Long Island Botanical Society

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Identities of Three Plant Fossils From the Upper Cretaceous of Lloyd Neck, Long Island

by Andrew M. Greller, Ph.D. Prof. Emer., Biology Department, Queens College, CUNY, Flushing, NY 11367; Andrew.Greller@qc.cuny.edu

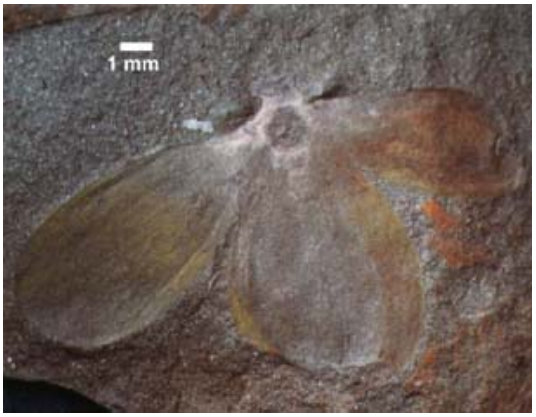
While browsing the web for references on a related topic, I came across the following website: http://people.hofstra.edu/faculty/J_B_Bennington/research/cretaceous/kplantfossils hosted by J. Bret Bennington of Hofstra University.

On this site three taxa of plant fossils from Lloyd Neck are pictured. The images are of fossilized plant parts. The fossils are of the compression/impression type. The matrix material of the specimens appears to be rusty-red iron sandstone. Such slabs are frequently found to contain plant remains, and a few contain marine invertebrates. Collections are credited to Greg Durso. Bennington and Durso published the findings from Lloyd Harbor in a journal article (Bennington and Durso, 1999).

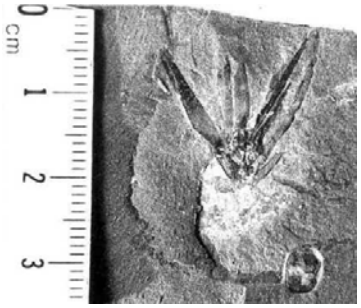
At least since 1906 (Hollick, 1906), Lloyd Neck has been known as a premier locality for plant fossils of the Upper Cretaceous (now dated as Magothy Fm, Coniacean-Santonian, ca. 86 mya). Having collected specimens from the Lloyd Neck Magothy Formation for many years, and having studied Hollick's pictures, I felt I was in a good position to attempt identifications of Durso and Bennington's beautiful and well-presented specimens.

Note: The following sections present the Durso/Bennington fossils (on the left) and my identifications, comments, and additional photos or pictures to aid in identification (on the right).

1. Winged dispersed scale, identified as *Tricalycites major* Hollick, a part of the female cone of an extinct species of the conifer family Cheirolepidaceae, possibly in the genus *Frenelopsis*.



Tricalycites major Hollick (Durso/Bennington)



"Dispersed (mature) ovuliferous scale '*Conanthus hystrixipinus*' with paired stigmatic lobes (modified sterile scale lobes - round with hollow centers that communicated with ovary and contained a resin-like material, also found in ovary) and single seed, which has fallen out of pouch (ovary) and lies below the ovuliferous scale."(Cornet, B. http://www.unifiedworlds.com/cornet/Why02/why.htm; accessed 05 May 2007) *(continued on page 19)*

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.

Visit the Society's Web site
www.libotanical.org

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Society News

Long-time LIBS member **Al Lindberg** will be retiring on July 3rd, 2008, after a long and productive career with Nassau County Department of Parks, Recreation & Museums. For the past several years, Al has been the Wildlife Biologist & Supervisor at Muttontown Preserve and North Shore Greenspace Preserves. It has been largely through Al's efforts that LIBS has been able to hold its monthly meetings at the Bill Paterson Nature Center at Muttontown Preserve. Tracy Kay, Deputy Commissioner of the Museums of Nassau County, announced at the LIBS barbeque that the County would like Al to stay on as caretaker of Muttontown Preserve and the County would also like to continue its long association and partnership with LIBS. A celebration of Al's career is being planned for September or October, 2008.

