

Cowling Arboretum

Carleton College
Northfield, Minnesota

Academic Use in 2009

The Arboretum is utilized by many classes and independent projects.

Biology

Entomology
Ecosystem Ecology
Population Ecology
Introductory Biology:
Genes, Evolution, and Development



Introductory Biology laboratory

English

American Nature Writing
Writing the Great Plains

Environmental and Technology Studies

Introduction to Geospatial Analysis

Geology

Geology in the Field
Introduction to Geology
Geomorphology
Geology of Soils
Geochemistry of Natural Waters
Intro. to Environmental Studies

Math

Sample Survey Design and Analysis

Studio Art

Advanced Ceramics
Field Drawing
Advanced Photography
Woodworking

Classes in the Arb: Spotlight on Advanced Photography

In the fall of 2009 students from the Advanced Color Photography course spent the term studying native tree species in the Carleton Arboretum. Each student selected one or two species to photograph over the term. Shooting weekly, they witnessed the seasonal changes of these trees. They gathered the tree's bark, branches, leaves and pods to photograph through a microscope. Each student also kept a field guide, which contained notes on the history of color, details about their particular tree, and various shooting assignments.



Photography class with large format camera

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

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 Endowed Fund

Arboretum Restoration Fund

Richard S. Cole '69 Memorial Fund

The Louise '51 and Frank '50 Wright Endowed Arboretum Fund

Conservation Reserve Program of the U.S. Department of Agriculture (USDA)

Environmental Quality Incentive Program of the USDA

Xcel Energy Foundation-Natural Science in Natural Lands: Improving the Carleton Arboretum

We wish to thank the Arboretum's many benefactors who help make our work possible.

Faculty Scholarship in 2009

The Arboretum is used by faculty members for their own scholarship. In 2009, these faculty drew inspiration and implemented research programs to address biological questions:

David Lefkowitz, visual artist and Associate Professor of Art

Lefkowitz's work in painting, mixed media and installation addresses the blurry boundary between the human-built environment and the natural world. His contribution to the faculty art show, the Cowling Arboretum Contemplative Transit System Map, presents the Arboretum trails as if they were public transit lines. This whimsical interpretation encourages the viewer to look at the Arb in a new way.

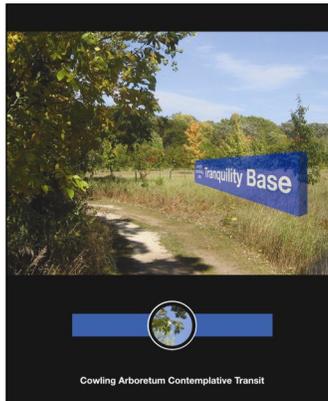
Susan R. Singer, Laurence McKinley Gould Professor of the Natural Sciences

Over the summer three students working with Professor Singer on her ongoing research investigated the expression of flowering genes in *Chamaecrista fasciculata* plants growing in Arb prairies. They compared the level of expression at different developmental stages of plants from the prairie with plants grown under controlled conditions in growth rooms. Although much has been learned about the regulation of flowering gene pathways from plants grown in controlled environments, there are subtle and significant differences when plants are observed in a natural environment. The research blends genomics and ecological evolutionary research.

Land Management and Restoration

In 2009 work in the Arboretum continued to promote its long-term mission of restoration to support native plant ecosystems. Restoration focused on the development of large areas of high-quality habitat that will increase plant and animal diversity, as well as creating ample opportunities for the property to be used as an outdoor laboratory for students and faculty. Work to enhance forest and grassland habitat by clearing non-native invasive trees and shrubs continued throughout the year. The forest around Monument Hill in the upper Arb was seeded with native woodland grasses and wildflowers that were collected from other sites in the Arboretum.

We are halfway through a four-year project supported by the Environmental Quality Incentives Program, a State of Minnesota-sponsored grant to remove buckthorn from the forests in the Upper Arboretum. Staff also continued to remove non-native trees and shrubs from highly degraded non-native fields. This area will be managed agriculturally for two years to eliminate weed seeds in the soil before being replanted to high-diversity prairie. This work supports the long-term goal of enhancing the Arboretum's only original prairie (Postage Stamp) by connecting it to adjacent prairie restorations. A new trail was also installed this summer, giving Arboretum users better access to Kettle Hole Marsh, which was previously obscured from view due to a very high density of buckthorn.



Tranquility Base Station, in Lefkowitz's Contemplative Transit Map



Partridge Pea
Chamaecrista fasciculata



Fire management

Inventory and Monitoring

Several new monitoring programs were added in 2009 to monitor current species and document new arrivals. The annual bird count brought together faculty, staff, students, alumni, and community volunteers to census the birds of the Arboretum. 2009 marked the first year that Arboretum staff and students conducted a frog and toad survey in a variety of locations in the Arboretum. Summer workers were also involved in a survey of a rare plant species (*Carex conjuncta* or Jointed Sedge) found in the Arboretum in 2009 and listed as a threatened species in Minnesota, as well as replicating a grassland bird survey.



Yellow-rumped Warbler

Arboretum Archiving Project

Since its establishment in 1927, the Cowling Arboretum has been as much a part of Carleton's campus as its academic buildings. Like these buildings, it has a history of additions and changes in use. This history has resulted in a large collection of materials, including letters, articles, proposals, and reports on land management and restoration, as well as student projects related to the Arboretum, maps and photographs. To inventory and manage these materials an online database is being developed that is available through the Gould Library. We hope to provide faculty and students with easy access to historical and contemporary information about the Arboretum to support scholarly work and research.



