

NYFA Newsletter

New York Flora Association - New York State Museum Associates

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Editor's Note:

This issue should awaken a winter longing for that remote, yellow-composite summer. It will also revive the practice of profiling plant species, a tradition that has been with us since the first NYFA Newsletter in 1990. I hope to bring it back from time to time, so that we can share specialized knowledge and insights gained from studying a single species in depth. Articles will usually feature a plant of some special interest, such as a weed, rarity, useful herb, overlooked or undercollected species.

I welcome such contributions. (R. Mitchell)

Black-eyed Susan (*Rudbeckia hirta* L.)

By Knowlton Foote, Ph.D.

Black-eyed Susan is an introduced species in the northeastern United States; however, it came not from Eurasia, as so many of New York's wildflowers did, but from the midwestern region of this continent. It is a native, North American species, well-known both by name and sight in the fields of New York State.

The common name may have come from a popular song written in England in 1720 about a lass called "Black-eyed Susan" who was searching for her sweet William among a ship's crew (Coats, 1973). However, "black-eyed" undoubtedly refers to its flower, with its dark brown (almost black) disk, surrounded by bright yellow rays, giving it a black-eyed appearance. In some areas it is known as the yellow daisy, and today, along with a number of other species, it is called a coneflower because of the conical shape of the central disk. Black-eyed Susan is the state flower of Maryland.

Name and Classification

Botanically, this species is *Rudbeckia hirta*, a scientific name assigned to it by the famous Swedish taxonomist, Carolus Linnaeus in 1753 (Carl von Linné, 1707-1778). *Hirta* means "hairy" in Latin, referring to the fuzziness of the stem and leaves. In England an old common name for it was "hairy coneflower" (Miller, 1884).



***Rudbeckia hirta* L., the common Black-eyed Susan, is one of North America's more successful native weeds**

The Genus

Rudbeckia is known as the "Coneflower" genus, and belongs to the family Asteraceae. There are eight species of *Rudbeckia* in the northeastern United States (Gleason & Cronquist, 1991), of which five occur in New York State (Mitchell and Tucker, 1997). These are *R. fulgida* (with three varieties), *R. hirta* (with two varieties), *R. laciniata*, *R. subtomentosa*, and *R. triloba*.

To understand the derivation of the generic name, it helps to go back to the college days of Carl von Linné, who started college at the University of Lund in 1727. After one year he transferred to the

University of Uppsala, located some 40 miles north of Stockholm. It was there that he received most of his scientific training. The person who taught botany there, Olof Rudbeck (1660-1740), befriended Carl during his college days, even providing lodging for him. Von Linné showed his profound gratitude to professor Rudbeck many years later by naming this genus of American plants in his honor. He wrote to Olof Rudbeck on July 29, 1731: "so long as the earth shall survive, and each spring shall see it covered with flowers, the *Rudbeckia* will preserve your glorious name" (Blunt, 1971).

Most historians believe, however, that Linnaeus was also honoring Rudbeck's father, Olof Rudbeck "the Elder." Rudbeck-the-Elder (1630-1702) taught botany at Uppsala before his son. He started the Uppsala Botanical Garden upon which Linnaeus based his book describing the garden plants, *Hortus Upsaliensis*, published in 1748. Rudbeck the Elder had a herbarium of over 11,000 plant specimens, built up during his lifetime of work at the Uppsala Botanical Garden. Most of this collection was destroyed by a 1702 fire that raged through three-quarters of the City of Uppsala. The loss of his herbarium apparently so upset the Elder Rudbeck that he died the same year.

Spread in North America

Black-eyed Susan originally ranged across the plains and prairies of the North American Midwest, apparently migrating into the Northeast as forests were cleared in post-Columbian times. It may have been transported by wagons and trains, moved purposely as an ornamental, or it may have first come as a contaminant of grass seed or grain fodder. It was reported in Quebec by 1830 (Rousseau, 1968), in southern Pennsylvania in 1847, and in the Lake George (NY) area in 1856 (Clute, 1944). Ironically, while Black-eyed Susan was making its way East in the 19th century, it had already arrived in Europe over a hundred years earlier. The plant had been brought into Britain by 1714 (Coats, 1973) and was growing as an ornamental in Europe before being named by Linnaeus in 1753 (Fernald and Schubert 1948).

