

Biennial Report
2016-18



Sea Grant
University of Wisconsin



Collaboration



ON THE COVER: Technicians at both the University of Wisconsin-Stevens Point Northern Aquaculture Demonstration Facility supported by Sea Grant and Superior Fresh, an aquaculture operation in northwest Wisconsin raising fish and salad greens in an aquaponics system, share the same goals — careful animal husbandry, efficient systems and an economically viable operation to meet consumers' desire for delicious fish. Through collaboration, that's happening.

FROM THE DIRECTOR

“You can’t cross the sea merely by standing and staring at the water,”

wrote Indian poet Rabindranath Tagore. And neither can we protect our beloved inland seas without a coordinated program of research, education and outreach. Intent without action is fruitless.

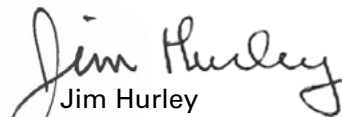
Wisconsin Sea Grant’s efforts are truly more than intent. They are a team endeavor as our staff collaborates with local officials, resource managers, community leaders, K-12 educators, students and members of the general public to share what we’ve learned about our state’s precious water resources.

What’s more, the varied audiences we serve know that Wisconsin Sea Grant is responsive — ready to listen to their needs and help them with the challenges they face. It is truly a two-way exchange, grounded in solid science, based at Wisconsin’s world-class universities.

Over more than four decades, we have built a reputation as a trusted broker of information. When people see the Wisconsin Sea Grant name, they know that they can count on unbiased information applied to the sustainable use of Great Lakes resources. Sea Grant helps Wisconsinites — and those who come here for work or play — protect their homes, safeguard groundwater, grow businesses, understand how the Great Lakes shape our history and culture, and much more.

In this report, you’ll get a taste of our activities over the past two years. It is a diverse portfolio that demonstrates how Sea Grant affects the lives of people around the Great Lakes. Please get in touch if you have comments or questions about our work. I value your collaboration.




Jim Hurley
Director



\$41 million
in economic
impact



From the Director 1

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A Tapestry of Collaboration on Behalf of the Great Lakes

The flying shuttle, invented in England in 1733, significantly increased textile production and spawned the Industrial Revolution. The shuttle's warp and weft of threads yielded the same woven product as in the past, but at a mechanized pace.

What is the relevance of 18th-century British ingenuity to Wisconsin's contemporary communities hugging the Great Lakes? Warp and weft.

It is an apt analogy. Just as threads are pulled efficiently into an over-and-under and top-to-bottom method to create clothing, blankets or rugs to meet people's needs so too does the Wisconsin Sea Grant College Program employ warp-and-weft expertise to serve needs — Great Lakes' needs.

Sea Grant weaves the strands of research and threads of collaborators, including fellow Sea Grant programs, local planners or resource managers, to create a strong and vibrant tapestry. This tapestry then spreads wide to touch stakeholders who live, work and play in Wisconsin's coastal communities.



From the terrestrial — examples featured here include green infrastructure plantings and drainage — to the aquatic, Sea Grant collaborates with others to promote the sustainable use of water resources.



1,647
acres of
habitat
restored





From Stormy to Solutions

The Coastal Storms Program is a regional effort funded by the National Oceanic and Atmospheric Administration (NOAA) to make coastal communities more hazard ready in the face of storms and a changing climate. Under the leadership of Wisconsin and Minnesota Sea Grant programs and partnering with the full Great Lakes Sea Grant Network, the Coastal Storms Program tackled some important goals: improving dangerous current and wave observations, modeling, forecasting/warnings and risk communication; facing the impacts of stormwater on natural resources and promoting management practices; enhancing shoreline mapping, visualization and management; and increasing hazard mitigation and community resilience.

Sea Grant awarded a series of resiliency sub-grants to fellow Great Lakes Sea Grant programs. In doing so, Wisconsin's extension specialist had identified local needs, guided product development and engaged with partners. This resulted in seven tailored programs for seven states, which led to curriculum development for watershed stewards, formation and support for watershed groups, green infrastructure audits and advice, coastal erosion education and tools for recreational marinas. Individual state outcomes served local needs and the effort contributed to a stronger network of resilience specialists within the Great Lakes Sea Grant Network.



Talking the Talk

The St. Louis River is the largest tributary into Lake Superior on the U.S. side of the lake. It is the area that is home base for the NOAA Lake Superior National Estuarine Research Reserve. It's also an area that was long ignored by residents and recreationalists because of pollution. For that reason, and because of the reserve's presence, the river and its estuary are now the site of joint research projects between the Wisconsin and Minnesota Sea Grant programs.

While this may be an epicenter of scientific exploration, area residents did not often have access outside of an academic setting to information about what was going on right in their backyard. Into that void has stepped a series of informal presentations called the River Talks. Minnesota Sea Grant and the reserve are collaborators in this effort to share the stories of individuals, groups and agencies researching, interpreting and restoring the region.

