

## A Floral Survey of Quadrants E1 and E2 of Greenwoods Conservancy

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### ABSTRACT

Greenwoods Conservancy, a thousand-acre property under conservation easement which is designated "forever wild" and managed by the Field Station, contains wetland, old forest, and meadow land ecosystems. A qualitative preliminary survey of flora was conducted in quadrants E1 and E2 of the property, a portion of the watershed encompassing the Cranberry Bog, to identify the various plant species present and what types of communities they created. Representative plant samples were collected, pressed, and dried. The various species were then identified and became part of the Greenwoods Collection Herbarium for future reference. Quadrants E1 and E2 consist of primarily hemlock forest including a variety of ferns, club mosses, and flowering plant species. Aquatic samples were also collected from the boundary of the open water body containing the bog and the marsh at the north end. This project is a part of a collaborative ongoing study of the Cranberry Bog Watershed within Greenwoods Conservancy.

### INTRODUCTION

Within Greenwoods Conservancy, Burlington, NY, lies an open water body containing a sphagnum mat, which is called Cranberry Bog. No non-native species dominate this environment, therefore making it an ideal location for preservation and study. The conservancy itself contains over one-thousand acres of diverse habitats ranging from old meadows, thickets, wetlands, hardwoods, and conifer forest. Consequently it is important to ensure the protection of these natural habitats. The Field Station has been granted access to this property and has constructed trails so that the area is accessible to researchers. More trails are proposed, and plans for a field laboratory on site are underway so that scientists and students may more effectively observe and conduct field work in the area. The intention is that an environment for study and field work may be created, while at the same time protecting, monitoring, and preserving the area and the bog contained within it (Taylor, 1994).

The intent of this study is to make a contribution to the work at Greenwoods Conservancy and Cranberry Bog by identifying as many vascular plant species as possible within the terrestrial portion of the two quadrants allotted, here E1 and E2 (see diagram 1). These two quadrants are a portion of the bog's watershed. It is important to recognize what types of plant species are present within it because they have an effect on, and are indicators of the types and amounts of limiting factors present in a freshwater ecosystem. Nutrient levels and factors such as pH are important to monitor when assessing the health of an environment such as this. This way, if problems are detected, the causes may be recognized and isolated so that actions may be taken to counteract them. Another important reason to identify what types of plant species are contained within the watershed is to ascertain biodiversity and ecological sustainability. A few non-native species were recognized during this study and an additional study conducted on the bog itself. Since they have been identified, it is possible to monitor and mitigate any negative action on the bog and/or its watershed.

