

Scientists Turn to Science Fiction to Model Future Scenarios

by Jenny Seifert

What if we bet the farm that technology was the best way to clean up our lakes? What if the world rethought its relationship to freshwater, leading to a global values shift and new management practices? Or what if we did absolutely nothing to improve the quality of our water?

While these questions may seem far-flung, a team of UW-Madison scientists is giving them full consideration and using scenarios to explore the possibilities for the future of the Yahara Watershed, the region that includes Madison's lakes. The underlying understanding is that decisions we make today affect people and places we care about over the long-term. With an eye to the year 2070, the "Yahara 2070" team aims to uncover opportunities and challenges for ecosystem resilience and the well-being of future generations. See <http://yahara2070.org>.

Scenarios are fictitious, but plausible, stories about the future – not predictions, but explorations of the question "What if?" Scientists use scenarios to hone hypotheses and challenge models. Decision-makers use scenarios to anticipate changes and work toward a desirable future.

The Yahara 2070 research team, which includes CFL director Steve Carpenter, is developing four scenarios through public input, computer models, and art. The scenarios follow distinct pathways of social and environmental change and speculate what the future of the Yahara Watershed's water, land, climate, and communities could be like as a result.

Each scenario is designed to highlight different advantages and disadvantages. None are presented as an "ideal" outcome. The idea is to start a conversation about where current government, technological, societal and land-use decisions are leading us.



The "Accelerated Innovation" scenario imagines a future where green technology saves our lakes.

In *Accelerated Innovation*, the United States has prioritized technology to address climate change and other environmental challenges. Well-positioned for this shift, the Yahara Watershed emerges as a solution center. By 2070, engineered landscapes and tech-driven lifestyles bring both benefits and costs.

In *Abandonment and Renewal*, the country doesn't do enough to combat climate change and other ecological ills, resulting in catastrophes across the nation. An environmental health disaster nearly empties the Yahara Watershed of people. In the disaster's wake, novel ecosystems transform the region, and the few remaining humans start anew.

In *Connected Communities*, a collective values shift led by a highly organized youth movement transforms the global paradigm. Community and sustainability become priorities and, by 2070, permeate the watershed's culture and policies.

(Yahara 2070 article continues on page 3)

Notes from the Director

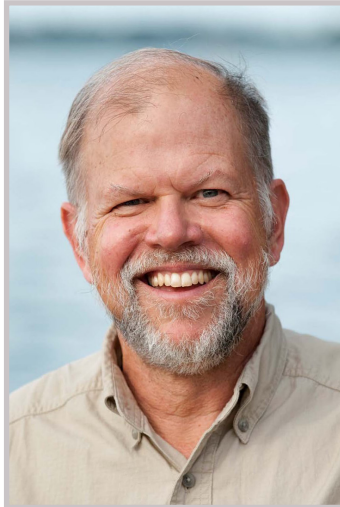
by Stephen Carpenter

The Center for Limnology was well represented at the Joint Aquatic Sciences Meeting, a rare convocation of three major U.S. freshwater science societies, in May 2014. Attendees included CFL alumni, like Redfield Award-winner Gene Likens and Plenary Speakers Patricia Soranno and Julian Olden, as well as current faculty, postdocs and students. Emerging trends of freshwater science, such as macro-scale ecology and sensor networks, were on display. The quality of the science was high and the presentations were excellent.

Two features of the meeting were new and different. The first was the abundance and diversity of electronic communications. Many attendees were navigating the meeting with the online agenda manager on their wireless devices. Talks were tweeted in real time, with blogs and other online commentaries not far behind. The second highlight was the prominence of broad science communication to a general audience. This is a new dimension of professional meetings. It reflects the evolution of the Wisconsin Idea, a guiding principle of the University of Wisconsin-Madison.

The [Wisconsin Idea](#) – that the work of the University should be applied throughout the state to improve the livelihoods and well-being of all citizens – was articulated in 1904 by President Charles Van Hise. By that time, UW-Madison limnologists had spent nearly 30 years gathering information about the freshwaters of the state. Van Hise himself was a staunch advocate for soil conservation to prevent the loss of phosphorus from Wisconsin's soils. The practices promoted by Van Hise resemble those used today by land managers to prevent nonpoint phosphorus pollution of lakes. However, the role of phosphorus in eutrophication of lakes would not be confirmed until decades later.