Flora of Queens County, New York. Andy Greller is working on a Flora of Queens in collaboration with botanists from the Brooklyn Botanic Garden and LIBS members Barbara Conolly and Rich Kelly. The BBG herbarium holds approximately 6000 voucher collections from that borough and a BBG data base includes another 2000 entries from other local herbaria. Andy, Barbara, and Rich have been conducting extensive field investigations to 1) document plant species new to the herbarium list, and 2) collect specimens of those species that have not been collected since 1980. The group meets once a week (when Andy is in town), on Thursdays at 10 AM, at the Alley Park field house parking lot off Winchester Blvd, just north of Union Tpke (take Union Tpke exits from either CIP or GCP). Frequent participants are Cesar Castillo (grad student at QC) and a variable representative of NYC Parks. If interested in joining the group in the field, please email Andy (agreller2@optonline.net) before the Thursday of potential attendance.

The Mosses of Long Island. LIBS member Eric Morgan has been surveying the mosses of Long Island for many years and has compiled extensive data on each species based on field surveys, herbarium searches, and an extensive review of the published literature. LIBS is pleased to announce that we are planning to publish the results of Eric's investigations in an upcoming issue of the *Newsletter*.

Edgewood-Oak Brush Plains State Preserve. LIBS has been assisting Friends of the Edgewood Preserve in an effort to pass NYS legislation that would provide permanent protection to the Edgewood-Oak Brush Plains State Preserve, according to Chapter 635 of the Laws of 1987 that created the preserve. The current legislation (A09870 / S6728) is concerned with "the transfer of certain lands to the Oak Brush Plain State Preserve". This preserve is the largest parcel of open space west of Brookhaven and the second largest remnant of pitch-pine scrub oak habitat in New York State. Andy Greller will be leading a joint field trip with Friends of Edgewood Preserve to the site in September (see LIBS field trip schedule for details).

(continued from pg. 17)

The identity of this fossil and its counterpart is clearly *Tricalycites major* Hollick (cf. Hollick 1906, Plate V, Figs. 13-22.). This enigmatic taxon may represent a dispersed ovuliferous scale of an extinct conifer in the family Cheirolepidaceae. *Frenelopsis* is a common Upper Cretaceous conifer fossil branch system covered with tiny leaves. Although *Frenelopsis* is rare in the Magothy Fm, Hollick states it is well known from the New Jersey Raritan Fm (Cenomanian, US Geol. Surv. 2003; 93.3-98.5 mya, Everhard 2004). *Tricalycites* could well be its dispersed ovuliferous scale.

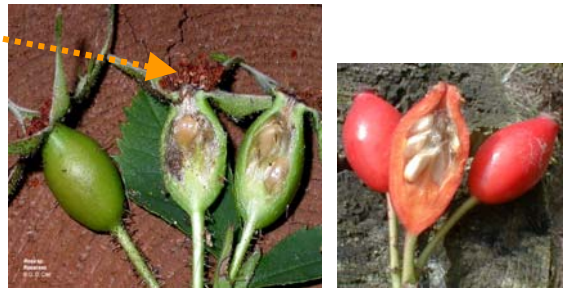
In the right column on page 17, I reproduce Bruce Cornet's photo of a structure he refers to as a "dispersed ovuliferous scale." In the lower right of the photo is a seed that Cornet indicates was likely borne at the confluence of the radiating appendages, in the concave receptacle.

Cornet further notes that "the discovery of an Early Jurassic (Sinemurian) cheirolepid conifer in central Pangaea (*Conanthus hystrixipinus*) that produced small simple flowers (*sic*) with perianth, ovuliferous scales with unusually elongate sterile lobes (modified for wind dispersal), a pair of hollow stigma-style-like organs (modified sterile lobes), and delayed ovule/ovary development until after fertilization, led to the recognition that some beetle-pollinated Cretaceous flowers reported in the literature may not belong to angiosperms. Beetle elytra are common in the same sedimentary layers containing *Conanthus*, supporting the idea that this *Magnolia*-like gymnosperm was insect pollinated, something that the tectate-columellate pollen (*Classopollis*) of the Cheirolepidaceae has suggested to palynologists for decades."

2. Fossil fruit: identified as an extinct species of the modern genus *Rosa*

Rosa sp. (Durso/Bennington)

This fossil (top left) appears to be a medial longitudinal section of a young rose (*Rosa* sp.) fruit. The wall (hypanthium) is thick, and the remains of the flower parts appear to be present at the top. It is the presence of these floral remnants that distinguish a rose hip from a fig (*Ficus*) synconium. Seeds are not clearly visible in the dark central cavity, suggesting an immature fruit specimen. In the cavity there is a hint of interovulary hairs that project apically from the base. Mature fruits of *Rosa canina* are presented at the right for comparison. Hollick (1906) recognized only one Magothy Fm leaf as belonging to the Rosaceae; he named it "*Amelanchier*."



