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A Project to Conserve a Long Island Orchid at Longwood Gardens

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Figure 1. *Platanthera pallida*, pale fringed orchid, on eastern Long Island near Montauk. Left, inflorescence in full flower; above, close-up of flower showing curved lip; right, inflorescence with shriveled flowers and enlarged ovaries. Photos on left and above by Jim Fowler, August 1, 2008; photo on right by Ashley Clayton, Sept 30, 2022.

All orchids are considered threatened or endangered throughout some part of their range. Climate change, invasive species, habitat loss, and excessive herbivory are several reasons for orchid decimation in our country. Long Island is no exception. There have been 38 species of orchids documented, but only 23 are currently extant (Lamont 1996). Of those that are still around, about 10 species have very few populations, in some cases only one. However, despite the crucial need for conserving native orchids, there is little published information on a holistic approach for propagating and growing them. This gap in knowledge led to the creation of the Orchid Conservation Program at Longwood Gardens, a display garden with over 1000 acres of gardens, meadows, and woodlands located in Kennett Square, Pennsylvania. Conservation has always been a part of the Longwood story from the very beginning when the founder, Pierre S. du Pont, purchased the property in 1906 to preserve the rare and historic trees that were to be cut down for timber, but it was not until 2015 that the Orchid Conservation Program formally began. The main goal of the program is to determine the propagation and production protocols of native, terrestrial orchids from seeds. The plants produced from the research projects are then used for enhancing or restoring populations at the native site, establishing populations at Longwood Gardens as a means of genetic protection, and educating the public about native orchids. Since its initiation, the program has expanded to include not only Pennsylvania orchids, but also orchids from across the U.S. and even from around the world. Currently, we have made over 880 seed collections, which include 110 of the about 220 species native to North America. However, the Longwood research team has not collected from Long Island, and after reading about one special orchid found there, I was determined to visit its site.

At the end of this past September, I traveled to Suffolk County to meet with Jim Ash, former Executive Director of the South

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Society News

A note from LIBS member Carol Johnston (Oct. 13, 2022)
"Dear fellow LIBS members, I was touched by your note, and wanted to thank you so much for the contribution to Literary Arts in John's memory! The last year was so painful for him, that I can only be glad that he is now at peace. Fondly, Carol."

Message From the President

Most people will probably agree that life has fundamentally changed on planet earth since the beginning of the COVID pandemic in early 2020. But LIBS has not changed its mission and is fulfilling its goals as well as ever. The society is dedicated to studying the flora of Long Island and documenting its discoveries through publications and collections. In 2022, LIBS published in its newsletter Andy Greller's (et al.) flora of northern Queens County based on more than 60 years of study. Another significant contribution published in the LIBS newsletter in 2022 was Dave Taft's 12-page update on the current status of orchids on Long Island.

Throughout its history LIBS has been involved in more than basic floristic studies. Results from floristic work have provided a foundation for conservation efforts throughout Long Island. Some of these efforts have been in progress for decades and have continued through the Covid Era, including the protection of native orchids at Quogue Wildlife Refuge and along an unassuming East Hampton roadside. Other on-going conservation projects include working with the owners of a radio tower company on developing and implementing a plan to protect rare plants at the Freeman Avenue "grassland" site in Islip and working with NYS officials on protecting a botanically rich site at West Brook, a tributary of the Connetquot River in Oakdale. Both of these aforementioned projects have been joint efforts with Seatuck Environmental Association.

Although the fundamental mission of LIBS has not changed during the Covid Era, some things have changed and will never be as they were. The interaction of LIBS members at monthly meetings has been a loss that might be difficult to restore. During the Covid Era many natural history organizations resorted to online virtual meetings but for several reasons LIBS did not join this trend. It remains to be seen if monthly meetings will be restored to their former splendor but in the meantime LIBS members will continue to study Long Island's rich flora and record discoveries for the benefit of present and future generations.

LIBS MEMBERSHIP RENEWALS FOR 2023 ARE DUE

Mail your dues ($25 individual, $30 family) to:

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Thank you for promptly renewing your membership

(Long Island Orchid, continued from cover page)

Fork Natural History Museum, who graciously donated his time to guide me to a few locations of *Platanthera cristata*. The *Platanthera cristata* in that area of Long Island are unique for their flower color and shape (Fig. 1). So different in fact, that Paul Martin Brown described them as a new species with the name *Platanthera pallida*. Regardless of species status (Table 1), the morphological differences alone make them a prime candidate for genetic conservation. Furthermore, there is great concern for the future of these orchids. The few populations remaining have drastically declined in both numbers and health in the last few years due to herbivory by deer. In fact, I noticed that while there were a few hundred single leaves, the only plants that developed capsules were found mostly within the deer exclosures. I was told that the population once used to have over a thousand individuals but is now reduced to about 60 mature plants. Not only are the deer a major threat but also the southern pine beetle. Jim explained to me his fear that it is only a matter of time before the voracious insects decimate the pitch pine the orchids grow beneath (Figs. 2 and 3). After seeing the devastation for myself, I have the same worry. Not only do the pine trees provide shade for the orchids but also a substantial amount of organic material. I was surprised when I sampled the soil to find at least an inch of pure humus before reaching loamy sand. Without this nutrient-rich material from the pines, I doubt the essential orchid mycorrhizal fungi supporting the orchids could survive.

