce Sidman; illustrated by Beckie Prange. Boston: Houghton Mifflin, 2005.

This collection of poems provides a look at some of the animals, insects and plants that are found in ponds, with accompanying information about each.

TURTLE SPLASH

By Cathryn Falwell. New York: Greenwillow Books, 2001.

As they are startled by the activities of other nearby creatures, the number of turtles on a log in a pond decreases from 10 to one. Includes factual information about the animals mentioned in the story.

Anyone in Wisconsin can borrow these books.
Just email **askwater@aqua.wisc.edu.**

Get Your Feet Wet With Our Third STEM kit

The Wisconsin Water Library welcomes a new addition to its ever-expanding STEM kit family. "Once a Pond a Time" introduces concepts related to ponds, including ecosystems and types of bodies of water.

It's the third water-themed STEM kit created by the library for teachers and librarians who work with children ages three through nine. The kits combine literacy and science into one storyhour extravaganza, including read-aloud books (see the list in the left column), ideas for a "science chat," craft ideas, songs, science experiments and other activities.

Two earlier kits — "Jump Around with Frogs!" and "Does It Sink or Float?" — are already in circulation and have been making their way around the state.

The kits are available to anyone in Wisconsin directly from the Wisconsin Water Library by contacting **askwater@aqua.wisc.edu,** (608) 262-3069 or from the website at **aqua.wisc.edu/waterlibrary.**

Illustrations by Kristen Rost / Frost Co.

Rhea Sanders

Love of Math and Nature Leads Student to Lake Michigan Mud

Shelby LaBuhn grew up playing in the forests of Michigan's rural "thumb." Although she liked math more than science, when it came time to choose her undergraduate degree, her experience in nature tipped the scales.

"The forest was my world," LaBuhn said. "That got me interested in environmental sciences and wanting to protect that at an early age."

After graduating from Lake Superior State University in Sault Ste. Marie, Mich., LaBuhn continued to pursue her interests at the University of Wisconsin-Milwaukee's School of Freshwater Sciences, where she is working on her Ph.D. in freshwater sciences and technology. Her advisor is J. Val Klump, a Wisconsin Sea Grant researcher and new advisory council member.

Klump is employing LaBuhn's talents to study habitat changes in the bottom of Lake Michigan caused by climate shifts and the invasion of zebra and quagga mussels. These changes have caused a lack of oxygen in the water, creating "dead zones" that are especially problematic in the Green Bay area.

LaBuhn explained that one of the important factors using up the oxygen in the lake bottom is the lake mud itself. It's difficult to measure the production and respiration of oxygen there, so Klump and LaBuhn are exploring a method called eddy correlation. This technique has been around for a dozen years or so, but this is the first time it's been employed in the Great Lakes.

With eddy correlation, researchers take measurements with equipment mounted on a steel tripod frame that is lowered to the bottom. The instruments sit 10-20 centimeters off the bottom and measure the speed of the water currents and oxygen levels.

"Basically, we take a big chunk of sediment out of the bottom of the lake," LaBuhn said. "We refrigerate it on the ship to mimic the cold conditions at the lake bottom, and measure the oxygen depletion. One of the things we want to answer is how well do these experiments on the ship correlate to what actually happens in the bottom of the lake. We found that they correlate very well. This is great news because it could be useful to a lot of Great Lakes scientists."

The work is not clean.

"I'm usually covered in mud," LaBuhn said.

But she likes what she does and hopes it will lead to a career as a scientist educator. She'd like to work for an organization that promotes citizen science to help the environment — for instance, a program where scientists engage community members to periodically sample a river.

"The people become engaged in the resource then," LaBuhn said. "They begin to care about it in a different way because they're starting to see numbers and how they change. Something like that, where I can help people become engaged in testing and protecting the resource would be valuable."

For more information about Klump and LaBuhn's project, listen to episode 8 in the podcast "Sea Grant and Lake Michigan: Waters in Transition" (**go.wisc.edu/xau9zv**). — MEZ

EDUCATION

Solidifying Stakeholder Engagement

David Nevala

Data-based groundwater flow models can be a fantastic way for hydrogeologists (scientists who study groundwater) to inform the public about the potential impact well pumping, irrigation and land use decisions can have on a groundwater system.

