University of Wisconsin
Sea Grant Institute

2012-14

Biennial Report

LETTER FROM THE DIRECTOR

CHANGE IS ALL AROUND US. As John F. Kennedy said, "Change is the law of life. And those who look only to the past or present are certain to miss the future."

There has been a lot of change affecting Wisconsin Sea Grant recently. As I look through our accomplishments for 2012-14, I can't help but think about it. Retirements, new hires, new projects, new investigators, new challenges, new responses.

I'm included in that list of changes, as I had the honor of being named the third director of our Sea Grant program in May 2012. I'm so proud to be associated with such an outstanding staff and some of the most creative researchers around. They devote their energies to understanding the changes, complexities and pathways of responses in the Great Lakes. They do this on behalf of the 35 million U.S. and Canadian citizens living, working and recreating in the region, people whose culture and livelihood are tied to the inland seas that hold 95 percent of our country's freshwater resources.

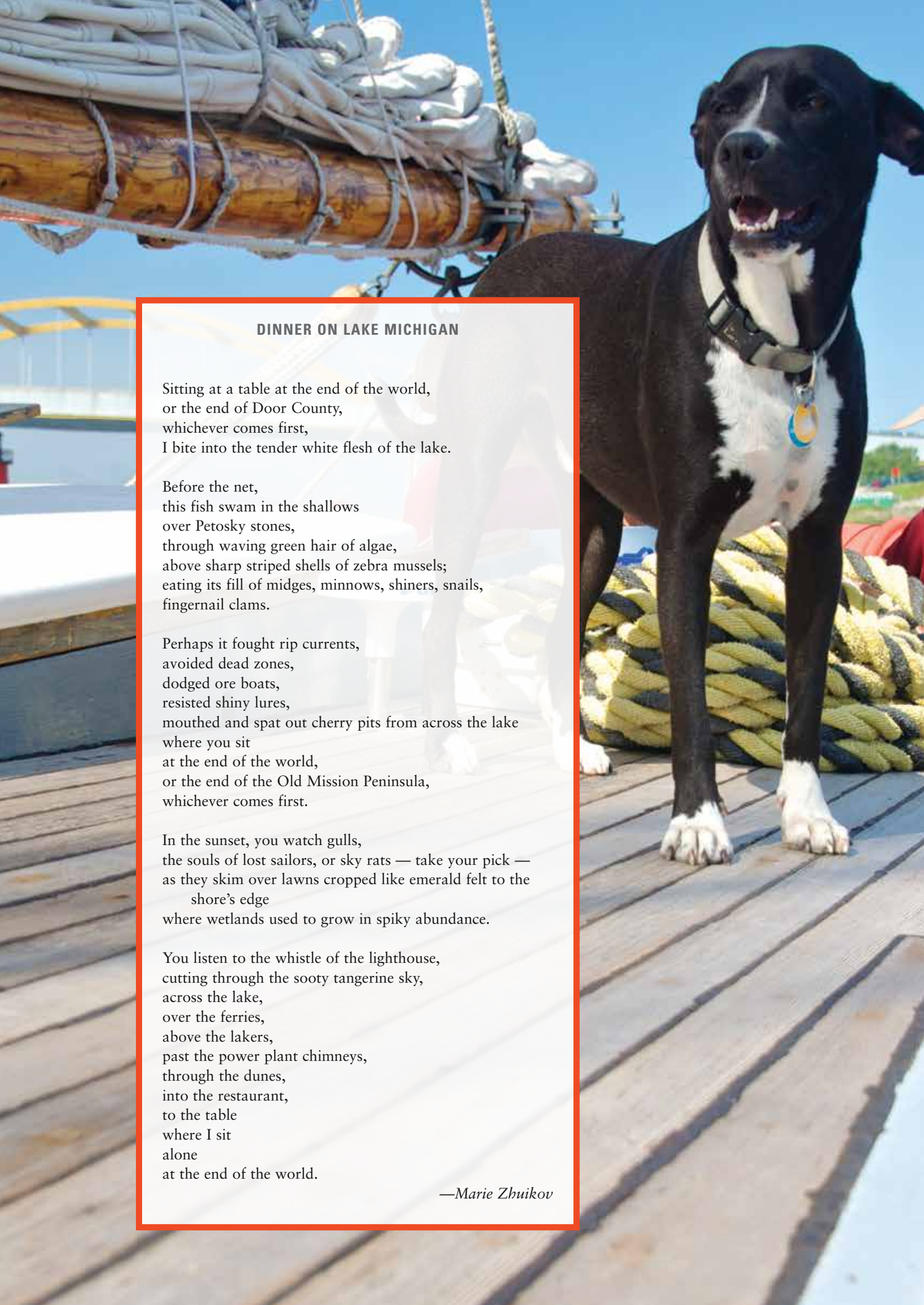
Through all these changes, there has been one constant. Our program has continued to maintain excellence in research, outreach and education, and we remain dedicated to stewardship and sustainable use of our Great Lakes resources. We are called. We respond.

I hope you will agree when looking through this report. It allows us to celebrate the science we support, extension services we provide and partnerships we value. It celebrates innovative approaches and the excitement of forward-looking responses.

This report also presents the intersection of Great Lakes science and the art and literature it inspires.

I appreciate your being a part of our efforts as we respond to change and play our part in shaping a bright Great Lakes future. To learn more about our efforts, visit s**eagrant.wisc.edu** or engage in our social media channels.

James P. Hurley
Director



DINNER ON LAKE MICHIGAN

Sitting at a table at the end of the world,
or the end of Door County,
whichever comes first,
I bite into the tender white flesh of the lake.

Before the net,
this fish swam in the shallows
over Petosky stones,
through waving green hair of algae,
above sharp striped shells of zebra mussels;
eating its fill of midges, minnows, shiners, snails,
fingernail clams.

Perhaps it fought rip currents,
avoided dead zones,
dodged ore boats,
resisted shiny lures,
mouthed and spat out cherry pits from across the lake
where you sit
at the end of the world,
or the end of the Old Mission Peninsula,
whichever comes first.

In the sunset, you watch gulls,
the souls of lost sailors, or sky rats — take your pick —
as they skim over lawns cropped like emerald felt to the
shore's edge
where wetlands used to grow in spiky abundance.

You listen to the whistle of the lighthouse,
cutting through the sooty tangerine sky,
across the lake,
over the ferries,
above the lakers,
past the power plant chimneys,
through the dunes,
into the restaurant,
to the table
where I sit
alone
at the end of the world.

