



College of Letters & Science  
UNIVERSITY OF WISCONSIN-MADISON



# Trout Lake Station News

News for Alumni and Friends of the Center for Limnology

Summer 2021

**Welcome to our first edition!**  
**Look inside for a peek at what's going on in our lakes.**



Associate Researcher Pam Montz and Undergrad Student Danielle Matuszak sampling macroinvertebrates. *Photo: Bethany Prochnow*





*Photo: Riley Steinbrenner, Undergraduate Outreach Intern, Summer 2017*



Who knew that my first year as [Trout Lake Station](#) (TLS) Director would include administering through a pandemic! The ground shifted under the feet of so many as the world faced simultaneous health, race, economic, and political turmoil. The procedural and risk assessment skills of TLS staff and researchers were reallocated and the community united to help plan, troubleshoot, and implement protocols that kept long-term research and numerous graduate student projects moving forward safely during the summer and winter of 2020. I feel privileged to have weathered this difficult period alongside the caring, thoughtful, and resilient problem solvers who work and research at TLS and the Center for Limnology (CFL).

While visitor numbers were limited in 2020, we took advantage of the reduced capacity to complete numerous facilities projects. A native rain garden, facilitated by the [WDNR Healthy Lakes](#) program, was planted behind [Frost House](#) and is looking great as it fills in this spring. Juday House and the all-season cabins received makeovers in the form of new flooring and cabinetry throughout. And, we have started planning for the construction of a National Science Foundation-funded outbuilding that will replace the current garage. The

new building will more than double our heated, large equipment workspace and facilitate more full-season limnology.

With vaccines readily accessible, we are excited to have new graduate students and undergraduate researchers join the station community for the 2021 summer. In addition to the new wild rice project highlighted on page 6, this season will have new crews studying parasites of rusty crayfish in Trout Lake, researching community and life history changes in response to early ice off, taking paleolimnology cores on [North Temperate Lakes](#) (NTL) [Long Term Ecological Research](#) (LTER) lakes, and comparing gas exchange measures taken across lake systems. Fortunately, the Trout Lake Station experience includes a lot of field work and social interaction around lakeside bonfires, hikes, and paddles, providing ample opportunity for the community to be together outdoors while maintaining COVID policies in the indoor lab spaces. We all hope for a safe and productive 2021 field season!

Our sincere thanks to all the Trout Lake Station supporters. The extended network of alumni, donors, regional partners, current and prior station users has continued to amaze me with their support, patience, and willingness to add value to the Trout Lake experience for the next generation of trainees. We love hearing from you all so please don't hesitate to reach out!

[Gretchen Gerrish](#), Director, Trout Lake Station  
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University of Wisconsin-Madison Center for Limnology



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## 215,000 Fish Later, Project to Boost Walleye Numbers Is Still Keeping the Competition Down by Adam Hinterthuer and Sydney Widell



Holly sets a clover trap in McDermott Lake.  
*Photo: Sydney Widell*

When [Holly Embke](#) backs her boat trailer into Iron County's McDermott Lake this summer, it will launch her fifth straight year of research on the lake. All told, Embke estimates that she - with the help of a rotating cast of research partners and undergraduate field technicians - has pulled 215,000 bass, bluegill and crappie out of the one-hundred-acre lake.

But Embke, a University of Wisconsin-Madison graduate student, hasn't spent half a decade wildly overfishing the lake for fun. She's hoping that her massive haul can tilt the scales in favor of another species of fish - walleye.

As almost any Northwoods angler can tell you these days, the bass catch is booming while walleye seem harder and harder to find. A lot of that has to do

with our warming lakes. Walleye do better in cooler conditions while bass like it nice and warm. Still, Embke, along with her partners at the University of Wisconsin-Stevens Point and the Wisconsin Department of Natural Resources, suspects that other factors may also be keeping walleye numbers down.

"Bass and panfish are thought to be competing with walleye in their really early life stages — either competing directly with them [for food] or even eating them," Embke explains. "There is potentially an interaction between those very tiny walleye and sunfish and bass that stops walleye from getting to that next juvenile stage."

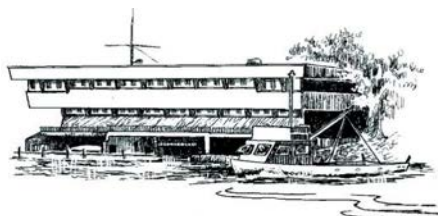
To test this hypothesis, Embke will spend yet another summer loading up her gear at Trout Lake Station - a research facility in Vilas County run by UW-Madison's Center for Limnology - and commuting to McDermott Lake multiple times a week to remove as many bass and sunfish as possible and then monitor the fish populations left behind to see if, by getting rid of the competition, the lake's walleye population can rebound.

