

# The Turk's Cap

THE NEWSLETTER OF THE DELAWARE NATIVE PLANT SOCIETY SPRING 2003

## 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** ○ *Letter From the President continued*  
 ○ *Feature Article*
- Page 4** ○ *Native Plant Highlight*  
 ○ *Natural Community Highlight*
- Page 5** ○ *Event Highlights*  
 ○ *Resources and Reviews continued*  
 ○ *Thoughts From the Edge...*
- Page 6** ○ *Feature Article continued*
- Page 7** ○ *Upcoming Events*

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

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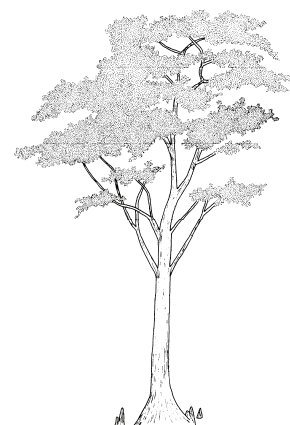
## A LEAFY EMERALD GREEN WELCOME TO OUR NEWEST MEMBERS

### January through March

Frederic Homan  
 S. Joseph Lesley  
 Abby Rae  
 Barbara O'Toole  
 Eric Wittman  
 Susan Yost & Michael Maciarelllo

## The DNPS Vision

**T**he 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.



## 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 and will be doing direct-seeding reforestation projects along Blackbird and Cedar Creeks, originally scheduled for 2002, but now postponed until 2003. In addition, help is needed with our native plant nursery at the St. Jones Reserve with the monitoring of the new greenhouse we just purchased and constructed.

For more information on how to get involved, E-mail us at [dnps@delawarenativeplants.org](mailto:dnps@delawarenativeplants.org). Or visit the new DNPS website at [www.delawarenativeplants.org](http://www.delawarenativeplants.org). Our website will have all of the past issues of *The Turk's Cap* along with a large section on native plants, as well as links to other environmental and

## LETTER FROM THE PRESIDENT

It seems spring is teasing us more than usual this year. The few days of warmth are punctuated by returns to chilly days. Yesterday's forecast for today in central Delaware was for temperatures in the upper 60s, yet the thermometer barely inched above 50 degrees. Yesterday morning I took a drive to the Great Cypress Swamp in southern Delaware hoping to photograph horse sugar (*Symplocos tinctoria*) in flower (it wasn't). Even though I came up empty-handed, I was relishing the weather. Temperatures were in the upper 70s and I was soaking it up. However, by the time I got back to Dover in mid-afternoon the temperatures were only in the 50s.

I am looking forward to the warmer days of spring and a chance to get out and enjoy the riot of colors offered up by the many spring ephemerals. Our Society has many activities planned for April and May (details in this issue of the

*Continued on page 3*

**LETTER FROM THE EDITOR****SPRING HAS SPRUNG, SORT OF**

After what seems to be a very sluggish spring, a few spring ephemerals are finally poking their heads out. Though I don't mind because all the snow we got this winter was fabulous! However, it was rough on all the plants in my little wild-life habitat in my backyard. Most of my saplings got gnawed off by the rabbits at the 18-20 inch mark, just where the top of the snow was. That'll be a definite set back, but plants have an amazing ability to rebound after being chomped on.

If you get the chance to go tromping around this spring to look for some of those spring ephemerals, be sure to look for the one featured in our native plant highlight. It's a diminutive little thing, but quite beautiful when you finally find one. And though it is not in full swing until later in the summer, it would be well worth your time to familiarize yourself with the wetland type discussed in our natural community highlight. Some of the rare species there are awe inspiring. Our plant-animal highlight was inspired from a recent DNPS field trip where we discovered lots of beaver activity and were amazed at the size of the trees they tackled.

The DNPS has been busy lately with lots of great speakers at our bi-monthly meetings, some great field trips, and a big push to move our nursery out of its childhood and into a more grown up world of plant propagation. See inside for more details... 

Eric Zuelke, Editor

**PLANT-ANIMAL HIGHLIGHT****HOW NOW BROWN BEAVER**

Indiscriminate. Persistent. Independent. Obsessive. Ecological keystone species. That's the North American Beaver. The beaver (Class: Mammalia, Order: Rodentia, Family: Castoridae, *Castor canadensis*) is one of nature's most ecologically influential personalities. The sound of running water is the call that beavers respond to and they seem to have an overwhelming instinctual urge to silence that water. In doing so, through their well engineered dams, they create deep ponds that not only serve their own needs, but create habitat for many species of fish, reptiles, amphibians, birds, river otters, mink, muskrats, raccoons, small mammals, and many species of plants. Beavers also help to protect water quality by slowing water velocity. When the water flow slows behind a dam, suspended sediments have a chance to settle out, reducing the amount of sediment moving downstream and eventually to larger bodies of water.

What is most amazing about the beaver is how they are inexorably linked to the plants in their environment. Not only do they kill certain types of plants, but by doing so, they inadvertently provide life for numerous others. The most blatant evidence that alerts humans to the presence of beavers are all those gnawed tree trunks. Beavers don't seem to be real picky about it either, they have been reported to chew on aspen, willow, alder, birch, cottonwood, ash, maple, poplar, red oak, white oak, cherry, ironwood, hop hornbeam, elm, bitternut hickory, shagbark hickory, cedar, and pine. Not only are trees the primary component of their dams and lodges, along with mud, stones, and dead vegetation, but they serve as an impor-

tant food source during the winter months when the beaver eat the cambium layer of the inner bark. During the summer months, they can indulge their vegetarian diets with shoots, twigs, leaves, roots, and bark of woody plants, plus herbaceous plants like sedges, grasses, ferns, algae, the roots and sprouts of skunk cabbage, and the rhizomes of water lilies.