—Marie Zhuikov

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On the deck of the 1800s replica three-masted schooner the S/V *Denis Sullivan,* which has been used by Sea Grant education staff when conducting science cruises. Brody is the ship's mascot, logging countless hours on the waves after leaving his home berth in Milwaukee.

CALL AND RESPONSE

University of Wisconsin
Sea Grant Institute

2012-14

Biennial Report

STAKEHOLDERS CALL, WE RESPOND

THE GREAT LAKES ARE THE LARGEST FRESHWATER SYSTEM ON EARTH. These glacial leave-behinds stun in size, features and possible uses. The lakes have also inspired artistic expression through the ages.

In 1855, Henry Wadsworth Longfellow wrote the classic "The Song of Hiawatha," sketching the wonders of pristine Lake Superior and the sweeping lives of the mythical Hiawatha, Minnehaha and Nokomis.

A century later, one of Wisconsin Sea Grant's staff members and a lifelong resident of Lake Superior's shoreline has been moved to compose her own inland seas poetry. Find Marie Zhuikov's "Dinner on Lake Michigan" on page 2 and "Two Sisters" on page 8.

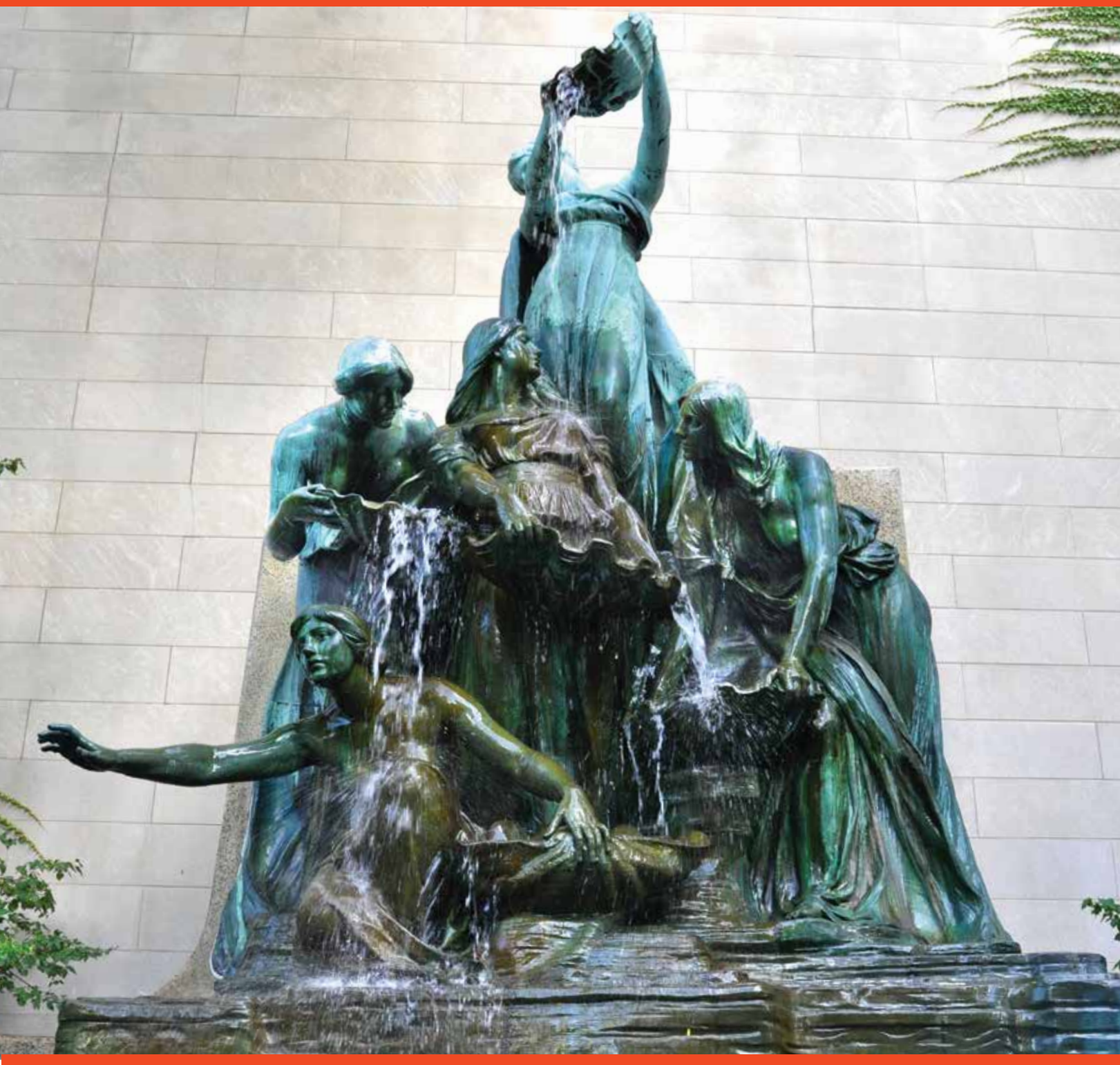
Through another medium is another tribute to the lakes. Sculptor Lorado Taft's Fountain of the Great Lakes illustrates the system's connectedness. Completed in 1913, it now stands in a garden of the Art Institute of Chicago. Women representing each lake hold bronze shells and pour water, which spills and bubbles into a central pool. The piece is a result of a fateful conversation between the artist and the influential Daniel Burnham, a mover-and-shaker of, among other things, the 1893 World's Columbian Exposition in Chicago. A hundred years ago, the pair lamented the lack of any artwork dedicated to the region's natural assets.

