

ASC

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A deep dive into the double centerboard schooner
shipwrecks of the Great Lakes PAGE 7

Aquatic Sciences Chronicle

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On the cover: Wreckage from the Emeline, one of six known double centerboard schooner shipwrecks in Lake Michigan. Image by Wisconsin Historical Society

FEATURED VIDEO



The Coon Creek Community Watershed Council comes together to improve its watershed.
Image by Wisconsin Sea Grant

Making running water walk: Changing a watershed

By BONNIE WILLISON

Communities in Wisconsin's Driftless area, with its steep hills and deep valleys, encounter many water challenges – like flooding. It was the floods of 2018 that catalyzed Coon Valley locals to band together and make some changes.

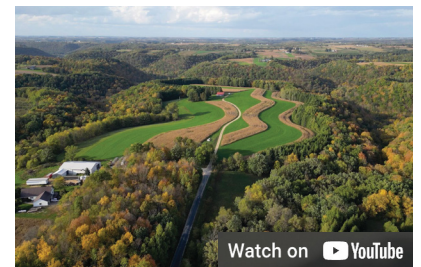
They formed the Coon Creek Community Watershed Council, which is made of farmers, food producers, business owners and landowners with a vested interest in protecting and shaping the future of the historic and beautiful watershed. This group is working to "make running water walk" in the Driftless.

In the "Voices of the Coast" video series, Wisconsin Sea Grant highlights the remarkable people throughout Wisconsin who protect our waters. The most recent video highlights the folks on the Coon Creek Community Watershed Council who are working together to make their watershed a healthy and thriving place now and in the future.

Other short-form documentaries in the "Voices of the Coast" series have featured Wisconsin's underwater archaeologists, folk artist decoy carvers, environmental justice leaders and aquaculture entrepreneurs. Get to know them at go.wisc.edu/d8rztc.

Know someone who should be featured in our award-winning series? Reach out to Video Producer Bonnie Willison at bonnie@aquawisc.edu. ■

WATCH THE VIDEO ▶



Voices of the Coast: The Coon Creek Community Watershed Council

go.wisc.edu/m87j8s



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Celebrating WRI's 60th anniversary year



By MOIRA HARRINGTON

The age of Earth's water has been estimated at 4.5 billion years. While 60 pales in comparison to that astounding age, the work of the National Institutes for Water Resources network — celebrating its diamond jubilee in 2024 — is critical for the resource's stewardship.

On July 17, 1964, President Lyndon B. Johnson signed the Water Resources Research Act to establish a water resources research institute in each state and Puerto Rico. The program was later expanded to include the District of Columbia, Guam and the U.S. Virgin Islands.

"The Congress has found that we have entered a period in which acute water shortages are hampering our industries, our agriculture, our recreation and our individual health and happiness," Johnson said.

The 54 institutes are charged with undertaking multidisciplinary water research. They are a federal-state partnership, with federal funds coming through the U.S. Geological Survey and providing dollars to support two tracks, a core grant to each individual program and also a pot of money to annually use for national research competitions to address timely challenges.

"We have a long history of working closely with Wisconsin communities to address their challenges and to connect researchers to real-world Wisconsin water issues."

— Jennifer Hauxwell, WRI research director

In Wisconsin, the state's statutorily funded Groundwater Coordinating Council also supports the University of Wisconsin Water Resources Institute. The WRI is a program of the Universities of Wisconsin and is housed on the flagship campus in Madison.

At the time of the centers' enactment, Johnson's statement continued, "The new centers will be concerned with municipal and regional, as well as national water problems. Their ready accessibility to state and local officials will permit each problem to be attacked on an individual basis, the only way in which complex characteristics of each water deficiency can be resolved." Johnson also noted that centers, such



UW–Madison graduate student Carl Betz evaluating the possibility of neonicotinoid insecticides leaching into groundwater from a potato field. Image by Wisconsin Sea Grant

as Wisconsin's, "will enlist the intellectual power of universities and research institutes in a nationwide effort to conserve and utilize our water resources for the common benefit."

Decades later, WRI continues to embody those 1964 presidential words. It has funded more than 140 research projects, including marquee issues like naturally occurring radium in southeastern Wisconsin. WRI research on those aquifers informed the first-ever binational approval of Great Lakes water withdrawals by a community outside of the basin. Waukesha secured that permission in 2016 because its own supplies were dwindling and contaminated.

Other WRI work has explored the long-term balance between water users in the Central Sands region of Wisconsin. The scarcity of water in the area creates a tug between those wishing to use it for agriculture and those seeing reduced surface water levels, meaning sporting and recreational opportunities could be compromised.

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Above: The East River Collaborative team and community partners hosted Governor Tony Evers and Department of Administration Secretary Kathy Blumenfeld.

East River Collaborative helps build flood resilience at the local and watershed level

By JENNA MERTZ | Images by Wisconsin Sea Grant

Since 2020, the East River Collaborative has demonstrated that it takes a village — and coordination between municipalities, state and federal government, nonprofits and universities — to improve water quality and flood resilience at the watershed level.

“It’s very challenging for municipalities to work across boundaries with other municipalities,” said Julia Noordyk, water quality and coastal communities outreach specialist with Wisconsin Sea Grant. Noordyk works alongside partners at The Nature Conservancy and NEW Water (the brand of the Green Bay Metropolitan Sewerage District) on a core team that provides coordination and technical assistance to communities in the East River watershed.

“Every community is extremely different, and we’re not there to tell them what to do,” said Noordyk. Municipalities in the watershed span the rural-urban spectrum and vary in population, budget size and capacity.

The 40-mile-long East River spans three counties in northeastern Wisconsin — Calumet, Manitowoc and Brown — and passes through agricultural, suburban and urban landscapes before it meets the Fox River and empties into the bay of Green Bay. Historic flooding in March 2019 resulted in 50 houses being condemned and spurred the creation of the East River Collaborative the following year.

