

LONG ISLAND BOTANICAL SOCIETY NEWSLETTER

Vol. 7, No. 4

Jul. - Aug. 1997

The Native White Pine Forest on Long Island's South Fork

White pines and pitch pines are holding their own throughout most of Northwest in the Township of East Hampton. The easiest way to see this is to count the number of seedling and sapling pines coming up. While there are a great number of pitch pine seedlings, and far fewer pitch pine saplings, there are a ton of little white pines coming along. In fact, there are so many young white pines rising up here and there that fairly large expanses of woods look like Christmas-tree farms.

Scott Clark, a horticulturist from Suffolk County Cornell Cooperative Extension, recently accompanied the writer on his little foray. Scott was surprised to find out that these white pines did not have a plantation origin but were native to the area.

The writer was pleased to see the white pine forest surging ahead, expanding its perimeter and filling in its interior, rather than struggling in the throes of contraction and loss of vigor.

Nowhere else on Long Island does native white pine grow in abundance except in a relatively narrow, north-south band, with Northwest the anchor at the south end and Moore's Woods in Greenport holding down the north end. The white pines in this

belt, including those on Shelter Island (but none on North Haven, interestingly), are most prominent in areas where water tables are shallow. Such is the situation throughout much of Northwest north of the moraine.

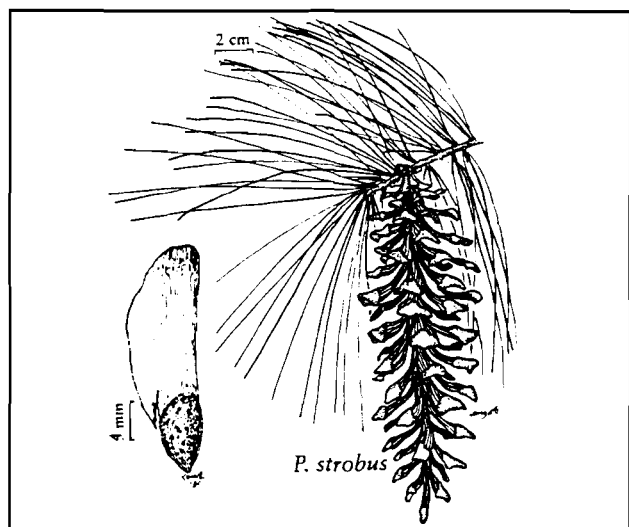
Along Swamp Road and the peripheries of Northwest Creek and part of Little Northwest Creek, for example, water tables are exceedingly close to the surface and white pine growth is vigorous. Interestingly, pitch pines in the same situation also seem to be doing well. The species that are losing out to some degree are the oaks, hickories, and other hardwoods.

The majority of young white pines now thriving along Old Northwest, Northwest Landing, Northwest, and Swamp Roads are three or four years old. The suggestion is that they got their initial impetus during the intensely droughty years of 1993-95, germinating in response to aridity, which can mimic postwildfire conditions.

When the rains came in the fall of 1995 that finally broke the drought, there was a second surge of activity, manifested in rapid growth and abundant

Highlights

White Pine Forest on Eastern L.I.	21
Long Island's "Redwood Forest"	23
Society News	24
Plant Sightings	25
Aquatic Plants Workshop	25
Field Trips	25



White Pine (*Pinus strobus*). Illustration from
Flora of North America, Vol. 2 (1993), Oxford Univ. Press.

needle production. This phase is the one we see so plainly today. Growth is particularly rampant in the areas with greatly elevated water tables. Local water tables have seldom been higher than they are today, and consequently there is a likely hydrogeological basis for the most recent spasm of white pine growth.

The white pine forest is thought to be a relic from earlier times, hundreds, even thousands of years ago, when the climate of Long Island was cooler than it is now and native hemlocks, spruce, white cedar, and other northern trees were resident and still dominant.

By all reports, the climate at this latitude continues to ameliorate. So why are the white pines expanding, rather than contracting? The more southern pitch pines should be replacing them. It may be that the water table plays an important role in keeping them around and in prime condition.

Groundwater in the warmer months is much cooler, on average, than surface water and the air temperature. When the white pines take up water from the water table in the summer, they are sucking up water that is cool, somewhere between 50 degrees and 60 degrees Fahrenheit. When they transpire water from their needles during photosynthesis and the water evaporates, the temperature of the microclimate around the tree is lowered, and the trees are further cooled. During mild winters such as the one we've just been through, some photosynthesis goes on and the groundwater is warm enough, relative to the ambient air, to help promote that photosynthesis and even promote a little growth.

In a way, then, the white pine forest is self-regulating and always adjusting to the climate, at once trying to stay cool, at once trying to stay productive. Another side to this coin is that in looking after themselves, the white pines also look after the things that are growing under them, on them, and around them. They continually drop their needles and keep the forest floor to their liking. Shrubs such as inkberry holly and dangleberry, and groundcovers like redberry wintergreen, which may not do well away from the white pines, do wonderfully in their presence.

Meanwhile, the pitch pines are not abiding in the wings. They are forever crowding their cooler-weather cousins, always poised for the opportunity to move in and displace them. For the moment, they are thwarted. The prevailing climate has to warm up

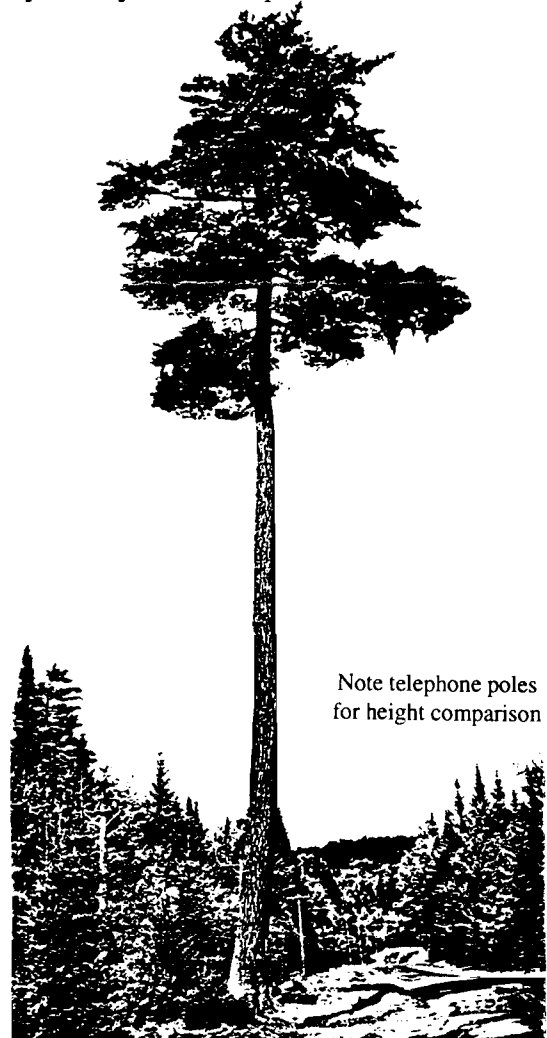
more and become drier before they can move in lock, stock, and barrel, and take over. It may never happen.

The indigenous white pine is an elegant tree, almost a perfect tree some would say, on the verge of being a miraculous tree. Yet in the eyes of local law, the native white pine has little standing, and is afforded little protection per se.

Ironically, while holding the pitch pines at bay so successfully all of these years, the white pines may finally succumb not to climatic forces, but to a force which can be far more threatening and quicker to act. We're talking about the destructive force of the biped known in anthropological circles as *Homo sapiens*.

Not all humans are that wise.

Larry Penny, East Hampton



White pine in New Hampshire. This "Lone Pine," one of the famous landmarks of the Androscoggin Valley, disappeared in July, 1956, victim of persons unknown. (U.S. Forest Service photo by Lee Prater).

Long Island's "Redwood Forest"

In Yaphank, a few acres of white pines, called Prosser Pines, tower over the surrounding oak woodland. They are toothpicks compared to the redwoods. However, they imitate the redwood style—they hover with long, straight trunks, some with considerable girth.

Planted in 1812 by George Prosser, they have grown up together with grace and style to claim the forest floor almost completely.

I took a January stroll through this Suffolk County park. A thirty second period was all I needed to walk from the parking lot before I was immersed in the dark, vertical world of *Pinus strobus*. Long Island forests were largely cut over in the 1800's. George Prosser's probable motivation in creating the plantation was to "patch things up." White pines grow rapidly and within his lifetime he could see the fruits of his labor.

