

**New York Flora  
Association Newsletter  
Winter 2020**

**Editor's Note:** The lead article in this issue is the first in what Steve Young has proposed as a series called "Stories from the Herbarium". Please, if you are associated with a herbarium, consider helping to add to this series. Also in this issue we have an article from this past years NYFA award recipient as well as some field trip reports. And since our last issue's article on state botanist Dick Mitchell brought back memories, Scott LaGreca recalled a paper he had written a number of years ago and was good enough to share it with us. And lastly, Bob Dirig was gracious enough to share his *Cystopteris tenuis* tips with us. Enjoy, and happy winter!

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**Stories from the Herbarium: New Zealand Ferns at SUNY ESF**

by Nancy B. Walker-Kopp

The SUNY ESF herbarium at Syracuse, NY contains an extensive collection of both plants and fungi from all over the world. The herbarium has a particularly rich representation of specimens specific to Onondaga county, which were mostly collected by students and faculty over the course of several decades. Many of the oldest specimens were acquired from the Syracuse Botanical Club (SBC) when it disbanded after more than one hundred years of existence. In addition to many local specimens, the SBC collection also contains non-local specimens acquired through exchanges with other botanists. In particular, many specimens collected in the 1870's and 1880's are from New Zealand, with a notable emphasis on ferns. As with many other subsets within larger collections, the New Zealand collection has an interesting history, one which connected amateur and professional botanists across the globe.

The SBC was formed in the 1870's by a group of women from Syracuse, NY. During that time, many "botanizers" collected, identified, preserved, and exchanged specimens with one another. Such scientific pursuit was popular then as a means of personal enrichment, and correspondence between amateurs and experts led to a productive sharing of information. The SBC was very active and rapidly expanded its membership. In addition to collecting specimens, the group conducted regular meetings, planned field trips, maintained their own herbarium, and held classes. They posted regularly to the *Bulletin of the Torrey Botanical Club*, and early members also wrote to the Harvard Circle to report on their activities and to seek help with difficult identifications. These correspondences lead to the members' introductions to other well-known botanists and scientists, including Charles Darwin, Sir Joseph Hooker and Asa Gray (Keeney 1992, Faust 1978).

Although no direct correspondence has been found, it is believed that the SBC acquired their New Zealand specimens through an exchange with Thomas F. Cheeseman, Secretary of the Auckland Institute and Curator of the Auckland Museum. Cheeseman corresponded with Dr. Asa Gray of Harvard University in 1879 in an effort to establish contacts with other North American botanists. He hoped to arrange exchanges of North American plants with his own New Zealand specimens. Dr. Gray also corresponded with Mrs. Kate Barnes of the SBC during this time. Therefore, Dr. Gray, or others in his circle, were likely instrumental in connecting Thomas Cheeseman to the SBC for plant exchanges. (Biodiversity Heritage Library 1879, 1879a). Many of the 19<sup>th</sup> century SBC botanical mounts from New Zealand list Cheeseman as the collector, and likewise there are many specimens in the Cheeseman Herbarium in Auckland that are attributed to the members of the SBC (Faust 1978, Goulding 1974).

The SBC 19<sup>th</sup> century New Zealand specimens contain many plant genera, but they are particularly rich in fern specimens. Local Onondaga county fern species from this time are also well-represented in the SBC collection due to the exceptional interest of the founding members. They particularly sought ferns for

collecting, led classes in fern study, and corresponded with well-known fern specialists such as GE Davenport of New England. In fact, there was a popular interest in fern-collecting generally in the mid-19<sup>th</sup> century, and it was fashionable for households to display fern albums that were produced and sold commercially (Goulding 1977).

It so happened that in the late 1870's a carpenter named Eric Craig was located a few doors away from the newly established Auckland Institute and Museum in New Zealand, where Thomas Cheeseman was serving as secretary and curator. Craig soon capitalized on the fern craze, and opened a "fern depot", also known as Craig's Museum or Craig's Curiosity Shop. Although he sold many types of curios, his specialty was ferns. He sought out rare and unusual species of fern, and was assisted by numerous amateur collectors both near and far. Specimens were mounted in handsomely bound albums with covers of leather or carved wood. Ferns were artfully arranged with each fern frond, or portion thereof, springing from a base of bright green mosses, with clubmosses or small leaflets of various ferns added as decoration. Craig corresponded frequently with Cheeseman for advice regarding fern identification and collecting, and many of his albums, mounts and specimens found their way to the Auckland Institute and Museum's herbarium. The hundreds of native and exotic specimens mounted by Craig and presented by him to the Auckland Institute and Museum in January 1923 are considered to be of exceptional value (Goulding 1977).

The ESF herbarium also has in its possession a fern album that is attributed to Eric Craig. It was purchased in Dunedin, New Zealand in 1897 and came to ESF via Dr. Mildred Faust. Sadly, it is in poor condition, but the fern specimens retain much of their beauty and color, as well as their lovely mounting arrangement. Images of representative pages are shown below.



Current efforts to determine exactly how ESF came to acquire the SBC collection have been unsuccessful, but the university did have a very important connection to the club in Dr. Faust. Dr. Faust was an adjunct professor of Botany at ESF for many years starting in 1970. Previously, she was an instructor, assistant professor and associate professor of Botany at Syracuse University from 1926 until her retirement in 1965. She was an authority on the flora of New York State and Onondaga County, served on many local, regional and national organizations in the environmental and biological sciences, and earned several awards of distinction for her work. Additionally, Dr. Faust served as the vice president of the SBC for over 40 years, and was still active in the club after coming to ESF. In addition to housing the collection of the SBC, ESF also obtained the Mildred E. Faust Herbarium, which contains her lifetime collection of specimens.



Images of Dr.  
Midred E. Faust and  
Dr. Lillian Sedgwick  
collecting specimens  
1928-1930.

Herbaria are not only repositories for plant and fungal specimens. They provide valuable knowledge on such topics as taxonomy, botanical history, biodiversity and global change. And often specimens and subsets of collections have interesting stories to tell, connecting botanists across great distances and over time.

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## Riddell Park Field Trip Report – July 13, 2019

by Dan Spada

A field trip with Mike Kudish always becomes more than just a botany trip. All who know Mike know that he is a keen observer of the landscape in the broadest sense. I have learned that going into the woods with Mike is an incredibly energy consuming experience. Physically, the hiking is usually quick and often through trail-less places. Mentally, the pace is also quick with questions and observations shooting forth. Why are there oaks here instead of Northern Hardwoods? How did this forest develop in this particular place? How deep are the soils and of what fertility? Why are some Catskill peaks free of all conifers while others have balsam fir or red spruce? Could cultural activities from centuries ago have affected what we see on the land? What did this place look like after the glaciers left and how has that affected today's vegetation? These are not merely academic questions. Their answers can help inform us on the activities and lives of those who preceded us, help us make rational land use decisions now, and leave a record and guide for those in the future who will occupy these lands. Further, the dynamics of forest history can provide insight into how the forests will react to a changing climate.



