2013 volume 4

ASC
Aquatic Sciences Chronicle
aqua.wisc.edu/chronicle
UNIVERSITY OF WISCONSIN SEA GRANT INSTITUTE UNIVERSITY OF WISCONSIN WATER RESOURCES INSTITUTE

INSIDE:

SEA GRANT RESEARCH

A New Gold Standard

RESEARCHERS DEVELOP TWIN TESTS TO TRACK VHSV MORE EFFECTIVELY

Joseph Tomelleri

Drum, muskie and pike are some of the species threatened by the virus that causes VHS.

Keeping track of a deadly virus, especially in diverse fish populations, is a slippery proposition at best. But when the stakes are as high as they are with the viral hemorrhagic septicemia virus (VHSV), the task takes on an even more critical dimension. VHS, which causes fish to bleed to death internally, can affect some of the most economically important sport fish in the Great Lakes—pike, muskie and large and smallmouth bass.

Wisconsin Department of Natural Resources (DNR) fisheries biologists and fish health specialists currently track the spread of VHS using virus isolation, which is a slow and labor-intensive process that's also lethal to the sampled fish. (That's because viruses only grow in living cells. Once the growth has occurred, the host living organism must be killed to complete the diagnosis.)

But virus isolation only indicates the fish's current infection state, not whether a fish has mounted an immune response to the virus and survived. In a case like that, the fish could still be a carrier of VHSV, putting other populations at risk.

continued on page 8 >>

Aquatic Sciences Chronicle

University of Wisconsin Aquatic Sciences Center
1975 Willow Drive
Madison, WI 53706-1177

Telephone: (608) 263-3259
Email: *chronicle@aqua.wisc.edu*

The Aquatic Sciences Center is the administrative home of the **University of Wisconsin Sea Grant Institute** & the **University of Wisconsin Water Resources Institute.**

Communications Manager
Moira Harrington

Editor
Elizabeth A. White

Writers
Aaron R. Conklin, Moira Harrington, Anne Moser and Marie Zhuikov

Designer
Yael Gen

Circulation Manager
Linda Campbell

University of Wisconsin Sea Grant Institute is part of a national network of 33 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*

University of Wisconsin Water Resources Institute is one of 54 Water Resources Research Institutes nationwide authorized by the federal Water Resources Research Act and administered through the U.S. Geological Survey. *wri.wisc.edu*

Sea Grant University of Wisconsin
WRI University of Wisconsin

SUBSCRIBE

Email *chronicle@aqua.wisc.edu* to request a no-cost subscription to the "Aquatic Sciences Chronicle," a quarterly publication. Please specify whether you prefer a mailed print edition or electronic delivery to an email in-box.

GET ASC NEWS ALERTS BY EMAIL

You can receive email notices about ASC news. Sign up at our pressroom link at ***seagrant.wisc.edu***.

Wisconsin Fish Identification Tools Go Mobile

seagrant.wisc.edu/fishid

Exactly 174 Wisconsin fish can now fit into your pocket. And they're not even wet, or smelly. That's because they are contained in the free Wisconsin fish identification app for Android and Apple phones. There is a finger-friendly mobile website as well.

Anglers can search by fish name, family or physical features—shape, distinctive features, pattern, and type of fins, mouth, scales, spine, tail or coloring. Each entry depicts the fish, from several photographic angles, and offers a short write-up of its features.

The overall project is a partnership of the Wisconsin Department of Natural Resources, the University of Wisconsin Center for Limnology and Sea Grant.

"It's rewarding to see such a positive response to the Wisconsin Fish ID app and mobile website. The app was downloaded in a dozen countries in the first few days," said Rich Dellinger, Sea Grant's Web developer. "We have some ideas for new features."

Patrick Gorski

Sampling in an irrigation well revealed high levels of metal. Researchers plan to develop guidelines for well drillers to avoid encountering toxic chromium VI.

How much is too much?

CHROMIUM VI IN THE WATER CYCLE

The Wisconsin State Journal headline certainly made it sound unsettling: "Tests Show Madison Water Has High Levels of Chromium-6, but Below Fed Limits."

