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The Two Taxa of the Eastern North American Lady Fern, *Athyrium filix-femina*

Carol L. Kelloff, Ph.D.

Athyrium filix-femina (L.) Roth is a wide-ranging complex of divergent, homoploid ($2n = 80$) taxa that evolved new species either in geographic isolation from an ancestor, or while geographically contiguous along an environmental gradient. These differences in the complex have been variously divided and treated at different ranks (species, subspecies, or variety) by different authors. There are at least three taxa that occur in North America. Butters (1917) and Wherry (1961) treated them as distinct species: the western *A. filix-femina*, the northeastern *A. angustum* (Willd.) Presl., and the southeastern *A. asplenioides* (Michx.) A. Eaton, although Wherry noted that they “intergrade to such an extent as to defy any simple classification.” Lellinger (1985) treated these taxa as subspecies of a single globally distributed species, i.e., western *A. filix-femina* ssp. *cyclosorum* (Rupr.) C. Chr., northern *A. filix-femina* ssp. *angustum* (Willd.) Clausen and the southern *A. filix-femina* ssp. *asplenioides* (Michx.) Hultén. Kato (1993) treated these taxa at varietal rank, recognizing four North American varieties: in the west, northern *A. filix-femina* var. *cyclosorum* Ruprecht, a more southerly *A. filix-femina* var. *californicum* Butters, and in the east, northern *A. filix-femina* var. *angustum* (Willd.) G. Lawson and the southern *A. filix-femina* var. *asplenioides* (Michx.) Farwell.

These differences in classification are not based on strongly divergent viewpoints among authors nor on definitive data separating the taxa, but rather represent the best judgment in a group noted for its high degree of variability (Schneller and Schmid, 1982).

In order to understand the nature of the taxa composing the *A. filix-femina* complex, in general, and those plants found on Long Island, New York, we shall examine the distinctness of the two taxa that overlay in eastern North America, *A. filix-femina* ssp. *angustum* and *A. filix-femina* ssp. *asplenioides* (referred to henceforth as *A. angustum* and *A. asplenioides*, respectively). Characters differentiating these two taxa (Butters, 1917; Lellinger,

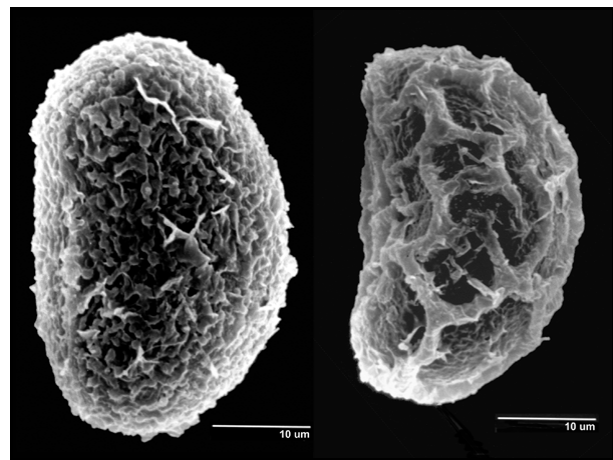


FIG. 1. Surface sculpturing (perispore) of the spores of *Athyrium angustum* (left) and *A. asplenioides* (right).

1985; Kato, 1993) include rhizome habit, leaf shape, and notable color and surface features of the spores (see Table I).

A study by Kelloff *et al.*, 2002, evaluated the degree to which these taxa are distinct by examining the fine features of the spore surface and a survey of the allozyme variation. The spores for both taxa are monolete (Fig. 1) with a single scar (shaped like a kidney bean). With the unaided eye or under a dissecting microscope the spores of *A. angustum* appear brownish-yellow (with an exception of one population in Pennsylvania where they appear dark brown), whereas the spores of *A. asplenioides* are brown to almost black. Under the light microscope the spores of both taxa appear yellowish, with the exception of the occasional *A. asplenioides* spore that displays a dark reticulation overlaying the surface of the spore. Although the surface details are obscure when viewed under a light microscope, the

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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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Society News

Welcome to new member Maureen Cullinane, and to new Life members, Mary Maran and Wei Fang. It's time to renew your membership for 2005. Please send your dues today. See the back page details.

The Society is tentatively planning a seven-day trip to Newfoundland with Karl Anderson in 2006. So far, about 10 people have indicated interest. For more information, contact Eric Lamont.

LIBS members are continuing the efforts to build and preserve Long Island's population of American chestnut trees. Eric Powers has started two seedlings in Caleb Smith State Park, with seeds provided by Lenny Lampel at the Seatuck Environmental Association. Another specimen in the park was discovered to be healthy and near reproductive maturity.

Steve Clemants has been working on a field guide to the wildflowers of the northeast with Carol Gracie of the New York Botanical Garden. It will be available for purchase in about a year.

Betty Lotowycz and Barbara Conolly have recently published a book titled, *Illustrated Field Guide to Shrubs and Woody Vines of Long Island*. See the review on page 17. To purchase the book write to: Waterline Books, P.O. Box 331, Hardwick, MA 01037, or order online: waterlinebooks@aol.com. The purchase price is \$20 (which includes \$2 shipping & handling).

