College of Letters & Science
UNIVERSITY OF WISCONSIN–MADISON

LIMNOLOGY NEWS

News for Alumni and Friends of the Center for Limnology

Fall 2019

Winter Limnology

Read more on page 6

Photo: Noah Lottig

Photo: Jeff Miller

Thank you for reading Limnology News! As always, I'm excited to share some of the happenings at the Center for Limnology (CFL) from the past year, and provide a look ahead to the coming year.

This last year, our very own Steve Carpenter was awarded the Ramon Margalef Prize in Ecology from the Government of Catalonia - this prestigious and well-deserved international award recognizes exceptional contributions to the environmental sciences (pg 3). Our new Trout Lake Station Director, Gretchen Gerrish, took the helm of the Station in June of 2019, and is already leading the charge on some exciting initiatives.

On a more melancholy note, two long-serving members of the CFL community retired in 2019: the Limnos, and its captain and CFL facilities guru Dave Harring (pg 10). The Limnos plied the mighty waters of Mendota in service of the CFL for an impressive 52 years, and was an iconic part of the Lake Mendota lakescape. Ultimately, mechanical problems become too much to manage. On July 25, 2019, we christened the Limnos II, which promises to serve the teaching, outreach, and research mission of the CFL for many years to come. We are grateful to the College of Letters and Science for helping to make this happen.

Looking forward, there is much excitement for the coming year! We are pleased to announce that Dr. Olaf Jensen, currently an Associate Professor at Rutgers University, will be joining the CFL as our newest faculty member in summer of 2020 (pg 5). What's more, we are currently in the midst of a faculty search to add a new limnologist as part of a UW-Madison cluster hire in Freshwater Sustainability.

And finally, some of you may know that Madison is hosting the Association for the Sciences of Limnology and Oceanography – Society for Freshwater Science joint summer meeting, to be held June 7-12, 2020 at the Monona Terrace Convention Center. Needless to say, several of us at the CFL are involved in planning this meeting. The CFL will be hosting several events, so we hope to see you there.

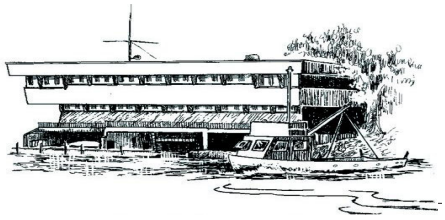
I'll close with a sincere 'thank you' to the many generous alumni, friends, and donors who have supported the CFL over the past year. Your generous support allows us to expand our impact and train the next generation of freshwater leaders. We couldn't have done it without you. Please don't hesitate to drop me a note and an update!

Jake Vander Zanden
Wayland Noland Distinguished Chair and Director
Center for Limnology, University of Wisconsin-Madison

Center for Limnology
University of Wisconsin–Madison

Hasler Laboratory of Limnology
680 N. Park Street
Madison, WI 53706

Trout Lake Station
3110 Trout Lake Station Dr.
Boulder Junction, WI 54512



Limnology Open House

by Adam Hinterthuer

Since 2011, we have set aside an afternoon each summer and opened our doors to the public. But we have never had a summer like this. 2019's annual open houses drew 484 visitors to Hasler Lab's June event and 363 folks to Trout Lake Station in August. That means we gave nearly 850 members of the public – including a certain UW Chancellor – a first-hand look at limnology!

Join us in 2020:

Hasler Lab - June 19

Trout Lake Station - July 31

Steve Carpenter Margalef Prize

by Adam Hinterthuer

On a Wednesday morning just before last Christmas, Steve Carpenter, professor and director emeritus of the Center for Limnology, stood onstage in Barcelona to receive (yet another) major award.

The Ramon Margalef Prize in Ecology is given each year by the Government of Catalonia, an autonomous community in the northeastern corner of Spain, in memory of ecologist, Ramon Margalef, who was one of that country's most notable scientists until his death in 2004.

Carpenter, the first limnologist to receive the prize, was recognized for his "creative and original work, which has transformed our understanding of ecosystems" and "of lakes and the rational use of water resources."

Carpenter says the role Ramon Margalef played in shaping his own thinking makes the award particularly special. As an undergraduate student just starting out in ecology, Carpenter recalls being assigned to read some of Margalef's scientific papers. "I was intrigued," he recalls, "these were some of the first concepts about ecosystems as a whole, integrated complex system. Thinking this way led to my own focus on the experimental study of whole ecosystems."