As noted by American botanist Willard Clute (1944), "as so often happens when a plant is introduced into a new geographical area, it soon begins to vary. Conspicuous differences began to appear in the size, shape, color of both disk and ray florets." Seven different color forms were reported in the Rochester, NY, area in 1893 (Burnham 1914).

Albert Blakeslee, writing in *New York Botanical*

Garden Memoirs in 1916, noted some of the heritable varieties. Variations included: absence of rays, number of rays, ranging from eight to 30 per flower, diameter of flowers, between one and 5.5 inches, and color of rays, varying from pale straw color to deep orange. Variations were also found in the width of rays. Some of these forms were annuals, while others were biennials or even short-lived perennials (Clute, 1944).

Some of the observed variations may have involved confusion with a closely related species (or variety), *Rudbeckia serotina*, a yellow daisy in which the leaves range from ½ to 1 inch in width, with smooth edges (Core, 1962). That species also has spread aggressively into the eastern states from midwestern North America, giving rise to a number of variants. It is now thoroughly naturalized and has become the commoner of the two in some areas. There is also the possibility that hybridization has occurred (Core, 1962), and both taxa have the same chromosome number of $2n = 38$ (Mulligan, 1959; Battaglia, 1947).

Merritt L. Fernald, in his eighth edition of *Gray's Manual of Botany* (1950), treated *R. hirta* and *R. serotina* as separate species, and listed many of the varieties observed by Clute and others as varieties or forms of *R. serotina*; however, Earl Core, of West Virginia University, after studying the work of Fernald and Schubert (1948), concluded in 1962 that *R. serotina* is best treated as a variety of *R. hirta*, known today as *Rudbeckia hirta* var. *pulcherrima* (Gleason and Cronquist 1991, Mitchell and Tucker, 1997).

Habitat and Range

Like many other naturalized wildflowers, Black-eyed Susan is found chiefly in disturbed, waste lands, pastures, old fields, roadsides, and meadows. It thrives the driest, hottest summers, when many other plants perish (Bailey, 1947). Rousseau (1968) noted that it does particularly well on sandy soils that are often poor in organic matter. It is undoubtedly a tough plant, with a present range from Nova Scotia to Florida west to British Columbia and Mexico (Gleason & Conquist, 1991).

Description:

This species is usually a biennial, but may be a short-lived perennial (or rarely an -annual) in the Northeast. Rydberg (1932) in his *Flora of the Prairies and Plains of Continental North America*, described it as a perennial. The mature plant is 1-3 ft tall, with leaves that vary in shape and size, ranging from 1-1.5 inches wide, with the edges

finely to coarsely toothed (Fig. 1). The stem and leaves are covered with short, bristly hairs. The flower head (or capitulum) is borne singly, or two to several, each with a long peduncle. Beneath the head are involucrel bracts: 18-24 small, hairy, reflexed, leaf-like structures in two series. Each flower head has an outside ring of 8-30 (often 10-14) yellow ray flowers surrounding the dark brown to purple, cone-shaped disk. The rays are 1-1.5 inches long, orange to yellow, with the color often darker at the base. The cone is $\frac{1}{2}$ to $\frac{3}{4}$ inches wide and $\frac{1}{2}$ to $\frac{3}{4}$ inches high (Gleason and Cronquist, 1991).



The so-called “flowers” are actually composed of smaller disk and ray flowers called florets, making them composite heads. Each ray comprises one floret. The ray florets, however, are sterile. The disk contains 200 to 300 flowers, and each disk flower (Fig. 2) has a pistil and five stamens, and, like other composites, produces a one-seeded fruit called an achene.

An interesting feature of this species is the lack of a pappus on its seed-like fruit (achene). It does not disperse in the wind like those of many asters, such as bull thistles, dandelions, and hawkweeds, for example. The achenes may be spread by humans in their agricultural activities, physically distributed by animals or wind gusts that dislodge and catapult them, or they may simply drop and establish near the parent plant.

The achene is long-lived. In a long-term, buried fruit experiment, 31% of those placed at eight

inches depth had germinated at the end of 31 years (Toole and Brown, 1946). The fruit is quite small, with an average weight of 0.26 milligrams (Stevens, 1932; Abrahamson, 1979) equivalent to 1,745,000 seeds per pound. Many fruits can be produced in a single flower head, but these are often subject to weevil infestation. Stevens (1932), in North Dakota, observed an entire plant which produced only 1615 seeds due to infestation.

