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Botanical Discoveries of 2000 (1999)

by Steve Young, NY Natural Heritage Program
& Richard Mitchell, NY State Museum

Three SH species (not documented in over 15 years) were reported or discovered in the field in the last two years. That keeps our record going for finding at least one SH species in each of the last 11 years. Congratulations to all the successful explorers (the state ranks, as listed here, are those that were assigned to the taxa at the beginning of the 1999 field season).

Galium concinnum G5 SH

Three specimens were identified at the Brooklyn Botanical Garden, two from the Vanderbilt mansion collected in 1995 by Steve Glenn and one at the Ice Pond Conservation Area, Patterson, Putnam County, collected by William Buck in 1999.

Juncus debilis G5 S1 Threatened

A few plants of this species were found by Spider Barbour in a red-maple forest bordering a wetland in Sterling Forest. Richard Mitchell later found nine additional colonies in the sunny wetlands and open-canopy swamp forest.

Lysimachia hybrida G5 S1 Threatened

This species was found by Richard Mitchell in the transition zone between a red maple swamp and open swampland in Sterling Forest; a return visit yielded several hundred plants in a quarter mile long population ringing the marsh; it has been found nowhere else in the Palisade Parks, even in the same lake drainage.

Najas guadalupensis* var. *muenscheri G5T2? SH

This variety was recently brought to our attention as the only endemic plant in New York State. Some of its historical records in Hudson River freshwater marshes were searched in the summer of 2000 and two, possibly four, extant occurrences were discovered by Steve Young and Troy Weldy. Other stations for this variety had been established in the area by Mitchell, Barbour and Focht in the 1990s.

***Lysimachia hybrida* Michx.** LANCE-LEAF LOOSESTRIFE (*L. lanceolata* Walt.), found in only one of all of the wetlands searched in the Hudson Highlands, but locally abundant there. [Illustration from Crow & Hellquist, 2000].

Pycnanthemum clinopodioides G2 S1

One of the larger worldwide populations of this globally-rare plant was documented within the Palisades in 2000. In addition to this site, three smaller populations were discovered elsewhere within the state.

Solidago rugosa* ssp. *aspera G5T5 SH

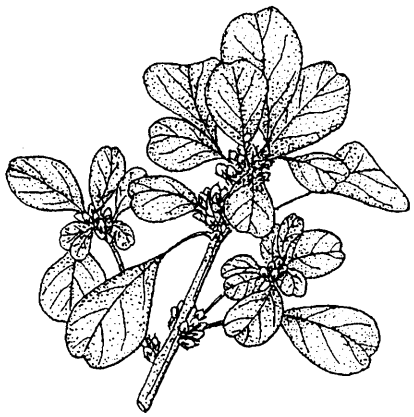
One specimen was identified as this species at the Brooklyn Botanical Garden. It was collected in 1995 by Steve Glenn at the Vanderbilt mansion.

Seabeach Amaranth on Long Island: 2000 Was the Best Year Yet -

by Steve Young, NY Natural Heritage Program

An estimated 150,000 plants of seabeach amaranth (*Amaranthus pumilus* Raf.), a federally threatened and state endangered plant) were counted on Long Island beaches this year. Annual counts have taken place on Long Island since 1990 when the plant apparently reappeared and was discovered, and this year's count is the highest ever, far surpassing the 19,000 plants seen in 1999 and the 8600 plants in 1998. Most of the plants are concentrated at three sites in central Suffolk, western Nassau and eastern Queens counties but populations are found to the east on Westhampton Island. Because North and South Carolina plants have suffered from numerous recent hurricanes Long Island is the current stronghold for this species at the moment. North Carolina only counted a few hundred plants this year. Small numbers of plants have now been discovered for the first time in many years in New Jersey and Delaware.