That newspaper story, based on a 2011 report by the Environmental Working Group, a non-governmental organization, had Wisconsin residents who failed to read the part after the comma convinced they had an Erin Brockovich-sized environmental catastrophe in their kitchen taps. That wasn't the case—as the headline noted, even the highest measurements collected from Madison wells were well under the federal 100 µg/L safety limits for the carcinogenic metal—but it did raise concerns. And for Patrick Gorski, the head of inorganic chemistry at the Wisconsin State Laboratory of Hygiene, it served as the impetus for a fascinating research project.

Using funding administered through the University of Wisconsin Water Resources Institute (WRI), Gorski, along with a team of researchers that includes metals expert Martin Shafer and WRI Director Jim Hurley, has spent the past year trying to determine the factors that determine the natural concentration of hexavalent chromium, or chromium VI, in Wisconsin groundwater.

"We knew it most likely wasn't due to industrial contamination," said Gorski of the Madison well readings. "And that made us think that it was probably occurring naturally. But if it's natural, the question becomes, how does it occur? In what types of groundwater does it occur and what influences it?"

The research team began by identifying several key geological formations in Wisconsin where a confluence of geology and environment could create an ideal situation for the formation of chromium VI. Working with the Wisconsin Department of Natural Resources and the Wisconsin Geological and Natural History Survey, Gorski's team collected rock and water

continued on page 8 >>

Fish—It's Not Just for Breakfast

In the mood to sear some salmon? Panfry some perch? Pickle some pike?

Wisconsin's Water Library has seafood cookbooks available for checkout. If you have a favorite cookbook you wish to share, please let us know—we are looking to "beef" up our collection.

THE FRESHWATER FISH COOKBOOK

By A.D. Livingston. Guilford, Conn.: Lyons Press, 2009.
With easy-to-follow instructions and a humorous style, the author presents more than 200 mouthwatering recipes for a wide variety of fish, including trout, salmon, black bass, perch, pike, walleye, stripers and many others. Included are instructions for anglers that like to cook and clean their catches.

THE NEW CLEANING AND COOKING FISH

By Sylvia Bashline. Minnetonka, Minn.: Creative Pub. International, 1999.
If you want to learn how to prepare fish like an expert, this book is for you. Whether you purchase trout from the grocery store or catch a basket of bluegills from your favorite lake, this book teaches you the best methods for successfully cleaning and cooking your fish.

ONE FISH, TWO FISH, CRAWFISH, BLUEFISH: THE SMITHSONIAN SUSTAINABLE SEAFOOD COOKBOOK

By Carole C. Baldwin and Julie H. Mounts. Washington, D.C.: Smithsonian Books, 2003.
Creative and savory recipes complement important information about the health and safety of our oceans and the creatures in them. Enjoy the flavors and health benefits of seafood while making these ocean-friendly dishes.

WILD CAUGHT AND CLOSE TO HOME: SELECTING AND PREPARING GREAT LAKES WHITEFISH

Ann Arbor, Mich.: Michigan Sea Grant College Program, 2010.
This cookbook celebrates the Great Lakes whitefish with recipes, cooking techniques and chef insights. Authors trolled the Great Lakes and met with restaurant chefs, fishermen and culinary educators from Wisconsin, Michigan and Minnesota to gather a wide spectrum of recipes.

If you wish to see more books on this topic, visit our recommended reading list at **go.wisc.edu/71uqi2.**

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


Bill Brose / Smithgroup JJR

New Two-Year Cycle of Sea Grant Research Projects

Sea Grant will fund 15 new and four ongoing research projects in 2014-16. It's the culmination of a long process that all starts with a spark for scientific discovery. It results in nearly $2 million to explore complex Great Lakes coastal or open-water topics.

Each of the Sea Grant focus areas—healthy coastal ecosystems, aquaculture and fisheries, resilient communities and economies, and environmental literacy and workforce development—is represented in this new research portfolio.