Limnology at UW-Madison has made many contributions to the quality of life in Wisconsin and elsewhere. Numerous important discoveries for managing eutrophication, fisheries, and invasive species have emerged from our work. A remarkable number of leaders in freshwater sciences



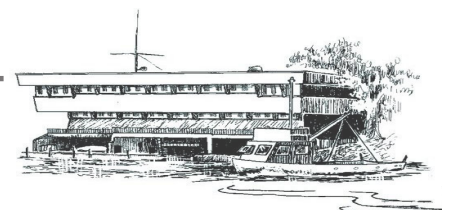
[Stephen Carpenter](#),
Director, UW-Madison
Center for Limnology.
Photo courtesy of UW
Communications.

received degrees here and went on to distinguished careers throughout the state, the U.S., and the world. The application of basic science to society's freshwater problems is well established. So is the training of outstanding practitioners and teachers. But the rising importance of science communication is new.

This newsletter highlights some of the CFL's exciting science communication activities. [Yahara 2070](#) is an experiment in transdisciplinary research, that is, science that involves citizens of the Yahara watershed as well as a team of researchers from both the natural and social sciences. Stories and art about the Madison region in 2070 are driving advances in ecosystem modeling that will quantify potential changes in land and water resources over a 60 year period. [Science on Tap-](#)

[Minocqua](#), Trout Lake Station's series of events at the Minocqua Brewing Company, continues to enliven public dialog in Northern Wisconsin. In June 2014, Science on Tap addressed one of the more controversial topics in the state, the proposed Gogebic Taconite mine near the town of Mellen, with a public forum and field trip. This event provided information to 400 members of the public. CFL's Citizen Science project on water clarity illustrates a different approach to outreach, one that engages citizens in the process of collecting data.

Research on fundamental ecological questions, applied problem solving, and lake features that are just plain interesting continue to provide the backbone of CFL's science. But, increasingly, the public's growing thirst for information about freshwaters is driving changes in our approaches to research and outreach. The public now plays a role in our science as gatherers of data or as participants in scenarios and surveys. Increased participation in lake research promotes more curiosity about our freshwater resources. It's safe to say that the Wisconsin Idea is not just alive, but evolving – adapting to the new landscape of public engagement with science in Wisconsin.



CFL's [Science on Tap](#) Tackles Wisconsin Mining Controversy

by Adam Hinterthuer

This June, more than 400 people settled into seats at the Campanile Center in Minocqua to hear a discussion about the proposed iron ore mine in northern Wisconsin. The event featured speakers from academic, scientific, industry, state agency and environmental backgrounds and was moderated by the senior staff attorney of the bipartisan Wisconsin Legislative Council.

Despite tackling one of the most contentious issues in our state, the forum provided a dynamic, respectful flow of information and audience questions for hours. After the event, attendees, participants, and even state legislators commented on its professionalism and importance.

The next day, nearly four dozen area citizens boarded a motor coach to tour the potential mine site and talk with tribal, environmental and mining groups.

The event was organized, in part, by Trout Lake Station staff as part of our monthly “science café” series, “[Science on Tap-Minocqua](#),” which, we believe, is a sterling example of the *Wisconsin Idea* - providing value-neutral, science-based information



On the mining field trip, members of the public had the opportunity to see the proposed site first-hand and talk with tribal, DNR and mining representatives.

to a large public audience and highlighting UW-Madison’s world-class research as something that directly addresses concerns within the state.

We’re proud of the event and have an excellent schedule in the works for 2015! We hope you can join the conversation at an event up in the Northwoods, live-stream our talks (and even send in questions) on your computer at home, or watch archived videos on our YouTube channel – details are all on our website, www.scienceontapminocqua.org.

Yahara 2070 Scenarios, continued from page 1

In *Nested Watersheds*, a national water crisis leads the United States to completely overhaul how it governs freshwater resources. It redraws the boundaries of water governance around the nation’s major watersheds. By 2070, agriculture and urban life in the Yahara Watershed have been reoriented around conserving and cleaning freshwater.

The primary goal of Yahara 2070 is to understand the range of potential future conditions for the region’s “ecosystem services,” or benefits, like food production and recreation, that nature provides us. Ultimately, these conditions have implications for our future economic, ecological and social prosperity.