Since its inception, the collaborative has worked with communities to identify shared goals across the watershed and developed maps and models to visualize flooding impacts. The team is building a new tool to evaluate how well different nature-based solutions capture, slow and clean stormwater on the landscape. Nature-based solutions include practices like planting native plants, using rain barrels, building agricultural runoff storage systems and stabilizing streambanks.

Even though the tool is still in the planning stages, communities aren’t waiting to get local projects off the ground.

At the fourth annual East River Collaborative Winter Forum in February, partners gathered virtually to share their work restoring wetlands, removing invasive species, planting pollinator plants and designing canoe/kayak launches for the East River water trail — among many other projects.

Adam Bechle, Wisconsin Sea Grant coastal engineering specialist and member of the East River Collaborative



core team, is particularly excited to work with partners on establishing a flood warning system for the river. “We worked with the Army Corps of Engineers and the National Weather Service and other partners to figure out what needs to happen so that the Weather Service can start putting together a forecast model,” said Bechle.

A visit from the governor and additional funding

In July, the East River Collaborative hosted Gov. Tony Evers on a walking tour of Van Beaver Park in Green Bay to showcase the work that’s been done so far. Evers announced \$1.3 million in funding for Wisconsin’s Great Lakes communities through the Wisconsin Coastal Management Program. The East River Collaborative was one of 31 projects to receive grants. The Fund for Lake Michigan will also be providing financial support for the East River Collaborative’s project.

Noordyk discussed how the new grant will allow the collaborative to better engage with and elevate the concerns of residents hardest hit by flooding.

“We are really trying to expand our capacity to do more community engagement in underserved neighborhoods and try to get voices at the table, understand what’s going on and what people think,” said Noordyk.

The grant will fund a new partnership with the University of Wisconsin–Madison Division of Extension Natural Resources Institute and Wello, a local health equity nonprofit, to develop a survey and gather feedback from the community. The goal, Noordyk said, is to bring those perspectives to the table when municipalities start planning projects.

The tour also showcased the work that East River communities have already undertaken to soak up

water and increase recreational opportunities. Brad Lange, village administrator of Allouez, discussed the development of a future water trail in the East River.

“The state doesn’t have many water trails, but we are looking at creating kayak-canoe launches,” said Lange. The goal would be for paddlers to traverse the river unobstructed from the town of Ledgeview to downtown Green Bay.

Bellevue Village Administrator Ben Krumenauer also discussed the village’s improvements to the East River Trail, a 10-mile multi-use path along the river that experiences flooding throughout the year. The village will be repairing deteriorating boardwalks and repaving sections of the trail.



To the tour group’s delight, the value of recreation was on full display. While Krumenauer spoke, a kayaker appeared in the river behind him and paddled quietly downstream. It was a picture-perfect moment that someone jokingly questioned as orchestrated.

“We can’t pay [for] that perfection,” laughed Krumenauer.

In his final remarks, Governor Evers echoed the value of wetlands for soaking up water and supporting recreation. Not only will local communities benefit from these projects, he said, but also bikers, hunters, anglers and paddlers across the state.

“This is also going to offer opportunities for increased recreation,” said Evers, and “using the river in a good way.” ■

Top left: Melissa Schmitz, city of Green Bay, and Nicole Van Helden, The Nature Conservancy, display the concept plan for Emelie Park in the East River region.

Top right: In the foreground from left, Angela Kowalzek, NEW Water; Julia Noordyk, Wisconsin Sea Grant; Kathy Blumenfeld, Department of Administration; Governor Tony Evers; Adam Bechle, Wisconsin Sea Grant, with additional partners in the background.

Bottom: A kayaker enjoying the East River.

Wisconsin's rural residents concerned about water quality

By MARIE ZHUIKOV



Michael Cardiff, associate professor in the UW-Madison Department of Civil and Environmental Engineering.

A report published by the University of Wisconsin-Madison found that Wisconsin's rural residents perceived significant risks to water quality from pesticides, PFAS (per- and poly-fluoroalkyl substances) and excess nutrients. They also ranked water as very or extremely important for supporting wildlife and for hunting and fishing, in addition to home uses such as drinking and cleaning.

These findings regarding groundwater and surface water are based on a study by UW-Madison professors, including Michael Cardiff via a research project funded by the University of Wisconsin Water Resources Institute. The report, titled "Rural Resident Perceptions of Wisconsin's Waters" (go.wisc.edu/9e446w), is available for free download.

As part of a larger project, Cardiff, associate professor of geoscience, and his interdisciplinary team surveyed 1,500 randomly selected households across 16 counties in Wisconsin. They received 481 responses.

Cardiff was struck by the importance water held for rural interests in hunting and fishing. "If we're talking with rural users about why they might want to protect their water, speaking in that natural reference frame about impacts on fish and wildlife might resonate."

The finding about the "forever chemicals," PFAS, surprised Cardiff. "People might just be hearing about this through the media and so it's something they're worried about even though it might not be as important as other contaminants in rural settings," he said. "We usually think of dangerous concentrations of PFAS being associated with industrial operations or airports."

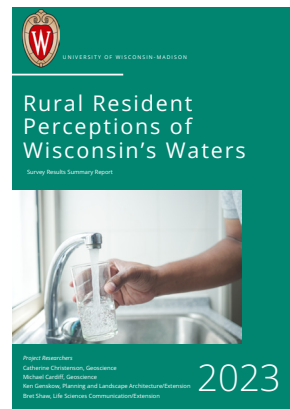
The survey also contained questions regarding water supply, but respondents had fewer concerns regarding this issue. Cardiff agrees with that assessment. "I

would generally say we're in a good place in Wisconsin on water supply. We tend to have more issues with flooding than we do with not being able to reach water," he said.

However, Cardiff expects water pollution and water supply to become more important in the future as

the Upper Midwest is touted as a climate haven and more people move here.