Conservation Committee Chair Andy Greller has been heavily involved in the fight to save the Grace Forest in the Village of North Hills (see his letter to Governor Pataki in the Winter 2005 issue of the LIBS newsletter).

On March 20, 2005, Newsday ran a two-page article on the controversy titled, "Tangled debate on thicket of trees: Naturalists cherish 18-acre site near LIE, but North Hills mayor says plot is village's 'most unkempt area.'" The article featured statements and photos of Andy, and of Liz Remsen, associate director of the North Shore Land Alliance.

Back in 1978, Andy documented the existence of this rare community in a paper published in the Botanical Gazette. Now, although the Village of North Hills had promised to preserve this land "in perpetuity," apparently there's been a change of heart, and, unless Andy is successful, the forest will give way to yet another development. This is a concern for all LIBS members. To get involved, contact Andy.

The Local Flora Committee announced that it has compiled a several-hundred-page preliminary draft of an atlas of vascular plants of Long Island. The next phase of their work will include reviewing and revising for publication.

There will be a BioBlitz at the Science Museum of Long Island in Plan-dome on May 20 to 21, 2005. This is a celebration of biodiversity, with scientists and citizens conducting a 24-hour biological survey of their site. For more information go to www.sml.org/bioblitz.html

The Friends of Hempstead Plains resumes volunteer community work-days and Friday lunch walks, beginning in April. For more information call the Friends of Hempstead Plains.

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difference between the two taxa is visible in their outline. The spores of *A. angustum* appear smooth compared to the uneven surface of *A. asplenioides*. Under the scanning electron microscope (SEM) the perispore, the outer surface of the spores, is markedly different. The perispore of *A. angustum* is papillose with its surface completely covered with wartlike projections with some

thin “flaking.” The spore surface of *A. asplenioides* is rugose with a network of reticulating “walls” in the perispore.

The genetic composition of these two taxa was examined with allozyme electrophoresis. Allozymes are allelic variants of enzymes encoded by structural genes. The amino acids that make up the enzyme proteins

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TABLE I. Comparison of morphological features of the two eastern North American taxa in the *Athyrium filix-femina* complex. Compiled from taxon descriptions in Butters (1917), Lellinger (1985), and Kato (1993).

| Character | <i>angustum</i> | <i>asplenioides</i> |
|---------------------------------|--|--|
| Rhizome orientation | erect or ascending, more condensed | ascending to creeping, more extended |
| Scales: | linear lanceolate, 8–10 × 1.5–2 mm, brown to dark brown | lanceolate, 3–9 × 2–3 mm, bronze to light brown or brown |
| Stipe length relative to lamina | up to half the lamina length | equaling lamina length |
| Lamina shape | elliptic or rhombic | narrowly deltoid lanceolate, ovate-lanceolate to lanceolate |
| Fronde base | gradually tapered to an acute to obtuse base | slightly reduced and truncate at base |
| Fronde apex | acute to acuminate | acute, acuminate, or more-or-less caudate |
| Widest portion of lamina | near or just below middle | second pinna pair |
| Pinna attachment | short-stalked or sessile | usually stalked |
| Pinna shape | oblong-lanceolate, usually widest at middle and not parallel-sided | oblong-lanceolate to lanceolate, nearly parallel-sided |
| Pinna apex | acute to acuminate | acute |
| Sterile v. fertile frond | tending toward dimorphism, the segments of fertile fronds narrower and more acute than those of the sterile fronds | not tending toward dimorphism |
| Pinnules of fertile fronds | narrowly lanceolate and acute | oblong or linear-oblong and obtuse |
| Indusium length | tending to be shorter than in <i>asplenioides</i> , up to 1.1 mm | tending to be longer than in <i>angustum</i> , up to 1.3 mm |
| Indusium margin ^a | irregularly dentate, and/or ciliate with eglandular hairs | ciliate with glandular or nonglandular hairs as long as indusial width |
| Sporangial stalks | bearing glandular hairs or less often secondary sporangia | consistently bearing glandular hairs |
| Spore color | yellowish | brownish-yellow to dark-brown or black |
| Spore surface | sparsely papillate | wrinkled or reticulated exospore, sometimes nigrescent |
| Mean spore dimensions | 38.6 × 24.7 μm | 36.0 × 25.5 μm |

^a Descriptions of the indusium margin in the two taxa are inconsistent in the literature. The table entry is a tentative consensus.

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have a net electric charge. If, through mutation, an amino acid has been replaced, the charge of that protein may have been altered. These subtle changes in an enzyme (referred to as isozymes) can be detected by gel electrophoresis and staining. Most enzymes have two or more "loci," or bands, that appear on the stained gel. These banding patterns can be compared between individuals and between populations and are a useful tool in determining many population genetic issues and where there is a question on the relationship between closely related species.