The project team also hopes to encourage discussion within the watershed about its long-term future—an uncommon, but needed, approach for ensuring resilience. Over the next two years, the team will be conducting outreach activities with decision-makers and communities to help them envision desirable futures.



In “Abandonment and Renewal” Madison rebuilds after a catastrophic toxic event.

Yahara 2070 is part of the Water Sustainability and Climate project, a five-year endeavor funded by the National Science Foundation to understand how water and other ecosystem services change over time. Dive deeper into these stories and learn more at <http://yahara2070.org>.

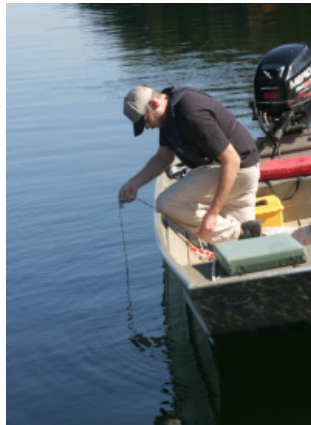


Citizen Scientists Provide Clarity for Lake Researchers' Big Questions

by Adam Hinterthuer

This April, a Center for Limnology-led report in the journal, [PLOS ONE](#), made some waves in scientific circles. But the massive new study of Midwestern lake water clarity trends didn't make a splash because of its large dataset – it's where that data came from that's truly noteworthy.

In a study involving nearly a quarter of a million observations in 3,251 lakes spread across eight states and seven decades, the researchers themselves didn't collect a single bit of data. Every observation came instead from a lakefront homeowner, boater, angler or other member of the public wanting to know a little more about what's going on in "their" lake.



"More and more, ecologists are looking at big picture issues," says Noah Lottig, a research scientist at the CFL's Trout Lake Station, "but there aren't enough scientists in the world to collect data for these projects." Enter citizen scientists. "There's a lot of information out there and, really, citizen data has been underutilized," Lottig says.

In an attempt to capitalize on citizen-generated data, Lottig and a team of freshwater scientists from across the U.S. combed through state agency records and online databases full of water clarity measurements taken by lake associations and other citizen groups.

Previous studies have shown that citizen readings of Secchi disks are nearly as accurate as professional scientists' measurements, says Lottig. With a dataset covering more than 3,000 lakes and stretching back to the late 1930s, his team decided to ask questions about large-scale and long-term change.

What they found was that, on an individual scale, some lakes were getting clearer while others were not. However, says Lottig, combining all that data together indicates that there is a slightly increasing trend in water clarity at a regional scale.

"Unfortunately," he says, "the data don't exist to explain those patterns."

Though the citizen scientist dataset limited his ability to explain the patterns observed, Lottig says it suggests that such information can play a role in shaping future research — a possibility that has some scientific organizations taking notice.

"This study highlights the research opportunities that are possible using data collected by citizens engaged in making important environmental measurements," says Elizabeth Blood, program director in the National Science Foundation's Directorate for Biological Sciences, which funded the work. "Their efforts provide scientists with data at space and time scales not available by any other means."

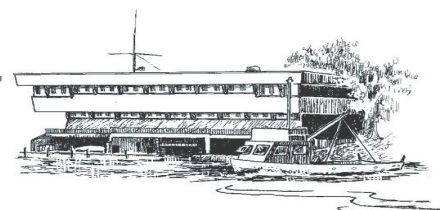
For Ken Fiske, it's an effort that's well been worth it. In 1985, Fiske saw a call for volunteers for a new Wisconsin citizen lake-monitoring program. Fiske, who had recently bought property on the shoreline of [Lake Adelaide](#) in northern Wisconsin, didn't hesitate to sign up.

"My interest, initially, was in finding out what the quality of water in Lake Adelaide was and seeing what we could do to maintain it," he says. "And if anything started to get out of whack, we could identify it very quickly."

For the next several years, Fiske took a monthly five-hour drive up north to take measurements. Eventually, he got some neighbors to help. Nearly thirty years later, they are still going strong.

"It's a cooperative thing and that's what makes it work and we've been doing it long enough that it makes the results meaningful," he says.

That meaning goes beyond the landowners around Lake Adelaide. All over the country, folks like Fiske have been peering into lakes for decades, collecting data on water clarity, temperature, and more. Now professional scientists are harnessing their efforts to try to answer some of the biggest questions on Earth.