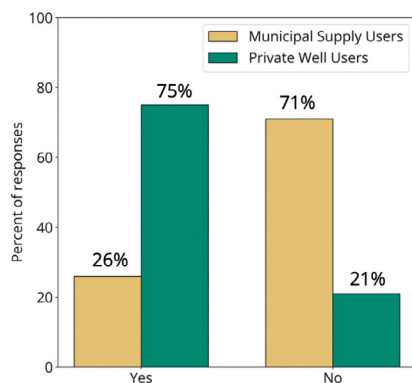
Rural residents were also surveyed about how they get their news about water. "Rural residents don't get a lot of news about their water, or at least they don't report getting a lot of news. The most cited



sources of information were local news or friends and family, but even use of those sources was quite low," Cardiff said.

Respondents ranked other sources of information more trustworthy than local news or their friends. This included Universities of Wisconsin scientists, research organizations and private well testers. But rural residents don't report hearing from them very often.

Cardiff expects the report to be useful for state legislators and water regulatory agencies. Collaborating with him on it were UW student Catherine Christenson; Ken Genskow, professor of planning and landscape architecture; and Bret Shaw, professor of life sciences communication. ■



Have respondents **ever** tested their well for water quality?

75% of private well users indicate having tested their water quality, in contrast to 26% of municipal water users having done so.

Results published in the report include the finding that 75% of private well users have tested their water quality.



PFAS levels high in foams, even if levels in water are low

By MOIRA HARRINGTON

A new study of natural foams and water surface microlayers of 43 Wisconsin rivers and lakes quantified 36 compounds in a group of chemicals known as PFAS. While PFAS were detected in both types of samples, it is the foams that the researcher said were “orders of magnitude higher in PFAS concentration compared to water,” while urging people and their pets to avoid them. The study also revealed that foams, generally off-white and found along shorelines on windy days, are not an indicator of elevated contamination levels in the entire water body.

“We studied many different lakes and found PFAS in all of them. The PFAS concentrations were high in the foams even if the concentrations in the water were relatively low,” said Christy Remucal with the University of Wisconsin–Madison Department of Civil and Environmental Engineering and interim director of the University of Wisconsin Aquatic Sciences Center.

Remucal stressed the need to avoid the foams because of the contaminants’ warning-worthy levels. “The chemical we found most in the foam is PFOS, which is one of the chemicals that’s driving fish advisories and driving drinking water regulations,” she said. “The highest PFOS concentrations we measured in foam were almost 300,000 nanograms per liter and, for comparison, the federal drinking water regulation is 4 nanograms per liter.”

She continued, “The main way people are exposed to PFAS is through ingestion... Obviously, people aren’t drinking foam. I would be more concerned about, for example, a kid who plays in the foam and then goes to grab a handful of snacks. You could potentially have some oral exposure that way.”

There are more than 9,000 PFAS compounds, which are often referred to as “forever chemicals” because they do not readily break down in the environment. For decades, they have been used to make a wide range of products resistant to water, grease, oil and stains and are also found in firefighting foams, which are a major source of environmental PFAS contamination. PFAS have been shown to have adverse effects on human health and increase cancer rates.

The levels in the new study validate a current Wisconsin Department of Natural Resources warning, as well as a similar freshwater foam warning in Michigan and one for saltwater foam in the Netherlands.

Remucal, postdoctoral co-investigators Summer Sherman-Bertinetti and Sarah Balgooyen and graduate students Kaitlyn Gruber and Edward Kostelnik published their work in the journal “Environmental Science & Technology.” (go.wisc.edu/719ri7) It was funded by a grant from the Wisconsin Sea Grant College Program. ■

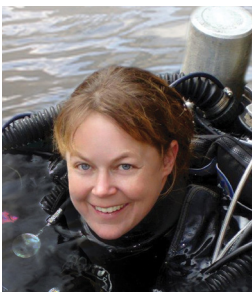
Above: Former UW–Madison College of Engineering postdoc Summer Sherman-Bertinetti collecting foam for research. Image by Elise Mahon



WISCONSIN SEA GRANT COVER STORY

A deep dive into the double centerboard schooner shipwrecks of the Great Lakes

By JENNA MERTZ | Images by Wisconsin Historical Society



Tamara Thomsen,
Wisconsin Historical Society
Maritime Archaeologist.

When sailing ships were the primary mode of transportation across the Great Lakes in the mid-1800s, there floated an odd duck: the double centerboard schooner.

Equipped with not one but two centerboards, these ships could haul lumber more quickly across Lake Michigan. The extra centerboard, a fin-like appendage that could be lowered from the bottom of the boat, enabled a more direct and less zig-zaggy route when sailing into the wind.

It was a rare feature on a Great Lakes ship and a short-lived one. Wisconsin Historical Society Maritime Archaeologist Tamara Thomsen said double centerboards faded from use by the 1870s, and many questions about their evolution and decline remain. But with grant funding from Sea Grant, Thomsen

