

ASC

AQUATIC SCIENCES CHRONICLE

2023 ISSUE 1

The stories trees tell

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Aquatic Sciences Chronicle

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STAY CONNECTED



ON THE COVER: Concentric rings lead out to a peel scar from the year 1830. Anishinaabe people in the Great Lakes region collected resin from the red pine trees for use on birchbark canoes. The resin can be seen here in the dark wood on the outside of the scar.

FEATURED VIDEOS

Barrage of projects provides plenty of digital storytelling fodder

The work of the Water Resources Institute and Sea Grant is far-reaching and varied. The programs' research, education and outreach yield scientific findings, as well as practical how-to tips to apply to freshwater settings.

Finding effective ways to share such a barrage of information can sometimes pose a challenge. One way the programs meet the challenge is by producing and disseminating videos, which offer an accessible, engaging and informative way to learn more about specific topics. It's also rewarding when the videos themselves, and their videographer, are recognized for technical merit through awards. More on that later.



Two recently produced videos offer those how-to tips and research information transfer. "Clean, Drain and Dry Your Boat" youtu.be/GKWpcn534w0 is a bite-sized way to get a look at how protecting waterways can be achieved by taking simple steps to remove potential aquatic invasive species from a boat. There is fantastic-looking drone imagery too. The video was widely placed as a public service announcement throughout the Great Lakes region last summer, generating views, and hopefully sparking new thinking and behaviors.



The second video delves into nano-plastics research on the University of Wisconsin-Madison campus. Every year, more than 22 million pounds of plastic pollution enter the Great Lakes ecosystem. The video "Nano- and Microplastics in the Great Lakes," youtu.be/47jh71oiC08 ensures this scientific exploration about what sort of contaminants might be found on those plastics reaches more people than if it were only published in an academic journal.

Now, about the awards. Bonnie Willison, videographer for the two programs, picked up two awards in November of 2022 in a regional competition for these concise digital stories.

Willison said,

"We shot this video to raise awareness of invasive species in the Great Lakes. It was great to partner with local professionals who helped direct, shoot and provide voiceover for this piece."



—MH



SUBSCRIBE TO THE WISCONSIN SEA GRANT YOUTUBE CHANNEL

Stay up to date with new videos about the program's research, outreach and education. youtube.com/@SGIVideo

NEW HIRE Alison Mikulyuk part of a connective stream of water

In the late 1800s, the field of limnology (the study of lakes) had its birth in North America when what is now the University of Wisconsin–Madison’s Center for Limnology began its formative years.

Zoologists Edward Birge and Chancey Juday offered vision and leadership for this take on water science. They went heavy on field work and produced dozens of papers expounding lakes’ chemistry, biology and geology. They were committed to fostering student experiences and learning.

A stream of connection to those early days of freshwater study and student support carries through to today with the arrival at Sea Grant and the Water Resources Institute (WRI) of Alison Mikulyuk, herself a graduate of that very same limnology program. She is the first-ever coordinator of Water@UW–Madison.

“I’m excited to join the team at the Aquatic Sciences Center.” Mikulyuk continued,

“I want to build and support a caring and connected network of water researchers, one that encourages exchange and innovation. I envision a healthy and productive collaborative group, where we work together across disciplines, across agencies and with communities to find new ways of asking and answering the questions that matter for fresh water.”

Water@UW–Madison had its own beginnings more than a decade ago when a handful of water scientists—including Jake Vander Zanden, the current director of the Center for Limnology—formed an organization to foster connections among students, staff and faculty with water interests and studies. The goal at the time, Vander Zanden said, was to facilitate greater interdisciplinary collaboration and exploration.

Water@UW–Madison sponsors a fall poster session, spring symposium, student mentoring, a summer undergraduate research experience and art and freshwater science collaborations. It hosts an informative website and during the academic year publishes a weekly newsletter. In sum, it pulls together and amplifies the water expertise of more than 130 faculty and staff across more than 40 departments and programs on the Madison campus.

It further strives to broaden its reach to other campuses in the University of Wisconsin System, along with private colleges, government agencies, non-governmental organizations and civil society in Wisconsin and beyond.

Mikulyuk will also support the WRI and Sea Grant research enterprise and the programs’ robust fellowship initiatives that place post-graduates in settings with state agencies, offering cutting-edge skills and knowledge to the agencies, along with mentoring, networking opportunities and experience for the fellows. Additionally, she will oversee the Freshwater@UW Summer Research Scholars Program, which pairs undergraduates with research mentors.

Mikulyuk assumed her role in late 2022. Natalie Chin, Sea Grant’s climate and tourism outreach specialist, was a member of the hiring committee that brought

Alison Mikulyuk,
Water@UW–Madison
research program
coordinator



Mikulyuk on board. Chin said, “I feel so lucky to have Ali as a colleague! She comes to us with a ton of great experience, a strong statewide network and a passion for community-engaged science. I have no doubt that she will do great things as a member of the Sea Grant and WRI family.”

Here’s a dive into that experience Chin mentioned: Ph.D. in freshwater and marine science from UW–Madison, more than 18 publications in her field, 17 years working in surface water protection and restoration as an employee of the Wisconsin Department of Natural Resources. Mikulyuk can be reached at 608-263-3296 or Alison.Mikulyuk@aqu.wisc.edu.