The unusual root system, lacks strong laterals and has no tap root. Its roots are mainly fibrous and similar in structure to the root systems of grasses, but without obvious rhizomes. The fibrous root system with its copious root hairs, provides a very large surface area for water absorption, a necessary adaptation for surviving the dry soils of their native prairie habitats in the Midwest.

Life Cycle

During the first year, a seed of Black-eyed Susan germinates and develops into a rosette, with simple, 2-6 inch, spatulate leaves. The rosette overwinters, and, in biennial plants, an erect flowering stem 1-3 feet tall develops from the center during the second season. After flowering and fruiting, the plant dies. For those plants that become short-lived perennials, the rosette stage lasts more than one year before flowering and fruiting occurs. Unlike the grasses, this species does not reproduce vegetatively.

Floral Biology

A black-eyed Susan flowering head opens first by spreading its rays, which naturalist Anna Comstock (1911) referred to as its “banners.” Next, the florets around the base of the cone-shaped disk begin to open and push out yellow pollen in a unique fashion. The five stamens of each disk floret are joined along the margins of the anthers to form the very important “anther tube.” In the center of the tube is the pistil. As a floret matures, the brownish style of the pistil elongates up through the anther tube. The two styles are tipped with stylar brushes, which sweep out pollen that was previously released by the anthers. The maturing disk florets form a ring easily seen due to the appearance of yellow pollen. As the flower head ages, the yellow ring moves closer to the apex of the disk’s dome – a process that may take three to four weeks.

Rudbeckia hirta is reported to be an obligate outcrosser (East, 1940; Abrahamson & McCrea, 1977). Therefore florets do not self-pollinate or pollinate neighboring florets within the flower head

(geitonogamy). For pollination to be successful, the pollen must be transferred to a different Black-eyed Susan genet (*i.e.* a plant with a different genetic makeup). Further study of the species, however, may show that it has some degree of self-compatibility.

The florets also exhibit a phenomenon called “sensitive stamens” which is a thigmonastic response (personnel observation, Small 1917). As an insect walks around an open floret, the anther tube is drawn down by the 5 filaments. With the pistil remaining in place, a small amount of fresh pollen is then swept out of the anther tube by the stylar brush for presentation to the pollinator.

Pollinators

Nectar is found in the deep, tubular, disk florets and is drained primarily by long-tongued insects. However, the golden pollen grains, which provide protein to adult insects and their larvae, are plentiful and accessible to all insects (Blanchan, 1915). Charles Robertson (1929) observed a large number of insect species (84) visiting this flower in Carbondale, Illinois. This number included 14 long tongued bees including the honeybee, *Apis mellifera*, 13 short tongued species, 31 fly species, 12 butterflies, 6 beetles and 1 bug. Ginsberg (1979) in Ithaca, New York, added the sweat bees *Halictus ligatus* and *H. confusus*.

Robert Dirig of the Bailey Hortorium, Cornell University, has been observing Lepidopteran visitors to New York’s wildflowers for 40 years. He has observed the following butterflies nectaring on Black-eyed Susan: *Thymelicus lineola* (European Skipper), *Colias philodice* (Clouded Sulphur), *Lycaena phlaeas americana* (American Copper), *Speyeria cybele* (Great Spangled Fritillary), *S. aphrodite* (Aphrodite Fritillary), *Clossiana bellona* (Meadow Fritillary), *Charidryas harrisii* (Harris Checkerspot), *Phyciodes tharos* (Pearl Crescent), *Euphydryas phaeton* (Baltimore Checkerspot), *Cercyonis pegala* (Common Wood Nymph) and *Danaus plexippus* (Monarch).

Nectar Guides and Ultraviolet Pigments

In 1793, German pastor and botanist Christian Konrad Sprengel pointed out the significance of bright colors in flowers. They send out signals to insects in the form of targets or guides, to help them locate the nectar-producing parts of the flower with a minimum expenditure of energy. Sprengel studied the concentric rings of a forget-me-not flower (*Myosotis palustris* L.) and developed his color theory. Sprengel’s book, “*The Secrets of*

Nature in the Form and Fertilization of Flowers Discovered” (translated from German) is now a botanical classic. But it attracted little attention in his day. His publisher didn’t even send him a copy. In his discouragement, Sprengel unfortunately did not have his second volume published, but turned from plants to the study of languages (Lovell, 1918).