Leaf samples from 11 to 72 individuals were collected for both *A. angustum* (five sites) and *A. asplenioides* (five sites) from locations from Canada to North Carolina. The tissue was analyzed electrophoretically and the banding patterns scored for each of the 11 enzyme systems studied. Isozyme banding patterns were readily interpreted as allelic variation for single gene loci from the leaf extracts. Seventeen loci in 11 enzymes systems were assayed. One locus was invariant across all 10 populations. The other 16 loci were variable in at least one population. There was a strong tendency for all populations to share the more common alleles and some of the less frequent ones as well. The four most polymorphic loci had similar allele frequencies within populations of *A. angustum* and *A. asplenioides*, respectively, but were strikingly different between the two taxa. Although the two eastern *Athyrium* populations shared some common alleles the differences in frequency between the taxa accounted for most of the divergence among populations. The result was two principal clusters each comprising the populations of one taxon.

Hybridization in ferns generally results when two conspecific taxa overlap in range and share the same habitat. In most cases, the result is a hybrid fern that produces abortive (nonreproductive) spores. The taxa of the *Athyrium filix-femina* complex overlap in both its eastern and western range. On the eastern half of North America *A. angustum* and *A. asplenioides* overlap in a thin band (Fig. 2). On the northernmost extent of the *A. asplenioides* range a sample was collected from Shirley, NJ (Fig. 3) that turned out not only to be a hybrid populations but one in which the spores

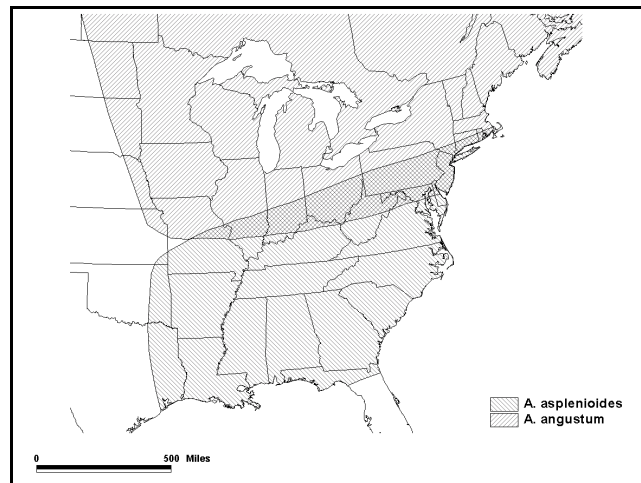


FIG. 2. Overlapping ranges of the northern *Athyrium angustum* and the southern *Athyrium asplenioides*.

were successfully germinated (unpublished data). The sculpturing of the perispore had the characteristics of both *A. angustum* and *A. asplenioides*. And the range of variation from *A. angustum*-like spores to *A. asplenioides*-type spores could be found within an individual plant, suggesting that there could be some backcrossing happening in the population. Although none of the 13 plants sampled at the site possessed only *A. angustum*-type spores, under the SEM, unique and variable morphologies suggested an influence from *A. angustum*. Although it was once thought that most individuals of both *A. angustum* and *A. asplenioides* produced both kinds of spores (Liew, 1971), it was entirely inconsistent with our observations. The allozymes from this New Jersey locality also indicated hybridization between the northern, *A. angustum*, and southern, *A. asplenioides*, populations. Allozyme frequency trends for this population of *A. asplenioides* were characteristically *A. angustum* for two alleles and that of *A. asplenioides* of Pond Drain, in the mountains of Virginia (1300 m). Moreover, five of the six Shirley, NJ, individuals hypothesized to be first-generation hybrids on the basis of spore morphology shared *A. angustum* and *A. asplenioides* marker alleles for at least three of the four most divergent loci. No other individuals in the entire data set possessed this genotype combination.



FIG. 3. Photo of *Athyrium asplenioides* in Shirley, New Jersey.

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Both Long Island and Staten Island, NY, fall within the narrow band of overlap between the extensive ranges of the two eastern taxa of *Athyrium*. Most authors of New York flora have lumped these taxa under *Athyrium filix-femina* (Gleason, 1962; Buegler & Parisio, 1981; Mitchell, 1984; and Magee and Ahles, 1999). Others have just record the two taxa for New York without any indication of locality (Flora of North America Editorial Committee, 1993; Gray, 1950). Records at the U.S. National Herbarium (U.S.), Washington, DC have specimens of *Athyrium angustum* that have been collected in three of the counties of Long Island—Suffolk: Greenport, Orient Point, Shelter Island; Nassau: Lawrence; and Queens: Hollis; and in Staten Island, Richmond County (Fig. 4). My survey of the *Athyrium* taxa of Long Island and Staten Island is far from complete; gathering historical data from herbaria that have specimens from this area is only the beginning. More field work is needed to determine: (i) if *A. asplenoides* is also found on the islands, (ii) how wide spread or rare it is, and (iii) if these two taxa of the eastern *Athyrium* can be found in the same habitat. Although the spore morphology of *A. angustum* and *A. asplenoides* is distinct enough to separate the two taxa, it is not very helpful in the field. The best field characters for these ferns are the shape of the frond, the length of the stipe, and the habit of the rhizome. The frond of *A. angustum* tends to be elliptic with the longest pinnae near the middle and tapering to the base; the stipe is half the length of the frond or less, and the rhizome is more erect with the frond bases condensed at the tip. In *A. asplenoides* the frond is more deltoid and wider at the base, the stipe equals the length of the frond and the rhizome is long, creeping, and less dense at the apex. I have also seen the rhizome of *A. asplenoides* with dichotomous branching. The red coloration of the stipe is seen in both taxa as scattered individuals in some populations and is not a useful characteristic for differentiating the taxa. I do not have good field characters for the hybrids yet. But if both taxa of *Athyrium* are found in the same locality, the chances are good that hybrids are among them.