Beaver have a tremendous impact on plant communities in the wetlands they inhabit. What starts out as a moderately forested swampy stream side with moderate canopy shade and little herbaceous vegetation can be transformed into an open, mostly sunny marsh with a great diversity of sedges, rushes, grasses and other herbaceous plants in just a few years. By flooding large areas of land, the floristic composition of a wetland changes with the creation of deeper water in the middle of the pond that kills trees, and the deposition of silt in the now slower water along the edges that creates shallow marsh habitat for herbaceous vegetation.

Whether you love or loath beavers, they are here for a purpose-just as all life is-and they seem to know this concept because they are one of nature's most indiscriminate, persistent, and obsessive creatures when it comes to altering their surrounding environment. 

Eric Zuelke, Editor

**RESOURCES AND REVIEWS****OCTORARO NURSERY WEBSITE**

Octoraro nursery is pleased to announce that their new website is now posted ([www.octoraro.com](http://www.octoraro.com)). The most exciting part of the site allows you to search the inventory for prices for bidding purposes, and more importantly to check the current availability and place orders on-line. The current availability section will be updated weekly. You can also search for information about plants in the plant reference section, get answers to some of the most frequently asked questions and search the web for related links.

**NATIVE AND NON-NATIVE PLANT BOOKLETS**

The list of Rare Vascular Plants of Delaware has been revised and can be found in Adobe format on the webpage of the Delaware Natural Heritage Program, Div. Fish & Wildlife ([www.dnrec.state.de.us/fw/wildrehe.htm](http://www.dnrec.state.de.us/fw/wildrehe.htm)). In addition, the list of Non-native Plants of Delaware has also been revised and can be found at the same web address.

The results from the revision of these two lists are alarming in regards to the protection of biodiversity in the state. Results of the update to the list of Rare Vascular Plants show that 40% of the native flora (629 taxa) is of conservation concern, 26% (403 taxa) is rare to extremely rare, 11% (170 taxa) is thought to be historical, and 3% (56 taxa) is thought to be extirpated. In addition, 4% (69 taxa) of the state's native flora is known from only a single occurrence or population.

Results of the update to the list of Non-native Plants show that 625 species and varieties of non-native vascular plants are known to occur in Delaware, which represents 28% of the states known flora, and 65 of these species are invasive.

*Continued on page 5*

**LETTER FROM THE PRESIDENT***Continued from page 1*

Turk's Cap and online at [www.delawarenativeplants.org](http://www.delawarenativeplants.org)). I hope that many of you will be able to participate in these events. I look forward to seeing you out and about Delaware this year.

Activities at our native plant nursery will be picking up soon. Recently, the Delaware Native Plant Society took delivery of its "Little Greenhouse" -in-a-kit. We have prepared the spot where we plan on erecting it by laying down a gravel pad. Next weekend (April 12-13) we will build it. The greenhouse measures 8.5 x 14' and is constructed of a wooden base in which the front, back, and side walls, composed of interlocking PVC pipes, are attached. The whole will be covered with 4 mil polyvinyl plastic, an exhaust fan at one end will provide cooling. The greenhouse will have benches on both sides for potting. The video that came with the greenhouse kit provided a glimpse at the challenge we have in its construction; wish us luck. I am very excited about this greenhouse and the ability it will provide us in our propagation efforts. We will be able to propagate many more plants and species. In the past few weeks I have planted hundreds of seeds in flats that I will be moving to the greenhouse as soon as its ready. I am also motivated to get out today and collect seeds (this is a very good time to go out looking for fruits of native plants, with the added benefit that the seeds have already received their pre-treatment requirements for germination).

I am also very excited about this coming year and all of the Society activities planned. Please join us at our 5<sup>th</sup> Annual Meeting on April 26, 2003. The featured event for this day includes a detailed look at the under-appreciated world of bryophytes (mosses, liverworts, and hornworts). Premier botanist and DNPS vice-president Bill McAvoy will introduce us to this fascinating group of plants through a slide show and a field trip at Abbotts Mill Nature Center. In May, we are scheduling the 17<sup>th</sup> for a trip to the Mt. Cuba Center for the Study of the Piedmont Flora (check inside this issue for details; members will have to call the Center at 302.239.4244 to reserve a space). On May 24, expert botanists Janet Ebert and Jack Holt will lead us on a wildflower walk in the White Clay Creek Valley.

Plans for our summer field trips are not yet finalized, but we hope to have several exciting trips scheduled (stay tuned!). I would also like to do another canoe/kayak trip, a very awesome way to experience streamside vegetation. Since many members do not have their own canoe or kayak I am looking into organizations that may be able to provide us with canoes or kayaks for free or at a nominal cost.

I want to mention that our website has been and is being revised. Many new additions and updates have been added. We are in the process of writing up descriptions of native and non-native species with photos and these will be added to the site in installments over the coming days and weeks.

Since it's a beautiful sunny day and they are forecasting snow for tonight and cold throughout the week, I think I will wrap-up this letter so I can get outdoors and enjoy this great day. I look forward to seeing all of you at our upcoming events. ☘

Sympatrically yours,

Keith Clancy

**NATURAL QUOTES**

"Adversity draws men together and produces beauty and harmony in life's relationships, just as the cold of winter produces ice-flowers on the window-panes, which vanish with the warmth."

