

Summer 2021

# Natural Lands News

The mission of the St. Olaf Natural Lands is to promote education, conservation, and recreation in our local ecosystems.



"August Evening" by Atia Cole '21 Natural Lands Fall Photo Contest Winner 2018

#### **New Natural Lands Director**

This summer Charles Umbanhowar Jr. Professor of Biology and Environmental Studies, became the next Director of Natural Lands, (formerly called the Curator of Natural Lands), following in the footsteps of Professor of Biology and Environmental Studies Kathleen Shea and Professor Emeritus of Biology Eugene Bakko. After attending Carleton College for his undergraduate degree, where he was one of Carleton's first student naturalists, Umbanhowar received his PhD in

botany and entomology from the University of Wisconsin Madison in 1989. He spent a year doing rare plant survey work for the North Dakota Natural Heritage inventory and came to St. Olaf in 1991. At St. Olaf Umbanhowar has served as chair of the Departments of Biology and Environmental Studies and manages the Regents Hall of Science Greenhouse. His research interests range from the impact of animal disturbances (e.g., bison wallows) on plant diversity, to paleoecology, specifically the analysis of charcoal, preserved in lake sediments, as a proxy for fire. Charcoal research sites have included the Dakotas, the Big Woods region of Minnesota, tundra-forest border of Manitoba, and western Mongolia. His research has currently expanded to include using satellite and drone-based remote sensing of peatlands to understand responses of Arctic ecosystems to climate



change. He has worked with many students on research related to fire and prairie ecology and GIS mapping. His teaching includes Introductory Biology, Remote Sensing and GIS, the Summer Bridge and Science Conversations courses. As Director he looks forward to maintaining and enhancing the plant and animal diversity of the prairie, forest, and wetlands as well as increasing the awareness, appreciation, and use of the Natural Lands by members of the St Olaf community and beyond.

## Thanks from the Curator ...

By Kathy Shea

The last two years have been an exciting and challenging time to finish my 12 years as Curator of Natural Lands! I am grateful for all the support and interest in the Natural Lands and am confident that my successor, Charles Umbanhowar, will continue to enhance the use of the Natural Lands in educational programing at St. Olaf.

After 30 years of development, the Natural Lands Program was reviewed in 2020 and the St. Olaf community was surveyed about their use of the Natural Lands. The survey showed that the existence of the Natural Lands influences student interest in attending St. Olaf and over 78% of the current students reported that they visit the Natural Lands at least once a month. The reviewers, both ecologists, Stuart Allison from Knox College and Dan Hornbach from Macalester College, received an report on the Natural Lands before meeting in September via Zoom on to talk with individuals associated with the Natural Lands. They also toured the Natural Lands with me in person. The overall conclusions of the review were the following: 1) the Natural Lands are clearly an asset to the College, 2) the College has shown commitment to the Natural Lands program by providing dedicated staffing and funding, and 3) the faculty and staff working on the Natural Lands have done a good job restoring and managing these properties. Prompted by review suggestions we 1) developed plans to make the Natural Lands part of new faculty and new student orientation, 2) will continue using The Natural Lands Advisory group to provide a greater variety of input on programing, and 3) made a proposal to the Faculty Governance Committee which led to official standing for the Environmental Sustainability Committee. The overarching goal of the review was to provide outside acknowledgement of what we are doing well and to develop plans to encourage more students, faculty and staff to use the Natural Lands.



Professor Kathy Shea

Old and New: Shea, Umbanhowar, Braker



Although we had to curtail and modify many activities this past year, the pandemic has led to a greater appreciation of and use of the Natural Lands for a variety of activities. Spending time in nature helps us understand and appreciate the natural world and improves our health and happiness. Knowing more about nature helps us make environmental sustainability part of our lifestyle.

On the ground work includes planting about 200 tree seedlings each year in restored areas that need additional trees or different species. Burning remains an important tool in prairie and wetland area management. During the pandemic we did smaller targeted burns, mainly around wetlands to reduce invasive grasses and cattails. We also did a small prairie burn to provide a space for Professor Emily Mohl's research project monitoring milkweed seedlings grown from seeds from different parts of the country.