Talks are presented at local eating and drinking establishments in the manner of a science cafe. The setting and structure allows for dynamic, two-way interactions between scientists and the public. In this way, local residents feel empowered to engage, and the scientist speaker gains valuable perspective on their own work. In 2016-18, more than 525 people attended the 21 talks.



Sea Grant collaborator Deanna Erickson of the Lake Superior Estuarine Research Reserve makes for a lively presenter at one of the 21 River Talks that occurred in 2016-18. Topics were wide ranging and relevant to area residents. Attendees heard about muskies, algae, river restoration and more.

Tangled Lake Michigan Food Web

The combined research prowess of Wisconsin, Illinois and Indiana scientists located at universities and management agencies — and coordinated by Wisconsin Sea Grant, along with Illinois-Indiana Sea Grant — focused on the secrets and challenges of Lake Michigan's depths and nearshore areas, yielding many findings.

Those depths include a food web tangled by over-fishing, pollution and the invasion of non-native aquatic species, particularly Dreissenid mussels that first appeared roughly 30 years ago and now approach the quadrillions in number.

These joint studies have examined nearshore habitats on the east and west sides of the lake, coastal wetlands and the effect of invasive species such as round gobies and Dreissenid mussels on predator-prey relationships.

The work allows resource managers to make scientifically sound decisions based on current conditions and use models to plan for future possibilities in the world's fifth largest lake, which supports both industry and recreation.

Tiny dreissenid mussels like the zebra and quagga, pictured to the right, can filter and eat the phytoplankton from a well-mixed Lake Michigan — the entire lake — in just seven to 11 days. Their voracious appetites and efficient feeding are denying sustenance to other species in the food web.





From Whiteboards to Whitecaps

Wisconsin science educators, like many educators in the state and across the nation, are under stress as K-12 funding has declined. Along with that is a decline in support for professional development.

Sea Grant, with collaborators Minnesota Sea Grant, the Wisconsin Historical Society, the NOAA Wisconsin Coastal Management Program and the NOAA National Marine Sanctuary Program, is committed to providing support for teachers who would expand environmental literacy. In the summers of 2016, '17 and '18, the programs offered a shipboard educator workshop aboard a replica historical Great Lakes schooner to bolster professional learning among teachers who then return to classrooms to inspire young learners.

More than 30 teachers and four Wisconsin Sea Grant staff members participated in the cruises and activities that included use of water-quality sampling equipment, plankton nets and remotely operated vehicles. In 2017 and 2018, the workshop culminated with the teachers leading hands-on STEM demonstrations at public festivals that attracted more than 200,000 people. A video captures the camaraderie and learning. go.wisc.edu/3hj086



When Water Comes Lapping

In recent years, the waters of lakes Michigan and Superior have been creeping ever closer to record-high levels. Sea Grant researchers have been studying what that means for natural and man-made features around the lakes.



From 2014-18, lakes Michigan and Superior's water levels have been steadily rising, increasing bluff erosion, eradicating beaches and toppling structures into the waves.

Sea Grant's coastal engineer co-organized property-owner information workshops, met one-on-one with owners and provided guidance so owners could hire private engineers and consultants to install shoreline erosion-control structures.

Some property owners needed immediate protection and the coastal engineer also worked with the Wisconsin Department of Natural Resources to formulate temporary emergency permits for shoreline protection. This regulatory reform saved valuable permitting time and allowed more than 20 property owners on lakes Michigan and Superior whose primary residences were in immediate danger of complete destruction to save their homes. Sea Grant is also collaborating with the NOAA Wisconsin Coastal Management Program on a three-year \$840,000 federally funded project to better map bluffs and bring together local communities with common solutions on high-water effects.





Serving Stakeholders, Netting Dinner

The Great Lakes had long yielded big catches of fish to feed hungry regional markets with walleye, chubs and yellow perch. As these species have declined, commercial fishing is a changed business. How best do Wisconsin's commercial fishers remain viable enterprises?

Sea Grant's fisheries specialist facilitates the Lake Michigan Fisheries Forum, which brings together commercial fishers, resource managers and researchers in an effort to raise awareness of fisheries issues and offers an opportunity for discussion and feedback. The group meets at least twice a year. Recreational anglers are included and bring their perspective on what it means to share the resource.

Sea Grant is also researching the feasibility and environmental impact of allowing Lake Michigan commercial fishers to use trawl nets to harvest the profitable lake whitefish without adversely affecting key non-target species such as salmon and trout. Currently, state law only allows trap nets and limited gill nets for lake whitefish harvest, which shortens the fishing season by several months each year. With trawling, these fishers would be able to harvest in any month.



Whitefish is Wisconsin's largest and most profitable commercial catch out of both lakes Michigan and Superior. The fish can weigh up to 20 pounds at harvest and make a tasty meal.



