

The Turk's Cap

THE NEWSLETTER OF THE DELAWARE NATIVE PLANT SOCIETY SPRING 2001

IN THIS ISSUE

- Page 1** ○ *A Call for Articles*
 ○ *New Members*
 ○ *Letter From the President*
- Page 2** ○ *Letter From the Editor*
 ○ *Plant-animal Highlight*
 ○ *Resources and Reviews*
- Page 3** ○ *Native Plant Community Highlight*
 ○ *Feature Article*
- Page 4** ○ *Feature Article continued*
 ○ *Plant Community Highlight cont.*
- Page 5** ○ *Letter From President continued*
 ○ *Native Plant Highlight*
- Page 6** ○ *Native Plant Highlight cont.*
 ○ *Thoughts from the edge of the garden*
- Page 7** ○ *Upcoming Events*
- Page 8** ○ *Membership Application*

A CALL FOR ARTICLES

If you would like to write an article for The Turk's Cap, we would love to print it. With like minded individuals as an audience, The Turk's Cap is a great venue for plant or habitat oriented writings.

We'll take just about anything from gardening tips to book reviews to poetry. Of course, it has to be about native plants, or issues related to native plants; just a minor constraint. Your imagination is the real key.

Contact Eric Zuelke for more information at (ezuelke@juno.com), or Keith Clancy at 302.674.5187.

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A WARM, VERNAL WELCOME TO OUR NEWEST MEMBERS

January through March

Olin Allen & Becky Boutz
 DE Bay Shore Project, The Nature Conservancy
 Delaware Wild Lands, Inc., Lifetime Membership
 Kathy and Dix Lamborn
 Mt. Cuba Center
 M. H. Mervine
 John Molitor
 Rick Mulrooney
 Phyllis Rawling
 Maria & John Taylor
 Darlyne Wilkinson
 Angela Wood
 Al & Joan Zverina

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LETTER FROM THE PRESIDENT

My calendar says spring but when I walk outside it still screams winter! And, oh the rain we have had; a prelude to a bounty of spring wildflowers? I have been keeping a close eye out for early spring bloomers, the so-called spring ephemerals. While this term is usually used to describe the early spring flowering herbs that typify the eastern hardwood forest community, it probably is not an appropriate term to describe the early blooming plants I have been seeing.

In late February I ventured out into our swamp forests to search for the malodorous skunk

Continued on page 5

The DNPS Vision

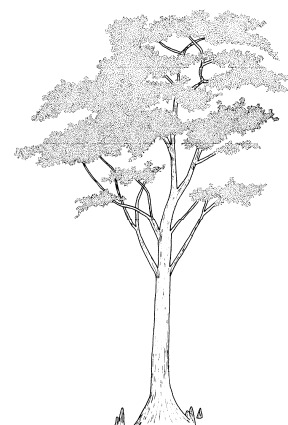
The purpose of the Delaware Native Plant Society (DNPS) is to participate in and encourage the preservation, conservation, restoration, and propagation of Delaware's native plants and plant communities. The Society provides information to government officials, business people, educators, and the general public on the protection, management, and restoration of native plant ecosystems. The DNPS encourages the use of native plants in the landscape by homeowners, businesses, and local and state governments through an on-going distribution of information and knowledge by various means that includes periodic publications, symposia, conferences, workshops, fieldtrips, and a statewide membership organized by the DNPS.

HOW CAN I GET INVOLVED?

The Delaware Native Plant Society is open to everyone ranging from the novice gardener to the expert botanist. One of the primary goals of the society is to involve as many individuals as possible.

The DNPS is working on several significant projects at this time. We are active in a reforestation project at Prime Hook State Wildlife Area. A second initiative underway is the establishment of a native plant nursery. We have three beds in this nursery and it looks great so far. We encourage everyone to participate in these, as well as other DNPS endeavors.

For more information on how to get involved, call 302.674.5187, or E-mail at dnplant@aol.com. Or visit the DNPS website at



LETTER FROM THE EDITOR**TIME TO FIRE UP THEM LAWNMOWERS**

Can you believe it time to start mowing the grass again! My trusty little non-motorized reel mower died on me last summer, so I just bought a shiny new electric mower the other day. Not completely environmentally benign, but a good alternative to those loud, smelly, greenhouse gas producing gas-powered mowers.

This issue of The Turk's Cap transports us back to our preferred level of article diversity. It's tough as an editor to fill 8 pages of space and I'd like to thank all those who have sent in articles, both long and short, to help with the creation of this newsletter. Keep 'em coming.

Another fascinating plant/bug relationship is discussed in the plant/animal highlight, and if you don't know what a *Paulownia* tree is, then the Feature Article is for you. If you make it out to some ponds or freshwater streams in the next few weeks, you'll begin to see all kinds of species of submerged aquatic vegetation peeking their heads out; the Native Plant Highlight discusses them. And after a brief hiatus, the Native Plant Community Highlight has returned with a discussion of one of my favorite forest types, tuliptree rich woods.

Though lawn mowing is a drudgery unparalleled, the smell of fresh cut grass makes the chore a little more tolerable. But better yet, let's all start planting more native trees, shrubs, and ground covers to reduce our lawn coverage. This could have profound affects on our economy and environment. By reducing our mowing, we not only reduce gas usage, thereby decreasing our dependency on foreign oil and the destruction of the earth from oil-related activities, but we also reduce emissions of CO₂ gases and thus do our part in protecting the ozone layer and reducing the rate of global warming. Our little planet can only tolerate so much! Happy spring.



Eric Zuelke, Editor

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PLANT-ANIMAL HIGHLIGHT**THE BEANS ARE A HOPPIN'**

If you have a special fondness for plants in the Euphorbiaceae family, then I'm sure you know of a phenomenon that fascinates children to no end. This phenomenon is the Mexican Jumping Bean. Mexican Jumping Beans are only found in the Riyo Mayo region of Mexico. The Mexican people call the plant "Yerba de la Flecha", which means "plant of the arrow", originating from ancient times when they used the milky sap to poison arrow tips. One shrub in particular, *Sebastiania pavoniana*, has co-evolved with an insignificant looking blue moth, *Lapeyresia saltitans* to form an interesting relationship. This shrub only flowers for a few days following seasonal rains. When it flowers and later sets seed, the moth visits only this plant and lays eggs on the seedpods. As the eggs hatch, the 3/16 of an inch long caterpillars burrow into the seedpods. As the seedpods mature, they develop a characteristic 3-sided shape and the larvae remains inside eating the meat of the seed. Eventually only a woody shell remains on the seedpods. When fully mature the seedpods fall off the shrub and break into three separate seeds, one of which has the moth larvae still inside it. The larvae then lines the inside of the bean with silk and at-

taches it's back legs to the silken wall. To make the bean jump, the larvae curls up and then springs uncurled again, jerking the bean forward.

There is speculation about why the larvae should expend so much energy making the bean jump. One possible explanation is that by doing so, it will move itself into a safer place to continue the life cycle. Where the beans fall is liable to be hot and sunny, and they could easily be fried in the sun, trodden on, or eaten by an animal. The beans do jump most when they are warmer or in light. Nevertheless, fresh beans often jump vigorously even when they are not especially warm, so it could also be an evolutionary mechanism of the moth for spreading the gene pool. Another explanation is that it is a defense mechanism to scare away predators. Vigorous movement will elicit a self-preservation reaction and the larvae will "play dead" for several minutes.

In a natural situation, the bean may continue to jump for many months until it finds a place where it remains cool and dark. People who have "pet" beans will get activity for 4 months or so from August until about November.

When the caterpillar senses that it has remained in a cool, quiet, safe place for some time, it prepares a tiny, perfectly circular "trapdoor" hole in the bean, spins a silk cocoon around itself, and becomes a pupa. Metamorphosis occurs and it remains in the pod until it senses that the seasonal rainfall has returned in June. After a few days, the adult moth pushes the trapdoor aside and emerges. It has now only a few days of life remaining to mate, find a *Sebastiania pavoniana* shrub, and lay it's eggs to complete the lifecycle.

This is an amazing example of insect evolution, and in particular, the adaptation one of species to its natural environment and surrounding resources.

Eric Zuelke, Editor



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RESOURCES AND REVIEWS**BOOK ON GROWING NATIVE PLANTS**

"100 Easy to Grow Native Plants" by Lorraine Johnson, 1999, Firefly Books, 160 pages ISBN #1-552-09327-1

This book is appropriate for the beginning native plant gardener. The common and botanical name, height and blooming period of each plant is given along with its soil, sun, shade, and moisture requirements. Other data includes each plant's native habitat and range, description, propagation, good companion plants, and related species. Such familiar plants as bee balm, black-eyed susan, Christmas fern, Jacob's ladder, purple coneflower and Virginia bluebells are listed. This synopsis is from the Maryland Native Plant Society's web page. I checked a copy of the book out of the Bear Library. The book is well illustrated with color photographs of each plant and actual garden plantings. It is well written and easy to read. Seventy-one of the 150 plants covered are from the northeast region.



Rick Mickowski, DNPS member

NATIVE PLANT COMMUNITY HIGHLIGHT***Liriodendron tulipifera*-(*Quercus rubra*/*Polystichum acrostichoides* Forest
Tuliptree-(Northern red oak)/Christmas fern Forest****Introduction**

Scattered throughout the state, rich woods are particular highlights come springtime. This community occurs on moist, nutrient-rich, loamy soils, and is rich in species. While there are certain species that are typical of this community throughout Delaware, such as *Liriodendron tulipifera* (tuliptree) and *Polystichum acrostichoides* (Christmas fern), individual occurrences can be quite variable. For this reason, this community type has been divided into two distinct variants; one for the Piedmont, and one for the Coastal Plain.

Community structure/composition (Piedmont)

This variant is typically restricted to the mid to upper reaches of steep slopes. In addition to *L. tulipifera* (tuliptree), *Quercus rubra* (northern red oak) is a characteristic tree, but these species may be joined in the canopy by *Quercus alba* (white oak), *Quercus coccinea* (scarlet oak), *Carya ovata* (shagbark hickory), *Carya cordiformis* (bitternut hickory) and occasionally *Fraxinus americana* (white ash) and *Tilia americana* (basswood). *Cornus florida* (flowering dogwood) and *Betula lenta* (black birch) are common in the understory. The shrub layer is typically characterized by *Hamamelis virginiana* (witch-hazel) and *Viburnum prunifolium* (black-haw), and *Viburnum acerifolium* (maple-leaved viburnum) may be abundant. The herbaceous layer can be quite diverse, with frequent species including *Podophyllum peltatum* (mayapple), *Sanguinaria canadensis* (bloodroot), *P. acrostichoides* (Christmas fern), *Collinsonia canadensis* (Canada horse-balm), *Galium lanceolatum* (Torrey's wild licorice), *Botrychium virginianum* (rattlesnake fern), *Aralia nudicaulis* (wild sarsaparilla), *Prenanthes altissima* (rattlesnake root), *Panax trifolius* (dwarf ginseng) and *Cimicifuga racemosa* (black cohosh). Other species that may be present include *Deparia acrostichoides* (silvery spleenwort), *Panax quinquefolius* (American ginseng), *Hydrastis canadensis* (goldenseal), *Phegopteris hexagonoptera* (broad beech fern), *Adiantum pedatum* (maidenhair fern), and *Caulophyllum thalictroides* (blue cohosh), among many others.

Community structure/composition (Coastal Plain)

These so-called "rich wood pockets" are typically found on slopes above streams beyond the range of regular flooding. However, they may also be found as small occurrences unassociated with a stream, on areas of rich, loamy soil. Like the Piedmont variant, the Coastal Plain variant is dominated by *Liriodendron tulipifera* in the canopy. *Quercus rubra* is a good indicator of the type, and may be joined by *Carya glabra* (pignut hickory), *Carya cordiformis* (bitternut hickory) and *Liquidambar styraciflua* (sweetgum). *Cornus florida* (flowering dogwood) is characteristic in the subcanopy. The shrub layer ranges from moderately dense to sparse, and frequently includes *Viburnum prunifolium* (black-haw), as well as *Lindera benzoin* (spicebush) and *Viburnum acerifolium* (maple-leaved

NATURAL QUOTE

Flowers always give me joy: the sky-blue hepatica..., the almost hidden pink and white arbutus..., crimson woodbine..., a carpet of yellow cowslips..., all of them give me pleasure, and knowing the long evolution of their formation makes their beauty even more significant."

Sigurd F. Olsen, *Reflections from the North Country*

FEATURE ARTICLE**PAULOWNIA**

(Editor's note: Reprinted with permission, from the Spring 2001 [Vol. 9, No. 1] issue of Chinquapin, The Newsletter of the Southern Appalachian Botanical Society).

"What is that tree with the purple flowers?" isn't a question botanists or naturalists could normally answer right off the bat. But when it's asked in mid-spring here in the southern mountains most of us know the tree being referred to is princess tree or Paulownia.

"What's that tree with leaves as large as elephant ears?" is another question one fields later in the growing season. Once again, the answer is the same.

Princess tree (*Paulownia tomentosa*) is eye-catching, even for motorists traveling at 60 mph along an interstate highway. Growing up to 50 feet in height, its showy flowers are displayed in branched, pyramid-shaped clusters up to 14 inches in length that contain up to 50 flowers. Each flower is about two inches in length, being comprised of a bell-shaped, purple corolla with fused petals. Since the flowers precede the leaves, they are even more noticeable. From a distance these clusters resemble wisteria.

When the tree does leaf out, it once again becomes eye-catching due to the size of its leaves, especially when displayed on sprouts. I once measured a leaf on a sprout growing out of a refuse pile that was 35 inches wide and 24 inches long.

And then comes winter, princess tree for a third time becomes eye-catching. This is due to its prominent tan flower buds and large, oval seed capsules from the previous season.

Despite all of these eye-catching attributes, the princess tree can still be categorized to my way of thinking as a weedy, aggressive, short-lived tree that often occurs in generally unpleasant locations like garbage dumps, barren roadsides, and urban wastelands. If you spot a sprout growing up from the crack in a sidewalk with abnormally large leaves, think "princess tree."

The common and scientific names honor Anna Paulownia (1795-1865) of Russia, princess of the Netherlands. Other common names are empress tree, royal paulownia, tung tree (tung oil derived from the tree is used as a substitute for linseed oil in paint and varnish), and foxglove tree (because of the flower shape). Here in western North Carolina where I reside, it is often called cottonwood, but it doesn't resemble true cottonwoods at all. Perhaps that common name is based on the downy cotton-like seeds.

The genus *Paulownia* is sometimes now placed in the family Bignoniaceae, but other authorities continue placing it in

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the Scrophulariaceae. In North America it has become fully naturalized from southern New York to north Florida and westward to north Texas and Missouri. The tree is, however, a native of China that also grows in Japan and Korea. At one time Chinese taxonomists designated as many as 23 species, but at the present time only nine or six species are accepted, depending upon the source consulted.

There are at least two versions of how paulownia was introduced into North America. One relates that the tree was introduced as an ornamental; the other maintains that it was introduced when porcelain tea containers were packed in the soft-bodied paulownia seeds for shipment to Chesapeake Bay. Perhaps both versions are factual.

Paulownia is reputed to have a market value of \$8 per board foot in Japan, where the wood is utilized to make musical instruments, furniture, sandals, chests used as wedding gifts, and other items. Derivatives from the tree are used to prepare medicinal balms. It is noteworthy that a major reforestation effort in China, which has made widespread use of paulownia, is reputed to have increased food production in the Yellow River and Yangtze floodplains by 30 percent.

The tree is so popular in some corners that an entire web site (www.paulownia.org) on the Internet is devoted to it under the heading "is it a weed? ... Is it a crop? ... IT'S SUPER TREE!" Go see for yourself. You can spend hours reading about paulownia consultants, growers, investors, nurseries, researchers, eco-action, propagation, taxonomy, woodworking, and a host of other topics. If that's not enough, punch "Paulownia tomentosa" into your favorite search engine and see what happens. I tried google.com and came up with 993 hits.

Because of the demand for paulownia, a widespread activity has evolved that would be amusing if it weren't criminal. Law enforcement officers refer to it as "paulownia rustlin'." One of the numerous reports I stumbled upon on the Internet cited an instance of rustlin' in Upper Marlboro, Maryland, where eight to 10 trees at Merkle Wildlife Sanctuary were chainsawed down and stolen during the night of March 6, 1998. It was alleged that the men sold the logs to a logging company in Virginia for \$3,400.

In January of 1993, a paulownia rustlin' took place here in western North Carolina that makes the Maryland rustlin' look like child's play. At that time 55 princess trees in the Nantahala Gorge were stolen from U.S. Forest Service lands. It takes a lot of gall to chainsaw 55 huge trees containing nearly 4,000 board feet valued at \$32,000 and haul them off of federal land in a flatbed truck. Now that's really rustlin'!

Although paulownia is promoted by some state agencies as an ornamental, it is considered to be persona non grata by most state and federal plant management specialists. In the Great Smoky Mountains National Park, for instance, paulownia is classified as an "invasive exotic pest" and has been prioritized for control or eradication where possible. Whenever possible, the tree is cut off at ground level and sprayed with a concentrated solution of glyphosate. On steep roadcuts where cutting them low is not possible, triclopyr (a basal bark spray) is utilized. Nevertheless, park managers have little hope that they will ever fully eradicate paulownia because the tree can disperse its seeds a couple of miles by wind and quickly invade fire scars or other barren areas.

So, there you go. Whether you consider paulownia to be a "super tree" or an "invasive exotic pest," when someone asks, "What is that tree with the purple flowers?" or "What is

that tree with leaves as large as elephant ears?", you'll know the answer.

oooo George Ellison



NATIVE PLANT COMMUNITY HIGHLIGHT

Continued from page 3

viburnum). The herb layer is diverse and typically includes a number of species restricted to this community type on the Coastal Plain. Indicator species for this variant are *Polystichum acrostichoides* (Christmas fern), *Podophyllum peltatum* (mayapple), and *Sanguinaria canadensis* (bloodroot). In addition, there are a number of other herbaceous species that are frequently present, including *Collinsonia canadensis* (Canada horse-balm), *Asplenium platyneuron* (ebony spleenwort), *Circaea concatenata* (cutleaf toothwort), *Circaea lutetiana* (enchanter's nightshade), *Botrychium virginianum* (rattlesnake fern), *Phryma leptostachya* (lopseed), *Galium circaezans* (wild licorice), *Senecio aureus* (golden ragwort), *Cimicifuga racemosa* (black cohosh), and *Solidago caesia* (bluestem goldenrod), as well as many others. There are also a number of herbaceous vines characteristic of Coastal Plain rich woods, including *Amphicarpa bracteata* (hog-peanut), *Menispermum canadense* (Canada moonseed), *Matelea carolinensis* (Carolina angelpod), and *Passiflora lutea* (yellow passion-flower).