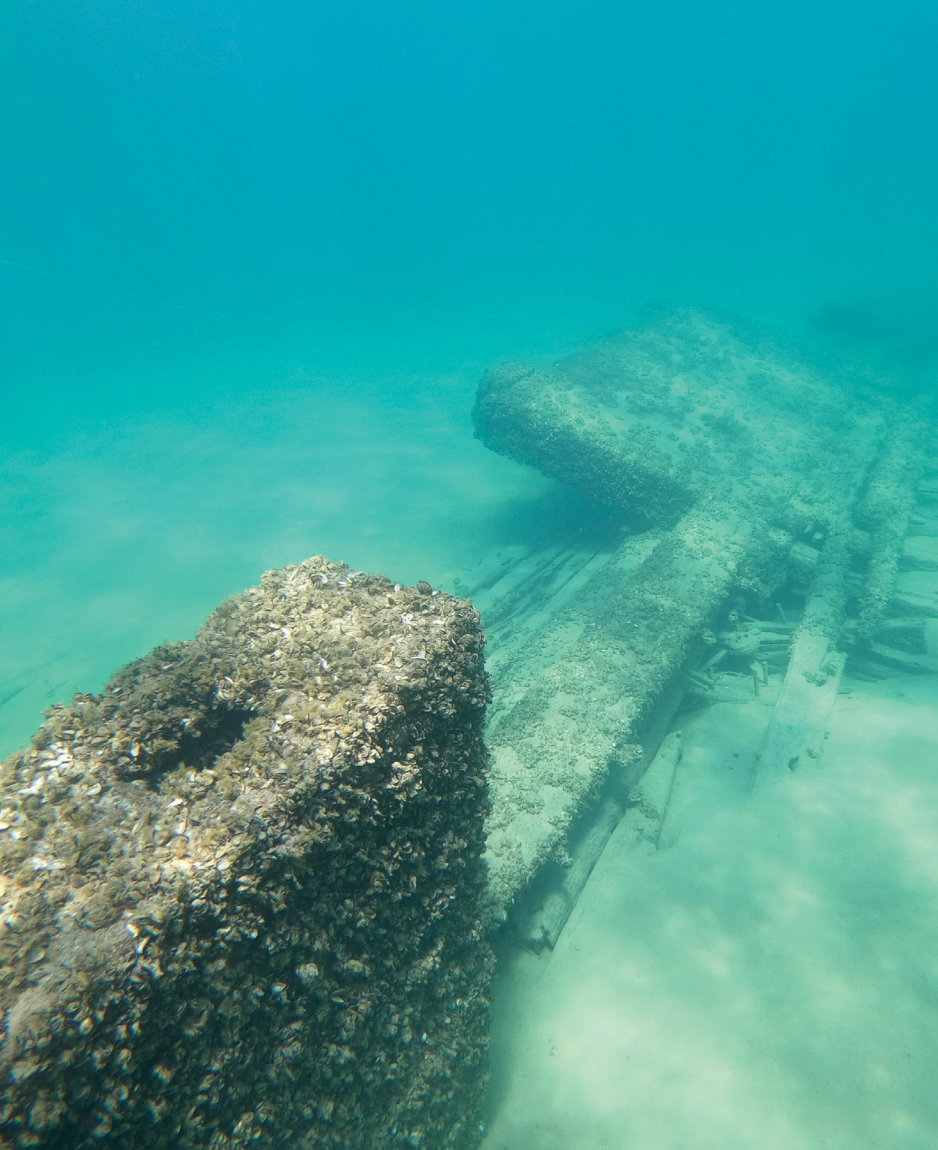
has been working to piece together the life history of these unusual vessels.

“We’re looking for these crumbs of evidence that are sort of scattered all over the place,” said Thomsen. One of those places? The bottom of Lake Michigan.

Diving for answers

For the past two years, Thomsen and a team of volunteer scuba divers have been busy resurveying the six known double centerboard schooner shipwrecks in Lake Michigan: the Boaz, Emeline, Lumberman, Montgomery, Rouse Simmons and Silver Lake. The team collected data on construction features, such as the location of centerboards, and took photos and footage that will be used to create 3D models of the wrecks.

“It’s a combination of photography, videography, photogrammetry [calculating measurements from photos], and then also ... engineering drawings,



which we create on the bottom,” said Thomsen. She also emphasized that the data her team collected is, in fact, the only way to understand how these ships were built.

“Vessels that were constructed in the 1800s were very, very rarely constructed by blueprint, and those blueprints do not exist today,” said Thomsen. “So, our understanding of how they were constructed and how this evolution of construction happened is all through the archaeological record.”

While resurveying the wrecks, Thomsen also positively identified the wreck of the *Emeline* (previously known as the *Anclam Pier* wreck), and she successfully listed both the *Emeline* and *Boaz* wrecks on the National Register of Historic Places.

Identifying the *Emeline* wasn’t the only thrill of Thomsen’s field research. The lake held another surprise: an undiscovered wreck.

While attending one of Thomsen’s training sessions for divers interested in surveying wrecks, volunteer Bob Jaeck alerted Thomsen to unidentifiable debris he encountered off Horseshoe Island in the bay of Green Bay. Having finished training early, Thomsen took the group to check it out.

It didn’t take long to figure out what they were looking at. There, submerged in the sediment, was another double centerboard schooner—the seventh in the state. The discovery was a high point for Thomsen.

“That was pretty cool,” she said.

So far, the identity of the vessel remains a “complete mystery.” Thomsen noted that there’s no recorded wreck at this location, but they’ve got a shortlist of ships lost in the general vicinity to guide their investigation.

A different kind of immersive research

When Thomsen isn’t diving into shipwrecks for her research, she’s diving into the archives. Much of her work on double centerboard schooners is, what she calls, “searching for breadcrumbs” in old ship papers.

Finding documents about the construction and eventual decline of double centerboards on the Great Lakes proved challenging. One roadblock? Registration documents for ships didn’t record anything about centerboards.