Soren Kierkegaard

**FEATURE ARTICLE****CYPRESS SWAMP: A LOOK BACK TO 1797**

(Editor's note: This an excerpt of a letter first printed in *The American Universal Magazine* for Monday, July 10, 1797).

Answers to sundry queries relative to the Indian River, or Cypress Swamps, in the Delaware State, in a letter to Thomas McKean, Esq. from a citizen of Delaware.

Honored Sir,

Swamp Location

The Indian River Swamps, otherwise called the Cypress Swamps [ed. note: current day Great Cypress Swamp Conservation Area], are situated in Delaware and Maryland states, a little to the southward of the true Cape Henlopen and distant from the sea about ten miles. They are a full seven miles from east to west and ten or twelve from north to south, so that they must contain near fifty thousand acres of land. Several rivers are traced up to this great source, such as the Pocomoke, Indian River and Saint Martins.

The first of these traverses the Peninsula to the southwest and falls in the Chesapeake – the two latter run east and fall into the Atlantic. The whole of this swamp is a high and level basin and consequently very wet; though undoubtedly the highest land between the sea and the bay, the waters descending from it in all directions.

Until 1759, it lay in a measure unlocated, and was thought to be of little value; but since that period most of it has been surveyed for different proprietors. As early as the year 1726, General Dagworthy's father patented a large quantity of it; and since that date the general has added considerably to what his father has secured.

Green cypress

About one fifteenth part of this vast tract was once covered with the beautiful green cypress, or rather cedar [ed. note: Atlantic white cedar], whose regular and majestic height cast such a venerable shade that it kept every other tree of the forest at an awful distance and impressed the beholder with a religious solemnity.

The cedars always grow at a distant from the fast land and are everywhere surrounded with maple or gum. It appears as if nature intended the latter as a guard to check the fury of the violent winds incident to our situation.

And indeed, it is certain that without such protection the former would always be blown down before they had acquired their full growth; as their roots enter the soil but a little

*Continued on page 6*

**NATURAL COMMUNITY HIGHLIGHT****Piedmont Streamside Seepage Wetland***Carex stricta* – *Impatiens capensis* – *Onoclea sensibilis*

Herbaceous Vegetation

Tussock Sedge – Jewelweed – Sensitive Fern

Herbaceous Vegetation

**Description**

This community type characterizes a diverse group of small, freshwater wetlands, typically associated with streams in the Piedmont. These wetlands are fed by groundwater year-round and tend to occur at the base of steep slopes. The species composition is highly variable, but dominant species typically include tussock sedge (*Carex stricta*), orange jewelweed (*Impatiens capensis*), sensitive fern (*Onoclea sensibilis*), and tearthumbs (*Polygonum arifolium*, *P. sagittatum*). Other frequent associates include scattered woody species, such as red maple (*Acer rubrum*), smooth alder (*Alnus serrulata*), and black willow (*Salix nigra*), and the herbaceous species include broad-leaf cattail (*Typha latifolia*), rice cutgrass (*Leersia oryzoides*), sweetflag (*Acorus americanus*), marsh fern (*Thelypteris palustris*), false nettle (*Boehmeria cylindrica*), hop sedge (*Carex lupulina*), mild water-pepper (*Polygonum hydropiperoides*), woolgrass (*Scirpus cyperinus*), fowl mannagrass (*Glyceria striata*), winter bentgrass (*Agrostis hyemalis*), and dodders (*Cuscuta* spp.).

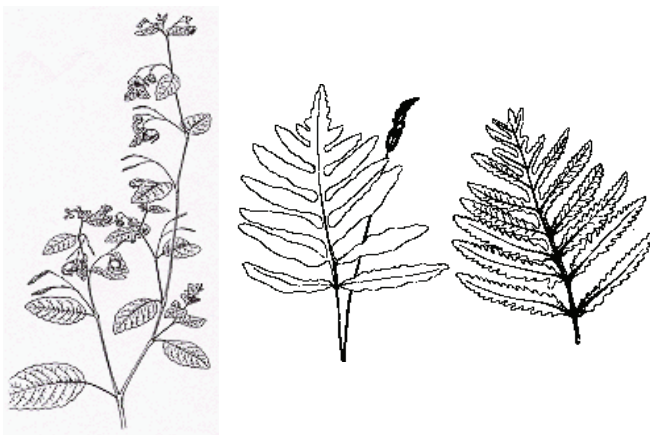
**Significance**

Although generally quite small, these wetlands are important for a variety of reptiles and amphibians, including a number of rare species. There are also several rare plant species known to occur in these wetlands, including fringe-top bottle gentian (*Gentiana andrewsii*), hairy-fruit sedge (*Carex trichocarpa*), rough bedstraw (*Galium asprellum*), and slender false-foxglove (*Agalinis tenuifolia*).

**Distribution**

This community is known from a number of places in the Delaware Piedmont. On public land, there are several small sites in White Clay Creek State Park, but probably the most well known occurrence is the freshwater marsh in Brandywine Creek State Park. This is the largest Piedmont streamside marsh in the state, and includes a boardwalk, as well as some interpretive information at the park visitor center. Rangewide, similar communities occur from Maine south to Virginia. 🌿

oooo Peter Bowman, DE Natural Heritage Program Ecologist

**NATIVE PLANT HIGHLIGHT****LISTERA AUSTRALIS (SOUTHERN TWAYBLADE)**

*Listera australis* Lindl., the southern twayblade of the Orchidaceae, the Orchid Family is a spring ephemeral of Delaware's coastal plain physiographic province. Of the 48 species of terrestrial orchids known to occur in Delaware, this species is the first orchid of the season to bloom.