The diameter of the largest of the "progenitor trees" exceeds 40 inches. Some have been growing for 184 years and counting. The largest trees are in the northwest corner of the pine grove. The soil is rich and the water table relatively close to the surface. This park is situated in the Carmans River drainage system. Just south of here the tall oaks of Warbler Woods confirm these growing conditions.

The original pine trees have spawned seedlings which are only successful in the pools of light created by canopy openings of fallen giants. The litter layer on the forest floor has three major components: cones, needles, and squaw wood. This rather barren and simplified litter layer adds charm to the setting. Patches of afternoon light whitewash the bark of some trees. This dappled effect plus the stillness and relative quiet creates a mood unlike any other forest grove I know of on Long Island.

In clearings, some of the saplings catch sunlight, causing the needled bunches to look like miniature fountains. On one trail I found two trees that had bow-shaped trunks over their entire length. This forest caught heavy winds during the '38 or '45 Hurricane. Perhaps these two trees sustained partial upheaval from the tornadoes that spin off from

hurricanes passing over land masses.

My favorite place in this forest is at a southernmost point on the trail. A tall, hollow seven foot tall stump has three knotholes pointing in three different directions, each hole giving a different view. I stood inside this stump and peeked out of each hole. It's as close as I've ever come to being a White Pine Tree.

The north side of the plantation is bounded by oak forest. Here is a nursery of hundreds of young trees all competing for light. Seeds that have been blown north find enough available light to germinate. Few will ever reach the height of their parent trees to the south. The competition for light is fierce. I saw saplings growing within just a few feet of each other.

I got the impression that this forest family is a close-knit clan that was started in 1812 and will go on indefinitely. A few black birches have integrated within the forest but even mature trees look puny compared to the grandfather white pine trees.

Yes, Muir Woods in California is much more magnificent, but Prosser Pines is here, close enough to visit after work. The plantation reminds me of a statement Donald Culross Peattie made in his book, *The Road of a Naturalist*: "You draw to a stop, shut off the motor like a profanity, and get out, to go into the wood and worship." If these trees draw you closer to God, I recommend you go there. Indeed, a stand of white pines close by is called Cathedral Pines for obvious reasons. These trees probably came from seeds blown there from the Prosser stand.

It is the enclosure, dimness of light, and hushed atmosphere that draws me to this wood. One reason for this hushed atmosphere is the thickness of the litter layer. In some places, pine needles are ten inches thick. This creates absorption that influences the quality of sound. It uplifts and sustains the human spirit. A brief visit to Prosser Pines would better be termed a pilgrimage. Indeed, wherever we live, we need to look to nature to find a place to go for inspiration and the upwelling of the life force within us that relates us to the whole planet.

Thomas Allen Stock, Smithtown

Society News

Rare Plant Victorious Over Development

St. Andrew's Cross (*Hypericum hypericoides* subsp. *multicaule*) is among New York's most rare plant species. This southern species is at the northern limit of its range on Long Island, where a population thrives in the Township of Huntington. Recently, a developer submitted a proposal to the Town to build a major subdivision on the property. Fortunately, environmentally sensitive individuals in the town's planning department were aware of the occurrence of St. Andrew's Cross on the property and ultimately protected the population by accepting 1.123 acres from the developer as a "park preserve."

Margo Myles of the planning board (and also a LIBS member) noted, "As far as I am aware, this is the first time that the town has actually required the dedication of an area as part of a subdivision because of a rare plant occurrence." According to the resolution, the town's Department of Parks and Recreation, General Services, and Environmental Control have been informed that the 1+ acre parcel is within their management jurisdiction, and have been directed to properly monitor and manage the site, including annual mowing in September or October of each year.

DEC Still Recommends Non-Native Trees & Shrubs for Long Island Shore Plantings

Once again this spring the New York State Department of Environmental Conservation (DEC) offered for sale tree and shrub seedlings to New York landowners. Two packages had been specifically geared toward Long Island shore planting. The tree seedling package of 80 plants contained two native species (eastern red cedar and northern bayberry) and two non-native species (autumn olive and rugosa rose). The shrub seedling package of 25 plants included two native species (high bush cranberry and silky dogwood) and three non-native species (tartarian honeysuckle, toringo crabapple and autumn olive). One of the greatest threats to natural ecosystems on Long Island is the invasion of non-native plant species. Through the years several

environmental organizations have been meeting with DEC officials to encourage the planting of only native species.

NYBG Historic Glasshouse Reopens After 4-year Restoration

The Enid A. Haupt Conservatory at the New York Botanical Garden, Bronx, opened to the public on May 3rd after a four-year, multi-million dollar restoration project. Inside the magnificent crystal palace palms soar into the 90-foot glass dome. The sago palm and the elephant fern, whose ancestors were here with the dinosaurs, thrive beside the palms. A fallen kapok limb has opened a sun-filled gap in the rain forest. The skywalk invites visitors to climb above the canopy. Ruggedly beautiful desert plants including the boojum tree and the tree aloe dwarf passers-by. For information call 718/817-8700.

Native Orchid Program

LIBS member **Sherman Wolfson** has been championing the cause for Long Island's wild orchids during the past year by presenting slide programs to several garden clubs and other organizations. Sherman updates his program continuously and has recently researched some of Charles Darwin's classic studies in orchid pollination.

New Members

The Long Island Botanical Society is pleased to welcome the following new members:

Laura Ahearn, Yale University, CT; **Abigail Barber & Noel Rowe**, East Hampton; **Dr. Dominick Basile**, Lehman College of CUNY; **Gregory Edinger**, Schoharie, NY; **Daniel Gilrein**, L.I. Hort. Research Lab, Riverhead; **Lenny Librizzi**, Bronx; **Russel Scheirer**, Hauppauge; **Laura Schwanof**, Port Jefferson Station; **Peter Stoutenburgh**, Peconic; **Guy Tudor**, Forest Hills.

Plant Sightings

Bob Laskowski reported that the very rare population of Pyxie (*Pyxidantha barbulata*) that had been bulldozed two years ago in Islip, is making a very modest comeback. Several "wisps" of the plant were observed this spring.

Barbara Conolly and **Betty Lotowycz** recently located a healthy population of Red Campion (*Silene dioica*) at Cold Spring Harbor; this introduced European species is rare in New York.

While surveying his "block" for the Metropolitan Woody Flora project, **Ray Welch** located several different species of clubmoss occurring on the Ronkonkoma Moraine near Bald Hill, Selden: Hickey's Tree Club-moss (*Lycopodium hickeyi*), Southern Running-pine (*Diphasiastrum digitatum*, previously know as *Lycopodium digitatum* and *L. flabelliforme*), and *Diphasiastrum x habereri* (a hybrid between *D. digitatum* and *D. tristachyum*).

Aquatic Plants Workshop

by **Dr. Alfred E. Schuyler**

Associate Curator, Botany Department
Academy of Natural Sciences of Philadelphia

23 August 1997 (Saturday); 9 am to 5 or 6 pm

A morning talk and slide presentation with handouts on aquatic plants followed by lunch (outdoors, weather permitting) and a full afternoon in the field in the Riverhead/Calverton/Manorville area. Plan to wade.

Site of morning "classroom," will be somewhere in central Suffolk, to be announced.

Participation by reservation only, with preference given to LIBS members; space is limited so reserve early. Call **Skip Blanchard** at home evenings 516/421-5619, to reserve. Further details will be sent in late July to those who have reservations.

[Thanks to Bob Laskowski for keeping after us about having such a workshop, and to Chris Mangles for persuading Dr. Schuyler to come to Long Island.]

Field Trips

12 July (Saturday), 2:30pm to 4:30pm. Oak Brush Plains, Bishop Tract, Edgewood (near Pilgrim State Hospital). Leader: **Thomas Allen Stock**. Originally encompassing 60,000 acres, the Oak Brush Plains has been fractured into numerous small tracts totally less than 4,000 acres. For details including meeting location call Tom at 516/979-8323.

26 July (Saturday). Bashakill, Orange and Sullivan Counties, NY. (Joint trip with the Torrey Botanical Society). Leader: **Patrick Cooney**. Meet at 10 am at a pull-off just before the very small, flat bridge over the marshlands. Lying between the Shawangunk Mountains to the east and the Catskill Mountains to the west, these wetlands constitute the largest wetlands (5 miles long and less than a mile across) in the nearly 300 miles that separate New York City's Jamaica Bay and the Montezuma National Wildlife Refuge west of Syracuse. Directions: Take I-87 to exit 16 for US Route 17 west, passing the towns of Goshen and Middletown, and get off at Exit 113. Turn left (south) and drive 1.9 miles; left turn (east) on Haven Road. Drive a short distance to a pull-off on the left (north) side of the road. Bring lunch, ample beverage, insect repellent, and be prepared for wet walking. Patrick Cooney telephone: 914/478-1803.