Easing the Way to Being Green

Green infrastructure is a proven and effective means to improve water quality and habitat and reduce flooding by reducing stormwater pollution and volume. Despite that, many communities are prevented from implementing green infrastructure practices by outdated zoning codes and ordinances.

Sea Grant developed a green infrastructure code audit workbook to provide guidance on safeguarding surface and groundwater from stormwater. Stormwater flows over streets, sidewalks, roofs and parking lots, picking up and concentrating pollutants. *Tackling Barriers to Green Infrastructure* is available at seagrant.wisc.edu/greeninfrastructure.

Sea Grant has also actively worked with municipalities to engage in code audits. Duluth, Minn., and Southfield, Clinton and Canton townships in Michigan have adjusted their codes and implemented policy changes to reduce impervious surfaces and lowered other barriers to green infrastructure. Two Wisconsin cities, so far, are completing code audits to make changes to protect surface and groundwater from contaminants and lessen the potential for property damage due to flooding, while also protecting public safety.



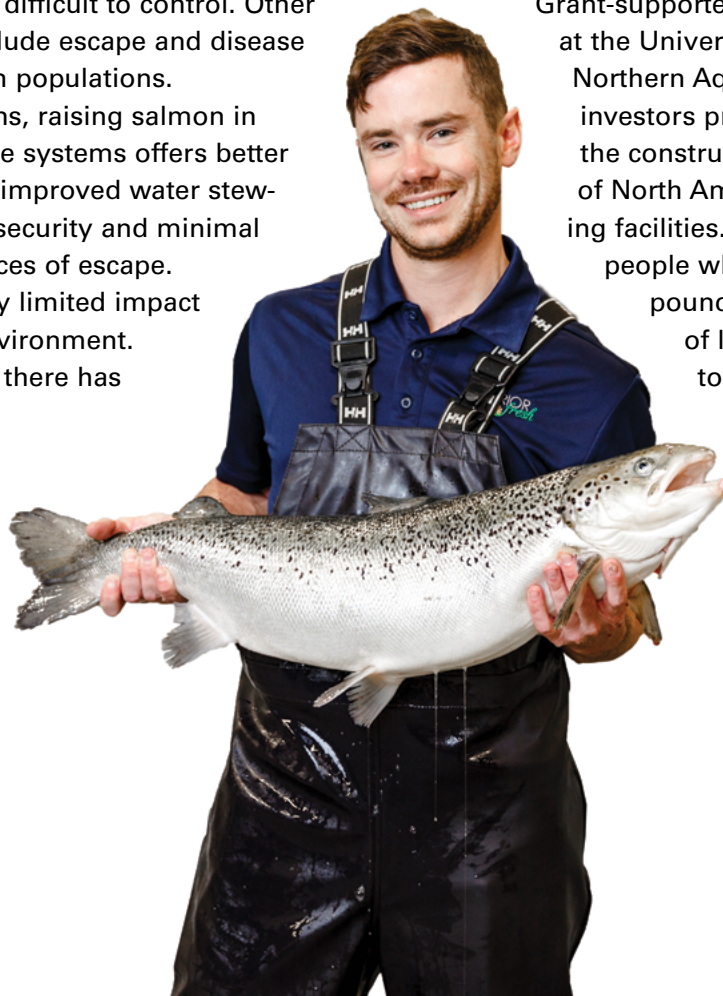
Lettuce Grows, Along With Fish

Salmon is a popular fish with American consumers. According to 2012 figures from NOAA Fisheries, salmon makes up 13 percent of all imported species and is second only to shrimp in popularity. Many farm-reared Atlantic salmon are raised in net pens, which produce fish waste that is difficult to control. Other net pen challenges include escape and disease transfer to wild salmon populations.

In contrast to net pens, raising salmon in land-based, water-reuse systems offers better effluent management, improved water stewardship, increased biosecurity and minimal to nonexistent incidences of escape. This all adds up to very limited impact on the surrounding environment. Over the last 10 years, there has

been an exponential rise in facilities that feature land-based, water-reuse systems, including a groundbreaking facility in the heart of Wisconsin's dairy country.

Using the knowledge formulated at the Sea Grant-supported research and outreach facility at the University of Wisconsin-Stevens Point Northern Aquaculture Demonstration Facility, investors provided at least \$20 million for the construction of Superior Fresh. It is one of North America's first on-land salmon-rearing facilities. The company employs about 50 people who care for and harvest 160,000 pounds of fish and 1.8 million pounds of lettuce and other greens annually to meet consumer demand.



In Wisconsin, consumers can now feast upon fresh Atlantic salmon raised in the heart of dairy country.