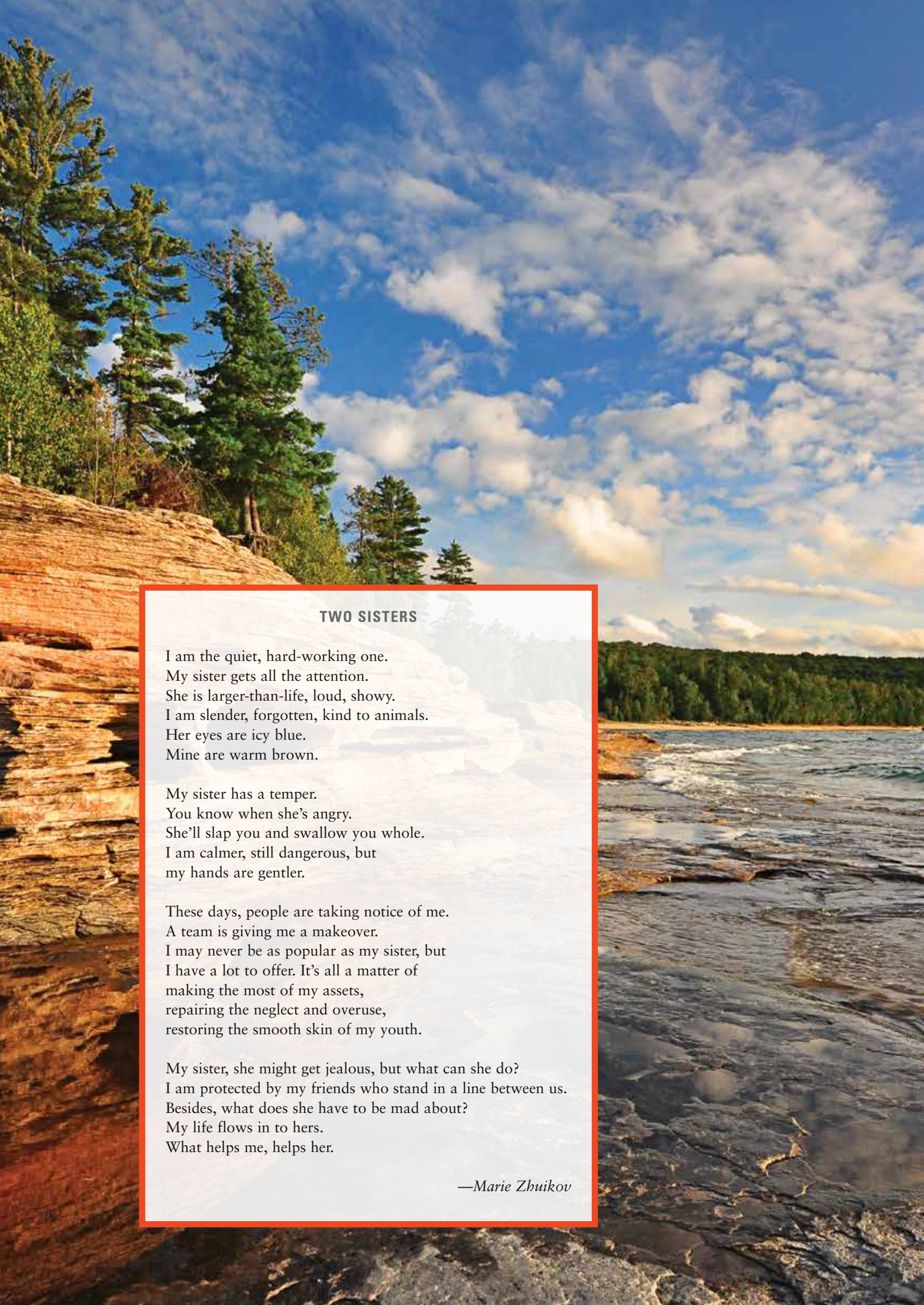
Gordon Lightfoot's "The Wreck of the Edmund Fitzgerald" hardly needs an introduction. It is a contemporary cultural touch point. In song, it conveys the deadly side of the largest of the Great Lakes, Lake Superior.

Other musical compositions, called sea shanties, originated on ocean voyages and consisted of a verse sung by one sailor and a chorus for the rest of the men — termed a "call-and-response" pattern. These songs served to unite a crew and seemingly lessened the strenuous physical challenges of sailing the Great Lakes.

Sea Grant has also integrated a call-and-response pattern, uniting its version of a crew to carry out its mission: supporting scientific research,

The Fountain of the Great Lakes is an artistic representation of Lake Superior — the woman holding the top-most basin — and lakes Michigan, Huron, Erie and Ontario. Through the ages, the lakes have served as muse for sculpture, poetry and song. The lakes have also had their own more prosaic needs. When a call is issued on their behalf, Sea Grant responds with science-based information and actions.





TWO SISTERS

I am the quiet, hard-working one.
My sister gets all the attention.
She is larger-than-life, loud, showy.
I am slender, forgotten, kind to animals.
Her eyes are icy blue.
Mine are warm brown.

My sister has a temper.
You know when she's angry.
She'll slap you and swallow you whole.
I am calmer, still dangerous, but
my hands are gentler.

These days, people are taking notice of me.
A team is giving me a makeover.
I may never be as popular as my sister, but
I have a lot to offer. It's all a matter of
making the most of my assets,
repairing the neglect and overuse,
restoring the smooth skin of my youth.

My sister, she might get jealous, but what can she do?
I am protected by my friends who stand in a line between us.
Besides, what does she have to be mad about?
My life flows in to hers.
What helps me, helps her.

—Marie Zhuikov

Top photo from left, David Hart, Wisconsin Sea Grant assistant director for extension; Angela Pierce, natural resources planner for the Bay Lake Regional Planning Commission; and Julia Noordyk, Wisconsin Sea Grant coastal storms specialist. Second photo, Anna Wilson, former Sea Grant-funded student and now a microbiologist with the Wisconsin Veterinary Diagnostic Laboratory; Kathy Kurth, a virologist with the Wisconsin Veterinary Diagnostic Laboratory; and Tony Goldberg, UW-Madison Veterinary School epidemiologist.

continued from previous page

education and outreach to foster the wise use, conservation and sustainable development of Great Lakes and coastal resources.

In practice, a single Great Lakes stakeholder or an ensemble deliver a call from the coastal businesses and communities ringing the lakes. Sea Grant responds. It offers its own call to hundreds of the best scientific minds on Wisconsin's campuses of higher learning. What empirical explorations best respond to these stakeholder calls? On average in each two-year research cycle, 60 proposals are submitted. Then, Sea Grant issues another call to experts across the nation to review the research proposals. Which proposals are scientifically sound? Which proposals will provide the most relevant results to meet the call expressed by stakeholders? Eventually, an average of 15 projects are selected and investigations commence.

Simultaneously, Sea Grant's extension services are fully engaged. Specialists in aquaculture, aquatic invasive species, coastal engineering, social science, geographic information systems, education, coastal storms, water quality and fisheries take existing and emerging knowledge, along with best-practice recommendations, and offer it to those coastal individuals and stakeholders.

It is not poetry, sculpture or song but when the call-and-response technique of Sea Grant and its stakeholders is at its best, as it has been throughout 2012, 2013 and 2014, it can be a thing of beauty on behalf of the Great Lakes. The freshwater system is a powerful muse indeed.

