

# Connecticut College Arboretum

## Conservation Policy

The Connecticut College Arboretum Mission Statement specifies seven topics or areas of activity: Teaching, Research, Conservation, Plant Collections, Cultural Resource Stewardship, Public Education and Recreation. Policies provide history, context, management guidance and goals for Arboretum staff, College community and others. The portion of the mission related to conservation is:

“To provide stewardship of College lands by protecting, sustaining and enhancing biological diversity of natural areas and other large tracts of open space. The Arboretum also provides leadership statewide and beyond in conservation matters.”

The Arboretum directly manages nearly 600 acres of the College’s total 750 acres of property for multiple uses, including teaching, research, recreation and conservation. For the purpose of Arboretum management, college property is divided into three categories, or zones: Plant Collections, Natural Areas and Managed Lands (see map at end of policy). The Grounds Department in the Office of Facilities Management is responsible for maintenance of the main campus (one of the Plant Collections), athletic facilities and off campus housing lots. The Arboretum manages Natural Areas, Managed Lands, the Native Plant Collection and the Caroline Black Garden. Conservation as an “activity area” in the Mission generally pertains to lands other than Plant Collections.

This policy describes the locations of college property for which conservation is a major purpose and provides management goals and procedures related to conservation. This policy is restricted to conservation of natural resources (the biological and physical environment) because there is another Arboretum policy statement for the conservation of cultural resources of human origin.

### NATURAL AREAS

The Arboretum defines Natural Areas as places where natural processes can unfold with a minimum of human disturbance and intervention. The primary purpose of these 186 acres is for research, especially long-term ecological research, as well as teaching and passive recreation. The Connecticut College Arboretum has three Natural Areas designated as Bolleswood, Goodwin and Mamacoke. The history of these properties, including previous owners, methods of acquisition and college uses are documented in the Arboretum bulletin series, Arboretum annual reports, and in various other publications by faculty and staff.

### Locations

- **Bolleswood Natural Area.** This 70 acre natural area was established in 1952 (Goodwin 1952; Niering 1982). It is located west of the Arboretum Pond, and is surrounded by

chain link fencing on the south, west and northern boundaries, with the fenced Native Plant Collection to the east. It was named for the Bolles family who owned much of the land since the first distribution of lands held in common to individual English colonists in the early 1700s (Goodwin 1991). The original designation of this natural area also included 30 acres of Arboretum property north of Gallows Lane, and more was subsequently added, so the natural area also encompassed all of the land between Gallows Lane and the gas pipeline right-of-way west of Bolles Road. The natural area also extended east of Bolles Road, to the rear of the former science center at 33 Gallows and the end of College Court. This portion north of Gallows Lane was renamed in honor of Professor Richard Goodwin (see below). Long term vegetation breeding bird studies in the Bolleswood south of Gallows Lane were initiated in 1952 and have been ongoing since then.

- **The Goodwin Natural Area.** The approximately 75 acres of the Bolleswood Natural North of Gallows Lane was renamed the Goodwin Natural Area in 1998 in grateful recognition of the tremendous contributions of Richard and Esther Goodwin.
- **The Mamacoke Natural Area.** This 41 acre peninsula in the Thames River was purchased in 1955 and designated a natural area in the same year (Goodwin 1955). It is attached to the mainland by an unditched, 4 acre salt marsh. Long term vegetation studies on the marsh began in 1957 (Niering 1961) and have been ongoing since then. Peat analysis was conducted in 1974 and 1975. Another long term study began in 1994 (Scott Warren) to measure marsh surface elevation changes in the face of rising sea levels. The name is derived from the local Native American term for a neck of land.

## Goals

- Sustain biological diversity
- Sustain habitat diversity
- Preserve the geophysical environment including soils, geology, and aquatic resources
- Promote the use of natural areas in teaching and research, particularly long-term studies
- Minimize human influences on ecological processes
- Document historical events and processes, both natural and cultural
- Calculate the amount of carbon sequestered in Natural Areas and promote the use of this carbon as a means of offsetting college greenhouse gas emissions.
- Encourage appropriate use by the public, especially passive recreation and education

## Management Procedures

In an effort to minimize human influences on the natural systems, typical landscape management activities are generally inappropriate. Such activities include any planting, harvesting, cutting, mowing, chemical applications, and intentional burning. Hunting, trapping, fishing, camping, building of fires and use of wheeled vehicles is prohibited on all Arboretum property without specific permission from the Director.

Management in natural areas is normally restricted to that which is necessary to keep existing access trails open to foot traffic. Such minimal management includes removing small sections of trees that block trails, and the careful pruning of encroaching vegetation. Limited erosion control activity on trails, such as shallow diversion ditches and log steps may be appropriate in some situations. Bolles Road and the north-south access trail in the western portion of the Bolleswood are kept wide enough for service vehicle access.

Research and teaching activities should be non-destructive and observational. Removal of small samples including tree cores, tissue samples, soil and rock samples and herbarium specimens are permitted for specific research projects after discussion with the Arboretum Director.

