

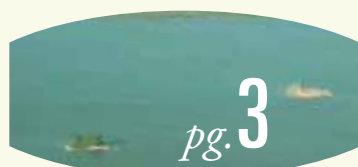
# ASC

## Aquatic Sciences Chronicle

aqua.wisc.edu/chronicle

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

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WATER RESOURCES RESEARCH

## GUIDED BY NATURE

### RADIOACTIVE AND HAZARDOUS WASTE CONTAINMENT SYSTEMS USE NATURE AS A GUIDE

Craig Benson collects a sample from a geosynthetic barrier.

**N**ot many people can say their work will last for hundreds or thousands of years, but that's the time scale Craig Benson, UW-Madison professor of geological, civil and environmental engineering, deals with every day. Benson is leading a Water Resources Institute project to evaluate the long-term performance of covers and barrier systems for low-level radioactive waste disposal and uranium mill tailings sites across the country. His revolutionary findings, which take nature into account, have gained attention or funding by the Nuclear Regulatory Commission, the U.S. Geological Survey, the U.S. Department of Energy and other high-level groups.

"I knew the findings would be important," said Benson. "But the attention they've gained has been even more than I expected. It's exciting to see your work have that level of relevance in the real world."

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# Aquatic Sciences Chronicle

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**University of Wisconsin Sea Grant Institute** is part of a national network of 32 university-based programs funded through the National Sea Grant College Program, National Oceanic & Atmospheric Administration, U.S. Department of Commerce, and through matching contributions from participating states and the private sector. [seagrant.wisc.edu](http://seagrant.wisc.edu)

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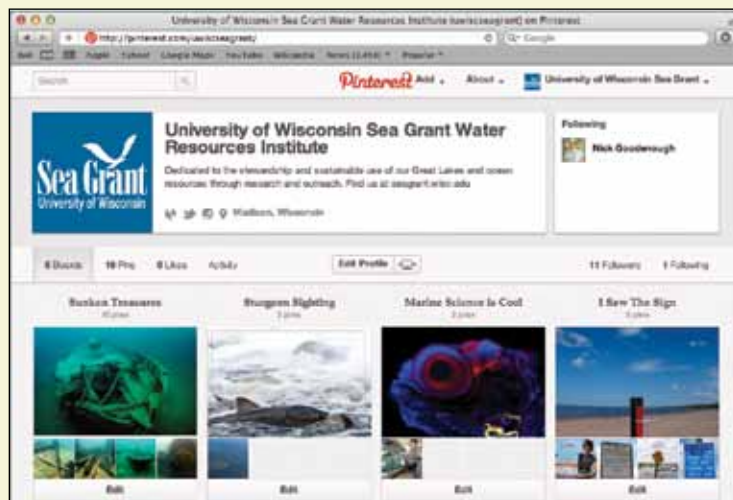