The normal visible spectrum for humans ranges from 400 nanometers (blue-violet region) to 700 nm (red region). The primary colors for human beings are blue (450 nm), green (520 nm), and red (700 nm). For insects, the visual spectrum is shifted toward the shorter wavelengths (Mulligan & Kevan, 1973). For most insects the visual spectrum is from 300 nm to 650 nm. The primary colors for insects are ultraviolet (350), blue (450) and yellow (580), so, unlike humans, most insects can see in the near ultraviolet range.

Interest in the ultraviolet range of insects was rekindled in 1969 by Thomas Eisner and his colleagues at Cornell University, using as a primary subject, Black-eyed Susan. The research group was able to demonstrate visual patterns of rays of this species with a UV sensitive television camera, and Black-eyed Susan was found to have an ultraviolet nectar guide. To humans, most of the flowers appear to have a brown-black disk and yellow to yellow-orange rays. However, the bases of the rays were observed to be ultraviolet-absorbing so that a bee sees three concentric rings on the flower head: light-yellow ray tips, darker yellow, ultraviolet-absorbing ray bases, and a black disk. The bee, according to researchers McCrea & Levy (1983), sees a 3-ringed bull’s eye with the rings darker towards the center.

Abrahamson & McCrea (1977), of Bucknell University, studied three species of *Rudbeckia*: *R. hirta*, *R. triloba* and *R. laciniata*. They believe that pollinators are able to discriminate between the three species based in part on their UV patterns. Further study of the Black-eyed Susan flower showed that the UV absorption was due to a mixture of three flavonols (Thompson *et al.*, 1972).

Conclusions

Black-eyed Susan, *Rudbeckia hirta*, is a species that originated in the plains and prairies of the North American Midwest. It is a native plant well-adapted to prairie and semi-desert conditions. Its root systems, has a high surface area for optimal water absorption, its leaf area is not great, and the leaves are covered with hairs (trichomes) that

reduce water loss due to transpiration. This species spread into the Northeast as forests were cleared and open habitats created, undoubtedly enhanced by increased vigor and variability acquired through hybridization with closely related taxa, such as *R. hirta* var. *pulcherrima*. Perhaps because of genetic enrichment, we see annual, biennial, and short-lived perennial life cycles in northeastern North American populations. *Rudbeckia hirta* is believed to be an obligate outcrosser, but this needs to be substantiated by further study.

In light of its range of flower coloration and target patterning, with UV absorbing pigments to attract insects, wouldn't Christian Konrad Sprengel find it a marvelous wildflower to study if he were with us today? Black-eyed Susan has now been scattered around the globe as an ornamental. With pride, I feel that it may be considered a gift from the New World to the Old.

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**Bitterweed (*Picris hieracioides* L.) –
An Abundant but Often Overlooked Species
by Joseph M. McMullen, Terrestrial
Environmental Specialists, Inc.**

Bitterweed or ox-tongue (*Picris hieracioides* L.) is a Eurasian import that is abundant in open fields, roadsides, and waste places throughout New York. This showy, late-summer, yellow-flowered plant is frequently a dominant plant in these areas. Unfortunately, many of our common floras and keys, especially those used by amateur botanist, do not include this species, or they list it as only occasional. As a result, it is often misidentified or ignored.

Picris hieracioides is a member of the *Asteraceae*. Like other composites, it has its flowers grouped in a head. The *Asteraceae* is considered the largest family of flowering plants. In the lengthy introduction to this family in Gleason (1952), Arthur J. Cronquist notes how the family was split into numerous families over the years but is now generally recognized as one large, complex family with a number of tribes. Gleason and Cronquist (1991) describe nine tribes, with *Picris hieracioides* in tribe nine, the *Lactuceae* (formerly *Chichorieae*).

Members of the *Lactuceae* are easily distinguished from those of the other eight tribes. They separate out immediately in the key, because they have only ray flowers (forming a ligulate head). Literally, ligulate means flat, indicating that each flower in the head has a flat corolla. As a result, the head appears much like a cluster of petals. Other genera in this tribe include dandelion (*Taraxacum*), hawkweed (*Hieracium*), and lettuce (*Lactuca*).