Some of the issues to be explored are harvesting light energy in Great Lakes bacterioplankton, estimating the economic value of Wisconsin's Great Lakes' fisheries, improving urban beach ecosystem health and assessing the role of quagga mussels in Lake Michigan's carbon dynamics.

Researchers from around the state will undertake the work. The University of Wisconsin System is well represented by scientists on the campuses of Green Bay, Madison, Milwaukee, Oshkosh and Superior. A Northland College investigator will study wetlands in the St. Louis River estuary to better inform future management decisions. The Wisconsin Historical Society will conduct underwater archaeological investigations of Wisconsin's stone industry. A research team from Marquette University will look into the accumulation of personal care products in the water. A researcher from St. Norbert's College is continuing research into the fish pathogen flavobacterium.

Send an email to **tklousie@aqua.wisc.edu** with "RFP mailing list" in the subject line to be added to the mailing list for future Sea Grant or Water Resources Institute requests for proposals. —MH

Even when she was growing up along the shores of Lake Michigan, Jennifer Hauxwell recognized the value of the Great Lakes' aquatic resources—the clean water, the varied fish species, the fisheries that supported the local economies. When she grew up, she dedicated her educational and professional career to studying and protecting them.

Today, as the chief of fisheries and aquatic sciences research at the Wisconsin Department of Natural Resources (DNR), Hauxwell's work parallels the outreach and research work supported by University of Wisconsin Sea Grant on a number of key issues. That's one of several reasons why UW Sea Grant Director Jim Hurley didn't hesitate to make her the newest member of the organization's advisory council. Hauxwell began her term earlier this year.

"Jen leads a world-class, innovative group of researchers who study inland waters and Great Lakes issues," said Hurley. "Adding her into our mix gives us the opportunity to make sure our research and outreach is relevant for Wisconsin. She knows the current issues, and that's the sort of advice we want to look for."

WISCONSIN SEA GRANT WELCOMES

Jennifer Hauxwell

TO THE ADVISORY COUNCIL

Hauxwell, who holds a Ph.D. in aquatic ecology from the Boston University's Marine Program at the Woods Hole Marine Biological Laboratory, knows the Sea Grant model well. She worked with Florida Sea Grant in the early 2000s, co-authoring outreach materials on the effects of nutrient loading on Florida's coastal waters. But it's her undying love of and dedication to science that both drives her and makes her a valuable advisor.

"It's not just about learning new facts, but communicating them," said Hauxwell of her approach to science. "We're far more productive as a society if people have access to relevant information and if people are debating what to do with the facts, rather than debating the facts. It starts with quality science and outreach, and the support Sea Grant gives is key to that."

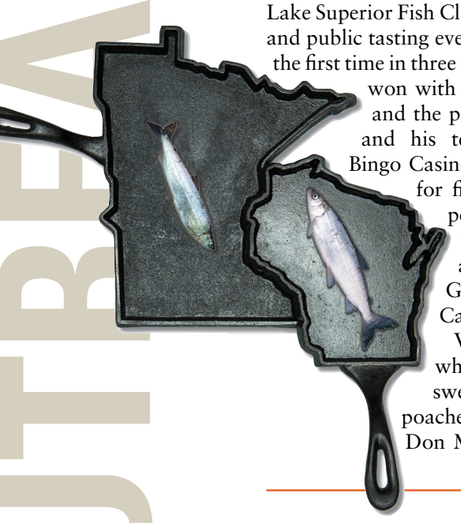
Hauxwell enjoyed sitting in on UW Sea Grant's most recent technical review panel in July, advising the group that selected the research projects that the organization will fund in the 2014-16 biennium. It was a thrill, she said, because it was two days focused on hands-on science, an opportunity to appreciate the widespread talent of Wisconsin's academic community engaged in Great Lakes research and outreach, and an opportunity to look for partnerships where priorities and talents aligned.