This photo, researcher Harvey Bootsma and his graduate student Caroline Mosley. Bottom photo from left, Lake Sturgeon Bowl competitor Luke Turner, bowl coordinator Liz Sutton, coach and teacher Heather Ebbot, team member Odell Chalmers, scientist and mentor Carmen Aguilar, coach and teacher Rochelle Sandrin and team member Donavin Griffin.

CALL

Help local communities understand, use and protect coastal ecosystems and infrastructure.

BRING EVERYONE TO THE PLANNING TABLE

RESPONSE

WISCONSIN SEA GRANT HAS FORGED NUMEROUS COLLABORATIVE RELATIONSHIPS WITH organizations to better identify and meet resiliency planning and decision-making needs. One example is the long-term relationship with the Bay-Lake Regional Planning Commission (RPC) based in northeastern Wisconsin. That organization is one of nine RPCs in the state. Under state statutes, planning commissions are charged with providing intergovernmental, comprehensive planning and coordination for the physical, social and economic development of their regions.

In the past, the two organizations have worked to deepen the understanding of Lake Michigan-bound land through the Wisconsin Coastal Atlas (wicoastalatlas.net). Sea Grant's Assistant Director for Extension David Hart is a key player in formulating, building and populating the online atlas. It is an enabling platform that catalogs, integrates, presents and shares distributed sources of geospatial data about the Great Lakes' coasts of Wisconsin in conjunction with the evolving sciences supporting the use of that data to guide decisions about preserving and protecting coastal resources.

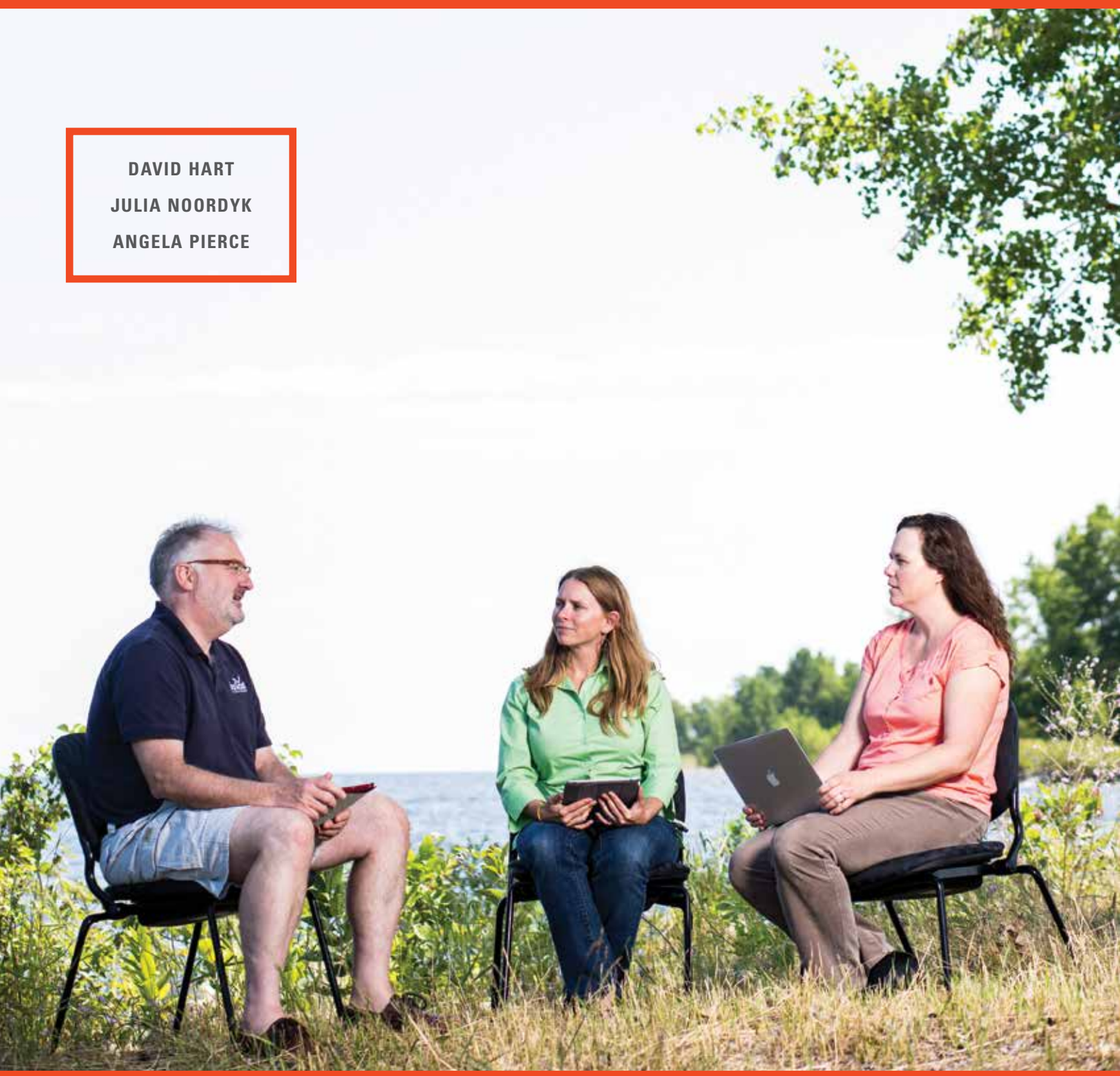
For its part, the planning commission has a rich inventory of digital land-use mapping and wanted to make it more accessible to coastal planners. Sea Grant added that digital data to the Wisconsin Coastal Atlas in many formats, including those used by popular virtual globes such as Google Earth. This effort is consistent with the ideals of the growing open data movement, as well as the federal government's initiative to share science data more effectively.

A second Sea Grant-planning commission collaboration involves the use of a software tool known as Tipping Points and Indicators. The tool helps identify the thresholds where land-use change degrades aquatic ecosystems and helps communities step back from a tipping point. Hart and colleague Julia Noordyk, the coastal storms specialist, along with Angela Pierce with the commission, acquired cutting-edge "table PCs" to engage policymakers with the tipping points tool. The hardware is mounted on stands that tilt from a vertical presentation mode to a horizontal one. Sitting around a table PC encourages a more collaborative planning process, offering exciting opportunities to make plans come alive.

Pierce, Hart and Noordyk coordinated a demonstration of the tipping points material in Marinette. The city is home to a major shipbuilding company and 12,000 people along the western shore of Lake Michigan's Green Bay at the mouth of the Menominee River. It is also a U.S. EPA-designated Area of Concern, which means multiple environmental factors and beneficial uses have been compromised by contamination.