In his acceptance speech, Carpenter credited the large team of collaborators that make careers like his possible. "Although I am standing here alone to accept a great award, all accomplishments in science depend on teamwork and luck," he said. "Long term observation of whole ecosystems extends beyond the scope of any one career. It requires an organization of thoughtful committed people, working together as a team, in institutions that are designed to be broader, more long-lasting, and more integrative than any individual person can be in a lifetime."

An Unusual Spring Leads to "Crystal Clear" Water in Madison Lakes

by Adam Hinterthuer

Photo above:
Lake Monona during clear water phase.
Photo: Hilary Dugan

On a beautiful calm Friday back in June, CFL lab technician, Petra Wakker, headed out to the middle of Lake Mendota to collect some routine data on conditions in the lake. As she unwound the rope holding limnology's oldest tool, the Secchi disk, and lowered it over the side of the boat, something strange happened – the plate-sized, black and white disk slid deeper and deeper into the water, but Wakker could still see it.

This was unusual because Lake Mendota is not known for clear water. In fact, in summer, the average depth a Secchi disk drops into the green water in the middle of Lake Mendota is somewhere between three-and-a-half and (if you get lucky) seven feet before it disappears from view. Yet Wakker's Secchi disk only passed out of sight once it passed eleven. And that was meters, not feet. Lake Mendota looked more like the waters of the Bahamas than a eutrophic lake in southern Wisconsin. It was "crazy," Wakker said, watching the Secchi disk dangle 33 feet below her boat.

The "clear water phase" of Madison's lakes is a normal rite of spring. But this year, that "normal" clear-water phase became exceptional. Not only did Secchi readings reach remarkable depths, but this year's extremely clear water lasted quite a bit longer than what we've seen in recent years.

Clear water phase begins when springtime water is clear enough on Lake Mendota that a Secchi disk can be seen down at least four meters. That places the rough start date to this year's phase at May 1st and, by the time waters 'greened up' this year, we'd enjoyed more than six weeks of clear water. While that easily beats anything we've seen in the last decade, it's not all that unusual if you look back far enough. From the mid-1990s until 2009, Mendota's clear water phase regularly lasted well over 40 days.

Much of this trend can be tied to our favorite native zooplankton – Daphnia pulicaria. In spring, as ice comes off and wind mixes the

lakes and the sun begins warming them back up, the water reaches a point where conditions are optimal for daphnia. And, when their populations boom, they gobble up the phytoplankton and algae that usually give our lakes their green hue.

In 2009, however, another zooplankton entered the picture. This one, called the spiny water flea, is invasive. And it loves to eat daphnia. After the spiny water flea invasion, what we would commonly see in spring is shorter clear water phases as the spiny water flea took advantage of the springtime daphnia buffet. In other words, they ate the things that eat the algae. Daphnia numbers would explode and the lake would clear up and then the spiny water flea population would boom, pushing daphnia numbers down.

For some reason this year, spiny water fleas took a long time to show up in the samples we regularly take on Madison's lakes and the extended cool spring held the surface of Lake Mendota at optimal temperatures for both daphnia pulicaria and the kinds of phytoplankton and algae they like to eat.

Of course, nothing lasts forever and our lakes did get green again this summer once spiny water flea populations finally got going and began eating daphnia and the warm surface of our lakes became coated with cyanobacteria, or blue green algae.

While it's unfortunate to know that murkier, greener summer waters are just as much a part of our lakes' cycle as spring's clear water phase, it was nice to see that daphnia pulicaria are doing well enough in Lake Mendota to take advantage when conditions favor them. Clear water phases like the one we saw this June appear to be getting rare, but as this spring showed us, they're not gone for good.

Meet the Newest CFL Faculty Member

by Adam Hinterthuer

We are thrilled to announce that CFL alum, Olaf Jensen, will join our faculty at Hasler Lab in the summer of 2020. Jensen is currently an associate professor in the Department of Marine and Coastal Sciences at Rutgers University. While we wait for Olaf and his family to move to Madison next summer, he took some time to introduce himself and what motivated him to head back to the CFL.

What are you currently doing/studying?