596
fishermen or
aquaculture
professionals
assisted



220
Wisconsin jobs
created or
retained



75,894
people reached
through events
and presentations



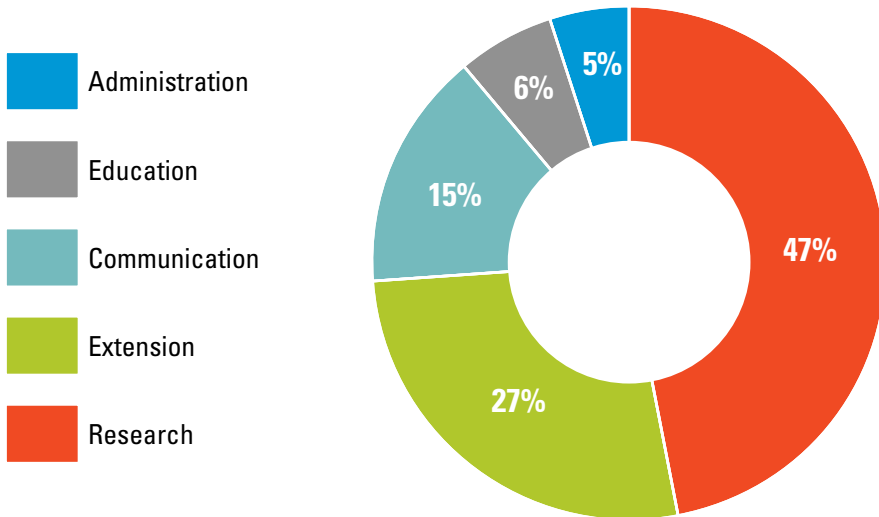
Connected with
25,675
K-12 students

37% increase in frequency
and intensity of Midwestern
rainstorms from 1958-2012

By the Numbers

BUDGET OVERVIEW

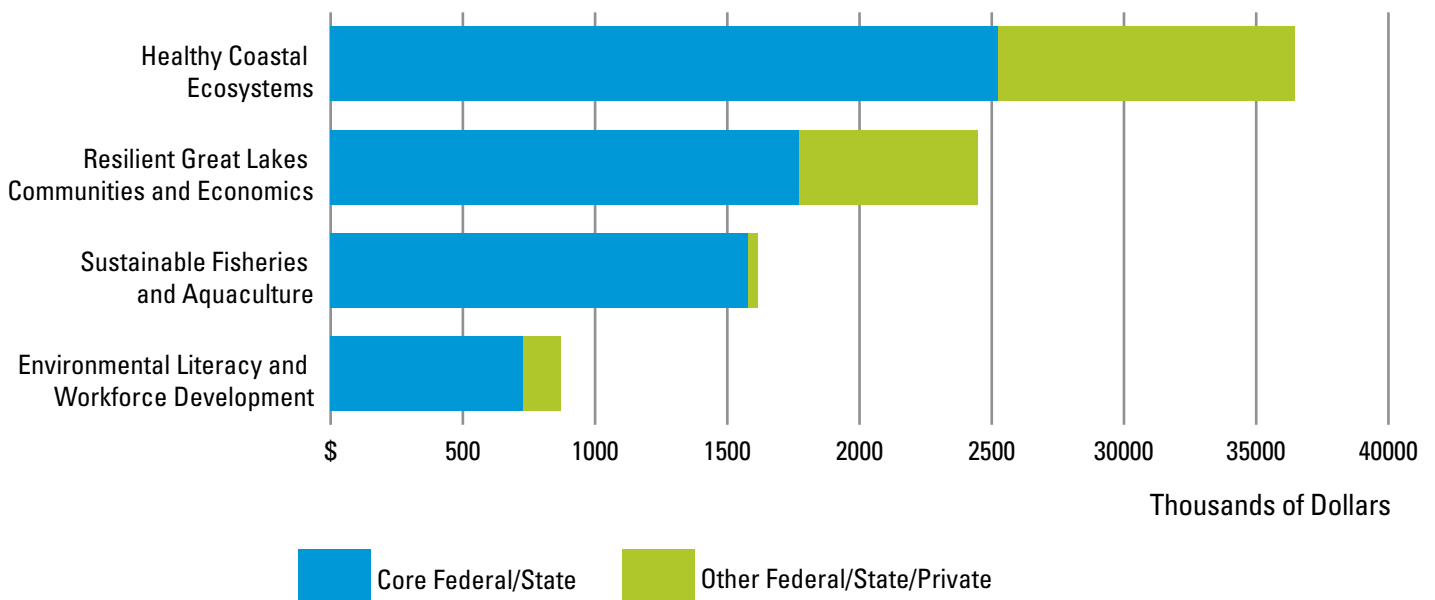
Funding allocation 2016-18



People reached at science and learning events

16,772

Focus areas 2016-18



Wisconsin Sea Grant Mission and Vision Statements

MISSION

Wisconsin Sea Grant promotes the sustainable use of Great Lakes resources through research, education and outreach.

VISION

Thriving coastal ecosystems and communities.