Mike's enthusiasm is infectious.

The Riddell Park field trip was advertised as being an excursion to verify the continued existence of American chestnut (*Castanea dentata*) sprouts. I don't know about you, but American chestnut has a special place in my heart. We've all seen the old photos of massive trees and know how much this major component of the eastern woodlands meant to forest critters and humans as a source of hard mast and lumber. When I was a kid I developed a romantic image of the valiant chestnut attacked by the blight and succumbing, but still battling on by continuing to send up root sprouts decades after the main trunk had been killed. I searched the woods for sprouts, trees, dead boles; anything to do with the chestnut. I found some sprouts, even some small but inevitably cankered trees, and collected some dead wood that I worked into small craft projects. And it depressed and annoyed me that this portion of the natural world that was my heritage was gone, seemingly forever. Long-time efforts at developing or finding resistant individuals are having some success, and I applaud them. But I most likely will never see American chestnut occupy its historical position in our forests in my lifetime. So, I always ask Mike where there are chestnuts and can we go look at them.

Mike discovered the *Castanea* patch in Riddell several years ago and we decided it would be worthwhile to revisit the site to determine if the sprouts were still surviving. Mike and I hiked into Shokan High Point in 1984 with Charles Canham and the late Bill Riemvis and discovered a large patch of chestnut sprouts. Subsequent field investigations revealed that northern red oak (*Quercus rubra*) has completely overtaken that site and chestnut no longer sprouts there. Would we find the same situation at Riddell?

What we found at Riddell was spectacular. Although our purpose was not to inventory every stem of *Castanea*, I can reliably report that there were several hundred sprouts scattered in the understory. The overstory was northern red oak, white oak (*Quercus alba*), and basswood (*Tilia americana*). We found chestnut sprouts and small trees up to 3" in diameter. The larger stems exhibited cankers and we found no fruits. Even though that



was disappointing, just being in among these relics of an historical forest and being able to handle those obovate (wider above the middle), lanceolate (lance-head shaped), acuminate (tapering to a slender point), sharply serrate (each tooth sharp and pointing forward) leaves was a true joy.



American chestnut leaf ( left) and American beech (right).



American chestnut sprouts.

During our walk in the woods, Mike introduced

us to the concept that much of the oak/hickory forests in the area are widespread consequent to fires set by Native Americans a couple to several hundred years ago. He notes that a recent history of the Town of Davenport by Mary Briggs states that there have been Native American artifacts (mineral materials) dug up at Pine Lake (Hartwick College Biological Field Station) in the Charlotte Valley about a mile or two south of the chestnuts of Riddell. Also there was a Mohawk village, Adequentaga, at the confluence of Charlotte Creek with the Susquehanna River (just east of Oneonta). Here, the valley was densely populated and farmed during the Owasco archeological era, about 800 years ago. Adequentaga was about 3.5 miles west-southwest of the chestnuts, but those folks' fires probably swept eastward all the way over to the Riddell area. If there was no historical burn, we would expect the dominant vegetation to be Northern Hardwood. Once manipulated with a burn, oaks, hickories and presumably chestnuts colonized and proliferated. One of the reasons Native Americans set their clearing fires was to encourage the growth of trees that produced edible crops.

Our group of eight enjoyed lunch in the grove and then headed back down the trail for a side excursion to a lovely waterfall and finally back to our cars. Many thanks to Mike Kudish for another great trip.



Winding up another successful field trip.



## Non-Native Tree Species Range Documentation Project

By Ian Fleming, Rebecca Hargrave and Jared Young

The intention of the Non-native Tree Species Range Documentation project is to locate naturalized populations of locally, non-native trees that have escaped from cultivation or plantations on and adjacent to SUNY Morrisville properties. With both the potential for plants to become invasive and in light of climate change, understanding the breadth of naturalized trees in an area is important for future management. The project surveyed 12 non-native species, including: eastern redbud (*Cercis canadensis*), Japanese tree lilac (*Syringa reticulata*), and yellow buckeye (*Aesculus flava*).

SUNY Morrisville is located near the geographic center of NYS in Morrisville, Madison County. The survey centered on key properties including three near campus: the SUNY Morrisville campus arboretum, a three-acre informal arboretum that includes collections of Fabaceae, Sapindaceae, Fagaceae, Betulaceae and others; Neighbor's Property, a private, open-forested property adjacent to the arboretum; and Galbreath Farm, a 45 acre softwood plantation and natural hardwood forest up the street from the arboretum that has frequent disturbance from small-scale harvesting and regular visits from classes; and a fourth in Canastota that is a retired landscape nursery surrounded by hardwood forests.

The properties were surveyed in loose transects and data were collected on any target species encountered. Diameter class sizes were measured at breast height using a diameter tape. Location data were gathered with a handheld GPS unit (Garmin GPSMAP 64st). Data was then uploaded into ArcMap GIS software and analyzed in Microsoft Excel. Only the location and origin of three species are included in this article.

Eastern redbud is native to the southeast and south central U.S. through southern Michigan and Pennsylvania and is a prevalent landscape species in the eastern half of the U.S. It is a small tree, often multiple stemmed, growing 10-30' tall. The leaves are alternate and heart-shaped or broadly ovate. It is

known for its early bright rose-colored flowers that make it a popular landscaping tree. The native habitat of eastern redbud consists of edges of forests, disturbed and waste areas, thickets, and open field areas. Eastern redbud is known to naturalize in New York and has been found in Tompkins, Monroe, Ulster, Orange, and Rockland counties (Weldy et al., 2019). At naturalized sites it can become quite abundant. Our surveys indicated that most redbud plants on and adjacent to SUNY Morrisville campuses had not yet naturalized and had been contained to their original plantings. However, the Canastota property was experiencing an "explosion" of redbud seedlings throughout the forest understory. Four planted redbuds were identified on the property. Many redbud saplings were found in a densely forested area, and the "explosion" of seedlings was found in a semi-wooded hedgerow adjacent to the old nursery (Figure 1). In this area, redbud nearly dominated the understory and appeared to out-compete other species. The regeneration ranged from 0.25" to 2" in diameter and from 1' to 5' tall. The findings from our surveys show that eastern redbud is naturalizing in Madison County as well.



Figure 1. Eastern redbud regeneration on SUNY Morrisville property located in Canastota, NY.



