



# Cowling Arboretum

## Academic Use of the Arboretum

Geology and biology students have been active with class projects in the Arboretum. In a joint class exercise between the ecosystem, ecology, and carbon and climate classes taught by Professor of Biology Dan Hernández and Assistant Professor of Geology Dan Maxbauer respectively, students examined how habitat conditions affect greenhouse gas emissions. Soil samples were collected from different vegetation types and were analyzed for organic carbon content. The study found significant variation in methane and carbon dioxide emissions among vegetation types in Kettle Hole Marsh. Soil moisture did not vary across the marsh, but sedge-dominated areas were significantly higher in greenhouse gas emissions compared to cattail-dominated areas. Greenhouse gas emissions were positively correlated with variation in soil organic matter.

Assistant Professor of Geology Chloé Fandel’s Geomorphology class has been studying the soil moisture, porosity, and infiltration capacity in Pigeon Field in the Upper Arboretum. This project is of particular interest to the Arboretum as we work to restore this highly impacted area to floodplain forest. Historically, Pigeon Field was the training area for the women’s Equestrian program and later used as a practice field for Field Hockey and for Wombat, the intramural women’s Softball League. Highly compacted soils have been a challenge to our restoration efforts, and work by these geologists-in-training may provide solutions.

## Cowling Arboretum Mission

Provide opportunities for education and research.

Preserve and restore native plant and animal communities on College natural lands.

Provide opportunities for outdoor recreation and nature appreciation.



Anwesha Mukherji '23

## Special Funding

*In addition to operating support provided by Carleton College, the Arboretum’s programs are supported by grants and funds that have been established through generous gifts (listed alphabetically):*

- Arboretum Restoration Fund
- Cole Family Memorial Arboretum Fund
- Kuntz Family Fund through the Madison Community Foundation
- George W. Megeath Fund for the Cowling Arboretum
- Minnesota Historical Society
- Outdoor Heritage Fund, the Minnesota Department of Natural Resources and the Conservation Partners Legacy Grant Program
- The Puzak Family
- Yolanda Stork Stillwell '50 Memorial Fund for the Cowling Arboretum
- Wright Arboretum Endowed Fund
- U.S. Department of Agriculture (Conservation Reserve Program)

*We thank the Arboretum’s many benefactors who help make our work possible.*

## Arboretum Academics

Faculty use the Arboretum extensively for classes and scholarship. Faculty and staff from the following departments and programs report using the Arboretum or Arboretum data for class work and other educational uses.

- |                          |                               |
|--------------------------|-------------------------------|
| American Studies         | History                       |
| Archeology               | Literary and Cultural Studies |
| Art and Art History      | Music                         |
| Asian Studies            | Physical Education            |
| Biology                  | Political Science             |
| Cinema and Media Studies | Religion                      |
| Classics                 | Sociology and Anthropology    |
| English                  | Statistics                    |
| Environmental Studies    | Theater and Dance             |

### Other Programs

- |                                     |                                   |
|-------------------------------------|-----------------------------------|
| Gender, Women’s & Sexuality Studies | FOCUS Colloquium                  |
| Geology                             | Carleton Summer Science Institute |
| German                              | Minnesota Master Naturalist       |
| Greek                               |                                   |

**Community Outreach** in the Arboretum includes tours, volunteer opportunities, and working with students in and out of class—involving both the College and Northfield communities. In addition to the efforts noted in the accompanying chart, volunteers working independently tallied up 93 hours of service, and our incoming class of 2027 provided 900 hours of service in one day, helping to plant 200 trees to restore our forests.

We have continued our relationship with the Northfield High School Nordic ski team, allowing them to practice in the Arboretum while team parents volunteer with trail grooming. Our snowy 2023 year allowed for many opportunities to get out on the grooming equipment!

Group Type	Number of Events	Total Number of Attendees
Class Activities	7	105
Tours	10	235
Volunteer Events	28	145

### Cole Student Naturalist Program



Nancy Braker '81

**Student Naturalists serve as ambassadors for the Arboretum, leading field trips, writing for the *Carletonian*, and engaging students in nature-based activities.**

### Geology Comps in the Arboretum

This past year, two seniors undertook comps projects focusing on the geology of the Arboretum. Both projects were supervised by Assistant Professor of Geology Chloé Fandel.

*Remote Sensing and Isotopic Analysis of Potential Zones of Groundwater Discharge in the Carleton College Arboretum* by Jack Mathieu '23

*Spring Creek Springs: Locating Prairie du Chien Springs in Cowling Arboretum, Northfield, Minnesota* by Grant M. Singer '23

These works can be found in the Gould Library on campus.