Embke says that, during last summer's field season, her team finally started to see a decrease in panfish populations like bluegill, so she's hopeful the change in McDermott Lake's fish populations will benefit walleye. That information will help researchers begin to trace the boundaries of what Holly calls a "safe operating space" for walleye, or the conditions that allow them to survive despite combined impacts of different environmental stressors.

"There are factors you can't control as a fisheries manager, things like climate change or habitat changes," Embke explains. "But there are smaller things within your control, like the harvest of walleye or other species."



Holly Embke sorts through her catch from McDermott Lake where researchers are removing sunfish in an attempt to promote walleye populations. *Photo: Riley Steinbrenner*

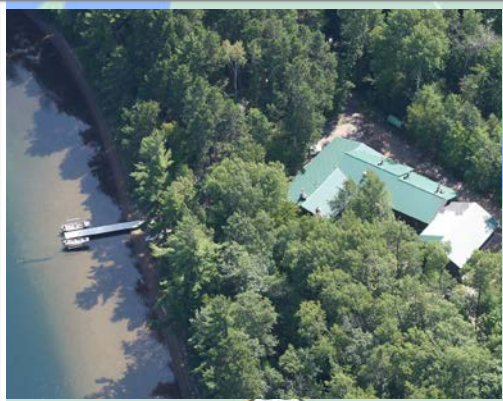


For ecologists and recreational walleye enthusiasts alike, setting those boundaries will be crucial to maintaining healthy walleye populations in a warming Northwoods.



# Get To Know our Long-Term Ecological Research Lakes

Access the [virtual scavenger hunt](#) to learn about our lakes and research.



**Trout Lake Station** is a scientific field station operated by the Center for Limnology at the University of Wisconsin-Madison. We've conducted freshwater research, training, and outreach since 1925. Trout Lake Station is home to the North Temperate Lakes Long-Term Ecological Research project (LTER) - a National Science Foundation project that has studied changes on eleven Wisconsin lakes since the 1980's. We've learned a lot about our lakes over the last forty years. Here are some current research projects in the Northwoods LTER lakes.



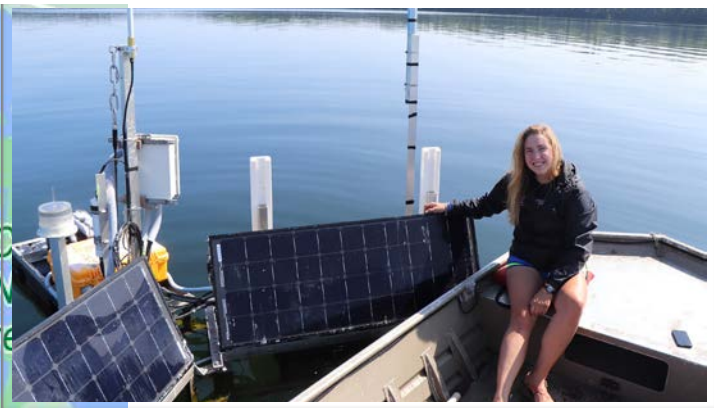
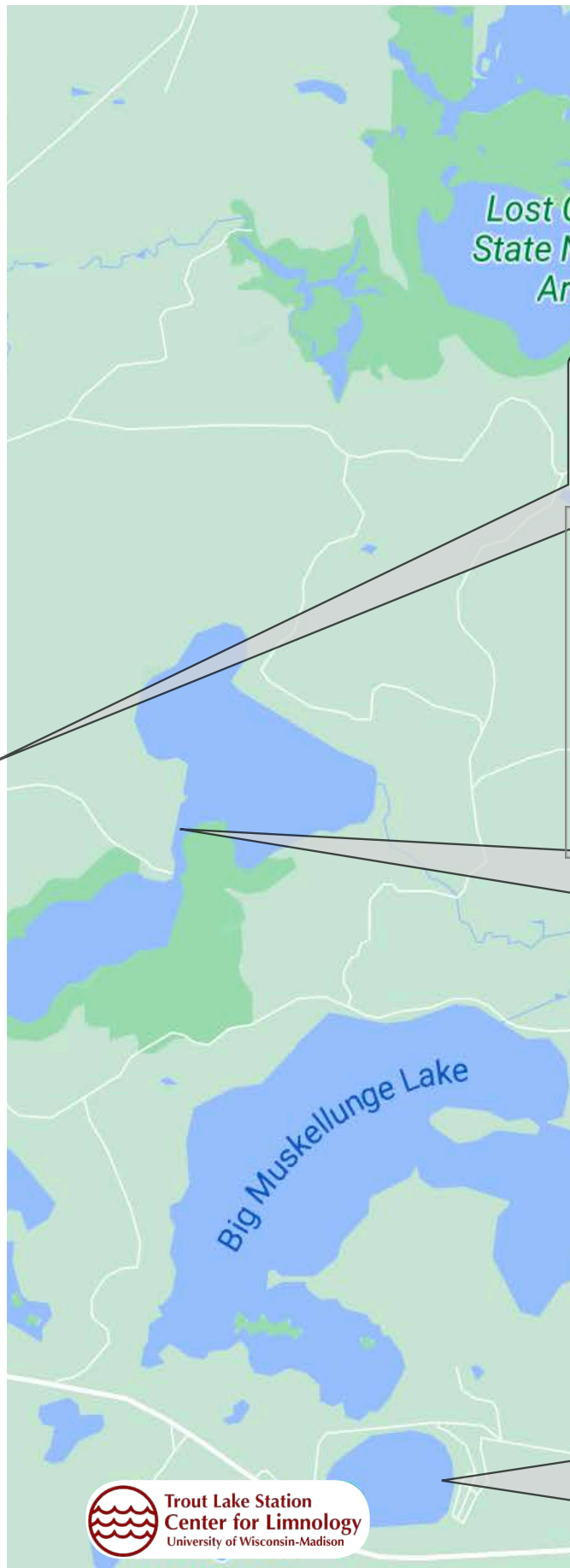
**South Sparkling Bog**- Adrianna Gorsky and Ellie Socha plowed this bog all winter to simulate what less snow cover on lakes might mean for plants and animals under the surface.