Japanese tree lilac is another non-native species considered by some as potentially invasive because of its ability to naturalize. Japanese tree lilac is native to Japan, but grows well in the United States where it is commonly used as a landscape tree because of its showy spring blossoms and its cold tolerance. Japanese tree lilac often reaches 20' to 30' feet at maturity and is easily identifiable by its dry capsules (Figure 2) that often persist through the winter, and by the elongated lenticels on its bronze bark. Instances of Japanese tree lilac naturalizing in New York and other states have been reported. According to Christopher Teter, as a result of extensive municipal planting, Japanese tree lilac has escaped into at least Wyoming, Ontario, Massachusetts, Pennsylvania, Vermont, and Minnesota. SUNY Morrisville has several planted Japanese tree lilacs on campus, including a large specimen in the arboretum whose three stems each have a diameter at breast height of 12" to 13". Three volunteer Japanese tree lilac trees were found, two of which reside just outside of the campus arboretum fence and one inside the arboretum itself. Monitoring for Japanese tree lilacs on SUNY Morrisville properties will continue in the future.



Figure 2. Photo of a volunteer Japanese tree lilac, showing capsules and leaves.

Yellow buckeye grows on well-drained soils and is commonly found in the Ohio River Valley and Appalachians Mountains. The trees reach upwards of 80' to 120' feet in height. It is easily identifiable

by its large brown buds, palmately compound leaves with five leaflets, and its large fruit, a spineless capsule that contains the buckeyes (Figures 3 and 4). Yellow buckeye is relatively cold hardy and grows in northeastern climates. There are no reports of yellow buckeye naturalizing in the NY Flora Atlas. Findings on SUNY Morrisville properties may indicate that yellow buckeye has the ability to naturalize in New York. There are two known plantings of yellow buckeye on SUNY Morrisville properties, one tree at Canastota, without known offspring, and one tree located in the campus arboretum. During surveys of the campus arboretum, the Neighbor's Property, and Galbreath Farm, 25 yellow buckeye seedlings, saplings and small trees were found. These offspring are thought to be of seed origin because of their distance away from the parent tree. One yellow buckeye specimen found about 900 yards from the parent tree is 6" in diameter and about 25' tall. Squirrels, humans, or equipment could have dispersed the buckeye seeds. These surveys indicate that yellow buckeye does have the ability to naturalize in New York, but further research is required to understand specifically where it will grow.



Figure 3. Yellow buckeye bud and leaves.





Figure 4. Yellow buckeye leaves and fruit capsule.

Other tree species surveyed in this research project are Kentucky coffeetree (including a likely seed-origin offspring), black locust, black walnut, Amur cork tree, Norway spruce, honeylocust, tulip-poplar, glossy buckthorn, and Scotch pine. These tree species were addressed in our research to locate their offspring, but were not as of much concern or importance as the naturalization of yellow buckeye, Japanese tree lilac, and eastern redbud due to their more local native range or because of their known status as invasive or commonly naturalized.

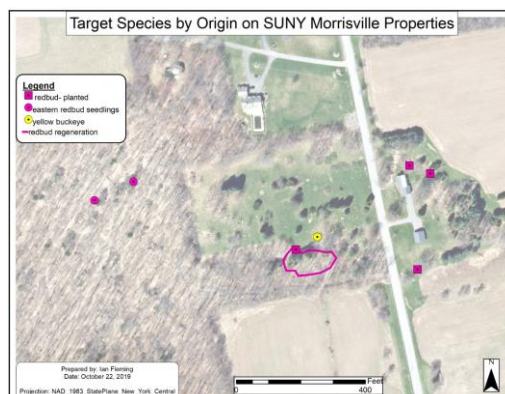
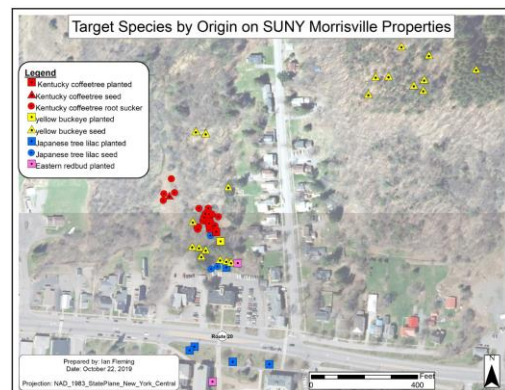
The non-native tree research project conducted on and adjacent to SUNY Morrisville properties has allowed Professor Hargrave and students involved in this research project to better understand the extent of non-native target species nearby. This project also helped identify target species that were showing signs of naturalization that have not yet been reported in New York State, such as the yellow buckeye, or locally, such as eastern redbud and Amur cork tree. Future surveys will be conducted to monitor the spread of these and other species on SUNY Morrisville properties.

*Acknowledgments:* Data collection was performed by Ian Fleming and Jared Young, both seniors in Renewable Resources Management at SUNY Morrisville. Associate professor of environmental sciences, Rebecca Hargrave, was their advisor. The researchers would like to thank their funders, the SUNY Morrisville Applied Learning Fund and New York Flora Association Research Award. If others have observations of yellow buckeye naturalizing, please notify Rebecca Hargrave at [hargrajr@morrisville.edu](mailto:hargrajr@morrisville.edu).

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## D&H Canal Visit

by Connie Tedesco



On a very warm Sunday, August 17<sup>th</sup>, only three people - Connie, Christopher and George - showed up for a NYFA field trip at the Delaware and Hudson Canal Linear Park located in the southern Catskills in Sullivan County. Unfortunately, our leader, Steve Young, was unable to attend. Two others cancelled at the last minute and two others simply did not show up. They missed a beautiful and educational walk! We observed a diverse wetland flora along the canal towpath and then enjoyed viewing upland flora along the old RR ROW as we hiked through the woods back to the Interpretive Center. See our species list below. For more information on visiting the Park (which is well worth a visit), see