#### **New Natural Lands Manager**

We welcome Wes Braker '18 back to St. Olaf this summer as the new Natural Lands Manager. At St. Olaf Wes was a student naturalist and researcher on various projects in the Natural Lands, surveying organisms from trees to frogs and leading walks to help others learn about local natural history. After St. Olaf Wes worked as a plant community intern at Cedar Creek Ecosystem Science Reserve (University of Minnesota) and as a plant healthcare technician at Rainbow Treecare, before beginning graduate work at the University of Minnesota in the Conservation Sciences program. He plans to continue his graduate work, studying local adaptation in the native grass little bluestem and restoration ecology, while working as the Natural Lands Manager. At St. Olaf, Wes looks forward to improving biodiversity in the natural lands, expanding on-campus outreach opportunities, and working closely with students to improve ecological and native ecosystem understandings. He is also excited to work with faculty and staff in his new role as a staff member.

#### **STOGROW Farming** By Gunnar Bodvarsson

At St. Olaf we are lucky to have a small organic farm run by students interested in agronomy and other related fields. The produce grown is bought by Bon Appetit and prepared on site. We, Gunnar Bodvarsson and Claire Michelsen, were selected to run the farm in 2021, overseeing everything from crop selection and preparing seed beds to harvesting the crops and delivering them to Bon Appetit. We are advised by Becca Carlson '11, a local organic farmer, and owner of Seeds Farm in Northfield, and Professors Kathleen Shea and Charles Umbanhowar. In learning the ins and outs of running a farm, we began with a spring course, organized by Becca Carlson,



Claire Michelsen and Gunnar Bodvarsson

on the basics of organic farming. The course focused on the importance of farming in a responsible and sustainable manner and maintaining soil health. We sent soil samples to a consulting firm to help us determine fertilizer needs in different fields and discussed how specific crops fit into the climate and hardiness zone of Northfield, MN. With the constraints of growing in a cold climate, we have a hoop house (essentially an unheated greenhouse) as part of our farm system for crops such as tomatoes. Carlson taught us how to run the BCS two-wheel tractor for prepping the ground, and gave advice on using the wide variety of tools at our disposal. In April and May we prepared our beds for the crops we are growing this summer and started transplants in the greenhouse. We are growing a wide variety of crops at STOGROW, and are excited to watch everything come to fruition in the coming months. Until then, there is much more work to be done.

## **RESEARCH IN THE NATURAL LANDS**

#### **Forest Restoration**

By Cully Hauck '23 and Sean Meager '21

As the only in-person researchers in St. Olaf's 2020 Collaborative Undergraduate Research and Inquiry program (CURI), we received a one-of-a-kind experience in the Natural Lands this past summer working under Dr. Kathleen Shea. This was the 30th anniversary of a forest restoration planted on the northwest side

of campus on two previously farmed fields. It was our responsibility to measure and identify all of the trees growing in 2.15 ha of restored forest, assessing the health of trees planted as seedlings and new trees that have colonized the area. Due to the pandemic we were not allowed the use of the ecology lab in Regents Hall. As biology majors, we faced the unique challenge of meeting our project goals almost solely through fieldwork. We were fueled by fresh air and the thrill of new discoveries, and felt lucky to be working on campus. By the end of the summer, we measured, tagged, and mapped approximately 1,600 individual trees, and our new findings made it all worth the effort. The current make-up of the restoration is largely dominated by white ash, comprising 32.8% of the community, followed by black walnut, white oak, and bur oak. White ash has been the most common colonizer, followed by American elm, wild plum, and basswood. Only 54.4% of the forest is now made up of original trees. New species include butternut and bitternut hickory. Diversity is an important indicator of a healthy forest, and the establishment of new native species shows the restoration is becoming more resilient and self-sustaining. Challenges remain from climate and disease, such as caused by emerald ash borer, but data suggest that the restoration is starting to resemble old-growth forests once common before European settlement.