Distribution

Occurrences of this community type tend to be rather small for a forest habitat, usually only a few acres. However, this does not diminish their significance in terms of conservation or botanical diversity. Several occurrences of the Piedmont variant are known from the Red Clay Creek valley, and are likely to occur in the Brandywine valley as well. The Coastal Plain variant is known from numerous scattered localities throughout the state, with notable occurrences at Woodland Beach Wildlife Area, Kent County and Prime Hook Wildlife Area, Sussex County. Species rich forests are known to occur throughout the Atlantic Coastal Plain, although their relations to this type are unclear. Similar community types occur in other eastern states but their composition can vary quite a bit.

Conservation Status

Currently ranked as an S? (questionable ranking) by The Nature Conservancy, but may be ranked an S3 in the future. There is currently no formal state or federal protection for this community type.

oooo Peter Bowman, DE Natural Heritage Program Ecologist



© Keith Clancy

LETTER FROM THE PRESIDENT*Continued from page 1*

cabbage, *Symplocarpus foetidus*, to photograph it in flower. This is one of our earliest blooming plants and while it usually flowers in February or March, I have seen it flowering as early as January. The day I went out there was a blanket of snow on the ground and the skunk cabbage was in full bloom; its inflorescences poking through the snow was quite a sight. The purple colored spathe, flecked with spots and streaks of green and yellow forms a hood-like structure covering the yellowish spadix that is covered with many small male and female flowers. If you have never seen this remarkable plant in bloom I recommend you schedule a trip to any of our streamside swamp forests to see this spectacle. But, unfortunately, you will have to wait until next winter to do so. By the way, it's a great way to break-up the long, cold winter. One last point about the skunk cabbage and where to find it: you can often see this ubiquitous plant right from the side of the road, and the comforts of your car. Just stop by wherever a wet forest comes close to the road, as at a stream crossing.

The last several weeks I have been going back to a site along the Murderkill River to see if the swamp pink, *Helonias bullata*, a federally threatened species, was blooming so that I could photograph it. I really do not want to miss this plant when its dense spikes of beautiful pink blooms are at full anthesis. In years past I have always been a few days or several weeks late and its blossoms had faded. But this year the winter and spring have been cooler and the plants are not yet showing any evidence of flowering. I don't intend to miss it this year.

Despite the cool and wet spring thus far, there are plenty of plants to see that are in full bloom as early as March; unfortunately most of these are aliens. Drive out into the country or just go outside your door and you may be surprised to see a variety of species in bloom. Such things as the mints, henbit, *Lamium amplexicaule* and red dead nettle, *Lamium purpureum*, and the ivy-leaved speedwell, *Veronica hederaefolia*, are now flowering. The red dead nettle forms dense carpets in some places and is often found growing alongside *L. amplexicaule*; look for it in farm fields. Its characteristic dark colors and clumping habit make it easy to identify while driving 50 mph along the road. The speedwell is right outside my door and has been flowering since early March; the cold damp days don't stop this little plant from its duties. Other aliens in bloom now include the hairy bitter-cress, *Cardamine hirsuta*, whitlow grass, *Draba verna*, periwinkle, *Vinca minor*, and winter cress, *Barbarea verna*. Some native plants that are now flowering include the wild or field pansy, *Viola bicolor*, and red maple, *Acer rubrum*. But if you really want to see our natives in full flower make sure you don't miss the next 2-6 weeks when there will be a deluge of native ephemerals announcing themselves to the world: such species as spring beauty, *Claytonia virginica*, bloodroot, *Sanguinaria canadensis*, wild ginger, *Asarum canadense*, cutleaf toothwort, *Cardamine concatenata*, trout-lily, *Erythronium americanum*, golden seal, *Hydrastis canadensis*, round-lobed hepatica, *Hepatica nobilis* var. *obtusata*, rue anemone, *Thalictrum thalictroides*, to name just a few. I highly recommend a visit to Brandywine Creek State Park where many of these plants can be seen along the hiking trails.

There are quite a number of native plant activities that will be happening in the next few months and I hope that many

of you will be able to participate in these exciting, educational and important events. On April 21, the DNPS will be having its annual meeting. This event takes place at the St. Jones Reserve outside Dover and will be an event-filled day. We will be planting native plant seeds in the morning and undertaking some work (e.g., installing new fencing around the seed bed) in the native plant nursery. Afterwards we will take a hike through the St. Jones Reserve and learn about the flora of a salt marsh. Following a pot-luck lunch there will be a short business meeting and the day will conclude with an informative talk on the orchids of Delaware. Don't miss this event!

Later in June (from the 24-28) there will be all day field trips to Delaware coastal plain habitats to see and learn about Delaware's native plants. This field trip is being organized by the Botanical Society of America, Torrey Botanical Society and Philadelphia Botanical Club. Several DNPS members will be leading field trips and giving talks. While I would encourage members to attend these meetings the cost may be prohibitively expensive at \$90 or \$230 with meals and lodging.

On-going help is also needed at the native plant nursery. I will continue to use this forum as an opportunity to solicit your help. During this field season we will need people to help out at the nursery as well as at Prime Hook State Wildlife Area where we have begun a reforestation effort. Last fall we direct seeded a one-acre field with nearly 2000 acorns, hickory and other seeds and this year we will be checking on the success of that effort. Seedlings that develop will need tending to (e.g., weeding around them and installing tree tubes or shields).

So, I hope that everyone will be able to get out and enjoy and observe the spring flowering phenomenon and the rebirth that is taking place in our forests. And check out some of the events that are happening (see the Upcoming Events section of this newsletter for additional activities). I hope to see you sometime soon at either a DNPS function, or other event.

Sincerely,



Keith Clancy

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NATIVE PLANT HIGHLIGHT
SUBMERGED AQUATIC VEGETATION

Submerged aquatic vegetation (SAV) is a widely used terminology to describe a particular category of vascular plant; one that is based upon growth habit and form, and habitat characteristics. SAV refers to those plants that live and grow entirely underwater, or just at the water's surface. Several species, when in bloom, have their flowers emergent (i.e., just above the water's surface), but for the majority of their life cycles, these and other SAV are found completely submergent. SAV, because they live in an aquatic environment, have developed special adaptations. For example, the leaves and stems of SAV do not have specialized plant tissue that serve as structural support (e.g., sclerenchyma) because the surrounding water medium provides that support. There are also specialized cells within the leaves and stems of SAV called aerenchyma, which are thin-walled cells with large intercellular air spaces. These cells provide additional buoyancy and support to the plant. In addi-

tion, the leaves and stems of SAV are generally thin and do not have a waxy covering on their surfaces called a cuticle, which is typical of most terrestrial plants. The lack of a cuticle increases the exchange of gases and nutrients between the plant and water. When an SAV is removed from the water for an extended period of time, it loses moisture rapidly and will soon desiccate and die.

There are 41 species and varieties of SAV known to occur in Delaware; 34 are native and seven are alien. Alien species include four that are considered to be invasive in nature. The SAV flora of Delaware is represented by 10 families and 34 genera. The families containing the largest number of species include: Potamogetonaceae (Pondweed Family), 12 taxa; Lentibulariaceae (Bladderwort Family), 9 taxa; Haloragaceae (Water-milfoil Family), 6 taxa; and Hydrocharitaceae (Frog-bit Family), 5 taxa. The genera containing the largest number of species include: *Potamogeton* (pondweed) 12 taxa, *Utricularia* (bladderwort) 9 taxa, and *Myriophyllum* (water-milfoil) 6 taxa. In general, SAV in Delaware is a very rare category of plants. There are 23 species (56% of the total SAV flora) considered to be rare and uncommon, four are thought to be historical (not reported for 15 or more years), and four are considered to be extirpated (gone from the state). The majority of SAV in Delaware have a perennial habit (38), with only three being annual. Most of the SAV flora of Delaware is found in fresh water systems (35), with six species found in brackish to salt water systems. Eleven species of SAV in Delaware have a more northern distribution (i.e., are at or near their southern limits of geographic distribution). Five species have a more southern distribution, and therefore are at or near their northern limits.

Submerged Aquatic Vegetation of Delaware

SCIENTIFIC NAME

Ceratophyllum demersum

Ceratophyllum echinatum

Egeria densa

Elodea canadensis

Elodea nuttallii

Heteranthera dubia

Hydrilla verticillata

Myriophyllum aquaticum

Myriophyllum heterophyllum

Myriophyllum humile

Myriophyllum sibiricum

Myriophyllum spicatum

Myriophyllum verticillatum

Najas gracillima

Najas guadalupensis ssp. *guadalupensis* southern naiad (H)

Najas minor

Potamogeton crispus

Potamogeton diversifolius

Potamogeton epihydrus

Potamogeton foliosus

Potamogeton natans

Potamogeton nodosus

Potamogeton pectinatus

Potamogeton perfoliatus

Potamogeton pulcher

Potamogeton pusillus

Potamogeton robbinsii

COMMON NAME

common hornwort

prickly hornwort (U)

Brazilian waterweed (IA)

broad waterweed

Nuttall's waterweed

grassleaf mud-plantain (R)

hydrilla (IA)

parrot feather (IA)

broadleaf water-milfoil (R)

low water-milfoil (U)

common water-milfoil (A)

Eurasian water-milfoil (IA)

whorled water-milfoil (H)

thread-like naiad (R)

southern naiad (H)

water-nymph (A)

curly pondweed (A)

water-thread pondweed

Nuttall's pondweed

leafy pondweed (U)

floating pondweed (H)

longleaf pondweed

Sago pondweed

clasping-leaf pondweed (H)

spotted pondweed

slender pondweed (R)

flatleaf pondweed (E)

<i>Potamogeton spirillus</i>	spiral pondweed (E)
<i>Ruppia maritime</i>	ditch-grass
<i>Utricularia biflora</i>	two-flower bladderwort (R)
<i>Utricularia fibrosa</i>	fibrous bladderwort (R)
<i>Utricularia geminiscapa</i>	hidden-fruited bladderwort (U)
<i>Utricularia gibba</i>	humped bladderwort (U)
<i>Utricularia inflata</i>	large swollen bladderwort (R)
<i>Utricularia macrorhiza</i>	large bladderwort
<i>Utricularia minor</i>	lesser bladderwort (E)
<i>Utricularia purpurea</i>	purple bladderwort (R)
<i>Utricularia radiata</i>	small swollen bladderwort (U)
<i>Vallisneria americana</i>	tape-grass
<i>Zannichellia palustris</i>	horned pondweed (R)
<i>Zostera marina</i>	eel-grass (E)

U = Uncommon

R = Rare

A = Alien

IA = Invasive alien

H = Historical

E = Extirpated

oooo William McAvoy, DNPS member

Editors Note: Some of the plants in this list would be great additions to a water garden. Please see the Pick The Turk's Cap column in Volume 3, Number 1 for more information on water gardens.

THOUGHTS FROM THE EDGE OF THE GARDEN

We would like to thank Delaware Wild Lands, Inc. for our first lifetime membership. Their support of our Society is really going to help with needed supplies at our native plant nursery at the St. Jones DNERR site.

We would also like to give special recognition to Rick McCorkle, DNPS Vice-president. Rick just recently completed his Master of Science thesis that entailed a biological study of the Blackbird watershed area. Congratulations Rick! Now you can spend more time digging up weeds at the nursery!

The Flora of Delaware update. This checklist by William McAvoy (DE Natural Heritage Program (DNHP) botanist) and Karen Bennett (DNHP Coordinator) will be going to the printers soon and will be available soon after that. The cost will be \$14.00 + Shipping and Handling charges. Call 302.653.2880, or see Vol. 3 No. 1 issue of The Turk's Cap for more information.



© Keith Clancy

UPCOMING EVENTS

SATURDAY, 21 APRIL 2001 – THIRD ANNUAL MEETING OF THE DE NATIVE PLANT SOCIETY. TO BE HELD AT THE ST. JONES RESERVE, KITTS HUMMOCK RD., DOVER, DE. ACTIVITIES INCLUDE PLANTING SEEDS, SOME MAINTENANCE WORK IN THE NURSERY, A HIKE THROUGH THE RESERVE AND TALK ON THE FLORA OF A SALTMARSH, A SLIDE PRESENTATION ON THE ORCHIDS OF DELAWARE AND A SHORT BUSINESS MEETING. EVERYONE IS CORDIALLY INVITED TO ATTEND. FOR MORE INFORMATION CONTACT THE DNPS AT DNPLANT@AOL.COM OR 302.674.5187.

SATURDAY, 28 APRIL 2001 – AN EARTH DAY ECO-WALK, TO BE HELD AT BRECKNOCK PARK, CAMDEN-WYOMING, DE. FROM 9 AM TO 1 PM. THIS EVENT IS SPONSORED BY THE DELAWARE SOLID WASTE AUTHORITY, KENT COUNTY PARKS AND RECREATION, THE DELAWARE ENVIRONMENT AND THE HILL DESIGN GROUP. THE EVENT IS DESIGNED TO PROMOTE INCREASED AWARENESS ABOUT OUR ENVIRONMENT AND THE NATURAL RESOURCES THAT WE DEPEND ON. THERE WILL BE A NATURE HIKE AND AN EXHIBITION AREA OF NATURAL RESOURCE ENTITIES. FOR MORE INFORMATION CONTACT KENT COUNTY PARKS & RECREATION AT 302.698.6445.

SUNDAY, 29 APRIL 2001 – A NATIVE PLANT HIKE. FROM 1 PM TO 3 PM. A WILDFLOWER WALK ON MARYLAND'S EASTERN SHORE, IN THE UPPER CHOPTANK RIVER WATERSHED. THIS IS A MD NATIVE PLANT SOCIETY SPONSORED EVENT (DNPS MEMBERS ARE INVITED TO ATTEND) THAT WILL BE HELD ON PRIVATE PROPERTY. NATURALIST, AND MNPS AND DNPS MEMBER, MARGARET CARTER WILD LEAD THIS TOUR OF HER PROPERTY THAT CONSISTS OF A VARIETY OF HABITATS FROM DRY, SANDY UPLAND WOODS OF PINES AND HARDWOODS TO A BOTTOMLAND HARDWOOD COMMUNITY. FOR MORE INFORMATION CALL 410.634.2847 OR 302.674.5187; THE LATTER NUMBER IF YOU LIVE IN DELAWARE AND WANT TO TRAVEL DIRECTLY TO THE SITE OF THE FIELD TRIP; MARYLAND NATIVE PLANT SOCIETY MEMBERS WILL BE MEETING AT ADKINS ARBORETUM, IN CAROLINE COUNTY ON MARYLAND'S EASTERN SHORE AND CARPOOLING.

SATURDAY, 5 MAY AND SUNDAY, 6 MAY 2001 – NATIVE PLANT SALE PRESENTED BY THE DELAWARE NATURE SOCIETY. FROM 9 AM TO 5 PM ON SATURDAY AND 10 AM TO 3 PM ON SUNDAY, ASHLAND NATURE CENTER AT BRACKENVILLE AND BARLEY MILL ROADS NEAR HOCKESSIN, DELAWARE. FOR MORE INFORMATION CALL 302.239.2334, OR ON THE WEB AT WWW.DELAWARENATURESOCIETY.ORG, OR WEBPAGE@DNSASHLAND.ORG.

SATURDAY, 12 MAY 2001 – ADKINS ARBORETUM ANNUAL SPRING NATIVE PLANT SALE, CELEBRATION OF THE FLORA OF THE MID-ATLANTIC REGION. FROM 9 AM – 1 PM. THE ARBORETUM IS LOCATED AT 12610 EVELAND RD., NEXT TO TUCKAHOE STATE PARK, NEAR RIDGELY, MARYLAND, 410.634.2847.

THURSDAY-SATURDAY, 7-9 JUNE 2001 - 11TH ANNUAL MILLERSVILLE NATIVE PLANTS IN THE LANDSCAPE CONFERENCE, AT MILLERSVILLE UNIVERSITY IN LANCASTER COUNTY, PA. THIS IS AN INFORMATION-PACKED EVENT THAT SHOULD NOT BE MISSED. PROGRAM HIGHLIGHTS INCLUDE: DISTINGUISHED SPEAKERS, GO WILD – HABITAT RESTORATION FOR THE BACK YARD, “A SENSE OF WONDER” – A PLAY DEPICTING THE LIFE OF RACHEL CARSON, THE RHYTHM OF NATIVE PLANT COMMUNITIES, PLANTS OF PROMISE – CULTIVARS VERSUS STRAIGHT SPECIES...A TRUTHFUL COMPARISON, COPING WITH DEER IN THE GARDEN, FIELD TRIPS, WORKSHOPS AND NATIVE PLANT AND BOOK SALES. FOR INFORMATION AND REGISTRATION FORMS CONTACT MILLERSVILLE UNIVERSITY'S DEPARTMENT OF EXTENDED PROGRAMS AT 717.872.3030.

THURSDAY, 21 JUNE 2001 - “BACKYARD BUTTERFLY GARDENS” BY ANDI PUPKE, CHESAPEAKE WILDLIFE HERITAGE, CO-SPONSORED BY ADKINS ARBORETUM. BEGINNING AT 7 PM. LEARN THE METHODS AND TECHNIQUES FOR ATTRACTING BUTTERFLIES TO YOUR BACKYARD USING NATIVE PLANTS. THIS FREE WORKSHOP WILL BE HELD AT THE “OLD RAILWAY STATION,” 46 PENNSYLVANIA AVE., EASTON, MD. CALL 410-822-5100 FOR MORE INFORMATION.