I study fish (including their ecology, diets, and habitat use) and the people that harvest them. It's a truism that "managing fisheries is managing people," but the simplicity of that statement masks the fascinating connections and feedbacks between the natural system and the human system. For example, it would seem obvious that as fish populations in a lake decline, anglers would leave to find better fishing opportunities elsewhere, allowing fish population to recover. However, this reasoning is based on hidden assumptions - for example, that fishermen are motivated by catching fish rather than other aspects of the experience like the scenery, solitude, or accessibility of a lake.

One of the hidden assumptions I'm currently researching in the lakes of Vilas County is that fishermen know when fish populations have declined. My lab is using interviews with anglers to understand information sources and flow within Northern Wisconsin's recreational fisheries. This research is a collaboration with two other CFL alumni, Chris Solomon and Stuart Jones. In some ways, this project is an extension of conversations that started when we were in grad school together at the CFL over a decade ago.

What made you apply to work at the Center for Limnology?

That's easy: the unique culture and sense of community. As a grad student at the CFL, I found it to be an exceptionally close and supportive but also intellectually challenging environment. I've never been anywhere else where hallway conversations so frequently turned into new and unexpected collaborations. It sounds cliche, but coming back to the CFL feels like coming home.

What was it like working in Jim Kitchell's lab? Any memories from your time here stand out?

I remember Jim suddenly appearing in my office doorway with waders in hand, usually on a sunny April afternoon, asking if I had time for a "lab meeting." This was code for "let's go fishing!" Jim taught me how to fly fish and much else during these "lab meetings." Car rides to and from the river were full of Jim's fascinating science stories. More than anyone else, Jim showed me the power of storytelling as a critical science communication tool. Regardless of how elegant your experiment or how extensive your data, if you can't boil it down to a clear, compelling, and accurate story, your work won't have the impact that it should. I remember getting my first thesis draft back from Jim. He had circled a paragraph full of long meandering sentences and in the margin he just wrote "Yuck!"

UW-Madison undergraduate, Sam Ahler, and CFL graduate student, Emily Whitaker, take samples through the ice of Sparkling Lake. *Photo: Hilary Dugan*

Gearing Up For "Full Season" Limnology

by Adam Hinterthuer

Emily Whitaker drills a hole in the ice on South Sparkling bog. *Photo: Hilary Dugan*

Last year, CFL graduate student, Emily Whitaker, found herself in an unusual location for a limnologist – out on a frozen lake doing fieldwork.

That might sound funny, but it's true – the vast majority of research on freshwater ecosystems occurs during the non-frozen months of the year. When Whitaker wrapped up work on the ice of northern Wisconsin's South Sparkling Bog and headed back to Trout Lake Station (TLS) each night, she had a much quieter experience than the bustling crowd of students that fill every cabin on station during the summer.

A lot of this tendency toward warm-water research "has to do with the growing season and the fact that what we're often interested in are processes like algal blooms or fish spawning that take place in the spring and summer," says CFL assistant professor, Hilary Dugan.

What's more, she adds, summer field work falls in line with university schedules. With so many students using their summer break to do their fieldwork, it's no wonder that researchers like Whitaker feel left out in the cold.

But, if Dugan, Whitaker and other CFL colleagues have their way, that warm-weather bias may soon change.

Dugan, along with TLS research scientist, Noah Lottig, was recently awarded a "UW 2020" grant from UW-Madison's Office of the Vice Chancellor for Research and Graduate Education and the Wisconsin Alumni Research Foundation. These grants are part of a larger initiative to, according to the university, "support highly innovative and groundbreaking research at the University of Wisconsin–Madison over the next five years."

Dugan and Lottig's award is titled "Full Season Science in the Northwoods" and the money from it is supporting graduate students like Whitaker, as well as allowing the team to purchase equipment like survival suits and an amphibious ATV called an "Argo" that will allow researchers to safely get out on the ice even

Photo right: A rare sight in winter, this buoy on South Sparkling Bog marks the location of underwater equipment that records temperature, light, chlorophyll and more.
Photo: Paul Schramm

during the "shoulder seasons" of spring and fall.

"Trout Lake Station is full of boats and trailers and trucks and none of those are useful in winter," says Dugan. "We didn't really have the right tools to send faculty and students up there to safely do winter field work."