The *Athyrium filix-femina* complex, distributed across four continents and comprising as many as four North American taxa with overlapping ranges, provides an especially suitable context for exploring patterns and processes of divergent evolution and its taxonomic consequences in ferns. The two eastern North American taxa, *A. angustum* and *A. asplenoides*, have long been perceived as close relatives separable by distinctive characters that are consistent within the vast northern and southern areas they respectively occupy, but that intergrade and recombine to form a hybrid zone in their relatively narrow region of overlap. The spore and

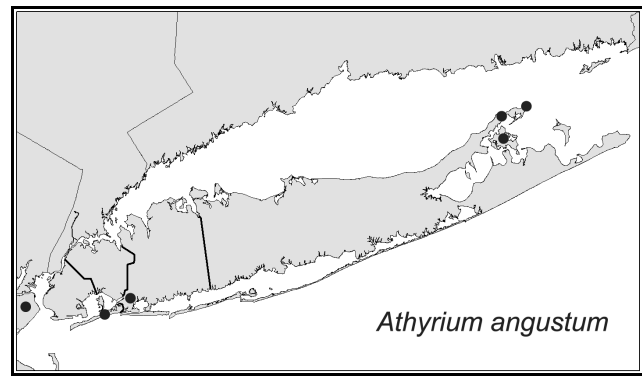


FIG. 4. Range map of *Athyrium angustum*, on Long Island, New York.

isozyme data indicate substantial divergence between *A. angustum* and *A. asplenoides*, suggesting that they merit distinction as the rank of subspecies or species. Additional study of populations in their region of overlap is required to determine the nature and extent of hybridization.

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- Carol L. Kelloff, Ph.D. can be reached at the Smithsonian Institution, Department of Botany, MRC 166, P.O. Box 37012, Washington, DC.*

War on Weeds: Breaking News

Marilyn Jordan
The Nature Conservancy

Several new invasive plant species have been discovered on Long Island in the last year or two, and others are on our doorstep (see Table I). Help from Long Island Botanical Society members in locating new invasive plant occurrences is invaluable, both by reporting findings on your own and by assisting with “weed mapping sweeps” in conservation areas. See below for contact information.

AQUATIC:

Water chestnut chestnut (*Trapa natans*) and hydrilla hydrilla (*Hydrilla verticillata*). We are especially worried about the possibility of water chestnut or hydrilla becoming established in a Long Island pond or stream. The discovery by Scott Kishbauagh (NYSDEC Division of Water, Albany) of one water chestnut plant in Mill Pond County Park in Wantagh last summer was alarming. He pulled it out, but it could return. Hydrilla isn't here yet, but it is critical to catch this horror early.

Floating water willow (*Ludwigia peploides*). This new invader, first noticed in 2003 by NYSDEC and TNC, is now abundant in the Peconic River upstream from the Forge Pond dam. Vegetative specimens look like the common native *Decodon verticillatus* (water willow). The DEC plans control efforts.

Water hyacinth (*Eichhornia crassipes*). Reported by Tim Green in a pond at Brookhaven National Laboratory. If this population reappears in 2005 it will be destroyed (and warnings broadcast)—as should be done if any plants reappear in Scudder's Pond, Sea Cliff (reported by Zu Proly last year).

Reed canary grass (*Phalaris arundinacea*). A “stealth invader” we have found on the banks of the Peconic and Carmans Rivers; it resembles *Phragmites* but is smaller.

TERRESTRIAL:

Narrowleaf bittercress (*Cardamine impatiens*).

Last year Skip Blanchard and Rich Kelly reported the first known infestations on Long Island in Oyster Bay Cove, Planting Fields Arboretum, Caleb Smith State Park, Caumsett State Park, Sweetbriar Nature Center in Smithtown, and a private garden. Control efforts were stymied by unavailability of park and TNC staff. We hope to do better in 2005. Contact Stacey Goldyn (see below) to assist in control efforts.

Mile-a-minute vine (*Polygonum perfoliatum*).

Nearly 100 person-hours were spent pulling this weed at six or more sites last year. Just when we thought we were gaining, Andy Senesac (Cornell Co-op Extension) reported a “mother of all M.A.M. infestations” at Orient that is overgrowing *Phragmites*.

Giant hogweed (*Heracleum mantegazzianum*).