Speaking for the Trees: CFL Research Adds Woody Habitat to Climate Change Discussion

by Adam Hinterthuer

In attempts to predict what climate change will mean for life in lakes, scientists have mainly focused on things like water temperature and dissolved oxygen.

But CFL research is speaking for the trees — specifically dead ones that have toppled into a lake's near shore waters.



[Jereme Gaeta](#) is now an assistant professor at Utah State University. During his time as a grad student and post-doctoral researcher at CFL, he worked extensively on what access to coarse woody habitat means for fish. Under “normal” conditions, he says, trees in the water offer a refuge for fishes that would otherwise be lunch. They also provide food for

those fishes — serving as structure for algae to grow on and aquatic insects to live.

But, when water levels drop, that habitat is left high and dry. Without it, Gaeta says, species like the yellow perch he studied are forced to move into what's called the foraging arena.

“When lake levels go down,” Gaeta says, “they lose all that refuge, so they're pretty much forced to live in the foraging arena, where they're directly interacting with their predators — in our case largemouth bass.” Previous studies, he says, have found that, in the arena, vulnerability goes “through the roof.”

Working with CFL director, [Steve Carpenter](#), and Wisconsin Department of Natural Resources research scientist, Greg Sass, Gaeta monitored Little Rock Lake in northern Wisconsin from 2001 to 2009. During that time, a prolonged drought greatly reduced lake levels throughout the region.

In Little Rock Lake, more than 75 percent of the coarse woody habitat was out of reach for fishes. That led to a decline in the perch population, with the species eventually reaching undetectable levels in the lake. Similarly, the bass population began to flounder, with their growth rates slowing dramatically.

In a report the team published in the [Canadian Journal of Fisheries and Aquatic Sciences](#), they say that a likely cause of these declines was that bass binged on perch, eating themselves out of their “best prey source.”

In the foraging arena, ecosystem dynamics changed for both predator and prey. Perch lost the cover crucial to both their survival and the survival of their offspring. Bass lost a sustainable set-up of regular meals. While the perch buffet was undoubtedly good while it lasted, bass were eventually forced to turn to terrestrial sources of food, like dragonflies and the occasional, unlucky shrew — meals that forced them to spend more energy to get less, stunting their growth.

Unfortunately, a recent bounce back in lake levels doesn't mean everything's back to normal in Wisconsin lakes. Gaeta says a five-year study that simulated rebounding lake levels by adding wood to the near-shore waters shows that, while fish flock back to coarse woody habitat as it becomes available, population numbers don't rebound accordingly.

There is still a lot to learn, but Gaeta hopes the study can be a piece in the puzzle as climate scientists work to better the implications of things like changing precipitation patterns and more severe droughts.

“The more puzzle pieces we add to the [climate change] picture,” Gaeta says, “the clearer that picture becomes. This is just one of the pieces, but I think it fits in a corner of the puzzle that we haven't really looked at yet.”



Fish feel the heat when water levels drop and leave trees like these high and dry.



A Piece of CFL History Returns Home

by Lorna Petty Harrell and Roy A. Stein

A phone conversation last summer between John Magnuson and a former student has led to the donation of a Whitney thermometer, handcrafted over 40 years ago at the (then) Laboratory of Limnology. Lorna Petty Harrell (M.S. 1972) had called her long-ago advisor to discuss donating some scientific reprints to the CFL archives and casually mentioned she still had her old Whitney thermometer gathering dust in her garage in Northern Kentucky. She was downsizing and didn't know what to do with it. John jumped at the chance to have the instrument return to UW for display in the Zoology Museum in Birge Hall. Lorna readily agreed to the donation and promised to write a narrative about the Whitney and its history.

In keeping that promise, here is the tale of a limnological relic!



A Whitney thermometer returns to its home shores.

Lorna and several other grad students each constructed Whitney thermometers during the winter of 1972, under the supervision of staff members Gerald "Chip" Chipman (assisting with electronics) and Frank Eustace

(assisting with woodworking). Because the Whitney was designed primarily to record temperature profiles in lakes, Lorna had little opportunity to use the instrument during her early professional years, which focused on rivers and streams. Simultaneously, lighter-weight, multifunctional instruments were developed and quickly came to be widely used.