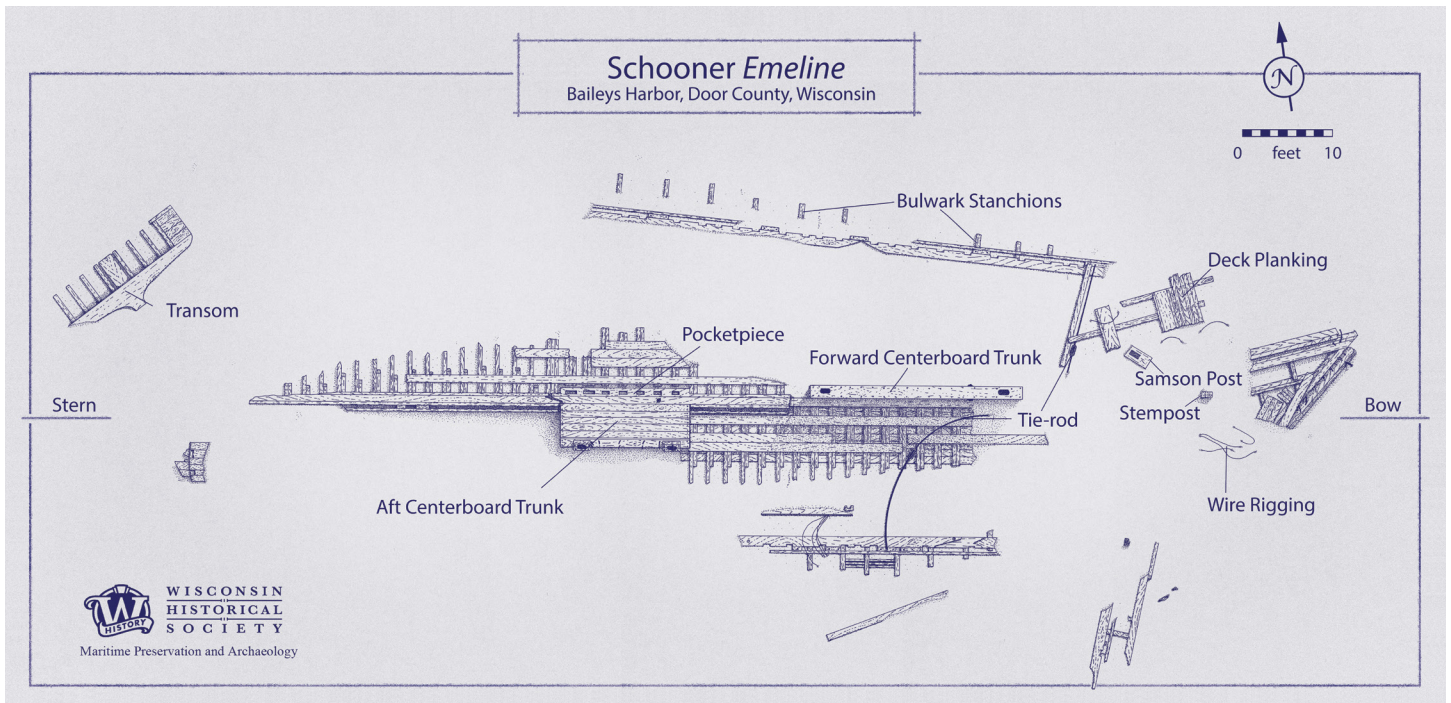
“So, you’re looking for scraps of information that might appear in newspapers,” said Thomsen, or notes from shipyards that repaired damaged double centerboards.

Opposite: Divers measuring the wreck of the *Emeline*.

Left: The wreck of the *Emeline*, which sank as a result of a heavy squall in 1896.

Right, top and bottom: The wreck of the *Boaz*, which started leaking during a storm and was beached in North Bay, Door County, Wis., in 1900.

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Above: Scaled diagram of the Emeline.

Opposite: Part of the Emeline shipwreck.

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Thomsen did find clues in the Rules of Construction, a government document that regulated the construction of ships. The first edition published in 1855 made no mention of double centerboards, but the 1876 version did, saying “no vessel of the first class should have more than one” centerboard.

“First class” refers to how vessels were insured: the lower the class, the less money you received if your ship was in an accident.

“So, your insurance value on your vessel decreased if you had a second centerboard,” said Thomsen.

Why the downgrade? The additional centerboard, it turns out, was risky. It structurally weakened the ship by putting a lot of pressure on the keel—or the backbone—of the vessel. An influential Wisconsin shipbuilder at the time, William Bates of Manitowoc, also argued it was unnecessary. Ship builders could make more structurally sound changes, like lengthening the first centerboard, to mimic the effect of having the second.

Thomsen believes Bates’s vocal dislike of double centerboard schooners—he wrote letters advocating insurance companies downgrade the rating—led to the ship falling out of favor on the Great Lakes. But no evidence has been definitive.

Histories, like shipwrecks, sometimes exist in fragments.

A shipshape team

As one of two maritime archaeologists with the Wisconsin Historical Society, Thomsen is busy traveling across the state from April to November surveying newly reported wrecks. It’s a big undertaking—one she accomplishes with a team of skilled volunteers.

Thomsen has long-standing partnerships with the Wisconsin Underwater Archaeology Association and Great Lakes Shipwreck Preservation Society to train 10 to 12 volunteer divers how to survey shipwrecks. Last spring, she held a workshop at a shallow-water wreck, where she taught participants how to draw vessels to scale and take scientific photos and video. Their skills are vital to the marine archaeology enterprise in the state.

It was a volunteer, after all, who tipped off Thomsen to the Horseshoe Island wreck.

“We would not be able to do the amount and definitely the quality ... of work that we do without the assistance of these volunteers,” said Thomsen.

In addition to shipwreck survey trainings, the grant also supported outreach and education efforts.



A recent discovery

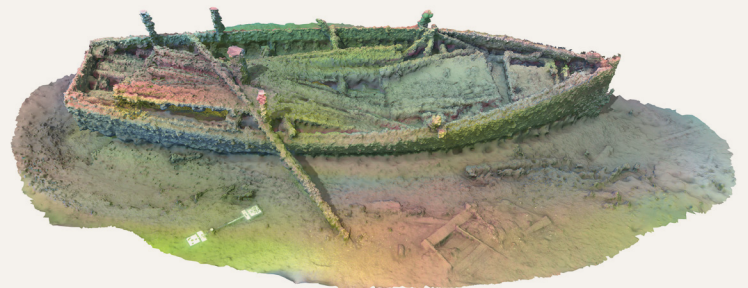
The latest Wisconsin shipwreck contender for the National Register of Historic Places is a newly discovered wreck in Little Harbor, Sheboygan, Wisconsin. It's a vessel type called a "launch," which was prevalent in the state from the 1890s through the 1940s.

According to Wisconsin Historical Society Maritime Archaeologist Tamara Thomsen, "Businesses, families, resorts, even fruit pickers were running around the peninsula, seems like everyone had one of these locally built launches – Sturgeon Bay had a local builder. They were probably flitting everywhere, and here we are just now learning about the breadth, variety and extent of their use!"