Membership Application

DELAWARE NATIVE PLANT SOCIETY

Member Information

Name: _____

Business Name or Organization: _____

Address: _____

City and Zip Code: _____

Telephone (home/work): _____

E-mail address: _____

- ☐ Individual \$15.00
- ☐ Full-time Student \$10.00
- ☐ Family or Household \$18.00
- ☐ Contributing \$50.00
- ☐ Business \$100.00
- ☐ Lifetime \$500.00
- ☐ Donations are also welcome \$ _____

Membership benefits include:

- * The DNPS quarterly newsletter, *The Turk's Cap*
- * Native plant gardening and landscaping information
- * Speakers and field trips

Total Amount Enclosed: \$ _____

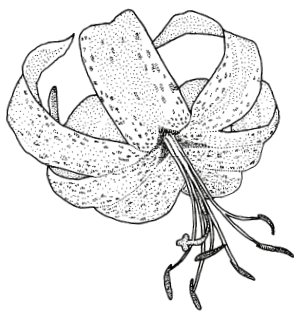
**Make check payable to:
DE Native Plant Society
P.O. Box 369, Dover, DE 19903**

DELAWARE NATIVE PLANT SOCIETY

P.O. Box 369

DOVER, DELAWARE 19903





The Turk's Cap

THE NEWSLETTER OF THE DELAWARE NATIVE PLANT SOCIETY SUMMER 2001

IN THIS ISSUE

- Page 1** ○ *A Call for Articles*
○ *New Members*
○ *Letter From the President*
- Page 2** ○ *Letter From the Editor*
○ *Plant-animal Highlight*
○ *Resources and Reviews*
- Page 3** ○ *Native Plant Community Highlight*
○ *Feature Article*
- Page 4** ○ *Feature Article continued*
- Page 5** ○ *Letter From President continued*
○ *Native Plant Highlight*
- Page 6** ○ *Native Plant Highlight continued*
○ *Thoughts from the edge of the garden*
○ *Resources and Reviews continued*
○ *Event Highlight*
- Page 7** ○ *Upcoming Events*
- Page 8** ○ *Membership Application*

A CALL FOR ARTICLES

If you would like to write an article for The Turk's Cap, we would love to print it. With like minded individuals as an audience, The Turk's Cap is a great venue for plant or habitat oriented writings.

We'll take just about anything from gardening tips to book reviews to poetry. Of course, it has to be about native plants, or issues related to native plants; just a minor constraint. Your imagination is the real key.

Contact Eric Zuelke for more information at (ezuelke@juno.com), or Keith Clancy at 302.674.5187.

A WHITE, PUFFY CLOUD WELCOME TO OUR NEWEST MEMBERS

April through June

Nancy Adamson
Dave Carter & Marjorie Crofts
Jennifer Clark
Elizabeth Pertzoff

The DNPS Vision

The purpose of the Delaware Native Plant Society (DNPS) is to participate in and encourage the preservation, conservation, restoration, and propagation of Delaware's native plants and plant communities. The Society provides information to government officials, business people, educators, and the general public on the protection, management, and restoration of native plant ecosystems. The DNPS encourages the use of native plants in the landscape by homeowners, businesses, and local and state governments through an on-going distribution of information and knowledge by various means that includes periodic publications, symposia, conferences, workshops, fieldtrips, and a statewide membership organized by the DNPS.

HOW CAN I GET INVOLVED?

The Delaware Native Plant Society is open to everyone ranging from the novice gardener to the expert botanist. One of the primary goals of the society is to involve as many individuals as possible.

The DNPS is working on several significant projects at this time. We are active in a reforestation project at Prime Hook State Wildlife Area. A second initiative underway is the establishment of a native plant nursery. We have four beds in this nursery and it looks great so far. We encourage everyone to participate in these, as well as other DNPS endeavors.

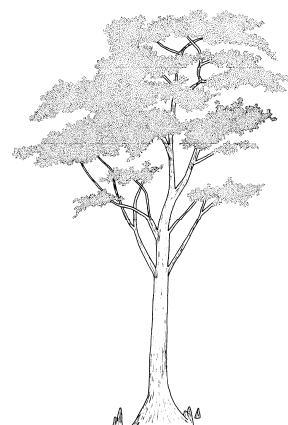
For more information on how to get involved, call 302.674.5187, or E-mail at dnplant@aol.com. Or visit the DNPS website at

LETTER FROM THE PRESIDENT

It wasn't a complete failure, although for the amount of effort we put into the project, I am sure most would say it was. I refer to the fruits of our seed planting labors this past April at the St. Jones Reserve. At that time, members planted thousands of seeds of hickories, oaks, black walnuts, persimmons, tulip trees and a few others, with the anticipation that many seedlings would soon be sprouting.

Our big mistake was not making the seedbed varmint proof. A return visit several weeks later to install fencing revealed nut-pilfering in a

Continued on page 5



LETTER FROM THE EDITOR*AH, THE BEACH, WHAT A FINE PLACE*

I've had a record breaking beach season so far this summer, 5 trips to Rehoboth and one to Cape Henlopen. For me that's a lot considering my limited opportunities for lounging time. Some people just don't dig the beach scene, but the people watcher and mingler in me loves it. One thing I've pondered upon in the past during my drives down Route 113 and Route 1 is the roadside vegetation that DelDOT has put into some of it's roadside wildflower areas. What did they plant? Why? Will it get better? Well, if you've ever wondered the same things, then this issue's feature article will answer all your questions. And once you get to the beach, take a moment to stroll along the edge of the vegetated backdune portion of the beach (but not in the dunes!) to see some of the plants noted in our plant community highlight. During that stroll you may even see some of the sedges talked about in the native plant highlight. After your botanizing excursions, surely you'll want to jump in the water and splash around a bit to cool off. While you're there, boogie boarding, body surfing and gettin' flipped all over the place by the waves, take a moment to analyze the complex interdependent relationships between the phytoplankton and zooplankton that mold the framework of the marine food chain. I did in my plant-animal highlight (what a nerd; get a life).

The beach is great place to study all kinds of plant, animal and human diversity. Enjoy it!



oooo Eric Zuelke, Editor

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PLANT-ANIMAL HIGHLIGHT*BUT THEY'RE SO TINY!*

One of the joys of summer is playing in the water. Any water will do, but I particularly enjoy ponds, streams and the ocean. What amazes me the most sometimes is the incredible world of activity that happens unbeknownst to just about everyone who plays in these habitats. If you've ever taken a drop of pond or ocean water and looked at it through a microscope you've entered into a world that is not unlike that of our terrestrial world, it's just wet and very tiny. Plankton makes up part of this world. The plankton is a whole community of its own made up of animals and plants drifting along in the water mass. The plant component is the phytoplankton (examples include bacteria, blue-green algae, green algae, golden-brown algae, Xanthophyceae and fungi), the animal component is the zooplankton (Protozoa, rotifers, Cladocera [Daphnia-like swimmers] and copepods). The members of this community have niches like those of terrestrial plants and animals, such as primary producers (the photosynthetic algae and cyanobacteria), herbivores, carnivores, detritivores (those that live on detritus or scraps) and decomposers.

One avenue of research on these organisms has led to discoveries that directly relate to people who live along coastlines. This research has focused on marine species and how consumption by herbivorous zooplankton and predation by car-

nivorous zooplankton affects the population sizes of the primary producing phytoplankton and how that relates to the formation of red tides or what scientists now refer to as Harmful Algal Blooms, or HAB's. Red tide is a type of HAB that is the result of mass breeding of a number of different species of phytoplankton. It's a natural phenomenon and is unrelated to human activity, though there is some research that suggests that red tides may develop after precipitation events that lead to surface run-off of phosphates into tidal waters. Most algae are non-toxic, but some can be toxic. Scientists have discovered that zooplankton such as copepods will avoid consuming toxic prey and this may enhance bloom formation, in that HAB's are a result of higher growth rates and lower mortality.

One of the other water-borne problems that we deal with here in Delaware is *Pfiesteria*. A toxic dinoflagellate (a protozoan with animal-like characteristics and a flagellum) called *Pfiesteria piscicida* is responsible for this. Most dinoflagellates are non toxic and plant-like, others, including *Pfiesteria*, are more animal-like and acquire some or all of their energy by eating other organisms. *Pfiesteria* normally exists in a number of non-toxic body forms, feeding on algae and bacteria in the water. However, they do become toxic in the presence of fish, particularly schooling fish like Atlantic menhaden, triggered by their secretions or excrement in the water. At that point, *Pfiesteria* cells shift body forms and begin emitting a powerful toxin that stuns the fish. Other toxins are believed to break down fish skin tissue, opening bleeding sores or lesions. The toxins or lesions are frequently fatal to the fish. As fish are incapacitated, the *Pfiesteria* cells feed on their tissues and blood. *Pfiesteria* is not infectious; thus, fish are not killed by an infection but by the toxins released. Toxic outbreaks of *Pfiesteria* are typically very short and they change back into non-toxic forms very quickly.

The tiny world of plankton is fascinating and complex. The fine line between plant and animal that many of these organisms walk on and the myriad body forms they assume are things to hold as treasures of the earth's biodiversity.

oooo Eric Zuelke, Editor



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RESOURCES AND REVIEWS**BOOK ON GROWING NATIVE PLANTS**

"The Landscaping Revolution – Garden with Mother Nature, Not Against Her" by Andy Wasowski with Sally Wasowski, 2000, Contemporary Books, 166 pages, ISBN #0-8092-2665-0

This is an interesting book written in a fun and engaging style. The Wasowski's are well known in the field of native plants and landscaping. Some of the chapters in the book are:

- ◆ The Birth of the Lemon Landscape
- ◆ There's Gotta Be a Better Way!
- ◆ The Natives are Friendly
- ◆ Homogenize Milk, Not Landscapes
- ◆ Converting Your Yard ... and Your Neighbors

Continued on page 6

NATIVE PLANT COMMUNITY HIGHLIGHT

Hudsonia tomentosa/*Panicum arum* var. *amarulum*
Dwarf-shrubland

Woolly Beach Heather/Bitter Panicgrass Dwarf Shrubland

Introduction

This maritime beach heather community is found on Atlantic coast sand dunes. The unstable substrate is influenced by wind-deposited sand and supports no soil development; large patches of sparsely vegetated or unvegetated sand are common. The community is characterized by *Hudsonia tomentosa* (beach heather) occurring as discrete patches that may coalesce into a dense mat on older, more stabilized dunes. A number of other shrubs such as *Myrica pensylvanica* (bayberry), *Myrica cerifera* (wax-myrtle), *Pinus rigida* (pitch pine) saplings, and *Prunus maritima* (beach plum) may occur but are low in abundance and cover. *Schizachyrium scoparium* ssp. *littorale* (little bluestem), *Ammophila breviligulata* (beach grass), *Spartina patens* (salt-meadow cordgrass), and *Panicum amarum* var. *amarulum* (bitter panicgrass) are common grasses of this community, and *Toxicodendron radicans* (poison ivy) is a common vine. Other herbaceous associates include *Lechea maritima* (pinweed), *Chamaesyce polygonifolia* (seaside spurge), *Gnaphalium obtusifolium* (fragrant cudweed), *Helianthemum canadense* (Canada frostweed), *Solidago sempervirens* (seaside goldenrod), and *Diodia teres* (rough buttonweed).

Distribution

This community may be locally abundant on protected dune systems from Broadkill Beach on the Delaware Bay, and from Cape Henlopen, discontinuously to Fenwick Island on the Atlantic Ocean. The community ranges from northern New York to North Carolina.

Conservation Status

While this dynamic community is continually subjected to the powerful forces of wind and water, the greatest threat to its integrity is coastal development. Because of the intense demand for seaside recreation and development, the remaining coastal dunes in private ownership are rapidly disappearing beneath luxury vacation homes. Fortunately, the state of Delaware has been very proactive in protecting much of its beachfront. Approximately 60% of Delaware's 25 miles of Atlantic Coast beach falls within three state parks: Cape Henlopen, Delaware Seashore and Fenwick Island. 🌿

◊◊◊◊ Peter Bowman, DE Natural Heritage Program Ecologist

**NATURAL QUOTE**

"In the end we will conserve only what we love, we will love only what we understand, we will understand only what we are taught."

Baba Dioum

FEATURE ARTICLE**LESSONS FROM DELAWARE'S HIGHWAYS: LANDSCAPES FOR THE REGION**

The Delaware Center for Horticulture and the University of Delaware initiated the research project "Enhancing Delaware Highways" (EDH) based on the premise that beautiful native vegetation and natural areas can coexist with highways. The original purpose was to trial regional strategies on a small scale with research plots throughout the state. The EDH project was initially funded by the National Urban Community Forestry Advisory Council and is now fully supported by the Delaware Department of Transportation (DelDOT). The plant species, methodologies and design strategies tested in the pilot plots will be documented into a series of roadside manuals for DelDOT. These manuals will guide both current management and new installation projects, and Delaware roadsides will be enhanced by these regional vegetation strategies in future years.

Initially, the EDH project collaborators worked to become familiar with Delaware's roadside ecology. Such a process is described in local plantsman Hal Bruce's book 'How to Grow Wildflowers and Wild Shrubs and Trees in Your Own Yard.' Mr. Bruce was preeminently qualified as a horticulturist and taxonomist, serving those functions at Winterthur Museum through the 1960's. Ironically, the perspective of his book turns out to be an enthralling descriptive ecology of Delaware roadsides. After his Winterthur assignment, Mr. Bruce had occasion to commute daily from Newark to Georgetown for years as a University of Delaware Professor and much of the book's experience is drawn from those travels. Instead of describing what you might expect-the boredom and monotony of traveling the same roads day after day-he narrates his intimate knowledge of the character of the changing seasons, and the succession of bloom and beauty he discovered on his daily trips.

A similar process has guided the development of EDH strategies. Three dozen research sites were selected from Newark to Delaware Seashore State Park that are representative of the ecological habitats of the state's roadsides. The key to regional landscape design is to understand the site and match the plant palette to the habitat or the ecology of the site. By visiting research sites in every season, evaluating the environmental factors, inventorying flora of each site, and documenting observations of the many miles of roads traveled in the process, the project team weighed installation and management decisions. This type of ecological understanding can be gained by carefully reading Mr. Bruce's book.

Designing the landscape from the driving perspective is a unique challenge. Like Hal Bruce, we found it helps to

imagine the travel corridors with the successional beauty of seasonal vegetation in a time-lapse sort of way. This article will provide a taste of the plant palette recommended for roadside plantings and describe some of the strategies for vegetation management. The goals of EDH read like the goals of personal and commercial gardening ventures any of us might face. Roadside vegetation should provide year-round interest and beauty, simple design, low cost maintenance, environmentally sound (i.e., using native species only), durability in adverse conditions and sustainability over a long period. Roadsides contain ecological niches that mirror many of the most adverse conditions you may encounter in your own garden or landscape.

The primary aim of the project, besides saving maintenance dollars and beautifying our travel corridors, has been to promote the advantage of using local indigenous plants; plants ecologically adapted to the region.

Seasonal interest is achieved with seasonal plant character; the successional beauty of spring flowering trees and shrubs, summer flowering forbs, and the autumn color of deciduous trees and other woody plants.

A huge challenge facing the project is to overcome the public perception of wildflowers. Wildflowers have come to mean plants that are not regionally appropriate or sustainable like bachelor buttons, oxeye daisy, bluebonnets, or cosmos. Too often, we try to borrow beauty from other regions that is not ecologically or economically practical or sustainable in our region. For example, the cosmos plantings that are presently in place require annual fumigation and reseeding for success.

Instead of relying on the traditional wildflower plantings, an EDH strategy is to mimic naturally occurring communities, incorporating warm season grasses in mixes with a few reliably flowering forbs to provide beauty.

The roadside-appropriate plants with spring interest tend to be shrubs or trees. Early flowering forbs are generally shade dwellers in the eastern deciduous forest and are not habitat appropriate for roadside conditions. We found many accidental compositions of beauty along our roadsides, including some early bloomers on the inventoried sites, one of the earliest being *Amelanchier canadensis*, or eastern serviceberry. One of the first native white-flowering shrubs to bloom, this excellent landscape plant adorns the forest edge even before dogwood and redbud. Other plants such as redbud (*Cercis canadensis*) and red chokeberry (*Aronia arbutifolia*) flower in early spring at a time when the prairie plants have very little interest. The brilliance of redbud really has no equal. The magenta buds are borne right on the older wood, providing a fascinating curiosity and then the flowers open to welcome spring.

Some of the plants in our experimental roadside palette are chosen to fit limiting environmental factors such as lack of fertility or abundance of moisture. Summersweet or sweet pepperbush (*Clethra alnifolia*) naturally creates an understory hedge fringing many miles of swampy woodland along DE highways. This plant and several others in our palette will thrive with excessive moisture to the exclusion of some of the undesirable invasives such as multiflora rose or autumn olive. *Clethra* has eye-catching yellow foliage in the fall and responds wonderfully to cultivation, rewarding the gardener with showy fragrant panicles of white flowers in late summer, as well as being very attractive to butterflies. Another white spring flowering shrub, Virginia sweetspire (*Itea virginica*) is a habitat mate of *Clethra*. It blooms a month earlier and like *Clethra*, is an excellent plant

for wet spots in the garden but also tolerates dry conditions.

Delaware's only truly native magnolia, sweet bay (*Magnolia virginiana*), named for its beautiful, fragrant flower, has one of the widest distributions of the genus. Like many plants with wide distributions, it is adaptable and remarkably drought tolerant despite its natural preponderance for swampy sites.

The fringe tree (*Chionanthus virginicus*) is a small flowering tree that may be found in scattered locations, in moist woods, throughout the coastal plain and occasionally in the piedmont. We have reintroduced this plant in the I-95 corridor area hoping to take advantage of its beautiful fragrant flower and proven adaptability in urban environments.

Many plant treasures were identified already existing naturally along the roadsides like the deciduous holly, known as winterberry (*Ilex verticillata*). This is another plant indigenous to wet sites and becoming very popular as an ornamental shrub. It is obvious why, with an outstanding berry feature that often lasts until February.

Plants that have colonizing habits are useful for roadside planting because they out-compete other woody plants. This group includes sumac (*Rhus* spp.) and groundsel bush or tree (*Baccharis halimifolia*). Both have outstanding ornamental features and actually can be contained without too much trouble in a naturalistic setting. Michael Dirr, an authority on woody plants and author of the book often used as the woody plant identification 'bible', says no native is as flamboyant as sumac in the autumn and when groundsel bush is in full bloom, you find yourself saying, "what is that amazing white cloud"?

