CONNECTICUT COLLEGE

A Commitment to Land Conservation From the Compus to Three Large Natural Areas

ALPINE
ACADEMICS FOR LAND PROTECTION IN NEW ENGLAND

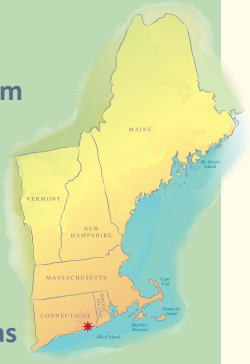
Academic Conservation Briefs

By Shuyi Lin

An aerial view shows Connecticut College's Arboretum Campus in New London, Connecticut. Credit: Connecticut College

At a glance:

- Campus arboretum
- 750 acres
- Ecological landscaping, botanical collections, natural areas, and research areas



"Connecticut College has incorporated into its mission a commitment to prepare the next generation of citizen-leaders, whose diverse responsibilities will include a sustainable relationship with the natural world."

Connecticut College is a private liberal arts college located in the seaport city of New London, Connecticut. Founded in 1911 as a women's college, Connecticut College is now a co-ed, undergraduate institution that hosts approximately 1,865 students and 200 faculty, with 98% of students living on campus.

The campus, including the land surrounding the buildings, is managed as an arboretum encompassing 750 acres that include a variety of plant collections, natural areas, and other managed landscapes (Figure 1). The Arboretum Campus of Connecticut College is not only an academic center but also an important part of land conservation and stewardship. The mission of the arboretum includes teaching, research, conservation, recreation, collections, stewardship of natural resources, and public education. As a college located in a city landscape, the arboretum clearly reflects the college's commitment to conservation and its mission of educating global citizens who value the environment.

About the Arboretum

The Connecticut College arboretum includes 120 acres of plantings surrounding the campus itself, plus several plant collections, including a native plant collection comprising 30 acres of indigenous plants and the Caroline Black Garden. The campus landscape, where students and faculty reside, is managed as a plant collection that includes 1,336 trees, 2,122 shrubs, and 7 vines from all over the world; there are 420 different types of woody plants.

In addition, the arboretum includes 200 acres of natural area that is free from human disturbance and available only for observatory research. The natural area includes the Bolleswood Natural Area,

the Goodwin Natural Area, and Mamacoke Island, that all provide an unusual opportunity to experience and passively study landscapes shaped primarily by natural processes rather than human activities. Arboretum policy stipulates that no manipulation will occur in these areas except for trail maintenance and invasive plant removal. The natural areas include a variety of habitats such as oak and hemlock forests and salt marshes. Another 200-acre area within the Arboretum is available for student and faculty experiments and research.

The Connecticut College arboretum was awarded a Level III accreditation through Arbnet.[1] The certification indicates that the Arboretum meets certain specified criteria: it has at least 500 species, employs a curator, has substantial educational programming, collaborates with other arboreta, publicizes its collections, and actively participates in tree science and conservation.

History of the Arboretum

The arboretum was originally constructed on a property purchased from the Bolles family that included a hemlock forest as well as adjacent farmlands. Over time, the arboretum expanded with the purchase of additional parcels. Initially, the concept of creating an arboretum was suggested to President Katherine Blunt in early 1931. She found this plan intriguing, passed the plan through the College's Board of Trustees, and then hired A. F. Brinckerhoff, President of the New York Association of Landscape Architects, to create a plan for the Arboretum.