My hope is to one day hand-pollinate the orchids to ensure seed development, collect a few capsules from the most vigorous population, and sow them in at Longwood's tissue culture lab. Unlike other plants, orchid seeds contain little to no endosperm for the developing embryo. Instead, orchids rely on specialized fungi that inoculate the seeds and provide nutrition necessary for germination. In the lab though, it is possible to bypass the requirement for a fungus by using a culture medium that contains all the necessary nutrients. It can take several repeated studies to find just the right recipe. However, that is not to say we don't use fungi at all. For the more challenging species, we isolate pelotons, the fungal structures that form within plant cells, from roots or protocorms (Fig. 4) and maintain them on their own culture medium. We can then place both the seeds and a small piece of the fungus together on culture medium to simulate the same relationship that would occur naturally out in the field. Using these techniques, we have already successfully germinated *P. cristata* collected from Delaware and Maryland (Fig. 5). They are currently growing in our newly renovated greenhouse and will be ready for planting this next spring, so I am optimistic that we can propagate and conserve the ones from Long Island. We can then

Figure 2. *Platanthera pallida* habitat: ancient dunes with pitch pine (*Pinus rigida*). Habitat supporting *P. pallida* has been described as "Maritime Pitch Pine Dune Woodland," a globally (G2G3) and state (S1) rare ecological community (Greg Edinger et al., 2014, *Ecological Communities of New York State*, 2nd edition). Pitch pine trees are somewhat stunted and the lower branches often grow out horizontally above the white, excessively well-drained, nutrient poor sand. Although the surface of the soil is often dry, depth to groundwater is shallow. Interspersed between the stands of pitch pine are open pockets of white sand bordered by dense mats of bearberry (*Arctostaphylos uva-ursi*) and beach heather (*Hudsonia tomentosa*), and scattered individuals of northern jointweed (*Polygonum articulatum*), pine barrens sandwort (*Mononeuria caroliniana*), and blunt-leaved sandwort (*Moehringia lateriflora*). The harsh habitat also supports reindeer lichens (*Cladonia arbuscular* and *C. rangiferina*), cup lichen (*Cladonia uncialis*), the barometer earthstar fungus (*Astraeus hygrometricus*), and mosses such as white cushion moss (*Leucobryum glaucum*), hair cap moss (*Polytrichum juniperinum*), and *Tortella tortuosa*. Photo by Jim Fowler, 2008.

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(Long Island Orchid, continued from page 27)

Figure 3. Plants growing in dunes with *Platanthera pallida* (pale crested orchid) on eastern Long Island. a. Bearberry (*Arctostaphylos uva-ursi*); b. Pine barrens sandwort (*Mononeuria caroliniana*); c. Barometer earthstar (*Astraeus hygrometricus*); d. Reindeer lichen (*Cladonia rangiferina*) and pine (*Pinus*) cone. Photo of reindeer lichen by Bob Gibbons, the other three photos from Gobotany.nativeplanttrust.org.

Table 1. Comments on the status of *Platanthera pallida* (pale fringed orchid)

1. William K. Chapman (1997): "Tucked safely within selected sheltered interdunal hollows of eastern Long Island, a small population of cream-colored orchids survives the rigors of the harsh beach environment. Paul Martin Brown (1992) has proposed that these plants be awarded species status. The major characteristics claimed for this orchid are the pale coloration, the back growing/arching lateral sepals and lip, and the highly specific habitat. At this time the debate has not yet been fully resolved about whether or not these orchids represent a possible hybrid, a distinct color form, a variety in the process of evolving into a different species, or a distinct species. Irrespective of our opinions concerning its possible origins and relations, this interesting orchid continues along on its unique evolutionary path."

2. Charles J. Sheviak (2002): "The plants described as *P. pallida* appear to represent neither a distinct species nor are they merely hybrids; they seem to be partially stabilized introgression products and potentially useful subjects for evolutionary study."

3. James A. Fowler (2008): "*Platanthera pallida* certainly is not like the "normal" *P. cristata* (crested fringed orchid), which it closely resembles; it is a light, lemon yellow color, whereas *P. cristata* is a darker yellow-orange. Its lip takes cues from *P. blephariglottis* (northern white fringed orchid) in that it tends to curve downward (concave) rather than curve forward (convex). It is *P. blephariglottis*, I believe, from which it gets the genes that cause the light color as well as causing the lip to curve downward. Although there are no longer any *P. blephariglottis* in the immediate vicinity of the *P. pallida*, I suspect that *P. pallida* must have been an ancient offspring of *P. blephariglottis* and *P. cristata*. That's just my $.02 on the subject."

"The site for *Platanthera pallida* is not one where I would expect to find an orchid so closely related to *P. cristata*. Along the Carolina coastal plain, *P. cristata* likes to have its feet wet. In fact, I've photographed it growing in a low spot in an inch of water. The Long Island site, near Napeague, can be described as being on ancient sand dunes -- very dry, indeed. This orchid seems not to prefer full sun (again, unlike the southern *P. cristata*), and is commonly found growing directly under pitch pines (*Pinus rigida*)."