In the category of herbaceous plants, goldenrods (*Solidago* spp.) are an important provider of regional color. Other members of the sunflower family that can lend wonderful accents to our roadsides are native species of bonesets, thoroughworts (*Eupatorium* spp.) and garden asters, like New England aster (*Aster novae-angliae*). It is amazing that many of these fine garden plants spring up on their own on roadsides.

Regionally native plants are not always better for every garden situation. However, we are advocating a policy of natives first because there are an overwhelming number of reasons that naturally occurring plants and plant communities make sense on roadsides and in our gardens. Besides being culturally and ecologically appropriate, interesting and beautiful, native plants speak to our regional heritage. Regional native plants fit into the surrounding context; they look like they belong. There is a value connected to selecting from the regional gene pool of native plants that cannot be overemphasized. The ecological value of provenance, that is, geographic origin of germplasm, is coming to the forefront as an important criteria to consider in plant selection. The nursery industry should be applauded for moving toward regional plant material and urged to continue efforts to propagate, grow, specify and promote regionally and locally appropriate plants.

**** Gary Schwetz, DE Center for Horticulture, DNPS member



LETTER FROM THE PRESIDENT*Continued from page 1*

major way. Hickory nuts and black walnuts were split in two, their meat gone and their remains strewn upon the soil. It was quite depressing, but a lesson was surely learned and one that will not be repeated.

Members returned in late May to weed and again it was disheartening to see the seedbed bursting forth with weeds but no tree seedlings. Another visit in early July and more weeds. Wall-to-wall were the weeds within the fenced-in seedbed. Nothing but crabgrass, Johnson grass, pigweed, lamb's quarters, cat's-ear, cursed crowfoot, madder, pepperwort, morning glories, jimson weed, nightshade, and others too numerous to mention. I knew there just had to be a native tree seedling in there somewhere; trying to reach the light but surrounded by and being choked by the prolific weeds. So, methodically I started weeding, careful not to pull up anything that looked like a woody plant. After an hour of depressing weeding I almost lost it when I spied a single hickory seedling! Yes, our efforts were not in vain. I was just a little sad that there wasn't any DNPS members around to share my excitement. After another hour and a half of weeding, I was able to turn-up a handful of additional hickory seedlings. But, I'd only gotten through about ¼ of the seed bed and it was time to leave.

So, I plan to return next week to do more weeding and am hopeful I will discover additional tree seedlings struggling to survive. I hope that some members will be able to join me.

Moreover, the last couple of months have been quite an eye-opener for me; in order for our nursery to be a success more work and more attention has got to be given to its operation. An all volunteer effort only works if there are enough dedicated members able to offer their services on a regular weekly schedule. The fault lies entirely with me and my difficulty in finding the necessary time and encouraging others to join me. Therefore, I am just now in the process of looking into funding that may be available to pay for a nursery manager at least on a ½ time basis through the growing season. If anyone has any ideas on funding sources please contact me.

The rescued plants beds are doing much better. All of these plants are putting forth new growth and look quite vigorous. In addition, the seedbed that Eric Zuelke and I planted last fall with almost 2000 hickory nuts and acorns has had some success. Thus far, about two dozen seedlings have emerged. Well, I did say "some" success.

In a related project, our seeding efforts at Prime Hook State Wildlife Area was quite profitable, as nearly 300 seedlings have sprouted. It will be necessary to install tree tubes around these very soon, and I hope to schedule one morning in the next few weeks to do so.

On another note, the Flora of the Delaware: an annotated checklist, by William McAvoy and Karen Bennett, is hot off the presses and available for \$14.00 + \$3.00 shipping from the Delaware Natural Heritage Program (call 302.653.2880 for ordering information). This is an invaluable resource, with up-to-date information on the flora of Delaware. The checklist contains a total of 2175 taxa with 610 of these considered to be aliens or non-natives. It gives information on each species habitat preferences and whether it is found on the coastal plain or piedmont, or both. *The Flora of Delaware* is a great reference to use if you want to check whether or not a plant is native to

Delaware.

Also, on the horizon is a DNPS publication: *Delaware Native Plants for Landscaping and Restoration: Recommended species for the property owner and land steward*. Some of our members have been active in the writing and production of this booklet that I hope will be available for sale (for just \$5 a copy) within the next few weeks. I would like to especially thank Maria Trabka for her hard work and diligence to this project. This booklet will provide an abundance of information about a select group of native plant species. It will also include a list of nurseries that either specialize in native plants or at least have available some native plants.

And speaking of native plants, on August 4, 2001 the DNPS will be offering a kayak outing to explore the wonders of Prime Hook Creek. This will be a great opportunity to learn about the flora and various habitats found along this meandering stream. It is also a great way to travel along a stream. If you have never gone kayaking this is your opportunity to try it; if you do you'll be hooked. On August, 25, 2001 we will be visiting DSU for a tour of the new Claude E. Phillips Herbarium. And close on the heels of this trip will be a September 8, 2001 trip to an organic farm on Maryland's eastern shore (details within this newsletter).

Well, it's too nice a day to be whiling away on the computer much longer. So, until next time all the best with your native plant endeavors.

Sincerely,



Keith Clancy

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NATIVE PLANT HIGHLIGHT
THE SEDGE FAMILY (CYPERACEAE)

The plant family Cyperaceae, or the sedge family is a group of plants that is often avoided by many people. This avoidance, and sometimes fear, is due in part to the difficulty sometimes encountered in trying to correctly identify certain species in certain genera. Technical manuals are usually needed and a familiarity with the botanical terms used to describe the morphological features of sedges are required. In addition, species in the sedge family do not have a showy, colorful appearance as the wildflowers do and thus are often overlooked in the field.

Delaware contains an impressive diversity of sedges, where 227 total taxa exist. The sedge family is the third largest family of plants in the state (i.e., the total number of species and varieties) and contains the largest genus in the state, *Carex*, with 116 taxa. The sedge family in Delaware is represented by 15 genera: *Bulbostylis* (1 taxon), *Carex*, *Cladium* (1 taxon), *Cyperus* (34 taxa), *Dulichium* (1 taxon), *Eleocharis* (23 taxa), *Eriophorum* (2 taxa), *Fimbristylis* (5 taxa), *Fuirena* (2 taxa), *Kyllinga* (3 taxa), *Rhynchospora* (23 taxa), *Schoenoplectus* (10 taxa), *Scirpus* (7 taxa), *Scleria* (4 taxa), and *Tricophorum* (1 taxon). This diversity of sedges in Delaware is primarily due to diversity in habitat; from upland forests and coastal dunes, to tidal and nontidal wetlands and swamps.

The majority of sedges in Delaware are found growing in the Coastal Plain physiographic province, where 106 taxa are restricted to this region. In contrast, 35 taxa are restricted to the Piedmont province. Eleven (11) species of sedges in Delaware are not native to the state and one non-native species is considered to be invasive (*Carex kobomugi*). When considering the overall natural distribution of sedges in the eastern U.S., 64 species of sedges in Delaware are at or near their northern limits of distribution and 62 species of sedges in Delaware are at or near their southern limits. The sedge flora of Delaware is primarily perennial (201 taxa), compared to 26 taxa that are annuals.

A high percentage (53%) of the sedge flora of Delaware is rare or uncommon. One hundred twenty-one (121) taxa are considered to be rare or uncommon in the state and 12 are known from only a single occurrence or population. In addition, 20 are historical, meaning they have not been reported for 20 or more years. Furthermore, seven (7) species are thought to be gone, or extirpated in the state. One species, *Rhynchospora knieskernii*, is listed as threatened by the U.S. Fish and Wildlife Service.

There are several species of sedges that are available in the nursery trade and would make great additions to backyard ponds, or a poorly drained corner of ones property. Some of these species include: *Carex comosa* (bristly sedge), *Carex stricta* (tussock sedge), *Dulichium arundinaceum* (three-way sedge), *Eleocharis quadrangulata* (squarestem spike-rush), *Schoenoplectus tabernaemontani* (long-stem bulrush, synonym = *Scirpus validus*), and *Scirpus cyperinus* (cottongrass bulrush).

In the next addition of *The Turk's Cap*, we will discuss another feared and dreaded family of plants, the Poaceae, the  grass family.

oooo William McAvoy, DNPS member

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RESOURCES AND REVIEWS

Continued from page 2

Wasowski points out that the people we need to reach with the message are the average homeowners, who, as a rule do not consider himself or herself to be a "gardener." He reports that while the "native landscaping" movement is still in its infancy, a lot of progress has been made since the early 1980s. The native plant movement represents the cutting edge of gardening. Where will the revolution be in the next 10-20 years? According to Dr. David Northington, former executive director of the Lady Bird Johnson Wildflower Center, native landscapes will, by the second decade of the new century, be the norm. "The concept of using regional native wildflowers, grasses, shrubs, vines and trees in our home and commercial landscapes will," he says, "have turned the corner. It will no longer be thought of as an interesting but esoteric notion, appealing only to a select audience."

I would recommend reading this book for its humor, good information and optimism.

oooo Rick Mickowski, DNPS member

LAWNLESS LANDSCAPES

I thought you might be interested in my latest article in the June 2001 issue of Audubon magazine, "Dawn of a New Lawn." It describes the history of the conventional land-centered landscape and the move toward more environmentally friendly native landscapes.

oooo Andy Wasowski

NEW PUBLICATION COMING SOON!

"Delaware Native Plants for Landscaping and Restoration: recommended species for the property owner and land steward"

This small booklet contains a select list of Delaware native species that are recommended for landscaping and restoration activities. Information is given on each species light (shade versus sun) and moisture preferences (dry or wet), its habit, form, flowering time and color, height, and whether its found on the piedmont or coastal plain or both. In addition, there is a list of native plant sources and selected references related to growing native plants. This book sells for \$5 (shipping included) and can be obtained by mailing a check to the DNPS at P. O. Box 369, Dover, DE 19903. Or for more information call (302) 674-5187 or dnplant@aol.com.

oooo DE Native Plant Society

EVENT HIGHLIGHT

DNPS ANNUAL MEETING: AN ENJOYABLE AFFAIR

The Annual meeting held on April 21st at the St. Jones Reserve was quite a fun time. The morning was consumed with the fervent pulling of weeds by all who attended. We ended up cleaning out all the beds of those nasty non-natives and undesirables, allowing our beautiful trees and shrubs to flourish once again. At the same time, some attendees planted buckets and buckets of seeds of oaks, hickories, and tulip-poplar in our newest bed. After enduring aching backs from all the weeding and pulling and planting, we retired to the air conditioned building to partake of a delicious pot luck lunch, which included vegetarian chili, salads, and chocolate brownies among others. During lunch we ran our business meeting. After the meeting and lunch, DNPS member and state botanist, William McAvoy gave a very educational presentation on the orchids of Delaware. We concluded our event with a breath of fresh air on a walking tour of the smooth cordgrass saltmarsh behind the St. Jones Center. The event was a wonderful success and fun was had by all. We hope to see you at this  event next year.

oooo Eric Zuelke and Keith Clancy

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THOUGHTS FROM THE EDGE OF THE GARDEN

The Flora of Delaware update. This checklist by William McAvoy (DE Natural Heritage Program (DNHP) botanist) and Karen Bennett (DNHP Coordinator) is now available. The cost is \$14.00 + \$3.00 Shipping charges. Call 302.653.2880, or see Vol. 3 No. 1 issue of *The Turk's Cap* for more information.

UPCOMING EVENTS

SATURDAY, 04 AUGUST 2001 – “CREATING CARDS WITH NATURE WORKSHOP AT ADKINS ARBORETUM,” 9 AM TO 12:30 PM, OPTIONAL PICTURE MAKING PROGRAM IN THE AFTERNOON. IN THIS SET OF MORNING (CARD-MAKING) AND AFTERNOON (PICTURE-MAKING) WORKSHOPS, CANDACE GERBER WILL PROVIDE PRESSED PLANTS, DECORATIVE PAPER, CARD STOCK AND FRAMING MATERIALS SO THAT PARTICIPANTS CAN IMMEDIATELY START TO CREATE THEIR OWN WORKS. CANDACE IS AN ARTIST AND NATURALIST LIVING IN AN UPLAND MIXED FOREST NEAR TALLAHASSEE, FLORIDA. MORNING PROGRAM, \$40 FOR MEMBERS, \$45 FOR NON-MEMBERS. AFTERNOON PROGRAM, \$30 FOR MEMBERS, \$35 FOR NON-MEMBERS. LIMIT 20.

SATURDAY, 04 AUGUST 2001 – FROM 9 AM TO 3 PM, EXPLORE THE BOTANICAL WONDERS AND BEAUTY OF PRIME HOOK CREEK BY KAYAK. MEET AT PRIME HOOK CREEK AT RTE 1. IF YOU DO NOT OWN A KAYAK (RESERVATIONS NEED TO BE MADE BY JULY 27) PLEASE CONTACT THE DNPS TO RESERVE A KAYAK. FOR MORE INFORMATION OR TO RESERVE A KAYAK, CALL 302-674-5187 OR EMAIL DNPLANT@AOL.COM.

SATURDAY, 18 AUGUST 2001 – LEARN ABOUT NATIVE PLANTS AND OTHER WILDLIFE WHILE CANOEING THE MILES CREEK. MEETING SITE AND TIME TO BE ANNOUNCED AT SIGN UP. WEAR RUBBER FOOTGEAR, BRING LUNCH AND WATER. PACK EXTRA GEAR IN WATERPROOF BAG. CALL ADKINS ARBORETUM AT 410-634-2847 TO SIGN UP. \$5 MEMBERS, \$8 NON-MEMBERS.

SATURDAY, 25 AUGUST 2001 – FIELD TRIP TO THE CLAUDE E. PHILLIPS HERBARIUM AT DELAWARE STATE UNIVERSITY FROM 10 AM TO 11:30 AM. THE HERBARIUM IS HOUSED IN A NEW \$1.9 MILLION DOLLAR FACILITY THAT WAS DEDICATED IN MAY OF 2000 AND IS THE ONLY LARGE-SCALE, PUBLIC HERBARIUM ON THE PENINSULA. THE HERBARIUM IS LOCATED ON THE CAMPUS OF DELAWARE STATE UNIVERSITY, WHICH IS ON RT. 13 IN DOVER, ACROSS FROM THE DOVER MALL AND DOVER DOWNS. FOR MORE INFORMATION, CALL 302-674-5187 OR EMAIL DNPLANT@AOL.COM.

SATURDAY, 08 SEPTEMBER 2001 – 10 AM TO ?, ORGANIC GARDENING FIELD TRIP TO THE HASTINGS FARM, NEAR MARDELLA SPRINGS, MD. A JOINT FIELD TRIP WITH THE MARYLAND NATIVE PLANT SOCIETY. THE HASTINGS FARM IS ABOUT TEN ACRES AND THE FAMILY HAS BEEN ORGANIC FARMING FOR 18 YEARS. THEY GROW FRUIT AND VEGETABLES FOR SALE, RETAIL AND WHOLESALE. MOST OF THEIR PRODUCE GOES TO THE WESTERN SHORE BECAUSE THERE IS A GREATER MARKET THERE FOR ORGANIC FOODS (WHAT'S WRONG WITH THE EASTERN SHORE FOLKS?). IN ADDITION TO THEIR ACREAGE, THEY HAVE ONE GREENHOUSE IN WHICH THEY GROW THEIR OWN TRANSPLANTS AS WELL AS FLOWERS FOR HANGING BASKETS, ETC. THEY HAVE ONE CHICKEN HOUSE AND A STOCKED POND ON THE FARM ALSO.

DIRECTIONS: FROM MARYLAND, PROCEED ON ROUTE 50 TO MARDELLA SPRINGS LIGHT. FOLLOW DIRECTIONS BELOW... FROM DELAWARE (ONE POSSIBLE ROUTE), DRIVE SOUTH ON ROUTE 13 TO DELMAR. TURN RIGHT (WEST) ON ROUTE 54. PROCEED ALL THE WAY TO THE TRAFFIC LIGHT ON ROUTE 50 AT MARDELLA SPRINGS. FROM THE TRAFFIC LIGHT ON ROUTE 50 AT MARDELLA SPRINGS, MARYLAND, PROCEED EAST TOWARD SALISBURY ABOUT 3/4 MILE. TURN RIGHT ONTO ATHOL ROAD AND PROCEED ALMOST 4 MILES. (DO NOT BE CONFUSED BY THREE WAY STOP SIGN AT HURLEYS NECK ROAD - A LEFT TURN WILL KEEP YOU ON ATHOL ROAD.) TURN RIGHT ONTO BAPTIST CHURCH ROAD. PROCEED 1 MILE TO ROSE POINT FARM. DO NOT TAKE FIRST ENTRANCE. PROCEED ANOTHER TENTH OF A MILE TO THE ENTRANCE WITH A MAILBOX WITH THE NAME HASTINGS AND NUMBER 7920.

TUESDAY, 11 SEPTEMBER 2001 – 7 PM TO 9 PM, NATIVE PLANT SOCIETY BIMONTHLY MEETING. WE WILL HAVE A PRESENTATION FIRST, AND SHORT BUSINESS MEETING AFTERWARDS. OUR SPEAKER WILL BE DR. ROBERT NACZI, CURATOR OF THE CLAUDE E. PHILLIPS HERBARIUM AT DELAWARE STATE UNIVERSITY, WHO WILL GIVE A SLIDE PRESENTATION ON PITCHER PLANTS (*SARRACENIA* spp.). THE MEETING WILL BE HELD AT THE AQUATIC RESOURCES EDUCATION CENTER, 4876 HAY POINT LANDING RD., SMYRNA, DE.