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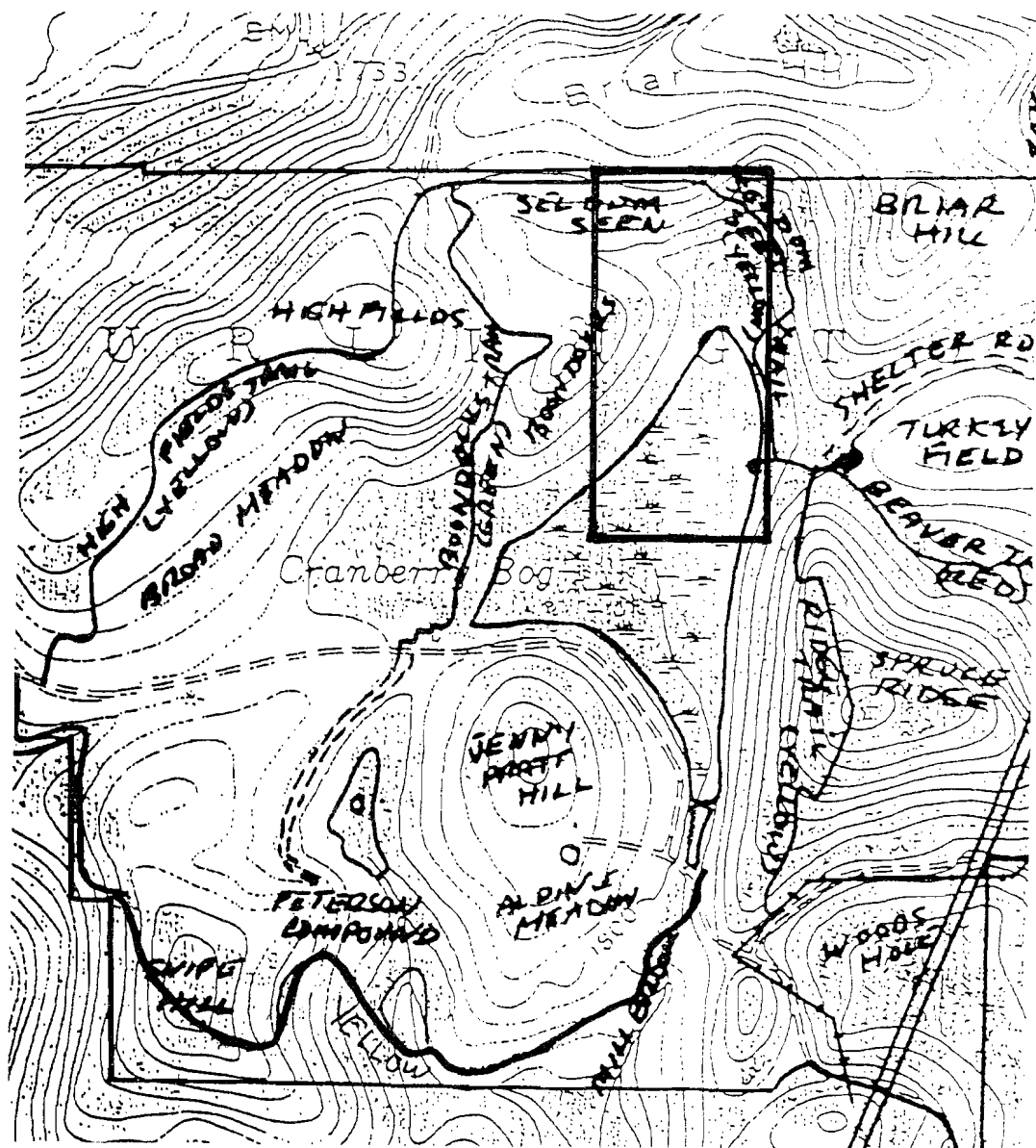


Figure 1. Cranberry Bog region showing area of study (closed rectangle).

## MATERIALS AND METHODS

To gain the preliminary floristic inventory sought in this study, representative plant samples were gathered over a period of six separate dates. On each date, a group of 2-4 people traveled to Greenwoods Conservancy and hiked into the collection area. From there, the group scanned the site for every plant species. Particular attention was given to flowering specimens. Each sample was collected and placed in a plastic bag and placed in a metal collection unit (vasculum) to keep them in optimum condition until they could be permanently preserved. Upon return to the Field Station the specimens were pressed and dried between layers of newspaper, blotter paper, and corrugated cardboard at 100°F for approximately 15 hours. This process removes any excess water which prevents decay and allows specimens to be stored for long periods of time so that they may be used for reference in the future. An identification tag was also created for each specimen stating the date of collection and the area from which it originated, so that when identification was begun this information would be clear and easily accessible. Once preserved, taxonomic keys and identification manuals (Brown, 1979; Cobb, 1963; Fernald, 1950; Peterson, 1982; Petrides, 1972) were used to identify each specimen as precisely as possible. A family, genus, and species was recorded in most cases, in others it was not possible to classify the plant completely because of poor condition or lack of a flowering or fruiting body. A data book was also kept to organize the dates and area from which each sample was collected. When all specimens were identified, they were mounted on herbarium paper. This collection will now contribute to the Greenwoods Conservancy Herbarium and will be used for future reference. A taxonomic list was then assembled with the complete contents of the collection made in this survey.

## RESULTS

Below is a taxonomic list of the flora contained within quadrants E1 and E2 of Greenwoods Conservancy collected during this study. Round-leaf orchids, *Habercaria orbiculada*, an endangered species was recorded during this study.