Rosa canina fruit (hip): immature (left), mature (right).(both images from University of New Hampshire; ros_hip UNH_5919)

Rosa canina l.s. flower
(from Prof. Dr. Otto Wilhelm Thomé, 1903)

3. Fern fossil: identified as sterile pinnules of an extinct species of the tree fern, *Cyathea*.

Cyathea sp. (Durso/Bennington)

Cyathea multiflora (from Robbin Moran; at www.gynosperms.org [ref DOL6805])

Fossil Cyatheaceae are known from the New York area from 86 mya through to the Miocene of New Jersey (Rachele, 1976). Sporangia are scarcely visible on the Durso/Bennington specimen. I present a comparison with a living *Cyathea* (above right). The similarity strongly suggests the fossil belongs in the genus *Cyathea*. Hollick (1906) lists for our area four species of the Cyatheaceae genus *Thyrsopteris*. In the Durso/Bennington specimen the pinnules differ from one portion to another; the leaflets (pinnules) are either directly attached to the midrib (rachis) or they are attached by a shallow wing (pinnatifid) and resemble those of the modern species *Cyathea multiflora*..

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Rachele, L. 1976. Palynology of the Legler lignite, a deposit in the Tertiary Cohansey Formation of New Jersey, U.S.A. Rev. Palaeobot. Palynol. 22: 225-252.

U.S. Geological Survey. 2003. Geology of the New York City Region, Section on Late Cretaceous Stratigraphic Units of the Coastal Plain (Accessed on 3 June 2007) http://3dparks.wr.usgs.gov/nyc/coastalplain/cretaceous.htm

Plant Sightings

Andy Greller with the assistance of **Barbara Conolly** and **Rich Kelly** have been recording plant occurrences in the eastern Queens parks and collecting specimens of the more unusual ones. The rarest and most unusual are photographed only. These field investigations and collections will serve as a basis for a "Flora of Queens County, New York". Here are some of the findings made in early Spring 2008:

Acer ginnala (amur maple) – a rare escape spontaneously occurring in Alley Ravine, south of the LIE and west of West Alley Road/Winchester Blvd. The ravine has been mostly filled with pebbles and cobbles; boulders fill the ravine as you go south toward the terminal moraine. During the past 20 years, *A. ginnala* has become more common on western Long Island.

Acer palmatum (Japanese maple) – a rare escape spontaneously occurring in the Alley Park forest understory; saplings are becoming more common throughout Long Island woodlands.

Agastache nepetoides (yellow giant-hyssop) – relocated along the Tuliptree Trail in Alley Park (overlooking "The Alley"), having survived repaving of the path; listed as rare in New York by N.Y. Natural Heritage Program.

Cardamine concatenata, aka ***Dentaria laciniata*** (cut-leaf toothwort) – common in the upland woods around Oakland Lake; rare on Long Island, extant

populations known only from Queens Co. and the vicinity of Montauk Point.

Cardamine diphylla, aka ***Dentaria diphylla*** (two-leaf toothwort) – rare in Forest Park; rare on Long Island, extant populations known only from Queens Co. and northern Nassau Co.

Chimaphila maculata (spotted wintergreen) – one plant seen in Alley Park; rare in Queens Co.

Claytonia virginica (spring beauty) – a large population on a lawn at the western edge of Alley Park; a smaller population in Cunningham Park. Rare on Long Island, extant native populations known only from Queens Co. and northern Nassau Co.

Galanthus nivalis (snowdrops) – two small populations spontaneously occurring in the forest of Cunningham Park. A rare escape from cultivation, not listed in Gleason & Cronquist (1991).

Juglans cinerea (butternut) – a few trees in a flat woods north of the moraine in Cunningham Park. This area is a narrow corridor of secondary forest between Hollis Hills Terrace and the Clearview Expressway, halfway between 73rd Ave. and Union Tpke. Butternut was also previously collected from wet woods behind Alley Pond Environmental Center, on old fill that was dumped on Alley Creek marshland.

Lilium canadense (Canada lily) – one large colony and two smaller ones in the open forest at Cunningham Park. This showy wildflower has become relatively rare on Long Island.