Her position is being funded, in part, by the Freshwater Collaborative of Wisconsin and the UW–Madison Office of the Vice Chancellor and Graduate Education.

—MH



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Aquatic invasive species staff member recognized as Lake Leader

Scott McComb, Wisconsin Sea Grant’s southeast Wisconsin aquatic invasive species outreach specialist, completed training through the Wisconsin Lake Leaders Institute, culminating in a fall graduation event.

McComb was part of the 14th class of graduates to learn about Wisconsin’s unique lake resources through a program organized by the Wisconsin Lakes Partnership.

He was recognized by Wisconsin Department of Natural Resources (DNR) Secretary Preston Cole, University of Wisconsin-Stevens Point College of Natural Resources Dean Brian Sloss and Wisconsin Lakes board members David Zelinger and Nick Homan.

Through a series of in-person seminars and online meetings, McComb gained a deeper understanding of lake ecology and how to work with state and local governments to ensure that lakes get the attention they need. The program combines readings, discussions, field experiences and more to develop lake management and leadership skills.

Commented McComb, who joined Wisconsin Sea Grant in 2021 and is based at the Kenosha County Extension Office,

“Lake Leaders was a unique opportunity to explore the intersection of people and water from cultural, scientific and legal perspectives while also providing opportunities to reflect on my own connection to lakes in Wisconsin.”

He holds a bachelor’s degree in geography and a master’s degree in bioregional planning.

“The individuals who participate in this program are true leaders who have stepped forward to protect our lakes for future generations,” said Sara Windjue, leadership and capacity development specialist for the UW-Stevens Point Extension Lakes Program. “They are committed to developing partnerships and facilitating the learning of others in order to build capacity that will ensure the protection and restoration of thousands of lakes across Wisconsin.”

“Lake Leaders was a wonderful opportunity to learn more about Wisconsin lakes and to connect with other lake-minded folks from around the state,” added McComb. He is committed to “honoring the waters of Wisconsin by learning its lessons, sharing its stories and listening to all” as he works prevent the spread of aquatic invasive species in southeast Wisconsin.

The Wisconsin Lake Leaders Institute draws participants from across the state to take part in a series of three two-day seminars. Participants demonstrate their commitment to protecting the integrity of the lakes in Wisconsin with an investment of their time and a modest registration cost to cover meals and lodging.

The Wisconsin Lakes Partnership is made up of the Extension Lakes Program at UW-Stevens Point, the Wisconsin DNR and the citizen advocacy organization Wisconsin Lakes. Recognizing a need for new and ongoing leadership in the management of Wisconsin’s lakes, they created the Wisconsin Lake Leaders Institute in 1996. Its mission is to assist citizen lake leaders to develop both their technical and people skills, ultimately enriching their communities and the waters within them.



Top: McComb shows off his certificate of completion. Right: The entire group of 2022 Lake Leaders pose near the shack of famed naturalist and conservationist Aldo Leopold.



Sara Windjue

This year’s graduation ceremony took place at the Aldo Leopold Shack near Baraboo, a fitting setting for celebrating the 22 new Lake Leaders’ accomplishments and looking ahead to their conservation journeys.

Since its inception, over 300 participants have graduated from the institute and made significant contributions in addressing a diverse array of water management challenges. The program has attracted national attention as an effective strategy for enhancing lake stewardship and protection.

For more information about the program, contact McComb at McComb@aqua.wisc.edu or 608-890-0977 or visit the UW-Stevens Point Extension Lakes website go.wisc.edu/j6mb12. —JAS

The Wisconsin Idea is one of the longest and deepest traditions surrounding the University of Wisconsin. It holds that education and the influence of the university need to reach beyond the boundaries of the classroom across the state.

Research survey aligns the Wisconsin Idea with water

A new Water Resources Institute project will survey rural communities across Wisconsin to discover their perceptions about groundwater quality and quantity.



Michael Cardiff,
associate professor
of geoscience

Associate Professor of Geoscience Michael Cardiff and his research team at the University of Wisconsin–Madison are applying the Wisconsin Idea to groundwater issues. They received two years of funding from the University of Wisconsin Water Resources Institute to survey rural residents about their perceptions regarding groundwater quality and quantity. The findings will be interpreted by a panel of experts who will use the results to inform future water opportunities and research directions.

“The central goal is basically understanding people’s perspectives on this issue of water availability with the idea that if we better understand stakeholders—the people who care about water—we can do a better job of making decisions that are positive and are viewed positively,” Cardiff said.

The water survey was sent by mail in early 2023 to people who live in rural communities. “As far as we’re aware, it’s going to be the first of its kind to try and get a better handle on rural Wisconsin perspectives,” Cardiff said. “We are focusing on rural counties because 97% of our state is rural and the majority of water is beneath those counties, but we’re also trying to get some diversity represented in the counties we are surveying.” Cardiff noted that rural communities depend on groundwater for their drinking water supply because many do not have public water treatment systems.