However, these models are not particularly useful if the key stakeholders and decision-makers they're intended to inform — from residents to private well owners, politicians and large-scale growers — ignore them or view them with mistrust and suspicion. Removing those barriers is the aim of a pair of Kens — Bradbury, the director of the Wisconsin Geological and Natural History Survey (University of Wisconsin-Extension), and Genskow, the director of the University of Wisconsin's Department of Urban and Regional Planning. Supported by funding from the University of Wisconsin Water Resources Institute, they have been conducting interviews and meetings with stakeholder groups to better understand each group's concerns and develop stakeholder-informed scenarios to assess future water management practices with groundwater flow models. They aim to bridge the gap between model-based science and stakeholder engagement.

"Trust is the main factor that determines whether science gets used or doesn't get used."

Maribeth Kniffin on engaging stakeholders with scientific models: "When stakeholders see that their information has been used, it builds legitimacy."

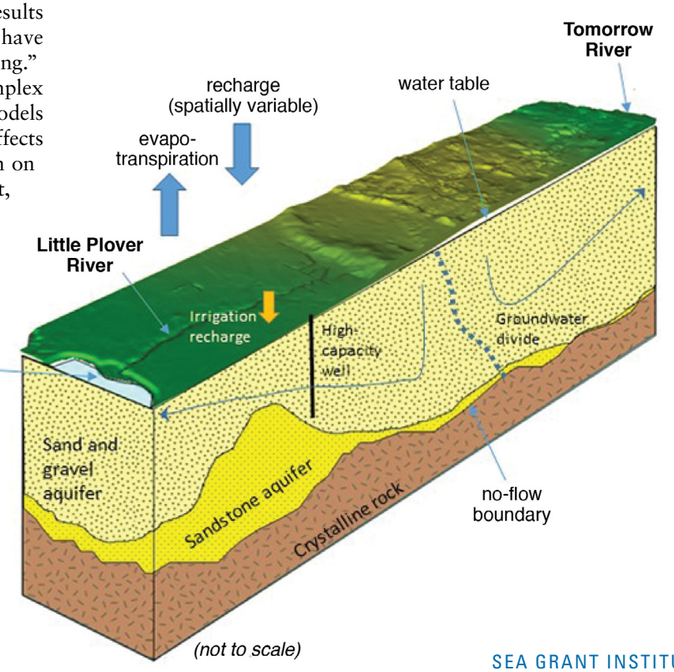
"There's confusion among stakeholders about what models can do," said Bradbury. "One of the things we often hear is 'That's just from a model — that's not reality.' Models are a way of understanding how a system works and assessing what happens when factors change. Stakeholders sometimes view models with suspicion, thinking that the model results will be biased and favor one outcome over another. A model might produce results they don't like, but the model isn't 'lying.' We have to take that into context in our decision-making."

It doesn't necessarily help that the complex nature of the problems groundwater flow models are useful in investigating — for example, the effects of a particularly heavy summer thunderstorm on groundwater recharge — are often transient, making them challenging to communicate.

The project was sparked in part by ongoing controversy in Wisconsin's agriculture community, where larger farms with high-capacity irrigation wells are being criticized for drawing large amounts of groundwater, especially in the Central Sands region.

"The wells and irrigation systems are very visible," said Bradbury.

Genskow sees the issue of citizen and stakeholder engagement as one of resource management. While it's important to try to get the stakeholders involved in a meaningful way, the question isn't just about presenting the information to them — it's also about incorporating and respecting the stakeholders' values and engaging in a dialogue. In other words, human perspectives are important to consider when setting out to define a scientific research question, including how the study is designed, what data is used in the analysis and what societal implications there are from the outcome of a study.



Wisconsin Geological and Natural History Survey's conceptual model of groundwater flow for the Little Plover River.

That's where Maribeth Kniffin comes into the picture. A UW-Madison graduate student, she's undertaken the task of talking to stakeholders in one-on-one interviews and small groups to learn about their perspectives, values and concerns.

Kniffin contends that most people don't object to science in and of itself, but rather the way it's portrayed and used. Too often, she pointed out, the individuals and groups involved in controversial water-use issues aren't willing to state their assumptions and be transparent about their concerns in larger groups — two key things that can go a long way towards building trust.

"Trust is the main factor that determines whether science gets used or doesn't get used," said Kniffin. "And the good news is that trust is buildable."

Kniffin said she was surprised to discover some of these groundwater issues aren't nearly as polarizing as they're portrayed in the media. She was also intrigued to learn that many of the stakeholders, including growers and private citizens, had been collecting their own scientific data.

"It's interesting that they chose to do it themselves," said Kniffin. "Data from citizens is important, and it's also valid. It can be useful to supplement data collected by scientists provided that the methodology is rigorous."