16 August (Saturday). Ringwood/Skyland Manor, Bergen County, NJ. (Joint trip with the Torrey Botanical Society). Leader: **Patrick Cooney**. Take I-87 north, passing exit 15 for I-287 south to NJ, and get off at the next exit, 15A (US Route 17 north) and proceed to Sloatsburg; turn/bear right (there is a sign for Ringwood) onto Sterling Mine Road. Keep following the Ringwood signs continuing/bearing straight past an entrance for Sterling Forest and drive into New Jersey onto Mill Pond Road/Sloatsburg Road. Turn right (west) and proceed to the parking area ear the Maor House. There are entrance fees at both places. Bring lunch, ample beverage, insect repellent, and be prepared for wet walking. Patrick Cooney telephone: 914/478-1803.

LONG ISLAND BOTANICAL SOCIETY

Founded: 1986; Incorporated: 1989.

The Long Island Botanical Society is dedicated to the promotion of field botany and a greater understanding of the plants that grow wild on Long Island, New York.

President	Eric Lamont
Vice President	Skip Blanchard
Treasurer	Carol Johnston
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Cor'sp Sec'y	Jane Blanchard
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Field Trip	Glenn Richard Allan Lindberg
Membership	Lois Lindberg
Conservation	John Turner Louise Harrison
Education	Mary Laura Lamont Thomas Allen Stock
Hospitality	Betty Lotowycz
Program	Skip Blanchard Steven Clemants
Editor	Eric Lamont

Membership

Membership is open to all, and we welcome new members. Annual dues are \$10. For membership, make your check payable to LONG ISLAND BOTANICAL SOCIETY and mail to: Lois Lindberg, Membership Chairperson, 45 Sandy Hill Road, Oyster Bay, NY 11771-3111

Field Trips

(see page 25 for details)

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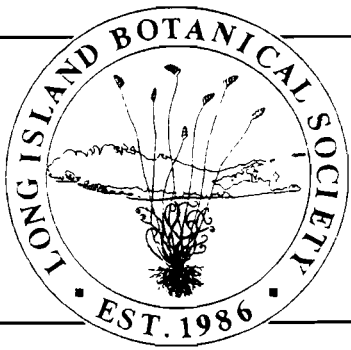
LONG ISLAND BOTANICAL SOCIETY

c/o Muttontown Preserve

Muttontown Lane

East Norwich, New York 11732





LONG ISLAND BOTANICAL SOCIETY NEWSLETTER

Vol. 7, No. 5

Sept. - Oct. 1997

The Maritime Oak-Basswood Forest on Long Island's North Fork

Where on Long Island can you observe undulating sand dunes blanketed with beach grass, and desert-like swales interspersed with wet depressions supporting insectivorous plants, cranberry, and a slew of sedges and rushes? The south shore, right? Well, not always.

Although much of Long Island's north shore consists of tall bluffs directly bordering Long Island Sound, sand dunes and broad sandy swales do rarely occur. I am not referring to locations within protected harbors and coves, I refer to broad, well developed sandy beaches directly bordering the Sound.

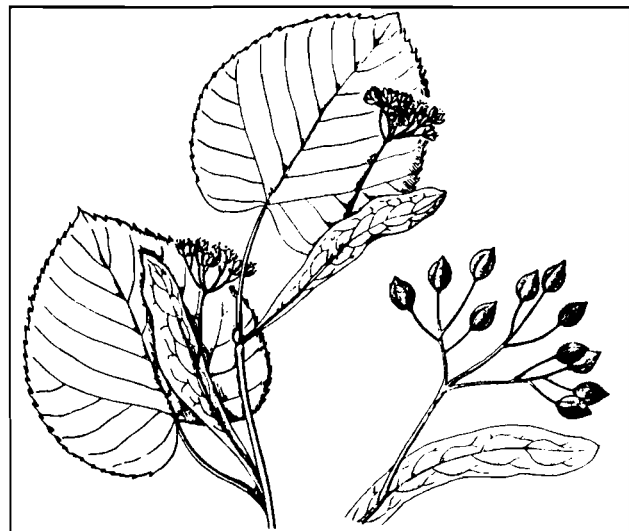
A system of low dunes and swales parallels Long Island Sound just east of Goldsmith Inlet in Peconic on the North Fork. Dr. Les Sirkin, professor of geology at Adelphi University, described this unique area in his book *Eastern Long Island Geology*, published in 1995: "The beach here is much wider due to excess sand in the longshore drift and perhaps a balance between east and west currents."

During the past few hundred years, strong winter winds have been constantly and unrelentingly

blowing this beach and dune sand landward up the faces of adjacent morainal bluffs composed of glacial till. The result has been the formation of a system of undulating dunes on top of the moraine. Think of it. Sand dunes deposited on top of 12,000 year old glacial moraines - a very unique geological process and formation.

A unique and possibly globally rare plant community has developed on this geologic formation: a pygmy forest largely composed of stunted, gnarled and contorted oak and basswood trees. The big surprise here is the occurrence of basswood (*Tilia americana*) which is normally a tree of rich moist woods, and is often associated with species such as sugar maple (*Acer saccharum*), white ash (*Fraxinus americana*), American beech (*Fagus grandifolia*), and American elm (*Ulmus americana*).

The maritime oak-basswood forest is dominated by dwarf individuals of post oak (*Quercus stellata*), black oak (*Q. velutina*), and basswood, with scattered individuals of shadbush (*Amelanchier canadensis*), black cherry (*Prunus serotina*), and hickory (*Carya tomentosa* and *C. glabra*). Some



American Basswood (*Tilia americana*). Illustration from Britton & Brown Illustrated Flora (1952). N.Y. Botanical Garden.

Highlights

Maritime Oak-Basswood Forest	27
The Pollen of American Chestnut	28
Development at Moores Woods?	30
Society News	31
Field Trips	31
Programs	32

sandy ridgetops are dominated by red maple (*Acer rubrum*) which on Long Island is often associated with wetlands but here grows as an upland species. Also noteworthy is scattered individuals of paper birch (*Betula papyrifera*), a more northern species that is rare on Long Island; gray birch (*B. populifolia*), which superficially resembles paper birch, is common throughout the island.

Trees occurring on the tops of dunes are extremely gnarled and contorted. Century old oaks grow horizontal before sending twisted limbs skyward, only to be pruned back by constant exposure to salt spray, sand blow-up, cold wind, and winter ice. Here, the understory is sparse and patches of sandy soil are exposed. A few herbs have precariously colonized the bare sands: common hairgrass (*Deschampsia flexuosa*), starry false Solomon's seal (*Maianthemum stellatum*), wild sarsaparilla (*Aralia nudicaulis*), and an upland form of seaside goldenrod (*Solidago sempervirens*). Low lying areas between and behind the dunes are relatively protected; here the understory consists primarily of shrubs and lianas, including bayberry (*Myrica pensylvanica*), pasture rose (*Rosa carolina*), black huckleberry (*Gaylussacia baccata*), poison ivy (*Toxicodendron radicans*), Virginia creeper (*Parthenocissus quinquefolia*), and briers (*Smilax glauca* and *S. rotundifolia*).

I am aware of only one other New York occurrence of a plant community that resembles this maritime oak-basswood forest. Gordon Tucker and Ed Horning have informed me that a "dwarf basswood forest" occurs on South Dumpling Island, just off the north coast of Fishers Island. The forest covers the crest of the island's moraine, and is exposed to severe maritime forces. South Dumpling Island is located about 25 miles northeast of Peconic Dunes, and both locations experience very similar limiting ecological factors. How and why did basswood colonize and become established at such unlikely habitats? The early events that led to the development of such a unique forest may always remain a mystery.

Eric Lamont, Riverhead

The Pollen of American Chestnut

The North American continent saw the last of Europe when the growing mid-Atlantic ridge churned up past Iceland eons ago and shoved the New World adrift. And it was then that the great American forest tree genus *Castanea* established an independent lineage in America.

The chestnut family had colonized much of the continent by casting about its pollen powder into the ancient Cenozoic breezes. Some of this pollen became immortalized in raging volcanic floods some forty million years ago in the area that is now Yellowstone. Twenty million years later chestnut pollen along with its dentate leaves became ornaments in fossil beds of northern Idaho. Then some ten thousand years or so ago North America's northwestern flank saw its last link with Asia melt away at the Bering Straight and the geographic isolation of modern *Castanea* was complete.