<http://sullivanny.us/Departments/ParksRecreation/DelawareHudson>

<i>Acer rubrum</i> var. <i>rubrum</i>	<i>Cornus racemosa</i>	<i>Juniperus virginiana</i> var. <i>virginiana</i>	<i>Rhamnus cathartica</i>
<i>Acer platanoides</i>	<i>Cornus amomum</i>	<i>Lactuca biennis</i>	<i>Rosa multiflora</i>
<i>Achillea millefolium</i>	<i>Dendrolycopodium obscurum</i>	<i>Lapsana communis</i>	<i>Sagittaria latifolia</i>
<i>Actaea pachypoda</i>	<i>Doellingeria umbellata</i> var. <i>umbellata</i>	<i>Lemna minor</i>	<i>Salix sericea</i>
<i>Agrimonia gryposepala</i>	<i>Dryopteris clintoniana</i>	<i>Liriodendron tulipifera</i>	<i>Sambucus nigra</i> ssp. <i>canadensis</i> (black) or <i>racemosa</i> (red)?
<i>Alliaria petiolata</i>	<i>Dryopteris marginalis</i>	<i>Lobelia cardinalis</i>	<i>Saponaria officinalis</i>
<i>Alnus incana</i> ssp. <i>rugosa</i>	<i>Dryopteris intermedia</i>	<i>Lonicera</i> sp.	<i>Solanum dulcamara</i>
<i>Alnus serrulata</i>	<i>Elaeagnus umbellata</i>	<i>Lysimachia ciliata</i>	<i>Solidago rugosa</i> var. <i>rugosa</i>
<i>Amphicarpaea bracteata</i>	<i>Epilobium</i> sp.	<i>Lythrum salicaria</i>	<i>Solidago flexicaulis</i>
<i>Anemone virginiana</i>	<i>Equisetum arvense</i>	<i>Microstegium vimineum</i>	<i>Sparganium</i> sp.
<i>Asclepias syriaca</i>	<i>Erigeron annuus</i>	<i>Monarda fistulosa</i>	<i>Spiraea alba</i> var. <i>latifolia</i>
<i>Asplenium platyneuron</i>	<i>Eupatorium perfoliatum</i>	<i>Nasturtium officinale</i>	<i>Symphytotrichum puniceus</i>
<i>Athyrium angustum</i>	<i>Eutrochium maculatum</i> var. <i>maculatum</i>	<i>Onoclea sensibilis</i>	<i>Thalictrum pubescens</i>
<i>Betula lenta</i>	<i>Galium triflorum</i>	<i>Osmunda cinnamomea</i>	<i>Thelypteris palustris</i>
<i>Berberis thunbergii</i>	<i>Galium lanceolatum</i>	<i>Persicaria virginiana</i>	<i>Tilia americana</i>
<i>Carpinus caroliniana</i> ssp. <i>virginiana</i>	<i>Hamamelis virginiana</i>	<i>Persicaria longiseta</i>	<i>Tsuga canadensis</i>
<i>Carya ovata</i>	<i>Hydrocharis morsus-ranae</i>	<i>Pilea pumila</i> var. <i>pumila</i>	<i>Typha latifolia</i>
<i>Cephalanthus occidentalis</i>	<i>Hylodesmum glutinosum</i>	<i>Pinus strobus</i>	<i>Ulmus americana</i>
<i>Ceratophyllum demersum</i>	<i>Ilex verticillata</i>	<i>Polystichum acrostichoides</i>	<i>Vaccinium</i> sp.
<i>Cicuta bulbifera</i>	<i>Impatiens capensis</i>	<i>Prunus virginiana</i>	<i>Verbascum thapsus</i>
<i>Cinna latifolia</i>	<i>Juglans nigra</i>	<i>Pteridium aquilinum</i> var. <i>latiusculum</i>	<i>Viburnum lentago</i>
<i>Cirsium</i> sp.	<i>Juncus tenuis</i>	<i>Quercus rubra</i>	<i>Vitis labrusca</i>
<i>Clematis virginiana</i>		<i>Quercus alba</i>	



**Editor's Note:** If you remember from the last issue, we had a report on Day 2 of the Tongue Mountain/Harris Lake field trip. In this issue we finish the trip recap with the Day 1 report and plant lists from both.

## NYFA Trip to Tongue Mountain's Deer Leap Trail: My Impressions and Observations

by Meena Haribal

David Werier, during his Finger Lakes Native Plants Society presentation on his book "Catalogue of the Vascular Plants of New York State", showed a slide of a beautiful bog and declared that he was leading a trip to there and to Tongue Mountain during June and that non-members were permitted to join. The slide he showed was stunning, filled with orchids and other plants. I made up my mind that I would join the trip.

We met at Luzerne State Park campsite near Tongue Mountain on the evening of Friday, June 28, 2019. I was early, so I went for a walk, hoping to see some awesome odonates and birds. Though the camping area was big, with lots of vegetation, I did not find many birds or insects. I did see a Black Meadowhawk hawking from a sunny patch and birds like Winter Wren, Hermit Thrush and a few other expected common species. By the time I returned to the campsite there were eight other participants who had arrived early. After dinner and making plans for next day we dispersed for the night. At night I heard a Barred Owl calling.

Early morning the next day, after breakfast, we headed from the campground to the Tongue Mountain trailhead, which was about 40 minutes from the campsite. We arrived at the small parking lot of the trailhead where four more people joined us. From there we started a trek of about 2 miles on a winding, hilly path, taking off to some of the side hillocks here and there to look at plants.



A side hillock overlooking Lake Champlain. Photo by David Werier.

I know many species of plants and their families as I was acquainted with the plants of Himalaya and Sahyadri in India, but here in the US I am still at the level where I can recognize a family and genus but not species. As we walked, the first interesting plant for me was a flowering *Pyrola americana*, round-leaved



shinleaf. I read Seabrooke Leckie's blog to help me understand why it is called shinleaf. It seems the leaves are used for bandaging bruises and injuries and is called "shin plaster". In the US the common names do not correlate to a group but seem very random. Later, I was surprised to find it belongs to family Ericaceae, though it once was classified under the family Pyrolaceae. On a recent trip to South African fynbos, I found many plants belonging to this group, but they were very different from *Pyrola*. Maybe if I had seen its fruits, I might have called it "wintergreen". Farther down the path we found another species - *Pyrola elliptica*. We came across several species of asters. Every plant Steven Daniel saw was exciting to him and some of us would collect around him as he explained some of the characters. Farther ahead we came across some *Viburnum acerifolium*, and there were some *Trillium* plants. A little later we came across what I think was a *Brachyelytrum* sp., a grass that excited Steven so much, his enthusiasm easily rubbed off on me.



Another side hillock and another chance to stop and enjoy the plants. Photo by Nava Tabak.

We all met up again on a small hillock where there were some native *Silene antirrhina*. Back at home I had learned its common name was sleepy catchfly as it has some sticky substances in which insects get trapped, though the plant itself does not derive any nutrition from the insects. It reminded me of the plant called *Plumbago zeylanica* in India, which also has sticky substances. There is a species of lycaenid butterfly - Zebra Blue butterfly - that lays eggs on the sticky part of the plant, but it also does not get trapped! It would be interesting to study the plant-insect interaction of the *Silene* species. We also noted some interesting trees, such as several species of maples, birches and shagbark hickory.

On a small rocky outcrop we came across several interesting plants and ferns including Rattlesnake fern (*Botrychium virginianum*), pink corydalis (*Capnoides sempervirens*), a native geranium with tiny flowers (*Geranium bicknellii*), a native forget-me-not (*Myosotis verna*), and a non-flowering four-leaved milkweed (*Asclepias quadrifolia*).