In Delaware, the flowering period for the southern twayblade typically begins in mid-April, and lasts for only a short while. Flowers blossom and the ovary matures all in a few short weeks, so the window of opportunity to see this species closes quickly.

The southern twayblade is actually hard to find due to its shy nature and diminutive size. It usually requires one to get down on their hands and knees in order to find it. It only grows to a height of about 6 to 8 inches and blends in very well with the surrounding pine needles and leaf litter.

The inflorescence is a loose raceme of 5-25 tiny flowers that are purplish-green in color. The stem is slender and erect, also purplish-green in color, with two opposite leaves borne at about the middle of the stem that are sessile, green in color and ovate in shape. The flowers are pollinated by minute insects

In Delaware, this species is found growing in wet, swampy woods usually with a mix of loblolly pine (*Pinus taeda*) and red maple (*Acer rubrum*). Though considered to be an uncommon species in the state, occasionally one can find 1000s of individuals growing within a localized area.

The southern twayblade is primarily a coastal plain species and has a more southern distribution, occurring from Florida to New York. This species is currently known in Delaware from Sussex and Kent Counties and was first documented in the state in 1990 by botanist Frank Hirst

The genus *Listera* is represented by 25 species in North America, and the species *australis* is the only representative of the genus in Delaware. The species name is from the Latin *australis*, meaning "southern," referring to the more southern distribution of the species. 🌿

oooo William McAvoy, DNPS Vice-President

*Listera Australis*

**EVENT HIGHLIGHTS****GROVE NECK, MARYLAND**

This trip was taken on 22 March 2003 on a pleasantly sunny and mild day. Ten members met and carpooled to the Grove Neck Girl Scout Camp at the confluence of the Sassafras River and Chesapeake Bay in Cecil County, Maryland. Late winter/early spring plant identification has its own set of unique challenges because of the conspicuous absence of flowers and other morphological characteristics useful for species recognition. At this time of the year one must rely on their knowledge of bark patterns, bud shapes, leaf scars, and twig coloration. But our leader, William McAvoy, did a great job in giving us all the knowledge we needed to sort out the dozens of plants we saw. We also got some lessons on the bryophytes of the area. We observed only one spring ephemeral, *Claytonia virginica* (spring beauty), but did see some other highlights including *Phoradendron leucarpum* (American mistletoe), *Lyonia ligustrina* (maleberry), *Rhododendron viscosum* (swamp azalea), *Leucothoe racemosa* (fetterbush), and some nice high quality shrub swamp wetlands. ♣

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**THOUGHTS FROM THE EDGE OF THE GARDEN****DNPS NURSERY UPDATE**

We've got some good news about the nursery and some bad news. The bad news is that most of our seedlings that were left in the pot-in-pot ground system overwinter got hit hard from rabbit browse. We are hopeful that they will bounce back. But the good news is that we now have a greenhouse!!!! As Keith mentioned in his Letter From the President, the greenhouse is a PVC pipe kit that we will be putting together. Purchasing this greenhouse took a great deal of research and effort to find just the right one that would serve our needs. We're hoping that things like rabbit and deer browse, squirrel pilfering and late summer heat scorching will be a thing of the past. The greenhouse has an exhaust fan, a misting system and we will be installing a thermostat and possibly someday a heater. Our long term goal is to someday offer as many species of native plants as we possibly can at our annual native plant sales.

**BACKYARD WILDLIFE HABITAT PROGRAM**

Jennifer Gochenaour gave a very informative presentation at our DNPS meeting on 21 January 2003 about the National Wildlife Federation's Backyard Wildlife Habitat Program. The DE Nature Society is the local facilitating organization for the NWF for this program. Getting your backyard certified as an official wildlife habitat by the NWF is quite easy and only requires you to supply five elements to the wildlife in your yard: suitable native plants, food, water, cover, and places for your wildlife to raise young. If you would like to learn more about this program contact:

Jennifer Gochenaour, Watershed Stewardship Coordinator  
Backyard Wildlife Habitat Program  
c/o Delaware Nature Society  
P.O. Box 700  
Hockessin, DE 19707  
302.239.2334 ext. 42  
www.delawarenaturesociety.org

**RESOURCES AND REVIEWS**

*Continued from page 2*

**ARDEN'S SHERWOOD FOREST INVENTORY**

This slide show from 2 November 2002 by botanist Janet Ebert and biologist Jim White is on videotape. To borrow the video of their presentation from the Arden Archives, contact Danny Schweers at 302.475.0998, or [www.ArdenClub.com](http://www.ArdenClub.com) for more details.

**CENTER FOR PLANT CONSERVATION WEBSITE**

The Center for Plant Conservation (CPC) has launched a new website that provides comprehensive information about the country's native, imperiled plants. The plant profiles, available at [www.centerforplantconservation.org](http://www.centerforplantconservation.org), contain a description of the plant, its distribution and conservation status. A complete bibliography follows each plant profile, and the pages contain more than 5,000 references.

Each plant profiled is included in the Center's National Collection of Endangered Plants. This collection contains plant material for more than 600 of the country's most imperiled native plants. An important conservation resource, the Collection is a back-up in case a species becomes extinct or no longer reproduces in the wild. It's also an important resource for the scientific study of plant rarity, rare plant life cycles and rare plant storage and germination requirements.