## FEATURED SOCIAL MEDIA



## AIS Facebook Page

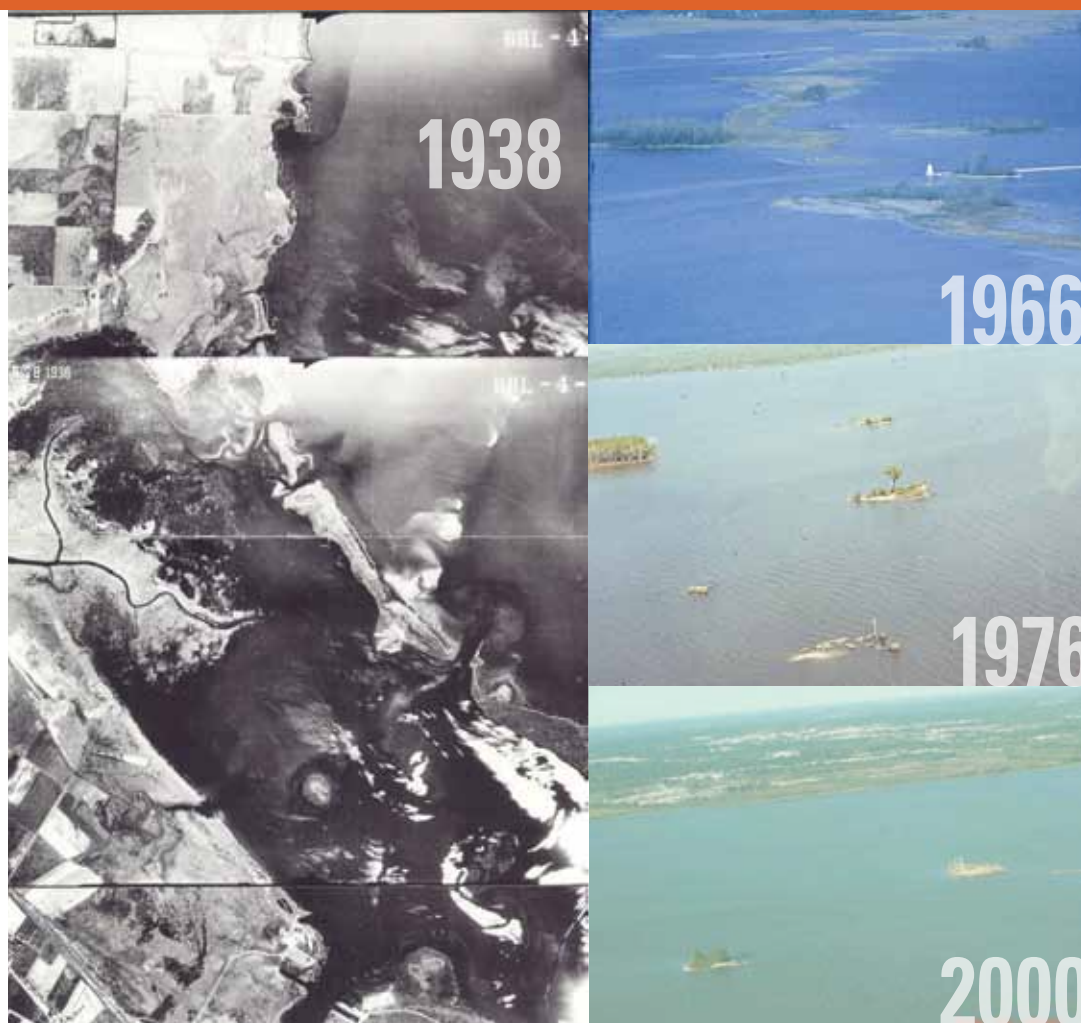
Anglers love to be out on the water during fishing season, but their boats are one of the biggest potential vectors for the spread of aquatic invasive species, from zebra and quagga mussels to Eurasian milfoil. As part of an ongoing effort to help stop aquatic hitchhikers, UW Sea Grant and its Great Lakes Sea Grant network partners have teamed up with several major fishing tournament sponsors (The Bass Federation, Cabela's MWC, the National Professional Anglers Association and Wildlife Forever) to launch a Facebook page dedicated to aquatic invasive species prevention for tournament anglers. Surf on over to [facebook.com/tourneyais](https://facebook.com/tourneyais), give the page a like, and remember the three-step process to stop invasives: Clean, drain and dry.



## Pinterest

UW Sea Grant has expanded its social media presence yet again, launching its very own Pinterest page, packed with some of the interesting images we and our friends have encountered and collected. Find us under "University of Wisconsin Sea Grant Water Resources Institute" and check out breathtaking images of Great Lakes shipwrecks, colorful zebrafish under a confocal microscope and the majestic beauty of the Lake Superior coast. Then pin and share them yourselves!





# THE CAT COMES BACK

**WHAT WAS LOST WILL BE RESTORED AGAIN**

**W**ay back in the 1960s and '70s, Cat, Willow and the Bass Islands—collectively known as the Cat Island chain—served as a beautiful and natural barrier to the waves that buffeted the harbor of Green Bay, as well as the wetland home to a long list of wildlife and plant species. At one point, 13 species of water birds had nesting colonies on Cat Island—the greatest colonial bird diversity of any island in the Great Lakes at that time.

Then Mother Nature screwed it all up.

Floods caused by historically high water levels and aggressive spring storms during ice-breakups began eroding the islands in the early 1970s. Within a decade, the entire chain was largely obliterated, submerged beneath the waves or washed away. Only a remnant of the largest island, Cat Island, remains above water. More than 40 years later, thanks to a several-decades-long collaboration between the University of Wisconsin Sea Grant Institute, Brown County Port and Solid Waste Department, U.S. Army Corps of Engineers, U.S. Fish & Wildlife Service, Wisconsin Department of Natural Resources (WDNR) and local conservation groups, the Cat Island chain is finally set to make a reconstructed comeback.

Vicky Harris, UW Sea Grant's water quality and habitat restoration outreach specialist, has been waiting a long time to see it happen. She coordinated the WDNR Remedial Action Plan for Green Bay and the Fox River from 1988 until 1999 and led a team of technical and citizen advisory committees that called for restoring the Cat Island chain. UW Sea Grant's involvement dates back even further. (See sidebar.)

"Bringing the islands back will restore both island habitat for wildlife and wetland habitat for fish," Harris said. "The chain of barrier islands is designed to shelter nearby coastal wetlands from storm damage, allowing them to recover from decades of higher-than-average lake levels."

The Cat Island chain of barrier islands in Green Bay eroded almost completely away in the 1970s. They're now set to make a reconstructed comeback—restoring habitat and providing an opportunity for beneficial reuse of uncontaminated dredged material.