Removal of invasive plant species may be permitted, but only in locations that are not in, or close to, long term research plots. Severe infestations of invasive plants within the natural areas could be considered for removal in consultation with faculty responsible for research areas.

Currently only the Bolleswood is fenced. This was originally done to control public access, but later became important for protecting the natural area and native plant collection from high levels of deer browsing. A large portion of the 7 foot perimeter fence was raised to 10 feet to more effectively exclude deer. In the future it may be deemed necessary to fence other natural areas for these or other reasons.

Currently, deer population management is only considered necessary in the Bolleswood Natural Area. The existing chain link fence, 7 -10 feet in height, should be maintained around the perimeter of the Bolleswood. A trail should be maintained near the inside of this fence to allow inspection for tree damage along the top and animals digging under the fence. A wildlife camera should be used on a regular basis to monitor the number of deer within the fenced area. The maximum population in this area should be less than four deer that are all male or all female.

The Director will consult with faculty members who use the areas for teaching and research prior to approving changes in maintenance activities in natural areas.

Appropriate recreational activities include walking, hiking, photography, painting, drawing, botanizing and bird watching. Examples of inappropriate activities include running, jogging, use of wheeled vehicles, rock climbing, camping, fires and organized or informal sporting events.

## **MANAGED LANDS**

Managed Lands are defined as all College Arboretum areas that are not designated as either Plant Collections or Natural Areas (or other college property used as Athletic facilities or housing). Managed Lands are available for a wide variety of research and teaching activities that may include a variety of manipulations or interventions, including cutting, harvesting, planting, spraying, mowing and controlled burning for various purposes, including ecological restoration

and ecological experiments. Major management and research activities are documented in Arboretum bulletins, annual reports, Honors and Masters Theses and various publications.

## **Locations**

The largest tract is all property north of the Goodwin Natural Area (i.e. north of the gas pipeline right of way). Another large tract is the property between Route 32 and the railroad tracks both north and south of Benham Avenue. The Niering tract, located south of the Native Plant Collection, is also categorized as Managed Land (see accompanying map)

## **Goals**

- Sustain and enhance biological diversity
- Sustain and enhance habitat diversity
- Preserve the geophysical environment including soils, geology, and aquatic resources
- Preserve human cultural resources including archeological and heritage sites
- Utilize and demonstrate vegetation and wildlife management based on ecological principles
- Support experiments that test basic ecological concepts
- Calculate the amount of carbon sequestered in Managed Areas and Plant Collections, and promote the use of this carbon as a means of offsetting college greenhouse gas emissions.
- Encourage appropriate public uses, which include walking, hiking, wildlife viewing, botanizing, orienteering, and running (on designated trails only)

## **Management Procedures**

In contrast to Natural Areas, the goal for Managed Lands is to have areas available where manipulation of vegetation and other ecosystem components for research and teaching is permitted. Historically these lands have been used for long term research and demonstration projects including: controlled burning of fields and forest understories (Niering, et al. 1970; Niering and Dreyer 1989); the selective use of herbicides to create and maintain naturalistic landscape demonstration areas (Niering 1975); selective herbicide applications to maintain stable shrublands on utility rights of way and other lands (Niering and Goodwin 1974) and to control invasive exotic plants; mowing, cutting and occasional seeding to maintain and expand meadow and savanna habitat (Jones et al. 2013).

Currently trail and access roads are kept open by: pruning and clearing trail sides; spraying herbicides to minimize poison ivy and invasives along trails; occasional addition of processed stone or gravel to repair erosion events; other occasional erosion control activity.

Fields are kept open by annual mowing ideally between March 1 and April 15, depending on wildlife use of specific fields. Mowing at the end of the dormant season provides winter food and

cover for wildlife. Controlled burning is an alternative management option that is more complicated but potentially more beneficial. Spring burning of small experimental plots was carried out from 1968 until 2003. Fields currently under active management include the 12 acre complex north and south of the east end of Benham Avenue; the fields around the historic Samuel Bolles farm house foundation; the former controlled burning research fields on the Matthies and Avery tracts east of Route 32, and the field on the north side of Gallows Lane directly east of the municipal water tank.

Periodic clearing of vegetation has been done for many years around the historic Samuel Bolles farm house foundation near Bolles Road. Additional clearing around other historic sites may be done in consultation with appropriate faculty in anthropology, history or other departments.

### **Bibliography**

Goodwin, R.H. 1952. Connecticut Arboretum Bulletin No. 7.

Goodwin, R.H. 1955. Connecticut Arboretum Bulletin No. 8.

Goodwin, R.H. 1991. Connecticut College Arboretum Bulletin No. 32.

Jones, C., G. Dreyer and N. Barrett. 2013. Evaluating the success of seed sowing in a New England Grassland Restoration. *Natural Areas Journal* 33(2): 214-221.

Niering, W.A. 1961. Tidal Marshes, Their Use in Scientific Research. Connecticut College Arboretum No. 12.

Niering, W.A. 1982. The Research and Conservation Program. In: Connecticut Arboretum Bulletin No. 28.

Niering, W.A. and R.H. Goodwin. 1974. Creation of relatively stable shrublands with herbicides: arresting succession.