Hauxwell said she admires the Sea Grant business model, with its focus on peer review ensuring solid science. In her role on the advisory council, she hopes to build more bridges between the DNR and UW Sea Grant, sharing scientific needs as both agencies increase their research focus on the Great Lakes.

The timing is good. Like a lot of ecologists, Hauxwell is concerned about a lack of public engagement in preserving aquatic resources. She noted the growing concern nationally and in Wisconsin about recruiting youth into outdoor sports and recreation, which makes it even more important that organizations like the DNR and UW Sea Grant engage the next generation. In a modern world where instantaneous access to not-necessarily-accurate information has become increasingly common, the stakes have heightened.

"We're in an era where ecological questions have become quite complex and bridging the gap between researchers and citizens is an ever-increasing need for innovating solutions," says Hauxwell. "We want what we do to matter. Key ingredients for success include high-quality science coupled with an educated and engaged citizenry. And that's exactly what Sea Grant is about." —ARC

WHITEFISH DISH WINS LAKE SUPERIOR FISH CLASSIC



More than 285 people enjoyed sampling Lake Superior whitefish and herring during the recent Lake Superior Fish Classic—a cooking competition and public tasting event held in Duluth, Minn. For the first time in three competitions, the same entrée won with both the professional judges and the public. Chef Seth VanderLaan and his team from the Potawatomi Bingo Casino in Milwaukee won $1,500 for first place out of seven competing chefs and the People's Choice Award. Second place and $750 went to Chef Scott Graden with the New Scenic Café, Duluth, Minn.

VanderLaan's dish was seared whitefish with creamy grits, sweet corn chow chow and poached herring butter. Lead Judge, Don Miller, with the University of Notre Dame, said the dish won "because of the variety of cooking methods used. The flavors came together and were balanced. The seared whitefish was cooked perfectly. The herring was smoked lightly and counterbalanced the creaminess of the sauce. The grits were a nice touch, and the chow chow on top added a contrast in flavor profiles."

Graden's dish was root vegetable hash with lake herring. He also participated in last year's event, earning both the runner-up and People's Choice awards. Miller said that Graden was "impeccable in the kitchen. By far, out of everybody, he did the best job of filleting and cleaning the fish. It's also very hard to crisp the herring skin to give it a nice crunchiness. The crispiness balanced the soft texture of the lake herring. The dish was cooked perfectly and seasoned well. The dish had a great Swedish breakfast theme and was executed beautifully."

Miller said that the variety of cooking methods displayed was the clincher for the winning dish, but that "both were extremely good and would be stars on any menu."

The event was held in October by the Minnesota and Wisconsin Sea Grant Programs to raise the visibility of Lake Superior's sustainably managed fisheries. It was sponsored by Bodin Fisheries in Bayfield, Wis.; Dockside Fish Market in Grand Marais, Minn.; the Duluth Seaway Port Authority; Lake Superior Magazine; and Minnesota Power. In 2011 and 2012, the competition and tasting event was held in Minneapolis. —MEZ

Marnie Zhukov/UW Sea Grant Institute

Seth VanderLaan's his winning team. VanderLaan is on the right.

THE WINNING RECIPE

Seared White Fish With Creamy Grits, Sweet Corn Chow Chow and Poached Herring Butter

Chef Seth VanderLaan, Potawatomi Bingo Casino, Milwaukee
Serves 4

2 whitefish fillets, skin on and cut in half

2 tablespoons canola oil

2 fluid ounces poached herring butter sauce

Heat saute pan over medium high heat. Add canola oil and sear fish portions skin side down. Continue cooking until browning appears up the side of the fish. Turn fish over and continue cooking for 1 minute. Remove from pan.

Plate fish with butter sauce under the fish to keep skin crispy.

Divide creamy grits and sweet corn chow chow between four plates.

For the creamy grits:

¼ cup stone-ground white grits

1 cup chicken stock

1 tablespoon butter

2 tablespoons heavy cream

Bring stock and cream to a boil.

Add grits and continue to simmer over medium-low heat for 30 minutes. Stir occasionally.

Turn off heat and add butter. Season with salt and white pepper to taste.