*continued on page 9 >>*



## Reading About Writing

Wisconsin's Water Library has collected some great books that might just inspire some great writing.

### AMERICAN EARTH: ENVIRONMENTAL WRITING SINCE THOREAU

Edited by Bill McKibben. New York: Literary Classics of the United States; Penguin Putnam, 2008.

This anthology includes selections from more than 100 great American writers, including some of the early conservationists, such as Thoreau, Muir and Burroughs. The editor proposes that environmental writing is America's most distinctive contribution to the world's literature.

### COLORS OF NATURE: CULTURE, IDENTITY, AND THE NATURAL WORLD

Edited by Alison H Deming and Lauret E. Savoy. Minneapolis: Milkweed Editions, 2011.

This collection of work from more than 30 contributors of diverse backgrounds explores the relationship between culture and place, emphasizing the lasting value of cultural heritage.

### SCIENTIFIC WRITING 2.0: A READER AND WRITER'S GUIDE

By Jean-Luc Lebrun. Hackensack, NJ: World Scientific Publishing Co., 2011.

This book aims to help scientists write papers for scientific journals through numerous examples.

### THE BEST AMERICAN SCIENCE WRITING 2011

Edited by Rebecca Skloot, Jesse Cohen and Floyd Skloot. New York: Ecco, 2011.

The 2011 edition of this annual series is a comprehensive view of 2011's scientific developments.

### THE BEST AMERICAN SCIENCE AND NATURE WRITING 2011

Edited by Mary Roach. Boston: Houghton Mifflin Harcourt Publishing Co., 2011.

The "Best American Series" is the premier annual showcase for the country's short fiction and nonfiction. Each volume's series editor selects notable works from hundreds of magazines, journals and websites.

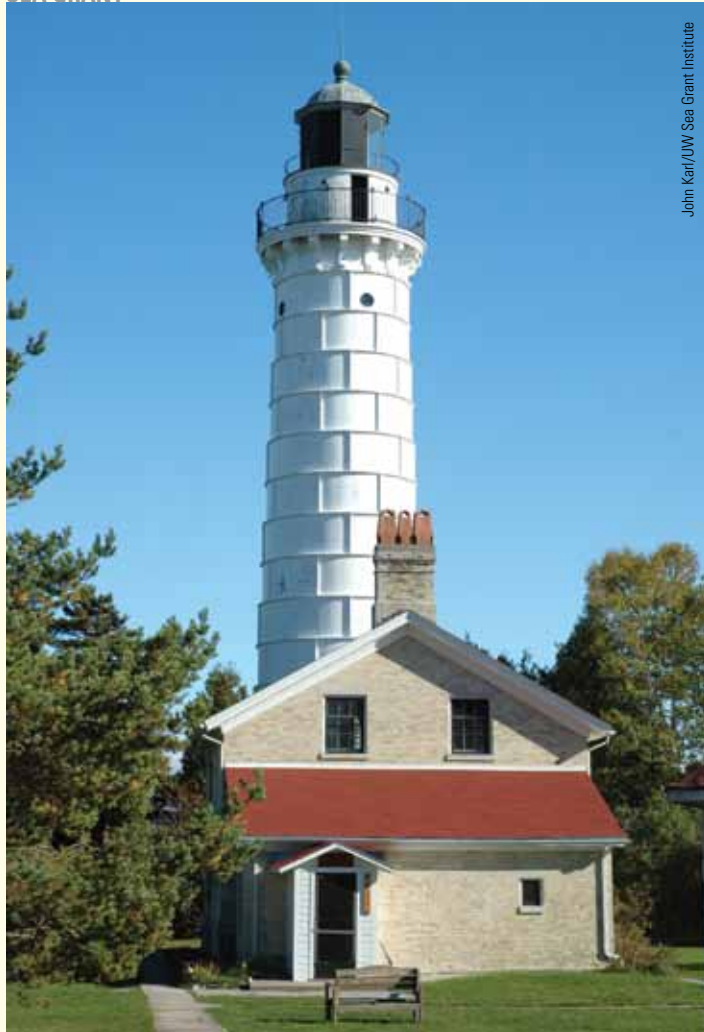
### WILDBRANCH: AN ANTHOLOGY OF NATURE, ENVIRONMENTAL, AND PLACE-BASED WRITING

Edited by Florence Caplow and Susan A. Cohen. Salt Lake City: University of Utah Press, 2010.

This collection of work by more than 50 contributors offers the perspectives of field biologists, hunters, farmers, environmental educators, academics, writers and artists, among others.

To see more books on this topic, visit the recommended reading list at [aqua.wisc.edu/channel/23](http://aqua.wisc.edu/channel/23).