Safety is a big concern, says Lottig, but sometimes the issue is one of "just plain accessibility." Lottig says he's excited for the new equipment, especially the Argo, because it will allow staff at TLS to "get out there when we need to get out there regardless of conditions." By comparison, station snowmobiles have been nearly burried in deep snow or thick slush in recent winters, he says.

For her part of this project, Whitaker is launching an experiment on South Sparkling Bog, where she is exploring how the changes in ice cover and snowfall that are predicted in climate change models might impact lakes in winter. Whitaker is hiring an on-call snow removal service to head out after every snowfall and, using industrial snowblowers and a plow attached to the new Argo, clear the ice.

By keeping the surface of the frozen bog snow-free, Whitaker says, sunlight will shine into the water column. She'll then drill holes into the ice and take water samples to see how communities of tiny plants and animals called phytoplankton and zooplankton react to their brighter winter existence.

"A similar study did this snow removal experiment, but they only did it at the end of the snow season," Whitaker says, noting that, in the places where those researchers cleared off all of the snow, "everything under the ice died because it was so shade-adapted that it couldn't handle the sunlight."

Whitaker believes plankton communities in her study may either become "light adapted" and thrive in the new conditions, or species of plankton that usually thrive in the fall will last longer in the season.

The take home message is we just don't know what will happen because there's still so much to learn about our lakes and bogs in winter. "That's why I'm collecting all the data I physically can, because it's unclear what will happen," she says. "The more data, the better."

Being able to add information to the underlying science of lakes in winter is an exciting opportunity, Whitaker says. But she's equally excited about another perk of winter limnology – no mosquitos!

Cover Photo: TLS research specialist, Paul Schramm, drives the Argo, an amphibious all-terrain vehicle that gives researchers access to northern Wisconsin's lakes in winter.
Photo: Noah Lottig

Followers on:

821 Instagram

1,700 Facebook

5,484 Twitter

51,726+ Blog post views 2019

blog

facebook

Study Says "Hidden Overharvest" From Fishing Plays a Role in Wisconsin Walleye Declines by Adam Hinterthuer

Holly Embke, a CFL graduate student working in Jake Vander Zanden's lab, led the study.

Over the last few decades, annual walleye production in many of Wisconsin's 900 or so "walleye lakes" has declined by 35 percent. Walleye stocks also now take one and a half times longer to replenish themselves. State fisheries managers have responded by changing angler regulations to protect large female walleye and stocking hatchery-raised fish in struggling lakes, among other things, but these efforts didn't reverse the broader walleye decline.

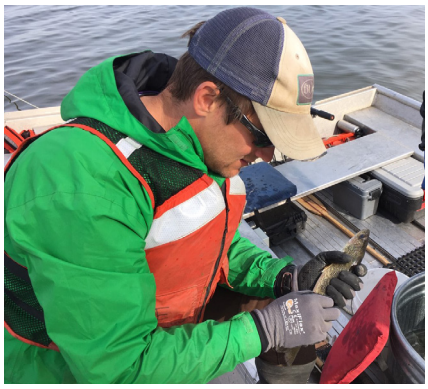
Despite this trend, the fish remains as popular as ever with the public. And, while fewer individual fish are being caught, the percentage of walleye that state and tribal resource managers allow to be harvested each year has stayed about the same.

Considering the cultural and economic importance of this inland fishery, it's time to reassess current regulations, says CFL graduate student, Holly Embke.

Embke was the lead author of a study published this November in the Proceedings of the National Academy of Sciences. That study found that "40 percent of walleye populations are overharvested, which is ten times higher than the estimates fisheries managers currently use," she says.

A big reason for this "hidden overharvest," says Embke, is that, for the last thirty years, resource managers have focused on fish abundance and not fishery productivity when calculating harvest limits.

One way to think of it, Embke says, is in terms of a bank account. "Abundance tells you the money in the bank while production tells you the interest rate," she says. If you start taking more money out of your account than the interest rate contributes each year, your savings shrink. Do this several years in a row, and those annual withdrawals begin to have an outsized impact on what little money is left in the bank.