The demonstration generated feedback so tipping points software developers could make refinements, and ensured a richer experience for coastal communities that access it in the future. The tipping points tool was developed by Illinois-Indiana Sea Grant and is also being used throughout the entire Great Lakes Sea Grant network.

DAVID HART
JULIA NOORDYK
ANGELA PIERCE



ANNA WILSON

TONY GOLDBERG

KATHY KURTH

CALL
Do something about fish that are dying because of viral hemorrhagic septicemia.

FISH IN DISTRESS; SEA GRANT RELIEF

RESPONSE

CLASSIFIED AS AN INVASIVE SPECIES SINCE ITS ARRIVAL IN THE GREAT LAKES IN 2005, the viral hemorrhagic septicemia virus possibly hitchhiked in ballast water in ocean-going vessels arriving via the St. Lawrence Seaway.

The virus does not affect people or pets, but it can infect at least 28 species of fish and cause them to bleed to death. It has been detected in a variety of species in Wisconsin's Lake Michigan waters and in lake herring from Wisconsin waters of Lake Superior.

Thanks to Wisconsin Sea Grant funding, a University of Wisconsin-Madison research team created two tests for the virus that causes the illness. The team included Tony Goldberg, UW-Madison profesor and epidemiologist; graduate student and Wisconsin native Anna Wilson; and Kathy Kurth, virologist with the Wisconsin Veterinary Diagnostic Laboratory.

They came up with serological diagnostic tests that are faster and nonlethal, as opposed to current testing options. The researchers are engaged in ongoing conversations with the Wisconsin Alumni Research Foundation to patent the tests. In the meantime, the discoveries are generating income — and protecting fish stocks — as the tests are performed for a fee.

The first test reveals infected fish in a location previously free of infection. The second test is for a fish population that has been exposed to the virus and determines how susceptible the fish are to future disease, in essence, whether the first outbreak provided antibodies so fish could withstand a future outbreak.

Scientists also found that the virus may continue to circulate even when fish are not dying off. This is important to communicate to anglers and boaters who need to abide by regulations to prevent the spread of disease even when there is no evidence of active virus.

The new research offers evidence that ongoing regulations are necessary to protect valuable fish — giving resource managers the justification they need for potentially unpopular precautions such as prohibiting the transport of live bait between water bodies.

Sea Grant researchers are working with the Wisconsin Department of Natural Resources to formulate policies based on these scientific findings, including regular monitoring in some previously affected water bodies. And, Wisconsin anglers can be assured their fishing spots are being monitored with the most up-to-date methods to assess the deadly fish disease.

CALL

Increase our understanding of the estimated 950 trillion nonnative Dreissenid mussels that carpet the bottom of Lake Michigan. They seem to be having an effect on the area's economy, recreational opportunities and public health.

LAKE MICHIGAN FLEXES WITH MUSSELS

RESPONSE

WITH FUNDING FROM WISCONSIN SEA GRANT, HARVEY BOOTSMA, A LIMNOLOGIST AT THE School of Freshwater Sciences, University of Wisconsin-Milwaukee, developed a mussel metabolism model to measure the organisms' oxygen consumption and phosphorous excretion. These are both processes that have dramatically altered Lake Michigan's nearshore and open waters because the mussels trap energy close to shore, rather than allowing it to circulate throughout the entire lake to nurture organisms up and down the food chain.

Bootsma said the model's usefulness will be to predict how the lake will respond to longer-term variations, such as climate change and phosphorous loading. 1970s models have guided phosphorous loading and other management options, but now the nonnative mussels have thrown those approaches out of whack.

Those who manage the fisheries, coastal wastewater-treatment facilities and beaches are struggling to determine how the lake will respond to longer-term conditions. This updated model will inform:

- The Wisconsin Department of Natural Resources' stocking practices, daily catch limits and harvest quotas. In Wisconsin waters, 70 commercial fishers ply their trade and net catches worth $5 million annually. Recreational fishermen reel in fish such as salmon and trout. Local economies, in turn, reel in the proceeds of a healthy sport fishery. A recent Sea Grant study placed the value of Wisconsin's Lake Michigan recreational anglers at nearly $25 million annually.

- The Milwaukee Metropolitan Sewerage District's management of water quality in a coastal region inhabited by nearly 1 million people. Bootsma meets regularly with those managers to address phosphorus-loading decisions, how intense rainstorms resulting from climate change are affecting what gets washed into the lake in episodic bursts, and what is stormwaters' fate in a mussel-laden environment.

- Beach managers' knowledge of Cladophora red-alert times and locations. This nuisance algae flourishes in areas invaded by the mussels, which filter the water and allow more sunshine that fosters growth. When the algae uproots, it washes ashore to rot with a tremendous smell that drives down property values and discourages recreational uses.

Cladophora piles pose a health hazard as well since they harbor contaminants and bacterial growth, sometimes leading to botulism colonies. Botulism has caused massive avian die-offs in the lake. Dead birds may contain toxin levels that could harm other animals, including pets. In rare instances, people can be affected by this strain of botulism. The National Park Service and the U.S. Geological Survey are using the model to determine the causes of avian botulism outbreaks.

Work on the Bootsma model has also been supported by the Illinois-Indiana Sea Grant program, Great Lakes Restoration Initiative, National Park Service and Illinois Natural History Survey.

HARVEY BOOTSMA


LUKE TURNER
DONAVIN GRIFFIN
ODELL CHALMERS
TECH
FOOTBALL

CALL

Provide a challenging learning environment to foster the next generation of marine-science leaders.

FROM HIGH SCHOOL TO THE HIGH SEAS

RESPONSE

ONE WAY WISCONSIN SEA GRANT IS RESPONDING TO THIS CALL IS THROUGH A long-term collaboration with the organizers of the Lake Sturgeon Bowl. It is the regional qualifying round for the National Ocean Sciences Bowl, which is managed by the Consortium for Ocean Leadership and represents leading oceanographic institutions, universities and aquaria.

As part of the regional competitions and national bowl, high-schoolers compete in rapid-fire buzzer matchups, respond to longer-form questions and conduct a mock ocean science policy briefing.

Sea Grant provides funds for team training, study material through its more than 30,000-volume water library and volunteers for the event itself, which takes place in February each year.

The collaboration has produced four national champions in the years 2009 through 2012; curriculum, teacher development and inspiration for marine-science learning at the 25 participating high schools from around the state; and crucial exposure to coastal science for five schools in underserved areas of Milwaukee.