Control efforts at Muttontown Preserve continue, but no control of plants on adjacent property have been done by landowner.

Rugosa rose (*Rosa rugosa*). Although not new to Long Island, we would like to know more about the invasive potential of *Rosa rugosa*. Do you know of escapes into natural areas, or can you document plantings that have remained contained for many years?

Kudzu (*Pueraria montana*). How often does kudzu set seed on Long Island? We have anecdotal reports, but no documentation (pressed specimens or photographs). Control of this species will remain a low priority unless its potential to regularly set seed on Long Island is documented.

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TABLE I. Long Island Early Detection—Rapid Response List.

| Long Island Early Detection— Rapid Response List ^a | | Number of Occurrences ^b |
|--|-----------------------------------|---------------------------------------|
| SHRUBS | | |
| <i>Lonicera maackii</i> | Amur honeysuckle | ≥4? |
| <i>Vitex rotundifolia</i> | Beach vitex/ roundleaf chastetree | 0 |
| HERBACEOUS PLANTS | | |
| <i>Butomus umbellatus</i> | Flowering-rush | 0 |
| <i>Cardamine impatiens</i> | Narrowleaf bittercress | (6) |
| <i>Cirsium palustre</i> | Marsh thistle | 0 |
| <i>Dioscorea oppositifolia</i> | Chinese yam | 0 |
| <i>Froelichia gracilis</i> | Slender snake-cotton | ≥4? |
| <i>Glaucium flavum</i> | Yellow hornpoppy | ≥4? |
| <i>Heracleum mantagazzianum</i> | Giant hogweed | (3) |
| <i>Humulus japonicus</i> | Japanese hops | + |
| <i>Impatiens glandulifera</i> | Ornamental jewelweed | 0 |
| <i>Lepidium latifolium</i> | Perennial pepperweed | 2 |
| <i>Polygonum perfoliatum</i> | Mile-a-minute vine | (≥4) |
| <i>Senecio jacobaea</i> | Tansy ragwort/Stinking Willie | 0 |
| GRAMINOID PLANTS | | |
| <i>Arthraxon hispidus</i> | Hairy jointgrass | 0 |
| <i>Carex kobomugi</i> | Japanese sedge | 0 |
| <i>Glyceria maxima</i> | Reed mannagrass | 0 |
| <i>Microstegium vimineum</i> | Japanese stilt grass | (≥4) |
| AQUATIC PLANTS | | |
| <i>Cabomba caroliniana</i> | Fanwort | ≥4 |
| <i>Callitriche stagnalis</i> | Pond water-starwort | 3 |
| <i>Egeria densa</i> | Brazilian water-weed | ≥4? |
| <i>Eichhornia crassipes</i> (naturalized) | Water hyacinth | 1 or 2? |
| <i>Glossostigma diandrum</i> | Mudmat | 0 |
| <i>Hydrilla verticillata</i> | Hydrilla | 0 |
| <i>Hydrocharis morsus-ranae</i> | Common frogbit | (2) |
| <i>Ludwigia peploides</i> | Floating primrose-willow | (1 or 2?) |
| <i>Myriophyllum aquaticum</i> | Parrotfeather | ≥4? |
| <i>Myriophyllum heterophyllum</i> | Two-leaf water-milfoil | 3? |
| <i>Myriophyllum spicatum</i> | Eurasian water-milfoil | (1?) |
| <i>Najas minor</i> | Brittle waternymph | 0 |
| <i>Nymphoides peltata</i> | Yellow floating heart | ≥4? |
| <i>Pistia stratiotes</i> (naturalized) | Water lettuce | 0 |
| <i>Potamogeton crispus</i> | Curly pondweed | (≥4) |
| <i>Salvinia molesta complex</i> (naturalized) | Giant Salvinia; kariba-weed | 0 |
| <i>Trapa natans</i> | Water chestnut | (1?) ^c |

^a Long Island Weed Management Area data in parentheses. Other data from: Weldy, Troy, Richard Mitchell, and Robert Ingalls. 2002. New York Flora Atlas (<http://nyflora.org/atlas/atlas.htm>). New York Flora Assoc., New York State Museum, Albany, New York.

^b Brooklyn, Queens, Nassau, and Suffolk Counties.

^c One plant found and removed, Mill Pond County Park, Wantagh.

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Pale and black swallow-wort (*Cynanchum rossicum* = *Vincetoxicum rossicum*) and (*Cynanchum louiseae* = *Vincetoxicum nigrum*). Both species of this vining milkweed are well established on Long Island. Though eradication seems impossible, suppression and containment can keep them from spreading. Distinguishing species is difficult, but both are equally invasive. For information go to <http://www.swallow-wort.com/>

OTHER NEWS:

The Invasive Plant Council of New York (IPC NYS) hired Margaret Wilkinson in January 2005 to establish and populate a NYS database of invasive plants, which will include the information in the Long Island Weed Management Area (LIWMA) database. She is co-supervised by Bill Jacobs and Kathy Schwager (The Nature Conservancy on Long Island).