And so *Castanea* pollen blew in the winds that swept the great divide, in the winds that powered tornadoes in the west, and in the winds that wore down the peaks of the Appalachians.

Chestnut pollen left its skeletons behind during the interglacial period 41,000-47,000 BC on Long Island (and in the Adirondacks). After the last ice sheet retreated and the chill of its aftermath waned some 4,500-5,000 years ago, *Castanea* reappeared in the northeast of North America (and on Long Island). It appeared as *Castanea dentata* which is likely a mutated form of chinquapin (a southern species appearing in Pennsylvania and south). The present natural range of *Castanea dentata* comprises pretty much the outlay of the Appalachian mountain range and foothills, including our notable glacial morainal home: Long Island.

The tree served as a forest stanchion providing shade, wood, food, and strength to the evolving eastern deciduous forest and its inhabitants. The early native Americans' bare feet pressed its leaves and pollen into the ground while collecting its nuts. And arriving settler's axes shaped the trunks into cabins and cabinets and later on into universities and college town barrooms.

The American chestnut tree, being a favored tree for its lumber, seed, and prowess, was then planted

outside of its post-Wisconsinian range into the soils of the Adirondacks, Michigan, Wisconsin, and Oregon where its pollen dusts the air today.

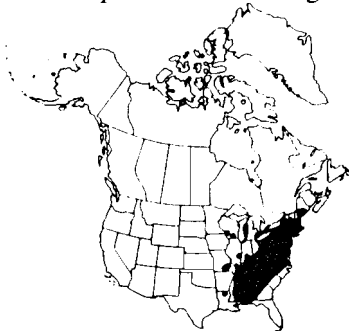
Just after the turn of this century the fungus *Chryphonectria parasitica* hitched a ride on some nursery stock from Asia (probably Japan) and made a feast of the American chestnut tree bark cambium. It ate its way through four billion trees up and down the Appalachians for five decades and left the species destroyed and disabled. In less than fifty years' time a tree that had a dominant position on this continent for over forty million years was annihilated. The creamy white catkins with their wind-borne pollen all but disappeared.

The chestnut trees of Long Island were no exception and they too were crippled to helpless root sprouts. And the few that remain today only occasionally manage to reach flower bearing heights of twenty or thirty feet before they too are drawn down by the consumptive blight fungus.

Since the pollen refuses to fertilize the flower of the tree from which it was shed, cross-pollination between trees must occur for fruit production which has thus become an even rarer event. And so the collected burrs that are often enthusiastically reported by scouting naturalists are merely full of undeveloped ovaries and barren of nuts.

The pollen can be carried by wind up to about a thousand feet under normal circumstances. And since the pollen of locally planted Japanese chestnut (*Castanea crenata*) and Chinese chestnut (*C. mollissima*) will gladly fertilize an attractive American chestnut ovary, some nuts within the burrs of American chestnut trees can be traced to hybridization by these transgressive species adding insult to injury.

During the spring, summer, fall, and winter of 1996 I followed up leads concerning the where-



Distribution of American Chestnut (*Castanea dentata*), Map from Flora of North America, Vol. 3 (1997), Oxford Univ. Press

abouts of flowering American chestnut trees from announcements in the LIBS newsletter and assorted local Long Island weeklies. Most of the well-meaning respondents sent in leaves of Chinese chestnut, Japanese chestnut, and horse chestnut (*Aesculus hippocastanum*). But there were accurate findings of true American chestnut that did manage to bear flowers. Unfortunately, none that I have seen to date had naturally occurring nuts within the ripe burrs. All flowering survivors found so far were on the Harbor Hill Moraine and ranged from Huntington to Wading River.

And so this summer during the month of July when the flowers of *Castanea* are in full display I set out with water containers, ropes, poles and snippers, and with the help of Jason Moore and my brother Dan, scaled backyard chestnut trees to reach and collect the prized male catkins at the ends of limbs. These pollen bearing catkins were then driven to other flowering American chestnut trees miles away. And again we worked our way up twenty to thirty foot tree trunks to pollinate the anxiously awaiting stigmas of female flowers. (Please note that trees adjacent to the chestnut trees were climbed instead, to avoid scarring the chestnut bark which might make it more vulnerable to blight infection.) Fortunately, North Shore Tree Service of Stony Brook helped out by providing and operating a bucket truck to assist in pollinating a lone dying thirty foot tree in Caleb Smith State Park. Thomas Allen Stock, who offered comment on the "coronation," said that he can't remember anything so boring and yet so exciting at the same time.

Hopefully I can now beat the squirrels come September and will have in my hand the first known true American chestnuts of Long Island in possibly fifty some odd years.

These nuts will then be planted in reserve orchards on Long Island (one of which will probably be in Caleb Smith State Park). There they can be grown and monitored for posterity as research advances. If enough are harvested some will go on to breeding programs in Meadowview, Virginia, and a genetic engineering project at SUNY Syracuse.

It is my hope that these efforts will help allay the terrible misfortune of a beautiful American landmark: the American chestnut tree.

John E. Potente, Long Island Director for the American Chestnut Foundation

Moores Woods Threatened With Development

"My feeling is, Moores Woods suffers from too little use. I think the fact that so few people use Moores Woods leads to misuse."

Mayor David Kapell
Greenport Village
June, 1997

Plans to develop the North Fork's 192 acre Moores Woods nature preserve into "a regional attraction" were recently presented to the Greenport Village Board by the Southold Town Transportation Committee. The ambitious plans include construction of a series of bike trails, elevated boardwalks with benches and information kiosks, a classroom building, bicycle racks, a skating rink, and parking lots.

Moores Woods has long been a mecca for nature enthusiasts. The ecosystem supports a significant diversity of flora and fauna. Five species of orchids have been reported from the site; one of them occurs along the edges of paths through the forest. The very rare cat-tail sedge (*Carex typhina*) and white-edge sedge (*Carex debilis* var. *debilis*) also occur along forest paths. During wet spring years the delicate primrose violet (*Viola primulifolia*) emerges from wet mucky depressions sometimes right in the middle of forest trails; only a dozen or so populations of this rare plant occur in all of New York. How might a regional bike course curving between forest trees impact these rare and endangered plants?

Unquestionably, the rarest plant at Moores Woods is the cranefly orchid (*Tipularia discolor*), with horizontal flower spurs that resemble the elongated abdomen of the true craneflies (in the insect genus *Tipula*); it takes only a little imagination to turn the delicate petals and sepals into the wings and legs of these common insects. The cranefly orchid currently occurs at only one location in New York - Moores Woods. For almost a century now, botanists have traveled from throughout the northeast to view this rare orchid at Moores Woods.

The only naturally occurring North Fork population of spring beauty (*Claytonia virginica*) also occurs at Moores Woods, and although this spring wildflower is common upstate, it is a rare find

almost anywhere on Long Island.

Although these last two wildflower species occur within the forest itself and not directly along trails, the development of Moores Woods into a regional bike center may attract off-road mountain bikers who may inadvertently destroy these rare plant populations.

Nature enthusiasts who leisurely stroll through Moores Woods can often observe salamanders during proper times of the year. Roy Latham, the famous naturalist from Orient, reported four different species of salamander from the vicinity of Moores Woods. What impact might speeding bicyclists have on these salamander populations?

The oak-tulip tree forest at Moores Woods is considered rare in New York, and is strikingly different from the typical oak-hickory forest of eastern Long Island. The area is largely underlain with fine sediments of clay which compact together to form underground lenses. These clay lenses inhibit the infiltration of water through the ground; water is often trapped near the surface resulting in rich, mesic to wet soil conditions and an elaborate system of freshwater wetlands. How might new bike trails, parking lots, and other proposed development impact these sensitive wetlands at Moores Woods? Could increased soil compaction and surface runoff have a negative impact upon the forest ecosystem?

I am personally aware of numerous environmental and educational groups that have utilized Moores Woods for nature studies during recent years, including Brooklyn Botanical Garden, Connecticut Botanical Society, Greenport High School, Long Island Botanical Society, Long Island Mycological Club, National Audubon Society, The Nature Conservancy, New England Wildflower Society, New York Natural Heritage Program, North Fork Environmental Council, Sierra Club, and Torrey Botanical Society. Certainly other groups have also utilized the site.

I propose that a feasibility study and full Environmental Impact Statement be completed before any development plans are implemented at this highly sensitive ecosystem. Only then will we be able to share with our children and grandchildren the natural heritage that has been bequeathed to us.