Ohh, but the most interesting plants for many participants were sedges and grasses! All I knew about sedges was that they have edges. But I was told all of them do not have edges! In New York State alone about 200 species of *Carex* are recorded. I was hoping to get know some of them. But, alas, it was very hard



to do so. According to Kyle Webster's list of the plants (see below), at least 17 species of *Carex* and 22 species of grasses were identified. After I came home, I tried to identify some of the grasses in the yard but was more confused than earlier. I think I will have to leave them for a later date.

On the next day we were supposed to go into a bog. Unfortunately, it was pouring, and I was not prepared for the rain and the bushwhack, as I was using a long, clumsy poncho as rain protection. So I missed some of the interesting plants everyone else saw. Next time I will be better prepared and hope to learn more.

I also kept track of the birds I heard and saw on the Tongue Mountain trail. We heard or saw 34 species of birds including Blackburnian warblers, Black-throated Blue warblers, Winter wrens and Hermit thrushes. We even heard a Common Loon calling from Lake George a couple of kilometers away!

Overall, it was pleasant trip and I did get to learn about some of the species of plants and see a beautiful new locality. Thanks to David for arranging this trip. This was my first NYFA trip and I hope to join a few more in the coming years!



A convenient log provided a good lunch spot. Photo by Nava Tabak.

### Tongue Mountain Plant List

*Acer pensylvanicum*, striped maple  
*Acer saccharum*, sugar maple  
*Achillea millefolium*, common yarrow  
*Agrimonia* sp., agrimony  
*Agrostis scabra*, northern tickle grass  
*Ambrosia artemisiifolia*, common ragweed  
*Amelanchier* sp., shadbush  
*Amphicarpaea bracteata*, hog peanut  
*Antennaria plantaginifolia*, plantain-leaved pussy toes  
*Apocynum androsaemifolium*, spreading dogbane  
*Aquilegia canadensis*, wild columbine

*Aralia nudicaulis*, wild sarsaparilla  
*Arisaema triphyllum*, Jack-in-the-pulpit  
*Asclepias quadrifolia*, four-leaved milkweed  
*Asplenium platyneuron*, ebony spleenwort  
*Athyrium angustum*, northern lady fern  
*Avenella flexuosa*, common hair grass  
*Betula lenta*, black birch  
*Borodinia missouriensis*, green rock cress  
*Botrychium matricariifolium*, daisy-leaved moonwort  
*Botrychium virginianum*, rattlesnake fern  
*Brachyelytrum aristosum*, northern shorthusk  
*Brachyelytrum erectum*, southern shorthusk  
*Bromus kalmii*, Kalm's brome

*Bromus pubescens*, Canada brome  
*Campanula rotundifolia*, harebell  
*Capnoides sempervirens*, pink corydalis  
*Cardamine parviflora*, small bittercress  
*Carex appalachicum*, Appalachian sedge  
*Carex arctata*, drooping wood sedge  
*Carex backii*, Back's sedge  
*Carex blanda*, common woodland sedge  
*Carex brevior*, round-fruited sedge  
*Carex cephalophora*, oval-headed sedge  
*Carex communis* var. *communis*, common sedge  
*Carex gracillima*, graceful sedge  
*Carex laxiflora*, loose-flowered sedge



Carex leptonevia, northern woodland sedge  
 Carex muehlenbergii var. muehlenbergii, Muhlenberg's sedge  
 Carex novae-angliae, New England sedge  
 Carex oligocarpa, few-fruited sedge  
 Carex ormostachya, northern red-based sedge  
 Carex pensylvanica, Pennsylvania sedge  
 Carex platyphylla, broad-leaved sedge  
 Carex rosea, common upland star sedge  
 Carex siccata, dry-spiked sedge  
 Carya ovata var. ovata, shagbark hickory  
 Caulophyllum giganteum, giant blue cohosh  
 Cerastium strictum, American field chickweed  
 Clinopodium vulgare, wild basil  
 Comandra umbellata ssp. umbellata, bastard toad flax  
 Conopholis americana, oakdrops  
 Cystopteris fragilis, fragile fern  
 Cystopteris tenuis, Mackay's fragile fern  
 Deparia acrostichoides, silvery spleenwort  
 Desmodium paniculatum, panicked tick trefoil  
 Dichantheium columbianum, District of Columbia rosette grass  
 Dichantheium depauperatum, poverty rosette grass  
 Dichantheium linearifolium, Lindheimer's rosette grass  
 Diervilla lonicera, bush honeysuckle  
 Dryopteris intermedia, evergreen wood fern  
 Dryopteris marginalis, marginal wood fern  
 Elymus hystrix, bottlebrush grass  
 Elymus trachycaulus, typical wheat grass  
 Epipactis helleborine, helleborine  
 Eurybia divaricata, white wood aster  
 Eurybia macrophylla, large-leaved aster  
 Fagus grandifolia, American beech  
 Fallopia cristata, crested bindweed  
 Festuca octoflora var. tenella, northern six-weeks fescue  
 Festuca subverticillata, nodding fescue  
 Fraxinus americana, white ash  
 Galium aparine, cleavers  
 Galium lanceolatum, lance-leaved wild licorice  
 Galium triflorum, sweet-scented bedstraw  
 Gaultheria procumbens, wintergreen  
 Geranium bicknellii, northern crane's bill  
 Geranium carolinianum, Carolina crane's bill  
 Geranium robertianum, herb Robert  
 Glyceria striata, fowl manna grass  
 Hamamelis virginiana, witch hazel  
 Helianthus divaricatus, woodland sunflower  
 Hepatica acutiloba, harp-lobed hepatica  
 Houstonia caerulea, common bluets  
 Huperzia lucidula, shining firmoss  
 Hyloidesmum glutinosum, pointed-leaved tick trefoil  
 Hypericum perforatum ssp. perforatum, common St. John's wort  
 Juncus tenuis, path rush  
 Juniperus virginiana var. virginiana, eastern red cedar