Students enrolled in these five schools live and get their education less than a mile from Lake Michigan, yet rarely visit the lake, much less understand its ecosystem, and economic and sociological importance. These diversity teams receive additional resources and training through a program called the Ocean Odyssey, which uses a scaled approach to prepare for the Lake Sturgeon Bowl competition.

Further, it extends their knowledge of the Great Lakes and oceans, and allows them to participate in Lake Michigan field sampling. One of the Ocean Odyssey teams has competed at the Lake Sturgeon Bowl's higher levels, winning at least half of its matches. That team is made up of Luke Turner, Donavin Griffin and Odell Chalmers from Bradley Tech High School.

As the National Ocean Sciences Bowl is itself striving to add diversity to each regional competition site, the Wisconsin initiative has become a national model for building that capacity and sparking young minds.

WISCONSIN SEA GRANT INSTITUTE MISSION STATEMENT

Wisconsin Sea Grant supports scientific research, education and outreach to foster the wise use, conservation and sustainable development of Great Lakes and coastal resources. We strive to provide unbiased science-based information to Great Lakes coastal residents, resource managers and other stakeholders. Our audiences include specific stakeholders and agencies, state and federal officials, the general public, the UW community and the National Sea Grant Program.

Review the 2014-17 Wisconsin Sea Grant College Program Strategic Plan and the work plan for the same period. go.wisc.edu/26ed50

Connect With the University of Wisconsin Sea Grant Institute
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Milwaukee Field Office
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(414) 382-1723

Superior Field Office
14 Marina Drive
Superior, Wis. 54880
(715) 392-3246

STUDENTS

Wisconsin Sea Grant's commitment to inspiring and supporting the next generation of marine-science leaders is strong. Education extension reaches young learners through preschool story hours, formal programming such as Grandparents University or thanks to the rich assets of Wisconsin's Water Library. Research grants support students at all levels in higher education. Fellowships leaven instruction with real-world experience.

154 Number of undergraduate, graduate and post-doctoral students supported by Sea Grant funds

9,712 Number of K-12 students reached

28 Number of curricula developed

Dean John A. Knauss Marine Policy Fellowship
This is a nationally competitive one-year fellowship that offers the opportunity to work with a federal agency or lawmaker in Washington, D.C.

Caroline Mosley, Kristina Surfus and **Catherine Simons** were selected in 2014 and will serve in 2015

Sarah Wilkins, 2014

Jennifer Phillips, 2013

Wisconsin's Water Library contains more than 30,000 volumes of water-related information about the Great Lakes and the waters of Wisconsin. The library includes a curriculum collection, dozens of educational videos, children's collection, and more than 20 journals and 100 newsletters. In 2012-14, 2,800 materials were circulated.

LEADERSHIP

Sea Grant has a five-person management team and is also guided by an external advisory council, which provides policy input within established institutional goals, approves the overall program plan and budget, and participates in program planning.

The council is appointed by the UW-Madison chancellor. Consisting of state leaders from academia, state and local government, industry and the public, the council brings a wide variety of viewpoints to the program and helps ensure the program's accountability to Sea Grant constituencies.

The Wisconsin Sea Grant Committee on Outreach and Education was formed to provide additional guidance on the direction of the program's advisory services, education and communications efforts.

Sea Grant Management Team

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Sea Grant Advisory Council

James P. Hurley (Ex-officio), director, UW Sea Grant, University of Wisconsin-Madison

Kristine Andrews, assistant vice president, federal relations, University of Wisconsin System, Madison, Wis.

Thomas J. Blewett, former program director, University of Wisconsin Cooperative Extension, Madison, Wis.

Carrie Bristol-Groll, owner, Stormwater Solutions Engineering, Hartford, Wis.

Steve Brueske, meteorologist in charge of the Milwaukee/Sullivan National Weather Service Forecast Office, Sullivan, Wis.

Sharon Cook, owner, Sharon D. Cook, LLC, Milwaukee, Wis.

Sheila Coyle, member, Wisconsin Women Forward for Environmental Education Foundation, Bayfield and Madison, Wis.

Michael Friis, program manager, Wisconsin Coastal Management Program, Madison, Wis.

David Garman, dean, School of Freshwater Sciences, University of Wisconsin-Milwaukee

H. J. (Bud) Harris, professor emeritus, Natural and Applied Sciences, University of Wisconsin-Green Bay

Al House, vice-president, Apostle Islands Sport Fisherman's Association, Washburn, Wis.

Larry J. MacDonald, owner, Cooper Hill House Bed & Breakfast and mayor, Bayfield, Wis.

John R. Sullivan, bureau director, Integrated Science Services, Wisconsin Department of Natural Resources, Madison, Wis.

Larry Wawronowicz (chair), natural resource director, Lac du Flambeau Band of Lake Superior Chippewa Indians, Lac du Flambeau, Wis.

Sea Grant Committee on Outreach and Education

Carmen Aguilar, associate scientist, School of Freshwater Sciences, University of Wisconsin-Milwaukee

Bill Brose, principal, JJR, Madison, Wis.

Ron Bruch, fisheries director, Wisconsin Department of Natural Resources, Madison, Wis.

Jeff DuMez, geographic information specialist, Land Information Office, Brown County, Green Bay, Wis.

Karen Green, educator, Milwaukee Public Schools

Lee Haasch, owner, Haasch Guide Service, Algoma, Wis.

Al House, vice-president, Apostle Islands Sport Fisherman's Association, Washburn, Wis.

John Kennedy, former environmental manager, NEW Water, Green Bay, Wis.

Pat Robinson, freshwater estuary specialist, University of Wisconsin-Green Bay Extension

Angie Tornes, senior planner for rivers, trails and conservation, National Park Service, Milwaukee, Wis.

Larry Wawronowicz, natural resource director, Lac du Flambeau Band of Lake Superior Chippewa Indians, Lac du Flambeau, Wis.