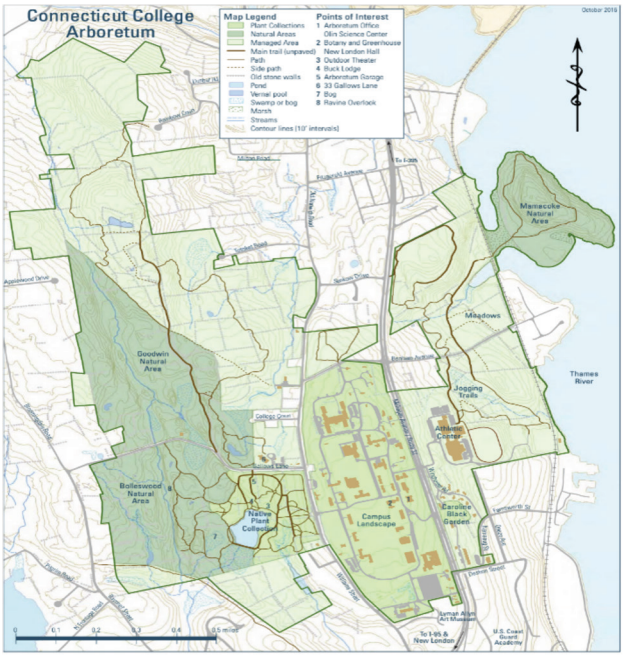


Figure 1. This map shows several parcels that together make up Connecticut College's land holdings. Source: Connecticut College.

The arboretum was established in 1931 on the 65 acres of land owned by Connecticut College at that time, with an emphasis on native species. Initial funding for the plan was pieced together by various gifts and land donations from friends of the arboretum. The land was mainly composed then of mature hemlock forests and abandoned agricultural lands. The property also included a small four-acre garden created by Dr. Caroline Black, the first chair of the Botany department, in 1928.

The Connecticut College Arboretum was dedicated on October 6, 1934. Its purpose, as stated by President Blunt, was "the preservation and propagation of the native plant life of Connecticut, and the scientific arrangement of that plant life for purposes of study."[2] The focus on native species was unique for an arboretum at the time.[3]

Dr. George S. Avery, the chair of the botany department at the time of the Connecticut College Arboretum's dedication, became the first director of the arboretum. He initiated membership and educational programs, many of which are still active today, and oversaw the establishment of the native plant collection. When Avery left Connecticut College to become the Director of the Brooklyn Botanical Garden in 1944, Dr. Richard H. Goodwin, a conservation leader who later helped establish The Nature Conservancy, took the position and began developing the conservation programs in the arboretum. In 1952, the Board of Trustees decided to conserve the Bolleswood Natural Area for the sole purpose of long-term ecological research. Under the supervision of Goodwin, the arboretum expanded from around 100 acres to 450 acres (Figure 2).

In 1953, Goodwin hired Dr. William Niering, a botanist and professor, to supervise ecological research in the Arboretum. In 1965, Niering became the director of the arboretum. During this time, Niering and Goodwin made substantial contributions to the study and preservation of natural areas and coastal habitats. Since then, research has become an important aspect of the arboretum; students in the environmental studies, botany, and zoology programs have all conducted research there.

As the arboretum grew in size and reputation, and became increasingly important as an educational resource, the college administration came to appreciate it as an integral part of the college. The arboretum also

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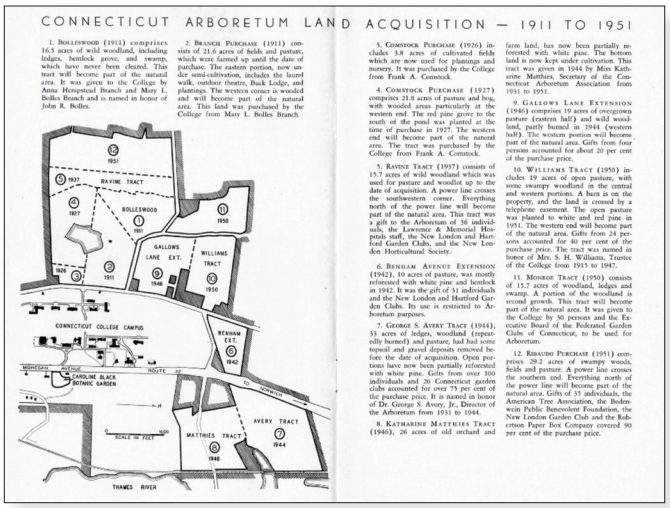
1 ArbNet is an international community of arboreta and tree-focused professionals that facilitates the sharing of knowledge, experience, and other resources to help arboreta meet their institutional goals.