WHAT YOU CAN DO:

LIBS members, if you find any plant species listed in Table I, or any other non-native plant species you have never before seen on Long Island, please report it to Kathy Schwager or Marilyn Jordan at The Nature Conservancy. We will add your information to the databases of the LIWMA and IPC NYS, and organize appropriate control efforts. If you want to help with scheduled “weed mapping sweeps” contact Stacey Goldyn.

To keep informed on breaking news about weeds, join the LIWMA Yahoo group at <http://groups.yahoo.com/group/LIWMA/>. After joining, you will be sent occasional notices about newly posted information on the group site.

Spreading It Around: A Tale of Lunacy

Ray Welch

One wants to be an apostle of virtue, but sometimes, as Ovid said, “*video meliora proboque, deteriora sequor*.” Since we are all Latin-adept botanists, there’s no need to translate. Oh, all right: “I see the better way and approve it, but I follow the worse way.” All I can plead is my youth at the time (I was 32—just a child really).

My sin? Encouraging the establishment of more populations of an alien plant species, but in a way more common than most of us realize—and there are more of us who are wrongdoers than we might think—but with me it was blatant. In mitigation, I will say that there are plenty of naturalized local populations of this species on Long Island already. I’ve seen them along the edge of the Long Island Expressway in Queens, behind a strip mall in Ronkonkoma. The plant? The winter-annual, *Lunaria annua*, Honesty. Honestly! How did I commit the sin? By planting *Lunaria* in my garden.

Lunaria annua, originally a native of southeast Europe, is while growing (anywhere) a rather untidy-looking monocarpic member of the Brassicaceae. Gleason and Cronquist describe it accurately enough, as “sparsely hairy,” with leaves, “coarsely dentate,” and the plant can grow up to a meter tall, although none of mine ever seem to. The loose racemes of rather large flowers (for a mustard) are usually pinkish-magenta, and while *Lunaria* en masse lends some color to a garden, it is in no sense a prize flower to have. Its major attrac-

tion is, unlike most garden plants, revealed during the plant’s senescence, when it has matured bizarre fruits—large (up to 5 cm across) oval, very flat, and semi-transparent within which the seeds (also large and flat) are seen in silhouette and cannot hide, hence “Honesty.” When the seeds are finally shed, the whitish, parchmentlike septum of the silique remains and the entire dead, but attractive, plant can be gathered and put in dried arrangements. My grandmother had grown Honesty in her own garden in northern New York, and I was fascinated, around age 10, by these fruits that echoed its other common names, Money Plant and Silver Dollar Plant. I also remember seeing vases of the dried plant at neighbors’ houses. It intrigued me.

In the mid-1970s, I was walking with a friend in Port Jefferson, and saw the plant in fruit along the sidewalk at a fenced yard, and took—all right, *stole* (another sin)—a few siliques with their seeds. I took them home, and being at the time interested in gardening, an interest more faint these days, scattered a few seeds and forgot about them. They took, and with no real care from me, flowered and set seed. I’ve done nothing to encourage them in my yard since, but I still have them nearly 30 years later—they sprout here and there: along the edge of fences, by shrubs, behind (and on) the compost heap—anywhere the mower does not reach, and I am not a demon for mowing. For a while it seemed

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that they thrive on an apparent biyearly cycle, but lately each year my small yard seems about as abundantly populated in its neglected corners and edges with the plants as the previous year.

Perhaps 10 to 15 years ago, still unenlightened about the problem of alien species, I took a few seeds and dropped them at the edge of a small woodland near my office at Suffolk Community College. Casual observation over the next year or so saw nothing, but then I spotted an unthrifty, but flowering plant or two, one of them 50 meters or so from where I had put the original seeds down. Since then, I've seen a handful more come up in yet other places not far away. This year, however, in the time between the snowfall of January and that of Presidents' Day, when the ground was snow-free, in an area cleared of brush by the grounds crew in the last couple of years, I saw that many square meters were dotted over with dozens of healthy young plants. It took 30 years, but now I'm responsible for two more naturalized and thriving populations of an alien species.

I feel that my sin is more venial than mortal. As Gleason and Cronquist say, "Occasionally escaped from cult," which betokens relative nonaggressiveness—plus, it is easy to control mechanically. I find I can pull it up with no effort at all and it never resprouts from the root—since the root is not there anymore. Also, it does not seem to spread that easily. For example, I've never seen any in my neighbors' yards, neighbors who are more diligent yard maintainers. They must think it a weed and remove it before it flowers. In my own yard I mostly leave it alone to brighten April and May, as I like to have a flower I don't have to tend, one that satisfies my urge for work-free gardening. Too bad that its un-subtle magenta is not high of my list of favorite colors, but I take what I get. I recently found and gathered seeds of a white-flowered population I'm debating scattering...



Lunaria annua, or Honesty

Photo by Ray Welch

When I said many of us are "wrongdoers," I meant that any one of us who gardens and who plants any non-native species, even one thought safe, is potentially adding another name to the list of troublesome alien invaders. While rough statistics say that of every 100 introductions only 10 naturalize, and only one becomes a "problem," there is no sure way to tell who the potential pest will be, or what the changed conditions are or what a new habitat might be that would let a formerly benign introduced species turn upon us. Caution should be our ever-present watchword.