Membership Application

DELAWARE NATIVE PLANT SOCIETY

Member Information

Name:

Business Name or Organization:

Address:

City and Zip Code:

Telephone (home/work):

E-mail address:

- ☐ Individual \$15.00
- ☐ Full-time Student \$10.00
- ☐ Family or Household \$18.00
- ☐ Contributing \$50.00
- ☐ Business \$100.00
- ☐ Lifetime \$500.00
- ☐ Donations are also welcome \$ _____

Membership benefits include:

- * The DNPS quarterly newsletter, *The Turk's Cap*
- * Native plant gardening and landscaping information
- * Speakers and field trips

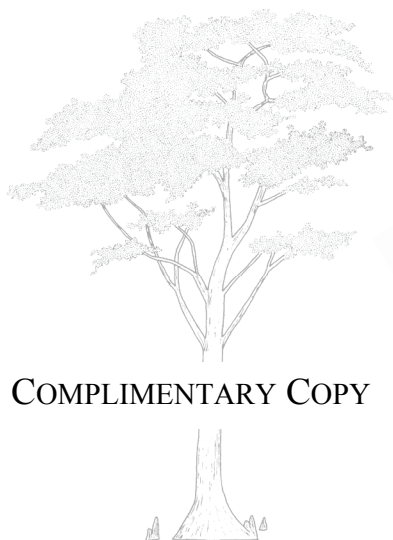
Total Amount Enclosed: \$

**Make check payable to:
DE Native Plant Society
P.O. Box 369, Dover, DE 19903**

DELAWARE NATIVE PLANT SOCIETY

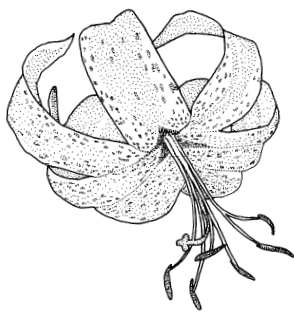
P.O. Box 369

DOVER, DELAWARE 19903



COMPLIMENTARY COPY





The Turk's Cap

THE NEWSLETTER OF THE DELAWARE NATIVE PLANT SOCIETY AUTUMN 2001

IN THIS ISSUE

- Page 1** ○ *A Call for Articles*
 ○ *New Members*
 ○ *Letter From the President*
- Page 2** ○ *Letter From the Editor*
 ○ *Plant-animal Highlight*
 ○ *Resources and Reviews*
- Page 3** ○ *Native Plant Community Highlight*
 ○ *Event Highlights*
 ○ *Feature Article*
- Page 4** ○ *Feature Article continued*
 ○ *Letter From the President continued*
- Page 5** ○ *Event Highlights continued*
 ○ *Native Plant Highlight*
- Page 6** ○ *Event Highlights continued*
- Page 7** ○ *Upcoming Events*
- Page 8** ○ *Membership Application*

A CALL FOR ARTICLES

If you would like to write an article for The Turk's Cap, we would love to print it. With like minded individuals as an audience, The Turk's Cap is a great venue for plant or habitat oriented writings.

We'll take just about anything from gardening tips to book reviews to poetry. Of course, it has to be about native plants, or issues related to native plants; just a minor constraint. Your imagination is the real key.

Contact Eric Zuelke for more information at (ezuelke@juno.com), or Keith Clancy at 302.674.5187.

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A SPICED MUG OF WARM APPLE CIDER WELCOME TO OUR NEWEST MEMBERS

July through September

Patricia Hackett
 Julia Lynch
 Bob Meadows
 Dr. Robert F. C. Naczi
 David G. Smith
 Mr. & Mrs. William F. Stout

The DNPS Vision

The purpose of the Delaware Native Plant Society (DNPS) is to participate in and encourage the preservation, conservation, restoration, and propagation of Delaware's native plants and plant communities. The Society provides information to government officials, business people, educators, and the general public on the protection, management, and restoration of native plant ecosystems. The DNPS encourages the use of native plants in the landscape by homeowners, businesses, and local and state governments through an on-going distribution of information and knowledge by various means that includes periodic publications, symposia, conferences, workshops, fieldtrips, and a statewide membership organized by the DNPS.

HOW CAN I GET INVOLVED?

The Delaware Native Plant Society is open to everyone ranging from the novice gardener to the expert botanist. One of the primary goals of the society is to involve as many individuals as possible.

The DNPS is working on several significant projects at this time. We are active in a reforestation project at Prime Hook State Wildlife Area. A second initiative underway is the establishment of a native plant nursery. We have four beds in this nursery and it looks great so far. We encourage everyone to participate in these, as well as other DNPS endeavors.

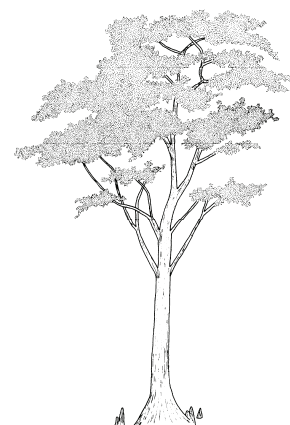
For more information on how to get involved, call 302.674.5187, or E-mail at dnplant@aol.com. Or visit the DNPS website at

LETTER FROM THE PRESIDENT

Our world will never be the same. As I write this letter it is now more than three weeks since the horrible, incomprehensible terrorist attacks on our nation. And like all of you, I am still in shock and filled with anger and sadness. I am also trying hard to get back to some kind of normalcy.

Up until September 11, 2001 we were pretty well insulated from the terror, or threat of terrorism, that grips much of the world on a daily basis. Sure, we were witnesses to the attack on the World Trade Center in 1993, but that attack was

Continued on page 4



LETTER FROM THE EDITOR**A TIME OF CHANGE**

Autumn certainly is a time of change. The leaves are turning color and fading fast, the grasses of the countryside are adorning their true gold, bronze and purple hues, the birds are working furiously to get to warmer climes, and the snow geese have returned. I recently had to make some changes myself, as I was forced to endure the bothersome task of leaving one job and finding another. Not an easy thing to do for the most part, but with a little help from some friends and my usual dogged determination to not be ordinary, everything has turned golden once again.

And speaking of golden, have you seen the grasses out in the old field habitats lately? They are spectacular! I became quite intrigued with Delaware's native grasses this year, so I was quite happy to see the topic of our Native Plant Highlight. I attempted to create some native grass gardens in my yard during the late summer, but other obligations have kept me busy. Perhaps over the winter I'll take the Feature Article I wrote and put it to good use. Landscape design, as I have found, is quite a job, but the rewards are worth every aching muscle. And if I thought the grasses were spectacular, one gaze out over a cordgrass saltmarsh at the glasswort, now in full, blazing glory, is even more of a treat. Our Native Community Highlight goes into some detail on this beautiful plant community.

This issue is also replete with field trip highlights. Our new Field Trip Coordinator, Diane Chance, has been doing a great job of organizing some very interesting events. We hope everyone will take the chance to enjoy them. Have a great Autumn!



Eric Zuelke, Editor

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PLANT-ANIMAL HIGHLIGHT**LADY BEETLES, APHIDS, AND THE PLANTS IN THE MIDDLE**

In the never ending battle against all those critters that seem to want to do nothing but destroy all the plants that you spent countless hours nursing to full blooming glory, we have one strong ally; the ladybug. Ladybugs are not true bugs at all (those are Hemipterans), and are more appropriately called lady beetles, or lady-bird beetles because they are in the taxonomic Order Coleoptera (Family Coccinellidae) that includes other critters such as weevils, scarabs, whirligig beetles, potato beetles, and fireflies. Lady beetles are true defenders of herbaceous beauty and are often considered beneficial insects because they feed on insects that are harmful to vegetation. These are primarily aphids, of which they can consume up to 1,000 in a lifetime in both their larval and adult stages. Lady beetles will also consume large numbers of whitefly, mealybugs, scales, mites, and many other soft bodied insects, as well as bollworms, broccoli worms, cabbage moths and tomato hornworms.

Aphids (Order Homoptera, Family Aphididae) are the bane of anyone who tries to grow a vegetable garden or have ornamental plants inside their home. They are small soft-bodied, plant-sucking insects that feed on the phloem fluid of plants with piercing mouth parts. They are one of the most

common pest groups of ornamental plants. There are thousands of species of aphids, and they feed on all types of vegetation. The white pine aphid feeds on the bark of twigs and branches of Eastern white pine, woolly alder aphids feed and reproduce on silver maple, and the pine bark adelgid and similar adelgids feed on spruce, larch, and other conifers. Many others feed on vegetables and fruit trees. One of the primary problems associated with aphids is the damage they do to plants. In some cases, the aphids cause damage directly and in other cases, they transmit plant viruses that cause the damage. Because viruses are intracellular parasites, their biological success, and the subsequent economic impact of the diseases they cause, is dependent on the ability to spread from one host to a new one. For the majority of viruses, this spread from host to host depends on the activities of other organisms known as vectors. Most vectors are plant sucking insects. Slightly more than half of the plant viruses are transmitted by aphids and about 30% of plant virus genera contain aphid-transmitted viruses. Aphids are therefore one of the most economically significant groups of vectors, and over 300 species of aphids have been reported to transmit viruses.

There are many garden center and nurseries that sell lady beetles to be released in gardens as biological weapons against invaders like aphids. One common complaint with lady beetles is that once released they will fly off to never be seen again. The truth is that once released a portion will fly off, and that once the aphids are consumed another portion will fly off looking for food. But there are a few things that you can do to get your lady beetles to stay. First, always release them in the evening, they are not very active at this time because of the cooler temperature. You could also cover the plants you release them on with screening to keep them around until they lay eggs.

In the battle to keep our plants alive and healthy, we have few natural allies, but one of the best is the lady beetle.



Eric Zuelke, Editor

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RESOURCES AND REVIEWS**NEW PUBLICATION COMING SOON!**

"Delaware Native Plants for Landscaping and Restoration: recommended species for the property owner and land steward"

Available by the end of October, this small booklet contains a select list of Delaware native species that are recommended for landscaping and restoration activities. Information is given on each species light (shade versus sun) and moisture preferences (dry or wet), its habit, form, flowering time and color, height, wildlife values, and whether it is found on the piedmont or coastal plain or both. In addition, there is a list of native plant sources and selected references related to growing native plants. This book sells for \$5 (shipping included) and can be obtained by mailing a check to the DNPS at P. O. Box 369, Dover, DE 19903. Or for more information call (302) 674-5187 or dnplant@aol.com.



DE Native Plant Society



NATIVE PLANT COMMUNITY HIGHLIGHT***Salicornia maritima* Tidal Herbaceous Vegetation
Glasswort Tidal Herbaceous Vegetation-Saltpanne****Introduction**

This community is dominated by *Salicornia maritima* (glasswort) and is primarily found in low, poorly drained depressions of the *Spartina alterniflora* (saltmarsh cordgrass) low marsh known as "salt pannes." The glasswort community may form dense colonies throughout a panne or may be comprised of only a few plants. In fact, some pannes may be completely devoid of vascular plants. During low tides, as water pools in and then evaporates from these depressions, the salinity level increases, leading to formation of the salt panne. This is an extremely saline habitat that few vascular plant species are able to occupy. Two other species of glasswort, *S. virginica* and *S. bigelovii*, are state rare plants in Delaware and rare associates within this community type. The short form of *Spartina alterniflora* is a frequent associate in the glasswort panne community. Additional infrequent associates include *Limonium carolinianum* (sea-lavender) and *Atriplex patula* (spearscale). Algal mats of various species may be present.

In the fall, these communities are easy to spot, as the glassworts turn a brilliant red, creating stunning scarlet patches within the golden swath of the saltmarsh.

Distribution

This community is prevalent in salt marshes along Delaware Bay and in the Inland Bays, and is especially common on the Great Marsh and the Lewes Creek marsh, Sussex County. The community ranges from the Maritime Provinces to Virginia and possibly south to South Carolina.

oooo Peter Bowman, DE Natural Heritage Program Ecologist

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EVENT HIGHLIGHTS**THE CLAUDE E. PHILLIPS HERBARIUM TOUR**

On Saturday, August 25 - Dr. Arthur Tucker and Dr. Susan Yost hosted a group of 15 Delaware Native Plant members and friends at the Claude E. Phillips Herbarium on the campus of Delaware State University. Their new facilities were bright, spacious, and healthy. The herbarium is climate-controlled and has a large open area that allows for workers to easily process specimens (i.e., mounting, sorting, or packaging for loans). In addition, there is an extensive botanical library, and separate office spaces for the director, curator and educator. There is a spiral staircase connecting the two floors as well as an elevator, the latter is particularly useful if one is moving large numbers of specimens between floors.

Dr. Tucker explained that for throughout much of the history of herbarium curation, plant specimens were treated with toxic materials to prevent insect damage and these toxins were also placed within herbarium cabinets. Botanists studying these specimens were exposed to these chemicals over many years. Recently, it has been discovered that natural oils of

NATURAL QUOTE

"No one has the right to destroy anything in the wilderness; such things belong to all and must not be disturbed. Freedom gives no license to violate a heritage that belongs to the ages."

Sigurd F. Olsen, *Reflections from the North Country*, 1976

FEATURE ARTICLE**LANDSCAPE DESIGN BASICS**

So, you've just moved into an old house that you built an addition on to and renovated with recycled building materials and solar power equipment. The yard is chewed up from the bulldozer and trucks, a tree had to be felled, and you took the opportunity to cut down and rip out all the previous Japanese honeysuckle, autumn olive, and juniper plantings. What's left is a muddy, grassless barren landscape: a perfect canvas to let your artistic imagination flourish and do a little landscape design.

Landscape design has numerous facets to it and can, if you let it, be an overwhelming task. However, creativity and organization are the keys. Of critical importance in the landscaping process is harnessing your ideas and creating a plan in advance. You don't want to have to do this physically demanding work more than once. Understand each phase of the job well and how it relates to the project as a whole. Create a step-by-step guide for yourself, as this will organize all your thoughts on paper. One initial purpose of landscape design is to meld human technology (e.g., a house, deck or barn) into the natural surroundings. This is achieved by exploring all your landscaping options: from plant selection to ponds and waterfalls to hardscapes (e.g., retaining walls, walkways, trellises, arbors, gazebos) to lighting. It's also important to remember that location is a major factor in the design. Plants and construction principles will vary geographically. Local nurseries, books with hardiness planting zones, local county extension offices, and botanical guides will all have good tips. In the end, common sense is the key as you answer some basic questions: are the lighting conditions full sun, partial sun, or shade? Is the elevation high and dry or low and moist? Is the soil acidic or alkaline, rich organic or sandy? Is the climate hot, cold, rainy, desert, windy, salty? You may have a combination of these conditions (microclimates) on your property.

With the analysis discussed above, you can pick the appropriate vegetation and design for your particular situation. For example, if you have a very moist, low-lying area on your property, you would select plants that naturally grow in that habitat, such as sweet pepperbush (*Clethra alnifolia*), fetterbush (*Leucothoe racemosa*), and pin oak (*Quercus palustris*). I strongly encourage you to incorporate native plants into your landscape, including native vegetation already on your property. Additionally, be sure to account for possible damage to the existing site; check utility and water line placement, and safe equipment access.

Now you can let some creativity come into the mix by

Continued on page 5

combining elements of art and science to create a functional, aesthetically pleasing living space. When planning bed locations, hardscapes and appropriate plants, you may want to consider the following: line, texture, scale, linear perspective and focal points, unity through consistent style, balance, transition, proportion, repetition, rhythm, plant shapes, and the many different types of color schemes. The best way to visualize all of these elements is to take a picture of your house, various views of the yard and from inside the house looking out windows. If you own a digital camera, you have the opportunity to utilize one of the many landscape design computer programs on the market. You simply open the digital pictures you took and add graphics and symbols to the picture to make your visions come to life. You can also take basic measurements of your property and sketch things out on graph paper to make a blueprint. It's especially important to keep in mind what your landscape design may look like 20 years from now, as it will be drastically different from when you first plant it. This future-oriented vision will keep you from placing the wrong plant in the wrong spot.

With plan in hand, you can now finally go outside. One of the first steps is to outline, with twine and dowel rods, the position of the elements you've chosen such as beds, retaining walls, patios, walkways, driveways, fountains, rock piles, trellises, arbors, pergolas, gazebos and lighting fixtures. Next, you could cut out circular pieces of cardboard or construction paper in the approximate ground-level diameter that your plants will reach at maturity and place them in the beds to get a feel for how things will be years from now to avoid any major blunders in placement. Now on to surface preparation and ripping up any remaining grass and unwanted vegetation that's in the way, and leveling the soil out. The next step is to build or install bed borders, retaining walls, walkways and wooden structures. And last but not least, installing lighting fixtures, watering systems, and planting all the plants.

Another way to go about landscaping your yard is creating native plant plantings and arrangements. If you decide to go this route there is less of need for establishing formal planting beds and hand surfaced structures, such as retaining walls, or brick or log borders.

There are many different ways to go about the process of landscape design, and the final design can be as simple or complex as you want it. Now matter what you end up with, a little advanced planning, and some common sense will result in a beautiful yard that you and your family will enjoy for many years. The following is a list of a few websites to visit for more information, and lists of books: <http://www.taunton.com/store/index.asp>; <http://www.411homerepair.com/garden/landscapebooks.shtml>; <http://www.taoherbfarm.com/herbs/resources/design.htm>; <http://www.buildfind.com/bookstore>; <http://www.homestore.com/LawnGarden/landscaping/default.asp>; <http://landscaping.about.com/mbody.htm>; <http://www.gardendesigner.com>.

oooo Eric Zuelke, Editor



LETTER FROM THE PRESIDENT

Continued from page 1

mild and resulted in a comparatively small loss of lives. And the attacks on the U.S.S. Cole and the U.S. embassies in Africa occurred on distant lands. September 11th was close to home and has impacted all of our lives, profoundly and forever.

Though my thoughts are elsewhere I think it is important that I write about the native plant society and our recent activities. I think it's imperative that all of us try and get back to living normal lives, as much as that is possible. Writing about or engaging in native plant activities is therapeutic and will show those terrorists that they have lost. So, I will set aside my preoccupation with the events of September 11th and terrorists and focus on the DNPS.

It was a very exciting summer. Although our nursery efforts were not that productive this year we did learn a lot and will aim to be more successful next year. Exciting and interesting field trips took place. Those that attended our kayaking outing on scenic Prime Hook Creek, in early August, were rewarded immensely and everyone had a great time. There was a profusion of blooming marsh plants that included an abundance of swamp mallow (*Hibiscus mosheutos*), white water lilies (*Nymphaea odorata*), pickerelweed (*Pontederia cordata*), the rare shrub, seaside alder (*Alnus maritima*), among many other species. The seaside alder was blooming in profusion along the banks of the creek.

Towards the end of August about 15 people attended a fact-filled and very interesting tour of the Claude E. Phillips Herbarium at Delaware State University. This brand-new facility is state of the art and the main repository for plant specimens on the Delmarva Peninsula. Drs. Susan Yost and Arthur Tucker were our tour leaders and provided lots of information about the facility. Our many thanks to them for the tour.