Anyone in Wisconsin can borrow these books. Just email [askwater@aqua.wisc.edu](mailto:askwater@aqua.wisc.edu).



John Karl/UW Sea Grant Institute

## Seeking Input on the 2014-18 Wisconsin Sea Grant Strategic Plan

Wisconsin Sea Grant is formulating a strategic plan for 2014-18. The plan will become the blueprint for our research, education, outreach and program administration. It all begins with a bottom-up process in which we invite broad participation. Weigh in about any gaps in the current approach to:

- Promoting the health of coastal ecosystems
- Applying research and best practices leading to wise decision-making on coastal planning and management
- Increasing fish stocks in a sustainable manner
- Building marine-science literacy

Email your thoughts to [seagrantplan@aqua.wisc.edu](mailto:seagrantplan@aqua.wisc.edu).

We also will have the opportunity to make some adjustments to our current plan, so feel free to offer comments regarding it. Visit [bit.ly/eWPAKU](http://bit.ly/eWPAKU).

## Wisconsin Sea Grant Project Assistant off to the Mariana Islands

When **Robbie Greene** came to UW-Madison, he probably never thought it would lead to a job on a far-flung tropical archipelago with active volcanoes, but that's just what happened. Greene, a landscape architecture major who had concentrated on urban agriculture, had not done much coastal work prior to coming to Madison. However, he always had a strong interest in the coastal environment, so when the chance to work with Wisconsin Sea Grant's David Hart on the Wisconsin Coastal Atlas arose, Greene jumped at the chance.

For the Atlas, a project to develop a Web portal that contains data about the Lake Michigan and Lake Superior coasts of Wisconsin, Greene helped gather data involving beach access and hazards along the coasts. He also worked on other projects, such as developing digital elevation models for different Great Lakes harbors. Along the way, he met Kathy Johnson, a NOAA Coastal Management Fellow hired by Wisconsin Sea Grant.

"She described the fellowship as a wonderful opportunity," said Greene. "I saw her network with different folks all over Madison. So it was in the back of my mind as a possibility."

When Greene graduated with a master's degree in landscape architecture this January he applied for the fellowship and moved to Tacoma, Wash., to pursue a coastal management job there in case the fellowship didn't work out. Fortunately, it did. Greene recently returned from a fellow-matching workshop hosted by the NOAA Coastal Services Center in Charleston, S.C. During the week-long event, 11 candidates went through interviews and presentations for six fellowship positions.

Greene likened the stress of the situation to a reality TV show or a fraternity rush. "A few people were having trouble sleeping during the week," he said. Greene went into the workshop hoping for a match on the Washington coast, but that changed. "It became



Robbie Greene (middle) at the fellow-matching workshop with Rachel Zuercher with the Commonwealth of the Northern Mariana Islands Coastal Resources Management Office (left) and fellowship mentor Dave Benavente (right).

Hansje Gold-Krueck/NOAA Coastal Services Center

apparent I was going to be a good match with the Mariana Islands program," Greene said. This was because the work he would be doing for them closely matched the work he had done for Wisconsin Sea Grant.

Greene moves his possessions into storage, says goodbye to friends and relatives, and leaves for Saipan Island at the end of July for two years. The group of 15 islands is officially a commonwealth of the United States, as is Puerto Rico. With the excitement in his voice borne of a new adventure, Greene admitted, "I have some learning to do before I go out there, and I've been told the office dynamic is a bit different than what I'm used to."

We hope your adjustment to island time goes well, Robbie.

## Protecting the Lakes, One Wetsuit at a Time



In 2007, I was balancing a summer research internship in the Wisconsin Northwoods while attempting to remain a competitive triathlete. Things were going well; I was getting miles in on the bike, running in the morning, and I had a pristine lake, Roach Lake, to swim in. While I managed to do some science while I was there, I was really

focused on training. I had it all planned out on my calendar, and one June weekend included a Saturday morning swim in Roach Lake, a quick trip south to Lake Winnebago for a Sunday race, and then a Monday afternoon swim.

Unfortunately, science got in the way of this weekend of racing, and I ended up spending most of the weekend collecting Chinese mystery snails. It wasn't until five years later that I realized how catastrophic that plan could have been for my immaculate Roach Lake.

The reason why? Lake Winnebago is a host to a handful of aquatic invasive species (AIS), and wetsuits are one way AIS can move around. Had I gone to that race, I would have thrown my sandy wetsuit in a plastic bag and kept it there until I had to pull it on, still damp, for my Monday afternoon swim. On that wetsuit could have been zebra mussel larvae, Eurasian water milfoil fragments, or even a fish virus that I could have introduced to my pristine Roach Lake.

To help prevent such a catastrophic event from happening elsewhere, I'm working to prevent the spread of AIS so that everyone's favorite open water swim stays as perfect as ever.

