



UPSTREAM

News from Itasca Biological Station and Laboratories



Students take part in a module on Lake Itasca during Nature of Life.

Excited about Itasca

Students bring an appreciation of the field station and field biology back home by forming the Itasca Booster Club.

For University of Minnesota undergraduates walking to class amidst a sea of more than 60,000 students, a light rail train passing by and the skyline of one of the largest metros in the country standing as a backdrop, the prospect of field biology is likely not top of mind for many. But that experience of getting out of the classroom, away from the city and slowly sinking into the mud of a lake, foraging through towering pine forests or discovering multicolored fungi on a rotting log is life changing.

“My favorite thing about Itasca was how quiet it was,” shared Lou Hoff, a junior

who took field mycology in May 2022. “I love going to school in a major metropolitan area, but sometimes you forget how bad the noise pollution is. I love being able to sit outside, drink coffee, and just listen to the waves lap against the shore and the loons call out.”

Hoff was one of 46 students from the University of Minnesota and other institutions who ventured to Itasca Biological Station and Laboratories this last summer as part of a field biology course. The students took classes on topics ranging from animal behavior to field mycology. And for many, their

time at the station created a lasting impact.

“Taking classes at Itasca was the best decision I ever made in my undergraduate career,” says Madie Cloutier who took field mycology and field microbiology in summer 2021. “At Itasca I made great connections with friends, faculty, and nature.”

That love of nature and place sparked an idea: The Itasca Booster Club. Cloutier and classmates came together this last year to build an organization to encourage students to consider heading to Itasca for field biology.

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Director's message

A reflection of my five years at the station and musings on what is to come.

Greetings from Itasca! I hope this note from the North finds you well. Winter is here and things are slowing down after the busiest year I have seen as director.

In 2022, we had over 7,000 overnights, compared to 17 groups in 2019, pre-COVID. Last May, we welcomed 60+ students in our biggest field course cohort in at least a decade. We had a seminar series, new volunteer “wilderness accessibility” guides, and an ornithology class back sampling the Bear Paw transects. In late June and July, Nature of Life returned. In August, we welcomed 10 graduate student retreats, several mushroom forays, plant diagnostics clinics, and rural arts-sciences workshops. To cap off the season, we celebrated with 21 student scholarship recipients in the alumni center back in Minneapolis, alongside generous donors. The pandemic cannot hold Itasca down!

This year has stoked my enthusiasm, but as my family knows, I could use a nap. I picked a doozy of a time to be a field station director. Since I started in 2018, the world was upended by a virus. There have been shortages of goods and labor that have challenged rural outfits in different ways than city facilities. Meanwhile, as some activated to confront institutional racism in the wake of George Floyd's murder, others continued backsliding on many fronts. Near the Headwaters, we also saw a pipeline rip a seam in the land, sparking protests, and an influx of law enforcement. As these events played out, the rural and urban rift

has deepened. The distinctions between places like Itasca and Minneapolis have been exacerbated by COVID isolation, travel restrictions, divisive politics, and unfortunately, science.

At Itasca Station, the past five years have also been a shake-up in terms of our operation. To borrow an ecological concept, we have experienced a disturbance and are reassembling toward an “alternative stable state” that is adapting to a new world. With the exception of our kitchen crew and one part-time technician, our staff has completely turned over since COVID-19 hit; six positions have new faces, including four full-time staff. Everything we have done to transform and grow, we have achieved with reduced capacity and fresh legs — new programs, increased enrollments, indigenous relationship-building, local community engagement, Seed-to-Root research initiatives, and efforts toward more welcoming and safe field station culture. Given this, I am deeply inspired by my staff, our students, faculty and supporters.

The seeds of a new era have been planted at Itasca, and we have a community to help support our growth. Our CBS leadership understands Itasca's unique potential and my energy to stoke it. We have an amazing group of supporters and a new enthusiastic student-driven Itasca Boosters Club, two groups that I predict will soon bond over shared experiences. And we have a baseline community of regular users who know



first-hand that Itasca is special. With Itasca staff on the scene rather than behind it, a growing relationship with our Itasca State Park neighbors, and with a cohort of early- and mid-career scientist affiliates, we are in a great position as we turn this chapter.