The Chicago Botanic Garden, partnering with the University of Illinois - Chicago, coordinated the project. The Center's participating institutions, located across the country, supplied content and photographs for the profiles.

The CPC is dedicated solely to preventing the extinction of America's imperiled, native flora. The center is a network of more than 30 of America's leading botanical institutions. By conducting conservation programs in horticulture, research, awareness and information exchange, the center's network is striving to save our rarest plants from being lost forever.

**THE GREAT CYPRESS SWAMPS**

This hardcover book authored by John V. Dennis is a fascinating reference text on the cypress swamps of the southern United States (including a description of Delaware's Great Cypress Swamp). Here's one review: "Their role in the ecology of the South became more appreciated as people became aware of the rare creatures and plants these forests and lakes held, and when they also became aware of their economic utility in such areas as purifying water, etc. This book brings out these facets of cypress forests as well as clearly and excellently discussing the flora and fauna found in them. The discussion on these marvelous trees, themselves, is worth the book price. Excellent photos abet this effort very well. The major swamps are covered on a chapter-by-chapter basis. The reader gains an appreciation of the unique nuances of each. I found the chapters on the Great Dismal Swamp and the discussion of the mysterious Carolina Bays most enjoyable." Check your local bookstore or Amazon.com to order a copy.

**FEATURE ARTICLE***Continued from page 3*

way or rather grow upon it.

The cedar has few, or no branches, except near the top; the leaves are short and of a fine strong green; the flowers are small and grow in clusters; the seeds are enclosed in a soft membrane about the bigness of a pea, the outside of which is rough and angular; the bark is a dark red or reddish-brown, and rough with deep furrows on its surface, from which oozes a fine transparent gum that is excellent for fresh wounds and which I incline to think may be the true frankincense.

The wood is soft, but very durable and by reasons of its gum not subject to eaten by worms, there are many instances of trees lying down of two and three feet diameter and others of the same bigness growing directly upon them and both equally sound.

Water near cedars

The water found among these cedars though stagnant, never putrefies, is always perfectly clear, and in color resembles strong beer. It has a peculiar indescribable taste, but not disagreeable. In dry seasons it tastes much of the acid, and sparkles when poured into a glass.

The people that drink it are of a thin habit, but healthy, and live until a very old age. I do not find form enquiry or recollection, a single instance of any person that has used this water constantly; dying since I have lived here, which is now upwards of nineteen years. The air, too, by its salubrious and healing virtues, may contribute not a little to their longevity. It may abound with balsamic volatile effluvia.

Bald cypress

The bald cypresses are also collected together, but they take possession of the lowest and most watery places. Though short of the green, with respect to numbers, they still cover a vast tract, and vie with the green, nay, surpass them and every other tree found here, in magnitude.

It is a beautiful tree and singular in the manner of its growth. It rises to one hundred and forty feet, having but few branches until near the top, and these spread like an umbrella. The trunks of these trees are frequently four to eight feet in diameter; but these large ones are apt to be hollow. They are called the bald cypress to distinguish them from the green, because they shed their leaves late in autumn.

The bark is of a lighter reddish brown, split into slender scales and of a resinous smell; the leaves are short and of a beautiful pale green the flowers small and inconsiderable; and the fruit is a kind of nut about the bigness of a nutmeg, which it resembles a little in color and taste.

It is of a firm substance, but when ripe divides into several parts and the seed fall out. The fruit before dry contains a fine liquid gum, perfectly pellucid and very fragrant, and has a powerful styptic quality, as I once experienced when gathering them.

From the roots of those trees, which run a great way from the trunk, grow hundreds of protuberances, which shoot up to eight or ten feet high, of a true conic figure their apex at top round and smooth. They are usually hollow. The tops are made use of by the country people for well buckets and other purposes.

Swamp fires

But the many fires we have had here have very much lessened the number of the green, as well as of the bald cypresses. The most terrible conflagration happened in June 1782; the swamp being at that time exceeding dry, by some means took fire and burnt for many weeks before much notice was taken of it

The drought continuing and the fire constantly spreading, it was on the 20<sup>th</sup> of August, about two hours before sun-set, driven by a strong southwest wind, with such inconceivable fury, that it mowed or otherwise destroyed, at least three thousand acres of these venerable cedars in less than twelve hours-with myself and family, my buildings and property were in the utmost danger, and had not the wind providentially shifted, must have perished in it

The smoke was so thick that we could not see a yard before us, and to prevent suffocation, were obliged to keep our mouths close to the ground; yet the vapor and ashes we unavoidably took in with our breath caused such an oppression of the breast, that it altered the natural tone of our voices; mine, I have not yet recovered. The scene was grand and terrific, the whole city of Philadelphia in flames, would give you but a faint ideas of this tremendous conflagration-"Wide and more wide is spread, and seemed to frame Huge lofty walls, and battlements of flame."

The light of this fire was seen seventy miles off.

Raining tree

In September 1778, an exceeding dry time, as my son was coming out of the swamp, he discovered a raining-tree; his account led me immediately to examine it, which I found literally true. In order to establish such an uncommon fact, I invited several persons of good sense and veracity, among who were General Dagworthy and his lady, to be witnesses of this singular phenomenon.