For the sweet corn chow chow:

1 ear fresh sweet corn, cut off the cob

1 tablespoon red pepper, small dice

1 tablespoon roma tomato, small dice

1 tablespoon white onion, small dice

¼ cup champagne vinegar

¼ cup cold water

1 teaspoon sugar

1 pinch freshly ground mustard seed

1 pinch freshly ground coriander

1 teaspoon chopped fresh herbs (basil, thyme and parsley)

Combine all ingredients in large bowl and let sit at room temperature for 45 minutes.

Adjust seasoning with salt and pepper to taste.

For the poached herring butter:

1 cup court bouillon or vegetable stock

2 tablespoons sweet white wine

1 tablespoon heavy cream

¼ cup butter, cubed

2 lake herring fillets, skin off

Bring bouillon and white wine to a light simmer. Turn off heat and let sit for 1 minute.

Add herring to liquid and let sit for 3 minutes or until cooked all the way through.

Remove herring and set aside, discard half of the liquid in the pan. Add the heavy cream and reduce remaining liquid by half.

Remove from heat and slowly add the cubed butter.

Lightly shred the cooked herring and add to butter sauce.

Season to taste with salt and white pepper.

LUCAS BEVERSDORF

Following Toxic Algae From Hawaii to Wisconsin

Yvonne Hsieh

Lucas Beversdorf takes an ice core from Lake Mendota.

Say you're working in Hawaii, studying blue-green algae in the ocean for your oceanography master's degree. What could possibly lure you to the more chilly climes of Wisconsin to study algae in Madison's Lake Mendota? As it turns out, a lot of things.

"As an undergraduate, I was always interested in medicine and human health," said Lucas Beversdorf, a student finishing his Ph.D. under the guidance of Katherine McMahon, a professor in the civil and environmental engineering department at the University of Wisconsin-Madison. "My path diverged into ecological work, but I always enjoyed looking at the environment from a public health perspective. Coming to Madison to work on lakes that were having toxic algae blooms was attractive to me, so when I finished my master's in Hawaii, I came right here."

Beversdorf has worked with McMahon for the past several years on a Wisconsin Sea Grant-funded project to sample water from Lake Mendota throughout the summer to determine the causes of algae blooms and what environmental factors are important for the production of toxins in the algae. (For more information on the project, see **go.wisc.edu/6074ux.**)

Beversdorf was born in Wisconsin and went to high school in Lomira, which is about 45 minutes north of Milwaukee. He started his undergraduate studies in Fond du Lac, Wis., then went to medical school in Iowa, where he researched tuberculosis on a Howard Hughes Fellowship.

"I enjoyed the research side of things so much, I continued with that instead of medical school," Beversdorf said. He graduated early and took a semester off to study art and history in Europe. Once back in the states, he resumed research, studying beach *E. coli* for the School of Freshwater Sciences at the University of Wisconsin-Milwaukee. That sparked his love of aquatic research. Not long after, he decided that Hawaii would be a great place to finish his master's degree.

McMahon was in Hawaii to give a seminar, and the two started talking. "I was surprised that anyone could be so ready to leave Hawaii and come to Wisconsin, but he was," McMahon said.

Beversdorf is starting work as a postdoc at UW-Madison and the UW-Milwaukee School of Public Health. Who knows where else blue-green algae will lead him? —MEZ

SEA GRANT RESEARCH

A New Gold Standard

RESEARCHERS DEVELOP TWIN TESTS TO TRACK VHSV MORE EFFECTIVELY

continued from page 1

Tony Goldberg

Research results suggest that VHSV may continue to circulate among fish populations—maintaining a cycle of transmission instead of burning through a fish population and then going extinct. This means that the virus may still be circulating, even if there aren't any fish kills taking place.

Thanks to Tony Goldberg, Kathy Toohey-Kurth, Anna Wilson and Susan Marquenski, there are two new ways to get VHSV infection information.