**Student Naturalist Senior Amelia Leonard '24** grew up hiking, backpacking, and Nordic skiing through the forests of the Pacific Northwest. When she was eight, Amelia first started visiting the Wenaha River Canyon, and when wildfire swept through it a few years later, she was driven to better understand the functions of the ecosystems she wandered. In high school, she worked with the Hoyt Arboretum, eager to share her knowledge of trees and native plants, and learn from the visitors to the park.

Carleton's Arboretum has provided another space to listen and explore. As a Student Naturalist at Carleton, Amelia is thrilled to learn about prairie ecosystems and the geology of the Midwest, and to get to better know her community.

### Summer Research Assistant: Katrin Birk

Katrin Birk '25 worked this summer as Research Assistant. She's a longtime Arboretum worker, having worked on the Arb Crew since fall term of her freshman year. Birk helped with multiple projects, including controlling invasive wild parsnip, monitoring native bee nest boxes, and coring Kentucky Coffeetrees this past fall term (see related article).



Nancy Braker '81

Her favorite part was participating in the Arboretum's management burns, which help rejuvenate the prairie, increase soil health, and prevent accidental wildfires. She highlighted the positive impacts that the Arb has on students' well-being.

Birk hopes to become a scientist and valued the experience of working in the field. She felt lucky to be able to experience the Arb over the summer, a privilege few students have. She especially enjoyed seeing the grasslands grow and transition. "It doesn't look like a prairie at the beginning, but at the end, you can't see two feet in front of you!" she said.





### Master Naturalists at Work

Since 2012, in collaboration with the University of Minnesota Extension Service, the Arboretum has offered Master Naturalist courses. This program offers adult education courses designed to encourage volunteerism in environmental stewardship. This summer's course focused on prairies, with lessons about geology, plants and animals, ecological conservation issues, and how those in the past and today use prairies. "This class was phenomenal due to its location in the Arb, the exceptional staff, and my classmates, which included a Carleton Geology professor, a soil scientist, and someone who is in the process of restoring prairie on part of his farm," said Master Naturalist volunteer Beth Janke '80. With 40 hours of class time, participants also undertake a group capstone project. As much as possible, class is held in the field, with two full day trips off-site.

There is always significant interest in the courses held at the Arboretum, with a variety of Northfield and Twin Cities residents taking part. Capstone projects focused on identifying species in remnant prairies along Rice County roadsides, helping identify conservation needs in these overlooked ecosystems. Perhaps the most important part of becoming a Master Naturalist is service; volunteering for local organizations is a required component of maintaining Master Naturalist certification. Through this program, the Arb gets new volunteers, and seasoned Master Naturalists can keep their skills sharp by working in the Arboretum.

### Kentucky Coffeetrees

The Arboretum has recently initiated a collaborative venture with Dan Griffin, Dendrologist and faculty member at UMN, to look at the age and origins of the Kentucky Coffeetrees in the Arboretum. Listed as a "special concern" species in Minnesota, the seeds of this tree are unable to germinate without scarification (physical damage to the exterior seed coat). It is theorized the tree may have relied on now extinct giant sloths, whose digestive system damaged the outer seed coat. Some of our trees may be naturally occurring and others planted.

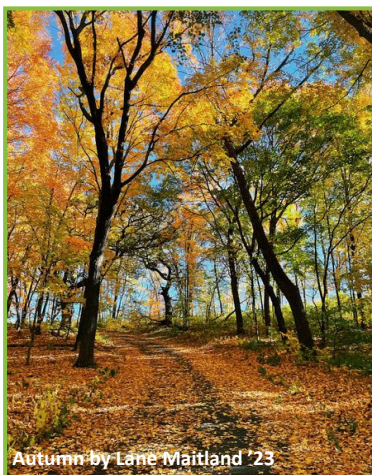
We are working with Griffin to collect information about the age of our specimens through tree ring analysis. An increment borer extracts a small core of the tree that can be used to estimate age and provide other information such as impacts of climate.

Beyond this current project, Griffin is developing a comprehensive open source database of high-quality archival images of tree cores for future study. This initiative fills a critical gap in the field, providing a valuable and enduring resource for researchers for years to come. Our Kentucky Coffeetree cores and other species will be part of this project.

### New Indigenous Use Prairie Planting

After several years of planning, the Arboretum has realized a significant milestone with the implementation of a planting project specifically for plant collection by indigenous students and any other self-identified Indigenous person. A seven-acre area contains plants selected to serve these needs. Planting was completed in November, with expectations for the full development of this restoration in approximately three years. Until now, all plant collecting required a permit, which were typically requested for research or class projects.