The areas in which the plants occur on Long Island have not expanded to large degree but the number of plants within these areas has increased greatly. There were two sites where the plants were so numerous we had to resort to estimating the total number. Almost all sites were within string fencing intended to protect rare shore birds, and this protection certainly has been a factor in increasing the numbers of plants. Future plans include more ecological studies and habitat modeling to predict where plants will occur and why they have occurred in selected areas. With this new knowledge, further protection can be planned and adjusted accordingly.



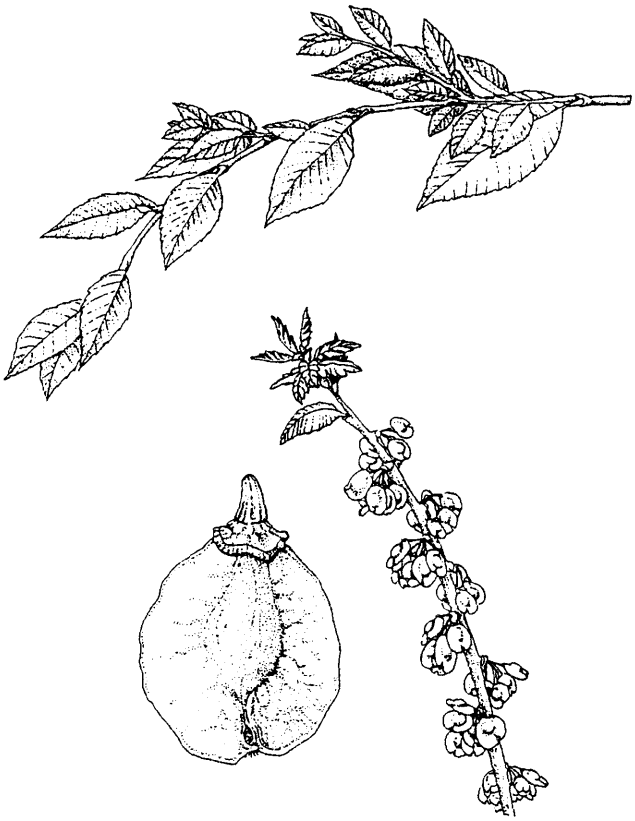
A Note on Horticultural Elms: *Ulmus parvifolia* and *Ulmus pumila* in the Niagara Frontier Region of New York

by P. M. Eckel, Buffalo Museum of Science

Ulmus pumila L., Siberian Elm, is a relatively recent addition to the flora of our region in the westernmost six counties, not recorded by Zenkert (1934) or for Cattaraugus County by Eaton and Schrot (1978). House (1924) reported its occurrence in the state: "observed as an escape near Albany." Zander and Zenkert (1975) first recognized it near Niagara by citing several collections from Erie and Chautauqua Counties and the Regional Municipality of Niagara at Port Colborne in Ontario. Its occurrence in Ontario was also noted by Morton and Venn (1990). Mitchell, in his treatment of the Ulmaceae in New York State (1988) showed recent records for Erie and Chautauqua Counties. The species is widely planted in cities, as a yard shrub or as an alternative to disease-prone American Elm, *Ulmus americana* L. The epithet "*pumila*" refers to the stature of this small tree or tall bush, a poor alternative to the tall, fountain-shaped form of the American Elm, which once made a trip along city streets seem like driving down the nave of a cathedral.

Siberian Elm readily escapes throughout the city of Buffalo and its environs, and if you thought those sprouts of sidewalks and roadsides were poor American Elm trying to make a comeback, it is probably Siberian Elm instead. Another horticultural Elm cited in the literature from time to time is the Chinese Elm, *Ulmus parvifolia* Jacq., (small-leaved), mentioned by Voss in his Michigan Flora (Voss 1985). Reports for Ontario are unconfirmed by specimens (Morton & Venn, 1990); reports for the New York State Flora are *U. pumila* instead (Mitchell and Tucker, 1997).