OFFICE LOCATIONS

Main Office
UW-Madison Aquatic
Sciences Center
1975 Willow Drive
Madison, WI 53706-1103
(608) 262-0905

UW-Green Bay MAC 212
2420 Nicolet Drive
Green Bay, WI
54311-7001
(920) 465-2795

UW-Green Bay,
Manitowoc Campus
705 Viebahn St.
Manitowoc, WI
54220-6699
(902) 683-4697

School of Freshwater Sciences
UW-Milwaukee
600 E. Greenfield Ave.
Milwaukee, WI 53204
(414) 382-1723

Lake Superior National Estuarine
Research Reserve Building
14 Marina Drive
Superior, WI 54880
(715) 399-4082

Leadership

Five people make up the Sea Grant leadership team. Two external bodies made up of diverse members provide guidance. The chancellor of the University of Wisconsin-Madison appoints the 15-member Sea Grant Advisory Council. The second body, the Sea Grant Committee on Outreach and Education, includes members who provide advice and assistance based on broad professional experience. Those members are appointed by the Sea Grant director.

SEA GRANT MANAGEMENT TEAM

Director

Jim Hurley
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hurley@aqu.wisc.edu

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Assistant Director for Extension

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Assistant Director for Research and Student Engagement

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Assistant Director for Operations

Terri Liebmann
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terri@aqu.wisc.edu



SEA GRANT ADVISORY COUNCIL

Jim Hurley (ex officio), director, Sea Grant, UW-Madison

Will Allen, farmer, founder and former CEO, Growing Power Inc., Milwaukee

Todd Ambs, campaign director, Healing Our Waters Coalition, Madison

Kristine Andrews, associate vice president, federal and corporate relations, University of Wisconsin System, Madison

Thomas J. Blewett, retired, program director, Community, Natural Resource and Economic Development, University of Wisconsin Cooperative Extension, Madison

Carrie Bristol-Groll, owner, Stormwater Solutions Engineering, Milwaukee

Sharon Cook, owner, Sharon Cook, LLC, Milwaukee

Michael Friis, program manager, Wisconsin Coastal Management Program, Verona

H.J. (Bud) Harris, professor emeritus, Natural and Applied Sciences, UW-Green Bay, De Pere

Justine Hasz, fisheries bureau director, Wisconsin Department of Natural Resources, Wisconsin Rapids

Al House, president, Apostle Islands Sport Fisherman's Association, Washburn

J. Val Klump, senior director and associate dean of research, School of Freshwater Sciences, UW-Milwaukee

Larry J. MacDonald, former mayor, Bayfield

Dreux Watermolen, section chief, Analysis Services, Department of Natural Resources, Madison

Larry Wawronowicz (chair), natural resources director, Lac du Flambeau Band of Lake Superior Chippewa Indians, Woodruff

1,055
communities
using Sea
Grant advice for
resiliency and
sustainability
policies and
practices



SEA GRANT COMMITTEE ON OUTREACH AND EDUCATION

Carmen Aguilar (education), associate scientist, School of Freshwater Sciences, UW-Milwaukee

Kate Angel (coastal hazards), Wisconsin Coastal Management Program, Madison

Bill Brose (coastal engineering), principal, Smith Group JJR, Madison

Brenda Coley (social science), co-executive director, Milwaukee Water Commons, Milwaukee

Bart De Stasio (fisheries), professor, Lawrence University, Appleton

Matt Eitrem (geographic information systems), GIS coordinator, Ashland

Mary Erpenbach (communications), president, Cherry Street Agency, Beloit

Denny Fox (aquatic invasive species), national tournament director, AIM Pro Walleye Series, Little Chute

Steve Galarneau (Great Lakes), director, Office of Great Waters, Wisconsin Department of Natural Resources, Madison

Lee Haasch (charter fishing), owner, Haasch Guide Service, Algoma

Vicky Harris (ecosystems and habitat), coordinator, Wisconsin Clean Marina Program, De Pere

Lynn Kurth (education), teacher, Prairie River Middle School, Merrill

Edith Leoso (social science), tribal historical preservation officer, Bad River Band of Lake Superior Chippewa Tribe, Odanah

Marge Loch-Wouters (education), youth services manager, La Crosse Public Library, La Crosse

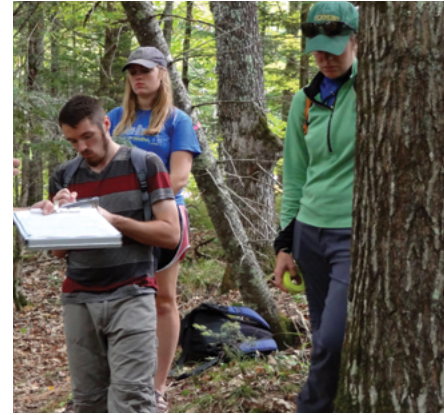
Patrick Robinson (freshwater estuaries), freshwater management estuary specialist, UW-Green Bay

Victoria Rydberg (environmental education), consultant, Wisconsin Department of Public Instruction, Madison

Jason Serck (economic development), planning, economic and port director, city of Superior

Angie Tornes (outdoor recreation), senior planner for rivers, trails and conservation, National Park Service, Milwaukee

Pat Wilborn (aquaculture), PortFish Ltd., Port Washington



167
students
supported

FELLOWS

Sea Grant recognizes the important responsibility it holds to foster the scholarship and careers of young professionals. From 2016-18, these inspiring fellows have contributed to the sustainable use of the freshwater and ocean resources through their efforts.