I. Pteridophytes

## Lycopodiaceae

<i>Lycopodium clavatum</i>	Staghorn Clubmoss
<i>Lycopodium lucidulum</i>	Shining Clubmoss
<i>Lycopodium tristachyum</i>	Ground Pine
<i>Lycopodium</i> sp.	Clubmoss
<i>Lycopodium</i> sp.	Clubmoss

## Osmundaceae

<i>Osmunda cinnamomea</i>	Cinnamon Fern
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## Polypodiaceae

<i>Athyrium Felix-femina</i>	Lady Fern
<i>Dennstaedtia punctilobula</i>	Hayscented\Boulder Fern
<i>Onoclea sensibilis</i>	Sensitive Fern
<i>Polystichum acrostichoides</i>	Christmas Fern
<i>Thelypteris novaboracensis</i>	New York Fern
<i>Thelypteris phegopteris</i>	Long Beech Fern

- \* Unknown Pteridophyte #1
- \* Unknown Pteridophyte #2

II. Gymnosperms

## Pinaceae

<i>Pinus strobus</i>	White Pine
<i>Tsuga canadensis</i>	Eastern Hemlock

III. Angiosperms

## A. Monocots

Alismaceae	
<i>Sagittaria latifolia</i>	Broad-Leaved Arrowhead
Cyperaceae	
<i>Carex lurida</i>	
<i>Dulichum arundinaceae</i>	Three-Way Sedge
<i>Carex</i> sp.	Sedge
<i>Carex</i> sp.	Sedge
Graminae	
<i>Glyceria striata</i>	Fowl Meadow Grass
* Unknown Graminae #1	Grass
Juncaceae	
<i>Juncus effusus</i>	Soft Rush
Orchidaceae	
<i>Habenaria orbiculada</i>	Round-Leaf Orchis
Liliaceae	
<i>Allium</i> sp.	Garlic species
<i>Smilaeina</i> sp.	False Salomon's Seal

## B. Dicots

Aceraceae	
<i>Acer pensylvanicum</i>	Striped Maple
<i>Acer rubrum</i>	Red Maple
<i>Acer saccharum</i>	Sugar Maple
Balsaminaceae	
<i>Impatiens capensis</i>	Spotted Touch-Me-Not
Betulaceae	
<i>Alnus</i> sp.	Alder species
Campanulaceae-Lobelioideae	
<i>Lobelia inflata</i>	Indian Tobacco
Caprifoliaceae	
<i>Viburnum recognitum</i>	Northern Arrowwood
Compositae	
<i>Achillea millefolium</i>	Yarrow
<i>Aster acuminatus</i>	Whorled Wood Aster
<i>Chrysanthemum leucanthemum</i>	Ox Eye Daisy
<i>Cirsium</i> sp.	Thistle
<i>Cirsium vulgare</i>	Bull Thistle
<i>Erigeron strigosus</i>	Daisy Fleabane
<i>Eupatorium maculatum</i>	Spotted Joe-Pye-Weed
<i>Rudbeckia hirta</i>	Black-Eyed Susan
<i>Solidago gigantea</i>	Late Goldenrod
<i>Solidago</i> sp.	Goldenrod species
<i>Tragopogon pratensis</i>	Yellow Goat's Beard
Corylaceae	
<i>Betula lutea</i>	Yellow Birch
Ericaceae	