For instance, in the Long Lake-Plainfield area in Waushara County, Kniffin has been collecting personal photos from stakeholders that show changes in the lake water levels over time — yet another way to engage stakeholders in the scientific and decision-making process in a way that values their

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Titus Seilheimer / Wisconsin Sea Grant

LONG TRAWL YIELDS BIG DATA HAUL

Sixty-five days. Nine weeks. Two-plus months.

Really, any way you cut it, it's a lot of time to spend on a boat, collecting and counting fish.

But that's how Titus Seilheimer, Wisconsin Sea Grant's fisheries outreach specialist, spent large chunks of his time over the past year, in the service of a research project aimed at determining the effects of the use of whitefish trawl nets by commercial fisheries in the Two Rivers/Manitowoc area of Lake Michigan. Working with the Steve Kulpa and Susie Q Fish Co. on the midsize trawler *Peter Paul*, Seilheimer surveyed the catches collected by a whopping 491 drags over those 65 days, tabulating the whitefish and the bycatch and tagging certain fish for tracking purposes and survival estimates.

Seilheimer was surprised by the lack of actual bycatch the trawl nets collected. Lake trout and sublegal or unmarketable whitefish constituted the majority of non-whitefish bycatch. Other species were encountered too, like burbot, white sucker and round whitefish, but there were very few sportfish species (three Chinook salmon and one brown trout). Over the 65-day study period, the amount of bycatch landed was less than 3 percent.

That's a potentially critical finding for the future of whitefish trawling in the Two Rivers/Manitowoc area, a practice that's currently not allowed under state law. (The Wisconsin Department of Natural Resources granted special approval for the *Peter Paul* to trawl in a limited area for this study.) In the 1980s, trawling for alewife and smelt, along with experimental trawling, resulted in both heavy bycatch and bycatch mortality. Preliminary results from Seilheimer's study indicate that changes in the lake, such as increased water clarity, may be a factor in the changes in bycatch.

The early and long hours weren't the only challenging aspects of this particular research project. Turns out wrangling and tagging sizable lake trout by hand isn't as quick and easy as it looks. The other Herculean aspect isn't quite so piscine — it's the magnitude of the data Seilheimer collected. He now has figures charting everything from the number of whitefish caught in each month to the size range of the lake trout in the bycatch and where some of those lake trout went after being released. One tagged lake trout was eventually discovered more than 300 miles away in the Canadian waters of Lake Huron.

While the first round of data collection is now complete, the trawling project will continue into a second year, this time featuring trawls at depths that are natural rather than experimental. The *Peter Paul* now has a video camera system installed to monitor the catch and bycatch.

"I'm glad we're going to be able to continue this research," said Seilheimer. "It'll just be without me on the boat so much." — ARC

Goby Creep Closer to Lake Winnebago

Nobody expected they would get quite this far quite this quickly.

Then again, the invasive round goby has made a comfortable career out of confounding conservationists and researchers' expectations, so the fact that they've now been found in Little Lake Butte des Morts near Neenah and Menasha — just below Lake Winnebago, one of Wisconsin's premier fishing lakes — shouldn't necessarily be surprising.

Alarming, though? Absolutely.

Gobies were first discovered in the Great Lakes region in the early 1990s, and they had set up shop in all of the Great Lakes by 1995. But as recently as a few years ago, research funded by Wisconsin Sea Grant seemed to indicate that they weren't migrating to colonize Wisconsin's inland waters.

Matt Komis

They don't look like much, but the round goby could devastate one of Wisconsin's premier fisheries if they invade Lake Winnebago.

It only takes one release to unleash the goby.

"For 20 years, we managed to keep them in the Great Lakes," said Tim Campbell, invasive species outreach specialist for Wisconsin Sea Grant and the University of Wisconsin-Extension. "We did a good job."

To look at them, the bite-size gobies don't seem like a predatory threat, but in every environment they've entered, they've created massive disruptions in the food web.

"Lake Winnebago is a world-class fishery, creating some $200 million in economic benefit," noted Campbell. "Gobies will clearly impact that in some way. As a fisherman or a nature lover, I'd be concerned about that, especially considering Lake Winnebago's unique sturgeon fishery."

It's illegal under state law to possess and transport round gobies, but it is suspected that the main way gobies are getting closer to Lake Winnebago is from bait bucket release, which explains how they could bypass multiple locks and dams to arrive in Little Lake Butte des Morts.