The story would have ended here had not Lorna discovered a yellowed letter beneath the lid of the Whitney. Written 40 years ago by Roy Stein (Ph.D. 1975), the letter thanked Lorna for letting him borrow the Whitney for a project he and former CFL Director Jim Kitchell conducted during 1972

at Lake Skadar, located on the border between Montenegro (at the time a province of Yugoslavia) and Albania. The letter led Lorna to contact a surprised Roy, asking him to collaborate on the narrative.

Roy recalled that "in a moment of weakness," he accepted an invitation to participate in a research effort on Lake Skadar, supported by the Smithsonian via PL 480 funds. He spent six months there during 1972, primarily to determine if the lake could be the field site for his dissertation research (for multiple reasons, it could not). In collaboration with American and Yugoslavian scientists, Roy explored fish population dynamics, catch statistics (summarizing historical commercial fisheries data), and predator-prey relationships (European carp and snails) while helping to develop a long-term lake management program.

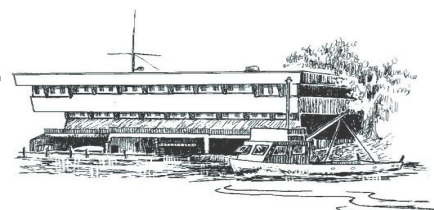
Lorna had lamented about never really using the Whitney herself, but Roy's letter reminded her that the Whitney had actually been put to good use and had traveled to Europe and back.

During their Wisconsin years, Lorna and Roy were advised by John Magnuson and both are now retired. Lorna was John's first female grad student. She became a regional water resources planner, educator, and environmental impact analyst while Roy became a professor at The Ohio State University and founded the Aquatic Ecology Laboratory, modeled after the Center for Limnology.

Go to limnology.wisc.edu/CFL-Newsletters.htm to read more about Lester Whitney in the Limnology Newsletter from 1999.



E. A. Birge, Chancey Juday and Lester Whitney at Trout Lake Station in 1935. Whitney spent several summers at Trout Lake, pursuing a PhD in Physics. Photo: UW Digital Collections.



Field Samples: Graduate Student Research

by Adam Hinterthuer

Aaron Koning (McIntyre)

Aaron Koning has spent the better part of this year conducting fieldwork along the remote, mountainous border of Thailand and Myanmar. A 4th year PhD candidate working with CFL professor, Pete McIntyre, Aaron explores freshwater conservation efforts and their impacts, especially on the fishes that many people in Southeast Asia depend upon for sustenance. To get at these answers, Aaron says, “I spend weeks on end staying in villagers’ homes; waking up to the sound of my study river; eating fish, frogs, and insects caught on the river; and going to sleep a stone’s throw from the river.” While it might sound like he’s rubbing it in, it should be noted that Aaron spends a lot of that time “scrubbing algae off of rocks with a toothbrush,” something even his less “international” colleagues can appreciate. Originally from Grand Rapids, Michigan, Aaron lived in Thailand for four years before starting graduate school, so his return for a dissertation on the country’s freshwater fisheries is a homecoming of sorts. When he’s not in Thailand or in the lab, Aaron enjoys “paddling things (kayaks, canoes, paddle boards), camping, watching soccer, and staring at fish.”



Peter Levi (McIntyre)

Peter Levi is also interested in how conservation efforts are impacting freshwater ecology, but his homecoming took him in the opposite direction of Aaron. Peter came to the CFL from a stint at Aarhus University in Denmark in order to focus on a place much closer to home – the urban, often concrete-lined rivers of Milwaukee. Over the last decade, the city has worked to restore its rivers and Peter now helps “evaluate and compare the ecological, economic, and social costs and benefits.” The goal, he says, “is to use these data to inform future restorations not only in Milwaukee, but throughout the Great Lakes as well.” While Peter enjoys his work on neglected streams, he wouldn’t mind getting out more to the peace and quiet of less developed ecosystems. Originally from Watertown, Peter says he still misses Denmark and the “daily 9:45 coffee break when everyone would meet in the conference room for wonderful bread, butter, jams, Nutella, coffee, and tea.” Perhaps the CFL should formalize our own intermittent “bagels in the break room” and create a weekly event!