For a second part of the study, the researchers will examine news stories, research reports, county plans and public comments with a technique called natural

language processing, which allows computers to read and extract meaning from text. The computers will be instructed to analyze and summarize articles that contain terms such as “water quality.” Cardiff explained this is another way to tune into conversations surrounding water issues in various communities.

This project was an unexpected benefit from the social isolation that Cardiff experienced during the Covid-19 pandemic. “It was a great chance to pause and consider the impact of my work,” he said. “I came to the conclusion that I love the technical aspects of the work I do, but one of the reasons I’m in hydrology is that it’s important that the work has positive outcomes—both for people and the planet. I felt there was a niche to make more connections with people about what’s going on with water resources and understand their perspectives so we can have productive conversations throughout the state.”

“...I love the technical aspects of the work I do, but one of the reasons I’m in hydrology is that it’s important that the work has positive outcomes – both for people and the planet.”

Collaborating with Cardiff on the project are Bret Shaw, associate professor in life sciences communication, and Ken Genskow, professor of planning and landscape architecture. Both are at UW–Madison. Shaw was ensured the survey questions will elicit useful information and that they are understandable. Genskow has experience bridging the gap between water science and social science. He’ll bring his experience working with rural communities on issues such as nitrate contamination in groundwater.

They will be aided by students Catherine Christenson and Campbell Dunn.

This project is also receiving additional funding from the U.S. Geological Survey.—MEZ



Top: A participant in an accessible birding event examines a feather under a microscope. Right: A group attending the event spots birds on Barker's Island in Superior, Wisconsin. Images by Marie Zhuikov, Wisconsin Sea Grant.



Accessible birding event delivers

Barker's Island in the Duluth-Superior Harbor was the site of a free, bird-focused morning last fall. People of all ages and ability levels attended an accessible birding outing led by experts from the Hawk Ridge Bird Observatory and the Friends of the Lake Superior Reserve.

The group met at the Lake Superior Estuarium on the island in Superior and were welcomed by Luciana Ranelli, education coordinator for the Lake Superior National Estuarine Research Reserve. She explained the three options for learning about birds. First was inside the estuarium, where staff from the UW-Madison Division of Extension Upham Woods Learning Center had arranged bird artifacts and learning stations. Second was a spotting scope behind the estuarium staffed by Pat Collins, a volunteer birding expert with the Friends of the Lake Superior Reserve. This was designed for birders with mobility issues or anyone who preferred a more stationary option. The third was a guided tour along the Barker's Island boardwalk with Margie Menzies, education director for the Hawk Ridge Bird Observatory in Duluth.

Superior resident and former city council member Mick MacKenzie recently had hip surgery, so the second station appealed to him. He said he came to the event because he's "enjoying life. It's good to be out in nature."

After discussing the population health of kingfishers in the estuary with Collins, MacKenzie said, "When I was a kid, there was nothing down here on Barker's Island. We'd come here to explore and play, so all this new development is really something to see: the whaleback add (a type of boat, which offers public tours) and the hotel . . ."

MacKenzie was interrupted by Collins. "There's a hummingbird right here!" Collins said.

MacKenzie expressed surprise that the birds were still around in September.

"They migrate through starting this time of year," Collins said. "As long as there are flowers in bloom, they'll stick around."

Meanwhile, Menzies' group got oriented to their binoculars and began their walk on the boardwalk. Sightings of the ubiquitous herring gulls around the island prompted

Menzies to discuss a rare bird that steals gulls' food: the parasitic jaeger. A Jaeger Birding Festival is held on nearby Wisconsin Point annually in fall because it's a prime time for spotting jaegers during their migration south from the Arctic Circle.

Her discussion was interrupted when two pigeons landed on the estuarium roof. "When you look at birds, particularly from a distance, what do you notice about that bird that helps you think about what it is. What kinds of diagnostic clues can you look at on that bird?" Menzies asked.

Someone mentioned the pigeons' orange feet. "Yes, those red-orangey feet are a dead giveaway for pigeons. And a nice chunky body," Menzies added.

The group moved farther along the boardwalk, following the shoreline of the island to the public beach, which is surrounded by native plants. Along the way, they spotted a turkey vulture, common mergansers, mallards, cormorants and warblers.

Kate McCall, a member of the board of directors for the Friends of the Lake Superior Reserve group, said she attended the event

Below: Superior resident and former city council member Mick MacKenzie (right) talks birds with Pat Collins, a volunteer birding expert with the Friends of the Lake Superior Reserve. Images by Marie Zhuikov, Wisconsin Sea Grant.

LISTEN TO THIS STORY ▶▶



Wisconsin Water News
Episode 45
Accessible Birding Event Delivers
go.wisc.edu/4ne5wr



because, “This is the stuff I love.” She is interested in making the outdoors more accessible for people of differing abilities and attended an accessibility training session offered by the reserve previously.

Just one of the things she learned was that cormorants don’t shed water off their backs as easily as other birds after they’ve been diving. “That’s why they’re so clumsy when they fly afterwards,” McCall said.



“I always wondered about that. It’s fun to learn more, not just about the habitat of birds, but their patterns of flight as well. I just really enjoyed it.”