Magnolia grandiflora (bull bay or southern magnolia) – one sapling about 2 m tall spontaneously occurring in a mature forest with a somewhat disturbed understory in the northern part of Alley Park; questionably persistent. This southern species has not been previously reported from north of Maryland.

Pachysandra procumbens (Allegany pachysandra) – two patches in the uplands of Oakland Lake. Not native to Long Island; also recently reported from North Hempstead Township in Nassau County.

Phlox stolonifera (creeping phlox) – three thriving populations on a forested slope above Oakland Lake. Initially, the populations appeared native but were later found to have been planted by NYC Parks and Recreation. The draft NYFA Atlas (1990) and Weldy & Werier (2004) list this showy southern wildflower as a "rare escape" in upstate Rensselaer and Fulton counties. The thriving colonies in Queens Co. may be in response to winter warming on Long Island.

Podophyllum peltatum (may-apple) – Cunningham Park: one colony of about 25 plants, another of 3-4 plants. During the past 20 years, well-established populations of may-apple have been reported from rich forests north of the terminal moraine on western Long Island, but upon investigation all of these populations were found to have been introduced. Jelliffe (1899) did not include may-apple in his *Flora of Long Island*, Taylor (1919) listed it as "unknown on L. I.", and House (1924) listed it as "not reported from Long Island".

Prunus* cf. *padus (bird cherry; not to be confused with *Prunus avium*, aka bird cherry) – a rare escape spontaneously occurring (in flower) in the understory of a mature forest in Cunningham Park. Apparently, this report is a new record for Long Island.

Pseudosasa japonica (Japanese arrow bamboo; métaké) – one clump in the middle of a wooded area with a clear understory in Alley Park forest (an area with a number of beech trees as well as the usual oaks, hickories, birch, and red maple). Escaped from cultivation; not fertile.

Pyrola americana aka ***Pyrola rotundifolia*** var. ***americana*** (round-leaf wintergreen) – one plant seen in Alley Park, near edge of a pond; rare in Queens Co.

Pyrus calleryana (bradford pear, callery pear) – invading the drying edge of a kettle pond/discharge basin in Alley Park. Apparently, the first published report of *P. calleryana* spontaneously occurring in New York was by Lamont & Young (2006); this species has the potential to become a serious invasive pest.

Thalictrum thalictroides aka ***Anemonella thalictroides*** (rue anemone) – one small colony of 3 plants in the uplands of Oakland Lake; a rare, native spring wildflower of rich woodlands on western Long Island.

Trillium cernuum (nodding trillium) – approximately 100 individuals concentrated in four colonies on a forested moist slope in Alley Park; an uncommon, showy wildflower on Long Island.

Zelkova serrata (Japanese zelkova; Elm Family, Ulmaceae) – one individual sapling along a footpath in a mature forest near the crest of the terminal moraine in Cunningham Park (where the Clearview Expressway and Grand Central Parkway meet). An escape from cultivation; questionably persistent.

Some Mushrooms of Blydenburgh Park

by Daniel Karpen, Huntington, NY

On July 26, 2006, Daniel Karpen and Sandra Vandiermen photographed 35 mushrooms along the Stump Pond Loop Trail in Blydenburgh County Park, Smithtown, NY. The mushrooms were photographed using Kodak professional color film, with a Tamrom SP 1:2.5 90 mm tele macro lens mounted on a Pentax K1000 single lens reflex camera. Twenty-two photographs were selected to be enlarged and framed for a permanent display at the Blydenburgh House. These mushrooms were identified from photographs with the help of botanist Bruce Kershner of Williamsville, NY, recently deceased.

Presented below is an annotated list of the identified fungi, accompanied by a few photographs from the exhibit.

Old man of the woods, *Strobilomyces floccopus* (pictured below). This is an immature specimen. This mushroom is edible and good tasting. The underside of the cap is covered with tubes. When cut or injured, the tubes turn color, to an orange red. It is growing on a lush bed of white cushion moss (*Leucobryum*).

Peppery bolete, *Boletus piperatus*. This mushroom is inedible and has a peppery taste, but it is not very toxic; the worst effect is an upset stomach. The stem is 3/4 to 3 inches high and the cap is 1 to 3 inches in diameter. It is one of the smallest of all of the large groups of the bolete genus.

Impolite bolete, *Boletus impolitus*. This mushroom is rare and is only found in New York State. This identification is necessarily tentative, based only on a photo.