4. Paul Martin Brown (2008): "Regardless if one chooses to recognize *Platanthera pallida* at the species level or as a cline within *P. cristata* (Sheviak 2002) they remain a group of distinctive and unique plants among the orchids of North America."

5. Tom Nelson and Eric Lamont (2012): "*Platanthera pallida* is definitely not a pale "color form" of *P. cristata* [(forma *straminea*)."]

6. Matthew C. Pace (2020): "Unfortunately, available molecular data do not address the species status of *P. pallida*."

plant them both at Long Island in their native setting and at Longwood Gardens to establish a gene bank. With a population at Longwood, we can ensure that the genetic material is protected and can serve as a source for seeds or plants if the original population continues to decline.

Figure 4. A germinated protocorm of *Platanthera ciliaris* grown on culture medium. Image provided by Ashley Clayton.

Figure 5. Seedlings of *Platanthera* spp. growing in sphagnum moss in an air conditioned greenhouse. Image provided by Ashley Clayton

You can learn more about orchid conservation at Longwood Gardens on the web at: https://longwoodgardens.org/gardens/research-and-conservation/orchid-conservation

Many thanks to Eric Lamont for coordinating contacts, to Vicki Bustamante for sharing the site location, and to Jim Ash for guiding me to the plants and telling me all about the natural wonders of Long Island.

About the Author

Ashley Clayton studied biological sciences and horticulture at Clemson University. It was as an intern at Longwood Gardens when she first learned about the incredible world of native orchids. Now, she works there as a research specialist managing the tissue culture lab, soil lab, and a couple of research greenhouses where she combines her passion for propagation and plant conservation.

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Changes in the Orchid Flora of Long Island, NY (Part 2)

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[Editor's note: Part 1 of Dave's article appeared in the last issue of the LIBS Newsletter (vol. 32, pp. 13, 15-19).]

Platanthera ciliaris, Orange or Yellow Fringed Orchid

In the mid-2010s this orchid seemed to be the poster-child for conservation successes on Long Island. With the staunch protection of the Garden Club of East Hampton and their leader Julie Sakellariadis, this spectacular native orchid increased in numbers. The plant had once been abundant along an unassuming East Hampton roadside but had declined to just a few sterile leaves by the first years of the 2000s. Though the plant had never been abundant in my time checking the colony, records of up to almost a hundred individuals along this roadside were common from the mid-1980s to early 1990s. For example: 94 plants in 1985 (Bob Zaremba), 81 plants in 1991, 61 of which flowered (Meryl Goldin), and "dozens" of flowering individuals in 1992 (Eric Lamont). Long before I began keeping detailed records of my orchid forays, I recall 20 plus glorious *P. cilliaris* plants in full bloom – probably in the late 1980s. By the time I began to keep specific records, numbers had decreased radically. In 2000, Eric Lamont observed just one flowering individual at the East Hampton site. My post-2000 observations:

August 1, 2007	4 individuals, one in bloom with a very small flower spike.
July 28, 2011	5 small sterile leaves, no blooms.
August 7, 2013	7 individuals, one successfully flowered, two had spikes which had been bitten off by deer, and four sterile leaves.
August 1, 2015	8 sterile leaves and one plant in full flower, but drought conditions had caused the plant to abort most of the unopened buds on the spike.

The decline was likely caused by many factors including heavy deer predation, neglectful management of a well-intentioned exclosure fence, and changes to roadside mowing and salting practices.

The Garden Club of East Hampton began working with these rare orchids at the site in 2015, having secured a grant to kick off the process. Orchids were identified, noted, and individually protected by deer exclosures in a variety of shapes and sizes. The roadside sites were cleared of competing vegetation. Results were truly heartening; as many as 37 plants (2 flowering) were recorded by Steve Young on July 21, 2018 and 23 plants (9 in flower) were recorded by Julie Sakellariadis on August 5, 2020.

Sadly, after several years of relative abundance, numbers of flowering and non-flowering individuals have again declined. This year's drought (Summer of 2022) was so severe that even local creeks, roadside wetland ditches, and other wet sites were parched. Three plants were located in spike though only two flowered due to a rabbit's handiwork. Several sterile leaves were also located at the colony in 2022, most of these faded by the time the site was surveyed at the end of the season, again, most likely due to the drought or herbivory. The increasing human population may be having a less obvious impact on the water table too, as more people tap into the aquifer. Deer and rabbits continue to leave clear signs of their presence. It is likely other poorly understood causes could also be contributing factors in the species' most recent decline.

This bucolic roadside in East Hampton is the only currently known site for this species in New York State.

Platanthera clavellata, Club-spur Orchid or Little Green Woodland Orchid

This small but lovely green orchid is named for the swollen tip of its nectary. It is one of the unusual orchid species which are not strictly bilaterally symmetrical. In *P. clavellata*, each flower is held at an odd angle along its flower spike. The flowers are quite small, but even though they are green, they are peculiarly showy, as the green is a bright chartreus which stands out beautifully against the dark moist sediments the species prefers. The plant had been extremely abundant in several natural areas of the North Shore near Smithtown and nearby in the early 2010s, but has been far more difficult to locate in the past three seasons of 2020-2022. My last active search for the plant in the familiar sites turned up none in bloom, and just a few scattered sterile leaves. I believe the plants can still be found at several well protected parks nearby, and in several related wetlands.