This free event was made possible through the University of Wisconsin–Madison Dean’s Innovation Grant to collaborators from Upham Woods Outdoor Learning Center, the Reserve, Wisconsin Sea Grant, UW–Madison Extension, and Bayfield and Ashland counties.—MEZ



Updated Wisconsin Clean Marina Guidebook Now Available

The Wisconsin Clean Marina Program has a new tool to help marina owners and operators meet state and federal requirements, protect water quality and save money and resources.

Theresa Qualls, Wisconsin Clean Marina coordinator, rolled out the third edition of the “Wisconsin Clean Marina Best Management Practices Guidebook” at the Wisconsin Marine Association Conference in Wausau last fall. The guidebook includes a checklist of best management practices (BMPs) organized by topic (for example, stormwater management or petroleum control) and color-coded by requirement status (mandatory by law, required for Clean Marina program or recommended). That checklist is followed by chapters with complete explanations and suggestions for meeting each requirement. Supplemental material includes boater rack cards; samples of signage; stormwater pollution prevention plans; spill prevention, control and countermeasure plans; emergency response plans; and contracts.

Marinas, related industries and services contribute more than \$2.7 billion to Wisconsin’s economy. Through the initiative, marinas can prevent pollution and protect fish, wildlife and public health. They know that clean water is important to boaters and Wisconsin’s coastal communities

For marinas that are interested in becoming certified Clean Marinas, instructions for certification and the necessary forms are included in the guidebook.

continued on page 14



Boemie Willison | Wisconsin Sea Grant

SEA GRANT RESEARCH COVER STORY

The stories trees tell

Above: These red pines near the tip of Wisconsin Point reflect the legacy of fire. Most of the new pines coming up to replace them are white pine. Right: Melonee Montano, member of the Red Cliff Band of Lake Superior Chippewa and University of Minnesota graduate student.

On a cool, sunny spring morning among the pines on Wisconsin Point along Lake Superior, a mix of Native and non-native people gathered in a circle with the scent of wood smoke and sage in the air. The small group was performing an opening ceremony for “Nimaawanji’idimin Giiwitaashkodeng,” the Anishinaabe name for a Wisconsin Sea Grant-funded research and outreach project led by UW-Platteville Professor Evan Larson, designed to explore how the Anishinaabe people connected to and homesteaded the lands of “Zhaagawaamikong Neyaashi” (Wisconsin and

Minnesota points) and how they used fire to manage the landscape. The project name translates into “We are all gathering around the fire.”



The ceremony was held to “...let the animals and plants and the spirits there know what our intentions are as far as the research,” said Melonee Montano, a Red Cliff tribal member and a University of Minnesota graduate student who is one of the investigators on the project. “We were asking for their permission and also for any guidance that they could give us moving forward so that we do things in the right way.”



Top left: The research team at work. Evan Larson, Ashla Ojibway, Mocha Reynolds, Valerie Zhaawendaagozikwe and Emily Lockling (left to right).

Top right: The cut surface of a long-dead red pine, solid and displaying evidence of a peel scar followed by two fire scars.

Left: A living culturally modified red pine.

Right: Undergraduate researchers Mocha Reynolds, Valerie Zhaawendaagozikwe and Ashla Ojibway gather data for the project.

Below: Blueberries, a key traditional food source among the Anishinaabe, are now sparse in this area and overshadowed by competing vegetation.

As the ceremony continued, a deer emerged and stood at the tree line, looking at the group for at least 20 minutes. “She just hung out for a long time, checking us out, wondering what we were doing. For me, that was a real good sign that what we’re doing is OK,” Montano said.

Later, in June on the first day of summer, a larger ceremony was led by Ricky DeFoe, Fond du Lac Elder and spiritual leader. The ceremony brought over 30 members of stakeholder groups together to publicly open the project. It included representatives from the cities of Superior and Duluth, the Great Lakes Indian Fish and Wildlife Commission, University of Wisconsin–Madison Extension, the Douglas County Board, Sea Grant and the Fond du Lac

Band of Lake Superior Chippewa. As the group stood around a sacred fire, DeFoe talked about the need to reconcile history and come together to heal people and the land.

Wisconsin and Minnesota points were home to the Anishinaabe people for hundreds of years before the forces of settler-colonialism began threatening their relationship to the area. Treaties and federal legislation drew explicit lines around reservations and industrial interests began to covet Zhaagawaamikong Neyaashi. go.wisc.edu/dz40s3

This is only the beginning of this story. For the complete version, visit our website at go.wisc.edu/v38j79. —MEZ

LISTEN AND LEARN MORE 



The Water We Swim In Episode 10
Fire, blueberries, and treaty rights
go.wisc.edu/5z2187





Anne Moser, education coordinator and senior special librarian for the Wisconsin Water Library, is the 2022 winner of the nonformal educator of the year award from the Wisconsin Association for Environmental Education.

Known by many for much, Anne Moser is now known as an award-winner

Anne Moser. Librarians in Augusta, Princeton, Stanley and Rice Lake, Wisconsin, know her as the person who showed up in a fishing hat with dangling lures for 2022 summer story hours to teach young children about Great Lakes fish through books, songs, dance and crafts.

Educators from around the Great Lakes region know her as the thoughtful voice on how best to integrate freshwater science and research into K-12 curricula, classrooms and nonformal learning centers around Wisconsin.