Flower heads in the other tribes may have all tubular flowers (a discoid head), or a mix of tubular and ligulate flowers (a radiate head). Examples of

genera that have all tubular flowers are ragweed (*Ambrosia*), blazing star (*Liatris*), and wormwood (*Artemisia*). Examples that have a mix of tubular and ligulate flowers are asters (*Aster*), sunflowers (*Helianthus*), and the goldenrods (*Solidago*). In the radiate-head group, the disk flowers are generally in the center and the ligulate flowers radiate from the margins where they are called ray flowers. At first glance, the flower head looks like a center of numerous pistils surrounded by a corolla. This is why lay people look at the head of showy sunflowers and consider it just one flower.

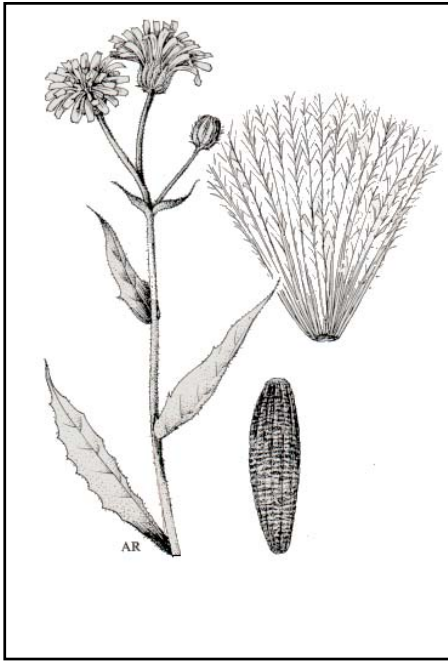
Picris hieracioides not only has heads of all ray flowers but also the milky sap that characterizes the tribe. The milky sap is similar to that found in other plant families, like the milkweeds (*Asclepidaceae*) and Indian hems (*Apocynaceae*).

As the epithet of its scientific name (*hieracioides*) implies, bitterweed has the general appearance of hawkweeds (*Hieracium*), and is often confused with them. The leaves have the long hispid hairs and rough texture of most hawkweeds, but characters of the flower parts readily separate the two genera.

The pappus is the outgrowth of hairs, scales, or bristles that extends outward or upward from the summit of the achene. It is generally considered to be a modified calyx. The pappus may be lacking, but when present it functions as an aid in seed dispersal. That tuft of hairs that floats a dandelion seed in the wind is the pappus.

The structure of the pappus varies among genera and the structure readily separates *Picris* from *Hieracium*. In *Picris*, the pappus consists of plumose bristles, meaning they are feathery and branched. In *Hieracium* and some other members of this tribe, the pappus is comprised of simple, unbranched hairs.

As stated at the outset, *Picris* is commonly misidentified because it is not well represented in our floras. Newcomb's Wildflower Guide (Newcomb, 1977), an excellent first step in identifying common flowering plants, does not include the genus *Picris*, nor does Peterson's A Field Guide to the Wildflower (Peterson and McKenny 1968). Even in our more technical floras, Gleason (1952) only lists it as found occasionally from Rhode Island to D.C. and Ohio, and Gleason and Cronquist (1991) reports it as occasionally found in our range. *Picris hieracioides* is obviously a species that has increased its range and abundance in New York over the last century. Paine (1865)



***Picris hieracioides* L. Bitterweed or Ox-tongue, a plant that is often mis-identified because it is ignored by the books.**

did not list it in the central New York region. Taylor (1915) reports it as an occasional adventive in parts of our downstate area. Wiegand and Eames (1926) lists it as rare in the Finger Lakes Region, and Zenkert (1934) state that it is very rare and of recent introduction in western New York at that time. More recent regional floras in the state do recognize its abundance. In Cattaraugus County, Eaton and Schrot (1987) note it as abundant. The Atlas of New York State Flora (NYFA 1990) records it from 22 counties in New York. It is a species that should be recognized as an abundant member of our open field and roadside flora.