I feel I have expiated my botanical sin by this confession...but may the person responsible for introducing *Celastrus orbiculatus* burn in Hell! Sorry, that just slipped out.

BOOK REVIEW

Illustrated Field Guide to Shrubs and Woody Vines of Long Island. G. E. Lotowycz and B. H. Conolly. 2004. xxii + 202 pages. Waterline Books; Hardwick, MA. \$18.00 paperback. ISBN: 0976427508.

Those of us who spend time in the field understand too well how the travails of urban ecology are reflected in our flora. We meet an ever-increasing number of new acquaintances and we search longer and farther for old friends. Yet most field guides don't mirror this reality, with little attention paid to exotics or the loss of native species. This issue is redressed to some

degree in the *Illustrated Field Guide to Shrubs and Woody Vines of Long Island*.

This book focuses on the woody plants that most field guides gloss over. An unexpected but welcome inclusion is the subshrubs, mostly of the Ericaceae, such as *Chimaphila* and *Pyrola*. The text also reflects the changing nature of our natural areas through its listing of species' frequencies and inclusion of naturalized exotics. All of this is filtered through the geographic scope of Long Island.

The book is simple to use. Plants are organized according to their branching patterns (opposite or alter-

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nate), leaf shape (simple or compound), and leaf margins (entire, toothed, or lobed). Identification is then determined through the use of the key. Over 190 species are discussed, arranged alphabetically by species. Full treatments are given to 130 entries, with traits described through words and drawings. In addition, common native taxa are preceded with an overview of the family (for example, Ericaceae, Caprifoliaceae) or genus (e.g., *Cornus*, *Rhus*).

Each entry begins with the plant's common name and Latin binomial, naming authority, family, and nativity to the U.S. (The "alien" designation should have been applied to all species not native to Long Island). Further information includes: origin of name; description of leaf, flower, fruit, bud, leaf scar, bark, and twig; habitat and frequency, including locations in each relevant county. To aid in assessing these characteristics, the inclusion of a metric and English rule inside the cover flaps is useful. Additional sections include a pictorial overview of plant characteristics, a taxonomic list of plant families, a glossary, and park locations.

The choice of illustrations is well thought out. All featured species' entries include stems with leaves and flowers and/or fruit. Many more have enlarged renderings of buds and leaf scars. All drawings were created by tracing herbarium specimen. For some species, this is more than adequate, where the pictures re-

veal fine, three-dimensional details. Unfortunately, a good number fall short of this. These drawings are mere outlines created with too wide a pen. In a few cases, as with *Hudsonia* species, it is impossible to discern any botanical details.

Another drawback is that "Long Island" is not clearly defined. In general it may refer to the area outside New York City's political purview. It can also mean the whole island, with the inclusion of Queens and Kings (Brooklyn) Counties. While a casual flip through the book would lead one to believe that the latter is the case, Brooklyn is never mentioned, not even for common coastal species such as groundsel tree and northern bayberry, and Queens is represented by only two parks (Alley Pond and Cunningham). Several natural areas are excluded or woefully under-represented (for example, Gateway National Recreation Area). And listings are inconsistent; oriental bittersweet and porcelainberry most definitely exist in Queens. This oversight makes the western half of the island seem sadly depauperate, as if botanists elsewhere have all the fun.

Overall, this volume nicely fills a niche for the New York Metropolitan area. It will be a welcome addition to my backpack this season.

Mariellé Anzelone
Plant Ecologist

NYC Parks, Natural Resources Group



Field Trips

SATURDAY, APRIL 23, 2005, 9 A.M.

Pelham Bay Park, Bronx, New York

Trip Leader: David Künstler

Visit Hunter Island for a rare, towering old-growth oak-tulip tree forest and its spring ephemerals: wood anemone (*Anemone quinquefolia*), lousewort (*Pedicularis canadensis*), alumroot (*Heuchera americana*), N.Y. endangered carrion-flower (*Smilax herbacea* var. *pulverulenta*), and N.Y. rare wild pink (*Silene caroliniana*). We will probably visit other nearby sites, if time permits. Park plant and fungi list for participants. This is a joint trip with the Torrey Botanical Society.

Directions: Meet at Orchard Beach parking lot. Take the Bruckner Expressway/New England Thruway/I-95 to Orchard Beach/City Island Exit 8B, and follow the signs to Orchard Beach. Park in the north-east corner (far left from booths) of the Orchard Beach parking lot.

SUNDAY, MAY 15, 2005, 10 A.M.

(carpool from Long Island at 9 a.m.)

Palisades Interstate Park and Hudson River shore near Alpine, New Jersey

Trip Leaders: Andy Greller and Nancy Slowik

We will hike both the Long Trail and the Short Trail looking for *Aristolochia macrophylla* (Dutchman's pipe) and watch out for other interesting springtime species in this unusual and varied habitat. Bring lunch and a liquid; wear sturdy shoes or hiking boots; camera and binoculars optional but recommended. Walking time is about four hours. The terrain varies from flat (easy walking), to steep ravines and a vertical stairway.