Recent inquiries at the Clinton Herbarium (BUF) at the Buffalo Museum of Science were hampered by the absence of a specimen of Chinese Elm to compare with local collections. Illustrations of the species are also generally inaccessible. While at the Missouri Botanical Garden in St. Louis in October, I happened to see branch tips on the ground with the typical samaras of Elms. Of all our species, *Ulmus parvifolia* is the only one to bear fruit in the fall (except *U. serotina* Sarg. to the west and south of us with leaves to 10 cm). The Missouri tree was extremely tall, with no likelihood of being considered a bush (*pumila*), the trunk was 11 inches in diameter at breast height. The crown was dense,



with a beautiful cascade of tiny leaves and tinier samaras, and the twigs had a definite weeping habit. A handy sign indicated that I was looking at *Ulmus parvifolia*, so I gratefully took some branches, conveniently found on the ground, for the Clinton Herbarium (BUF).

Bailey (1949) has a key to both species, which are separated from our other Elms by leaves that are generally simply serrate, or if double, weakly so, and only in the distal half of the leaf. The famous characteristic of the elm family, that the leaves are unequal at the base (one half higher than the other) is less evident (they are subequal). Both species have very small leaves when mature: to 7 cm, and the samaras are glabrous. It was while I was trying to draw the leaves that I noticed that the petioles were longer on *U. parvifolia*, and that the twigs were around 1 mm wide in *U. parvifolia*, but 1.5 mm in *U. pumila*:

I offer the following key to aid in small-leaf elm identification:

1. Branchlets soon glabrous, especially at maturity; flowers occur in spring before the leaves, fruits develop in spring to early summer; leaves lanceolate, broadest at or below the middle; leaves acute to sharply acuminate; mature teeth more generally doubly-serrate in the distal half, especially on older leaves, generally acute, subsessile or petioles short (2-3 mm); nutlet of the fruit above the middle .....*Ulmus pumila*

1. Branchlets pubescent, sometimes only along one side of the twig; flowers occur in late summer, fruits develop in late summer, early autumn (October); leaves oblanceolate, broadest at or above the middle, apices obtuse to rounded and broadly acute, mature teeth generally obtuse, more regularly one-serrate, petioles longer (5-7 mm); nutlet central in the fruit..*Ulmus parvifolia*

It is hoped that this information will contribute to more confident identifications. It is a pity that *U. parvifolia* does not escape; it is certainly a more lovely tree than *U. pumila*. *Ulmus parvifolia* is not winter hardy in New York, although it can survive a St. Louis winter. In was once reported as "hardy near Boston" (Rehder, 1927). With the recent extension of the growing season around wintry Buffalo, it might be just a question of time before it becomes established. With the aid of the key that I offer here, perhaps you can find it as an escape in your area, and add a new exotic species to the flora.

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When an Aster is No Longer an Aster

by David 'Nakita' Werier
Botanical Consultant, Ithaca, NY

Asters are one of my favorite groups of plants here in central New York. The showy blues, violets, purples, and whites of late summer are so common and decorate the landscape beautifully. Learning to distinguish the 20 or so different species in central NY has been an exciting challenge. The taxonomy of the genus *Aster* has not always been such a delight for some botanists. In his old age Asa Gray wrote, "I am half dead with *Aster*... I work and work, but make no headway at all. If you hear of my breaking down utterly, and being sent to an asylum, you may lay it to *Aster* which is a slow and fatal poison" (Asa Gray letter, quoted in Xiang and Semple, 1996).

Interestingly, asters are not all that closely related to each other. Taxonomists have long recognized different genera to what now is mostly accepted as *Aster*. At the same time many botanists of late have refused to accept these segregates. The purpose of this article is to elucidate recent evidence that points in the direction of accepting several genera as a result of different evolutionary history. I tried to make this article as least technical as possible, which is not easy when dealing with such a complex issues as *Aster* taxonomy. So, bear with me if the going gets rough.