I thought it odd this orchid species had not been located in habitat just south of the Ronkonkoma Moraine, but on August 22, 2014 I finally located a small colony of six plants in fruit on a small hummock of sphagnum at the very northern reaches of the Connetquot River. Maddeningly, searches in following years turned up no orchids on this hummock or nearby. In 2016 a single leaf I suspect of being *P. clavellata* (based on habitat preference and size) was located near Bunces Bridge at Connetquot River State Park Preserve.

On August 29, 2010 and for several years after, a small population of club-spur orchid persisted in Blydenburgh Park, growing from a decomposing canvas sneaker which had been colonized by mosses…leading me to wonder about wet canvas as a starter area for mosses and orchids.

I have not been back to check the East Hampton Township location for the plant in several years, but healthy individuals have regularly been located there through the late 2010s. Though never more than a handful of plants, it is still a site which harbors this species according to Jim Ash.

A small population of *P. clavellata* was located in a wetland drainage at Camp Hero, Montauk in the early 2010s; in 2021 Vicki Bustamante checked on this small colony and observed approximately 10 or fewer individuals.

Platanthera cristata, Orange Crested Orchid

On August 1, 2007 I joined Jim Ash in Sag Harbor where he showed me five orange crested orchids along a roadside. Either my photography was not wonderful at the time or I just couldn't keep my hands from shaking with excitement as I snapped the photographs. The result – several poor photos of *P. cristata*, one very nice shot of Jim. To my knowledge it was the last time these orchids were recorded – at least in flower – at this eastern Long Island location. A shame, as I have never seen as fluorescent orange a form of this orchid anywhere. Mis-timed mowing and increased salting of roadsides here and throughout eastern Suffolk County are most likely the cause of this colony's demise.

Herbivory, or even more likely, the death of more than 95% of the pitch pines (*Pinus rigida*) at Connetquot River State Park Preserve due to the unchecked advance of the Southern Pine Beetle, is probably the cause of the decline in a widely scattered, but well-established population of *P. cristata* there:

July 30, 2010	20 individuals (7 in flower, 9 eaten by deer, 4 sterile leaves).
August 2, 2013	28 individuals (25 in flower, 3 sterile leaves).
July 27, 2014	24 individuals (in wide range of development from buds, to early bloom, to advanced bloom; no sterile plants observed).
August 11, 2016	2 plants in bloom, 2 sterile leaves.
2017–2022	no orchids located.

LIBS members visiting the Connetquot River site in late July through August should keep an eye out for this showy species, while they dodge the ticks and mosquitoes.

**A note on the closely related *Platanthera pallida* (pale crested orchid): The species status of this beautiful and well-known Long Island endemic is still being researched, most notably by Melissa McCormick of the Smithsonian's Environmental Research Center (SERC). Longwood Gardens is also researching the ex-situ germination of several native orchid species including *P. pallida* (see cover story of this issue). This timing may be very fortuitous, as the ravenous Southern Pine Beetle has found its way to the once secure eastern Long Island woodland which has served as a stronghold for this interesting orchid for decades. Many Long Island naturalists are watching nervously as representatives of New York State cut down the pines at the site which demonstrate phase one or two of the beetle infestation. This treatment is the only remedy which has been found to slow or stop the spread of the beetle so far. What impact this drastic action has on the fragile ecology of this relatively small, eastern Long Island pitch pine woodland is hard to predict. What happened at Connetquot River State Park will hopefully not be the future here too.

Platanthera flava var. *herbiola*, Northern Tubercled Orchid

In my 2013 article in the LIBS Newsletter, I outlined the overarching issues at Long Island's single well documented site for this species in Oyster Bay. *Phragmites australis*, *Rosa multiflora*, and other non-native and highly invasive plant species were already widespread. Forward a decade, and unfortunately the issue has compounded. Efforts to clear the area employing a local contractor in the early 2010s resulted in several interviews. But the fragile wetland soils frustrated efforts. Contractors would agree to meet assuring me that they had the necessary equipment, but would show up only to shake their heads, as if they hadn't been warned about the soils or the imperative for wide tires, light equipment, and an army of workers. Though more radical disturbance was prevented from the tire ruts and trapped vehicles of these contractors, a great deal of time was wasted. The population of this orchid has declined, but reasonable numbers of plants persist along the edges and occasionally in small groups in less degraded areas within the disturbance. Unfortunately, the last few flowering seasons have coincided with heavy rains and extremely soft conditions. The proliferation of multiflora rose and poison ivy (*Toxicodendron radicans*) throughout the site makes it almost impossible to penetrate deeply to get more accurate counts.

April 24, 2012	76 plants just beginning to leaf out.
March 13, 2013	No plants emerging as yet.
June 18, 2013	Approx. 40 individuals in early bloom, about a dozen sterile leaves.
June 24, 2014	12 large plants in full bloom (heavy rain, particularly soft soils, and continued spread of *R. multiflora* prevented extensive exploration).
June 21, 2016	Conservatively, 30 large plants in full flower (very dry year allowed good access).

Liparis loesellii, reported from the site a decade or more ago has never been relocated, but scattered individuals of *Platanthera*

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(Changes in the Orchid Flora, continued from page 31)

lacera are regularly encountered, flourishing in the same habitats and flowering at about the same time as the tubercled orchid.