WDNR fisheries biologist (and CFL alum), Dan Oele, takes measurements of a walleye during a spring sampling trip. *Photo: Adam Hinterthuer*

Using data that are collected already by Wisconsin Department of Natural Resources (WDNR) and Great Lakes Indian Fish and Wildlife Commission (GLIFWC) researchers, Embke and her colleagues calculated how walleye biomass had changed over a 28-year period in 179 lakes. Measuring biomass is akin to throwing all of the walleye in a lake on a scale and recording the overall weight. Production is a reading of how much biomass grows each year, an indication of a population's ability to replenish its losses.

By comparing walleye production to the total fishery harvest in these study lakes, they found that overharvest is ten times higher than the 4 percent estimates generated when fisheries managers consider abundance alone.

CFL alumni Greg Sass, with WDNR, was a co-author of the study and proud dad of the kid on the annual fishing pamphlet! *Photo: Greg Sass*

What's more, Embke says, the study found great variation in walleye production from lake to lake. Some lakes remain walleye strongholds and can handle current fishing pressures, while others can't sustain even current average harvest rates of 15 to 20 percent, much less the 35 percent harvest benchmark. By considering production, fisheries managers may be better equipped to set limits for individual lakes.

These results, the researchers write, "highlight the urgent need for improved governance, assessment, and regulation of recreational fisheries in the face of rapid environmental change."

The good news is that data fisheries managers already collect can be plugged in to Embke's method for estimating production and help chart a way forward. By better understanding the resilience of Wisconsin walleye populations and by acknowledging the role that anglers play in reducing stocks, the future of this iconic fishery just may have a fighting chance.

Full paper – Production dynamics reveal hidden overharvest of inland recreational fisheries

Field Samples: Graduate Students

Holly Embke (Ph.D., Vander Zanden) @fishandbugs

Holly grew up in Eau Claire, WI and moved to Montreal, Quebec to study at McGill Univ for her undergraduate degree in Biology. A summer internship at the Northwest Fisheries Science Center in Seattle inspired her to complete a Master's degree in aquatic ecology at the Univ of Toledo.

Now at the CFL, Holly is pursuing a Ph.D. in Jake Vander Zanden's lab. Holly's research focuses on understanding the conditions needed to support self-sustaining inland fish communities in a changing climate. She is also the CFL's top fish wrangler – having removed nearly 200,000 bass, bluegill and other fish in the Centrarchid family from a single Wisconsin lake to see if fewer competitors open a window for walleye populations to rebound.

Ben Martin (Ph.D., Vander Zanden) @BassBen11

Ben grew up in New Holland, PA and completed his undergraduate degree at Juniata College in Central Pennsylvania. While there, Ben worked on a variety of research projects ranging from herbicide effects on smallmouth bass, to impacts of natural gas extraction (fracking) on brook trout ecosystems.

Here at the CFL, Ben works with Jake Vander Zanden on research focusing on food web disturbances in Wisconsin lakes invaded by spiny water flea, shifts in cisco communities in the Great Lakes, and the rabbitfish invasion of the Mediterranean Sea. When he's not in the lab feeding water fleas to Lake Mendota perch, Ben enjoys fly fishing, disc golf, and running – usually not all at once!

Emily Whitaker (Ph.D., Stanley) @EmilyCWhitaker

Emily is from Hopewell, NJ and received her B.S. in Physics from Dickinson College. She spent a summer at UW-Madison working with Ankur Desai and NTL-LTER researchers looking at ice thickness sensors and lake heat flux.

Emily jumped at the chance to be surrounded by Madison lakes again and joined Hilary Dugan's lab on a project studying the role climate change has on ice-on and –off dates and how that impacts lake ecosystems.

Emily is a winter limnology champion and spends the bulk of her fieldwork season at TLS during the frozen months. That said, this summer she managed to find a -10 degree Celsius walk-in freezer so she could keep analyzing samples!

Catching Up With Alumnus Gretchen Hansen

(Ph.D., Vander Zanden; Postdoc, Carpenter) @gretchen_H2O

Gretchen with husband Jon and daughters Ada and Billie

Where are you now and what are you currently working on?

I am an assistant professor at the University of Minnesota, Department of Fisheries, Wildlife, and Conservation Biology. The work in my lab focuses on how lake and fish communities are changing as a result of climate, land use, and invasive species; what makes some lakes more resilient to change than others; and how management can facilitate adaptation and promote resilience.