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<i>Chamaedaphne calyculata</i>	Leather Leaf
<i>Vaccinium</i> sp.	Blueberry
<i>Vaccinium</i> sp.	Blueberry
Fagaceae	
<i>Fagus grandifolia</i>	Beech
Geraniaceae	
<i>Geranium robertianum</i>	Herb Robert
Guttiferae	
<i>Hypericum mutilum</i>	Dwarf St. Johnswort
<i>Hypericum perforatum</i>	Common St. Johnswort
<i>Hypericum virginicum</i>	Marsh st. Johnswort
Hamamelidaceae	
<i>Hamamelis virginiana</i>	Common Witch Hazel
Hydrophyllaceae	
<i>Hydrophyllum virginianum</i>	Virginia Waterleaf
Labiatae	
<i>Agastache foeniculum</i>	Blue Giant Hyssop
<i>Blephilia hirsuta</i>	Hairy Wood Mint
<i>Mentha arvensis</i>	Wild Mint
<i>Prunella vulgaris</i>	Heal-All
<i>Pycnanthemum pilosum</i>	Hairy Mountain Mint
<i>Pycnanthemum virginicus</i>	Bugleweed
<i>Satureja vulgaris</i>	Basil
<i>Scutellaria incana</i>	Downey Scullcap
<i>Scutellaria lateriflora</i>	Mad-Dog Scullcap
<i>Scytellaria epliobiifolia</i>	Common\Marsh Scullcap
Leguminosae	
<i>Lotus corniculatis</i>	Birdfoot Trefoil
<i>Vicia cracca</i>	Cow Vetch
Onagraceae	
<i>Circaea alpina</i>	Smaller Enchanter's Nightshade
<i>Epilobium coloratum</i>	Purple-Leaved Willow Herb
<i>Epilobium glandulosum</i>	Northern Willow Herb
<i>Oenothera biennis</i>	Common Evening Primrose
Oxalidaceae	
<i>Oxalis europaea</i>	Yellow Wood Sorrel
Polygonaceae	
<i>Polygonum coccineum</i>	Swamp Smartweed
<i>Polygonum hydropiperoides</i>	Mild Water Pepper
<i>Polygonum sagittatum</i>	Arrow-Leaved Tearthumb
<i>Polygonum scandens</i>	Climbing False Buckwheat
Primulaceae	
<i>Trientalis borealis</i>	Starflower
Pyrolaceae	
<i>Monotropa uniflora</i>	Indian Pipe
Ranunculaceae	
<i>Ranunculus acris</i>	Common\Tall Buttercup
<i>Ranunculus hispidus</i>	Hispid Buttercup
<i>Ranunculus</i> sp.	Buttercup species
<i>Thalictrum dicotum</i>	Early Meadow-Rue

Rosaceae	<i>Agrimonia</i> sp.	Agrimony species
	<i>Crataegus</i> sp.	Hawthorn species
	<i>Potentilla fruticosa</i>	Shrubby Cinquefoil
	<i>Potentilla</i> sp.	Cinquefoil species
	<i>Rosa multiflora</i>	Rose
	<i>Rubus hispidus</i>	Bristly Dewberry
	<i>Rubus idaeus</i>	Red Raspberry
	<i>Rubus occidentalis</i>	Black Raspberry
	<i>Rubus</i> sp.	
	<i>Spiraea latifolia</i>	Broadleaf Spirea, Meadowsweet
Rubiaceae	<i>Galium asprellum</i>	Rough Bedstraw
	<i>Galium trifolium</i>	Fragrant Bedstraw
	<i>Mitchella repens</i>	Partridgeberry
Salicaceae	<i>Populus balsamifera</i>	Balsam Poplar
Scrophulariaceae	<i>Linaria vulgaris</i>	Butter and Eggs (alien)
	<i>Mimulus ringens</i>	Sharp-Winged Monkey Flower
Tiliaceae	<i>Tilia americana</i>	American Basswood
Violaceae	<i>Viola pallens</i>	Northern White Violet
	* Unknown Angiosperm #1	
	* Unknown Angiosperm #2	
	* Unknown Angiosperm #3	
	* Unknown Angiosperm #4	
	* Unknown Angiosperm #5	

#### DISCUSSION

There were 106 specimens collected in this survey. Out of these, 83 were positively identified to species, 16 to genus, and 7 were unknown. Quadrants E1 and E2 contain conifer forest on the east and west sides of the Cranberry Bog. Here Eastern Hemlock is the dominant species. Below the tree canopy, Ground Pine, Black and Red Raspberry, various fern species, and Indian Pipe are represented. Directly above the northern end of the bog is a marshy area where Red Maple, Arrow-Leaved Tearthumb, Spotted Touch-Me-Not, and ferns are in abundance. Above this marshy area lies a thicket where Hawthorn, Meadowsweet, and Blueberry are present. At the very northern edge of E1 is a meadow where Ox Eye Daises, Black Eyed Susans, and meadow grasses flourish.

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