In early September, the DNPS and the Maryland Native Plant Society combined on a joint field trip to an organic farm on Maryland's Eastern Shore. Read all about in our Event Highlights section.

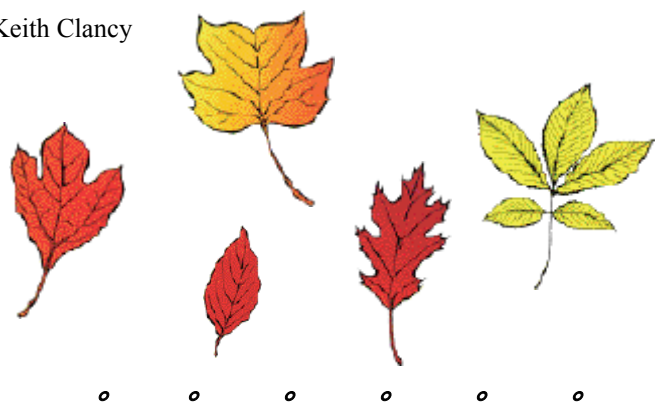
Now that autumn is upon us, DNPS members are busy preparing for our very first native plant sale, scheduled for November 3, 2001, at the St. Jones Reserve. Members are donating native plants from their own properties. These are mostly tree and shrub seedlings that have germinated and are growing in areas that they are not wanted (e.g., in the lawn, or along the driveway or on a trail). I am very excited by this sale and expect that we will have many attractive and healthy plants available to the public (including DNPS members) at low, low prices. We should have between three and five hundred native plants for sale. Also, on October 20th, and maybe again on the 27th, I will be looking for a few members to help dig-up about forty-fifty well-established plants from our rescued plant beds. We are going to ball and burlap many of these. I will be sending out an announcement shortly about this sale to all members.

I also expect that we will have available for sale, at the native plant sale, the forthcoming booklet (slightly late), *Delaware Native Plants for Landscaping and Restoration: Recommended species for the property owner and land steward*.

I hope to see everyone at our native plant sale in November. Until next time, stay safe and sound and enjoy your native plant gardening endeavors. My thoughts and prayers go out to the September 11th terrorist attack victims, their families and friends. I guess we are all victims in a sense.

Sincerely,

Keith Clancy



NATIVE PLANT HIGHLIGHT **THE GRASS FAMILY (POACEAE)**

In the last issue of the *Turks's Cap*, I discussed the Cyperaceae (Sedge Family) in Delaware and provided data on its overall status and distribution in the state. I also pointed out the difficulty that occurs in species identification, and due to this fact, the family is frequently avoided by many people. In this issue, I discuss another family that can be difficult to identify and often strikes fear into the hearts of those who attempt to key-out species, and that family is the Poaceae, or the Grass Family.

As with sedges, to identify grasses, technical manuals are usually needed and a familiarity with the botanical terms used to describe the morphological features of grasses are required. In addition, species in the grass family do not have showy, colorful flowers as the wildflowers do and thus are often ignored or overlooked in the field.

The main "field" characters that distinguish a grass from a sedge are: grasses have hollow stems, vs. solid stems for sedges; grasses have joints where the leaves are attached, vs. no joints for sedges; the base of the leaves of grasses wrap around the stem in a structure called the sheath that is open, versus sheaths that are closed for sedges. In addition, the flowers (referred to as florets) of grasses are arranged differently than the flowers of sedges, and the flower structures of grasses are slightly different than the flowers of sedges.

The Poaceae is well represented in the state of Delaware. It is the second largest family in the state, composed of 237 native and non-native species and varieties (the largest family in the state is the Asteraceae, aster or daisy family with 238 species and varieties). There are 77 genera within the grass family in Delaware with the largest being *Dichanthelium* with 34 species and varieties. This diversity of grasses in Delaware is primarily due to diversity in habitat; from dunes and upland forests, to tidal and nontidal wetlands and swamps.

The majority of grasses in Delaware are found growing in the Coastal Plain physiographic province, with 81 species and varieties being restricted to this region. In contrast, 25 species and varieties are restricted to the Piedmont province. Seventy-three (73) species and varieties of grasses in Delaware are not native to the state and 8 non-native species are considered to be invasive. When considering the overall natural distribution of grasses in the eastern United States, 60 species of grasses in Delaware are at or near their northern limits of distribution

and 23 species of grasses in the state are at or near their southern limits. The grass flora of Delaware is primarily perennial (174 species and varieties), compared to 63 species and varieties that are annuals.

A high percentage (41%) of the grass flora of Delaware is rare or uncommon. Sixty-seven (67) species and varieties are considered to be rare or uncommon in the state and 7 are known from only a single occurrence or population. In addition, 20 are historical, meaning they have not been reported for 20 or more years. Furthermore, two (2) species are thought to be gone, or extirpated in the state. One species, *Panicum hirstii*, is globally rare and is known from only four sites worldwide (Sussex Co., Delaware, southern New Jersey, and two in North Carolina).

There are several species of grasses that are available in the nursery trade and would make great additions to native plant gardens. Some of these species include: *Andropogon gerardii* (big bluestem), *Andropogon virginicus* (broom-sedge), *Panicum virgatum* (switch panic grass), *Saccharum giganteum* (giant plume grass, synonym = *Erianthus giganteus*), *Schizachyrium scoparium* (little bluestem, synonym = *Andropogon scoparius*), and *Sorghastrum nutans* (yellow Indian-grass).

To conclude this series on grasses and sedges, I'll emphasize that the grass and sedge families are two of the most diverse families of vascular plants in Delaware, and in my opinion the most fascinating ecologically and in many cases, the most attractive. So I encourage you to try your hand at keying-them-out and to learn more about their ecology and life history.

William McAvoy, DNPS member

EVENT HIGHLIGHTS

Continued from page 3

various plants and herbs serve the same purpose. By using mixtures of such aromatic substances as peppermint oil, cloves, and cinnamon, damage is prevented and one's health is not at undue risk. An added benefit is that when the cabinets are opened, spicy odors fill the room. "It's like aromatherapy," Dr. Tucker explained.

The collection specializes in Delmarva collections but has specimens from all over the world. Important collections by William Canby, Albert Commons, Edward Tatnall and Robert Tatnall are housed here. A few of the oldest specimens date to the 1700s. Each plant is dried and mounted on paper. The drying process requires low heat, low humidity, and should be done as quickly as possible. The collection now houses more than 100,000 specimens with room for many more.

The goal of the herbarium is to serve as an educational resource as well as a research facility. Specimens are available, on a loan basis, to other botanical researchers at accredited institutions, such as universities or botanical gardens. The herbarium is also open to the public with hours by appointment.

Diane Chance, DNPS Field Trip Coordinator

THE HASTINGS ORGANIC FARM TOUR

On Saturday, September 8, 2001, a group of nine avid native plant enthusiasts from Delaware and Maryland gathered at Rose Point Farm, an organic farm owned by Bill and Shirley Hastings. Bill has served on the Maryland Board of Certified Organic Growers for ten years and Shirley is certified in Nutrient Management. She's also recently taken the test that will qualify her to be an inspector of organic farms for the National Program. Together they've farmed Rose Point's twenty acres for over 18 years.

Bill gave us an enthusiastic overview of organic growing and assured us that it is a profitable business. "Organic foods are more popular now than ever. People are coming to realize that to be healthy, you need to eat healthy foods."

"When you use toxic chemicals to control pests, you poison the soil for a long time. Someone I know had a soil test done not too long ago. It showed traces of DDT. DDT was banned 25 years ago and it's still with us."

Shirley told us that when they moved to the farm the only birds they saw were crows. She believed that songbirds were an indication of a healthy ecosystem and she worked to provide habitat for them. Now their property is surrounded with a buffer of tall shade trees filled with the sounds of birds.

Birds are an important part of organic gardening, according to Shirley. "One year," she said, "the grasshoppers came up out of the ditch and worked their way across the field devouring everything in sight. Bill plowed under a thirty foot band of crops in order to stop their progress. It worked. As soon as the grasshoppers entered that barren stretch of field, the birds swooped down and ate them up." "We lost a good part of our crop that year, but we salvaged most of it, thanks to the birds," Bill said.

Someone asked about companion plantings. "Generally they don't seem to work, at least not on a commercial level," Shirley told us. "But buckwheat will crowd out wiregrass."

"We were told to plant basil in our tomato field to prevent insect damage," Bill laughed, "We did but the insects ate both the tomatoes and the basil alike. Although the tomato crop was lost, something good did come of it all. Once the weather changed, the basil sprouted back up nice and full. We harvested it and sold it in little bouquets for \$1.25 each."

In addition to hearing other success stories, we wandered through fields of squash and amaranth, green beans and strawberry plants. We tasted the sweetest cherry tomatoes ever grown and ate grapes worthy of a king's table. Even the organically grown fish came to the edge of the pond when Bill stomped his feet on the bank.

There were so many questions and so much enthusiastic discussion, our hour's tour stretched into two and a half. We bid the Hastings farewell with a renewed appreciation for good land stewardship and directions to a vegetable stand down the road that sold organic produce.

oooo Diane Chance, DNPS Field Trip Coordinator

KAYAKING PRIME HOOK CREEK

Our kayak outing along Prime Hook Creek on August 4, 2001, was a great success and enjoyed by all (even the few people that were canoeing). About a dozen of us hit the creek at

the peak time for flowering plants and the weather was great; a cloud cover kept the temperature down. Biting insects were conspicuous by their absence. The swamp rose-mallow (*Hibiscus moscheutos*) was in full bloom along the creek banks. This member of the Mallow Family and relative of the cotton plant, has beautiful large flowers with striking white or pink petals, with characteristic dark pink or purple centers. Other attractive plants we observed included the white water lily (*Nymphaea odorata*), pickerelweed (*Pontederia cordata*), water smartweed (*Polygonum* sp.), spatterdock (*Nuphar advena*), dodder (*Cuscuta* sp.), bladderworts (*Utricularia* spp.), water-willow or swamp loosestrife (*Decodon verticillatus*), arrow arum (*Peltandra virginica*), Virginia meadow-beauty (*Rhexia virginica*), and blue flag (*Iris virginica*), among many others. The narrow streamside scrub or low forest community was comprised primarily of red maples (*Acer rubrum* v. *rubrum* and *A. rubrum* v. *trilobum*), some green ash (*Fraxinus pensylvanica*), willow oaks (*Quercus phellos*), black gum (*Nyssa sylvatica*), sweet bay magnolia (*Magnolia virginiana*), sweet pepperbush (*Clethra alnifolia*), fetterbush (*Leucothoe racemosa*), swamp rose (*Rosa palustris*), smooth alder (*Alnus serrulata*), seaside alder (*A. maritima*), to name a few. As early as the first week in August the red maples and poison-ivy foliage was beginning to turn red. The short-statured maples were often festooned with many hemi-parasitic mistletoes (*Phoradendron leucarpum*) and the rare seaside alder (*Alnus maritima*) was in abundance along this stream. Ferns observed included the marsh fern (*Thelypteris palustris*), royal fern (*Osmunda regalis*), cinnamon fern (*O. cinnamomea*), netted chain fern (*Woodwardia areolata*), and Virginia chainfern (*W. virginica*). Aquatic plants were not overlooked. The native coontail or hornwort (*Ceratophyllum demersum*) and the invasive exotic, hydrilla (*Hydrilla verticillata*) were abundant along some stretches of the creek. Pondweeds (*Potamogeton* spp.) and water-milfoils (*Myriophyllum* spp.) were also in abundance. All in all it was a great trip learning about and observing the mostly native flora of Prime Hook Creek and its streamside vegetation. Traveling by kayak (or canoe) was an excellent way to get up close and personal with the plants along this meandering stream.

oooo Keith Clancy, President



© Keith Clancy

UPCOMING EVENTS

SATURDAY, 01 OCTOBER THROUGH 30 NOVEMBER 2001 – “BOTANICALS AND BUGS” AT THE VISITORS CENTER, ADKINS ARBORETUM. A RECEPTION TAKES PLACE ON FRIDAY, OCTOBER 19, FROM 6-8 P.M. AND A DEMONSTRATION BY THE ARTIST WILL TAKE PLACE ON NOVEMBER 3, FROM 2-4 PM. JOIN NATURAL SCIENCE ILLUSTRATOR, AND AMERICAN SOCIETY OF BOTANICAL ILLUSTRATORS’ EDUCATIONAL ADVISOR SHARON O’HARA FOR AN ILLUMINATING AFTERNOON COMBINING SCIENCE AND ART. ADKINS ARBORETUM IS LOCATED AT 12610 EVELAND RD, RIDGELY, MD. FROM RTE 50 TAKE RTE 404 TO HILLSBORO. TURN NORTH ONTO RD. 480 AND IMMEDIATELY TURN LEFT ONTO EVELAND ROAD. THE ARBORETUM IS TWO MILES ON THE LEFT. CENTER HOURS: 9 A.M. TO 5 P.M., MONDAY-SATURDAY (EXCLUDING HOLIDAYS). FOR MORE INFORMATION, CALL 410.634.2847. FEE REQUIRED: \$10 MEMBERS, \$15 NON-MEMBERS.

SATURDAY, 20 OCTOBER 2001 – AUTUMN AT ABBOTT’S MILL FESTIVAL. FROM 10 AM TO 4 PM, LIVE RAPTOR & REPTILE DEMONSTRATIONS, GUIDED CANOE EXCURSIONS, GRISTMILL TOURS, CHILDREN’S ACTIVITIES, COLONIAL SKILLS DEMONSTRATIONS, NATIVE AMERICAN & ENVIRONMENTAL EXHIBITS, CRAFT SALES, MUSIC AND REFRESHMENTS. ABBOTT’S MILL NATURE CENTER. FOR MORE INFORMATION CALL 302.422.0847, OR ON THE WEB AT WWW.DELAWARENATURESOCIETY.ORG.

SATURDAY, 27 OCTOBER 2001 – 9 AM TO NOON, FALL TREE PLANTING AT MIDDLE RUN NATURAL AREA, HELP PLANT 1000 TREES AS PART OF THE DELAWARE NATURE SOCIETY’S ONGOING FOREST RESTORATION PROJECT IN ITS 815-ACRE MIDDLE RUN NATURAL AREA PARK NEAR NEWARK, DELAWARE. IF YOU ARE INTERESTED IN PARTICIPATING, CALL LANDOWNER CONTACT COORDINATOR MELISSA McDERBY AT 302-239-2334 EXT. 26 FOR LOCATION AND OTHER DETAILS.

SATURDAY, 03 NOVEMBER 2001 – DNPS NATIVE PLANT SALE, FROM 10:00 AM – 3:00 PM, AT THE ST. JONES RESERVE. HUNDREDS OF TREES, SHRUBS AND, A FEW, HERBS OF NATIVE SPECIES WILL BE AVAILABLE AT VERY REASONABLE PRICES. DIRECTIONS: ST. JONES RESERVE, TAKE RTE 1/RTE 113 TO JUST SOUTH OF THE DOVER AIR FORCE BASE TO THE RTE 9/KITTS HUMMOCK RD. INTERSECTION; GO EAST ON KITTS HUMMOCK ROAD ABOUT 1 MILE TO THE ENTRANCE OF THE ST. JONES RESERVE (LOCATED RIGHT NEXT TO THE JOHN DICKINSON MANSION). FOR MORE INFORMATION CALL 302-674-5187 OR EMAIL DNPLANT@AOL.COM.

THURSDAY, 08 NOVEMBER 2001 – MR. ROD SIMMONS, A WELL-KNOWN ECOLOGIST, GEOLOGIST, EDUCATOR, AND VICE-PRESIDENT OF THE MARYLAND NATIVE PLANT SOCIETY, PROVIDES A BEAUTIFUL LOOK INTO THE DIVERSITY AND COMMUNITY ECOLOGY OF TREES IN MARYLAND. WITH SLIDES, WE’LL TRAVEL FROM THE COASTAL PLAIN TO THE MOUNTAINS. FROM 7-9 PM. ADKINS ARBORETUM IS LOCATED AT 12610 EVELAND RD, RIDGELY, MD. FROM RTE 50 TAKE RTE 404 TO HILLSBORO. TURN NORTH ONTO RD. 480 AND IMMEDIATELY TURN LEFT ONTO EVELAND ROAD. THE ARBORETUM IS TWO MILES ON THE LEFT. FOR MORE INFORMATION, CALL 410.634.2847. FEE REQUIRED: \$8 NON-MEMBERS, \$5 MEMBERS.

TUESDAY, 20 NOVEMBER 2001 – 7 PM TO 9 PM, NATIVE PLANT SOCIETY BIMONTHLY MEETING. WE WILL HAVE A PRESENTATION FIRST, AND SHORT BUSINESS MEETING AFTERWARDS. THE MEETING WILL BE HELD AT THE AQUATIC RESOURCES EDUCATION CENTER, 4876 HAY POINT LANDING RD., SMYRNA, DE. DETAILS AT A LATER DATE.

THE KENT COUNTY PARKS DIVISION REQUESTS DNPS MEMBER PARTICIPATION IN DEVELOPING THE FINAL PLAN FOR A DEMONSTRATION RAIN GARDEN AT THE BRECKNOCK PARK NATIVE PLANT GARDEN. THIS GARDEN SERVES AS A SAMPLING OF SUBURBAN LANDSCAPE PRACTICES USING NATIVE AND NATURALIZED DELMARVA PLANT SPECIES EXCLUSIVELY. THE NEW RAIN GARDEN WILL BE ADDED TO SHOW HOW STORMWATER CAN BE BENEFICIALLY BIO-RETAINED IN A WETLAND PLANTING BED, RATHER THAN SIMPLY DISCHARGED TO THE STREET. WE HOPE TO COMPLETE SITE PREPARATION AND CONSTRUCTION OF THE SYSTEM BY EARLY OCTOBER, AND TO PLANT THE GARDEN BY NOVEMBER 1. CALL CARL SOLBERG 302.698.6451 FOR MORE INFORMATION.