What led you to study at the CFL back in your grad school days?

After doing my master's at Michigan State University, I was interested in doing a Ph.D. in a program that would increase my training in ecology to compliment my training in quantitative fisheries science. The CFL's reputation as the premier place to study freshwater ecology combined with the opportunity to live in Madison made it a great place to pursue my graduate work.

How do you spend your non-limnological time?

Most of my non-limnological time is spent enjoying time at home and outside with my husband and two daughters, playing and coaching hockey, and teaching my new course on science and critical thinking in the information age.

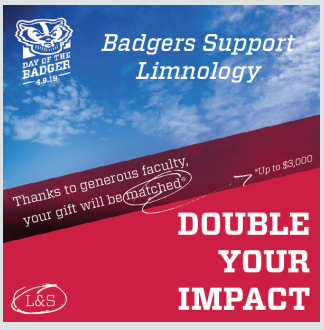
First Ever "Day of the Badger" Nets CFL $7,000+

This spring, the CFL participated in the UW-Madison's first-ever "Day of the Badger," an online fundraising effort organized by the Wisconsin Foundation and Alumni Association. We weren't sure what to expect but hoped to raise $5,000 to support undergraduate research and CFL outreach activities.

The response blew us away. All told, we raised $7,111.50 from supportive friends and alumni (both old and new) who gave donations (both large and small). We even received some very nice notes – like this from Roy Stein:

"I was sitting in a coffee shop catching up on correspondence and the Day of the Badger came down from cyberspace. I can't "rightly" explain it, but I was overcome with both pride and gratitude … wondering where I would be if I had not had the CFL experience. If you will excuse an old guy reminiscing about his graduate-student days, what an experience we all shared. In those days, working meant you were "at the lab," leading to lots of time together, brainstorming research, reflecting on the field, gossiping about what was happening in the lab, on the hill at Birge Hall, the next big thing, politics, the list goes on. Those conversations, that interaction served as the underpinning for my own research perspective, [one] I brought to Ohio State University and built a lab around."

Day of the Badger 2020 will be April 7 and 8, so keep your eyes peeled for opportunities to spread the word and help support the CFL!



The Limnos and Her Long-time Captain Sail Off Into the Sunset

by Adam Hinterthuer

The Limnos on an early voyage on Lake Mendota. Circa 1967.

The Limnos, after a half century of service, officially retired from the CFL this summer. She left Lake Mendota hitched to the back of a black Ford pickup truck headed for greener pastures and now resides on a farm in Michigan, where she awaits repairs and a new paint job. Her new owner says that, hopefully, by next year "she will be put into Lake Michigan and will reside in the Chicagoland area for her summers."

It's not a bad retirement plan for a 50-year-old hunk of steel that was always more boat than Lake Mendota warranted. The Limnos suffered from what felt like chronic engine failure (usually at the least opportune times) and sank twice, inspiring former CFL information tech, Dave Balsinger, to pen an ode to the tune of The Wreck of the Edmund Fitzgerald.

"The legend lives on from Chipman on down of the big lake they call Mendota.

Where the LIMNOS floats free in the westerly breeze and the sunset turns Maple Bluff golden.

Her color was green and her temper was mean. Her length it was just about thirty.

She wasn't so big and she wasn't so nice. As it turned out, she wasn't so sturdy."

In all seriousness, though, the Limnos was a tireless workhorse for the CFL. Built in Two Rivers, Wisconsin by Schwarz Marine in 1967, she spent five decades shuttling countless UW limnology classes out on Lake Mendota – as well as CFL researchers, citizen groups, state lawmakers, visiting scientists, the occasional interested journalist and attendees at our annual open houses. All told, hundreds, if not thousands, of folks had their first excursion on Lake Mendota aboard the Limnos.

Jake Vander Zanden, Bucky Badger, John Magnuson & Dave Harring on the Limnos at Hasler Lab Open House, 2015 *Photo: Marilyn Larsen*

Dave Harring shows attendees at Hasler Lab Open House, 2014 how to use zoo-plankton net. Over five decades, the Limnos took hundreds, if not thousands, of people out on Lake Mendota. Dave was there for two of those decades.