To put up another barrier to the goby invasion, the final lock between Lake Butte de Morts and Lake Winnebago has been closed for now. That's good news for preventing the spread of an invasive species but also carries a heavy impact for recreational boaters and the businesses that cater to them, as there's no longer a way for boats to get from one lake to the other without trailering.

To help mitigate those impacts, options to operate the lock while keeping gobies from passing through are being investigated by the Department of Natural Resources and the Fox River Navigational System Authority.

In the meantime, Campbell's hired several graduate students to help spread the word about avoiding bait bucket release this fishing season. The outreach is valuable, but vigilance is even more key. After all, it only takes one release to unleash the goby. — ARC

Madeline Gotkowitz

Becoming a Force for Nature

Earlier this year, Wisconsin Sea Grant became a Weather Ready Nation ambassador. Weather Ready Nation is a National Weather Service initiative to, among other things, help individuals and families develop a comprehensive plan for extreme natural situations as well as perhaps less severe but still troubling occurrences such as power outages.

Being ambassador means Sea Grant is part of a force multiplier bringing together business, academia and nonprofits to be ready, responsive and resilient. Both Sea Grant and the National Weather Service are housed within the federal department known as the National Oceanic and Atmospheric Administration and, for the past several years, Wisconsin Sea Grant's social scientist, along with others, has been helping to refine language used to warn local residents of hazardous weather in their areas.

See **go.wisc.edu/49e903** for more information.

Solidifying Stakeholder Engagement

continued from page 7

perspective and unique expertise. Careful mapping that accurately shows where private citizen wells are located also helps.

David Nevala

"When stakeholders see that their information has been used, it builds credibility," she said.

One thing that's become obvious is that involving stakeholders early in the scientific analysis and decision-making process is absolutely critical to ensuring engagement and making scientific outcomes implementable. Kniffin also thinks that engagement improves rigor of the scientific process.

"The more we talk to the stakeholders, the more they trust the process. They really feel that their interests have been incorporated," said Bradbury.

The eventual results of Bradbury, Genskow and Kniffin's work stand to inform a whole host of controversial Wisconsin water issues that could be illuminated by scientific models — everything from mining for sand used in hydraulic fracturing (frac sand) to Waukesha's petition to divert water from Lake Michigan. That's what makes the work they're doing here so important — and so challenging.

"Understanding how to present these models is a challenge," said Bradbury. "Frankly, it's not something scientists were trained to do. We can do the best science in the world, but if we can't present it, nobody will." — ARC

Troye Fox

New Advisory Council Member Spends Time in the Dead Zone

Where lakes and water are concerned, J. Val Klump gets around. Klump, the newest addition to Wisconsin Sea Grant's Advisory Council, has traveled the world researching large lakes, including Lake Baikal in Russia. In the Great Lakes he was the first person to reach the deepest point in Lake Superior via submersible. Now, as senior director and associate dean of research for the School of Freshwater Sciences at the University of Wisconsin-Milwaukee, he is looking into ways to fix the dead zone in Green Bay of Lake Michigan where a lack of oxygen (called hypoxia) makes aquatic life difficult, if not impossible.

While Klump and his colleagues are studying the problem from all angles, Klump's lab is focusing on the biogeochemical aspects of hypoxia. They hope to develop a set of linked watershed-bay models that will allow them to predict how the system will respond to different management practices and which practices should be encouraged to help solve the hypoxia challenge. They are also incorporating climate change scenarios into the mix.

"It doesn't take a rocket scientist to figure out what the problem is with nutrient loading in the watershed," Klump said. "If you just fly over the area, anyone can see the nature of it. But controlling nonpoint source runoff is difficult because you're dealing with thousands of people instead of just a handful of point sources. It will require a shift in the way we think as a society."

One of Klump's goals for his advisory council tenure is to encourage Sea Grant to focus on science that's proactive. To him, this means, "getting out in front of mistakes so we don't make them. But that's hard to do, especially in the Great Lakes where the system is changing so rapidly. It requires understanding the dynamics and collecting enough data, particularly monitoring data, so that you can see trends."

"In addition to Val's superb research track record, his role in establishing the UW-Milwaukee's School of Freshwater Sciences cannot be understated," said James Hurley, Wisconsin Sea Grant director. "His tireless efforts have resulted in new opportunities for faculty and graduate research in Wisconsin, and we're proud to support many new initiatives through Wisconsin Sea Grant. His forward-thinking voice will be welcome as we prepare for the future challenges in the Great Lakes." — MEZ

Goodbye, Mr. Potter — But Not Farewell

In February, the UW-Madison's Ken Potter closed the book on a 38-year career as a professor of civil and environmental engineering, and he soon discovered that there are both benefits and drawbacks to retirement.