Trout Lake

## **Sparkling Lake -**

Grad student, Joe Mrnak is studying how Wisconsin's iconic walleye populations can be protected through fish stocking, habitat restoration and invasive species control.





**Trout Lake** - “Megabuoy,” our big, floating raft of scientific equipment spends its summer recording changing conditions in water temperature, oxygen levels and algae growth.



**Allequash Lake** - The northern basin is a popular spot for fishing while the southern basin is home to another kind of food - wild rice. Station scientist, Susan Knight, launched a research project this year on wild rice growth.



**Crystal Lake** - After an earlier experiment removed more than 90% of invasive rainbow smelt in the lake, LTER crews are now working on an experiment to keep the invasive’s numbers low, making room for native species like perch.



# What's Going on With Wisconsin's Wild Rice?

## Trout Lake Station Joins Partners to Investigate

by Adam Hinterthuer

This summer, scientists at Trout Lake Station launched a new research project on one of Wisconsin's most iconic and important aquatic plants – wild rice. Many readers of this newsletter may only encounter wild rice at roadside stands or gas stations during vacations in the Upper Midwest or Canada but, for the original residents of this area – the native Ojibwe people – wild rice is known as manoomin and is a highly valued and culturally important food source still by harvested by canoe in the fall.



Freshly harvested wild rice.

Photo: Carol Warden

Unfortunately, many wild rice populations in northern Wisconsin are on the decline. This is probably due to many factors, says [Susan Knight](#), a research scientist at Trout Lake Station and an expert on aquatic plants. Wild rice, she says, is under assault by things like higher-than-average water levels for the past half decade, big rain events in spring that might flush wild rice seedlings downstream, milder winters that might allow more perennial vegetation to encroach on their habitat, more waterfowl, especially swans, that eat the entire plant and don't wait for seed production and increased development along our lakes and streams.

That's a lot of potential problems facing our wild rice populations but, Knight says, understanding how these factors interact and which are most negatively impacting wild rice will be crucial to protecting it.

“While most wild rice projects look at populations in late summer, we are focused on looking at wild rice through the entire growing season,” Knight says. “We have been out on lakes since early spring and were finding very young seedlings. Our goal is to follow the rice and develop tools to assess the health of the population throughout its life cycle.”

For Erin Matula, the wild rice project was a good reason to head back home. Matula is an undergraduate student studying environmental science at Northern Michigan University in Marquette, a city on the shores of Lake Superior in Michigan's upper peninsula. But don't be fooled by her short career as a “Yooper,” Matula grew up near Ashland, Wisconsin. When her original summer job plans fell through, Matula's mom suggested she check out the job listings for summer students at Trout Lake. And she's glad she did, she says. “Once I read the position description I was hooked!”