But the Limnos wasn't the only long-serving member of the CFL to retire this year. The man who had spent the last twenty years piloting (and repairing) our boat also sailed off into the sunset. Perhaps **Dave Harring** felt he could finally step away once the Limnos had been put out to pasture. In addition to Limnos duty, Dave's job involved helping students design and build instruments for field work and then fixing those things when we broke them! Dave was a valued member of Hasler Lab and will be missed (and we're not just saying that because he seems to be the only person who knows how to install and remove our pier!).

Dave captains the Limnos II on her inaugural voyage with Friends of the Lakeshore Nature Preserve interns.

While we are still in the process of hiring the next Dave, we did manage to find a new boat. Thanks to generous support from the UW-Madison College of Letters and Science, we christened the **Limnos II** in late July. She spent the summer and early fall floating sturdily atop her three pontoons, embarking on the first few journeys of what we hope will be another storied career.

See all 'Awards' and 'Catching Up With Alumni' at our CFL Newsletter webpage

ASLO Association for the Sciences of Limnology and Oceanography

Society for Freshwater Science

SAVE THE DATE!

The Association for the Sciences of Limnology and Oceanography and the Society for Freshwater Science are teaming up to host the ASLO-SFS joint summer meeting here in Madison, June 7-12, 2020. This will be a great opportunity to learn the latest in aquatic sciences and catch up with friends and collagues. We look forward to evenings on the Memorial Union terrace and watching the sun set over one of limnology's landmark lakes.

SEE YOU IN 2020!

THANK YOU FOR SUPPORTING THE CFL

The generosity of our supporters allows the Center for Limnology to continue to train the next generation of limnologists, generate new knowledge about inland waters, and share this knowledge with diverse audiences. Please consider making a gift to the Center for Limnology Endowment Fund.

CFL Support webpage:

https://limnology.wisc.edu/support/

or

Contact Jake Vander Zanden at 608-262-3014 or mjvanderzand@wisc.edu

Support - limnology.wisc.edu/support

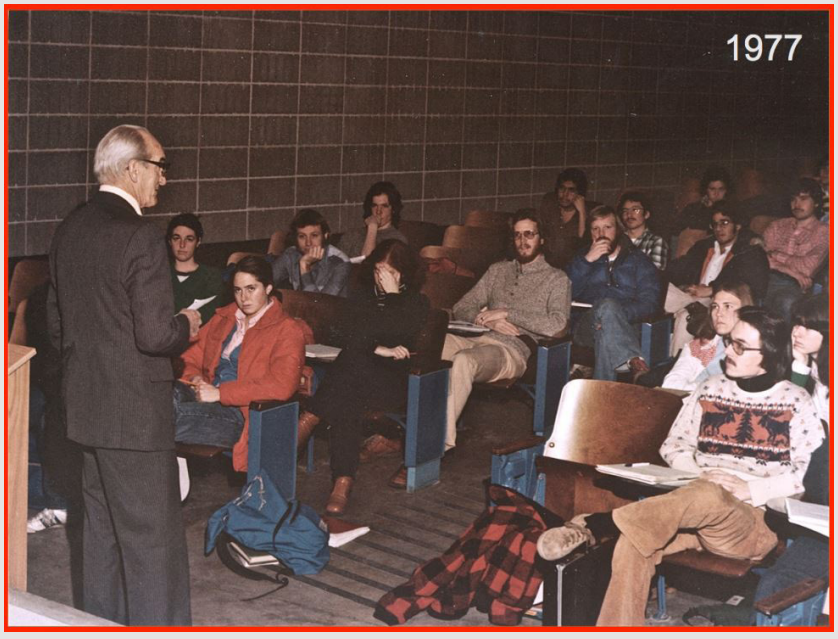
Blog - blog.limnology.wisc.edu

Twitter - twitter.com/WiscLimnology

Facebook - facebook.com/centerforlimnology

Center for Limnology
University of Wisconsin-Madison
680 N. Park Street
Madison, WI 53706-1413

Nonprofit Org.
U.S. Postage
PAID
Permit #658
Madison, WI



Did you know that Chauncey Juday launched the undergraduate course "Limnology: Conservation of Aquatic Resources" in 1909 and it has been taught at UW-Madison ever since? It's the longest-running limnology course in North America and - with an average annual enrollment of 150 students - the largest, too!

Left: Art Hasler the teacher
Photo: John Magnuson