Bitter bolete, *Tylopilus felleus*. This mushroom is mildly poisonous with a very bitter taste. The cap resembles a hamburger bun. The underside shows a surface of pores and tubes.

Variegated bolete, *Boletus variipes*. This mushroom is edible with a pleasant taste. The cap resembles a hamburger bun. The underside is covered with holes or tubes, typical of all boletes. When dry, the cap develops an interesting cracked appearance.

Yellow lady's fingers or golden spindles, *Clavulinopsis fusiformis* (pictured below). This mushroom is bitter though edib1e. This photo is the only one taken off the trail, about 75 feet north of it and about .9 miles east of the Blydenburgh House. It was found growing less than 10 feet away from a black tupelo tree that I estimate to be about 700 years old.

Destroying angel, *Amanita virosa*. This mushroom is the number one most poisonous mushroom in North America, related to the death angel (see below). It is very easily confused with edible mushrooms.

Death angel, *Amanita verna*. This mushroom is related to the destroying angel (see above). It is also very easily confused with edible mushrooms.

Blushing amanita, *Amanita rubescens*. When the cap of this mushroom is bruised, the white flesh turns pink. This is one of the only mushrooms that can sprout in the spring, as well as the summer and fall. Although edible, it too closely resembles several poisonous species. It is best to avoid it and just enjoy its beauty.

Fly agaric, *Amanita muscaria* (pictured below). This mushroom is historically and culturally the most important and also most famous mushroom. It is the classic “toadstool" with a large red or orange cap, spotted with white dots depicted in cartoons, fairy tales, medieval paintings and modern artwork. It is the mushroom that Alice ate in Lewis Carroll's "wonderland." The mushroom is hallucinogenic and has been used as such since the Stone Age. The eastern U.S. variety, which is identical in appearance to the European variety, is just mildly toxic and it is one of the most common large mushrooms in the summer time. This photo is of an immature, not-yet-fully open mushroom.

Emetic brittlegill, *Russula emetica*. This mushroom is very common, moderately poisonous, causes vomiting, and has a peppery taste. The bright brick-red color fades with age.

Green brittlegill, *Russula virescens*. This mushroom is edible, and is delicious with a nutty taste, making it one of the best tasting mushrooms in North America.

Chanterelle, *Cantharellus cibarius* (pictured below). This mushroom is rated one of the top five best quality gourmet mushrooms in the world. It is sold in supermarkets and commands premium prices. It is part of the small mushroom taxonomic group with a unique funnel shape without a separate stem.

Lilac-tinged milkcap, *Lactarius uvidus*. When this mushroom is cut or bruised, it releases a milky-white latex. This mushroom is variable in color, although these two photos do not show the lilac variety. It is not edible.

Powderpuff or bearded milkcap, *Lactarius torminosus*. This mushroom is very unusual, notably for being pink and hairy (mostly on margins) and for extruding white latex if it is bruised or cut. It is poisonous, but it is eaten in Russia and Norway when pickled or roasted and added to coffee.

Allard's milkcap, *Lactarius allardii*. This mushroom is not edible and has an acrid taste. It releases abundant white latex that turns olive and then brown.

Saffron milkcap, *Lactarius deliciosus*. This mushroom is gourmet edible. It is orange when fresh, but turns greenish when exposed to air or handled. It will become streaked or pockmarked. It was so beloved by the ancient Greeks that they depicted it on frescoes.

Some References (principal sources for identification)

Arora, D. 1986. Mushrooms Demystified. Ten Speed Press, Berkeley, CA. 959 pages, 2,000+ species.

Graham, V. O. 1944. Mushrooms of the Great Lakes Region. Dover Publishing, New York. 491 pages, 1,200 species.

Lange M. and B. Hora. 1967. A Guide to Mushrooms and Toadstools. E. P. Dutton & Co., Boston. 257 pages, 570 species.

McKnight, K. and V. McKnight. 1987. Field Guide to Mushrooms of North America. Peterson Field Guide Series. Houghton Mifflin Co., Boston. 429 pages, 1,000+ species.

Miller, O. K. 1977. Mushrooms of North America. E. P. Dutton Publ., Boston. 368 pages, 680 species.

Pacioni, G. 1981. Simon & Schuster's Guide to Mushrooms. Gary Lincoff, ed. Simon & Schuster, New York. 511 pages, 421 species.

Phillips, R. 1991. Mushrooms of North America. Little, Brown & Company, New York. 319 pages, 1,500 species.