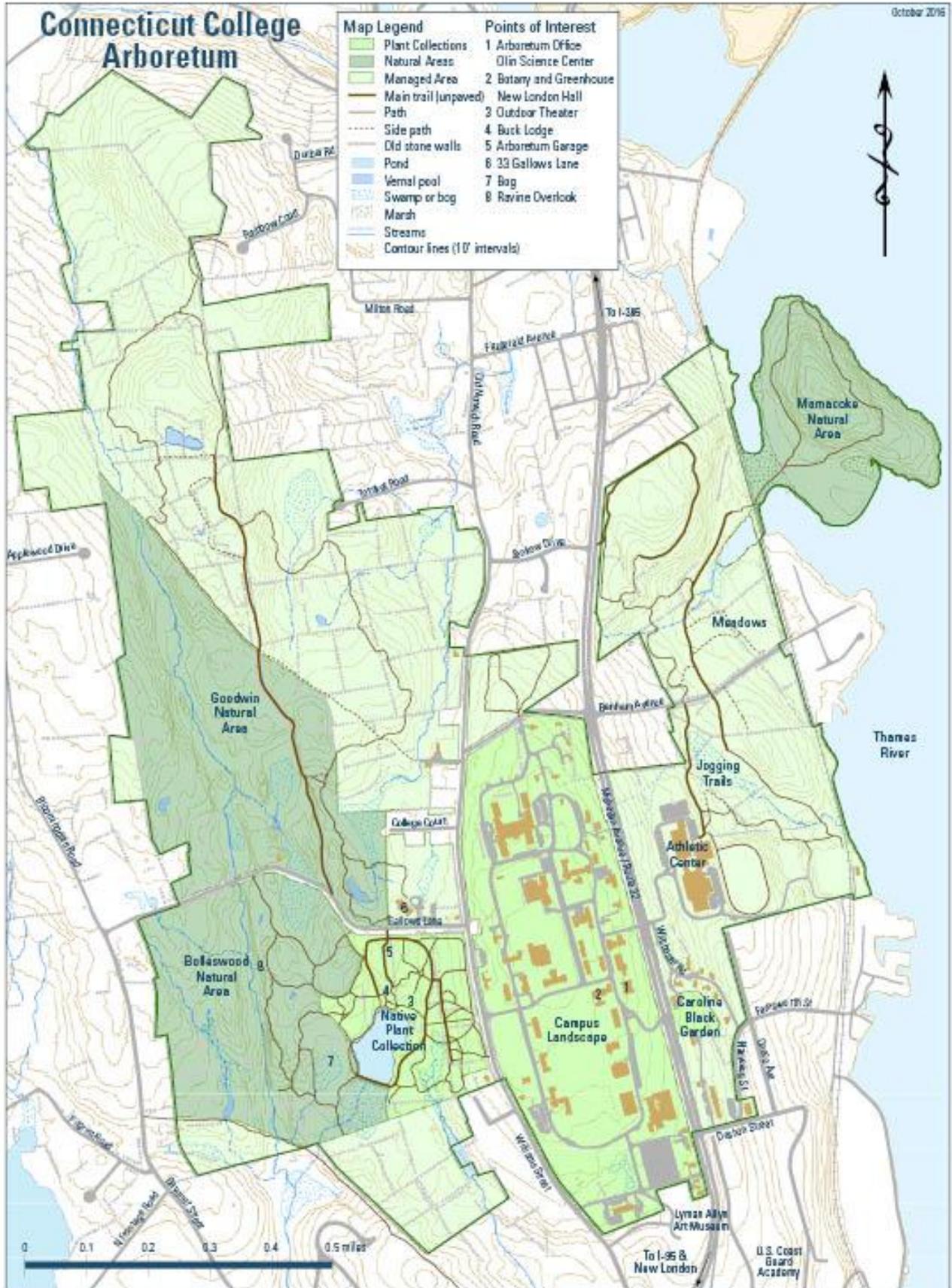
Niering, W.A., R.H. Goodwin and S. Taylor. 1970. Prescribed burning in southern New England: introduction to long-range studies. *Proceedings of the Annual Tall Timbers Fire Ecology Conference*. Pp. 267-286.

Niering, W.A. and G.D. Dreyer. 1989. Effects of prescribed burning on *Andropogon scoparius* grasslands in Connecticut. *American Midland Naturalist* 122(1):88-102.

# Connecticut College Arboretum

October 2016

Map Legend		Points of Interest
	Plant Collections	1 Arboretum Office
	Natural Areas	2 Olin Science Center
	Managed Area	3 Botany and Greenhouse
	Main trail (unpaved)	4 New London Hall
	Path	5 Outdoor Theater
	Side path	6 Buck Lodge
	Old stone walls	7 Arboretum Garage
	Pond	8 33 Gallows Lane
	Vernal pool	7 Bag
	Swamp or bog	8 Ravine Overlook
	Marsh	
	Streams	
	Contour lines (10' intervals)	



0 0.1 0.2 0.3 0.4 0.5 miles

To I-95 & New London  
U.S. Coast Guard Academy