There are many potentially suitable habitats for this orchid on Long Island. Active LIBS members are encouraged to (carefully) search out this species in soft, freshwater habitats.

Platanthera lacera, Ragged Fringed Orchid

Platanthera lacera is still widespread throughout Long Island, with small populations cropping up occasionally, others declining briefly, or on occasion, permanently. The plant can be found in a variety of habitats that range from shaded young woodlands to sunny open meadows and wet grasslands.

Platanthera lacera is still relatively common in colonies in southern Brooklyn, though competition from poison ivy as well as many non-natives seems to be depressing numbers there. Counts in southern Brooklyn in the last ten or so years included these records:

July 3, 2014	181 large plants in full bloom.
July 1, 2015	461 total number of plants, near peak bloom (including additional nearby sites).
July 5, 2016	9 fresh flower spikes observed, about three times that many dry and browned (exceptionally dry conditions at site).
July 1 and 17, 2022	12 plants in flower, many aborted inflorescences (drought conditions at site); improper mowing schedule, encroaching native and non-native species (eg., poison ivy, bayberry, honeysuckle, Japanese knotweed).

A southern Queens population of *P. lacera* was last observed on June 19, 2012, 8 plants total.

In 2017, 5 scattered plants (3 sterile and 2 in flower) were located in a North Shore Land Alliance property not far from Planting Fields Arboretum.

An interesting location discovered on Fire Island National Seashore on July 11, 2012 (five plants in full bloom in a wet stand of *Phragmites australis*) is still extant in 2022, according to Jordan Raphael, National Park Service biologist.

2022's drought was probably the reason for smaller numbers of plants in several known sites. One location in Commack boasted 23 plants in bloom in 2018. On July 3, 2022 only five small individuals were located.

Occasional plants are also encountered in Oyster Bay at the *Platanthera flava* var. *herbiola* site.

Vicki Bustamante reported several plants from Big Reed Pond at Montauk, well protected by millions of ticks guarding the site during their bloom season, 7 plants were observed in 2022.

Pogonia ophioglossoides, Rose Pogonia or Snakemouth Orchid

A plant muse for several well-known writers and naturalists – loved by the poet Robert Frost, but slighted by no less than Henry David Thoreau himself, rose pogonia is one of spring's most beautiful orchids. It can still be found in reasonably secure numbers in open, sunny wetlands in eastern Long Island. It is frequently associated with thick beds of sphagnum moss from Quogue to Montauk.

Sadly, increased public use of several park areas – including off-trail, poorly-supervised hiking, and dirt biking – seems to be having a negative impact on several sites which contain this species' fragile habitats. Sites such as eastern Suffolk County's Walking Dunes still have good populations of the orchid, but the fragile swales the plants prefer are increasingly trampled by social trails which either damage the plants directly, or compact and/or disturb soils. These conditions are the perfect opportunity for non-native, invasive plant species such as *Phragmites* to gain a toehold. Increasing amounts of native woody vegetation in these boggy areas may also be competing with these small orchids.

The elusive western Suffolk populations I had hoped to find back in 2013's article remain "elusive." As with so many orchids, increasingly rare habitat may look right, but no longer harbor orchids (or, in some cases, perhaps never did).

I have been shown one or two locations just north of New York City with reasonable populations of *Pogonia*, but none recently on Long Island.

Spiranthes cernua, Nodding Ladies' Tresses

Many old-time naturalists on Long Island (including the one writing this article) used to enjoy the prospects of this species' late summer/early fall bloom, providing a final hoorah for the field season. All this changed when *Spiranthes cernua* was more carefully examined by Matthew Pace, botanist at The New York Botanical Garden. It is more or less widely accepted that this species is actually three or four subtly differing species of *Spiranthes*, where there had been one. Fortunately for us Long Islanders, *S. cernua* is considered to be a coastal species, and all of the local *Spiranthes* I've examined (so far) have turned out to be the genuine *S. cernua* (including the reputed *S. ochroleuca* colony at Montauk). Complicating the ID is the strange habit that this species has of reverting to poorly defined, apomictic flowers. Beyond cleistogamous, these flowers not only do not open, they have undeveloped floral parts, which are best described as narrow green appendages. The same plants may produce these interesting, if not exactly "attractive," flowers some years, alternating with the beautiful crystalline white, flared blooms for which the species is primarily known in other years. This

phenomenon is not well understood, however, both the poorly developed flowers and the more fully developed white blooms are held in the classic *Spiranthes* spiral which lends the plant its name and makes ID to genus fairly straightforward.

Spiranthes cernua prefers damp substrates, and is generally found in bright open grasslands. It can be very abundant in suitable habitat, but gradually declines as competition through natural succession or human disturbance takes over a field.

Small groups of these plants can sometimes be found as either remnants of what were likely larger populations, or the beginnings of a colony. One site where thousands of these plants used to be found was the Jamaica Bay Wildlife Refuge in Queens. The once impressive display of thousands of plants has disappeared through natural and anthropogenic causes. Highlighting the loss, a single plant in bloom was located at one of the original sites at Jamaica Bay by Zihao Wang in 2020. I observed none at the site in 2021 or 2022.