Wilson was a graduate student at the University of Wisconsin-Madison's School of Veterinary Medicine's Comparative Biomedical Sciences Program, where Goldberg served as her advisor. Backed by funding from Wisconsin Sea Grant, she has developed a pair of serological assays that provide a much more complete picture of how VHSV may be affecting fish populations. The first is a virus neutralization (VN) assay; the second is a blocking enzyme-linked immunosorbent assay, also known as ELISA. The laboratory work happened under the supervision of Toohey-Kurth, director of virology at the Wisconsin Veterinary Diagnostic Laboratory (WVDL).

Wilson, now a microbiologist at WVDL, hooked into the project through fish inspection work she was doing with the DNR's fisheries management bureau supervised by Marquenski, the DNR's fish health specialist. Wilson took tissue samples from the drum population in south-central Wisconsin's Lake Winnebago, conducted assays and interpreted the results.

"Antibody assays tell us whether the fish has ever been exposed to the virus," explained Wilson. "They can also indicate whether it was infected, survived and developed antibodies to the virus. It gives us an idea of the immunity levels of the fish."

"There are two big questions about VHSV in Wisconsin," said Goldberg. "First, is it spreading? In that case, you're very concerned about finding an infected fish in a place where you haven't found one before, and the ELISA assay that detects all antibodies would be your tool of choice. But if you have a water body where the fish have already experienced an outbreak and you want to know how susceptible the fish population is to future disease, then you're interested in if they've mounted a successful immune response, and you could use the virus neutralization test."

The team's research has implications beyond simply identifying virus and immune response in drum. Their data suggest that VHSV continues to circulate among fish populations even when wardens aren't seeing fish kills. The virus may actually maintain a cycle of transmission from year to year, as opposed to burning through a fish population and then going extinct.

"Anglers and boaters get a little tired of regulations restricting movements and mandating the cleaning of equipment and gear because they haven't seen any fish kills in a while," said Goldberg. "Our data, unfortunately, suggest that maintaining those restrictions may be necessary. If there is active virus circulating under the radar, it continues to pose a threat to uninfected waters even if fish kills aren't occurring."

Tony Goldberg

Anna Wilson, part of the team that developed two new tests to track the virus that causes VHS and endangers Great Lakes sport fish, at work in the lab.

The two assays are currently wending their way through the process of commercialization at UW-Madison. The goal is to get them up and running as routine tests at the WVDL, which would make it the go-to place for VHSV testing nationwide.

Toohey-Kurth expects that eventually the WVDL will begin applying the assays to key sport fish species, and also begin meshing their findings with the DNR's existing fish database to begin charting the true impact of the virus on fish populations. —ARC

WATER RESOURCES RESEARCH

How Much Is Too Much?

CHROMIUM VI IN THE WATER CYCLE

continued from page 3

samples from replacement wells and brought them back to the lab, where reactor experiments were conducted to mimic what was happening in the environment. Factors like the concentration of oxygen—a force that turns the beneficial chromium III into the potentially dangerous chromium VI—were examined, as were levels of pH and the presence of other metals like iron and manganese in the surrounding water. In the latest round of experiments, Gorski's team observed a slight increase in chromium VI in the presence of the reactors.

"We think we have a good link between geology and water," said Gorski. "But just because chromium is in the rocks doesn't mean chromium VI is in the water."

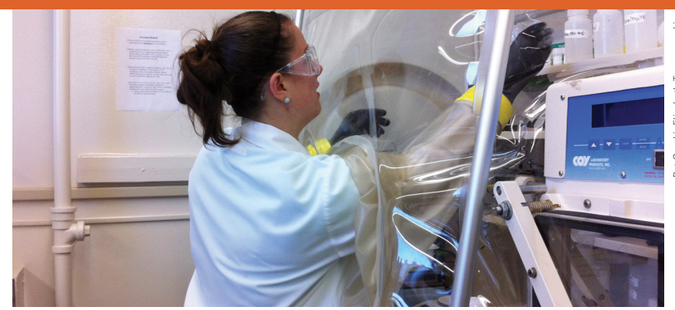
Over the next year, Zana Sijan, a graduate student pursuing a master's degree in environmental chemistry, will continue to conduct reactor experiments on the samples, using a glovebox to maintain an anoxic environment.