"On the plus side, I only work on stuff I want to do," said Potter with a chuckle. "However, there is a danger that I'll overcommit myself. Once people find out you're available, your retirement 'opportunities' tend to grow exponentially."

If there's one thing Potter never had a problem overcommitting to during his nearly four-decade academic and research career, it was collaborating on research projects with the University of Wisconsin Water Resources Institute (WRI) and Wisconsin Sea Grant. Potter was front and center on a file cabinet's worth of water and climate-based projects, including several that focused on climate change adaptation for coastal communities and one that evaluated the tools created by the U.S. Geological Survey National Water Center.

Potter's concerned that the conservation principles…will be forgotten or ignored in the rush to develop and rebuild the areas around Wisconsin's rivers and streams.

But the one he may be proudest of is the project that resulted in "Design Guidelines for Stormwater Bioretention Facilities," an infiltration/rain garden manual he helped create in conjunction with WRI in 2006.

"It was in more demand than anything I've ever done," he recalled. "It was an important topic, but this was back at the beginning, when people first began to explore it."

David Hart, Wisconsin Sea Grant's assistant director for extension, always appreciated Potter's leadership on projects like the Wisconsin Initiative on Climate Change Impacts (WICCI) Stormwater Working Group and his collaboration on Wisconsin Sea Grant's Coastal Community Climate Adaptation Initiative (CCCAI) grants. He's also grateful for the support Potter gave to maintaining UW-Madison's status as a top-notch school for geospatial research and applications.

"A decade ago, three key faculty retirements threatened this reputation," said Hart. "Some on campus wanted to go in a different direction and Ken was asked to lead a campus task force that resulted in investment in new remote sensing faculty. The geospatial community on campus owes him a debt of gratitude for helping keep our place among the leading universities in this discipline."

James Hurley, the director of Wisconsin Sea Grant and WRI, echoes Hart's comments about Potter's importance to scientific issues in Wisconsin.

"Ken's research and outreach has truly exemplified the Wisconsin Idea. Through his many research projects, his participation in advisory groups and his commitment to better understanding hydrologic systems, he always had the best interests of the citizens of Wisconsin in mind. I'm sure in retirement he'll continue to be actively involved in his community"

Jeff Miller, UW-Madison College of Agricultural and Life Sciences Communications

Hurley has that right. As Potter moves confidently into the next phase of his career, he said he's concerned that the conservation principles that Wisconsin researchers have contributed to will be forgotten or ignored in the rush to develop and rebuild the areas around Wisconsin's rivers and streams. For instance, Driftless Area streams that have recovered from abusive agricultural practices in the first half of the 20th century could easily be threatened by future land development. Potter already has several talks scheduled on the potential effects of continued urbanization of the Yahara River Watershed. (Hint: It's likely to involve increased flood risk.)

"It's better to keep the science out there," Potter said. "We have to remind people of what we understand." — ARC

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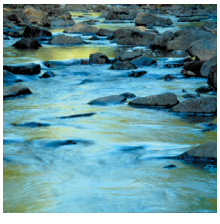
Aquatic Sciences Chronicle

a joint newsletter from UW Sea Grant and UW Water Resources



CALENDAR OF EVENTS

AUG. 21-25, 2016
145th Annual Meeting of the American Fisheries Society
Kansas City, Kan.
fisheries.org/events/146th-annual-meeting-of-the-american-fisheries-society-kansas-city

SEPT. 25-28, 2016
GSA 2016
Denver
community.geosociety.org/gsa2016/home

OCT. 18-22, 2106
North American Association for Environmental Education Conference
Madison, Wis.
naaee.org/our-work/programs/conference

NOV. 13-17, 2016
2016 AWRA Annual Conference
Orlando
awra.org/meetings/Orlando2016

GREAT LAKES EXPLORATION AND EDUCATION

ITS PEOPLE AND PROJECTS

From now until early 2018, Sea Grant is funding 19 research and education projects, along with another few dozen outreach initiatives, to better understand and sustainably use Wisconsin's Great Lakes resources.

Find out who is doing this valuable work and get the details by visiting **go.wisc.edu/9ns900** for a downloadable PDF. Contact Sea Grant by email at **publications@aqua.wisc.edu** or phone at 608-263-3259 to have a free copy of the booklet mailed to you.