During all the time it rained, the weather was very dry, the mercury in the barometer stood higher than I had observed it for two months before; and there were few clouds to be seen. The drops were very small and shot out beyond the branches of the tree, it afforded one continued shower of fine rain for the space of three weeks and then left off, until September 1779, when it began again and rained nearly as long as before.

In 1780, though I visited it often, I could never find it raining, which led me to conclude as the tree showed evident symptoms of decay, that it would rain no more. But in September 1781, it began again, but did not continue to rain for more than two weeks.

In August 1782, it was scorched by the great fire, since which time it has not rained at all. The tree that possesses this singular property, is an old black gum, about two feet in diameter, and fully sixty feet high. It stands on the fast land about two hundred yards from the cedar swamp; and there is a water hole near it, that is seldom dry.

It is not difficult to conceive that this tree may have an extraordinary power to pump up the juices or sap from the roots in greater abundance than will assimilate, but how, or in what manner it is projected with such force from thence, is utterly beyond my philosophy to account for. ☞

oooo Submitted to the Editor by David Rickards (Birdsong Gardens), DNPS member

## UPCOMING EVENTS

**SATURDAY, 26 APRIL 2003** – DNPS 5TH ANNUAL MEETING AT ABBOTTS MILL NATURE CENTER FROM 10 AM TO 3PM. KEYNOTE SPEAKER BILL MCAVOY, STATE OF DELAWARE BOTANIST PRESENTS: "THE MICROCOSMIC WORLD OF MOSSES, AN INTRODUCTION TO BRYOPHYTES: MOSSES, LIVERWORTS, & HORNWORTS", A FIELD BRYOPHYTE EXPLORATION IN THE HABITATS AROUND ABBOTTS MILL, BUSINESS MEETING AND POTLUCK LUNCH. FROM POINTS NORTH, TAKE RTE 113 SOUTH PAST MILFORD TO SHAWNEE RD. (RTE. 36), SOUTH ON SHAWNEE RD. TO ABBOTTS POND RD. GO WEST ON ABBOTTS POND RD. TO ABBOTTS MILL AT ABBOTTS POND. FROM THE SOUTH, TAKE RTE 113 TO FITZGERALDS RD. (RD. 207); WEST ON FITZGERALDS RD. TO SHAWNEE RD.; NORTH ON SHAWNEE RD. TO ABBOTTS POND RD.; WEST ON ABBOTTS POND RD. TO ABBOTTS MILL. PLEASE EMAIL US AT [DNPS@DELAWARENATIVEPLANTS.ORG](mailto:DNPS@DELAWARENATIVEPLANTS.ORG), OR ON THE WEB AT [WWW.DELAWARENATIVEPLANTS.ORG](http://WWW.DELAWARENATIVEPLANTS.ORG), OR BY PHONE AT 302.674.5187 FOR MORE INFORMATION AND TO RSVP.

**SATURDAY, 03 MAY & SUNDAY, 04 MAY 2003** – DELAWARE NATURE SOCIETY'S 2003 NATIVE PLANT SALE FROM 9 AM TO 5 PM, AND 10 AM TO 3 PM. THOUSANDS OF NATIVE PLANTS ARE OFFERED FOR SALE AT THE COVERDALE FARM, ON WAY ROAD, IN GREENVILLE, DELAWARE. FOR MORE INFORMATION CALL 302.239.2334, E-MAIL AT [WEBPAGE@DNSASHLAND.ORG](mailto:WEBPAGE@DNSASHLAND.ORG), OR ON THE WEB AT [WWW.DELAWARENATURESOCIETY.ORG](http://WWW.DELAWARENATURESOCIETY.ORG).

**SATURDAY, 10 MAY 2003** – ADKINS ARBORETUM 2003 NATIVE PLANT SALE FROM 9 AM TO 1 PM. A VARIETY OF NATIVE TREES, SHRUBS & HERBS ARE AVAILABLE. THE ARBORETUM IS LOCATED ON MARYLAND'S EASTERN SHORE ALONG THE TUCKAHOE CREEK AT 12610 EVELAND ROAD, OUTSIDE RIDGELY. FOR MORE INFORMATION CALL 410.634.2847, EMAIL AT [ADKINSAR@INTERCOM.NET](mailto:ADKINSAR@INTERCOM.NET), OR ON THE WEB AT [WWW.ADKINSARBORETUM.ORG](http://WWW.ADKINSARBORETUM.ORG).

**SATURDAY, 17 MAY 2003** – TOUR OF MT. CUBA CENTER TO SEARCH FOR PIEDMONT FLORA, 10 AM OR 1 PM. THE DNPS IS SCHEDULING THIS DATE AND TIMES FOR ITS VISIT TO MT. CUBA'S CENTER FOR THE STUDY OF THE PIEDMONT FLORA. ANY MEMBER (ALSO OPEN TO THE GENERAL PUBLIC) INTERESTED IN ATTENDING THIS TRIP, FOR EITHER TIME, MUST CALL MT. CUBA **DIRECTLY & ASAP** AND MAKE YOUR OWN RESERVATIONS. SPACE IS LIMITED SO CALL 302.239.4244 TODAY TO RESERVE YOURS. MT. CUBA IS OFFERING WEEKEND TOURS (AT 10 AM AND 1 PM) OF ITS GARDENS FROM LATE APRIL THROUGH 25 MAY 2003 (SO IF YOU CANNOT ATTEND ON MAY 17, TRY ONE OF THESE OTHER WEEKEND DATES). ONCE YOUR RESERVATION IS MADE MT. CUBA WILL SEND YOU A CONFIRMATION LETTER WITH DIRECTIONS; A \$5 ENTRY FEE IS DUE ON THE DAY OF THE TOUR.