The wreck site includes a brass bell, glass windows, a brass propeller and many small personal items inside the boat. The vessel had a gasoline engine — a two-cylinder, two-stroke reversible Straubel Marine Engine produced in Green Bay. Because all of these items remain on the boat, it's unlikely it was intentionally sunk. Archaeologists are hoping to determine what caused the boat to be abandoned.

One of Thomsen's volunteers, Zach Whitrock, created a photogrammetry model that is available online: go.wisc.edu/15knzi.

The archaeology team is working on a National Register of Historic Places nomination for the wreck site, and it will likely go in front of the state committee in November. ■



Photogrammetry model by Zach Whitrock.

Thomsen was able to bring on maritime archaeologist Jordan Ciesielczyk-Gibson to adapt online educational activities about shipwrecks to in-person programming for kids. The "grab bag" for facilitators included a game with Great Lakes basin map, 3D-printed boats, puzzles and more.

Ciesielczyk-Gibson also co-created the first Wisconsin maritime educators workshop with Anne Moser, Wisconsin Sea Grant education coordinator, this past summer. The event gave educators the opportunity to network and share ideas for getting young people excited about Wisconsin's rich maritime history.

A history, as evidenced by Thomsen's research on double centerboard schooners, that continues to take shape.

Thomsen said she's fortunate to do the work she does. Underwater with a shipwreck, she feels reverence.

"These are places of great tragedy and loss, and sometimes people died on them," said Thomsen. "To be tasked with protecting them is just such an honor." ■

Explore the website to learn more.
wisconsinshipwrecks.org

Brand-new fellowship to assess atrazine-use policy

By MOIRA HARRINGTON



Sam Brockschmidt is the 2024-25 Wisconsin Water Resources Science-Policy Fellow.

The 1980s called — they want to check in on their atrazine-use policy.

While it can feel retro to talk about this herbicide that captured Wisconsin headlines over four decades ago, it remains a highly relevant topic in 2024.

Sam Brockschmidt is eager to explore that relevancy through a brand-new Wisconsin Water Resources Science-Policy Fellowship focused on evaluating existing atrazine data, gathering new data and analyzing current restrictions on atrazine use in parts of the state known as prohibition areas. In short, he said he will attempt to, “figure out if we have been improving groundwater quality in a comprehensive way.”

Groundwater monitoring in the 1980s and ‘90s found atrazine, used for killing weeds in farmers’ fields, was responsible for groundwater and drinking water contamination. In March 1991, the Wisconsin Department of Agriculture, Trade and Consumer Protection enacted its first restrictions on atrazine use, establishing an atrazine management area and six prohibition areas. That initial approach has now evolved into outright prohibition areas, (go.wisc.edu/wr0o6e) which have grown to 101, representing about 1.2 million acres. These areas where no atrazine can be applied on corn and other crops are centered heavily in central and southern Wisconsin but do exist elsewhere. In fact, 35 out of Wisconsin’s 72 counties have a prohibition area.

“We believe that partnering with a university is an excellent way to attract individuals interested in research careers with significant societal impact. This project requires someone who is dedicated to such a path, and a university partnership is the perfect avenue to find and nurture this talent.”

— Carla Romano, DATCP groundwater specialist

Brockschmidt’s project will quantify how a prohibition area is effective and how it’s not and will explore implications of both of those conditions.

If an area is effective, that could prompt calls to lift the restrictions. That, said Brockschmidt, is tricky. “Even if the prohibition area seems to be working, it’s not necessarily that we’ve solved the problem. Because the prohibition area is keeping the atrazine concentration in check, but if we went back to the way that things were before the prohibition area, we

might just go back to the same problem we’ve had before where so much atrazine was getting into our drinking water. It’s a very complicated issue that this project is tackling. But step one is just figuring out what data we have and are these prohibition areas actually effective.”

On the flipside, an ineffective zone is likely that way due to a multitude of factors. For example, he noted, “You’d think that if you stopped using atrazine in a place and then you keep testing your groundwater eventually your groundwater will have lower concentrations.” However, he cited one of Mother Nature’s maxims: water goes wherever it likes and doesn’t respect an artificial boundary like a prohibition zone.

“You might have a prohibition area on one side of the road and then on the other side of the road they’re just free to use as much atrazine as they want within the scope of the current regulations on it. So, the atrazine that is applied outside of the prohibition areas may get into prohibition areas. It all has to do with soil type and the hydrogeology of the subsurface,” he said.



Sam Brockschmidt conducting groundwater field work during a previous project.

continued from page 2

In June, Brockschmidt, who has a master's degree in geosciences from UW–Madison, began his one-year fellowship that is supported by DATCP and the University of Wisconsin Water Resources Institute. "This is our first time creating such a position," said Carla Romano, groundwater specialist with DATCP. "We believe that partnering with a university is an excellent way to attract individuals interested in research careers with significant societal impact. This project requires someone who is dedicated to such a path, and a university partnership is the perfect avenue to find and nurture this talent."

For his part, Brockschmidt said the opportunity will afford him the chance to evaluate the two long-term paths he faces. At the fellowship's conclusion, he will either pursue a career in a state agency or one in academia.

In the meantime, he said one appealing aspect of this fellowship is the chance to engage with people about atrazine. It's a product that is useful in agriculture. It is relatively inexpensive and highly effective, which could improve crop yields and increase income. But it does have deleterious effects on the water people drink. "Part of the project is that I'm going to be going out and collecting new samples of people's drinking water. I'll be at their homes so I'm going to be interacting with people, maybe learning about them and writing their stories of how these prohibition areas impact them," said Brockschmidt. "I'm really excited to get to know some people here in Wisconsin and learn what their perspectives are from the other side of these regulations."