Excerpt from a guest column written by Tim Campbell, UW Sea Grant's aquatic invasive species specialist, which appeared in the nationally distributed USA Triathlon newsletter, April 2012. To read the full story, visit [aqua.wisc.edu/channel/27](http://aqua.wisc.edu/channel/27).





It's been said that the average person changes careers multiple times during a lifetime. Mary Lou Reeb just packed all of hers into the same organization.

Reeb, 63, has spent the bulk of her career with the University of Wisconsin Sea Grant Institute and Water Resources Institute (WRI), first as UW Sea Grant's finance and budget specialist (seven years), then UW Sea Grant assistant director and education coordinator, and, for the last twelve years, also assistant director for the WRI. At the end of June, she officially retires from an organization she's spent the last 36 years serving.

As she approaches her latest career milestone, she's put in mind of the famous quote by the late Steve Jobs: "You can't connect the dots looking forward. You can only connect them looking backwards."

"When I thought about it, I realized this could have been a plan if I had made a plan," said Reeb. "Instead, you just fall into something."

# Mary Lou Reeb Retires

Reeb helped build a system to track the hundreds of graduate students who have worked with UW Sea Grant over the last 44 years.

Facing page: (left to right) Mary Lou Reeb at the Sea Grant offices during the 1991 Rose Bowl; Reeb at the Sea Grant booth at 1979 Wisconsin State Fair; Reeb with co-workers. From left, James "Fritzby" Grandt, information systems engineer, Terri Liebmann, assistant to the director/accounting, Reeb, Song Jiang, administrative assistant, Dan Marklein, finance and grants administrator. Photo by Rich Dellinger.

That something had its origins in Green Bay. Reeb's family was a stoic combination of old-school fishermen and Menonites. Inspired by the public-service vibe of the Kennedy era and her family's emphasis on education—her mother, one of 13 children, went back to get her GED as an adult—Reeb graduated from UW-Madison with a degree in education.

And then she decided to become an accountant.

"At that time, the job market for teachers was tight, and I thought, everyone needs someone who can count money," said Reeb. "This is just the start. That was the logic of it."

Her first impression of UW Sea Grant left a little something to be desired. When she began in 1976, the program was housed in, of all places, the UW's former poultry science building at 1800 University Ave. The environs were cramped, fragrant and less than ideal.

Dan Marklein, who began his own extended UW Sea Grant career as Reeb's assistant, still remembers the look of horror on her face when she finally saw her office. "The ceiling had exposed plumbing and the drain from the upstairs toilet passed directly over her office," he recalled. "Every flush was announced with a gushing sound of running water right overhead. To this day I still wonder if she had asked where she'd be sitting whether the whole course of our history would have changed."

As assistant director, Reeb moved to the building's second floor. "My fire escape was a rope tied to my radiator. Luckily, I was young and reasonably fit. I thought, 'At least they gave me a strong rope.'"

Marklein and Reeb would spend the next three-plus decades as colleagues and friends, growing and maturing with the program. Today, he's the one serving as the program's fiscal officer. He remembers the two spending long nights



crunching omnibus budget numbers with clunky calculators and number-two pencils, the threat of a single accounting error sending the process all the way back to square one.

He also recalls Reeb's reaction to his discovering what he thought was an error in a rosy financial report. Even though the report eventually proved accurate, Reeb didn't hesitate to take the heat from UW Sea Grant's current director Bob Ragotzkie.

"Ragotzkie could be a little excitable. I expected to see her body come falling past my first floor window," joked Marklein.

Her colleagues credit her with keeping the program's financial ship in working order, integrating Wisconsin's Water Library into the program and helping set up story hours at the Boys and Girls Club on Madison's Allied Drive. But Reeb's crowning accomplishment may well be creating and piloting the Madison JASON program, the local version of marine explorer/Titanic discoverer Bob Ballard's national tele-science program in 1995. For a couple of weeks each spring, Reeb, Marklein and UW Sea Grant staffers would gather Madison teachers and up to 300 fourth- through ninth-grade students together to watch and interact with scientists via a two-hour broadcast and participate in their own science experiments.

It wasn't always a smooth process. In the beginning, JASON broadcasts were staged in the sometimes beer-soaked rooms of UW-Madison's monolithic Union South, an arrangement that meant that broadcast equipment had to be taken down and stored each night.

"That was crazy," Reeb recalled. "It was always in the back of our minds—is our connection going to go up again the next day?" At one point, an elementary-school-aged student raised his hand to ask Reeb if she were Mrs. Bob Ballard.