Since 2018, I have tried to approach my job with more spine than bravado — with realism and some humility — with clever timing rather than strong-arm tactics. As someone on a 30 percent director appointment who likes doing things right, I have felt vulnerable and exhausted at times. The energy and endeavor, however, have purpose. I believe that Itasca can help modernize the conservation movement. I think Itasca is a place, in the rural and among indigenous communities, to plant seeds of real change. To share science as a community good. To gather and to listen, rather than gilding everything into tokens. To share rather than gatekeep ideas for progress. To protect fragile relationships. To study nature. These should be the whole of our effort, not the communications side of a conquest, and I think it fits the grandest notions of a public University.

Enjoy reading *Upstream*, and thank you all for supporting Itasca!

— Jonathan Schilling



Meet Itasca's new station biologist

Dan Brumm joined the staff this winter. Living at the station full-time, he supports research and leads a handful of projects.

Why did you join the team? I needed a job! But jokes aside, I completed my master's degree in June of 2022 and was interested in finding a position that stimulated my passions and interests. I joined the team because it gives me opportunities to both learn new things and share my own knowledge with others.

What's your history with Itasca? My history with Itasca began in mid-April of 2016. I was competing in my first collegiate soil judging contest hosted by the University of Minnesota Crookston, and during a free day we made the trek to Itasca for a relatively brief visit. I returned many times in 2019 - 2022 both for personal interest and to complete fieldwork for my thesis research, which was to expand the tree ring-based fire history reconstruction of the state park.

Is there a project you're excited about? I'm excited for our lake ice monitoring endeavors (date of ice-in and ice-out). It's interesting how long lake ice can be present from year-to-year, so I'm excited to record information that's helpful to assess how our winters are changing over time. I'm also excited for ice fishing season and will be simultaneously monitoring for when the ice is safe for fishing.



What's the best thing about living at the station? Simply being here is the best part. I get a lot of opportunities to meet and learn from interesting people during the "busy season," and I have the opportunity to explore a landscape that I find fascinating (I'm a sucker for glacially constructed landscapes). I really appreciate no longer living in an imposing urban environment.



Scientists and students shared a bit of what life looks like at the headwaters of the Mississippi River with visitors at the Minnesota State Fair this summer.



“It is my greatest hope that [the Itasca Booster Club] can benefit both the station itself as well as any and all people who are interested in learning and research based in our natural environment.” – Madie Cloutier

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“I created the Booster Club because I wanted to share my love for the research station and the work they do there,” says Cloutier, who now serves as president of the Booster Club. “It is my greatest hope that this club can benefit both the station itself as well as any and all people who are interested in learning and research based in our natural environment.”

For many students who engage in field biology at Itasca, the opportunity is truly unique. Not only do they get to explore the world around them in new and exciting ways, but they also get the chance to build relationships with peers not possible in a normal classroom setting.

“[Itasca] helped me meet my best friends, and provided me with connections not only at the U, but at other schools and with a wide variety of people,” says Izzy

Edwards, who took animal behavior and mammology in 2021. “You’re with the same group of people for a couple of weeks spending every waking hour with them, you become friends really fast!”

With an expanding reach of students coming to Itasca from not only the University of Minnesota, but Augsburg and other regional institutions in 2022, the Booster Club hopes to continue encouraging enrollments from students both inside and outside of the U of M. Through advocacy and engagement the group hopes to raise awareness about the stations and opportunities available to students over the coming years.

“I want to help other people discover Itasca and learn to love it like I did,” says Jessica Jahn, a fifth-year CBS student who took animal mammology and behavior

in 2022 and now serves as vice president for the Booster Club. “I learned so much more than I thought I would. I ended up changing my major to Ecology, Evolution and Behavior and I also really discovered my love of fieldwork at Itasca.”

Ultimately, the Booster Club looks toward the future with a hope of encouraging students to engage in these experiences and opportunities for the betterment of the station and the students themselves.

“Going to Itasca solidified my desire to work outdoors,” says Hoff. “I realized I am someone who needs to be able to connect with nature in some way to be happy, so I am now able to focus the rest of my college career on preparing for some sort of job outside.”