Dean John A. Knauss Marine Policy Fellows

Shelby LaBuhn, 2017
Danielle Brunner, 2017

Wisconsin Sea Grant Coastal Management and Water Policy

Bridget Faust, 2018

Great Lakes Commission Fellow

Michael Polich, 2016
Jack Cotrone, 2018

J. Philip Keillor Wisconsin Sea Grant Coastal Management Fellow

Adam Bechle, 2016
Yi Liu, 2018

Coastal Management NOAA Coastal Management Fellow

Joe Dwyer, 2016

J. Philip Keillor Great Lakes Fisheries Fellow

Elizabeth Tristano, 2018

Water Resources Science Policy Fellow

Carolyn Voter, 2016
Alex Latzka, 2017
Stephanie DeVries, 2018
Francisco Guerrero-Bolano, 2018

Wisconsin Sea Grant-U.S. Environmental Protection Agency Human Health and the Environment Research Fellow

Ryan Lepak, 2018



Partners and Collaborators

STATE, REGIONAL, NATIONAL AND INTERNATIONAL GOVERNMENT

1836 Treaty Waters Technical Fisheries Committee

21st Century Community Learning Centers

Aquatic Nuisance Species Task Force

Argonne National Lab

Bad River Band of Lake Superior Chippewa

Bay-Lake Regional Planning Commission

Center for Great Lakes Literacy

Coastal Zone Canada Association

East Central Wisconsin Regional Planning Commission

Fond du Lac Band of Lake Superior Chippewa

Fox River Navigational System Authority

Great Lakes Panel on Aquatic Nuisance Species

Great Lakes Fishery Commission

Ho-Chunk Nation

Illinois Coastal Management Program

Illinois Natural History Survey

International Joint Commission

International Oceanographic Data and Information Exchange, Intergovernmental Oceanographic Commission, UNESCO

Japan Agency for Marine-Earth Science and Technology

Lac Courte Oreilles Band of Lake Superior Chippewa

Lac du Flambeau Band of Lake Superior Chippewa

Lake Superior National Estuarine Research Reserve

Menominee Indian Tribe of Wisconsin

Michigan Coastal Zone Management Program

Michigan Department of Natural Resources

Minnesota Board of Water and Soil Resources

Minnesota Coastal Management Program

Minnesota Department of Natural Resources

Minnesota Department of Public Health

Minnesota Pollution Control Agency

Mississippi River Basin Panel on Aquatic Nuisance Species

Mole Lake Band of Lake Superior Chippewa

National Oceanic and Atmospheric Administration Coastal Storms Program

National Oceanic and Atmospheric Administration Great Lakes Environmental Research Laboratory

National Oceanic and Atmospheric Administration Great Lakes Observing System

National Oceanic and Atmospheric Administration National Marine Sanctuaries



317
partners and
collaborators



National Oceanic and Atmospheric Administration National Sea Grant Office

National Oceanic and Atmospheric Administration National Weather Service

National Oceanic and Atmospheric Administration Office for Coastal Management

National Oceanic and Atmospheric Administration Office of Ocean Exploration and Research

National Park Service

North Central Region Water Network

Northeast Ohio Regional Sewer District

Northwest Wisconsin Regional Planning Commission

Oneida Nation

Red Cliff Band of Lake Superior Chippewa

Southeastern Wisconsin Regional Planning Commission

U.S. Army Corps of Engineers

U.S. Coast Guard

U.S. Department of Transportation

U.S. Environmental Protection Agency

U.S. Fish and Wildlife Service

U.S. Forest Service

U.S. Geological Survey

Virginia, state

Wisconsin Historical Society

Wisconsin Coastal Management Program

Wisconsin Department of Agriculture, Trade and Consumer Protection

Wisconsin Department of Emergency Management

Wisconsin Department of Health Services

Wisconsin Department of Natural Resources

Wisconsin Department of Public Instruction

Wisconsin Department of Tourism

Wisconsin Department of Transportation

Wisconsin Veterinary Diagnostic Laboratory

LOCAL, MUNICIPAL AND COUNTY GOVERNMENT

Ashland, city

Bailey's Harbor, town

Bayfield, city

Bayfield, county

Bayside, village

Belgium, town

Brown, county

Caledonia, city

Canton, town

Cedar Grove, village

Chicago, city

City of Milwaukee Health Department

Clinton, town

Clover, town

Cudahy, city

Door, county

Douglas, county

Duluth, city

Evanston, city

Fox Point, village

Fox-River Valley County Land Conservation Departments

Grafton, town
Herbster, town
Kenosha, city
Kenosha, county
Lake, county
Liberty Grove, town
Long Beach, town
Madeline Island
Manitowoc, city
Manitowoc, county
Mequon, city
Metropolitan Water Reclamation
District of Greater Chicago
Milwaukee, city
Milwaukee, county
Milwaukee Metropolitan
Sewerage District
Milwaukee Public Schools
Mishicot, village
Mount Pleasant, village
NEW Water
North Bay, village
Oak Creek, city
Ozaukee, county
Pleasant Prairie, village