Laportea canadensis, wood nettle  
 Leersia virginica, white cut grass  
 Lespedeza violacea, wand-like bush clover  
 Liliium philadelphicum, wood lily  
 Lonicera canadensis, American fly honeysuckle  
 Lysimachia borealis, starflower  
 Maianthemum canadense, Canada mayflower  
 Medeola virginiana, Indian cucumber root  
 Melampyrum lineare, cow wheat  
 Micranthes virginensis, early saxifrage  
 Mitchella repens, partridge berry  
 Mitella diphylla, two-leaved miterwort  
 Myosotis verna, spring forget-me-not  
 Nabalus sp., rattlesnake root  
 Oclemea acuminata, whorled wood aster  
 Onoclea sensibilis, sensitive fern  
 Oryzopsis asperifolia, spreading white grass  
 Osmorhiza claytonii, bland sweet cicely  
 Osmunda claytoniana, interrupted fern  
 Osmundastrum cinnamomeum var. cinnamomeum, cinnamon fern  
 Paronychia canadensis, smooth forked chickweed  
 Parthenocissus quinquefolia, Virginia creeper  
 Pinus strobus, white pine  
 Plantago major, common plantain  
 Poa alsodes, grove blue grass  
 Poa compressa, flat-stemmed blue grass  
 Poa nemoralis, woodland blue grass  
 Poa saltuensis ssp. saltuensis, common weak blue grass  
 Polygala polygama, bitter milkwort  
 Polygala senega, Seneca snakeroot  
 Polygaloides paucifolia, gaywings  
 Polygonatum pubescens, hairy Solomon's seal  
 Polygonum douglasii, Douglas's knotweed  
 Polypodium virginianum, Virginia rock polypody  
 Polystichum acrostichoides, Christmas fern  
 Prunella vulgaris, heal all  
 Prunus virginiana var. virginiana, choke cherry  
 Pyrola americana, round-leaved shinleaf  
 Pyrola elliptica, common shinleaf  
 Quercus alba, white oak  
 Quercus montana, chestnut oak  
 Quercus rubra, northern red oak  
 Ranunculus abortivus, kidney-leaved crowfoot  
 Ranunculus fascicularis, early buttercup  
 Ranunculus recurvatus var. recurvatus, hooked buttercup  
 Ribes cynosbati, prickly gooseberry  
 Rosa carolina, pasture rose  
 Sabulina michauxii var. michauxii, rock sandwort  
 Schizachne purpurascens, false melic grass

Schizachyrium scoparium var. scoparium, little bluestem  
 Scirpus sp., bulrush  
 Selaginella rupestris, rock spikemoss  
 Silene antirrhina, sleepy catchfly  
 Solidago bicolor, silver rod  
 Solidago canadensis, Canada goldenrod  
 Solidago juncea, early goldenrod  
 Streptopus lanceolatus, rose twisted stalk  
 Symphyotrichum cordifolium, heart-leaved aster  
 Symphyotrichum undulatum, wavy-leaved aster  
 Tiarella cordifolia, foamflower  
 Tilia americana var. americana, American basswood  
 Trillium erectum, purple trillium  
 Trillium sp., trillium  
 Triodanis perfoliata, common Venus's looking glass  
 Tsuga canadensis, eastern hemlock  
 Uvularia perfoliata, perfoliate bellwort  
 Uvularia sessilifolia, sessile-leaved bellwort  
 Vaccinium angustifolium, common lowbush blueberry  
 Vaccinium pallidum, hillside blueberry  
 Viburnum acerifolium, maple-leaved viburnum  
 Viburnum rafinesqueanum, downy arrowwood  
 Viola pubescens var. scabriuscula, smooth yellow-stemmed violet  
 Viola rotundifolia, early yellow violet  
 Woodsia ilvensis, rusty woodsia  
 Woodsia obtusa ssp. obtusa, blunt-lobed woodsia  
 Zanthoxylum americanum, prickly ash



Photo by David Werier.



**Harris Lake Plant List**

Acer rubrum, red maple  
 Acer saccharum, sugar maple  
 Adiantum pedatum, maidenhair fern  
 Agrostis gigantea, redtop  
 Alnus incana ssp. rugosa, speckled alder  
 Amelanchier sp., shadbush  
 Amphicarpaea bracteata, hog peanut  
 Andromeda polifolia var. latifolia, bog rosemary  
 Aralia nudicaulis, wild sarsaparilla  
 Arisaema triphyllum ssp. stewardsonii, common Jack-in-the-pulpit  
 Athyrium angustum, northern lady fern  
 Betula alleghaniensis, yellow birch  
 Botrychium virginianum, rattlesnake fern  
 Calla palustris, wild calla  
 Calopogon tuberosus var. tuberosus, grass pink  
 Caltha palustris, marsh marigold  
 Carex annectens, yellow-fruited sedge  
 Carex atlantica ssp. atlantica, prickly bog sedge  
 Carex billingsii, Billing's sedge  
 Carex comosa, bristly sedge  
 Carex crawfordii, Crawford's sedge  
 Carex deweyana, Dewey's sedge  
 Carex digitalis var. digitalis, slender woodland sedge  
 Carex disperma, soft-leaved sedge  
 Carex exilis, meager sedge  
 Carex gracillima, graceful sedge  
 Carex intumescens, bladder sedge  
 Carex laxiflora, loose-flowered sedge  
 Carex leptalea, bristle-stalked sedge  
 Carex limosa, mud sedge  
 Carex lurida, sallow sedge  
 Carex magellanica ssp. irrigua, bog sedge  
 Carex pedunculata ssp. pedunculata, long-stalked sedge  
 Carex pellita, woolly sedge  
 Carex platyphylla, broad-leaved sedge  
 Carex rosea, common upland star sedge  
 Carex scoparia, pointed broom sedge  
 Carex stricta, tussock sedge  
 Carex swanii, Swan's sedge  
 Carex tenera, slender sedge  
 Carex tenuiflora, sparse-flowered sedge  
 Carex trisperma, three fruited sedge  
 Carex vulpinoidea, fox sedge  
 Chelone glabra, white turtlehead  
 Cicuta sp., water hemlock  
 Circaea canadensis enchanter's nightshade  
 Coptis trifolia, goldthread  
 Decodon verticillatus, water willow  
 Dryopteris marginalis, marginal wood fern  
 Eriophorum vaginatum, tussock cotton grass  
 Eriophorum virginicum, tawny cotton grass  
 Eurybia divaricata, white wood aster  
 Fagus grandifolia, American beech  
 Fraxinus americana, white ash  
 Fraxinus nigra, black ash  
 Galium triflorum, sweet-scented bedstraw  
 Gaultheria hispidula, snowberry  
 Gaultheria procumbens, wintergreen  
 Geranium robertianum, herb Robert  
 Glyceria striata, fowl manna grass  
 Hyloidesmum glutinosum, pointed-leaved tick trefoil  
 Hypericum sp., St. John's wort  
 Ilex mucronata, mountain holly  
 Ilex verticillata, common winterberry  
 Impatiens pallida, pale jewelweed  
 Iris versicolor, blue flag  
 Juncus effusus var. solutus, soft rush  
 Juncus tenuis, path rush  
 Kalmia angustifolia var. angustifolia, sheep laurel  
 Kalmia polifolia, bog laurel  
 Larix laricina, tamarack  
 Leersia oryzoides, rice cut grass  
 Leersia virginica, white cut grass  
 Lindera benzoin, spice bush  
 Liparis liliifolia, lily-leaved twayblade  
 Lonicera morrowii, Morrow's honeysuckle  
 Lycopus sp., bugleweed  
 Lyonia ligustrina var. ligustrina, maleberry  
 Lysimachia borealis, starflower  
 Lysimachia terrestris, swamp candles  
 Lysimachia thyrsiflora, tufted-loosestrife  
 Maianthemum canadense, Canada mayflower  
 Malaxis unifolia, green adder's mouth  
 Mitchella repens, partridge berry  
 Mycelis muralis, wall lettuce  
 Nabalus sp., rattlesnake root  
 Nuphar variegata, common yellow pond lily  
 Onoclea sensibilis, sensitive fern  
 Oryzopsis asperifolia, spreading white grass  
 Osmunda regalis var. spectabilis, royal fern  
 Osmundastrum cinnamomeum var. cinnamomeum, cinnamon fern  
 Ostrya virginiana, hop hornbeam  
 Parthenocissus quinquefolia, Virginia creeper  
 Peltandra virginica, green arrow arum  
 Persicaria arifolia, halberd-leaved tearthumb  
 Persicaria sagittata, arrow-leaved tearthumb  
 Phegopteris hexagonoptera, broad beech fern  
 Phleum pratense ssp. pratense, common Timothy grass  
 Picea mariana, black spruce  
 Pinus strobus, white pine  
 Platanthera clavellata, little club spur orchid  
 Platanthera lacera, ragged fringed orchid  
 Poa pratensis, Kentucky blue grass  
 Pogonia ophioglossoides, rose pogonia  
 Polypodium virginianum, Virginia rock polypody  
 Polystichum acrostichoides, Christmas fern  
 Pseudolycopodiella caroliniana, Carolina clubmoss  
 Pteridium aquilinum ssp. latiusculum, eastern bracken fern