It seems that there is much reluctance to accept this recent evidence and long recognized and described *Aster* segregates. "Maintenance of a "conservative" treatment, or a "traditional" treatment, of Aster has sometimes been stressed as a valuable objective or at least implied to be such" (Nesom, 1994). Our own state botanist, Richard Mitchell, seems to be in the crowd that resists new evidence. "I resist dropping the genus *Aster* from the North American flora, no matter how convincingly some may argue for splitting all of our native species into several genera none of which is *Aster*.... several *Aster* experts will agree with the split, but, since we will have no asters under the new scheme, who needs aster experts?...The pendulum swings, sorry to say with changes often based on too few (and inconsistent) morphological differences. If we start calling our native asters Symph[*y*]*otrichum* (and such), we are only paving the way for some future genius to get tenure by discovering that: all we have is a bunch of asters." (Mitchell, 1998)

Arthur Cronquist (1947) gives a review of how we have arrived at the present situation. "Until the publication of the first part of the second volume of the *Genera Plantarum* [Bentham, 1873], it was customary at least in America to regard the various *Aster*-segregates as valid genera. Asa Gray rather reluctantly followed Bentham's sweeping reduction of most of the segregates."

"Although I do not wish to become involved at this time in a discussion of the propriety of the extended definition of *Aster*, I must support it, with some misgivings, at least until a thorough study of the old-world as well as the American species provides a reasonable basis on which all species can be referred either to *Aster* proper or to a morphologically definable segregate."

I got involved in this debate while doing work in Maine. The recent Flora of Maine (Haines and Vining, 1997) recognizes many of these *Aster* segregates and I was forced to learn them in order to conduct the work I was involved with. I spoke with Arthur Haines, one of the authors of the new flora about the different names. He explained that it only makes sense to follow recent research. To stick to some other beliefs only creates confusion as more and more botanists call things by different names.

So, what is this debate about anyway? It seems that there is still some conflicting evidence about what to call all the different *Aster* species. At the same time the evidence is in that the genus is polyphyletic (derived from different ancestry) (Nesom, 1994; Xiang and Semple, 1996; Noyes and Rieseberg, 1999) and that some *Aster* segregates need to be recognized. Some *Aster* segregates (i.e. *Oclemena and Ionactis)* are so distantly related that if they are included in *Aster* then *Solidago* must also be included in *Aster* (Xiang and Semple, 1996).

Nesom (1994) reviewed recent research about the taxonomy of *Aster* and applied morphological evidence to come up with a current revision of

Aster. I will only look at the revisions made to *Aster* species here in central New York although he looked at species distributed all over the globe. He found that *Aster* sensu stricto (*Aster* in the narrow sense) based on the type specimen (a specimen designated as the type for a species or genus or family, etc.) for the genus *Aster*, *Aster amellus*, is almost entirely Old World in distribution with no species occurring in the central NY region. In other words the species that are closely related to *Aster amellus* occur predominately in the Old World. There is only one species (*Aster alpinus)* that reaches the New World (no species in central NY). Nesom (1994) considers all other New World species of *Aster* sensu lato (*Aster* in the broad sense) to be distantly related to *Aster* sensu stricto and therefore segregates them as distinct genera.

The *Aster* segregates Nesom (1994) recognized for species in the central New York region include *Doellingeria* (for *A. umbellatus*, and *A. infirmus*), *Eurybia* (for *A. divaricatus*, *A. macrophyllus, and A. schreberi*), *Ionactis* (for *A. linariifolius* which occurs just outside the central NY region), *Oclemena* (*for A. acuminatus*, and *A. nemoralis*), *Sericocarpus* (for *A. paternus*), *Symphyotrichum* (for *A. borealis, A. ciliolatus, A. cordifolius, A. ericoides, A. laevis, A. lanceolatus, A. lateriflorus, A. lowrieanus, A. novae-angliae, A. oolentangiensis*, A. *pilosus, A. prenanthoides, A. puniceus, A. sagittifolius, A. subulatus,* and *A. undulatus*). For more details about the descriptions and relationships of these *Aster* segregates please see Nesom's (1994) work.