Port Washington, city
Port Washington, town
Port Wing, town
Racine, city
Racine, county
St. Francis, city
Saxon Harbor, town
Sheboygan, city
Sheboygan, county
Shorewood, village
Sister Bay, village
Somers, village
South Milwaukee, city
Southfield, city
Superior, city
Two Rivers, town
Washington, county
Washington-Ozaukee Public Health
Department
Waukesha, county
Western Lake Superior
Sanitary District
Whitefish Bay, village
Wilmette, city
Wind Point, village



ACADEMIC

Algoma School District
Carleton University
Central Michigan University
College of Menominee Nation
Cornell University
East Carolina University
Gustavus Adolphus College

International Association of Aquatic
and Marine Science Libraries and
Information Centers
Kewaunee School District
Lake Superior State University
Loyola University Chicago
Manitowoc Public School District
Marquette University

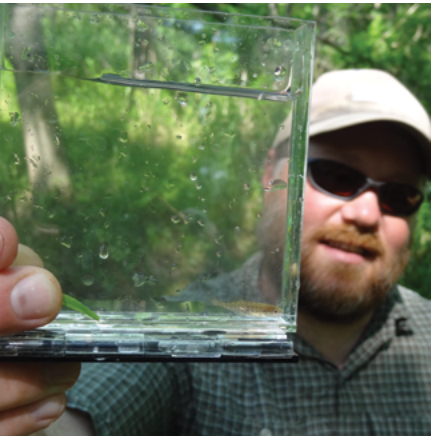


Michigan State University	University of Michigan
Milwaukee Public Schools	University of Minnesota Duluth
National Sea Grant Law Center	University of Minnesota Twin Cities
North Carolina State University	University of St. Thomas
Northern Michigan University	University of Vermont
Northland College	University of Wisconsin-Extension
Ohio State University	University of Wisconsin-Green Bay
Pennsylvania State University	University of Wisconsin-Green Bay, Manitowoc Campus
Purdue University	University of Wisconsin-La Crosse
Reedsville School District	University of Wisconsin-Madison
St. Norbert College	University of Wisconsin-Milwaukee
Shorewood Elementary School	University of Wisconsin-Oshkosh
State University of New York - Stony Brook	University of Wisconsin-Stevens Point
Texas A & M University	University of Wisconsin-Superior
University of California, San Diego	University of Wisconsin-Whitewater
University of Florida	Valders School District
University of Illinois at Champaign-Urbana	

BUSINESSES AND NON-GOVERNMENTAL ORGANIZATIONS

1000 Friends of Wisconsin	Association of State Floodplain Managers
1000 Islands Environmental Nature Center	Bad River Watershed Association
16th Street Community Health Center	Baileys Harbor Fish Co.
Abbey Marina, Lake Geneva	Bayfield City Dock
Alaska Marine Safety Education Association	Birchline Planning LLC
All Natural Greens	Blue Iris Fish Farm
Alliance for the Great Lakes	Capuchin Community Services
American Planning Association	Cardinal Environmental Consulting
Apostle Islands Marina	Cat Island Advisory Committee
Apostle Islands Sportfisherman's Association	City of Port Washington Marina
	Clean Bay Backers
	Clean Drain Dry Dispose LLC

Clean Wisconsin	Henriksen Fisheries
Coolwater Farms LLC	Impact 2-1-1
Crow River Organization of Water	International Coastal Atlas Network
Discovery World	Kingdom Animalia Exotic Animal Rescue
Ducks Unlimited	Lake Michigan Stakeholders
Esri	Lakeshore Natural Resource Partnership
Ex Fabula	Lakeshore Towers Marina
FarmedHere	Lower Fox Demonstration Farms Network
The Farmory	Madison Area Chefs Network
Fingerlings – YEP Inc.	Manitowoc Marina
Fox Valley Humane Association	McKinley Marina
Fox-Wolf Watershed Alliance	Milwaukee Community Sailing Center
Friends of the Apostle Islands National Lakeshore	Milwaukee Riverkeeper
Friends of Lincoln Park	Milwaukee Water Commons
Friends of the Manitowoc River Watershed	Milwaukee Yacht Club
Fund for Lake Michigan	MWH/Stantec Industries
Gaslight Pointe Marina	National American Society of Civil Engineers
Great Lakes Beach Association	National Museum of the Great Lakes
Great Lakes Commission	Nature Conservancy
Great Lakes Community Conservation Corps	Nelson & Pade Inc.
Great Lakes Fisheries Heritage Consortium	Nestegg Marina
Great Lakes Shipwreck Preservation Society	Northwest Passage
Great Lakes Shipwreck Research Foundation	Open Door Café
Great Lakes Surf Rescue Project	Pentair
Great Lakes Observing System	Pepper Boy Foods
Green Bay Aquarium Society	Pikes Bay Marina
Green Bay Conservation Partners	Port of Dubuque Marina
Growing Power Inc.	Port of Duluth Superior, Twin Ports
Harbor Centre Marina	Port Exploreum
Harbor Club Marina	PortFish Ltd.
Harbor District Inc.	Racine Yacht Club
	Reefpoint Marina