PARTNERS

Wisconsin Sea Grant values its partners, large and small. The results that flow from these collaborations spread benefits locally, regionally and nationally. Some recent partners include:

State, Federal, Tribal and Provincial Government Agencies

AmeriCorps

Bad River Tribe of Lake Superior Chippewa

Center for Great Lakes Literacy

Department of Fisheries and Oceans Canada

Federal Emergency Management Agency

Fond du Lac Band of Lake Superior Chippewa

Great Lakes Fishery Commission

Ho-Chunk Nation

Illinois Coastal Management Program

Illinois Department of Natural Resources

Illinois Environmental Protection Agency

Illinois Geological Survey

Illinois Natural History Survey

Indiana Coastal Management Program

Indiana Department of Natural Resources

Iowa Department of Natural Resources

Iowa Department of Transportation

Julius Kühn-Institut, Federal Research Centre for Cultivated Plants

Lake Superior National Estuarine Research Reserve

Library of Congress

Los Alamos National Laboratory

Marine Advanced Technology Center

Menominee Indian Tribe of Wisconsin

Michigan Coastal Management Program

Michigan Department of Environmental Quality

Michigan Department of Natural Resources

Minnesota Coastal Management Program

Minnesota Department of Natural Resources

Minnesota Department of Transportation

National Park Service

National Science Foundation

National Weather Service

National Wildlife Health Center

New York Department of Environmental Conservation

NOAA-Climate Program Office

NOAA-Coastal Services Center

NOAA-Great Lakes Environmental Research Laboratory

NOAA-National Marine Estuarine Research Reserve

NOAA-National Marine Fisheries Service

NOAA-National Marine Sanctuary Program

NOAA-National Weather Service

Office of the President of the United States

Ohio Department of Natural Resources

Oneida Nation of Wisconsin

Ontario Ministry of Natural Resources

Oregon Coastal Management Program

Pennsylvania Department of Environmental Protection

Pennsylvania Fish and Boat Commission

Red Cliff Band of Lake Superior Chippewa

St. Croix Chippewa Indians of Wisconsin

U.S. Army Corps of Engineers

U.S. Bureau of Indian Affairs

U.S. Coast Guard

U.S. Coast Guard Auxiliary

U.S. Department of Agriculture

U.S. Department of Transportation

U.S. Environmental Protection Agency

U.S. Fish and Wildlife Service

U.S. Forest Service

U.S. Geological Survey

Wisconsin Coastal Management Program

Wisconsin Department of Health Services

Wisconsin Department of Natural Resources

Wisconsin Department of Tourism

Wisconsin Department of Transportation

Wisconsin Historical Society

Wisconsin State Cartographer's Office
Wisconsin State Laboratory of Hygiene

Academic

Arizona State University
Bowling Green State University
Bemidji State University
Central Michigan University
Consortium of Universities for the Advancement of Hydrologic Science
Cooperative Educational Service Agency 6
Harvard Medical School
Loyola University
Marquette University
Medical College of Wisconsin
Michigan State University
Michigan Technological University
Milwaukee Public School System
North Carolina State University
Northland College
Notre Dame University
St. Norbert College
The Ohio State University
Oregon State University
Pennsylvania State University
Purdue University
State University of New York-Brockport
State University of New York-Oswego
University Corp. for Atmospheric Research
University of Florida
University of Illinois at Urbana-Champaign
University of Maine
University of Miami
University of Michigan
University of Minnesota-Duluth
University of New Hampshire
University of North Carolina
University of Puerto Rico
University of South Florida
University of Southern California
University of Texas
University of Vermont
Uppsala University
Woods Hole Oceanographic Institution
Yale University

Local, Municipal and County Agencies

Bay-Lake Regional Planning Commission
Bayfield County, Wis.
Brown County, Wis.
Brown County Land and Water Conservation Department
Carlton County, Minn.
Chicago
City of Ashland, Wis.
City of Au Train, Mich.
City of Bayfield, Wis.
City of Duluth, Minn.
City of Green Bay, Wis.
City of La Pointe, Wis.
City of Madison, Wis.
City of Manitowoc, Wis.
City of Marinette, Wis.
City of Milwaukee
City of Port Washington, Wis.
City of Racine, Wis.
City of Sheboygan, Wis.
City of Superior, Wis.
City of Two Rivers, Wis.
City of Washburn, Wis.
Dane County, Wis.
Door County, Wis.
Douglas County, Wis.
East Central Wisconsin Regional Planning Commission
Fox-River Valley County Land Conservation Departments
Fox River Navigational System Authority
Madison Metropolitan School District
Milwaukee County, Wis.
Milwaukee Metropolitan Sewerage District
NEW Water
Northeast Wisconsin Stormwater Consortium

Northwest Wisconsin Regional Planning Commission

Outagamie County, Wis.

Ozaukee County, Wis.

Sheboygan County, Wis.

Southeastern Wisconsin Regional Planning Commission

Washington Island, Wis.

Wauwatosa Recreation Department

Businesses and Nongovernmental Organizations

16th Street Community Health Center

Abbey Marina

Alliance for the Great Lakes

American Meteorological Society – DataStreme Earth's Climate System

American Planning Association

Aquafauna Bio-Marine Inc.

Association of Floodplain Managers

Association of Public and Land Grant Universities

Bayfield City Dock

The Bass Federation

Bell Aquaculture

Bird Studies Canada

Blue Iris Fish Farm

Centers for Ocean Sciences Education Excellence-Great Lakes

Centerville Cares

Centro Hispano

Chequamegon Bay Area Partnership

Chippewa-Ottawa Resource Authority

City of Port Washington Marina

Clean Wisconsin

Coolwater Farms

Council of Great Lakes Governors

Discovery World

Eco Modeling

Ecosystem Based Management Tools Network, NatureServe

Eden Gardens\Living Waters

Escuela Verde

Federation of Great Lakes Sport Fishing Clubs

Fort Fremont Marine

Fox Brothers Charter Service

Fox-Wolf Watershed Alliance

Friends of the Manitowoc River Watershed

Fund for Lake Michigan

Gaslight Pointe Marina

Gathering Waters

Great Lakes Beach Association

Great Lakes Commission

Great Lakes Ecological Services

Great Lakes Indian Fish and Wildlife Commission

Great Lakes Information Network

Great Lakes Observing System

Great Lakes Shipwreck Preservation Society

Great Lakes Research Foundation Inc.

Greater Milwaukee Committee

Groundwork Milwaukee

Growing Power, Milwaukee and Chicago

Harbor Centre Marina

Harbor Club Marina

Herrick Foundation

Hunger Task Force

Illinois Marine Towing

International Aquaponics Association

International Coastal Atlas Network

Jerry's Dock

John G. Shedd Aquarium

Kindra Marine Terminal Inc.

Kingdom Animalia Exotic Animal Rescue

Lakefront Brewery

Lake Michigan LaMP Forum

Lake Michigan Stakeholders

Lakeshore Towers Marina

Manitowoc Marina

McKinley Marina

Manitowoc Maritime Museum

Masters Walleye Circuit

Material Service Corp.