After a rocky start, Reeb ended up going out to the Promega Corporation—an unofficial first contact between the UW and the Fitchburg biotech company—and convinced them to let her use their state-of-the-art auditorium to host the JASON

program free of charge. The program was wildly successful. It would run until 2006, involving a total of 495 teachers (83 percent of them women) and 22,000 students.

The teamwork that fueled the Madison JASON project is one of the things that kept Reeb at UW Sea Grant for the bulk of her career.

"Quite honestly, it's the team we've assembled and the fact that they have chosen to stay with us," said Reeb. "When someone has come into our organization, they've essentially become a lifer. We're doing creative projects to engage them, use their talents and make it a benefit to them personally and well as professionally. That, to me, is the greatest accomplishment."

In that same spirit, Reeb appreciates what each of UW Sea Grant's three directors have brought to the program in addition to their scientific accomplishments—

Bob Ragotzkie's focus on administrative structure, Anders Andren's emphasis on technology and now Jim Hurley's efforts to integrate graduate students into the program.

With Marklein's help, Reeb built the framework that will facilitate the latter, creating a system to track the hundreds of graduate students who have worked with UW Sea Grant over the last 44 years. The database, first begun by staffers using a manual typewriter in 1968, has allowed the program to survey its students about the impacts they've had on the world.

Like many UW Sea Grant staffers who've retired in recent years, Reeb plans to remain attached to the program. While she'll spend the bulk of her time training her papillons—Tucker and Keeper—to become therapy dogs for assisted-living facilities, libraries and hospitals, she also plans to continue volunteering with Wisconsin's annual Lake Sturgeon Bowl competition.

"It's nice to be able to love a program and still be able to leave it," said Reeb. "I like to recall the advice my mother always gave me: Stay young. I take that to mean intellectually young. Things will always work out and doors will always open."—ARC







Joseph Sciala/UW-Madison

## GUIDED BY NATURE

*continued from page 1*

Students map the features of a surface barrier on a waste containment site.

The project builds on a previous study of the field performance of cover systems for waste containment. The issue, as Benson described it, is that, “We are designing systems to last a millennium and have little understanding about how they evolve over time from an engineering perspective.”

Benson said the cover is the most important feature in terms of long-term performance and protection of the public and the environment from the wastes the sites contain. An army of graduate students and post-docs, along with a consortium of federal agencies and private-sector companies, joined the project, which involved constructing, monitoring and dissecting different barrier and cover systems in facilities across the U.S. While some aspects of the covers behaved as expected, researchers found that others changed dramatically over time due to local environmental conditions like rain and erosion.

For Benson’s current project, researchers dug into the test facilities to assess how the various barriers fared over time. One lesson they learned is that the more incongruently a system was engineered compared to the local environment, the more quickly natural processes would work to make it congruent with the environment. Systems built more in harmony with the local environment changed less quickly.

“Physical, biological and chemical properties change over time,” Benson explained. “We should expect engineered systems that are at or near the surface to do the same thing.” As the systems get

wet and dry, freeze and thaw, feel the effects of plant roots and insects building homes in them, changes are going to happen, Benson said.

The other lesson they learned is despite where in the country containment facilities were built, their end conditions varied little after a certain time.

“Although some systems changed more rapidly than others, their final states were remarkably similar,” Benson said. This involves the rate at which liquids precipitate through the containment cover and into the underlying waste.

Benson said the findings jibe with what Canadians and Australians are learning. “We are all finding that nature is this big equalizer,” Benson said. “We used to assume that our engineering properties were functioning the same over time and they aren’t.” This has caused state agencies, the Nuclear Regulatory Commission and other authorities to think about containment system design differently. The project’s final report ([aqua.wisc.edu/channel/28](http://aqua.wisc.edu/channel/28)) was delivered this past January and is causing a philosophical change in the industry.

“We recommend now that engineers approach design in a way that mimics the natural environment,” Benson said. “If the natural system in the area where you’re locating a facility is not conducive to long-term control of fluids and gasses, maybe we ought not put the waste in that environment.”

Benson said that bio-mimicking facilities are more sustainable and require less maintenance, which means they are less costly in the long run. —MEZ



# THE CAT COMES BACK

*continued from page 3*

Now that lake levels are nearly a foot below long-term average, the coastal wetlands are beginning to return.

It isn't often that a restoration project manages to address multiple major environmental issues. In addition to restoring habitat, the islands provide an opportunity to beneficially reuse more than 2 million cubic yards of non-contaminated dredged material culled from the outer channel of Green Bay, beyond Longtail Point.

"We're very excited. This will allow for 20 years of disposal of dredged material from the bay," said Steven Check, project manager with the U.S. Army Corps of Engineers responsible for helping the project. "It will also lower the cost for dredging the harbor."