- Reflo
- Rivertown Nature Center
- River Revitalization Foundation
- River Road Research
- Riverence LLC
- Rushing Waters Fisheries
- S-H Harbor Centre Marina
- St. Croix Marina
- Salmon Specialists
- Sportfishing Charters
- Schlitz Audubon Nature Center
- Seagull Marina
- Shedd Aquarium
- Sierra Club
- Skipper Bud's marinas
- South Bay Marina
- South Shore Yacht Club
- Southeast Michigan Council of Governments
- Southeast Wisconsin Watershed Trust (Sweet Water)
- Southport Marina
- Steve the Snake Man
- Superior Chamber of Commerce
- Superior Fresh
- Superior Public Museums
- Susie Q Fish Co.
- ThedaCare
- Upham Woods Outdoor Learning Center
- Urban Ecology Center
- Urban Farm Project
- Urban Organics
- Village of Egg Harbor Marina
- Washburn Marina
- The Water Council
- Wehr Nature Center
- West Shore Marine
- Wildlife Forever
- Wisconsin Alumni Association
- Wisconsin Aquaculture Association
- Wisconsin Association for Floodplain, Stormwater, and Coastal Management
- Wisconsin Coastal Beaches Workgroup
- Wisconsin Commercial Ports Association
- Wisconsin Environmental Education Board
- Wisconsin Federation of Great Lakes Sport Fishing Clubs
- Wisconsin Harbor Towns Association
- Wisconsin Land Information Association
- Wisconsin Marine Association
- Wisconsin Maritime Museum
- Wisconsin Underwater Archaeology Association
- Wisconsin Water Thinkers Network
- Wisconsin Waterfowl Association
- Wisconsin Wastewater Operators, Association
- Woodland Dunes Nature Center and Preserve

Publications and Information Transfer Materials

Bartelme, RP, RJ Newton, Y Zhu, N Li, BR LaFrentz and MJ McBride. Complete Genome Sequence of the Fish Pathogen *Flavobacterium columnare* Strain C#2 *Genome Announcements* 4:1-2. doi:10.1128/genomeA.00624-16 (2016)

Bechle, AJ, CH Wu, DAR Kristovich, EJ Anderson, DJ Schwab and AB Rabinovich. Meteotsunamis in the Laurentian Great Lakes *Scientific Reports*, 6:37832 doi: 10.1039/srep37832 (2016)

Blanke CM, Y Chikaraishi, Y Takizawa, SA Steffan, PS Dharampal and MJ Vander Zanden. Comparing Compound-Specific and Bulk Stable Nitrogen Isotope Trophic Discrimination Factors Across Multiple Freshwater Fish Species and Diets *Canadian Journal of Fisheries & Aquatic Sciences*, doi: 10.1139/cjfas-2016-0420 (2017)

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7,137
volunteer
hours

AWARDS

2018 Silver Circle of Excellence Award from Council for Advancement and Support of Education for “Tackling Barriers to Green Infrastructure: An Audit of Local Codes and Ordinances”

2018 Water Research Image Contest Winner from Water@UW-Madison presented to Titus Seilheimer, Sea Grant fisheries specialist

2017 Outstanding Achievement Award from the Lake Superior National Estuarine Research Reserve presented to Jim Hurley, Sea Grant director

2017 Platinum Award from AVA Digital for “Undercurrents: The Hidden Knowledge of Groundwater” podcast

2017 Honorable Mention from AVA Digital for “Sea Grant: Science Serving America’s Coasts” video

2016 Invader Crusader Award from the Wisconsin Council on Invasive Species presented to Tim Campbell, Sea Grant aquatic invasive species specialist

RESOURCES

The 2018-21 Sea Grant strategic plan is available for review, go.wisc.edu/z756uw

The 2018-21 Sea Grant work plan outlines ongoing and upcoming initiatives for extension and communications staff members, go.wisc.edu/eu6w2g

Program resources, fact sheets, posters and more can be found at aqua.wisc.edu/publications

More than 30,000 water-related resources can be reviewed and checked out from the Wisconsin Water Library, aqua.wisc.edu/waterlibrary

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