**SATURDAY, 24 MAY 2003** – SPRING WILDFLOWER WALK IN THE WHITE CLAY CREEK VALLEY INTO PENNSYLVANIA FROM 10 AM TO 2 PM (OR THEREABOUTS). LEADERS WILL JANET EBERT AND JACK HOLT. THE GROUP WILL WALK ALONG THE WHITE CLAY CREEK INTO PA. AMONG ALL THE LATE SPRING EPHEMERALS WE WILL BE ON THE LOOKOUT FOR THE RARE WALKING FERN (*ASPLENIUM RHIZOPHYLLUM*). WE WILL MEET AT THE PARKING LOT ON CHAMBERS ROCK ROAD (NEW CASTLE CO., DELAWARE) IN WHITE CLAY CREEK STATE PARK. DRESS APPROPRIATELY FOR MID-SPRING WEATHER. BRING A HAND LENS & A BAG LUNCH. IF YOU NEED MORE INFORMATION AND TO SIGN-UP FOR THIS TRIP PLEASE CALL 302.674.5187 OR EMAIL [DNPS@DELAWARENATIVEPLANTS.ORG](mailto:DNPS@DELAWARENATIVEPLANTS.ORG).

**DNPS BI-MONTHLY MEETINGS FOR 2003** – ARE CURRENTLY SCHEDULED THE 3RD TUESDAY OF EVERY OTHER MONTH. OUR NEXT MEETINGS WILL BE: 26 APRIL (THE ANNUAL MEETING AT ABBOTTS MILL), 15 JULY, 16 SEPTEMBER, AND 18 NOVEMBER. 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. WE PLAN TO HAVE GUEST SPEAKERS AT EACH MEETING (SPEAKERS AND THEIR TOPICS WILL BE ANNOUNCED AT LATER DATES). CHECK OUR WEBSITE FOR ADDITIONAL DETAILS OR EMAIL US AT [DNPS@DELAWARENATIVEPLANTS.ORG](mailto: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 \$ \_\_\_\_\_

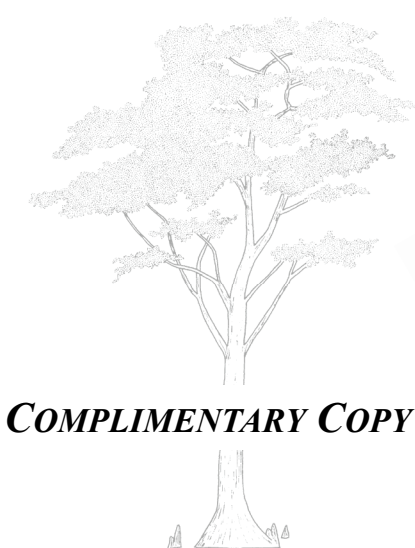
Membership benefits include:

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

**Total Amount Enclosed: \$** \_\_\_\_\_

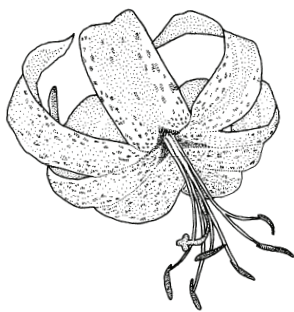
**Make check payable to:  
DE Native Plant Society  
P.O. Box 369, Dover, DE 19903**

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



**COMPLIMENTARY COPY**





# The Turk's Cap

THE NEWSLETTER OF THE DELAWARE NATIVE PLANT SOCIETY SUMMER 2003

## IN THIS ISSUE

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

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

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## A LAZY SWINGING HAMMOCK UNDER A SHADY BEECH TREE WELCOME TO OUR NEWEST MEMBERS

### April through June

Nancy Everds & Peter Mann  
Carole & Graham Knight  
Kate McManus  
Christina Pax  
Rob & Alix Robinson  
Joe Satterfield  
Mark Willoughby

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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 completed a reforestation project at Prime Hook State Wildlife Area and will be doing direct-seeding reforestation projects along Blackbird and Cedar Creeks, in the fall of 2003. In addition, help is needed with our native plant nursery at the St. Jones Reserve with the monitoring and watering of plants in our recently acquired greenhouse.

For more information on how to get involved, E-mail us at [dnps@delawarenativeplants.org](mailto:dnps@delawarenativeplants.org). Or visit the new DNPS website at [www.delawarenativeplants.org](http://www.delawarenativeplants.org). Our website will have all of the past issues of *The Turk's Cap* along with a large section on native plants, as well as links to other environmental and

## LETTER FROM THE PRESIDENT

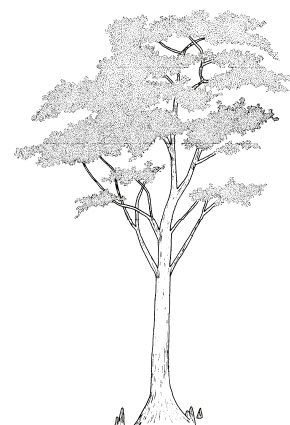
Well, are we starting to dry out yet? What a spring it's been. It seemed like it was cold and rainy almost every day or at least every weekend. In my last letter I expressed my longing for the warmer days of spring to get out and enjoy the spring ephemerals. I guess I'll have to (hopefully) settle for the warmer and drier days of summer – it just didn't happen this spring.