Environmental Education and Community Outreach

Outreach to the Carleton community and beyond is an important aspect of the work of the Arboretum staff. With the increase in staffing over the past two years, additional outreach initiatives have been possible.

Field trips and talks

As one might expect, audiences related to the College make up a large component of the users visiting the Arboretum. Field trips are hosted for prospective students, visiting alumni or other guests, reunion groups, faculty, staff and current students. Twice a year, the Northfield Middle School seventh grade science class visits the Arboretum for programming and service projects.

This year the Arboretum offered “cut your own” Christmas trees to Carleton families. Eighteen families and residents of Dacie Moses House enjoyed a wintery outing to select and cut trees in a portion of the Upper Arboretum. These trees, seeded in from conifers on an adjoining property, were slated to be removed as part of our restoration program.

Type of Group	Number of Field Trips or Talks or Workshops	Total Number of Attendees
College Related	8	179
Youth (K-12 or Other)	6	350
Adult (Local Community)	7	147

The Arboretum held its first annual Prescribed Fire Workshop in 2009. The workshop was designed to teach private landowners and volunteers the basics of prescribed burning in grassland situations. During the workshop participants gained a basic understanding of fire history in grasslands, learned basic prescribed burning methods, and had the opportunity to apply some of the methods in the field.

Cole Student Naturalist Program

The Cole Student Naturalist Program is funded through an endowment created in memory of Richard S. Cole '69. The program trains students in natural history and nature interpretation and provides opportunities to lead field trips and participate in other educational events for Carleton and the broader Northfield community. Student Naturalists meet each week during the academic year to share experiences and knowledge and learn from experienced naturalists. Field trip leaders are requested by various campus offices, including admissions and alumni affairs, and groups like the Scouts, schools and garden clubs utilize the Naturalists as well. The Student Naturalists also write a weekly column for the *Carletonian*, the student newspaper. Meet two of our 2009 Cole Student Naturalists:

Chelsea Clifford '10

Gloucester, Virginia
Biology major

Chelsea's favorite part of her Carleton education has been learning about nature in nature from the experts. Anticipation of Friday afternoons in the Arb with the naturalists motivates her to persevere through each week in the classroom.

Being a student naturalist has taught her to appreciate her ability to create learning experiences for other people. Chelsea considers the Arb Carleton's greatest asset for producing students who understand the value of their planet and the impact of their lives upon it.



John Kraus '10

Decorah, Iowa
Philosophy major



As a child John often sneaked off to play in the woods in order to avoid working on his family's organic farm. His favorite Arb activities include running, catching crayfish, and munching on gooseberries. He is especially interested in researching the history of the Arboretum, learning about land restoration, and getting other students at Carleton excited about the Arb.

Physical Education, Athletics and Recreation

The Arboretum is heavily used for many types of organized sports as well as for recreational activities.

The trail system is open to members of the local community as well as College users. Fifteen miles of trail provide endless opportunities for hiking, running, skiing and nature observation. The Men's and Women's Cross Country Teams use the Arboretum for practice and hosting meets.

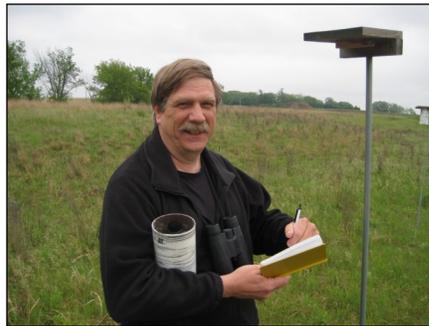


Nordic Ski Team race

The Nordic Ski Club Team practices on the Arboretum trails and hosts a fun race each year. Beyond Carleton, the Northfield High School Cross Country Ski Team also utilizes the Arboretum for practice and meets. In 2009, the parents of the Northfield High School Nordic Ski Team collaborated with the Arboretum staff to groom the trails.

Volunteers

Over the past year, both students and interested community members have participated in a variety of environmental activities to enhance the Arboretum including buckthorn removal and seed collecting. A monthly volunteer event was held the third Saturday of every month to enhance the area adjacent to Spring Creek in the Upper Arboretum.



Volunteer Glenn Lee maintains the arboretum nest boxes

For the second year Carleton's volunteer Acting in the Community Together (ACT) program introduced the incoming class to the Arboretum and volunteer opportunities. New students helped with buckthorn removal and cleared an overgrown section of trail. Community members also volunteered to help with the Arboretum prescribed fire management program, provided guidance to new students during the buckthorn pull, and helped groom the cross country ski trails in the winter months.

Arboretum Staff

Thirty two students worked in the Arb during the 2008-2009 academic year, assisting restoration and habitat-management programs of the Arboretum and McKnight Prairie. These students provided 2,100 hours of work. Student workers began to fill new roles during the 2009-2010 academic year, including: outreach, security, archiving of all Arboretum-related material, and data collection and organization.



Summer work in the Arboretum

The Arboretum also employed six students to work full-time over the course of 10 weeks in the summer of 2009. They were engaged in the restoration and habitat management programs of the Arboretum and McKnight Prairie.

Around the Arboretum:



Moon rising over the prairie



Sarah Deel and Sean Fox and family with their Christmas tree



White-tailed deer fawn

For additional information, contact the Arboretum Director or visit our Web site:

www.carleton.edu/campus/arb/