Xiang and Semple (1996) used restriction site analysis of chloroplast DNA to determine the relationships and therefore the appropriate generic names in and for *Aster* sensu lato. Fundamental differences showed up in Xiang and Semple's (1996) as compared to Nesom's (1994) studies. For example Xiang and Semple (1996) found *Aster divaricatus* to be closely related to the type specimen of *Aster*, *A. amellus*. Therefore they included in *Aster* sensu stricto, many North American species. They also found that *Symphyotrichum* is a well-defined group although, if the genus *Aster* was to be broadly defined it could include *Symphyotrichum*. They found *Sericocarpus* to be the sister group to *Aster* sensu stricto and included it in the genus *Aster*.

In summary, Xiang and Semple (1996) called for at a minimum the genera *Doellingeria, Ionactis* and *Oclemena* to be maintained. They also called for the genus *Symphyotrichum* to be maintained with further research to be conducted to see if it is actually a sister group to *Aster* and at that point would recommend its inclusion in *Aster*. Differences from Nesom's (1994) interpretation include calling *Eurybia* and *Sericocarpus* synonyms of *Aster*. All the other species in the central NY region would remain as Nesom (1994) outlined.

Noyes and Rieseberg (1999) analyzed sequence variation in the internal transcribed spacers (ITS) of nuclear ribosomal DNA of many *Aster* sensu lato species to test the conflicting hypotheses of Nesom (1994) and Xiang and Semple (1996). The ITS data sides with Nesom (1994) and shows that *Aster* sensu stricto is confined to Eurasia and is not closely related to American species of *Aster* sensu lato. In other words *Eurybia* and *Sericocarpus* are not close enough to *Aster* sensu stricto to call them synonyms of *Aster* sensu stricto. Noyes and Rieseberg (1999) also found that the different *Aster* segregates occupy different clades (groups that have one common ancestor) and therefore are polyphyletic and should be segregated out as distinct genera.

Noyes and Rieseberg (1999) were puzzled that ITS results differed greatly from Xiang and Semple's (1996) chloroplast results. Noyes and Rieseberg (1999) therefore called for further research to figure out the relationship of *Aster* sensu stricto and North American taxa. So, it seems that the taxonomy of central New York *Aster* sensu lato species are still being worked out and at the same time it is clear that some changes (or reversions) are necessary. In the mean time it seems best to recognize certain *Aster* segregates including *Doellingeria, Ionactis, Oclemena,* and *Symphyotrichum*. A case could be made to also recognize *Sericocarpus* and *Eurybia* but to be on the "conservative" side in regards to interpreting recent research these two genera should be relegated to synonymy.

Perhaps this recent evidence will help Richard Mitchell and others change their minds about how they define *Aster*. Lastly, just because a scientific name changes doesn't mean the common name needs to change as well, and we can happily go on calling all of the asters, asters.

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Editor's Note:

I'm in a holiday mood, here, trying to give all sides of any controversy their say, and not inclined to get myself into a "heap" of controversy, as I did with loosestrife and habitat restoration. So, I won't offer my opinions on cladistic techniques applied to phylogenetic classification. I will refrain from using words like "bunk" to describe such activities. The writer of the preceding article seems reasonable (if a bit quick) in his personal acceptance of a series of generic splits now being supported by some of the more careful and long-term students of asters, but I stand my ground. An aster, by any other name, is not very different from a goldenrod, much less *Chaetopappa*, but that opens another can of worms.

Composites! Psychiatric help is now available for those in crisis. Contact Dr. Florio Pappus (author of: *Being an Aster is Still O.K.*), Center for the Generically Confused, Bugtussle, Texas, USA.

Dues: Check your envelope above your address to see the last year you paid up. If you are two years behind, I have to send you a reminder letter, and that makes me grinchy. Stay with us, please!

Happy Holidays!