– Lance Janssen

Station snapshots

All sorts of activity happens in and around the station. Here are a few scenes from the recent field season at Itasca.



From top left: Researchers study the biophysics of prey capture in dragonflies, students use a fungal biology project to map their own collected specimens, the Mycology class learns about grass mycorrhizae on the Waubun prairie, a visiting scientist from Japan uses the water displacement method to measure wood densities.

A photograph of two cyclists riding away from the camera on a paved path through a forest. The path is wet and reflects the surrounding greenery. The cyclist in the foreground is wearing a light blue jacket and a white helmet, with a large green backpack. The second cyclist is wearing a white shirt and a dark helmet. The forest is dense with various trees, including tall evergreens and deciduous trees with green leaves. The sky is overcast.

First person from the field

Graduate student Talia Michaud shares impressions of a summer working up north.

We sat our breakfast among a scatter of pencils, scrap paper, chunks of cross-sectioned bracket fungi, and tree mapping gear on our big kitchen table in cabin 3. Calipers (key to measuring plant stems), computers, compasses, pencils, notebooks, snacks, and more snacks slide into our backpacks. Stepping outside, I am grateful for the layers between me and the early morning chill. I add another layer, the linchpin: a mass of netting fashioned into a “bug jacket.” I zip it over my face. We buckle our helmets and step over the seat of our bikes, pushing off across campus.

As we wind up the bike path, I catch the rounded lobes of basswood leaves, the pinnate points of ash leaflets, and the occasional plume of white pine needles in my periphery. We turn off the bike path, plunging through thickets of ferns and struggling up “the big hill.” After pushing through a mess of muck riven by our previous passage, we arrive at our base camp, consisting of a bear-resistant cooler and fold out stools amid trampled vegetation. We unload our lunches, strap on fanny packs (blending function and fashion) and prepare for the trek across our plot of Northwoods.

As we follow each other between trees, across swamps, clambering over logs, we look up. Just two weeks ago, the sugar maples were draped in spring green chandeliers, the reds studded with rubies. Broad leaves have since unfurled across their canopies, casting emerald shade. In the four weeks we spend in our small patch of Northwoods, we watch buds break, leaves expand, the canopy fill, the flowering and wilting of a dozen wildflowers, the emergence of some of my favorite mushrooms. As we move through the plot tree by tree, we teach each other their names, patching together a portrait of an ecosystem.

By this time next year, each woody stem in our patch of woods that measures more than one cm across at my shoulder will have a “unique identifier.” The year after next, it will be identified to species, measured, and geolocated within a meter of its actual location (0.8 m + 0.3 m, to be exact. I calculated). And “patch of woods” is a bit misleading. Really, it’s roughly 40 acres. In total, we estimate that there are 35,000 stems in our plot. With a team of five including myself, a grad student, two undergrads, and two recently minted high school graduates from nearby Waubun (The Dream Team), we figured out how map the woods this summer, pinning down 3,000 stems in the process. It’s slow work, but it’s a start.

This extensively mapped patch of woods will one day be what my advisor Dr. Peter Kennedy likes to call, “a sandbox for other researchers.” We hope our mapping data will provide rich context for other scientists, encouraging them to contribute their research to our shared knowledge of the plot. This mosaic of information, combined with multiple tree censuses over the years, will enable us to track the response of Minnesota’s Northwoods to climate change. This reality is years away, however. For now, The Dream Team moves at a snail’s pace. We breathe in the fresh air, learn the names of the creatures around us, and collect knowledge stem by stem.

Talia Michaud is a Ph.D. candidate in the Plant and Microbial Biology program at the University of Minnesota. Her research is focused on fungal ecology and symbiosis.

Back on campus

Nature of Life was back at Itasca this summer! With seven sessions throughout June and July, 560 incoming CBS first-year students kicked off their college careers with a four-day Itasca experience.



From top left: Students complete a module via a canoe on Lake Itasca during Nature of Life, Students pipette and work in a lab during a module this summer., Tug of war is pasttime for students coming to Itasca for NOL.



Professor Jennifer Powers took advantage of a rainy day at Itasca to capture some of the plants near the station with watercolor.