On June 1, construction crews began creating an access road that leads out into the water where the old island chain used to exist. By 2014, a spine constructed of quarried stone will be in place, serving as a barrier to waves lapping in from the northeast. Stone ribs jutting from the structure's southwest side will create confinement zones for dredged sand, effectively recreating the islands.

Great Lakes Restoration Initiative (GLRI) funds have been appropriated to start this project; however, future funding is dependent on contract bids and the availability of funds appropriated by Congress.

The project will use only non-contaminated dredged material taken from the bay, not sediment from the harbor or river, material that is much more likely to have been contaminated by wastewater discharges and land runoff. Sediments from the outer bay navigation channel are mostly fine sand and contain very low or non-detectable levels of contaminants. In the past, dredged material from the bay was deposited into the Bayport Confined Disposal Facility on the south shore of the bay. That facility is designed to handle moderately contaminated material. Material that the Corps dredges from the harbor and inner bay channel will continue to be placed into the Bayport facility. Dredging for PCB clean-up is not conducted by the Corps and that material goes to specially engineered landfills.

Gene Clark, UW Sea Grant's coastal engineering outreach specialist, also assisted the project as a technical reviewer, making sure the team understood the ramifications of the project design.

"I was sort of the bridge between the hard science and the model," he said.



## GREAT MINDS THINK ALIKE

The Cat Island restoration has an additional UW Sea Grant connection: According to Harris, the original idea came from former UW Sea Grant Coastal Engineering Specialist Phil Keillor. Back in the late 1970s, Harris remembers brainstorming with Keillor about ways to reduce the wave environment and sediment resuspension in the bay. "Every time the wind blows," said Harris, "it turns the water brown." Before his retirement, Keillor participated with the advisory team and worked with the U.S. Army Corps of Engineers' staff.

Harris is well aware that reconstructing the islands is only the first step in an ongoing process of wetlands and wildlife restoration. While the rock spine will provide some immediate wave-dampening benefits to coastal wetlands, the three separate islands in the chain will be built one at a time, over a period of at least 20 years. Area agencies and local conservation groups may be enlisted to help develop final habitat features and manage plant and wildlife communities that establish themselves on the sand islands. A big challenge may be preventing foreign invasive plant species from driving out native vegetation.

"We'll definitely need to manage Phragmites and continue cormorant controls," said Harris. The WDNR has committed to limiting the numbers of cormorants nesting on Green Bay to the same levels currently set in a cormorant management plan. "The island habitat will evolve naturally over time, but Mother Nature may need some help from time to time."

After 40-plus years of planning and designing, these seem like workable challenges.

"I'd be really happy to see the first island finished," said Harris, who's nearing the end of a career that has spanned the life of the Cat Island project. "And to know that I had a hand in the wildlife restoration. But we're being realistic—the restoration is likely to be a 20-year process." —ARC

From left: Janet Smith, chair of the Lower Green Bay Remedial Action Plan Biota and Habitat Work Group; Dean Haen, interim director of Brown County Port and Solid Waste Department; Lt. Col. Mike Derosier, commander of the U.S. Army Corps of Engineers, Detroit District; and Vicky Harris.



John Karl / UW Sea Grant Institute

Visitors to Science Expeditions were drawn to the fish in the aquaponics display. Nearly 3,000 people attended UW-Madison's event.

## Fish for the Future on Display at Science Expeditions Daylong Event

In April, the University of Wisconsin-Madison threw open the doors of its labs and invited in the rest of the state for some hands-on science through a daylong event called Science Expeditions.

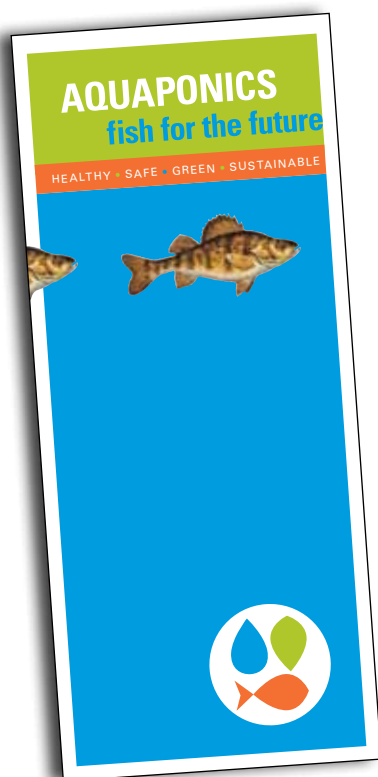
Among the hundreds who RSVP'd "yes" was KarieAnn Zeinert from Neenah who made the hour-and-a-half-long drive from the Fox River Valley to learn more about aquaponics by visiting UW Sea Grant's display.