Members of the International Association of Aquatic and Marine Science Libraries and Information Centers and those in the Wisconsin Library Association know her as someone who has taken on leadership roles in the organizations to support marine and aquatic sciences library science around the world and in specialized libraries throughout the state.

Now, we all know her as the 2022 winner of the nonformal educator of the year award from the Wisconsin Association for Environmental Education (WAEE). The group conferred the award during a virtual ceremony last fall. The organization highlighted her significant contributions to the field of environmental education.

Moser is the senior special librarian for the Wisconsin Water Library, supported by Sea Grant and the University of Wisconsin Water Resources Institute. She is also the education coordinator. About the award, she said,

“I am deeply honored to be recognized by the WAEE. In my time with Sea Grant and the Water Resources Institute, I have met hundreds of formal and nonformal educators, librarians and teachers who are deserving of an award! It has been my absolute privilege to work with them and to have the opportunity to do my small part in educating the future caretakers of our watersheds.”

Colleague Titus Seilheimer, Sea Grant fisheries specialist, presented a take on yet another of Moser’s educational initiatives, “I have worked with Anne for 10 years at the UW-Madison Alumni Association Grandparents University, where she coordinates the limnology major. Anne is equally great with the logistics, children and grandparents. Anne is an inspiration and has had a major impact on Wisconsin’s environmental education.”

WAEE is a statewide nonprofit organization of environmental educators who support environmental education through advocacy, networking and recognition. The awards program is meant to acknowledge and encourage excellence in the field of environmental education. —MH

WISCONSIN WATER LIBRARY

Spotlight on women in science

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

We celebrate International Women’s Day in March, but the contributions of women in science should be highlighted and celebrated every day. Marine biology, environmental conservation and cartography are only a few of the disciplines where women have changed the ways we understand the Earth and our effect on its health.

The Astronomer Who Questioned Everything: The Story of Maria Mitchell by Laura Alary. Toronto: Kids Can Press, 2022.

Changing the Equation: 50+ US Black Women in STEM by Tonya Bolden. New York: Abrams Books for Young Readers, 2020.

Headstrong: 52 Women Who Changed Science – and the World by Rachel Swaby. New York: Broadway Books, 2015.

Life in the Ocean: The Story of Oceanographer Sylvia Earle by Clair Nivola. New York: Frances Foster Books, Farrar Straus Giroux, 2012.

Ocean Speaks: How Marie Tharp Revealed the Ocean’s Biggest Secret by Jess Keating. New York: Tundra Books, 2020.

Rachel: The Story of Rachel Carson by Amy Ehrlich. San Diego, California: Silver Whistle, Harcourt, 2003.

Noordyk named a Lake Michigan Champion of Conservation

Julia Noordyk, Sea Grant's water quality and coastal communities specialist, was named a Lake Michigan Champion of Conservation by the Lake Michigan Stakeholders.

"I am humbled by this honor and know that any success would not have been possible without the inspiration and partnership of all of my excellent colleagues. I am also extremely grateful to the municipalities for their commitment in improving their communities through green infrastructure and look forward to continuing to support their visions," Noordyk said.

Noordyk has been with Sea Grant for more than nine years, coming from the Maine Coastal Program where she worked as a senior planner focused on outreach programs in offshore wind energy, water quality and coastal public access.

Based in Green Bay, she has devoted herself to public engagement. Noordyk serves on the Green Bay Sustainability Commission. She said she counts among the most-rewarding actions in her time on the

commission the support offered to city staff to build flood resilience, removal of green infrastructure barriers and the March 2, 2021, common council adoption of a resolution to value and protect local waters.

She is also co-leading the East River Collaborative, which is committed to building resilience in Brown County's East River watershed, an area that has seen repeated flooding.

The awarding organization also noted Noordyk's leadership as the Wisconsin Clean Marina Program manager. Last year, Noordyk and partners added a marina resiliency checklist to the clean marina certification process. The self-assessment identifies risks, vulnerabilities and information gaps, allowing coastal communities and marinas to prioritize, plan and initiate enhancements to ensure marina resiliency.

Sea Grant's Fisheries Specialist Titus Seilheimer said, "In my decade of working with Julia, she has been a constant inspiration for me. Every time I hear about what she is working on and the impacts that it is having, I think, 'Wow, how can I be more like Julia?' She is the definition of a Lake Michigan Champion."

The Lake Michigan Stakeholders organization is made up of professionals in the fields of environmental management, academic research, education, community outreach, outdoor advocacy, agriculture and private industry. Its members collaborate to promote and celebrate the health and viability of Wisconsin's Lake Michigan basin through stewardship and education.—MH



Julia Noordyk,
water quality and coastal
communities specialist

"The more clearly we can focus our attention on the wonders and realities of the universe about us, the less taste we shall have for destruction."

— Rachel Carson in *Silent Spring*

Sisters in Science: Conversations With Black Women Scientists About Race, Gender, and Their Passion for Science, With Interviews by Diann Jordan. West Lafayette, Indiana: Purdue University Press, 2006.

Super Women: Six Scientists Who Changed the World by Laurie Lawlor. New York: Holiday House, 2017.