Samantha Oliver (Stanley)

While Aaron and Peter criss-cross the planet in search of field sites, Sam Oliver is here in Hasler Lab, collecting data from across the globe. Sam works with a group called “CSI: Limnology,” which tries to harness “big data.” The group collected data from tribal, state, federal, university, and private organizations on thousands of lakes across seventeen U.S. states. The result is the LAGOS database, which, Sam says, lets scientists “ask water-quality questions that we normally [can’t], because we don’t have the data at these large-scales.” A Minnesota native, Sam came to UW-Madison as an undergrad and worked with Jim Kitchell and Jake Vander Zanden studying invasive species. She received her master’s degree from the University of Minnesota-Duluth on the shores of Lake Superior. There she did more traditional science, working “in one community, on one lake, studying one process.” Now, though, she’s what some call a “data janitor.” And that suits her just fine. “My career path is being set,” she says, “there’s still the on the ground science to be done, but I’m excited that I’ll grow into not just a single scientist’s role, but as a part of a team.”



Go to <http://limnology.wisc.edu/blog> to read weekly research Q&A with a faculty member, post doc or grad student.

Catching Up With Alumni

Daniel Schneider

(M.S. 1986, PhD 1990, Frost and Magnuson, Post-doc, 1991, Kitchell)

Daniel is a professor in the Department of Urban and Regional Planning and a scientist at the Illinois Natural History Survey at the University of Illinois. He just finished up two years as interim department head, first of the Department of Urban and Regional Planning, and then of the Department of Landscape Architecture. He learned a lot, but is looking forward to getting back to his regular research and teaching. He has been concentrating his research these days on environmental history. He recently completed a book, *Hybrid Nature: Sewage Treatment and the Contradictions of the Industrial Ecosystem* (MIT Press, 2011), on the history of biological sewage treatment. It received the George Perkins Marsh Prize for best book in environmental history from the American Society of Environmental History.

Peter Inskip

(M.S. 1980, Magnuson) Following temporary appointments as a foreign fishery observer with the National Marine Fisheries Service in Alaska (1980) and as a fish ecologist with the U.S. Fish & Wildlife Service in Colorado (1981-82), Peter returned to graduate school to do a doctoral program in epidemiology at the Harvard School of Public Health. He began working in the Radiation Epidemiology Branch, Division of Cancer Epidemiology and Genetics in the National Cancer Institute in 1987, where he has remained, with the exception of a three-year interlude (1995-98) as an Associate Professor in the College of Veterinary Medicine at Texas A&M University. Peter currently is a Senior Investigator at NCI, where his research has most recently focused on the study of radiation-related second primary cancers in childhood cancer survivors and the etiology of brain tumors in adults. He began the latter line of research in response to public and Congressional concerns about the possible risk of brain cancer in relation to exposure to radiofrequency radiation from cellular telephones. Peter lives in Rockville, Maryland. His hobbies include fishing and canoeing.

Chris Luecke

(Post-doc 1986-87) Chris is currently Dean of the Quinney College of Natural Resources at Utah State University. Part of his duties are to oversee undergraduate degrees in Fisheries and Watershed Sciences, and graduate degrees in Aquatic Ecology and Fisheries Biology. Chris thinks fondly of his days at the CFL and is glad to see the continued vigor of the aquatic sciences programs at UW. The Quinney College is very pleased to be adding CFL recent graduate Jereme Gaeta to their faculty ranks this fall.

Additional alumni news... Pat Soranno gave a plenary lecture at the 2014 Joint Aquatic Sciences Meeting; Kathy Cottingham was a plenary speaker at the annual meeting of the Ecological Society of America; and Shelley Arnott, Daniel Schindler, and Peter Leavitt were invited speakers at the Society of Canadian Limnologists/Canadian Society for Ecology and Evolution/Canadian Society of Zoologists meeting in Montréal.

Alumni:

Please let us know about address updates, job changes, and other noteworthy events!

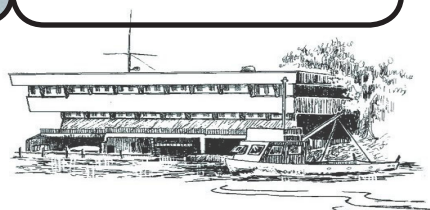
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608-262-3014



Allequash Lake,
near Boulder Junction, WI,
June 2014

by Helen Klebesadel, Trout
Lake Station's 2014 [artist in residence](#)



Denise Karns Retirement

After 32 years of continuous service to UW-Madison, Denise Karns retired from the Center for Limnology last December. As the “Jill of all trades” for the Center, Denise was the go-to person for many things. Her extensive experience at the university provided the foundation for her excellence in supporting the CFL’s research, teaching, and outreach activities. During her tenure at the CFL, Denise was a key participant in several successful events, including two site reviews of the North Temperate Lakes Long Term Ecological Research project (NTL-LTER), two Science in the Northwoods, and the dedication and re-naming of the Laboratory of Limnology to the Arthur Davis Hasler Laboratory of Limnology.