Membership Application

DELAWARE NATIVE PLANT SOCIETY

Member Information

Name: _____

Business Name or Organization: _____

Address: _____

City and Zip Code: _____

Telephone (home/work): _____

E-mail address: _____

- ☐ Individual \$15.00
- ☐ Full-time Student \$10.00
- ☐ Family or Household \$18.00
- ☐ Contributing \$50.00
- ☐ Business \$100.00
- ☐ Lifetime \$500.00
- ☐ Donations are also welcome \$ _____

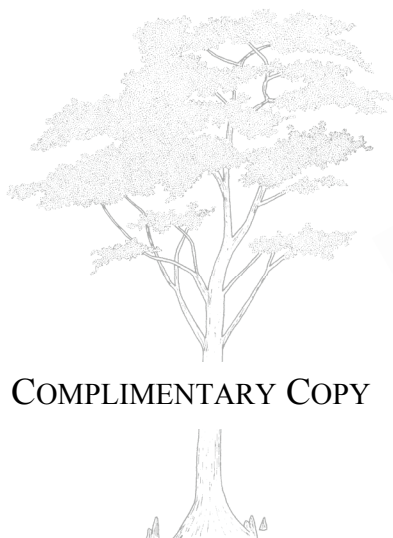
Membership benefits include:

- * The DNPS quarterly newsletter, *The Turk's Cap*
- * Native plant gardening and landscaping information
- * Speakers and field trips

Total Amount Enclosed: \$ _____

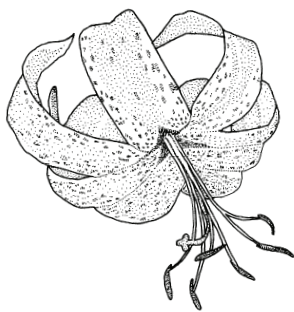
**Make check payable to:
DE Native Plant Society
P.O. Box 369, Dover, DE 19903**

**DELAWARE NATIVE PLANT SOCIETY
P.O. Box 369
DOVER, DELAWARE 19903**



COMPLIMENTARY COPY





The Turk's Cap

THE NEWSLETTER OF THE DELAWARE NATIVE PLANT SOCIETY WINTER 01-2002

IN THIS ISSUE

- Page 1** ○ *A Call for Articles*
 ○ *New Members*
 ○ *Letter From the President*
- Page 2** ○ *Letter From the Editor*
 ○ *Plant-animal Highlight*
 ○ *Feature Article*
- Page 3** ○ *Feature Article continued*
- Page 4** ○ *Feature Article continued*
 ○ *Natural Community Highlight*
 ○ *Resources and Reviews*
- Page 5** ○ *Letter From President continued*
 ○ *DNPS Website*
- Page 6** ○ *Native Plant Highlight*
 ○ *Snowflakes poem*
- Page 7** ○ *Upcoming Events*
- Page 8** ○ *Membership Application*

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HOW CAN I GET INVOLVED?

The Delaware Native Plant Society is open to everyone ranging from the novice gardener to the professional botanist. One of the primary goals of the society is to involve as many individuals as possible.

The DNPS is working on some significant projects at this time. We have begun a reforestation project at Prime Hook State Wildlife Area. A second project is our now established native plant nursery. We have four beds in this nursery and have had a successful plant sale. We encourage everyone to participate in these, and other DNPS endeavors.

For more information on how to get involved, call 302.674.5187, or E-mail us at dnplant@aol.com. Or visit the new DNPS website at www.delawarenativeplants.org. Our new website has all of the past issues of *The Turk's Cap* along with a large photography section, and links to many other environmental and plant related organizations.

A CALL FOR ARTICLES

If you would like to write an article for The Turk's Cap, we would love to print it. With like minded individuals as an audience, The Turk's Cap is a great venue for plant or habitat oriented writings.

We'll take just about anything from gardening tips to book reviews to poetry. Of course, it has to be about native plants, or issues related to native plants; just a minor constraint. Your imagination is the real key.

Contact Eric Zuelke for more information at (ezuelke@juno.com), or Keith Clancy at 302.674.5187.

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A REFRESHING WINTER BREEZE WELCOME TO OUR NEWEST MEMBERS

October through December

Chris Bohinski
 Merritt Burke III
 Melvin D'Souza
 Sterling & Nettie Green
 Dr. Faith B. Kuehn
 Cathy Martin
 Betsy Ney
 Joyce Ponsell
 Paul Teese

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LETTER FROM THE PRESIDENT

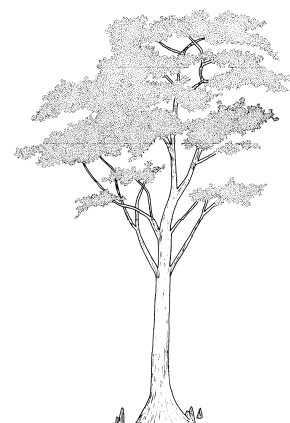
As the cold wind blows and the clouds settle in for the long winter season, it's the perfect time to dream about longer days, spring rains and the cornucopia of flowers that burst forth to beckon in a new spring. It is also time to briefly reflect on DNPS activities during 2001 and start planning for a better 2002.

This past year was one filled with many interesting times and developments. Members were active in developing our native plant nursery and, although, we were less successful in germinating seeds that were directly planted in seedbeds, we did learn a lot from our efforts; results for 2002 hopefully will be better. Our first annual native plant sale in early November was a rousing success. We had many members and non-members alike come out to the St. Jones Reserve to choose

Continued on page 5

The DNPS Vision

The purpose of the Delaware Native Plant Society (DNPS) is to participate in and encourage the preservation, conservation, restoration, and propagation of Delaware's native plants and plant communities. The Society provides information to government officials, business people, educators, and the general public on the protection, management, and restoration of native plant ecosystems. The DNPS encourages the use of native plants in the landscape by homeowners, businesses, and local and state governments through an on-going distribution of information and knowledge by various means that includes periodic publications, symposia, conferences, workshops, field trips, and a growing statewide membership organized by the DNPS.



LETTER FROM THE EDITOR**WILL IT EVER SNOW?**

I think I need to get out my lawnmower, rather than a snow shovel! My grass has grown more in the past month than it did in August! I guess I shouldn't complain too much, at least I have a yard, which is more than a lot of people have. Not only do I have a nice sized yard, I have so many wildlife plants and flowers, that I should start my own nursery. Speaking of nurseries, our Feature Article for this issue focuses on the DNPS nursery at the St. Jones Estuarine Research Reserve, it's history thus far, and the details of what went into its creation. We thought everyone might be interested to learn about this dynamic project of ours. We also have two articles about some pretty dynamic plants, Atlantic white cedar and featherfoil. Our plant-animal highlight talks about amber, and last but not least, we have a new website. 🌿

oooo Eric Zuelke, Editor

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PLANT-ANIMAL HIGHLIGHT**"HELP, I'M STUCK"**

Imagine you're a bug happily marching along a tree trunk, or perhaps gnawing on a leaf or two here and there, when suddenly a sticky, gooey, oozing, honey-like mess comes flowing your way at a speed much faster than your little legs can carry you. What happens? Well, you get stuck and become a fascinating research project for scientists some 135 million years later.

Amber and invertebrates have had a long relationship. Over the years, scientists have discovered a 30 million-year-old stingless, tropical bee, and a 30 million-year-old termite both entombed and perfectly preserved in Dominican Republic Amber. They have also discovered a 120-135 million-year-old weevil found in Lebanese amber, and chloroplast DNA dated at 35-40 million years before present from the leaf of a West Indian locust preserved in Dominican Republic amber. They were able to extract DNA from all these specimens that lead to amazing discoveries, helping to show the origin and taxonomic relationship of animals, and plants. This information can be correlated with evidence from plate tectonics to show the ancestral migrations of animals and plants as they literally rode on the moving continents. Overall, an astonishing array of creatures have been discovered in Dominican amber, including beautifully preserved insects, spiders, bird feathers, mushrooms, an anolis lizard, and a tiny phoretic pseudoscorpion with one claw grasping the leg of a beetle. Even cellular structures such as ribosomes, mitochondria, nuclei and cell membranes have been observed in amber using an electron microscope. But what exactly is amber?

Since the first records of neolithic humans in Europe, approximately 5,000 years ago, amber has been cherished for its natural beauty and mysterious properties. Designated as tree resin by Aristotle, Pliny and others, amber was once thought to be solidified lynx urine, mineralized honey or petrified whale sperm. Many tree species are known to produce amber, but most neotropical (New World) amber comes from the fossilized resin of the extinct *Hymenaea protera* (West Indian locust), an ancient leguminous tree that once grew throughout the Caribbean region, Mexico, Central and South America more than 30

million years before present. East African copal, which is commonly used in bead jewelry, comes from *Hymenaea verrucosum*, a tree that is closely related to the West Indian locust. The trees of the genus *Hymenaea* produced copious amounts of terpene resin that flowed underground, probably as a chemical defense against the high diversity of plant-eating insects and parasitic fungi found in the tropics.

These subterranean resin globs have transformed into amber through a chemical process that required millions of years. Terpene resins are a class of chemicals composed of 5-carbon isoprene subunits joined together to form 20-carbon, nonvolatile diterpene molecules. Oleoresins also contain volatile 10-carbon (monoterpene) and 15-carbon (sesquiterpene) molecules, producing the "piney" aroma of these resins. While sitting in the ground, enzymes, pressure, and high temperatures act as catalysts to begin the polymerization process, which produces long-chain molecules from many repeating units of smaller short-chain molecules. The volatile monoterpenes and sesquiterpenes escape and the nonvolatile diterpenes bond together by addition reactions forming a hard plastic like polymer that is resistant to natural decay processes.

Many different species of plants in a variety of families produce sticky saps composed of gums and resins, but most of these substances do not form amber. True gums are polysaccharides composed of many sugar subunits linked together, and are soluble in water. Plant resins are often associated with pine pitch, but it is doubtful that this resin becomes amberized as commonly as the tropical broad-leafed conifers and legumes. When raw pine pitch is distilled the volatile "spirits" of turpentine are removed, leaving a solid residue known as rosin. Rosin has many industrial uses and provides the slight stickiness to help a baseball pitcher grip the ball. Rosin is also used on the bows of string instruments to make them slightly sticky, thus creating more friction and enhancing the tone of the music. Other plant resins include Japanese lacquer and the fragrant incenses frankincense and myrrh. There are also a lot of bogus ambers that are sold as the real thing, but are made of synthetic polymers. When exposed to ultraviolet light in a dark room, authentic Dominican Republic amber fluoresces intensely in beautiful shades of blue. The synthetic polymers also smell of plastic rather than the fresh, piney fragrance of real amber when burned.

Scientists believe that there must be countless tons of resin buried in the soil of the rain forests of the New World tropics. Although the chemical changes may go unnoticed in a human lifetime, some of these honeylike globs are undoubtedly slowly metamorphosing into amber, waiting to reveal their secrets someday. 🌿

oooo Eric Zuelke, Editor

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FEATURE ARTICLE**THE DNPS NATIVE PLANT NURSERY**

Starting a native plant nursery can be a daunting task. With the tremendous popularity of creating butterfly, bird and general wildlife gardens by people all over the world, there has come a strong demand for native plants to use in these gardens. People start plant nurseries for many different reasons; everything from small, hand nurtured non-profit nurseries serving a limited number of clients to sprawling, monstrously mecha-

nized for-profit nurseries serving entire states or regions. These nurseries range from those specializing in bedding plants, annuals and perennials, to those huge conglomerates (like Burpee Seeds) that mass produce millions of seeds of flowers and vegetables for the mail order markets. Other nurseries may specialize in ornamental woody plants and these may be wholesale or retail establishments. Still other nurseries may focus in producing large quantities of tree seedlings for reforestation projects. Once it is determined what type of nursery one wants to establish, the next question is where will this nursery be located. Many hours of time are put into finding suitable locations, deciding on whether or not the nursery will be a true business or just a low-key labor of love, deciding on what kinds of plants the nursery will specialize in, dealing with zoning laws, the legal structure, production schedules, marketing and how much initial capital investment is needed. And without the proper planning and the proper partnerships, there is a persistent concern of failure in the face of big business, consumer-oriented nurseries like home improvement stores and "one stop shopping" kind of stores.

The Delaware Native Plant Society realized that there was a need for a local, native plant nursery here in Delaware. There are many established nurseries in the state already, but we felt there was a need for a centrally located nursery that specialized in native plants propagated from locally collected, and therefore indigenous, seeds. Virtually all other nurseries in Delaware offer a wide assortment of ornamental, mostly exotic species. Individuals or land stewards interested in obtaining native plants have to go out of state to obtain these plant materials.

Originally, we intended on establishing native plant nurseries in all three counties, but in the planning phase we realized that this was a pretty ambitious adventure and that perhaps our scope should be a little smaller until we actually figure out what we're doing or had the necessary resources (i.e., lots of volunteers). This nursery has truly been a labor of love to this point and everything about the nursery has been a hands-on, nearly non-mechanized affair. Our first obstacle in creating the nursery was finding a location. We had several ideas floating around until we learned about the availability of some land at the Delaware National Estuarine Research Reserve (DNERR) in Kent County, the St. Jones Reserve, off Kitts Hummock Road. The Reserve is managed by the Division of Soil and Water, of the Delaware Department of Natural Resources and Environmental Control (DNREC). We entered into discussions with Mr. Dave Carter of the Division of Soil and Water and Mr. Mark DeVecchio, the manager of the Reserve about establishing a native plant nursery on cleared land at the Reserve. And after a number of discussions and the drafting of a management plan we entered into a three year Memorandum Of Agreement (MOA) with DNREC to establish this nursery.

One of our initial conversations dealt with whether or not our nursery would be compatible with the land use agreements made by the St. Jones Reserve and the state. After it was determined that our nursery would be compatible, stipulated by the fact that we would be specializing in native plants only, we began preparations in earnest.

We then decided, through a number of business meetings, what kinds of plants we would specialize in propagating. It was agreed that we would start with a focus on woody plants and that we would try and propagate enough seedlings of trees to benefit reforestation projects throughout the state. We would

NATURAL QUOTES

'Love of the land is the basis for the unending struggle of those who really care against those who see only material rewards.'

Sigurd F. Olsen, *Reflections from the North Country*, 1976

later propagate shrubs and herbs.

We began to gather together equipment and materials, designed the size and number of planting beds we would start with, and staff at the St. Jones Reserve plowed up our first two beds (of which we were very grateful for their assistance). Soon afterwards, we gained permission to dig-up plants from a forest that was to be clear-cut for the future Rte 1 by-pass. Several DNPS members, in 90 degree plus heat and with chainsaws bearing down, were able to rescue many of the plants that were in the path of the construction activities; we only wished there were more of us on that day. We transplanted these plants the next day and the nursery, after months of planning, negotiations and preparations, finally began to look like a nursery.

The next endeavor involved gathering volunteers to collect seeds in local forests that we would direct seed into tilled beds. We collected several thousand seeds of various oaks, hickories, black walnut, persimmon, and tulip poplars, among others. Seeds were primarily collected from Blackbird State Forest, Prime Hook Wildlife Area, and Nanticoke State Wildlife Area. In the fall Eric Zuelke and Keith Clancy hand-sown about 2000 seeds of hickories and oaks in one tilled bed. And the following spring we roto-tilled another bed to direct seed an additional several thousand seeds collected from the previous fall. A thin layer of mulch was placed over the seeds. For one of the beds we installed chicken wire and shade cloth, which was effective in keeping out rabbits and deer but not squirrels or other rodents. The seed bed planted in the spring was not immediately fenced and that proved to be a fatal oversight, as most of the seeds sown were pilfered by raiding rodents. It wasn't a total failure however, since the bed sown in the fall, resulted in the sprouting of a few dozen plants. These seedlings were dug-up by the end of the season and placed in a pot-in-pot method and put back in the ground and covered with mulch. The fruits of our labor thus far were realized in November of 2001 when we hosted our first native plant sale. Most of the plants in the nursery were potted up in preparation for the sale. In addition, some members also generously donated many plants for this sale. The sale was a huge success and gave us all hope that this native plant nursery endeavor might work out after all.

However, we must learn from the trials and tribulations that we experienced last year, not to repeat the mistakes we made and coax other DNPS members to become involved in this nursery operation, either by offering their expertise or muscle. We would also like to have someone track development projects to identify forest tracts to be cleared so that we may have an opportunity to "rescue" many of these plants and transplant them to our native plant nursery; these to be made

available at out annual plant sales or for restoration projects.

This coming year we have taken a different approach to germinating seeds. Members have volunteered to germinate seeds of various species collected last fall. They will give the seeds the necessary pre-treatment regimes of stratification and will sow the seeds in the spring in pots or flats at their homes. Eventually, many of these seedlings will make their way to our nursery. In addition, we may acquire a small and inexpensive, collapsible, germination house to try and germinate seeds at the nursery.

Late in 2001 staff at the St. Jones Reserve installed a split rail fence with mesh wire demarcating the boundaries of the native plant nursery.

The DNPS native plant nursery at the St. Jones Reserve offers a welcome alternative to the typical nursery that limits its offerings to non-native species, and it is also an effort that has truly come from the hearts of those involved. With the support of the staff at the St. Jones Reserve and the elbow grease of the DNPS members and volunteers, we can see our little nursery becoming a great resource for everyone in the state. 🌱

oooo Eric Zuelke and Keith Clancy, Managers, DNPS native plant nursery

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NATIVE PLANT COMMUNITY HIGHLIGHT

Chamaecyparis thyoides - *Acer rubrum* / *Magnolia virginiana* / *Alnus maritima* Forest

Atlantic White Cedar-Red Maple / Sweetbay / Seaside Alder Forest (Delmarva Atlantic white cedar swamp)

Introduction

One of Delaware's most important wetland resources, Atlantic white-cedar swamps occur in association with streams in the southern portion of the state. Dark and mysterious, these swamps have long been a source of interest to botanists. Unfortunately, Delaware's cedar swamps currently occupy only a fraction of the area they once did, as the wood of the white-cedar tree was highly valued for its decay-resistance, and was often used to produce building shingles. Today, many of the examples that remain are on protected lands, and those that are not should be a high priority for conservation.