Ten Women Who Changed Science and the World by Catherine Whitlock and Evans Rhodri. New York: New Diversion Books, 2018.

Two in the Far North by Margaret Murie. Anchorage, Alaska: Alaska Northwest Publishing Company, 1978
Women in Field Biology: A Journey Into Nature by M.L. Crump and M.J. Lannoo. Boca Raton, Florida: CRC Press Taylor & Francis Group, 2023.

Women in Science: 50 Fearless Pioneers Who Changed the World by Rachel Ignatofsky. New York: Ten Speed Press, 2016.

Wonder Women of Science: Twelve Geniuses Who Are Currently Rocking Science, Technology, and the World by Tiera Fletcher. Somerville, Massachusetts: Candlewick Press, 2021.



Top: Lubner on a field trip with a group of Sturgeon Bowl winners prior to the finals of the Ocean Sciences Bowl in Washington, D.C. Right: Lubner at Milwaukee County's Grant Park beach with students from Vieau School participating in Watershed Alive, a professional development program for teachers that includes field experiences for students. Images by Liz Sutton, UW-Milwaukee School of Freshwater Sciences.

A lifetime of education— Retired outreach specialist James Lubner

Ask Jim Lubner about his 33-year career as a boating safety and education outreach specialist at Wisconsin Sea Grant (and what led to those years), and he'll tell you about Lake Michigan.

"Living in the Bay View area of Milwaukee, I'm never very far from Lake Michigan. I see it on a regular basis and spend many hours each year on its waters as well. I consider it very special and am always reminded of the significant part it has played in my life and that of my family. I'm thankful for all of those people, experiences and opportunities," he said.

He grew up on a farm in Sheboygan County, which borders Lake Michigan, spending his high school and college years in Catholic school and the seminary. He enjoyed fishing in Lake Michigan and in the fairly large lake across the neighbor's field using a small aluminum boat you could throw in the back of the pickup truck.

While fishing continued to hold its appeal, Lubner realized the seminary wasn't the right direction for him and he secured a position at a Catholic middle school, teaching science and math for three years. It may not have been his ideal job.

"I won't say that I was necessarily good at it, but it was an early opportunity to get involved in education. In the back of my mind I really knew that if I was going to shift away from the seminary that I was going to pursue education, likely in the sciences," he said.

And pursue education he did. Lubner received a master's degree in zoology and a Ph.D. in biological sciences from the University of Wisconsin-Milwaukee. He became a teaching assistant during his master's program, as most graduate students do, until another student suggested he find a program with the resources to support him in other ways. The Center for Great Lakes Studies was the only program that came to mind, and Lubner secured a position there.

During a graduate student seminar at the Center for Great Lakes Studies, Lubner was approached by a Ph.D. student with ship time who was studying pelagic zooplankton. He proposed that Lubner take

on studying the benthos, allowing them to share the work of collecting samples and the ship time. Sea Grant was funding that project and Lubner joined right in.



Sea Grant was funding some projects that supported his master's degree, and he was encouraged to submit a proposal for his Ph.D. project, which was funded for several years.

Lubner assumed he was headed for the classic tenure-track academic position, but nothing seemed to fit. When a position became available at Sea Grant, he decided to give it a try.

"Opportunities present themselves and sometimes you take a leap," he said. "I have no idea what the heck I'm doing, but sometimes, it turns into something that maybe soon or maybe way far down the road and you say, 'Geez, I'm glad I did that.'"

That opportunity turned into a 33-year career at Sea Grant, specializing in boating safety and, most of the time, education, even including an adjunct faculty position.

An early emphasis of the job was boating safety. Kim Bro (the Sea Grant field agent in the Lake Superior office) suggested partnering with an established organization with a solid track record, so Lubner joined the U.S. Coast Guard Auxiliary in 1979. He taught courses in boating safety to several thousand adults and young people and continues his membership in the Coast Guard Auxiliary to this day.

Over the course of working with the Coast Guard, Lubner started a pilot program for charter boat operators to help them with licensing and other requirements and wrote up a guidebook published by Sea Grant. Today there is a national-level program

for charter boat captains (not as a direct result of the earlier program) that Lubner remains involved with.

Another long-lasting relationship resulted from an invitation to join the local emergency planning committee, which oversees the planning for spills of hazardous materials within a county. He's been on that committee in Milwaukee County for 32 years.

For the education side of the position, there was a project already underway in Milwaukee when Lubner first accepted the job in 1977. The project focused on kids in Milwaukee and was funded by Sea Grant and led by a professor from the UW-Milwaukee Department of Curriculum and Instruction along with a UW-Extension staff member with close ties to the central-city community in Milwaukee. The program ran its course, but it gave Lubner an inroad that turned into an adjunct position in the School of Education, Department of Curriculum and Instruction.

Then the Reagan era arrived, and many entities shifted their focus away from education. The same was true for Sea Grant's national priorities. At one point Lubner received a letter from Bob Ragotzkie, the Sea Grant director at that time, stating very clearly that education was no longer in his job description.

Lubner said, "It is to his everlasting credit that Al Miller (the Sea Grant assistant director of outreach at the time) found creative ways to involve me in education, knowing full well that it was officially not my job description."