2 Richard Goodwin, "Bulletin No. 7: The Connecticut Arboretum: Its History and the Establishment of the Natural Area," Bulletins, 1952.

3 Avery et al.,"Bulletin No. 28: The Connecticut Arboretum: Its First Fifty Years 1931–1981," Bulletins, 1982.



CONNECTICUT ARBORETUM LAND ACQUISITION — 1911 TO 1951

1. Bollenwood (1911) comprises 16.5 acres of wild woodland, including lodges, hemlock grove, and swamp, which have never been cleared. This tract will become part of the natural area. It was given to the College by Anna Hempstead Branch and Mary L. Bolles Branch and is named in honor of John R. Bolles.

2. Branch Purchase (1911) consists of 21.6 acres of fields and pasture, which were farmed up until the date of purchase. The eastern portion, now under semi-cultivation, includes the laurel walk, outdoor theatre, Buck Lodge, and plantings. The western corner is wooded and will become part of the natural area. This land was purchased by the College from Mary L. Bolles Branch.

3. Comstock Purchase (1926) includes 3.8 acres of cultivated fields which are now used for plantings and nursery. It was purchased by the College from Frank A. Comstock.

4. Comstock Purchase (1927) comprises 21.8 acres of pasture and bog, with wooded areas particularly at the western end. The red pine grove to the south of the pond was planted at the time of purchase in 1927. The western end will become part of the natural area. The tract was purchased by the College from Frank A. Comstock.

5. Ravine Tract (1937) consists of 15.7 acres of wild woodland which was used for pasture and woodlot up to the date of acquisition. A power line crosses the southwestern corner. Everything north of the power line will become part of the natural area. This tract was a gift to the Arboretum of 56 individuals, the Lawrence & Memorial Hospitals staff, the New London and Hartford Garden Clubs, and the New London Horticultural Society.

6. Benham Avenue Extension (1942), 10 acres of pasture, was mostly reforested with white pine and hemlock in 1942. It was the gift of 31 individuals and the New London and Hartford Garden Clubs. Its use is restricted to Arboretum purposes.

7. George S. Avery Tract (1944), 33 acres of ledges, woodland (repeatedly burned) and pasture, had had some topsoil and gravel deposits removed before the date of acquisition. Open portions have now been partially reforested with white pine. Gifts from over 100 individuals and 20 Connecticut garden clubs accounted for over 75 per cent of the purchase price. It is named in honor of Dr. George S. Avery, Jr., Director of the Arboretum from 1931 to 1944.

8. Katharine Matthies Tract (1946), 26 acres of old orchard and farm land, has now been partially reforested with white pine. The bottom land is now kept under cultivation. This tract was given in 1944 by Miss Katharine Matthies, Secretary of the Connecticut Arboretum Association from 1931 to 1951.

9. Gallows Lane Extension (1946) comprises 19 acres of overgrown pasture (eastern half) and wild woodland, partly burned in 1944 (western half). The western portion will become part of the natural area. Gifts from four persons accounted for about 20 per cent of the purchase price.

10. Williams Tract (1950) includes 19 acres of open pasture, with some swampy woodland in the central and western portions. A barn is on the property, and the land is crossed by a telephone easement. The open pasture was planted to white and red pine in 1951. The western end will become part of the natural area. Gifts from 24 persons accounted for 40 per cent of the purchase price. The tract was named in honor of Mrs. S. H. Williams, Trustee of the College from 1915 to 1947.

11. Monroe Tract (1950) consists of 15.7 acres of woodland, ledges and swamp. A portion of the woodland is second growth. This tract will become part of the natural area. It was given to the College by 90 persons and the Executive Board of the Federated Garden Clubs of Connecticut, to be used for Arboretum.