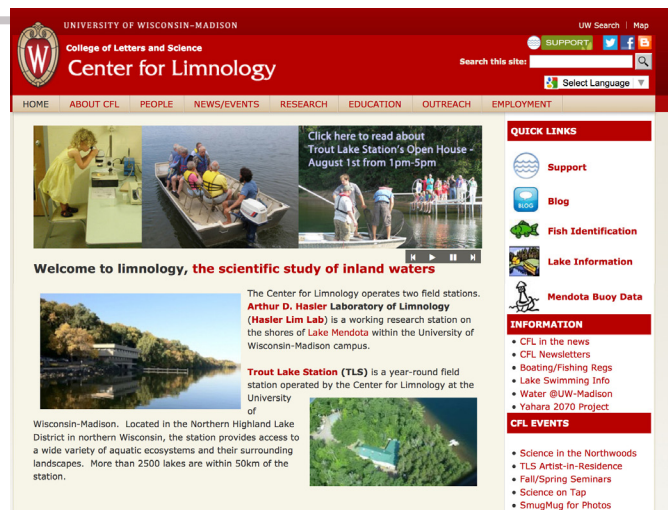
Since her retirement, Denise has become increasingly involved as an anti-puppy mill activist, and continues to volunteer for dog rescue groups. Additionally, she’s training with her own dog, Jean, for competitive dog agility, and continues to expand her horizons with writing, photography, drawing, and whatever other activities that don’t run fast enough to get away from her. She is considering following Jim Kitchell’s footsteps and taking up the ukelele.

We wish her continued success in her retirement!

New Website = More Access

Check out our new look online! The CFL has revamped its website and added cool content, like access to our entire archive of past newsletters - starting with Issue #1 in 1987. Feeling nostalgic? Step back in history and read about Lester V. Whitney: Instrumentation Pioneer; the Lake Mendota Food Web Project; Women in Limnology and much more! Available now at <http://limnology.wisc.edu/>.

And, as always, we want to know about you and your current research for future issues of the CFL Newsletter! Drop us a line at limnology@mailplus.wisc.edu.



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New Faces and Transitions at CFL

We welcome the following new staff to the CFL, as well as new appointments for continuing staff:

Ben Beardmore, Research Associate (Stanley)
Chelsey Blanke, Research Assistant (Vander Zanden)
Vince Butitta, Research Assistant (Stanley)
Sam Christel, Research Assistant (Stanley)
Hilary Dugan, Research Associate (Hanson)
Mark Gahler, Senior Information Processing Consultant (Gries)
Peter Levi, Research Associate (McIntyre)
Peter Lisi, Research Associate (McIntyre)
Allison Moody, Research Associate (McIntyre)
Kelly O'Ferrell, University Services Program Associate
Andy Stevens, Research Assistant (McIntyre)
Tyler Tunney, Research Associate (Vander Zanden)

Stay in Touch!

Via our website at
limnology.wisc.edu

or our blog at
limnology.wisc.edu/blog

or on Facebook
facebook.com/centerforlimnology

or on Twitter:
[@WiscLimnology](https://twitter.com/WiscLimnology)

Recent Degrees and Transitions

Ryan Batt (PhD, Carpenter), thesis *Understanding and anticipating change in aquatic ecosystems*, took a Postdoctoral Associate position at Rutgers University Institute of Marine and Coastal Sciences.

Nora Casson (Post Doc, Stanley) is an Assistant Professor in the Department of Geography at the University of Winnipeg.

Evan Childress (PhD, McIntyre), thesis *Cross-ecosystem delivery of nutrients to streams: The role of fish migrations and landscape processes*, will be starting a Postdoctoral Associate position at the USGS Conte Anadromous Fish Research laboratory in Massachusetts.

John Crawford (PhD, Stanley), thesis *Carbon gas emissions from headwater streams*, is a Research Ecologist with USGS National Research Program in Boulder, CO.

Jereme Gaeta (PhD, Carpenter; Post Doc, Vander Zanden) is an Assistant Professor of Fish Ecology, Conservation, and Management at Utah State University.