As the interest in education projects started to rise again with a different administration, Lubner discovered that what the program needed was not better education proposals to biennial Sea Grant competitions but a better review process. Education projects can't be evaluated fairly using the same criteria as research project, he felt.

Lubner said, "When you ticked off the boxes that a reviewer would tick off (related to an education proposal), there weren't enough science boxes. So even if it was a good proposal, it didn't rate as high as the science proposals." He set to work creating a review process for education projects that resulted in the funding of many successful education projects.

In addition to his boating safety work and his role as education coordinator, Lubner served as an adjunct professor, largely teaching middle and high school teachers about Great Lakes, ocean and climate topics. He described two-week teacher trainings as "the most exhausting and exhilarating experience I ever had."

Lubner also taught a course called "Environmental Education for Teachers" at UW-Milwaukee that was a requirement for teacher certification in Wisconsin. The teachers who enrolled primarily taught middle

school, but then UW-Milwaukee's approach to teacher certification changed, resulting in more early-childhood majors appearing in his classes.

He was rather dismayed with this development, saying that they "scared the heck out of me because I didn't really know anything about early-childhood educational principles and practices."

He soon realized that he loved the enthusiasm and dedication of these teachers and the way their energy and knowledge influenced the interests of the kids. "Early childhood is really just about awareness," he said. "It's helping them make the connection they can make at that level so that five years from now, 10 years from now, the teacher in the classroom can help them make a higher-level connection."

Starting environmental education early can make all the difference. Lubner said, "I remember one young teacher who said, 'I teach kindergarten. What can I do?' And one of the other teachers looked at her and said, 'I'm a middle-school teacher, and what you do for those young kids, that sets the tone for what they are by the time they get to me.'"

As Lubner looks back at what changed over the span of his career, he noted a couple of changes that have benefited education—an increased emphasis on accountability and an increase in enthusiasm for outreach. As government budgets became tighter, officials wanted to be sure their dollars were having the most impact. How can you ensure that the research you're funding has a real-world impact? Outreach and education became important aspects of that accountability.

Lubner said, "When I was working, except for the last number of years, scientists did their work and assumed that somebody would recognize the value for policy decisions down the road. Then finally somebody figured out if we don't get policy experts in there who can tell the political decision makers what the benefits are for their constituents and make these social connections, they won't care about the science, no matter how good it is."

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Lubner with students in a UW-Milwaukee summer camp engaged in a navigation exercise aboard the UWM School of Freshwater Sciences R/V Neeskay.



Liz Sutton

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Updated Wisconsin Clean Marina Guidebook Now Available

2022 was a successful year for the Clean Marina Program with two new, two re-certified and two new pledged Clean Marinas—bringing the total current number of certified Clean Marinas to 22.

Julia Noordyk, Wisconsin Sea Grant water quality and coastal communities specialist, said, “The guidebook is a comprehensive tool to help marinas adopt a range of practices that create safer and healthier places to work and recreate along the Great Lakes.”

The guidebook was reviewed by members of the Clean Marina Technical Team (marina operators and staff from the Wisconsin Coastal Management Program, Wisconsin Department of Natural Resources and Wisconsin Sea Grant) and additional subject area experts and regulatory agency representatives.

Qualls said, “As the program continues to grow, the updated guidebook will be a valuable resource providing marinas with current information to implement practices and become certified. 2022 was a great year working with marinas throughout the state as they do their part to protect water quality for boaters to enjoy.”

The guidebook is available for download from the Wisconsin Clean Marina Program website, go.wisc.edu/w62790.

The Wisconsin Clean Marina Program is administered by the University of Wisconsin Sea Grant Program in partnership with the Wisconsin Marine Association, Wisconsin Coastal Management Program, Wisconsin Department of Natural Resources and Fund for Lake Michigan.—EAW

NEW VIDEO ▶



Green Infrastructure and Great Lakes Marinas: A Collaboration

Check out a new video about regional clean marinas and how they are adding green infrastructure. go.wisc.edu/63224n

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A lifetime of education— Retired outreach specialist James Lubner

He went on to explain that Sea Grant has always tried to serve as a bridge between scientists and the general public, and in the early days it was one of a very few organizations serving that purpose. He’s found that younger scientists seem to have more of a desire to reach out and get their message across to a wider audience, and he thinks the work that Sea Grant has done helped lay the foundation.

“To some extent we can take credit for showing the importance of outreach. It adds to the number of people who are actually doing it, which is a good thing,” he said.

In addition to his enduring roles at the U.S. Coast Guard Auxiliary and the local emergency planning committee, Lubner is well known for his work with the Lake Sturgeon Bowl. He brought the competition to Milwaukee—somewhat by accident. A group from

the now-disbanded National Ocean Sciences Bowl requested a meeting with J. Val Klump, formerly associate dean of the School of Freshwater Sciences. Klump was unable to attend and asked Lubner to attend instead. Lubner, Klump and UW-Milwaukee formed a strong partnership with the national organization and created the Lake Sturgeon Bowl. The program allowed Lubner to work closely with the bowl’s regional coordinators. He finished his Sea Grant career working with Liz Sutton of the School of Freshwater Sciences, regional coordinator for the bowl, and he continues volunteer work with outreach and education activities in his retirement.