12. Renaud Purchase (1951) comprises 29.2 acres of swampy woods, fields and pasture. A power line crosses the southern end. Everything north of the power line will become part of the natural area. Gifts of 35 individuals, the American Tree Association, the Bodenwein Public Benevolent Foundation, the New London Garden Club and the Robertson Paper Box Company covered 90 per cent of the purchase price.

BOLLENWOOD
RAVINE TRACT
GALLOWS LANE EXT.
WILLIAMS TRACT
BENHAM EXT.
CONNECTICUT COLLEGE CAMPUS
CAROLINE BLACK BOTANIC GARDEN
MONTAUK AVENUE
ROUTE 32
AVERY TRACT
MATTHIES TRACT
SCALE IN FEET
THAMES RIVER

Figure 2. Shown here is a copy of the Connecticut College Arboretum Bulletin No. 7, written by Richard Goodwin in 1952, including a map showing the historical arrangement of natural areas within the arboretum.

gained a growing and generous constituency among the alumni. As a result, the trustees and the administration came to realize that the arboretum was of key importance to the identity of the college and its educational mission.

For the first six decades, the arboretum was a separate property from the college campus itself. However, in 1996, a campus planning effort officially incorporated the campus land as a part of the arboretum. According to Dr. Miles Sax, the current director of the arboretum, the inclusion of the campus was a way to elevate the campus landscape as a botanical garden and allow the campus to be managed with strategies and approaches used in botanical gardens. In addition, including the campus as a part of the arboretum created a more efficient management structure for the entire landscape. Plus, the inclusion of the campus in the arboretum demonstrated the increased conservation commitment of students and faculty alike.[4, 5, 6]

Conservation of the Arboretum

The arboretum includes a three-fold conservation purpose. First, the natural areas within the arboretum, which constitute over 25% of the arboretum, conserve and display the unmanaged landscapes of coastal southern New England. Second, the managed areas provide an opportunity for ecological research. Third, the plant collections, especially the native plant collection, demonstrate the concept of ecological landscaping and preserve plants that are native to the area.

[4] Gooodwin, "Bulletin No. 7."
[5] Avery et al., "Bulletin No. 28."
[6] Richard Goodwin and Glenn D. Dreyer, "Bulletin No. 32: The Connecticut College Arboretum: Its Sixth Decade and a Detailed History of the Land," Bulletins, 1991.

The arboretum supports a variety of managed and unmanaged habitats including different forest types and wetlands. According to the arboretum website, "Forested crest sites are dominated by chestnut oak and huckleberry. Midslope forests are dominated by oaks, maples, and black birch. Typical shrubs include mountain laurel and arrowwood. On lower slopes, tulip tree, white ash, and American beech are common." Wetland types include forested wetlands, bogs, and tidal marshes. One tidal salt marsh, the Mamacoke Marsh, is situated on the Thames River and is one of the few unentrenched tidal marshes left in Connecticut (Figure 3). This extremely productive ecosystem acts as a nursery for a variety of plants and marine organisms. Discrete vegetation bands of smooth cordgrass, salt meadow cordgrass, marsh elder, and switchgrass are visible on the marsh.

Figure 3. This satellite image shows Mamacoke Island, part of the Connecticut College Arboretum. Credit: Connecticut College

The National Audubon Society has recognized the shoreline of the Thames River between Harrison's Landing (in the City of New London) and Smith Cove in Quaker Hill (in the town of Waterford) as an Important bird area for Connecticut. Important bird areas constitute a network of sites in the United States and other countries that provide significant habitat for bird populations. The site on the Thames River centers on Mamacoke Island, which is a designated natural area within the Connecticut College Arboretum.