Eric Lamont, Riverhead

Society News

Search for Rare Orchid

The small whorled pogonia (*Isotria medeoloides*) is one of the rarest orchids in the eastern United States; it is a Federally threatened species that has not been observed in New York in many years. Historically, two populations occurred on Long Island: Fanny and Harriet Mulford reported it from Hempstead Lake in 1918, and William Ferguson reported it from the vicinity of Dix Hills in 1923. It hasn't been seen since. On June 18th, a team of LIBS botanists spent the day searching for the rare orchid in the vicinity of Dix Hills, West Hills, Half Hollow Hills, and Manetto Hills. The effort was organized by **Steve Young** (State Botanist for New York Natural Heritage Program, and LIBS member); participants included **Skip Blanchard**, **Julius Hastings**, **Eric Lamont**, **Tom Meoli**, and **Troy Weley** (botanist, NYNHP). All told, tens of thousands of individuals of the large whorled pogonia (*Isotria verticillata*) were observed, but no *medeoloides*. Afterwards the team concluded, "if no one looks, no one's gonna find it."

New Plant Checklist

After 11 years of preparation, *Revised Checklist of New York State Plants*, by **Richard Mitchell** and **Gordon Tucker**, is finally available from New York State Museum Publications. This 400 page, hard-cover book is a must for anyone interested in plants of Long Island. The treatment incorporates cutting-edge nomenclature and taxonomic decisions, and many pertinent synonyms. To order, send \$15.50 per copy, plus \$4.00 shipping and handling (all orders must be prepaid by check or money order) to: New York State Museum, Publications Department, 3140 C.E.C. Albany, NY 12230. For more information please call Dick Mitchell at 518/486-2027.

Update: Joe Beitel Memorial

For several years now, LIBS has been trying to obtain permission from Suffolk County Parks to place a memorial plaque in honor of **Joe Beitel** at Montauk County Park. Joe began his botanical career by conducting plant inventories throughout Suffolk Co. Parks; he went on to become an acknowledged authority on ferns and fern allies at the New York Botanical Garden, before passing away at the age of 39. Joe was also instrumental in establishing the Long Island Botanical Society.

LIBS member **Karen Blumer** has volunteered to revitalize the effort to establish the memorial plaque at Montauk County Park. Anyone interested in helping should contact Karen at 516/821-0975.

Field Trips

September 6 & 7, 1997 (Saturday & Sunday). **The Montauk Peninsula**. Joint trip with New York Flora Association. **Leader: Bob Zaremba**. We will be exploring the outermost limits of Long Island, an area famous for its unusual flora, including: Napeague Beaches, Walking Dunes, Oyster Pond, Montauk Point, the woodlands at Hither Hills, and grassland restoration burns at Prospect Hill. We may even see the very rare sandplains gerardia (*Agalinis acuta*), which should be in bloom at that time. Meet at Montauk, Saturday am; overnight lodging may be available at TNC's Mashomack Preserve on Shelter Island. Please register with and obtain details from Bob Zaremba at 518-273-9408 (note, this number is new).

September 13, 1997 (Saturday), 10 am. **Wertheim National Wildlife Refuge**: Shirley, Suffolk County. **Leaders: Robert Parris & Allan Lindberg**. This trip is a follow-up on Al's recent article on management of Phragmites (see LIBS Newsletter, Vol. 7(3), May/June 1997). Water level manipulation and burning has been used to eliminate Phragmites in a 20-30 acre freshwater impoundment. After lunch, we will explore some of the different plant communities at the Refuge. **Directions:** Take the LIE to exit 68 South (William Floyd Pkwy), continue south over Sunrise Hwy (Rte. 27) and turn right (west) on Montauk Hwy. Travel about 3/4 mi and turn left (south) onto Old Riverhead Road, cross railroad tracks and enter Refuge. Meet at Visitors Center which is about 1 mile into Refuge. Bring lunch. For more details contact Al Lindberg at 516/571-8500.

October 25, 1997 (Saturday). **Great Trees of Long Island**, northern Nassau County. **Leader: Vincent Simeone** (Assistant Director, Planting Fields Arboretum). Observe the island's largest trees (including State and National champions) during the height of autumn leaf color. We will meet in the vicinity of Oyster Bay, but specific details were not available before the newsletter went to press. For details, including meeting time and location, call Al Lindberg at 516/571-8500.

LONG ISLAND BOTANICAL SOCIETY
Founded: 1986; Incorporated: 1989.

The Long Island Botanical Society is dedicated to the promotion of field botany and a greater understanding of the plants that grow wild on Long Island, New York.

President	Eric Lamont
Vice President	Skip Blanchard
Treasurer	Carol Johnston
Rec'd Sec'y	Barbara Conolly
Cor'sp Sec'y	Jane Blanchard
Local Flora	Steven Clemants
Field Trip	Glenn Richard
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	Louise Harrison
Education	Mary Laura Lamont
	Thomas Allen Stock
Hospitality	Betty Lotowycz
Program	Skip Blanchard
	Steven Clemants
Editor	Eric Lamont

Membership

Membership is open to all, and we welcome new members. Annual dues are \$10. For membership, make your check payable to LONG ISLAND BOTANICAL SOCIETY and mail to: Lois Lindberg, Membership Chairperson, 45 Sandy Hill Road, Oyster Bay, NY 11771-3111

PROGRAMS

9 September 1997 - 7:30 pm*

Vincent Puglisi & Elizabeth Gulotta

(Nassau Community College)

"Field Biology in Costa Rica"

Slides of phytogeographic regions
with an emphasis on plants

Location: Bill Patterson Nature Center,
Muttontown Preserve, East Norwich

14 October 1997 - 7:30 pm*

Michael Flemming

(Brooklyn Botanic Garden)

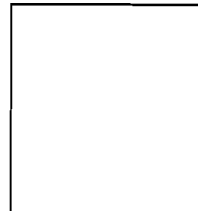
**"Vegetation of the Siletz River
Watershed, Oregon"**

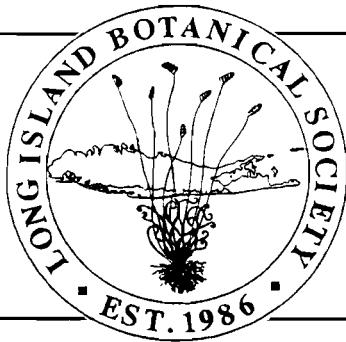
Slides with an emphasis on ethnobotany,
based upon Michael's MS degree

Location: Bill Patterson Nature Center,
Muttontown Preserve, East Norwich

*Refreshments & informal talk begin at 7:30pm, the meeting starts at 8pm. For directions to Muttontown Preserve call 516-571-8500.

LONG ISLAND BOTANICAL SOCIETY
c/o Muttontown Preserve
Muttontown Lane
East Norwich, New York 11732





LONG ISLAND BOTANICAL SOCIETY NEWSLETTER

Vol. 7, No. 6

Nov. - Dec. 1997

Preliminary Atlas of the Ranunculaceae of Long Island, New York

The Flora Committee has been working for the past year on this fourth contribution to an atlas of Long Island plants. This installment treats the Ranunculaceae or buttercup family. As with the preceding treatments we have followed the names as presented in the Flora of North America. The latest (third) volume of FNA covers the Ranunculaceae, and includes the following name changes that may not be familiar:

Anemone americana (DC.) H. Hara for *Hepatica americana* (DC.) Ker.; common name: round-lobed hepatica. Recent research indicates that *Anemone*, *Hepatica*, and *Pulsatilla* all belong to the same genus.

Ranunculus aquatilis L. var. *diffusus* Withering for *Ranunculus trichophyllus* Chaix ex Vill.

Thalictrum thalictroides (L.) Eames & Boivin for *Anemonella thalictroides* (L.) Spach. Recent research adds support for including *Anemonella* in *Thalictrum*.

Two species are reported from Long Island which are almost certainly cultivated: *Clematis viticella* L. was collected twice in 1877 in Queens (at Prince's Garden and at College Point); *Trollius laxus* Salisb. was collected once in the mid-1800's from Brooklyn.

As always, if you have additions or corrections please send them to the Flora Committee for inclusion in the final publication of the atlas.

Highlights

Atlas of the Ranunculaceae of L.I.	33
Distribution Maps	34
Seabeach Amaranth Report	38
Curly-Grass Fern on Eastern L.I.	38
Society News	39
Programs	40

Key to Map Symbols

Closed circle [●] = there is a specimen for this area collected after 1980.

Open circle [○] = there is a specimen for this area collected before 1980.