In doing so, she may be breaking new ground. Currently, the Environmental Protection Agency (EPA) measurements include all types of chromium, even though not every type is toxic. Specific analytic techniques to measure chromium VI are still being developed and refined. In this sense, Gorski and Sijan could be writing the measurement guide other scientists will use to track the metal in their own states. It's even possible that Gorski's team will end up detailing the mechanics of how chromium VI enters the water cycle before the EPA has developed a clear set of guidelines specific to it.

"Our goal is to develop predictive capabilities," he explained. "Where in the state could there be the potential for higher levels of hexavalent chromium?"

Eventually, Gorski hopes their findings could be used to help develop guidelines similar to what's been done with arsenic, where well drillers in Wisconsin know where and how deep to drill to avoid encountering it, as well as which types of well casings to use.

"Having this type of research will benefit us now, and benefit us later," said Gorski. —ARC



Pat Gorski, Elizabeth Tomaszewski

Clockwise, from left; workers drill a replacement well.

Graduate student Zana Sijan conducts reactor experiments on water samples, using a glovebox to maintain an anoxic environment.

Disruption of rock surrounding a well during drilling can lead to the formation of chromium-VI in well water.

Sea Grant and UWSP-NADF:

A Hookup

Lake herring swirl around a tank at the University of Wisconsin-Stevens Point: Northern Aquaculture Demonstration Facility (UWSP-NADF), and Greg Fischer, the facility's manager, shows his connection with fish of all species.

Beginning in February, Sea Grant takes on a formal relationship with the University of Wisconsin-Stevens Point: Northern Aquaculture Demonstration Facility (UWSP-NADF) to enhance technology transfer and the sharing of aquaculture knowledge with Wisconsin's would-be and current fish farmers.

Sea Grant is providing funding for the facility based in Red Cliff at the northernmost tip of Wisconsin near Lake Superior. In return, Sea Grant is directly dialed in to the UWSP-NADF's innovative work to optimize the health and growth potential for fish species such as lake trout, lake herring, Arctic char, yellow perch, Atlantic salmon and a hybrid of walleye and sauger, known as saugeye. It's all in pursuit of a robust commercial aquaculture industry in the state.

Prof. Chris Hartleb said he doesn't particularly like to highlight a negative, but it is a fact: "One of the criticisms we hear about the UWSP-NADF is that it's as far north in the state as you can go."

That balances with the fact that there are wonderful demonstration projects underway and learning opportunities abound. However, those in the aquaculture industry face travel challenges when trying to access the projects and learning.

Hartleb said the new relationship with Sea Grant will help. Now, the UWSP-NADF will be able to more easily spread the word and strengthen the state's diverse aquaculture industry.

The UWSP-NADF in Bayfield County is co-directed by Hartleb and his colleague Dr. Matt Rogge of the College of Letters and Science at UW-Stevens Point. Despite its far-flung location, the facility is a part of the school located in the central part of the state.

Greg Fischer is the facility's manager. He chuckled as he recounted past phone conversations with campus colleagues. "I'll be on the phone and the person will say, 'Can we meet? Can you come to my office?'" not realizing that Fischer is more than 200 miles away.

But distance doesn't hinder productivity or passion. "We take a lot of pride in what we are doing," Fischer said. —MH

Ed Edlish / FEMA

Weather Ready Nation

New Warning System Could Save Lives

When extreme weather strikes, information—accurate information—becomes a matter of life and death.

However, in the heat of a crisis, sometimes warnings about weather can become misinterpreted or exaggerated. To combat the confusion, the National Weather Service (NWS) is rolling out a new, impact–based warning system, featuring specific messages that range from "major home destruction likely" to "tornadic winds could throw automobiles into the air" to "the entire neighborhood will be destroyed."