Margaret Guyette (Post Doc, McIntyre) is an Environmental Scientist at St. Johns River Water Management District in Florida.

Stephanie Januchowski-Hartley (Post Doc, McIntyre) is pursuing her freshwater conservation research from her new home base in the UK, as well as continuing her outreach efforts via Connected Waters.

Zach Lawson (MS-Freshwater and Marine Science, Carpenter), thesis *A test of thermal limits: Experimental mixing of Crystal Lake to eradicate coldwater invasive rainbow smelt (*Osmerus mordax*)*, is a Fisheries Biologist at the Wisconsin Department of Natural Resources.

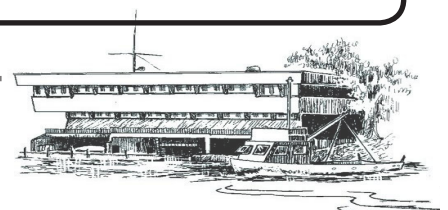
Emily Read (Post Doc, Hanson) is a Scientist at USGS.

Chad Sebranek (Associate Programmer Analyst) took an Associate Research Specialist position at the Waisman Center.

Aaron Stephenson (Information Processing Consultant) is a Geographer at USGS.

Luke Winslow (PhD, Hanson & Stanley), thesis *Landscape limnology: Lake morphology and process at the continental scale*, took a Postdoctoral Associate position at USGS.

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Awards

Anna Grant Birge Memorial Scholarships were awarded to Civil and Environmental Engineering students Michael Busch and Andrew Maizel; Environmental Chemistry and Technology student Robin Rohwer; Environment and Resources student Michael Braus; Freshwater and Marine Science students Luke Loken, Luke Winslow and Sam Zipper; Microbiology student Alexandra Linz; and Zoology student Kara Cromwell.

Undergraduate Samantha Neary was the recipient of a Chase-Noland Scholarship.

Recent graduate Lauren Hennelly (B.A., Ecology) received a Fulbright U.S. Student Program award to study wolves in India.

Freshwater and Marine Science student Samantha Oliver was awarded a summer scholarship from the Dorothy Powers Grant and Eugene Lodewick Grant Memorial Fund.

Jean B. and E.T. Juday Awards were given to undergraduates Jamie Dobosenski and Ben Kranner.

Undergraduate students Meredith Smalley and Paul Schramm were awarded John and Patricia Lane Summer Research Scholarships.

The Kenneth W. Malueg Limnology Scholarship was awarded to Freshwater and Marine Science student Evan Childress.

Freshwater and Marine Science student Luke Loken was the recipient of a Charlotte Stein Student Travel Award.

Freshwater and Marine Science student John Crawford has been selected as the recipient of the 2014 Exceptional Promise in Graduate Research Award from the Ecological Society of America (ESA) Aquatic Ecology Section.

Carol Warden was a recipient of the L&S Academic Staff Excellence Early Career Award for 2013-2014.

Steve Carpenter received the 2014 MIT Technology Achievement Award (Individual).

John Magnuson was elected as a 2014 Wisconsin Academy Fellow.

CFL Outreach by the Numbers in 2014

by Adam Hinterthuer

- 217** Visitors to Hasler Lab Open House
- 342** Visitors to Trout Lake Open House
- 45** Newspaper articles, radio pieces and TV spots on CFL research
- 1** Appearance by Bucky Badger
- 1,500+** People reached directly through CFL Outreach programs
- 401** Likes for “Center for Limnology” on Facebook
- 1,356** Followers of “@wisclimnology” on Twitter
- 23,504** Visitors to the CFL Blog since the last newsletter
- 1** Research promo on Big Ten Network



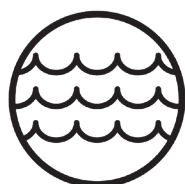
Hasler Lab had a very special visitor at this year's Open House. Bucky even checked out some aquatic invertebrates with our visitors!



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Limnology News

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In This Issue

- **Scientists Using Science Fiction**
- **Big Turnout for CFL Forum on Mining**
- **Citizen Scientists Ask Big Questions**
- **Why Fish Need Trees**
- **A “Relic” Returns Home**
- **Student Research “Field Samples”**
- **Catching up with Alumni**
- **Denise Karns Sails into the Sunset**



***Why is Bucky Badger on CFL's pier?
Look inside for the answer.***