In addition to helping Susan Knight and Trout Lake Station director [Gretchen Gerrish](#) monitor current populations of wild rice as they grow throughout the season, Matula will have an additional research project collecting much older data on wild rice. She plans to take sediment cores from the bottom of their study lakes and investigate the historic seed banks of wild rice.

Trout Lake has many partners in this project. In addition to the Wisconsin Department of Natural Resources, which is funding the project, partners include the Great Lakes Indian Fish & Wildlife Commission, Lac du Flambeau Band of Lake Superior Chippewa, North Lakeland Discovery Center, and the ecological consulting firm, Onterra.

“I'm excited to be participating in novel research on wild rice as well as hearing about or helping out in others' research on station,” Matula says. “It's exciting to see everyone out and about and passionate about their own projects.”



Erin Matula using a rake sampler to locate rice grains and rice seedlings in Wild Rice Lake.

# Artists in Residence at Trout Lake Station by Adam Hinterthuer

In 2013, Trout Lake Station launched our “[artist-in-residence](#)” program. Every year, artists from around the country apply to spend a few weeks “on station” accompanying our researchers as they do field work and producing works inspired by the science around our amazing lakes. Here are a few examples of what happens when science and art meet.



## 2017 Artist in Residence - [Rebecca Jabs](#)

*“Trout Lake is a year-round station. On-site cabins have electricity and running water - and are within earshot of the loons calling out on the Lake. I was able to borrow a station canoe to paddle Trout Lake and nearby Allequash Lake.*

*A highlight of my residency was learning to cast a plankton net and viewing my catch under a microscope! Tiny underwater creatures called zooplankton may escape casual notice, but they are a vital part of the aquatic food web. This illustration identifies some of the zooplankton species common to Wisconsin waters.”*

*Image left: “Zooplankton” (Adobe Illustrator & Photoshop)*

## 2018 Artist in Residence – [Mary Burns](#)

*“I think people really feel drawn to water, and it means a lot to people, whether it is a sense of belonging, or a sense of serenity. I think there is a magnetic pull to water for most people.*

*Women working in limnology are essential. I would like to bring their expertise into this discussion, [and] broaden people’s knowledge of our water problems and encourage people to take action.*

*Bringing these stories to life in weaving is a gift I have been given. I think that people relate to it and are amazed by it. It’s a textile, and people are drawn to that. It’s something basic, it connects to everybody and it’s something that can be touched.”*

*Image Right: Weaving of Emily Stanley & Carol Warden*



*Image Above: Just Hanging Around*

## 2019 Artist in Residence – [Jim Arnold](#)

*“I spent my time as a nature photographer snorkeling the local lakes photographing the art and beauty of life below the surface. I had memorable encounters in lakes named Star, Little Bass, Clear, Trout, Sparkling, White Sand, Blue, Presque Isle and Solstich filling memory cards from 33 different outings in water temperatures from 60 to 78 degrees.*

*The experience was not just in the water but also when I would share what I had found with staff and students and the debates of the names of what I had captured digitally and questions of where I had seen certain aquatic plants, fish, algae, frogs, and aquatic invertebrates.”*

Trout Lake Station - [limnology.wisc.edu/trout-lake-station-welcome/](http://limnology.wisc.edu/trout-lake-station-welcome/)

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## THANK YOU FOR SUPPORTING TROUT LAKE STATION

The generosity of our supporters allows for Trout Lake Station 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 Trout Lake Station.

CFL and TLS support webpage:

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

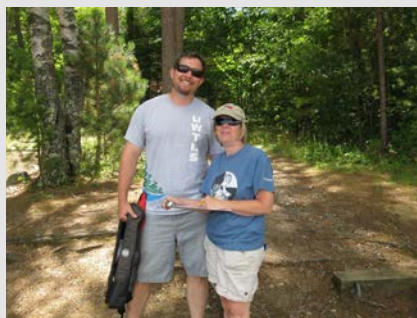
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## Farewell to the Pams of Trout Lake Station



Pam Fashingbauer, Station Coordinator



After decades of helping our station run smoothly and produce world class science in Wisconsin's Northwoods, Pam Fashingbauer and Pam Montz are retiring.



Pam Montz, Associate Researcher



We'll miss them and are excited to see what sorts of new adventures await them!