“I still have an office at the School of Freshwater Sciences, so when I do a tour, I tell people I’ve had an office in that building since 1977. They haven’t thrown me out yet,” he said.—EAW



Special Librarian Anne Moser with participants at a learning station about marine debris after the performance.

LISTEN TO THIS STORY ▶▶



Wisconsin Water News
Episode 46
Marine Debris Play Debuts
In Door County
go.wisc.edu/n7yh6b



Left: Actors Neil Brookshire and Cassandra Bissell performing "Me and Dubry." Lower right: Wisconsin Sea Grant staff member Julia Noordyk and her family members Ethan (left) and Zander (center) study their scripts for audience participation. Images by Marie Zhuikov, Wisconsin Sea Grant.

Whimsical marine debris play debuts in Door County

What empowers people to help the environment and rhymes at the same time? Answer: "Me and Dubry," a half-hour, whimsical, audience-participation play about litter (marine debris) in the Great Lakes.

The play had its "world premiere" in Wisconsin's Door County last fall before a full house at the village library in Egg Harbor. Starring in it were two local actors: Cassandra Bissell and Neil Brookshire. They live just two blocks away from the library and the play was for a good cause, so lending their talents to it, "seemed like a no-brainer," said Bissell.

Brookshire said he was drawn to the play because his father was an environmental economist who specialized in water resources research and his mother worked for the U.S. Fish and Wildlife Service. "So, I have a personal family history of being aware of these kinds of issues and information. One of the reasons we live up here is we like nature. We like the water, so we naturally want to do anything we can to spread awareness to keep it clean."

The actors described the play, produced by David Daniel with American Players Theatre, as an "information play" and their parts as vaudevillian characters who banter with each other to lighten the subject matter and make the information easier for the audience to take in.

"I'm Jerry Bardo Apam Napat Sesquipedalian Cornelius Watershed Dubry," said Bissell. "And in the vaudevillian act of the duo, I'm the really long-winded talky one. And Neil is..."

"Beck," Brookshire deadpanned.

"He's much more to the point and has fewer words," Bissell said.

Brookshire highlighted the play's audience participation, which includes prewritten parts for a kayaker, young person, crane and fish. "Any time you involve an audience, people are going to remember better because it wasn't just something they observed, it was something they participated in."

The project was led by Wisconsin Sea Grant's Education Outreach Specialist Ginny Carlton, who described the variety of marine debris. "It's a solid found in our waters. It's not perhaps the most common pollutant that you think about when you think of pollution in our waters. It's not oil slicks on the water. It's these solid things that can be really tiny – like microplastics – or really big – like derelict fishing vessels."

Carlton described the performance as "Wonderful. The actors really brought it to life with all the different nuances they added."

After the play, audience members visited learning stations around the room that featured art and science activities involving marine debris. These included experiments to determine different types of microplastic pollution, a table with information about Milly Zantow, who helped create Wisconsin's recycling mandate, and a station where people could decorate their own reusable tote bag.

Carlton said the play will be performed again in the spring with the Gilmore Fine Arts Middle School in Racine and

that the script will soon be available for other groups to perform.

Besides environmental messages, the play instills a sense of hope and empowerment in the audience.

"Now we know how we can help," said Brookshire playing his Beck character. "You and I right here can always make a difference."

"You are the difference," said Bissell playing her character. "You're what our watershed needs! One who knows their actions have impacts on the land and the inland sea."

"If it's to be, it's up to me!" said Beck.

"Me and Dubry," (pronounced "debris") is part of a two-year project funded by Wisconsin Sea Grant with grants from the National Sea Grant College Program, National Oceanic and Atmospheric Administration Marine Debris Program, U.S. Department of Commerce, and the state of Wisconsin.

The project, called, "The Play's the Thing: Using Drama as an Introduction to Marine Debris Prevention and Meaningful Stewardship Experiences" harnesses the power of storytelling to engage, educate and inspire performing artists and community members to be committed stewards of their Great Lakes watershed. —MEZ



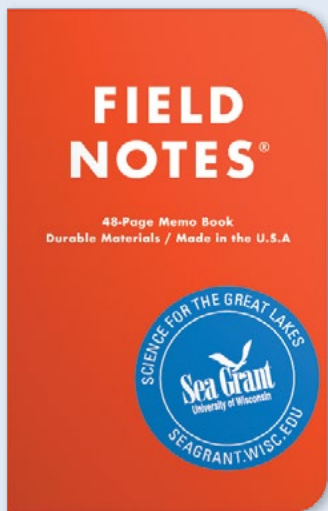
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Margo Butler

UPCOMING EVENT

Water@UW–Madison 2023 Spring Symposium

Watershed Connections: Engaging
Communities in Water Research

Tuesday, April 18 | 9:00 a.m.–12:00 p.m.

UW–Madison Gordon Dining and Event Center,
Symphony Room

The event will be held in-person and live streamed. The event will include a series of lightning talks, longer presentations and a panel discussion. It aims to bring together presenters from a range of backgrounds to speak about their experiences engaging and working alongside communities in water research. Register now go.wisc.edu/79fra2.