Michigan Small Harbors Coalition

MillerCoors Foundation
Milwaukee River Basin Area of Concern
Milwaukee Kayak Co.
Milwaukee Public Museum
Milwaukee Riverwalk
Milwaukee Water Council
National Education Association Foundation
National Professional Anglers Association
Natural History Museum of Los Angeles County
The Nature Conservancy of Wisconsin
Nestegg Marine
NEW North
Neville Public Museum
Oshkosh Public Museum
Outagamie Museum
Outpost Natural Foods
Pet Industry Joint Advisory Council
Pikes Bay Marina
Princess Marissa Charters
Racine Riverside Marine
Racine Yacht Club
Riveredge Nature Center
River Alliance of Wisconsin
Rogers Street Fishing Village
St. Croix Marina
Salmon Specialist
Schlitz Audubon Nature Center
Seafood Center
Seagull Marina
Skipper Bud's Marinas
South Bay Marina
South Shore Park Watch
South Shore Yacht Club
Southeastern Wisconsin Watershed Trust
Southport Marina
Star Prairie Trout Farm
Sturgeon for Tomorrow
Superior Public Museums
Susie-Q Fish Co.
University Consortium for Geographic Information Science
Urban Ecology Center
Urban Farm Project
Van's Catch Sport Fishing
Village of Egg Harbor Marina
Washburn Marina
Water Action Volunteers
West Shore Marine
Wildlife Forever
Willy St. Co-op
Wisconsin Academy of Sciences, Arts and Letters
Wisconsin Alumni Association
Wisconsin Commercial Ports Association
Wisconsin Green Industry Federation
Wisconsin Harbor Towns Association
Wisconsin Marine Association
Wisconsin Maritime Museum
Wisconsin Underwater Archeology Association

From 2012-14, Wisconsin Sea Grant-funded researchers published in peer-reviewed journals. Sea Grant-funded Ph.D. students, and outreach advisory services and communications staff members produced varied products that transferred scientific information.

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AWARDS

2014 RESEARCH TO APPLICATION AWARD from the Sea Grant Association presented for work to stem accelerated corrosion of the Port of Duluth-Superior infrastructure

2014 PRESIDENT'S AWARD from the Sea Grant Association presented to James P. Hurley

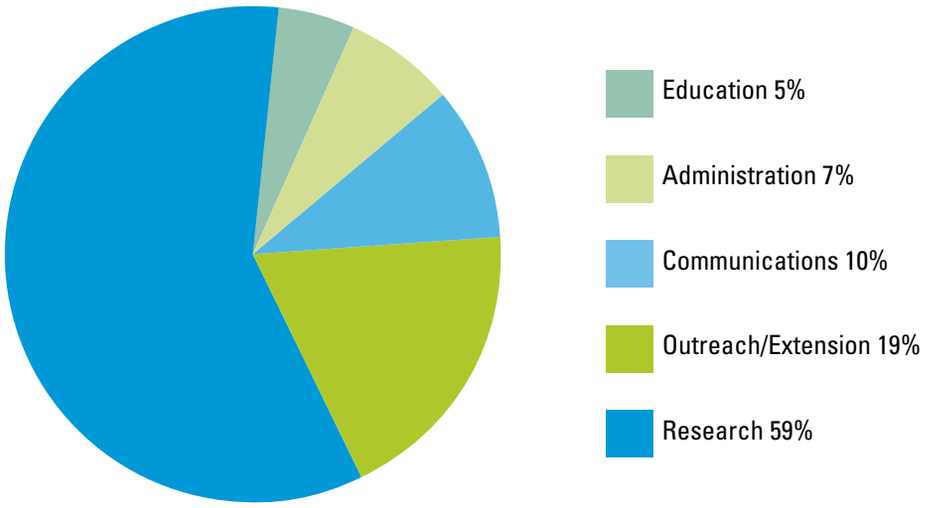
2013 EXCELLENCE IN PUBLIC HEALTH RESEARCH AWARD from the Wisconsin Public Health Association presented to Fred Binkowski

Highlights for 2012-14

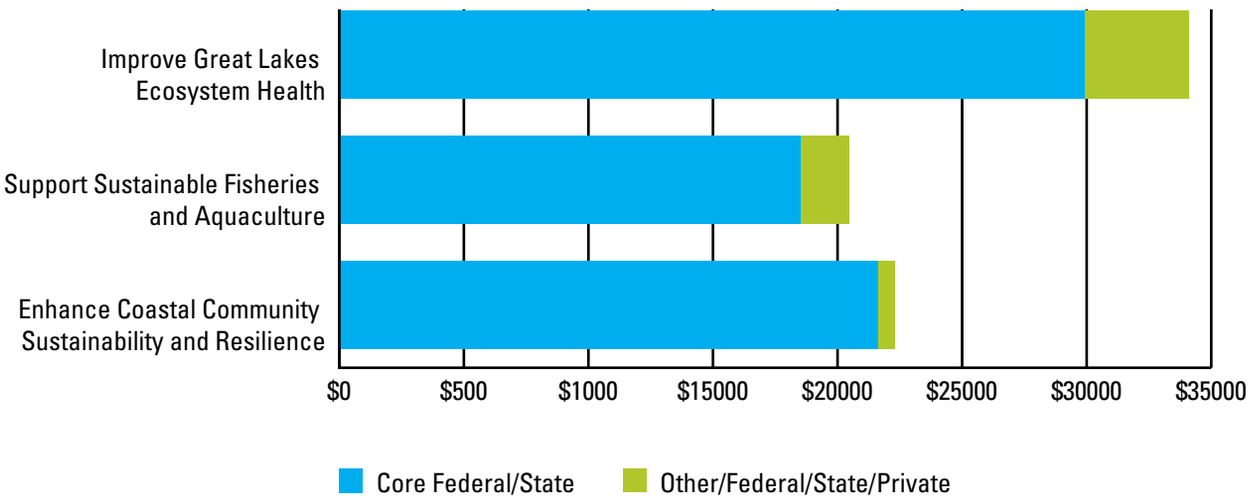
- 33 research projects on five campuses involving 31 lead project investigators (for more on the research projects, see **go.wisc.edu/77xyyj**)
- Five new certified clean marinas
- 191 extension events reaching 8,010 people
- 6,261 volunteer hours facilitated
- 1,250 acres of coastal wetlands and ecosystems restored
- 3,377 jobs created/retained thanks to Sea Grant expertise
- Four coastal hazard resiliency trainings in cities with a combined population of 1.5 million people
- One Wisconsin shipwreck added to the National Register of Historic Places, for a total of 52, far more than any other state. Preservation of maritime culture is a collaboration between Sea Grant and the Wisconsin Historical Society.

BUDGET OVERVIEW

Funding allocation 2012-14



Focus areas 2012-14



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