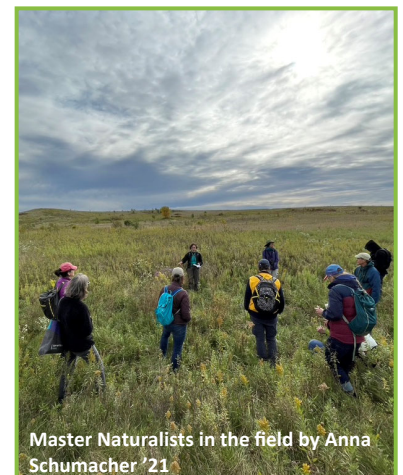
In light of this new project, Indigenous people will have the freedom to collect within the designated area without any prior permission. This project not only promotes the conservation of local flora but also acknowledges and respects the historical significance of the Arboretum's location on indigenous lands. Assistant Professor of American Studies and History, Meredith McCoy states that "This planting reflects our campus commitment to interrupt histories of settler colonial harm and to invest in the health and well-being of all our relatives in this place. It is an important step towards living out our campus responsibilities to strengthening relationships with Indigenous people in our region today."



Autumn by Lane Maitland '23



Kentucky Coffeetree by Joanne Bouknight



Master Naturalists in the field by Anna Schumacher '21

**Bike Trail Planning Close to Completion**

For the past 20 years, Carleton has been in conversation with the Minnesota Department of Natural Resources about the possibility of the Mill Towns Bike Trail, part of the state-wide bike trail system to pass through part of the Arboretum. The 25-mile trail will eventually connect Northfield with Faribault to the south and Cannon Falls to the east. These sites are all historically as well as geographically linked, as the Cannon River allowed these communities to have thriving mill businesses in the past.

As currently proposed, the trail will follow the edge of college land and use the Iron Bridge at the northern end of the Lower Arb to cross the Cannon River. This historic bridge has been unused for the past ten years and the new trail will allow a storied Northfield landmark a new life! As part of the project, a new tunnel will be added underneath Highway 19 that both bicyclists and students will appreciate. Staff are currently working on the final details of this project, including Administrative and Trustee approval. Not only will bikers have more possibilities to explore southern Minnesota, students will have another safe way to get across the highway into the Lower Arb once the new tunnel is completed.

**History in the Making**

The Arboretum will celebrate its 100-year anniversary in academic year 2026-27. To commemorate this occasion, a book is planned about the Arboretum's history. With funding granted to the College from the Minnesota Historical Society, Nat Case '88 and Ingrid Case '90 have been contracted to research material for the book. They have been assisted in their efforts by Carleton history major Alex Wilson '24. Alex has scoured the College Archives, including the *Carletonian* and other newspapers, to locate information for the book. He finds the different ecological approaches to managing the Arboretum especially interesting. Alex said about the project, "I've spent a lot of time in the Arb personally, and that was a really important place for me, especially during the pandemic. I want to go into museum work after I go to graduate school, so this is really helping me get research skills that I'm not able to get anywhere else."

**Carleton Birders**

What's that in the sky? It's a bird! It's a plane! No, it's a bird. A new club on campus is particularly excited about that—the Carleton Birders, founded by biology major Maxima Gomez-Palmer '26. "When I was a freshman, I was already really interested in bird-watching. I was looking for a club and was surprised to find out there was not one on campus," said Gomez-Palmer. She took matters into her own hands and started the club herself at the end of her freshman year. There was strong interest in the club from the start, with Gomez-Palmer gathering 200 signups at the fall activities fair. In fall term, they had weekly morning bird walks in the Arb, often led by bird watchers from the Northfield area. Carleton Birders heavily use the Arb, as do many student groups on campus. "The reason that I came to Carleton was because of the Arb," said Gomez-Palmer.



Maxima Gomez-Palmer '26 holding a hawk.

**Arboretum Aperture**



Prairie Plants by Anwasha Mukherji '23



Trail by Laine Maitland '23



Fall Sunflowers by Kallie Rollenhagen



New Student Week by Erica Helgerund '20

**For additional information, contact the Arboretum Director or visit our website, Facebook, or Instagram page:**

- [carleton.edu/campus/arb](http://carleton.edu/campus/arb)
- [facebook.com/carletonarboretum](https://facebook.com/carletonarboretum)
- [Instagram.com/carletonarboretum](https://Instagram.com/carletonarboretum)

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Arboretum in Spring by Berett Wilbur '14