Quercus rubra, red oak  
 Ranunculus abortivus, kidney-leaved buttercup  
 Ranunculus flabellaris, yellow water buttercup  
 Rhamnus alnifolia, alder-leaved buckthorn  
 Rhododendron groenlandicum, Labrador tea  
 Rhynchospora alba, beak sedge  
 Rosa palustris, swamp rose  
 Rubus pubescens, dwarf raspberry  
 Sarracenia purpurea, purple pitcherplant  
 Scheuchzeria palustris, pod grass  
 Solidago caesia var. caesia, blue-stemmed goldenrod  
 Solidago rugosa, wrinkle-leaved goldenrod  
 Symphyotrichum puniceum var. puniceum, purple-stemmed aster  
 Symplocarpus foetidus, skunk cabbage  
 Thalictrum pubescens, tall meadow rue  
 Thuja occidentalis, northern white cedar  
 Toxicodendron radicans ssp. radicans, eastern poison ivy  
 Trifolium repens, white clover  
 Trillium sp., Trillium  
 Tsuga canadensis, eastern hemlock  
 Typha latifolia, wide-leaved cattail  
 Urtica gracilis ssp. gracilis, American stinging nettle  
 Utricularia cornuta, horned bladderwort  
 Vaccinium oxycoccos, small cranberry  
 Vaccinium corymbosum, highbush blueberry  
 Vaccinium macrocarpon, cranberry  
 Vicia cracca, tufted vetch



*Liparis liliifolia*, lily-leaved twayblade.  
Photo by Kyle Webster.



## History of the New York State Botanist Position

by Scott LaGreca

I was sad to learn of former State Botanist Dick Mitchell's passing in the last issue of the *NYFA Newsletter*. As I read through the contributions written in Dick's memory, I remembered my undergraduate days at Cornell University, where I majored in Plant Science in the College of Agriculture while working part-time in the Bailey Hortorium. I recalled writing a term paper for my Plant Taxonomy class on the history of the New York State Botanist position. This paper was largely based on a telephone interview with Dick on May 2, 1989 - over 30 years ago.

After some searching, I dug the term paper out of my files, and was happy to see it was given an "A-" by the course's graduate student TA! Here it is—updated, but more or less in its original form - transcribed from the typewritten original, as an historical article that other NYFA members may enjoy.

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The New York State Botanist is responsible for providing the public with information about New York State's diverse plant life, and for describing and cataloguing the state's flora. Of special interest are rare and endangered species, introduced species, and disjunct populations. The State Botanist is based at the New York State Museum in Albany; they are appointed and overseen by the New York State Board of Regents, which controls all Museum appointments and operations. The very first New York State Botanist was appointed on-the-spot by the Board; his successor, however, was forced to take a specially prepared civil service exam! This idea was later scrapped; the most recent procedure involves applying to the Board in a process similar to applying for a faculty position at a university. The State Botanist works closely with the New York State Department of Environmental Conservation, the New York State Legislature, and their fellow Museum scientists to provide the public with the most precise, up-to-date information possible.

The position has a long history. The well-known botanist **John Torrey** can be considered the "prototype", or model, for the position. Torrey was the staff botanist of the Geological and Natural History Survey, appointed in 1835 by New York State Governor William L. Marcy (with help from Dewitt Clinton, Amos Eaton and others) for the purpose of inventorying the natural wealth of the state. Torrey compiled the first and only New York State flora—"The Flora of New York State", published in 1843 in two of the volumes (one with hand-colored plates) of the Survey's *Natural History of New York*.

The enormous collection of natural history specimens acquired by the Survey during these early years was housed in what was called the "State Cabinet of Natural History" in Albany. The Cabinet was eventually placed under the direction of the Board of Regents, which assigned a curator to it. Dr. Torrey's herbarium specimens, used in writing his flora, constituted a large portion of this collection. It was clear even then, however, that the herbarium and the flora were by no means complete as plants new to New York State were constantly being discovered.

In 1870, the State Cabinet of Natural History was officially renamed the "New York State Museum of Natural History". It was just a little before this time that **Charles Horton Peck** entered the picture. Dr. Peck's mentor was George W. Clinton, accomplished naturalist and son of Governor Dewitt Clinton. It is largely due to the junior Clinton's efforts that Dr. Peck became involved with botany on the state level. In 1883, Clinton persuaded the State Legislature to pass a law which established a permanent State Botanist position in the State Museum. To date, four people have occupied this post.

Dr. Peck was the first and most famous New York State Botanist. He was the most obvious person for the job; at the time of his appointment, Dr. Peck had been in state service for 26 years and had been writing *The Report of the State Botanist* (or "Peck's papers", as they came to be called) for 15 of those years. *The Report* was created by Dr. Peck in 1868 as a means of informing the Board of Regents of herbarium acquisitions. In 1892, the State Museum started publishing *The Bulletin of the New York State Museum*, and from that point



onwards, *The Report* appeared as one of the many Bulletins issued each year.

Unlike plants, very little research had been done on New York State fungi until Dr. Peck's time, which may explain his preoccupation with this group of organisms (which, at the time, were still considered plants). Dr. Peck became one of the most prominent mycologists of the nineteenth century. His work was primarily on the large and important genera of fleshy fungi known as agarics, although he did studies on most groups of fungi known at that time. In total, he described more than 2,800 new species of fungi throughout his career. Bryophytes were another of Peck's passions; he devoted many hours of intense study to these plants. Dr. Peck was known for his keenly analytical mind and his powers of clear, accurate description. His patience was unbelievable in light of the many difficulties under which he labored (lack of space, assistance, and proper equipment being a few).