In southern Brooklyn I observed a large group of *S. cernua* plants with well-developed flowers not far from a major highway on September 26, 2011. What turned out to be a fair sized colony has inspired annual checks for a decade now. Population numbers ranged up and down through the past decade. After a high of 67 plants recorded on September 12, 2012, no plants were found in 2013, 2014, 2015, and 2016. On September 22, 2021 Park Ranger Audrey Bartow and I re-located 39 plants at the site, interestingly, these plants produced exclusively apomictic blooms that year. In September of 2022 I once again found no sign of the orchids despite several visits. The plant's absence is of interest, and may be due to incompatible mowing schedules or drought during key periods of development. There are one or two other Brooklyn locations that were also impacted by the drought.

Small populations of *Spiranthes cernua* can also be found in Nassau County, for example in Massapequa, a remnant wetland field has produced one or two (or zero) *Spiranthes* stems for Maria Stankowski and I for several years. There are also several small to mid-size sites in Suffolk County.

LIBS members are encouraged to record sightings of this species, they are quite conspicuous in open fields in the increasingly spare autumn landscape.

Spiranthes lacera var. *gracilis,* Southern Slender Ladies' Tresses

Like so many orchids, the taxonomy of these plants bears some examination. For lumpers, the two varieties of this species, var. *gracilis* and var. *lacera*, intergrade into each other, the spiral of flowers being not quite as tight in some as others. Variety *lacera* is sometimes almost completely secund (flowers held on one side of the rachis of the bloom stem) whereas in var. *gracilis* flowers are often tightly spiraled. I have seen both plants together in certain colonies, but I know of only a handful of locations on Long Island where either variety of this tiny orchid can be found. Where the orchids grow, they seem to conform (generally) to var. *gracilis*. There were 57 plants located in one site in Amagansett in 2022. Leaves are sometimes present at anthesis, sometimes not; hairs on the flowering stem are sometimes more abundant, sometimes less or even almost absent. Considering that only humans are reading the taxonomic texts, I'm happy simply to encounter this lovely little orchid growing in the poorest sandy soils, protected from the brutal sun under the shade of the low-lying bearberry (*Arctostaphylos uva-ursi*) and beach heather (*Hudsonia tomentosa)* shrubs, only the flower spikes emerging prominently above cover during the flowering season. Very similar in size and somewhat less in shape to its close relative *S. tuberosa*, each flower measures just millimeters long, and is a glittering white when observed through a magnifying loupe. The most obvious difference between *S. lacera* and *S. tuberosa* is the dark green central stripe on the labium of *S. lacera*. A mid-summer bloomer, conditions are often sunny and hot in the sandy habitats this plant prefers. Jim Ash has reported relatively large numbers of *S. lacera* among even greater numbers of *S. tuberosa* at the East Hampton airport, however, access is extremely limited due to security concerns on the runways and taxiways, and consequently it is difficult to get an accurate count. In 2022, poor timing of mowing eliminated the blooms of both species at the accessible areas of this site. Concerns about the future of the East Hampton Airport may also have serious implications for the species at this location.

Spiranthes tuberosa, Tuberous or Little Ladies' Tresses

The most diminutive of our native orchids, the flowers of *S. tuberosa* are undeniably orchidaceous when examined closely; they conform to the orchid model of three sepals, three petals (including modified petal that is the lip of the flower), and the unified reproductive organs called the column. Though I have never dug one up, this orchid notably has only one tuberous root, as opposed to several in the closely related *S. lacera*. The flowers also tend to be somewhat "boxier," not as elongate as the flowers of *S. lacera*.

A mid-summer bloomer, this orchid is easily overlooked due to its small size, and human-deterring habit of flowering in hot, sunny, mid-summer fields. It can be found in old cemeteries and busy roadsides. Several sites come to mind in far-flung places like Commack, Sag Harbor, Riverhead, and the Hamptons. I recently encountered a small wintering rosette of this plant in a *Viola pedata* (bird's foot violet) site not far from the Sunrise Highway in East Patchogue.

LIBS member Vicki Bustamante reports a compact colony of about 50–75 plants in a small pocket of maritime grassland near

(continued on next page)

(Changes in the Orchid Flora, continued from page 33)

the lighthouse at Montauk, the single reported colony from that most eastern outpost on Long Island.

Past LIBS officer Rich Kelly had told me about scattered plants which grew in the parking field at Old Bethpage Village Restoration. Sadly, this site has been badly damaged by the creation of an Armaments Museum. The museum sponsors destructive off-road vehicle demonstrations which indiscriminately drive through the site. Plants that persisted on the very fringes of the site were set upon by heavy equipment which pushed debris over them. Some of this debris had been the result of large-scale recreational events hosted in the field which wiped out the small number of orchids still clinging to life in the center of the parking area. In 2016, the destruction reached even greater dimensions with the razing of habitat on the southern edges of the site with heavy equipment. Tractors and earth moving equipment were left throughout the field for weeks after the destruction, which included the creation of a variety of hard-to-explain earthworks which may have been facsimiles of military shelters or bunkers. I received no response to numerous phone calls and emails. Miraculously, seven plants persisted in 2016, but the complications involved in accessing the site after the construction of the Armaments Museum, and the generally depressing remains of the field discouraged further checks. It has been on my mind to check the site in 2023.