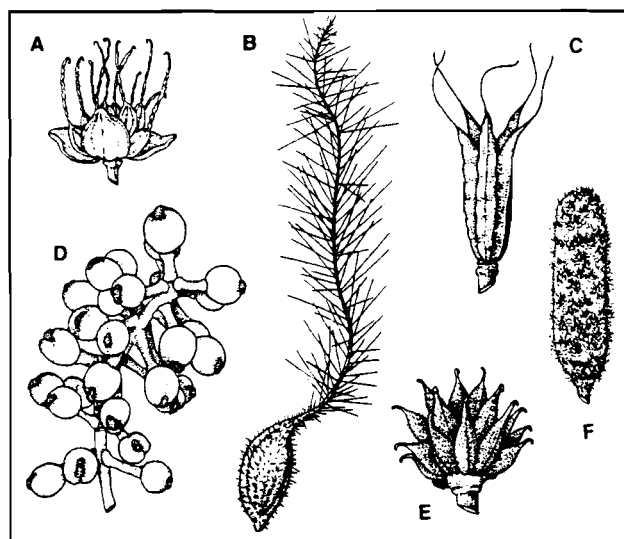
Closed square [■] = there is a specimen from this area collected before 1980 and a report (based upon a visual sighting or published literature report) from this area after 1980.

Closed triangle [▲] = there is a report (based upon a visual sighting or published literature report) from this area after 1980.

Open triangle [△] = there is a report (based upon a visual sighting or published literature report) from this area before 1980.

Botany Quiz

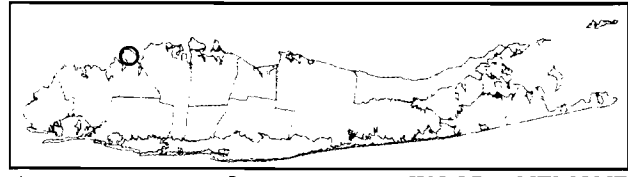
Identify the fruits & seeds shown below; all are from LI species included in the Atlas of the Ranunculaceae (Illustrations from Mitchell & Dean (1982); Answers are on p. 39)



Maps



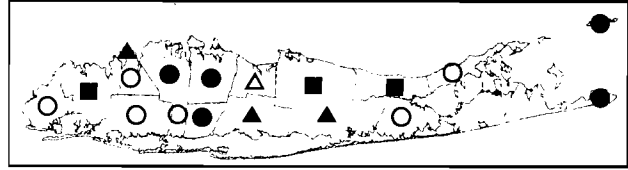
Actaea pachypoda Ell. - WHITE BANEBERRY
Native



Anemone nemorosa L. - WOOD ANEMONE
Alien



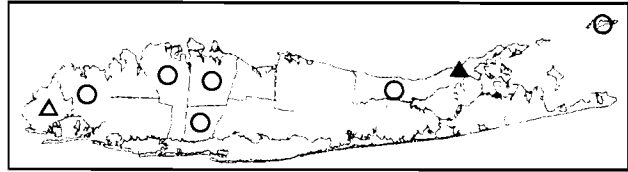
Actaea rubra (Ait.) Willd. - BANEBERRY
Native



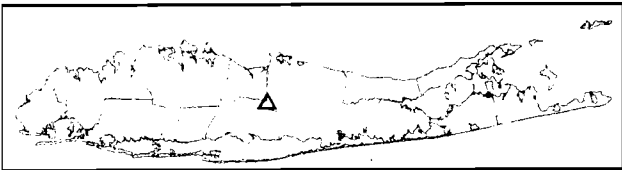
Anemone quinquefolia L. - WOOD ANEMONE
Native



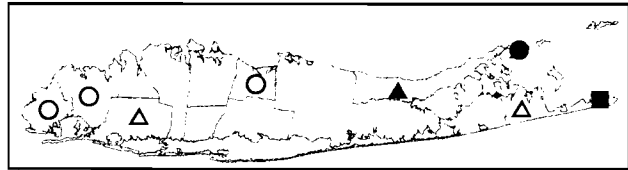
Anemone americana (DC.) H. Hara - BLUNT-LOBED HEPATICA
Native



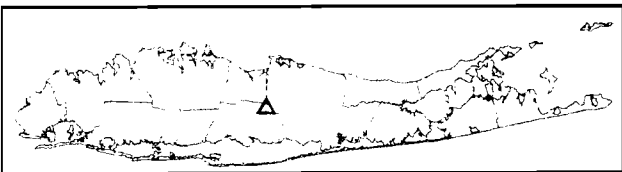
Anemone virginiana L. - THIMBLEWEED
Native



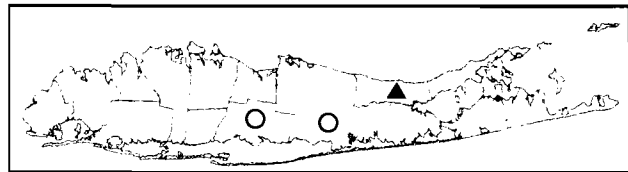
Anemone canadensis L. - CANADA ANEMONE
Native



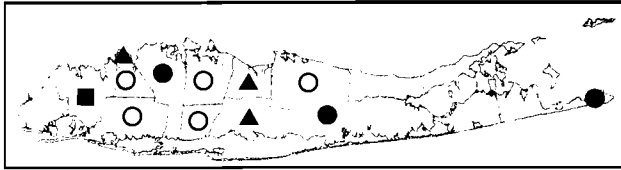
Aquilegia canadensis L. - WILD COLUMBINE
Native



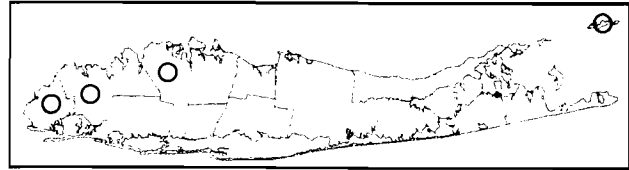
Anemone cylindrica A. Gray - THIMBLEWEED
Native



Aquilegia vulgaris L. - BLUE COLUMBINE
Alien



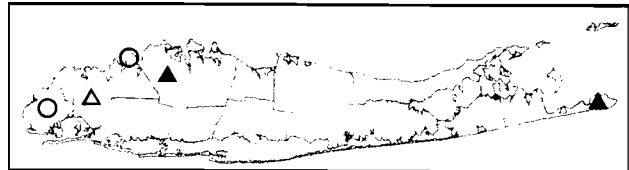
Caltha palustris L. - MARSH MARIGOLD
Native



Consolida ajacis (L.) Schur - ROCKET LARKSPUR
Alien



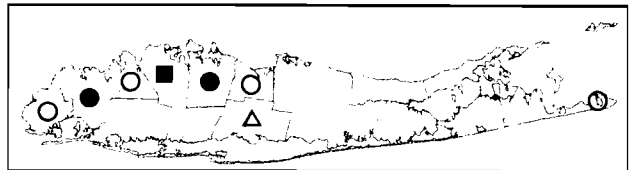
Cimicifuga racemosa (L.) Nutt. - BLACK SNAKEROOT
Native



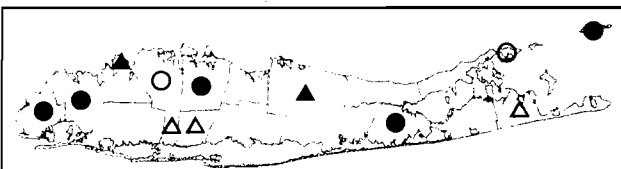
Helleborus viridis L. - GREEN HELLEBORE
Alien



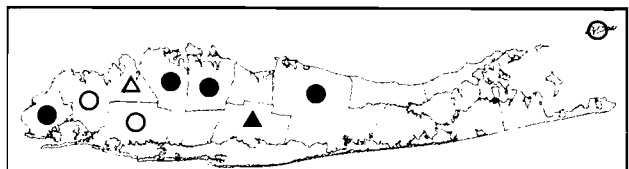
Clematis ochroleuca Ait. - CURLY-HEADS
Native



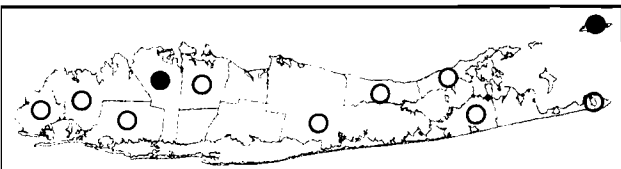
Ranunculus abortivus L. - KIDNEY-LEAF CROWFOOT
Native