He will also enjoy free time in the coming year, engaging in outdoor pursuits like camping and hiking. In fact, immediately before heading to the Madison headquarters of DATCP where he will be stationed, Brockschmidt slingshot from a 10-day hiking trip in Japan, to an overnight in Chicago and then the following day departed for Scotland on a college-sponsored trip. ■



Freshwater@UW summer scholar Eva Riveros evaluates the possibility of neonicotinoid insecticides leaching into groundwater from a potato field. Image by Wisconsin Sea Grant

More contemporary research priorities have been examining PFAS in the state's waters, the effect of climate change on resources and assessing the extent and impact of pathogens in drinking water.

WRI Associate Director Jennifer Hauxwell said, "In a state so enriched with water, we have no shortage of water challenges, including water quality challenges statewide due to excessive nutrients or contaminants, water quantity challenges related to scarcity in some parts of the state and flooding in other parts. WRI's investment in research helps us better identify and understand these challenges and evaluate management solutions to these challenges. We have a long history of working closely with Wisconsin communities to address their challenges and to connect researchers to real-world Wisconsin water issues."



Jennifer Hauxwell,
WRI research director.

"We are so fortunate to have had the opportunity to serve as this bridge for the past 60 years and look forward to the next 60," she concluded.

WRI also recruits and trains the next generation of water leaders. Throughout its history, more than 1,250 students have been trained by working on research projects.

Further, WRI has established a transformative fellowship program. It partners with state agencies to mentor post-graduates who provide cutting-edge knowledge while gaining skills early in their careers. One of the current fellows is Sarah Gravlee. She works in water science policy for the Wisconsin Department of Health Services. She said, "I like working at the intersection between water and public health. I've enjoyed fielding questions from the public about water contaminants, sitting in on meetings about newly identified water contamination, and assisting in projects focusing on reducing Wisconsin's environmental health hazards. I've learned a lot."

Also learning a lot have been the three, and counting, cohorts of undergraduate summer research scholars. It's a program called the Freshwater@UW Summer Research Opportunities and links researchers who have been funded through WRI, and other grant programs, to competitively selected students from across the nation.

"We are incredibly proud of the students and the work supported by WRI these past 60 years. At the same time, we know that water issues remain critical throughout the state. We look forward to supporting innovative and impactful research in Wisconsin," WRI Interim Director Christy Remucal said. ■



Trolling for musky in the St. Louis River Estuary. Image by Todd Furo

Heading for the St. Louis River? Local groups offer water safety tips

By MARIE ZHUIKOV

Between the Fond du Lac Dam and Minnesota and Wisconsin points, the St. Louis River Estuary is becoming a destination for many types of water recreation. Thanks to pollution remedies and controls combined with habitat restoration, the river is cleaner than it has been in decades.

Despite these improvements, there are still safety hazards people should consider before recreating in the estuary. Whether people swim, paddle, hunt waterfowl, fish, sail or pleasure cruise on the river, local partners including the St. Louis River Area of Concern Coordinators and Sea Grant Programs in Minnesota and Wisconsin offer a web page (go.wisc.edu/84u4f4) with tips for appropriate precautions.

A shorter, “quick tips” fact sheet with similar information can be downloaded from go.wisc.edu/6q6pt6.

“We receive a lot of inquiries from people who want to know if it’s safe to swim in the estuary now,” said Barb Huberty, St. Louis River Area of Concern coordinator with the Minnesota Pollution Control Agency. “I reached out to the Sea Grant programs for help because of their community connections

“I reached out to the Sea Grant programs for help because of their community connections and communications expertise. We worked since last fall to gather input on what should be included in the fact sheet and web page from various water safety and harbor groups, and we are happy to have compiled information to give people.”

– Barb Huberty, Minnesota Pollution Control Agency

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The text was written by Kelsey Prihoda, Great Lakes transportation extension educator with Minnesota Sea Grant. Editing and design services were provided by Wisconsin Sea Grant, which also distributes the information. ■

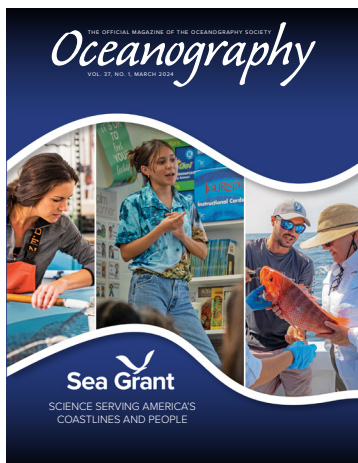
Sea Grant staff contribute to special journal issue

Sea Grant research and outreach projects took center stage in the latest issue of “Oceanography,” the official journal of The Oceanography Society. The issue (go.wisc.edu/5pzqcy) features 36 articles contributed by Sea Grant authors across 29 programs and the National Sea Grant Office.

“Sea Grant’s success and impact continues to rely on the power of collaboration,” said Jonathan Pennock, director of the National Sea Grant College Program. “This special issue showcases and celebrates the breadth of Sea Grant’s work.”

Articles cover a range of topics including aquaculture, marine debris research, green infrastructure, science communication and community partnerships, highlighting the wide scope of contributions Sea Grant makes to the environmental and marine sciences.

Tim Cambell, Julia Noordyk, Bonnie Willison and Marie Zhuikov with Wisconsin Sea Grant co-authored five articles with staff from other Sea Grant Programs across the country. Emma Hauser represented the Wisconsin program on the cover. Many other staff members helped review the articles, providing input and editing services. ■

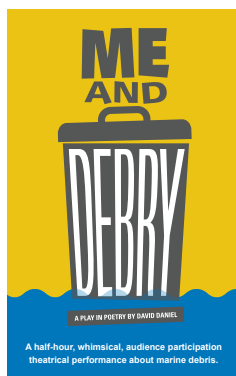


Marine debris play script available for free

What is marine debris, what are its impacts and what can we do about it? These are the central questions of a play written on behalf of Wisconsin Sea Grant by David Daniel with American Players Theatre of Wisconsin.