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NYFA Plant Identification Workshops – Past and Future:

On Saturday, Sept. 22, NYFA held a workshop: Aquatic Plants of New York, led by the well-known pondweed (*Potamogeton*) expert Dr. Barre Helquist and hosted by the Biology Department at the State University, Albany. Dr. Helquist is the chair of the biology department at the Massachusetts College of Liberal Arts, and he recently co-authored *Aquatic and Wetland Plants of Northeastern North America*, a revised and enlarged, two-volume edition of Norman C. Fassett’s *A Manual of Aquatic Plants*. The workshop included a slide overview of the diversity of aquatic plants, reiteration of field characters to assist attendees with identification, a hands-on identification session using fresh plants and herbarium specimens, a discussion of invasive aquatic species, and some tips for locating rare aquatics. Participants were from Watertown, the Adirondacks, Syracuse, Ithaca, the Catskills, Hudson Valley and Capital District regions. Many thanks to all attendees, Barre Helquist and the University of Albany for making this workshop a great success.

NYFA is planning two new identification workshops for the 2002 field season. The first workshop will be held on Saturday, April 27th in conjunction with the Northeast Natural History Conference. Dr. Steven Clemants, FNA Juncaceae co-author and Vice-President of Science at the Brooklyn Botanic Garden, will lead a Juncaceae identification workshop. This workshop is schedule

to start at 9am and will run until 3 or 4pm. The cost of this workshop is \$23 (NYS Museum members \$20). Since this workshop is in April, it will be lab-based and similar to the aquatic plant workshop described above. If all goes as planned, the second workshop will be a field-based sedge identification session under the guidance of Dr. Tony Reznicek. It will be held somewhere in the eastern Adirondacks or western Lake Champlain Valley. Although plans are not finalized it will occur some time during late June. We are still trying to confirm details on this workshop, so please check the NYFA website for updates.

New York Flora Atlas Update -

by Troy Weldy, N. Y. Natural Heritage Program

This note is to keep NYFA members updated about our exciting NY Flora Atlas project. In early December, an invitation was sent to select herbaria who were thought to have label information in an electronic format. This invitation described the digital flora atlas project and asked each herbarium to share the following fields: species name, county and year of collection. Information was received by late January 2002, and map production began after all the data were assimilated into the NY Flora Atlas database. Each record was checked against Mitchell's Checklist of the NY Flora.

The invitation resulted in the receipt of over 100,000 records. The top ten data sources were:

Source	# Records
1990 NYFA Atlas (digitized by Kartesz).....	44,644
New York State Museum.....	29,856
Brooklyn Botanic Garden.....	10,983
NY Botanical Gardens.....	5,675*
Planting Fields Arboretum.....	5,115
Cornell University.....	3,812*
Gray Herbarium (Harvard Univ.).....	1,365*
Philadelphia Academy of Science.....	1,261*
Buffalo Museum of Science.....	836*
Rice Creek Field Station.....	763

*Records from these institutions were obtained from either the Brooklyn Botanic Garden or New York Natural Heritage Program, and are not complete.

The new digital New York Flora Atlas should be finished this spring. An official unveiling will take place at the Northeast Natural History Conference, with the atlas of distribution maps appearing on the NYFA website shortly thereafter.

The "Preliminary Vouchered Atlas of New York State Flora" still distributed by NYFA was created

in 1990. Since then, Dick Mitchell has worked with NYFA to produce the new atlas, checking all species lacking map data, including new species discovered and adding greatly to the excluded species list. An online atlas will allow periodic updates, thereby providing members with the most recent distribution information on the flora of New York State. The first version will be similar to the Atlas of Tennessee Vascular Plants. See: <http://www.bio.utk.edu/botany/herbarium/vascular/atlas.html>).

We are also planning a **revised online atlas**. Our goal for the revised atlas is to produce a database similar to the Atlas of Florida Vascular Plants (<http://www.plantatlas.usf.edu>). This will allow users to see species distributions maps, taxonomic comments, data sources, links to color photos and other helpful fields yet to be determined. If we are able to secure funding, we hope to produce a NY Flora Database with Atlas similar to Florida's by the fall of 2003. Funding for the database will come from membership donations and grants. A New York equivalent of the Florida Atlas would cost approximately \$25,000.

New Website features: to prepare for the updated atlas, the NYFA website has been updated. The updates incorporated many features requested by NYFA members, including: county checklists, calendar of events, a discussion forum, a newsletter archive, a site index and a search engine.