Clematis terniflora DC. - YAM-LEAF CLEMATIS
Alien



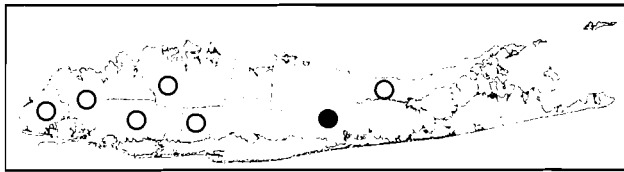
Ranunculus acris L. - COMMON BUTTERCUP
Alien



Clematis virginiana L. - VIRGIN'S-BOWER
Native



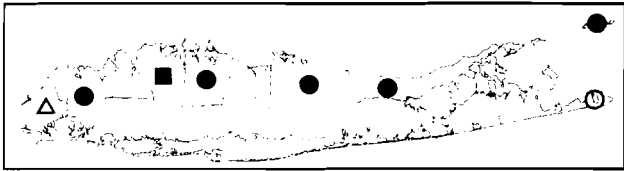
Ranunculus ambigens S. Wats. - AMERICAN SPEARWORT
Native



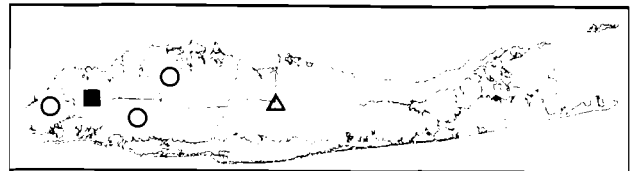
Ranunculus aquatilis L. var. *diffusus* Withering
Native WHITE WATER-CROWFOOT



Ranunculus flabellaris Raf. ex Bigel.
Native YELLOW WATER-CROWFOOT



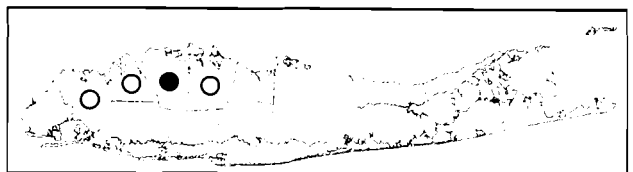
Ranunculus bulbosus L. - BULBOUS CROWFOOT
Alien



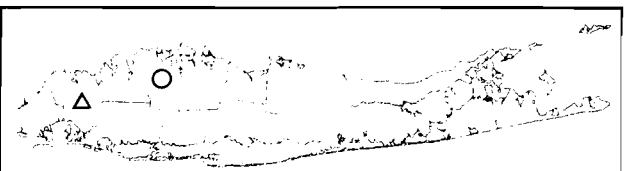
Ranunculus hispidus var. *caricetorum* (Green) Duncan
Native SWAMP BUTTERCUP



Ranunculus cymbalaria Pursh - SEASIDE CROWFOOT
Alien



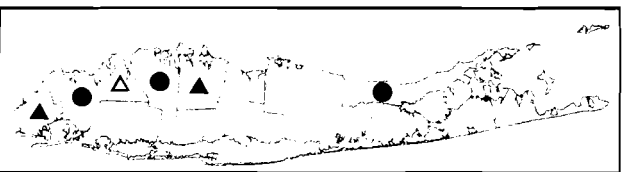
Ranunculus hispidus Michx. var. *hispidus* -
Native HAIRY BUTTERCUP



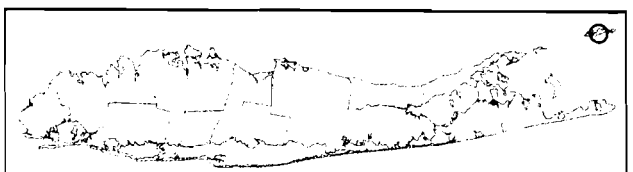
Ranunculus fascicularis Muhl. ex Bigel. -
Native EARLY BUTTERCUP



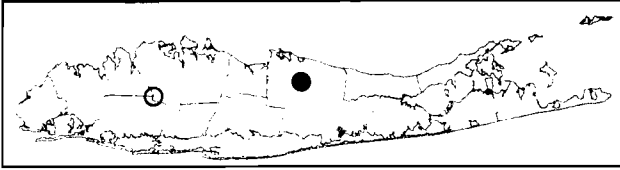
Ranunculus hispidus var. *nitidus* (Muhl. ex Ell.) Duncan
Native SWAMP BUTTERCUP



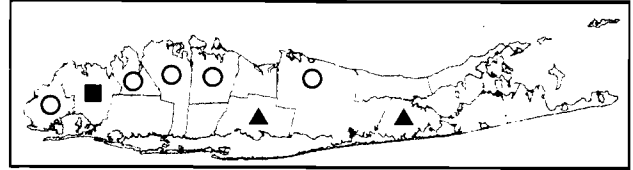
Ranunculus ficaria var. *bulbifera* Marsden-Jones -
Alien LESSER CELANDINE



Ranunculus micranthus Nutt. in Torrey & A. Gray
Native SMALL-FLOWERED CROWFOOT



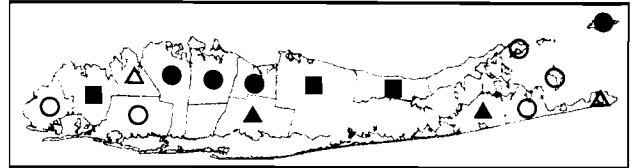
Ranunculus pensylvanicus L. f. -
Native BRISTLY BUTTERCUP



Thalictrum dioicum L. -
Native EARLY MEADOW-RUE



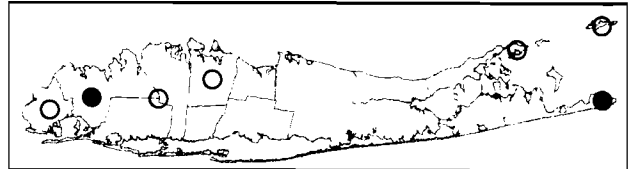
Ranunculus pusillus Poir. in Lam -
Native LOW SPEARWORT



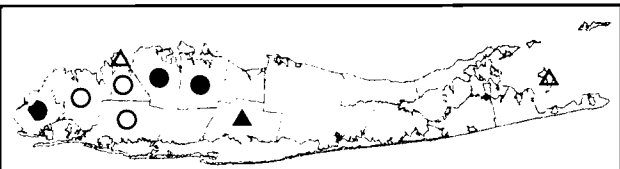
Thalictrum pubescens Pursh -
Native TALL MEADOW-RUE



Ranunculus recurvatus Poir. in Lam. -
Native HOOKED BUTTERCUP



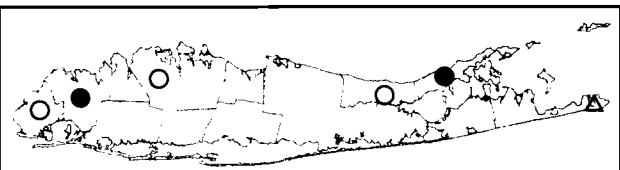
Thalictrum revolutum DC. -
Native WAXY MEADOW-RUE



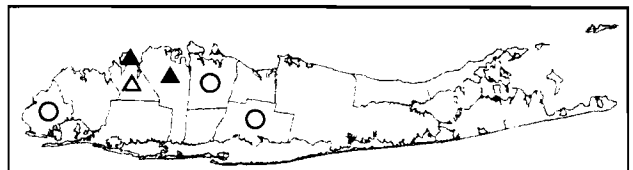
Ranunculus repens L. -
Alien CREEPING BUTTERCUP



Thalictrum thalictroides (L.) Eames & Boivin -
Native RUE ANEMONE



Ranunculus scleratus L. -
Alien CURSED CROWFOOT



Xanthorhiza simplicissima Marsh -
Native YELLOWROOT

Seabeach Amaranth Doing Well in 1997

A total of just under 8000 plants of the federally threatened seabeach amaranth (*Amaranthus pumilus*) were counted on Long Island beaches this year. Annual counts have taken place on Long Island since 1990 when the plant was rediscovered, and this year's count is the highest ever. Most plants are concentrated at two sites in western Nassau and eastern Queens counties but plants are found east to Westhampton Island.

Because North and South Carolina plants have suffered from numerous recent hurricanes **Long Island may have the most flowering plants in the world at this time.** The recent success of Long Island plants seems to be primarily due to the protection provided by the fencing of beaches for rare piping plovers and terns. Unfortunately there is constant pressure from beach users to reduce or eliminate these areas. The replenishment and movement of barrier island sands by the U.S. Corps of Engineers is another big unknown factor in the success of this plant. It probably provides new habitat in some areas and destroys habitat in others. We hope future research will provide new insights on the biology of this rare and interesting beach plant.