In the plant collections established by the college, the concept of ecological landscaping is advocated and strictly followed. Ecological landscaping promotes plant choices that are endemic and thus well-adapted to local environmental conditions. Ecological landscaping also embraces the idea of a dynamic community rather than a static one. The commitment to planting native plants has been an arboretum priority since its inception.

The Connecticut College Arboretum includes diverse landscapes, like this pond. Credit: Connecticut College

which was written in 1990, is the notion that teaching and research become an essential part of the place. Since its establishment, the arboretum has served as an outdoor classroom and a living laboratory for the students to learn and explore the natural world. Both undergraduate and master's students have been heavily involved in the study of natural history and vegetation in the Arboretum. In the 1950s, with the designation of the Bolleswood Natural Area and the acquisition of the Mamacoke Island, research conducted in the arboretum was expanded. Under the direction of botany professors and directors of the arboretum, Niering and Goodwin, vegetation surveys and a bird census survey were established and have continued to the present time.

The role of research and education was further expanded after the establishment in 1969 of the human ecology program, which was later renamed environmental studies. Throughout history, students at the college have published an impressive amount of research and studies that utilize the arboretum. Currently, the arboretum hosts a variety of academic activities including more than 30 courses that actively use the arboretum, multiple long-term research projects, countless individual studies, and various honors and master's thesis projects.

In addition to educating the students, the arboretum is also a resource for the entire New England region. As stated in the mission statement, the arboretum values public education in fostering an understanding of the natural world. The arboretum hosts various programs, self-guided walks, and guided tours. In 2019, before the pandemic, the arboretum offered a full schedule of lectures, workshops, conferences, guided theme walks, and family programs. In one such program, Connecticut College students developed an initiative for school-aged children to participate in hands-on learning by exploring resources in the arboretum. The guided tours are led by students and the topics of the tours change frequently.

Students use the arboretum for research and course work, such as sampling vegetation on a Mamacoke Island salt marsh. Credit: Connecticut College

In an effort to understand, catalogue, preserve, and honor the diverse history of human interaction with the landscape, the arboretum has expanded its mission in recent years to include the stewardship of cultural resources. For example, past arboretum projects have studied Native American activity on Mamacoke Island and archeological studies of colonial occupancy in the arboretum.

Students also use the arboretum for recreation, like this group that is enjoying the Connecticut College Arboretum pond. Credit: Connecticut College

Lessons Learned

The Connecticut College Arboretum serves as an example of conserving natural areas within an urban environment for the benefit of students, faculty, and the surrounding community. The experience of this college lends several key lessons for other institutions looking to do the same.

- As was shown here, the college remained dedicated to this initiative throughout its history, and sought to add land to its campus with the goal of creating ecological landscaping, botanical collections, and preserved natural areas, including space for student and faculty research.
- The value of this asset is extended to the surrounding community with trail access and educational programming for school children and the general public.
- The creation of an arboretum campus aligns with the college's mission of serving as a place for students to connect with the natural world so that they will be effective stewards going forward.
- Planning for the arboretum campus continues to look to the future. While only a small portion of the arboretum is conserved with an easement (50 acres), the college is planning to expand this easement to cover more acreage in the future. Additionally, the college is considering undertaking a carbon capture project utilizing the arboretum land.

Looking ahead, the future of the Arboretum and its role for Connecticut College is best summed up by Dr. Miles Sax, who joined Connecticut College as the director of the arboretum in 2019: "As we move forward and start to envision the next chapter of the arboretum, we aim to honor this past while looking to address the environmental challenges of the future. We aim for the arboretum to be a beacon of hope and resource for the community on issues of conservation, ecological land management, and sustainability. The arboretum will be looking to honor our history in conservation and ecological land management while charting a new course into the future that addresses contemporary environmental challenges facing our flora and the planet."

Students also use the arboretum for recreation, like this group that is enjoying the Connecticut College Arboretum pond. Credit: Connecticut College

More Information

Connecticut College Arboretum
https://www.conncoll.edu/the-arboretum/

ArbNet http://www.arbnet.org/

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