"It was the display that brought me down from the Fox Valley and the rest of the exhibits were a bonus! I saw the excitement and wonder in the children's eyes that I would hope to see in my classroom," said the 4th grade teacher at St. Margaret Mary Elementary School. "I would appreciate the opportunity to pilot a program that could help us grow more of our school lunch program's fruits, vegetables and fish."

Aquaponics is a sustainable fish/salad greens production system. The fish fertilize the plants and the plants clean the water for the fish in a closed-loop system. Hundreds of people stopped by to see the dozen or so perch that cruised the large tank, and the greenery topping it.

"We had a lot of people interested in the exhibit," John Karl said. "People loved seeing the live fish and many were intrigued that you could produce two kinds of food through this symbiotic system."

Karl is a science communicator with Wisconsin Sea Grant and was one of the exhibit's organizers. He also shared a brochure with event-goers, [aqua.wisc.edu/channel/29](http://aqua.wisc.edu/channel/29) so the learning could continue.



OUTREACH





Will Ramas/Consortium for Ocean Leadership

## Wisconsin Team Wins National Ocean Sciences Bowl in Continuing Streak

### COACH INSTRUMENTAL IN STUDENTS' SUCCESS

Paul Herder, a former Earth science teacher in Marshfield, Wis., has led a four-year winning reign for Marshfield High School in the National Ocean Sciences Bowl (NOSB). The event is a competitive ocean sciences quiz that challenges high school students from across the country.

The four-person team from Marshfield, Wis., recently won the national tournament in Baltimore. Not only did the students complete rapid-fire buzzer questions, they conducted a mock expert science briefing involving an ocean bill that's before Congress.

The secret to their success? "We've had some brilliant kids who have dedicated themselves to working hard and they enjoy their teammates' company," Herder said. Herder, who has retired from teaching and works for a mineral exploration company, hopes to help Marshfield with a fifth win. "The students want me to continue to coach, so if I'm permitted, I definitely want to coach again."

Marshfield has won each year that Kathleen Meehan Coop has directed the NOSB. Only one other team has done that in the event's 15-year history. She said the NOSB is designed to be fun and get students excited about the ocean.

For their prize, the landlocked Marshfield students will get a taste of the ocean—a trip to Hawaii to meet marine researchers. "While they are exciting trips to exotic locales, they have a strong science focus, which the students love," Meehan Coop said.

Wisconsin Sea Grant supports the Lake Sturgeon Bowl—the Wisconsin state competition. In the event that Marshfield does not win the state contest next year, Herder said they still plan to be involved in the national competition because it will be held close to home in Milwaukee, the first time the NOSB will be held in a Great Lakes state. Meehan Coop said that hosting the event in Milwaukee will expose students from ocean states to the freshwater Great Lakes.

The Marshfield High School National Ocean Sciences Bowl winning team 2012 Award Trip to Hawaii (left). From left to right (above): Coach Paul Herder, Christine Tyler, Laura Josephson, Rahul Pathak, Jack Gellerman, Michael Josephson, Cindy Knapman from the University of Hawaii Sea Grant and Robert Gagosian, president and CEO of the Consortium for Ocean Leadership.

EDUCATION



University of Wisconsin Aquatic Sciences Center  
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# Aquatic Sciences Chronicle

a joint newsletter from UW Sea Grant and UW Water Resources



## CALENDAR OF EVENTS

**AUG. 8, 2012**

**UW-Madison Day at the Wisconsin State Fair**

West Allis, Wis.

[wistatefair.com/index.html](http://wistatefair.com/index.html)

**OCT. 29 – 31, 2012**

**Upper Midwest Invasive Species Conference**

La Crosse, Wis.

[umisc2012.org/index.html](http://umisc2012.org/index.html)

**OCT. 10 – 12, 2012**

**Wisconsin Association for Floodplain, Stormwater and Coastal Management Conference**

Madison, Wis.

[wi.floods.org/Annual\\_Conference.htm](http://wi.floods.org/Annual_Conference.htm)

**NOV. 4 – 7, 2012**

**The Geological Society of America Annual Meeting**

Charlotte, N.C.

[geosociety.org/meetings/2012/](http://geosociety.org/meetings/2012/)

**OCT. 25 – 27, 2012**

**Wisconsin Association of Environmental Educators Fall Conference**

Egg Harbor, Wis.

[bit.ly/LmnUM8](http://bit.ly/LmnUM8)

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## Don't Wait for Sea Grant and Water Resources Institute News

News from the Sea Grant and Water Resources institutes doesn't stand still while waiting for the next issue of the Aquatic Sciences Chronicle. There is always something going on and you can stay on top of it by signing up for email updates. Visit [seagrant.wisc.edu/subscribe](http://seagrant.wisc.edu/subscribe) for Sea Grant email alerts and [wri.wisc.edu/subscribe](http://wri.wisc.edu/subscribe) for Water Resources Institute email alerts.