Directions: We will meet to carpool at 9 a.m. at the Bill Paterson Nature Center, Muttontown Preserve, East Norwich, and travel to Exit 2 on the Palisades Interstate Parkway, where we will meet at the Interstate Park Headquarters at about 10 a.m. From there we will carpool to another yet-to-be determined location.

More Field Trips →

SATURDAY, MAY 21, 2005, 9:30 A.M.*Garden City Bird Sanctuary, Garden City, New York*

Trip Leader: Rob Alvey

We will continue our cataloging of the plants at the Sanctuary. Rob has labels for the plants, so as we point them out, he will mark them. The sanctuary was a sump that is now a refuge for birds and other wildlife, as well as plants in our growing suburban culture. We will add to our plant list from last summer.

Directions: Follow Jericho Turnpike to Denton Avenue (at a traffic light by a Mavis Tire Co). Turn LEFT from the east or make a RIGHT coming from the west. Follow Denton, and proceed under the small one-lane railroad bridge. The road is now Tanners Pond Road and the Bird Sanctuary is on your immediate right. Parking is permitted on Tanners Pond Road.

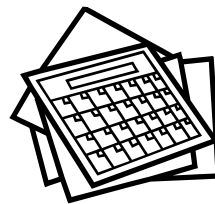
SUNDAY, JUNE 12, 2005, 9:30 A.M.*Wertheim National Wildlife Refuge, Shirley, New York*

Trip leader: Jenny Ulsheimer

This is 2550-acre refuge attracts many different kinds of wildlife. The refuge is a typical pine barrens forest with pitch pine and scrub oak. There are marshlands along the Carmans River that are lined with skunk cabbage and swamp azalea. The only trail on the preserve is the White Oak Trail (three miles). It is a relatively flat and easy trail with an observation blind for birders.

Directions: From the west: Take Sunrise Highway (Route 27) to Exit 57S, Yaphank Avenue. At the end of the ramp make a left, then go to the end of the road and make a right. Take this to the light (Montauk Highway) and make a left. Stay on Montauk Highway for one to two miles and make a right on Smith Road. The entrance to the refuge is just past the railroad tracks

From the east: Sunrise Highway (27) to Exit 58S, William Floyd Parkway. Take the Parkway south to Montauk Highway. Make a right (Route 80) and continue for about a mile. Make a left onto Smith Road. The entrance to the Refuge is just past the railroad tracks.



Upcoming Programs

April 12, 2005***Tuesday, 7:30 p.m.**

BETSY GULOTTA: "THE HEMPSTEAD PLAINS: PAST, PRESENT, AND FUTURE."

This talk will focus on the history, flora, fauna, and management of the Hempstead Plains. Betsy is the Conservation Project Manager of Friends of the Hempstead Plains at Nassau Community College. This nonprofit organization has a mission to preserve, restore, and educate regarding the Hempstead Plains.

Location: Bill Paterson Nature Center
Muttontown Preserve, East Norwich

Please note that Dick Stalter's talk on "Southeastern Coastal Plant Communities" has been changed from April to September.

May 10, 2005***Tuesday, 7:30 p.m.**

PHILIP ALTOMARE: "ETHNOBOTANY OF THE TANALA TRIBE."

Learn about the use of medicinal plants and technological applications of plants by this tribe from Madagascar. Philip is a landscape designer and organic gardener who studies at the Stony Brook Center on Anthropology and Ethnobotany.

Location: Museum of Long Island Natural Sciences
Earth and Space Science Building
Gil Hanson Room (Room 123)
SUNY at Stony Brook, Stony Brook

June 14, 2005**Tuesday, 5:30 p.m.**

(Please note early start time for the barbeque)

ANNUAL BARBEQUE

EXECUTIVE BOARD MEETING

The annual barbeque, featuring Chef Eric's made-to-order hot dogs and hamburgers. Salads, deviled eggs, desserts, etc. gladly accepted. The traditional location—on the green behind the Muttontown Preserve meeting house. All members are invited to attend the Executive Board Meeting to be held before the feasting begins.

Location: Bill Paterson Nature Center
Muttontown Preserve, East Norwich

* Refreshments and informal talk begin at 7:30 p.m.
Formal meeting starts at 8:00 p.m.

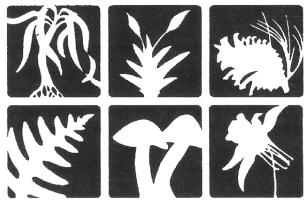
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Articles, and News** items
may be submitted to:

Margaret Conover
Long Island Botanical Society
PO Box 507
Aquebogue, NY 11931

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*This newsletter was printed by Suffolk AHRC
(Association for the Help of Retarded Children).*



Botanical Society of America

An Invitation to the 2005 Joint Field Meeting of the

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Philadelphia Botanical Club

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