Steve Young, NY Natural Heritage Program

Sexual Reproduction in American Chestnut on L.I.

The hand pollination of a group of flowering American chestnut trees in July (see LIBS newsletter, vol. 7: 28-29) bore seed this October. Some of these seeds (of Long Island stock) will be planted at Caleb Smith State Park and others will go on to American Chestnut Foundation research. Special thanks to Margaret Conover, Gary Chattam, and Ann Carter for properly identifying and locating these important trees.

John Potente, Hauppauge

Recovery of Curly-Grass Fern on Eastern Long Island

Curly-grass fern (*Schizaea pusilla*) was first collected on Long Island by Roy Latham in the 1920's. But Latham's discovery went unnoticed by the botanical world for more than 30 years. In *Gray's Manual of Botany* (Fernald, 1950) curly-grass fern is listed as occurring in Newfoundland, Nova Scotia, and the pine barrens of New Jersey. Likewise, in *The New Britton and Brown Illustrated Flora*, Gleason (1952) reported curly-grass fern as "rare and local," in Newfoundland, Nova Scotia, Ontario, and New Jersey (the report from Bruce County, Ontario, has been subsequently discounted by most fern experts).

Harold and Andrew Moldenke's discovery of a second population of curly-grass fern at Napeague, Long Island, was the first published report from New York State (Moldenke, 1960; *Rhodora* 62: 294). Throughout the late 1960's and 1970's the two populations were monitored by local botanists including Joe Beitel, Henry Bookout, Ann Johnson, and Chris McKeever. Others knowledgeable of the site included Stanley Smith from the State Museum at Albany and Jim Montgomery from New Jersey.

Sometime around 1980 one of the two populations died out and has never recovered. Changes in local water drainage patterns may account for the loss of this population which was located in an open peaty depression adjacent to railroad tracks at Napeague.

Throughout the 1980's and early 1990's the remaining population of curly-grass fern thrived in a long, open moist swale in Napeague which Chris McKeever described as "undoubtedly the bed of the old wagon road to Montauk." During these years the population size varied between 40 to more than 100 individuals (Lamont, personal observation).

In 1995 Long Island suffered a severe drought. The long, moist swale at Napeague dried up. Plant leaves curled and turned brown. Cranberries shrivelled and withered away. The open swale baked in the intense summer heat; the effects of the drought on the fern population were devastating. During several visits to the site, I was able to locate only 6 plants; none had produced fertile fronds.

Normal amounts of precipitation fell on Long Island during late 1995 and the first six months of 1996. But intense searches by several botanists revealed only two individuals of *Schizaea* at the "long swale" locality in Napeague. It was feared that New York might lose its last known population of curly-grass fern.

Monthly surveys from June to October 1997, revealed a substantial recovery of *Schizaea* at Napeague. Twenty-

four individuals were observed at the long swale locality and a new sub-population, consisting of three individuals, was discovered 350 to 400 feet east of the main population. Approximately half the individuals had produced fertile fronds.

Yearly surveys of the historical "railroad track" population have revealed no signs of recovery; the last documented occurrence of curly-grass fern from that locality was in September 1978 (Ann Johnson, personal communication). The site is consistently drier than it used to be and the area is slowly succeeding into a shrubland.

Curly-grass fern is notoriously difficult to find, searches are often conducted on hands and knees even in areas where it is known to occur. It is possible that additional populations of *Schizaea* may occur scattered throughout the numerous isolated moist swales and depressions at Napeague.

Acknowledgments: Appreciation is expressed to Jim Ash, Henry Bookout, and Ann Johnson for assistance in field surveys and for sharing historical information. I am indebted to the late Joe Beitel who first shared with me the locality of *Schizaea* at Napeague.

Eric Lamont, Riverhead

Society News

LIBS Elections 1997

The Nominating Committee has submitted the following slate of candidates to serve as officers during 1998 and 1999:

President.....Eric Lamont
Vice President.....Skip Blanchard
Treasurer.....Carol Johnston
Recording Secretary.....Barbara Conolly
Corresponding Sec'y.....John Potente

Elections will take place during the monthly meeting of 11 November 1997. As stated in the by-laws, chairpersons of each committee are not voted into office, but appointments are confirmed by the Executive Board.

Vincent Puglisi, Chairperson
Nominating Committee

Executive Board Meeting

A meeting of the Executive Board will be held on 11 Nov. 1997 at 6:15 pm (before the monthly meeting and program) at the Bill Paterson Nature Center, Muttontown Preserve. All members are welcome.

Lost Newsletters?

For some unexplained reason several members did not receive the last issue of the newsletter (Sept/Oct 1997; vol. 7, no. 5). If you did not receive your copy, please contact Eric Lamont at 516/722-5542.

Field Trip Report

Aquatic Plants of Eastern Long Island

On 23 August 1997, **Dr. Alfred Schuyler** from the Academy of Natural Sciences of Philadelphia presented a workshop on identification of aquatic plants. Sixteen LIBS members participated. The afternoon field trip consisted of visits to Sweezy Pond (south of Riverhead), Peconic River, Sandy Pond (Calverton), and Carmans River. The following aquatic plants were observed (nomenclature follows Mitchell & Tucker, 1997): water-shield (*Brasenia schreberi*), fanwort (*Cabomba caroliniana*), four species of spikerush (*Eleocharis acicularis*, *E. microcarpa*, *E. flavescens*, *E. robbinsii*), pipewort (*Eriocaulon aquaticum*), Tuckerman's quillwort (*Isoetes tuckermanii*), duckweed (*Lemna minor*), yellow pondlily (*Nuphar variegata*), white waterlily (*Nymphaea odorata*), floating-heart (*Nymphoides cordata*), arrowleaf (*Peltandra virginica*), pickerel-weed (*Pontederia cordata*), three species of pondweed (*Potamogeton epihydrus*, *P. perfoliatus*, *P. spirillus*), white water-crowfoot (*Ranunculus trichophyllus*), quill-leaf arrow-head (*Sagittaria teres*), chairmaker's rush (*Scirpus pungens*), clubrush (*Scirpus subterminalis*), bur-reed (*Sparganium eurycarpum*), giant duckweed (*Spirodela polyrhiza*), three species of bladderwort (*Utricularia cornuta*, *U. fibrosa*, *U. purpurea*), tapegrass (*Vallisneria americana*), watermeal (*Wolffia braziliensis*), and large yellow-eyed grass (*Xyris smalliana*).

Eric Lamont, Riverhead

Answers to Botany Quiz (from page 33)

A. Early Meadow-rue (*Thalictrum dioicum*); B. Virgin's-bower (*Clematis virginiana*); C. Wild Columbine (*Aquilegia canadensis*); D. White Baneberry (*Actaea pachypoda*); E. Wood Anemone (*Anemone quinquefolia*); F. Thimbleweed (*Anemone cylindrica*).

LONG ISLAND BOTANICAL SOCIETY

Founded: 1986; Incorporated: 1989.

The Long Island Botanical Society is dedicated to the promotion of field botany and a greater understanding of the plants that grow wild on Long Island, New York.

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Membership

Membership is open to all, and we welcome new members. Annual dues are \$10. For membership, make your check payable to LONG ISLAND BOTANICAL SOCIETY and mail to: Lois Lindberg, Membership Chairperson, 45 Sandy Hill Road, Oyster Bay, NY 11771-3111

PROGRAMS

11 November 1997 - 7:30 pm*

Dr. Steven Clemants

(Brooklyn Botanic Garden)

"Plants of the Ukraine"

A slide show of plants of the Carpathian Mts., and other regions of the Ukraine

Location: Bill Patterson Nature Center, Muttontown Preserve, East Norwich

9 December 1997 - 7:30 pm*

Dr. Margery Oldfield

(Director, Seatuck Research Program)

"Values & Uses of Plant Diversity"

Why is biodiversity such an important issue these days? Find out as Dr. Oldfield explains, using local, national and global examples.

Location: Museum of L.I. Natural Sciences, Room 137, SUNY at Stony Brook.

*Refreshments & informal talk begin at 7:30pm, the meeting starts at 8pm. For directions to: 1) Muttontown Preserve call 516/571-8500; 2) MOLINS, call 516/632-823 0.

LONG ISLAND BOTANICAL SOCIETY

c/o Muttontown Preserve

Muttontown Lane

East Norwich, New York 11732