REQUEST FOR SAMPLES

Brooklyn Botanic Garden needs samples of blooming privets (*Ligustrum*) found in natural areas where they were not planted. Freshly collected specimens can be brought in plastic bags to TNC's Uplands Farm office in Cold Spring Harbor, where they will be collected and gotten to BBG. If samples can't be delivered, they should be pressed and dried, and mailed to BBG at the address below. Include with specimens a piece of paper with the following information:

The date the plant was collected, the name of the collector, the location and habitat (Town, street address or intersection, park or preserve name, etc.), the abundance of the plant (number, area covered, etc.)

Mail to:
Dr. Gerry Moore
Brooklyn Botanic Garden
1000 Washington Avenue
Brooklyn, NY 11225

UPCOMING PROGRAMS

September 9, 2008* Tuesday, 7:30 PM

Scott McDonnell: "GIS Environmental Attributes and Forest Health." Learn about developing hardware and software technologies relative to environmental risk assessments and damages, such as from defoliation. Scott is the GIS aerial surveyor for the NYS DEC.

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

October 14, 2008* Tuesday, 7:30 PM

Joe Zysman: "The Nature of the Fire Island Wilderness Area." This talk is about the flora and fauna of the Fire Island Wilderness Area within the Fire Island National Seashore. It will also cover related issues such as planning processes that affect Fire Island as well as the history of Fire Island. Joe is President of the Fire Island Wilderness Committee.

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

* Refreshments and informal talk begin at 7:30.
Formal meeting starts at 8:00 PM.
Directions to Muttontown: 516-354-6506

Long Island Botanical Society
PO Box 507
Aquebogue, NY 11931

FIELD TRIPS

JULY 16, 2008 (WEDNESDAY) 11 AM
(LECTURE/TALK --**NOT A FIELD TRIP**)
Syosset Public Library, Syosset, Nassau Co., NY
Speaker: Andy Greller
An hour long talk on the flora, vegetation and fossils of Caumsett State Park. (This talk is co-listed with Seatuck Environmental Center.)

Directions: Syosset Public Library, Long Island Expressway [exit 43] and South Oyster Bay Rd., northeast corner. It will be in the basement, lecture room A, enter door on South Oyster Bay Road.

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JULY 26, 2008 (SATURDAY) 10 AM
Alley Pond Environmental Center, Douglaston, Queens, NY
Trip Leader: Andy Greller
On this "genera jaunt" see a wide selection of botanical genera at Alley Pond Park and marsh. Bring water, insect and tick repellent, sturdy and/or waterproof footwear, field guides, hand lens. (This trip is co-listed with the New York Natural Heritage Program of NYSDEC and The Nature Conservancy)

Directions: Meet at Alley Pond Environmental Center, 228-06 Northern Blvd., Douglaston, Queens.. From Long Island: - From Cross Island Parkway north, exit at Northern Blvd. (Exit 31E). APEC will be on the right side as you come off the exit ramp.

AUGUST 9, 2008 (SATURDAY) 9:30 AM
Laurel Lake Preserve, Town of Southold, Suffolk Co., NY
Trip leader: Karin Gluth
Laurel Lake Preserve is a complex of properties owned by the Town of Southold, Suffolk County Parks Department, Suffolk County Water Authority and NYS Department of Environmental Conservation. The preserve encompasses 400 acres surrounding Laurel Lake. The Peconic Land Trust facilitated the acquisition of the properties. Community types include mixed hardwood forest, old field successional communities, wetlands, red maple swamp, and meadows.

Directions: Laurel Lake is located on Route 25 in Laurel/Mattituck. Must RSVP at 631-885-2541 (C) and leave a phone number so you can be contacted with additional information.

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SEPTEMBER 13, 2008 (SATURDAY) 10 AM
Edgewood-Oak Brush Plain State Preserve, Town of Babylon, Suffolk Co., NY
Trip Leader: Andy Greller
Edgewood Preserve covers 813 acres of Oak Brush Plains and Pine Barrens in Deer Park and is New York State property, administered by NYS DEC. See: www.friendsofedgewoodpreserve.org. Bring lunch, liquid, insect and tick repellent, sturdy and/or waterproof footwear, field guides, hand lens. (This walk is sponsored by the Friends of Edgewood Preserve)

Directions: The parking lot is on the east side of Commack Road, north of the LIRR tracks.