Description

This community typically forms where streams flow slowly through an unconsolidated sand/gravel substrate. Soils generally consist of poorly drained organic muck. Historical disturbances such as fire, wind throw, ice damage, cutting and flooding have probably had a considerable influence on the structure and composition of existing stands. The canopy of this mixed forest contains *Chamaecyparis thyoides* (Atlantic white-cedar) and *Acer rubrum* (red maple) as co-dominants. Other less abundant canopy trees include *Fraxinus pennsylvanica* (green ash), *Nyssa sylvatica* (blackgum), *Diospyros virginiana* (persimmon), and *Pinus taeda* (loblolly pine). The subcanopy tree/tall shrub layer may be diverse. It typically includes *Ilex glabra* (inkberry), *Ilex opaca* (American holly), *Clethra alnifolia* (sweet pepperbush), *Magnolia virginiana* (sweetbay magnolia), *Rhododendron viscosum* (swamp azalea), *Leucothoe racemosa* (fetterbush), *Viburnum nudum* (possum-haw) and *Vac-*

cinium corymbosum (highbush blueberry). One of the nominate species, *Alnus maritima* (seaside alder), is a shrub nearly endemic to the Delmarva Peninsula, and typically occurs in canopy openings and along the stream edge, where it can receive more sunlight than in the shady interior. The herbaceous layer is also diverse and commonly includes *Arisaema triphyllum* (jack-in-the-pulpit), *Carex collinsii* (Collin's sedge), *Boehmeria cylindrica* (false nettle), *Mitchella repens* (partridgeberry), *Osmunda cinnamomea* (cinnamon fern), *Osmunda regalis* (royal fern), *Peltandra virginica* (arrow arum), *Woodwardia areolata* (netted chainfern), *Thalictrum pubescens* (tall meadow-rue), *Impatiens capensis* (orange jewelweed) and others.

Distribution

Examples of this community can be found along the Nanticoke River, Cedar Creek, Tantrough Branch, Pemberton Branch, Brittingham Branch, and probably elsewhere in the state. Overall, this community is confined to the Delmarva Peninsula. Some good examples that are open to the public can be found on the Nanticoke Wildlife Area, west of the town of Laurel. 🌱

oooo Peter Bowman, DE Natural Heritage Program Ecologist

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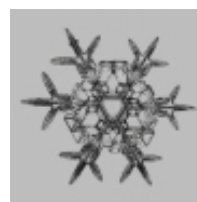
RESOURCES AND REVIEWS

WILDFLOWERS OF PENNSYLVANIA

This is a fabulous book written by Mary Joy Haywood, Phyllis Testal Monk and members of the Botanical Society of Western Pennsylvania. This book ranges in suitability for the novice to the professional botanist. On the front and back covers are illustrations of flower forms and leaf forms. Each species is grouped by family and has a photograph and a detailed morphological description. The photographs are excellent, and this would be a great book to use in conjunction with *Newcombs Guide to Wildflowers* and the *Flora of Delaware: an annotated checklist*. Contact information: Wildflowers of Pennsylvania, Mary Joy Haywood, 3333 Fifth Ave., Pittsburgh, PA, 15213.

WEBSITE FOR MEDICINAL AND EDIBLE PLANTS

If you're into cooking with wild plants, or using plants for holistic or herbal medicine then this website could be a great resource. At <http://www.herbalartsclearinghouse.com>, you can find a ton of information on topics ranging from guides to plants, uses of medicinal plants, conservation organizations, cooking with wild plants, identifying poisonous plants in the wild, and wilderness survival. This website has something for everyone, from cooking tips for the family to surviving those wilderness backpacking adventures to Canada, or your favorite mountain climbing spot.



LETTER FROM THE PRESIDENT*Continued from page 1*

from a wide selection of native plants at very reasonable prices. Many of the plants that we had previously rescued in 2000 from a threatened forest, were bought at this sale and hopefully will have a long and pampered life. Members also donated several hundred plants that proved to be very popular. All in all, we sold more than 200 plants of over forty different species of trees, shrubs and herbs. Cardinal flowers (45 plants), mixed oaks (27 plants) and swamp sunflowers (21 plants) were the biggest movers. Other popular sellers included bonesets, partridgeberry, inkberry, bayberry, and pipsissewa. Thanks to Nancy Adamson, Karen & Chris Bennett, Diane Chance and Bob Edelen for their donations of plants. I want to also thank those members that helped with the plant sale: Rick McCorkle, Bill McAvoy, Eric Zuelke, Flavia Rutkosky, Rick Mickowski, Betsy Archer, Diane Chance, and Bob Edelen. My apologies if I have forgotten anyone.

As far as field trips in 2001, what we lacked in quantity we made up for in quality. Highlights for the year included an awesome kayak/canoe trip along Prime Hook Creek in August (we'll have to have a repeat of this trip in 2002 on a different stream), an enlightening trip to the Claude E. Phillips Herbarium at Delaware State University also in August, and a seed-collecting trip to Blackbird State Forest in November. The year 2002 should be even better.

2001 also proved to be a great year for increasing our membership. We added 32 new members during the year, which translates to an increase of more than 60 percent!

I am very excited about the upcoming year and all that it has to offer. I look forward to meeting many of you on field trips and at events throughout the year.

Members are pre-treating seeds collected from the fall of 2001 and will attempt to germinate a number of species. Seedlings that result from these efforts will be transferred to the nursery, hopefully, later this year (members will also be able to keep some of the seedlings for their own properties). Last year was not a particularly productive one for seed for many of our native tree species so we wound up collecting many seeds of winterberry, arrowwood, and partridge berry, among others, and, therefore, will be sorely challenged to successfully germinate these seeds.

Our field trip agenda for 2002 should be more robust than 2001 and will start earlier. We have field trips already planned for February and March (see Upcoming Events section in this issue). I hope that many DNPS members will be able to attend these outings.

This year will require renewed efforts to improve the quality of our native plant nursery. I hope that more members will be able to volunteer their time and expertise to this work. And remember anyone that works out at the nursery is entitled to receive complimentary plants from their volunteering. This coming spring we will be working out at the reforestation site at Prime Hook State Wildlife Area to do some weeding and, possibly, some transplanting. Volunteers are needed!

And speaking of reforestation, I am please to announce that we just received notice from the Partnership for the Delaware Estuary that we have been awarded a mini-grant for \$3600 to undertake one, or more, reforestation projects in the Delaware Estuary. I am really excited about this project and its potential for long-term benefits in restoring some of our lost for-

ests. We will be collecting seeds of native species of trees and shrubs from intact forest habitats and then use a direct seed approach to reforestation; this method proved to be very effective at Prime Hook. While the grant funds will be used to purchase flags and tree tubes as well as to pay several DNPS members for their time, we will still need members (and non-members too) to volunteer their time to make this a successful project; the more participants we have the greater the amount of acres that can be reforested. During the next few months we will be talking with land stewards to identify potential reforestation sites. Please contact me if you have any interest in this project or would like more information. Also, please check our website for more details in the coming months.

And speaking about our website, I am very pleased to announce that it has finally been updated and completely overhauled. This updating is still processing and should be more or less completed in the next few weeks. Your comments are welcomed.

Finally, I want to conclude this letter with a wish that everyone has a very prosperous and happy 2002, and one filled with all things related to native plants. I'd also like to say that we are always looking for active members and I encourage everyone to take a more active role in their society. There is a lot to do and we need your help. We need members to play active parts in public outreach, conservation issues, reforestation projects, invasive species control initiatives, and field trip leaders/organizers, among other activities.

Well, I for one am not going to sit home all winter dreaming about the spring, but rather will endeavor to get out as much as I can to see what's up with our winter flora. Besides, there's usually one thing or another blooming in January. ❄️

Sincerely,

Keith Clancy

**THE DNPS WEBSITE**

At long last, our website is being completely revised and updated. Check out our newly designed website at www.delawarenativeplants.org (Please note: this is a new address). The site is still under construction so please check back on a regular basis. We plan on having a photo library that will allow visitors to view high quality images of Delaware's flora and native plant communities. Accompanying each image will be a brief description of the plant or community, information on the plant's distribution, planting needs, wildlife and ornamental attributes. There will be sections on Delaware's invasive and exotic species, upcoming events, publications, and an online version of our newsletter, and related links among other topics.

Please take some time to check out our site. All comments and suggestions for improvements are welcomed. Also, if you have any photos that you would like to see added to the site please contact dnps@delawarenativeplants.org with details.



NATIVE PLANT HIGHLIGHT**FEATHERFOIL**

This issues native plant highlight focuses on the wetland plant featherfoil (*Hottonia inflata* Ell.) of the Primulaceae, the Primrose Family. Featherfoil is an obligate wetland plant with a curious appearance and a fascinating lifecycle.

In Delaware, featherfoil is found growing primarily in coastal plain ponds and occasionally in beaver ponds. Coastal plain ponds are depressional wetlands found within wooded areas of the state, and are typically flooded in the early spring when the ground-water table is high, and dry in late summer when the ground-water table is low. Coastal plain ponds are home to a diverse suite of plant species, many of which are rare or uncommon in Delaware. In addition, coastal plain ponds provide critical breeding habitat for frogs and salamanders.

Featherfoil has a unique and interesting appearance. The plant is branched apically (at the tip) into many erect, hollow, inflated, leafless flowering stems that are contracted at the nodes (position on the stem where leaves, flowers, or branches originate). The pedicellate (with a stalk to a single flower) flowers, which are white with five petals, occur in whorls (a ring-like arrangement) at the nodes, and the fruiting capsules are many seeded. At the base of the flowering stems are submerged leaves that are pectinate (comb-like) in form and have the appearance of a feather, hence its common name.

Featherfoil is an annual species and its life cycle is totally dependant on the fluctuating water levels that occur in wetland types such as the coastal plain pond. In early spring, usually in April when the ponds are flooded, featherfoil begins to flower. The hollow, inflated stems actually float at the waters surface and are rooted in the pond bottom by a long, nearly naked vegetative stem. Flowering usually lasts for two-to-three weeks and seeds mature soon after flowering ceases. Mature seeds then fall from the plant and sink through the water column of the still flooded pond. The seeds come to rest on the pond bottom, where they wait patiently while the pond slowly draws-down through the summer. In late summer after the pond has been dry for a period of time, seeds of featherfoil begin to germinate, usually in September or early October. After germination, a small rosette (a dense radiating cluster of leaves at ground level) develops that is about two inches across and pectinate in form. The rosette will remain green through the winter even as the ground-water table rises and the ponds flood. The high waters likely protect the rosettes from cold winter temperatures. After a long winter sleep, something then triggers the plant to develop a stem and climb to the waters surface. I have observed featherfoil flowering in over three feet of water, so that climb to the surface can sometimes be quite an effort. From the stem, flowers develop and once again the flowering process begins and the cycle repeats.

Featherfoil has been known to perform a disappearing act, meaning, it can be present in high numbers at a particular site one year, but be completely absent the next, then reappear in the future. This appearance/disappearance regime may be a result of several factors. One factor being, less than satisfactory growing conditions, e.g., the ponds never draw-down in a particular year allowing time for winter rosettes to develop. Another factor, as some researchers have suggested, may be that featherfoil functions on a two-year lifecycle instead of annually, i.e., seeds germinate after two years not during the first.

In the eastern U.S., featherfoil is more southern in its

distribution. It occurs sporadically along the Atlantic coastal plain from Maine to Florida, but is rare and uncommon in the northern portions of its range. In Delaware, featherfoil is currently restricted to SW New Castle Co. and NW Kent Co., which is not surprising considering that these regions of the state support the highest frequency of coastal plain ponds.

Featherfoil is considered a rare species in Delaware and is known from only 14 distinct populations. ❁

oooo William McAvoy, DNPS member

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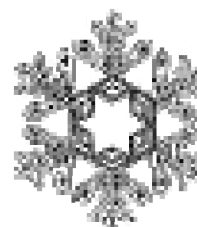
SNOWFLAKES

Out of the bosom of the Air,
 Out of the cloud-folds of her garments shaken,
 Over the woodlands brown and bare,
 Over the harvest-fields forsaken,
 Silent, and soft, and slow
 Descends the snow.

Even as our cloudy fancies take
 Suddenly shape in some divine expression,
 Even as the troubled heart doth make
 In the white countenance confession,
 The troubled sky reveals
 The grief it feels.

This is the poem of the air,
 Slowly in silent syllables recorded;
 This is the secret of despair,
 Long in its cloudy bosom hoarded,
 Now whispered and revealed
 To wood and field.

Henry Wadsworth Longfellow



UPCOMING EVENTS

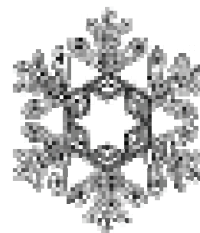
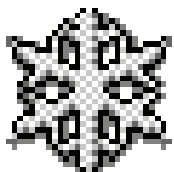
SATURDAY, 23 FEBRUARY 2002 – A MID-WINTERS NATIVE PLANT HIKE AT CAPE HENLOPEN STATE PARK, FROM 10 AM TO 3 PM, WILL TAKE US THROUGH RARE PITCH PINE FOREST AND SCRUB COMMUNITIES, BEACH HEATHER AND BEACHGRASS DUNES, INTERDUNAL SWALES AND VAST SALT MARSHES. WE WILL ALSO LEARN A LITTLE ABOUT COASTAL GEOLOGY AND WILL WITNESS THE INEXORABLE MOVEMENT OF SAND AS A RESULT OF SEA-LEVEL RISE. THE ROLE THAT CAPE HENLOPEN PLAYED DURING WWII WILL ALSO BE INVESTIGATED. THIS IS A FIELD TRIP YOU WILL NOT WANT TO MISS. DRESS APPROPRIATELY FOR CHILLY LATE FEBRUARY WEATHER. FIELD TRIP LEADER: KEITH CLANCY. WE WILL MEET IN THE PARKING LOT ACROSS FROM THE OBSERVATION TOWER THAT IS OPEN TO THE PUBLIC (THIS IS BETWEEN THE CAMPGROUND AND THE OLD FT. MILES). BRING A BAG LUNCH AND SOMETHING TO DRINK AND DRESS WARMLY. FOR MORE DETAILS OR TO SIGN-UP FOR THIS TRIP PLEASE CALL 302.674.5187 OR EMAIL AT DNPS@DELAWARENATIVEPLANTS.ORG.

SUNDAY, 24 FEBRUARY 2002 – WINTER FESTIVAL. FROM 1 PM TO 4 PM AT THE ASHLAND NATURE CENTER. ANIMAL TRACKS IDENTIFICATION, WINTER SURVIVAL SKILLS, MAPLE SUGARING, WINTER MYSTERY HIKE, AND SLEDDING IF THERE IS SNOW. ADMISSION IS \$4.00 FOR ADULTS, \$1.00 FOR CHILDREN. CALL 302-239-2334 FOR MORE INFORMATION, OR ON THE WEB AT WWW.DELAWARENATURESOCIETY.ORG.

SATURDAY, 16 MARCH 2002 – COPELAND NATIVE PLANT SEMINAR. FROM 8 AM TO 4 PM AT THE DELAWARE MUSEUM OF NATURAL HISTORY. THE KEYNOTE SPEAKER WILL BE DARRELL MORRISON WHO WILL FOCUS ON DESIGN IN NATIVE PLANT COMMUNITIES. JEN GOCHENAUR, AND OUR OWN BILL MCAVOY (AUTHOR OF ALL OUR NATIVE PLANT HIGHLIGHTS) WILL ALSO GIVE PRESENTATIONS. THERE WILL ALSO BE GUIDED FIELDTRIPS AND A CATERED LUNCHEON. CALL 302-239-2334 FOR MORE INFORMATION, OR ON THE WEB AT WWW.DELAWARENATURESOCIETY.ORG.

SATURDAY, 23 MARCH 2002 – A POST-EQUINOX PLANT HIKE AT KILLENS POND STATE PARK, FROM 10 AM TO 2 PM. WE WILL WANDER THROUGH MIXED HARDWOOD-PINE FORESTS AND VENTURE TO THE EDGE OF PALUSTRINE STREAMSIDE SWAMP FORESTS WHERE WE MAY CATCH A GLIMPSE OF THE RARE SWAMP PINK. THIS WILL BE A GREAT TIME TO OBSERVE MANY PLANTS THAT ARE BEGINNING TO AWAKE FROM THEIR LONG WINTER'S NAPS. DRESS APPROPRIATELY FOR EARLY SPRING WEATHER. FIELD TRIP LEADER: KEITH CLANCY. WE WILL MEET IN THE PARKING LOT NEAR THE CABINS OFF PARADISE ALLEY ROAD (ON THE SOUTH SIDE OF THE PARK). FOR MORE DETAILS OR TO SIGN-UP FOR THIS TRIP PLEASE CALL 302.674-5187 OR EMAIL AT DNPS@DELAWARENATIVEPLANTS.ORG.

DNPS BI-MONTHLY MEETINGS 2002 – ARE CURRENTLY SCHEDULED FOR JANUARY 15, MARCH 19, MAY 21, JULY 16, SEPTEMBER 17, AND NOVEMBER 19, 2002. MEETINGS WILL TAKE PLACE, UNLESS OTHERWISE NOTIFIED, AT 7 PM AT THE AQUATICS RESEARCH AND EDUCATION CENTER, WOODLAND BEACH WILDLIFE AREA, RTE 9 (4876 HAY POINT LANDING ROAD) ABOUT 1 MILE NORTH OF RTE 6. WITH THE EXCEPTION OF THE JANUARY MEETING, WE WILL HAVE GUEST SPEAKERS AT EACH MEETING (SPEAKERS AND THEIR TOPICS TBA AT A LATER DATE). BUSINESS MEETING WILL TAKE PLACE AFTER EACH SEMINAR. CHECK OUR WEBSITE FOR ADDITIONAL DETAILS OR EMAIL US AT DNPS@DELAWARENATIVEPLANTS.ORG.



Membership Application

DELAWARE NATIVE PLANT SOCIETY

Member Information

Name:

Business Name or Organization:

Address:

City and Zip Code:

Telephone (home/work):

E-mail address:

- ☐ Individual \$15.00
- ☐ Full-time Student \$10.00
- ☐ Family or Household \$18.00
- ☐ Contributing \$50.00
- ☐ Business \$100.00
- ☐ Lifetime \$500.00
- ☐ Donations are also welcome \$ _____

Membership benefits include:

- * The DNPS quarterly newsletter, *The Turk's Cap*
- * Native plant gardening and landscaping information
- * Speakers and field trips

Total Amount Enclosed: \$

**Make check payable to:
DE Native Plant Society
P.O. Box 369, Dover, DE 19903**

**DELAWARE NATIVE PLANT SOCIETY
P.O. BOX 369
DOVER, DELAWARE 19903**