Due to serious illness and old age, Dr. Peck was forced to resign in 1913; the Board, however, didn't accept his resignation until 1915. During the years prior (1905-1913), the Board hired two Assistant State Botanists—Stewart H. Burnham and **Homer Doliver House** - for the purpose of aiding the elderly Dr. Peck in his duties. Upon Peck's retirement in 1915, House became the second State Botanist, much to the dismay of Burnham, who did not have a Ph.D. and thus was ineligible for the position. (Burnham was eventually hired by Cornell in 1920 as "Assistant in Botany" and finally as Assistant Curator of the Wiegand Herbarium in 1922). Dr. House devoted much of his energy to elucidating the distributions of New York State plants. Immediately after his appointment, he started work on a plant distribution card file system which later became the "master source" for the entire State. Dr. House also updated the State flora with his 1924 publication *An Annotated List of the Ferns and Flowering Plants of New York State* (Bulletin #254). However, House is best known for his monumental, two-volume set, *Wildflowers of New York* (*New York State Museum Memoir* #15), which he wrote in 1918. The beautiful natural color plates used to illustrate these volumes were considered by many to be the standard of excellence against which other, future wildflower books were compared. In addition to writing frequent articles for the *Bulletin*, Dr. House continued to write the annual *Report of the State Botanist* until the series was terminated in 1925.

Upon Dr. House's resignation in 1947, the Board of Regents was flooded with applications from people who wanted the position. Among the most qualified of these was Stanley J. Smith. Unfortunately, Smith, who was attending Cornell at the time, was in the same unfortunate situation that Burnham was in 22 years earlier; his major professor, Robert Clausen, was denying him his Ph.D.! Thus in 1948, respectable botanist **Eugene Cecil Ogden** was appointed as the third State Botanist. Smith, aided by Dr. House, was appointed Curator of Botany in the State Museum just prior to this, in 1947. According to Richard S. Mitchell (our fourth State Botanist), Dr. Ogden felt some sympathy for Smith for being denied both a Ph.D. as well as the State Botanist position, and it may be for this reason that Dr. Ogden allowed Smith to do most of the work on revising the State's flora through field work and specimen collection, while he himself worked on projects that were more narrow in scope. In a sense, then, Dr. Ogden "shared" the position.

During his years as State Botanist, Dr. Ogden was especially interested in aquatic plants. He did a number of taxonomic revisions of the genus *Potamogeton*. In the late 1950's and early 1960's, Dr. Ogden published a number of important studies on airborne plant pollen and fungus spores; he was particularly interested in how these could be used to interpret the paleontological history of the state. After retiring in 1975, Dr. Ogden maintained close ties with the State Museum, and continued to be involved in many botanical research projects.

The fourth State Botanist, **Richard S. Mitchell**, was also interested in aquatic plants. In his early years he conducted research projects on them much like his predecessor. However, when Smith died in 1978, Dr. Mitchell was forced to take a more active role. His emphasis became endangered species: rapid development of certain areas of New York State threatened many species with extirpation. During those years, Dr. Mitchell was involved in many activities aimed at preservation of fragile plant communities. In the early





1980s, the New York Department of Environmental Conservation assumed the majority of that work, leaving Dr. Mitchell's time to work on what became his major claim to fame: a complete "overhaul" of the state's flora. Up until that time, Dr. Torrey's 1843 flora and Dr. House's 1924 checklist were the only inventories of the state's plant species. Many species new to New York State had been recorded since Dr. Torrey's and Dr. House's publications, and a great number of non-native species had been introduced. New York State had been in need of a completely revised state flora for some time. His revised flora was issued on a family-by-family basis as issues of the *Bulletin*, and he summarized it as a species checklist of the State in 1986 (updated in 1997 with help from Gordon Tucker). Dr. Mitchell's plans to computerize the entire state flora eventually came true, thanks to the efforts of the New York State Flora Association, an organization that was founded by Dick and Bob Zaremba and which has outlasted the New York State Botanist position.

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### *Cystopteris tenuis* (Mackay's Fragile Fern).

Bob Dirig, editor of the Finger Lakes Native Plant Society newsletter, was kind enough to let us reprint his very useful study of the differences between the fertile and sterile fronds of *Cystopteris tenuis*. Thanks, Bob!

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by Robert Dirig

#### FronD Dimorphism and Structure in Mackay's Fragile Fern *Cystopteris tenuis*

Sori are clusters of sporangia that produce spores

The striking *dimorphism* of *Cystopteris tenuis* fronds is displayed here at the same scale (life-size in 8½ × 11 inch printed format). Fresh *sterile fronds* can be found from late April to June, lingering into July and August in wetter years. New steriles may sprout in August-September, and persist until frost. *Fertile fronds* usually sprout in May, and remain until August-September, withering as autumn proceeds. In droughty summers, they may dry up by late July and August.

Blade (leafy part of fern)

Spring (sterile) fronds, 11 May 2018

Summer (fertile) frond, 1 Aug. 2019

Stipes are much longer in fertile fronds.

Enlargement of second basal pair of pinnae with angle overlay on pinnules

Although **pinnule angles** from the pinna's costa (midvein) usually work with fertile and sterile fronds in *C. tenuis*, they may be more reliable in fertile fronds.

See explanations of morphological terms in Cobb *et al.* (2005), pp. 21-26.





To put everyone in the mood for the upcoming spring, here is a photo Steven Daniel took of blue clematis (*Clematis occidentalis*) in flower in St. Lawrence County on 25 May 2018.



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David Werier



**NEW YORK FLORA ASSOCIATION MEMBERSHIP FORM 2020**  
**We are a 501c3 Tax Deductible Organization!**

Annual Membership dues:

- New \$20                      Make checks payable to the **New York Flora Association**
- Renewal \$20 per year
- Renewal with paper option \$30 per year (**only** for those already receiving printed newsletters)
- New Student Members (Free the First Year) School: \_\_\_\_\_
- Student Members (continuing) \$10                      School: \_\_\_\_\_
- Additional donation to support NYFA efforts like botany presentation awards and small grants.
- Total \$**

Name: \_\_\_\_\_

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**We are only accepting credit card payments through PayPal at this time. If you would like to use a credit card, please use the link on our website: <http://www.nyflora.org/join-make-a-donation/>**

**Mail this form to: NY Flora Association, PO Box 122, Albany, NY 12201-0122**  
*Thank you for supporting NYFA and the flora of New York State*

**NY Flora Association**  
**PO Box 122**  
**Albany, NY 12201-0122**