“Me and Debry,” (pronounced “debris”), is a half-hour, whimsical, audience-participation play about litter (marine debris) in the Great Lakes. It had its “world premiere” in Wisconsin’s Door County in October 2022 and was performed three times at the Gilmore Fine Arts School in Racine, Wisconsin, for fifth- and sixth-grade students in May 2023.

The play’s script has been fine-tuned through these performances and is now available for others to use for free, complete with props. ■



To borrow the complete kit, visit the project website. go.wisc.edu/24t57s

Celebrating WRI’s 60 years of archiving research

As the Water Resources Institute celebrates its 60th anniversary, there is an additional reason to celebrate. Since its founding in 1964, WRI has invested in more than 450 projects that address issues facing the water resources of Wisconsin. The project results are captured in the digital Groundwater Project Repository. Here are some projects from the early days.

Treatment of Cheese Processing Wastewater by Ridge and Furrow Disposal – Nitrogen Transformations

by William C. Boyle and Frederick J. Doran. Madison, Wisconsin: Wisconsin Department of Natural Resources, 1985.

go.wisc.edu/2540kg

Hydrogeology and Groundwater Geochemistry in Fractured Dolomite, Northeastern Wisconsin by Kenneth R. Bradbury, Margaret C. Blanchard and Maureen A. Muldoon. Madison, Wisconsin: University of Wisconsin Water Resources Institute, 1988.

go.wisc.edu/953y2f

West Bend Area Road Salt Use Study by Marianna Sucht. Madison, Wisconsin: University of Wisconsin Water Resources Institute, 1990.

go.wisc.edu/h9imh2

Fate of Aldicarb Residues in a Groundwater Basin Near Plover, Wisconsin by George J. Kraft. [Unpublished doctoral thesis.] University of Wisconsin–Madison, 1990.

go.wisc.edu/f9594g

Verification Technique to Evaluate Integrity of Well Seals: Final Report, October 6, 1994

by Nazli Yesiller, Tuncer B. Edil and Craig H. Benson. Madison, Wisconsin: Department of Civil and Environmental Engineering, University of Wisconsin–Madison, 1994.

go.wisc.edu/ij43yf

Explore the repository to learn more. wri.wisc.edu/wgrmp-repository



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a joint newsletter from UW Sea Grant and Water Resources Institutes

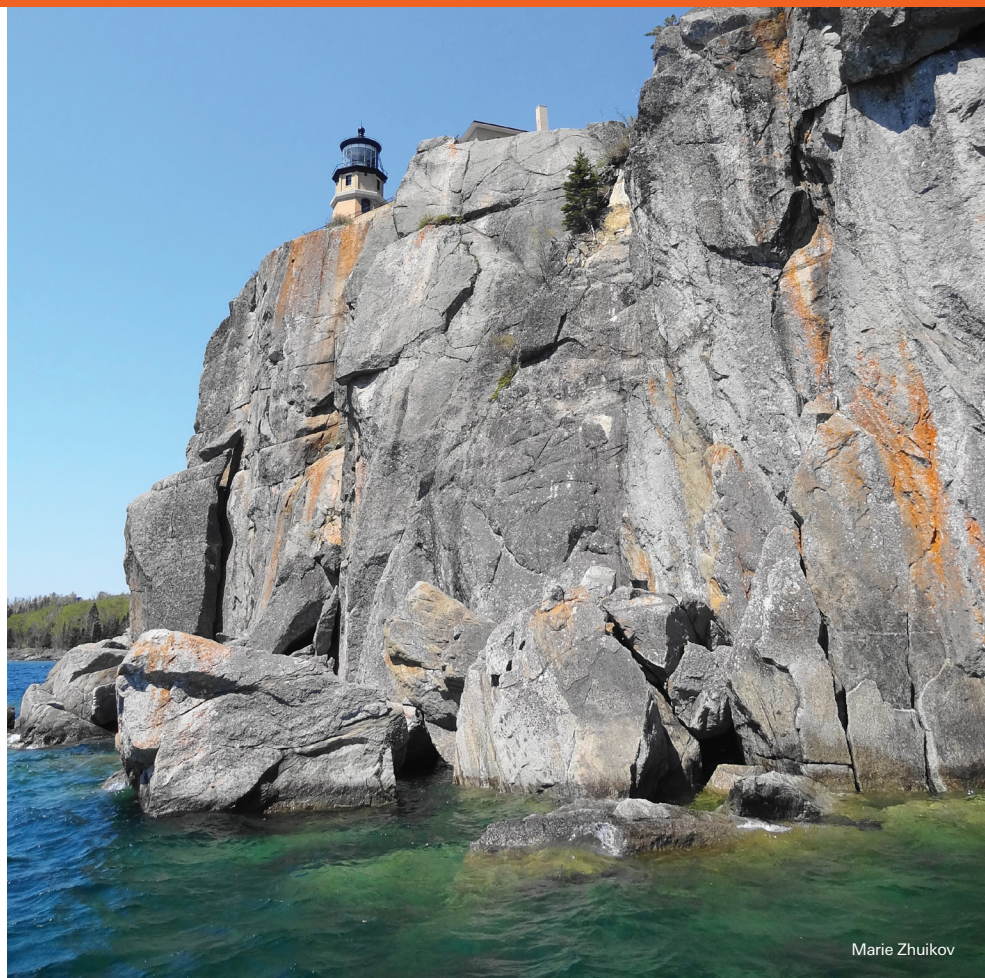
Provide feedback to Sea Grant review team

Wisconsin Sea Grant will be reviewed
Dec. 3-5 by a team convened by the
National Sea Grant College Program.

The review will be conducted at the
University of Wisconsin-Madison and
will consider all aspects of the program,
including management and organization,
performance, engagement and collaborative
activities, such as activities involving
various offices of the National Oceanic
and Atmospheric Administration.

This notice invites your participation in the
review. **The comment period ends on
Nov. 26.** Please indicate "Wisconsin Sea
Grant site review" in the email subject line.

EMAIL COMMENTS TO
oar.sg-feedback@noaa.gov.



Marie Zhuikov