Most recently I was called by Ron Gallardi of the New York State DEC, and Annie McIntyre of New York State Parks' Long Island region about what seemed to be an orchid species flowering in great numbers at one south shore site. We visited the site together on August 19, 2021 only to find the very last blooms of literally thousands of *S. tuberosa* orchids. The late stage of the orchids' blooms made it impossible to determine whether *S. lacera* might also have been mixed in. We planned our next visit for August 12, 2022 when we brought a team of excited naturalists to find exactly zero plants, none in spike, none in bloom, none past bloom. Simply vanished or took the year off. The cause of this disappearance is puzzling, perhaps the drought of 2022? Perhaps some other altered set of conditions. At another Long Island *S. tuberosa* site several miles away in Commack, 205 plants were located in full bloom not long after. We hope to revisit the south shore site in 2023.

Spiranthes tuberosa can crop up in surprising sites, such as the East Hampton airport reported by Jim Ash. I have also encountered the species near the *Platanthera ciliaris* colony in East Hampton.

Spiranthes vernalis, Spring-blooming or Grass-leaved Ladies' Tresses

Unfortunately, numbers of this state endangered species have not recovered in several sites where it had been found prior to Hurricane Sandy. Plants located behind the dunes east of Robert Moses State Park on Fire Island have not returned; the beautiful freshwater bowls between the dunes completely blown out by the storm. A few sites further inland on the barrier spit still host this orchid species, though in diminished numbers. Access here has become limited due to increasing restrictions by the National Park Service, and unfortunately storage of heavy equipment has damaged some of the remaining sites.

In the Commack site I reported on in 2013, the plant has faced numerous challenges. The site has been managed expertly by Larry Ferrandiz of PSE&G for many years, but accidentally mis-timed or mis-placed mowings by contractors have occasionally caused setbacks. Despite the mowing, the fields where the plants are found are rapidly undergoing succession, and in several areas a variety of weedy species (both native and non-native) have replaced the blue stem and switch grasses which prevailed at the site. Despite this concern, 2022 was a banner year for this species. Mowing was perfectly timed for two years, and on July 30, 2022 I arrived to find 74 individual flower spikes in the peak of bloom.

July 29, 2012	46 plants, several almost 24" tall.
July 27, 2013	10 small spikes in beginning bloom (field mowed flat, mistimed).
August 1, 2014	13 plants blooming (field mowed, incorrect timing and location).
July 29, 2015	81 individuals, peak bloom.
August 3, 2016	6 individuals just emerging (mistimed mowing).

LIBS members botanizing or birdwatching in open fields in late July should keep a look out for this state rarity, it is a plant which is at the northern extreme of its range on Long Island. *Spiranthes* species are notoriously confusing to identify; but by way of quick identification, this species can grow very tall (I've measured occasionally robust specimens at well over two feet tall though they generally are much shorter), and the flowers often show a great deal of yellow in the throat. One of the initial hints is the early blooming period. Only one other *Spiranthes* blooms earlier in New York State, and *Spiranthes lucida* is far smaller, prefers wetter, more alkaline soils. The name "vernalis" refers to spring, and in the southern parts of the species' range it does in fact flower in spring, I have seen it in full bloom in Florida, in February.

Tipularia discolor, Crane-fly Orchid

Though it was one of the last orchid species documented on Manhattan Island, currently, *T. discolor*'s only known location in New York State is a small, rapidly suburbanizing woodland on eastern Long Island. The specific site, wedged between recreational facilities in an increasingly affluent, immeasurably more crowded town, has always been of concern to New York State botanists, but has recently been

the subject of even greater alarm when the New York State DEC granted permission for the town to lay down tracks for a ride-on choo-choo train through this orchid's protected woodland. Mapped to circle through the woodlands near the specific site where these orchids are located, it is unlikely to improve the conditions for this rarest of New York State plants. On a visit to the site in July 2022, progress had included laying out the gravel foundation of the tracks, and "improving" drainage through the woodlands. I was relieved to see that the tracks did not wind through the specific location within the site where the colony of orchids resides. However, these woodlands will not benefit from the additional foot traffic and the attendant litter which accompanies attractions like these. It also reduces the amount of nearby wooded areas which could eventually be colonized by the plants. Reasonably good records have been kept on these orchids for decades, which will become even more important as increasing development and greater public use here seems inevitable.

I reported on numbers through 2012 in my 2013 article, and will add these dates.

January 10, 2013	61 leaves.
July 15, 2013	8 spikes in flower.
November 8, 2013	46 leaves.
January 6, 2014	79 leaves, 9 spent spikes.
July 24, 2014	10 spikes in flower (including one damaged spike).
December 18, 2014	106 leaves (including one purple leaf), 12 spent spikes.
January 4, 2016	132 leaves (conservative count).
April 10, 2016	77 leaves till present (return visit).
August 21, 2016	3 spikes in sparse bloom.
February 24, 2017	62 leaves, some notably larger than average.
2018- 2021	plants present, records misplaced temporarily.
July 21, 2022	2 spikes in perfect bloom (one in an unexpected location).

Due to the nature of this species (leaves are hibernal – appearing in late summer and overwintering), summer and winter surveys are best to accurately assess the population.