From the NY Flora Atlas website, you can view individual checklists for any county within New York State. These county checklists are generated automatically from the NY Flora Atlas database, so you will be guaranteed the most current information available.

On the calendar of events, we hope to summarize botanical activities occurring throughout New York State. If you are a member of another group with botanical interests within New York, please forward event announcements to Troy Weldy (weldy@nynhp.org). If you happen to know of any botanical seminars, please forward that information too. The goal is to create a single source.

The discussion forum is a web page specifically designed for NYFA members to share field stories, talk about new plant finds, discuss taxonomic issues, ask questions, or discuss any other topic that will interest NYFA members. After you submit your comments, your text is automatically added to the web page. These entries will be periodically monitored for content, and the comments page will

be cleared on a regular basis.

Beginning with the September 2001 issue, you can now find an archive of previous NYFA Newsletters. New newsletters will be added 3-6 months after they are mailed to NYFA members.

We are looking for someone to scan newsletters published prior to September 2001. If you are interested in tackling this task, please contact either Troy Weldy or Dick Mitchell. We would like to have this done soon so that we may post a complete newsletter archive. The site index provides users with an easy way to discover all the supporting pages located on the site. In a similar way, the search engine allows users to easily locate text of interest. We welcome your feedback, so please tell us how we may improve these pages.

We want to encourage continued membership support. There have been many exciting activities within NYFA so far. We hope to continue to provide members with identification workshops led by nationally recognized botanists. Two more workshops are in the queue for the 2003 field season. We also hope to host a botanical lecture once each year. Over the next year, the website will continue to improve, the big event being the online digital flora atlas. By the fall of 2003, maps in the atlas will be generated directly from a database; meaning the maps will always represent the best voucher distribution available.

Once the atlas project is complete, NYFA should be able to reinstate the small grants program. This program helps defer the cost of travel for NY botanical studies conducted by NYFA members – especially students. In order to advance such projects, we need your continued support. If your membership is not up-to-date, please renew today. Additional donations are also welcome.

2002 Doos-R-Doo

Line-drawing illustrations are from Holmgren, 1998

NYFA CALENDAR OF EVENTS

See our website for more information:

www.nyflora.org

NYFA Lecture Series - April 24, 2002

Bill Brumback will present “NEPCoP: A Regional Plant Conservation Program (or how one region discovered the public really can help).

Juncaceae Identification Workshop – April 27

Dr. Steven Clemants, FNA and NY State Juncaceae author and Vice-President of Science at the Brooklyn Botanic Garden, will conduct a workshop on identification of Juncaceae. The workshop is schedule to start at 9am and will run until 3 or 4pm. The cost of the workshop is \$23 (NYS Museum Institute members \$20).

NYFA Field Trip: Ithaca, NY - June 9, 2002

David Werier will lead a tour of the Ithaca area including the Taughannock Falls Gorge with a chance to see *Primula mistassinica*, *Pinguicula vulgaris*, and *Saxifraga aizoides* plus a beautiful and rich gorge. If interested, David is also leading a sedge walk on Sat. June 8th for the Finger Lakes Native Plant Society of Ithaca, and he has invited NYFA members to join in. The walk will be from 12:30 to approximately 5pm. If there is any interest, we may also offer a NYFA social opportunity on June 8th where NYFA members can tour some of the local Finger Lakes wineries together. If you are interested in any of these activities, please check out the website or contact Troy Weldy: weldy@nynhp.org

Carex Identification Workshop- Late June, 2002

Dr. Tony Reznicek has agreed to lead a field oriented workshop. Contact Troy Weldy for dates and cost: weldy@nynhp.org

NYFA Field Trip – September 28, 2002

Rogers Island, near Catskill

Steve Young, botanist for the New York Natural Heritage Program, will lead a tour of the mudflats and marshes of Rogers Island where we will see all kinds of interesting and rare freshwater tidal species. Be prepared to get down and dirty. If you have a canoe to share, please contact Steve Young: young@nynhp.org



**April 24-27 - NYFA will be holding meetings and workshops in conjunction with the
Northeast Natural History Conference**

For information on the conference, visit the following web site:

<http://www.nysm.nysed.gov/nhc/index.html>