"Providing impact-based warnings is important because they relay a consistent message about the impacts of severe weather that emergency managers and broadcast meteorologists can disseminate to the public," said Jane Harrison, a social scientist with Wisconsin Sea Grant. "It takes out the guesswork when a big storm hits."

Backed by a $50,000 grant from the National Oceanic and Atmospheric Administration's (NOAA) Weather-Ready Nation project, Harrison is part of a team that's testing the efficacy of the new system with three key user groups—broadcast meteorologists, emergency managers (EMs) and the weather forecasters charged with writing the impact statements. Working with a network of social scientists within the Great Lakes Sea Grant Network, Harrison and graduate student Katie Williams spent the summer conducting focus groups in Fargo, N.D.; the Quad Cities, Iowa /Ill.; Chicago; and Louisville, Ky.

Harrison and Williams are aware that the project carries unique challenges—namely, trying to understand the complex terminology and jargon of three distinct groups. That's essential to understanding whether the messages are working. Williams, meanwhile, has already discovered that different parts of the country view their emergency messages quite differently. (See sidebar.)

The project coincides with a growing effort at NOAA to fund projects related to preparing communities for extreme weather events. —ARC

LOCAL WEATHER

Katie Williams was ready for the focus groups. She wasn't prepared for the vastness of the North Dakota sky.

"The clouds were amazing," she said, "and huge."

Earlier this summer, Williams, a graduate student in geography at the University of Wisconsin-Milwaukee, travelled to Fargo to interview the first group of broadcasters and EMs as part of NOAA's Weather-Ready Nation project. Her participation is being funded by UW Sea Grant.

In Fargo, she discovered the broadcasters had heard of the impact-based warning tool but had yet to use it. As she spoke with them, Williams soon realized they viewed it differently than states with a less cool and dry climate—states like Oklahoma that live in constant fear of devastating tornados.

"They don't take their summer severe weather nearly as seriously as their winter severe weather," said Williams, noting that North Dakota experiences more blizzards than tornados. "Their reaction was like, 'This is really helpful—just not helpful for us,'" said Williams. That reaction could complicate NWS plans to standardize the impact-based messages.

Williams said she's been fascinated by the ways the focus groups interweave science and policy.

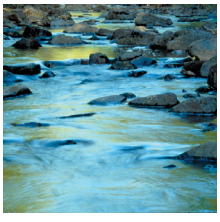
"It's really interesting to see how this program is being received," she said. "The broadcasters I spoke to clearly see their role as translating information from the National Weather Service, and they tend to rely on their own experiences. This is something of a departure from that."

ASC

University of Wisconsin Aquatic Sciences Center
1975 Willow Drive
Madison, WI 53706-1177

Aquatic Sciences Chronicle

a joint newsletter from UW Sea Grant and UW Water Resources



CALENDAR OF EVENTS

JAN. 28, 2014
The River Talks
Duluth, Minn.
bit.ly/18rZLjx

FEB. 23-28, 2014
Association for the Sciences of Limnology and Oceanography
Honolulu
sgmeet.com/osm2014/default.asp

FEB. 8, 2014
Lake Sturgeon Bowl
Milwaukee
glwi.uwm.edu/sturgeonbowl

MARCH 13 AND 14, 2014
American Water Resources Association – Wisconsin Section Meeting
Wisconsin Dells, Wis.
awra.org/state/Wisconsin

Find a Fellowship
Encourage Your Student to Apply

Wisconsin students have traditionally fared well in national and regional competitions for professional fellowships. The students of 2013-14 have further chances to display their mettle through these opportunities, with various January and February deadlines:

Dean John A. Knauss Marine Policy Fellowship, based for a year in Washington, D.C.

NOAA Coastal Management Fellowship, which offers experience with a state coastal zone management program.

Great Lakes Commission-Sea Grant Fellowship in Ann Arbor, Mich., focused on the sweetwater seas.

Sea Grant-NOAA Fisheries Graduate Fellowship in either population dynamics or marine resources economics for summer 2014.

Visit the "students" tab at **seagrant.wisc.edu** for more.