An interesting appearance of a single *T. discolor* leaf in a Brooklyn backyard was the subject of excited and amused phone calls between Tom Nelson, Eric Lamont, and I in the late winter of 2022. A digital shot was provided by a home-owner in Bay Ridge which clearly illustrated a *Tipularia* leaf still attached to its corm which had been dug from the ground near a plaster religious figure. *Tipularia* is a fairly common orchid south of New York State and if a plant was purchased by a landscaper from New Jersey south it is likely either seeds or young corms of *Tipularia* could have been transported to a Brooklyn backyard on the root ball of a shrub, perennial, or tree. I exchanged several emails with the home owner and encouraged her to place the corm back where she had dug it from, after which communications ceased despite several efforts, so I cannot confirm whether the plant survived or perished. As I write this, I wonder if the plant is sprouting new leaves this season, like its wild relatives from the opposite end of Long Island.

Fellow LIBS member Vicki Bustamante and I have tried a few times to relocate a poorly documented small colony of *Tipularia* reported near Montauk about a century ago by no other than Roy Latham, but as yet have not been able to relocate the colony.

Conclusion. As I wrap up the 2022 season, and this article, a few things come to mind. Orchids persist on Long Island, but most are in a precarious state and with fewer and fewer suitable sites to colonize, their dust-like seeds must drift father and farther afield to find toeholds. Habitats, subject to both anthropogenic factors and natural succession, inevitably change and often become less suitable for the species which initially inhabited the site. Obviously, preservation of what remains of Long Island's precious open space must be considered a first priority for conservation efforts – it is far better not to lose these species than try to re-introduce them. But practically speaking, how much expensive Long Island real estate can be purchased? And where to start with so many plants and places to protect? Perhaps at least as importantly - who are the "feet on the ground" to manage and protect these areas? Do poorly supervised agreements with landowners truly work? Have posted signs alone ever made a real difference?

So, barring large-scale preservation of land I have begun to question my long-held belief that it is better not to "move the furniture." I am in no way arguing for transplanting these famously difficult plants, but should we consider judiciously being the vectors for orchid seeds? Perhaps removing a seed capsule or two from a healthy population and sprinkling orchid "fairy dust" over potentially suitable, still viable habitats could provide a substitute for more natural means of recolonization? Are the soles of our boots and our denim jeans less suitable (even philosophically) than the hooves of deer, or racoon fur – or am I simply deluding myself, justifying my thoughts before justifying my actions?

I hope my daughter, or her children, (or theirs), do not experience the heartache I do, reading old records of *Arethusa* on Long Island, or reading Roy Latham's notes from a century ago about locations and plants now buried a century deep under development of one sort or another.

LIBS members should actively record those plants they encounter and fight to protect the spaces where they grow, lest they become nothing but dusty footnotes in some botanist's research in the year 2220.

I'd like to thank Jim Ash, Victoria Bustamante, Eric Lamont, Tom Nelson, and so many other plant fans, botanists, LIBS members, or nature lovers for their input, their inspiration, and simply the laughs and the thrill of their company on hikes through Long Island's wildlands.

Long Island Botanical Society
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Aquebogue, NY 11931

Field Trip

December 3, 2022 (Saturday) 11am
Lichen Survey
North Fork Preserve, Northville, Suffolk County
Trip Leader: James Lendemer

This field trip will primarily focus on learning about the natural history of lichens and how to identify them; we will also take note of mosses, liverworts, and other inconspicuous often overlooked plants. We will survey a variety of ecological communities (including old growth forest, old growth buttonbush swamps, marshes and other freshwater wetlands, as well as successional fields, shrublands, and disturbed sites) and pay particular attention to the lichens growing on glacial erratics scattered throughout the preserve. A list of observed species will be published in the LIBS Newsletter.

James is the staff lichenologist and an assistant curator at The New York Botanical Garden (NYBG's lichen collection is the largest such collection in the western hemisphere). During the past few years James has led several LIBS field trips and has presented programs on lichens -- sensitive indicators of environmental quality often considered to be the equivalent of corals on land.

Pre-register with LIBS field trip chair, Bob Chapman (bob.chapman516@icloud.com). More details about the trip and the meeting place will be sent after completing registration.

LIBS BBQ & Monthly Meetings

The Bill Patterson Nature Center at Muttontown Preserve is no longer available for public meetings. This closure is one of the many results of the Covid pandemic and marks an end to a LIBS tradition. Bill Patterson was an active LIBS member during the society's early years, leading field trips and hosting meetings at one of Nassau County's premier nature preserves. During the ensuing decades LIBS and Nassau County Department of Parks, Recreation, and Museums partnered on many botanical projects and at this time LIBS expresses sincere appreciation to all the individuals who made this special relationship possible, especially Lois and Al Lindberg.

John Potente, chair of the LIBS Program Committee, recently announced that 2023 will see a return of the LIBS BBQ as well as monthly programs. At this time definite plans have not yet been finalized but monthly meetings will likely take place at a public library in Nassau County. A full committee of individuals will be needed to make the return to in-person meetings a reality; help is needed in bringing and setting up a projector, hospitality tasks need to be planned, and other details need attention. Please contact John Potente or Eric Lamont if you can help.

Concerning the LIBS BBQ, John is following-up on some interesting possibilities, members will not be disappointed. Stay tuned in for further details!