#### **Duckweed**

#### By Allie Raduege '21

Dr. Jennifer Brentrup, a new professor in the departments of Biology and Environmental Studies, is conducting summer research on campus with the CURI program to identify the effects of duckweed (*g. Lemna*) on nutrient and carbon cycling as it relates to population density. She is assisted by students Morgan Smith '22, Liam McBride '23, Zoe Plechaty '23, and Angel Nieto '24. Global climate change and eutrophication in freshwater systems are altering the structure and function of lakes and ponds. Small ponds are globally abundant, and





Cully Hauck and Sean Meagher



## Being a Student Naturalist

Submitted by Denver Link '21

A group of six to eight students meet once a week in an effort to promote student and community use of our natural areas. Throughout the year, events



Earth Day 2021 Tree Planting

hosted by the student naturalists provide ways to experience the Natural Lands in fun and engaging ways. In previous years, seed collection events, buckthorn pulls, tree planting, and educational walks boosted campus awareness about the ecological diversity sitting in our backyard. Although COVID-19 has impacted the ability to host events, the student naturalists continue to create opportunities in a safe manner. This year, the group held the fan favorite "spooky walk" that takes place on Halloween. As the sun sets, taxidermy animals scatter along the trail, and student naturalists wait to jump out behind trees to scare the passing group. Events like the spooky walk invite students to experience and enjoy the beauty of the Natural Lands.

As a student naturalist, focus is placed on engaging the campus community with the Natural Lands. Regardless of majors/interests every student has the ability to learn, recreate, enjoy, and cherish the Natural Lands. During the spring semester, the student naturalists led "phenology walks" on Fridays through Norway Valley. Each week, special attention is given to plants, birds, and animals present during the transition from winter to spring. Students of all backgrounds gather for these walks to learn more about our local natural ecosystems by observing weekly changes. We take notes and record data in order to make year to year comparisons. Seeing students from diverse backgrounds engaging with the Natural Lands makes all the event planning worth it. We look forward to expanded event hosting, as social gatherings become safer next year.

## From the Natural Lands Technicians By Autumn Pozniak '24

Working as a Natural Lands Technician has been an incredibly educating and rewarding experience. Every time I go to work I know that I'm doing something that makes a difference, whether it be managing invasive plant species to allow native species room to flourish, or collecting/planting seeds. There's never a dull moment, and I love that I get to work outside while doing something



Harris Kramer '22, Chantel Henderson '23, Andy Harrison '23

worthwhile. It's fascinating knowing that the environment of the Natural Lands didn't happen by itself, but by the efforts of students like me and all of the passionate individuals who care about nature just as much as I do. One of my favorite aspects of my job is the wealth of knowledge it has given me about natural biology, land management, and environmental sustainability. The Natural Lands is the place on campus I go to when I need to relax and just appreciate the beauty of nature. Through my work I hope to keep it as beautiful and healthy as I can so others can admire nature and learn more about the world around us.



## Thinking about the Future

Although we are mainly finished with the expansion phase of the Natural Lands, started in 1989-90, we have encouraging news that Post (the cereal company after Malt-O-Meal) may donate a section of land along Heath Creek between two St. Olaf owned parcels (outlined in orange). It will be easier to manage if St. Olaf owns the parcel between the sections. In the Heath Creek area in 2009 and 2017 we did 6 and 10-acre forest restorations through tree seeding on agriculture fields, shown in lighter green on the map to the left. This area is less well known, in part because access requires crossing Hwy 19. However, it is a beautiful part of the Natural Lands, the only place with a stream, and we encourage you to explore it.



#### Featured Plant: Butternut, Juglans cinerea

The butternut tree was a fairly common Minnesota canopy tree until it was afflicted with a lethal fungal disease, the butternut canker, *Sirococcus clavigignenti-juglandacearum*. of unknown origin in the 1970's. The fungus attacks the cambium causing cankers that can girdle the tree, causing it to die. There is no known cure, and *J.cinerea* was listed as endangered in Minnesota in 2013. The good news is that we have some butternut in the Natural Lands and multiple trees are fruiting, producing sticky oval shaped nuts. Can you find the butternut in the St. Olaf Natural lands?

Thank you to David Kuntz '70 and Patti Mulvihill for setting up the Nunatak (Inuit for biological refugia) Fund to help support Natural Lands programs!!

Let us know about your experiences using the Natural Lands! For more information go to <u>https://wp.stolaf.edu/naturallands/</u>

Contact

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