There's some small consolation to all of this rain; we have not had to water our plants at the nursery as much as usual. And speaking of our nursery. We erected a greenhouse/propagation house (photos on the website soon) in mid-April and have been busy filling it up with flats and pots of native plant seedlings. We, literally, have hundreds, if not thousands, of seedlings. These include various species of oak (e.g., southern red oak, scarlet oak, swamp chestnut oak, willow oak),

*Continued on page 3*

## The DNPS Vision

**T**he 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****SUMMERTIME AND THE LIVING IS BOTANICAL**

I have been working in our nursery more over the past three months than I did all last year combined! With the addition of our greenhouse, the workload has doubled just in watering, then add on top of that the phenomenal success of our seed germination efforts this past winter and spring and the work load doubles again with all the repotting and inventory work! I'd like to thank everyone who has come out to help us with repotting of seedlings during our work days over the past 6 weeks. The nursery would not be as successful as it is without your help. We'll be having some more repotting work days, so I hope everyone manages to find some time to help out. Fortunately I have managed to squeeze in some time for a DNPS field trip here and there and the Annual Meeting, which by the way was a great success. We had a terrific presentation by our Vice-President, Bill McAvoy, whose knowledge on bryophytes inspired me to do a theme issue on the world of bryophytes. Most of this issue's columns are on that topic, so I hope you enjoy it and learn a little bit about this fascinating division of plants.

I hope everyone stays cool this summer. The rains we've had have turned our nursery into a tropical rainforest of growth, and I hope your flower beds and gardens are doing just as well. Have a good summer and don't forget the ice cream!



oooo Eric Zuelke, Editor

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**PLANT-ANIMAL HIGHLIGHT****WHAT GOOD ARE THEY?**

At this year's annual meeting our Vice-President, William McAvoy, gave a very informative presentation on bryophytes. After the presentation I riddled the following question: "So, in the grand scope of nature, what good are they?" That got my own curiosity going, so I thought I would answer my own question.

Scientists have been researching bryophytes for years, yet there is a surprising dearth of information on how animals use bryophytes. Though more research is in order, biologists have found that many animals use bryophytes for three main purposes: nesting and shelter, food, and camouflage.

Probably the most well known use of bryophytes as nesting material is by the Marbled Murrelet, a small fish-eating, diving bird of the open ocean that nests on moss mats in the canopies of old growth Douglas fir, Sitka spruce, hemlock, and yellow cedar trees in the Pacific Northwest of the United States, the west coast of Canada, and the southern coast of Alaska. And besides the murrelet, there are dozens of other species of birds that incorporate bryophytes into their nesting structures either as the main component or as a soft lining. Mammals too, such as the red tree vole, also a denizen of the Pacific Northwest that lives in the canopies of old growth trees, and flying squirrels use bryophytes as nesting material. Though they don't necessarily nest in it, many species of amphibians, such as salamanders and frogs, are completely reliant on mats of bryophytes for cover and moisture. Additionally, there are even species of spiders that make their homes in mats of moss.

Some animals also eat bryophytes. Several groups of

invertebrates have been demonstrated to feed on foliicolous lichens, bryophytes, algae and fungi: Annelida, Gastropoda (snails), Lepidoptera (larvae of certain moths), and in particular Psocoptera (book lice). While snails and larvae of Lepidoptera seem to specialize on either lichens or bryophytes, Psocoptera are omnivorous. Some of the bryophyte consumers can only be found where their food sources grow. For example, several moss and liverwort feeders are found chiefly in mature and old growth forests.

One characteristic of bryophytes is that they are normally very small, and easily overlooked; a characteristic that many insects use to their advantage. Camouflage is an important part of survival for many insects and many use bryophytes to achieve this goal. There are species of weevils in New Guinea that let moss grow on their backs. Grasshoppers resembling a leaf covered with epiphylls have been documented from tropical Africa as well. Similar grasshoppers have also been discovered in Costa Rica. While some look similar to epiphyllous bryophytes, others perfectly imitate leaves covered with foliicolous lichens, and even the genera of lichens that are imitated can often be determined. Scientists have also discovered a katydid (*Rhossophyllum* spp.) that mimics a leaf colonized by the foliicolous lichen in the genera *Calopadia* and *Gyalectidium*. These mimetic insects abound in illuminated parts of the forest and give hints about their habitat preferences. Also discovered was an African frog imitating leaves with patches of epiphylls.

It turns out bryophytes are a significantly important part of our natural world, and many species of animals have co-evolved with them and could not exist without them.

oooo Eric Zuelke, Editor

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**EVENT HIGHLIGHTS****WHITE CLAY CREEK STATE PARK: DE TO PA**

Under threatening skies, but thankfully no rain (for a change), we were treated to an excellent botanical foray along the White Clay Creek. Our field trip leaders were the premier botanists Janet Ebert and Jack Holt.

We began our walk from the parking lot and walked along the trail that first past by through a wildflower/grass meadow before entering the forest. The plants in the field and along the edge of the forest consisted of a cornucopia (i.e., who's who) of non-native and invasive species. These included autumn olive (*Eleaeganus umbellata*), Japanese knotweed (*Polygonum cuspidatum*), mile-a-minute (*Polygonum perfoliatum*), Canada thistle (*Cirsium arvense*), velvet grass (*Holcus lanatum*), multiflora rose (*Rosa multiflora*), dame's rocket (*Hesperis matronalis*), and crimson clover (*Trifolium incarnatum*), among others. As we entered the woods that border White Clay Creek our hopes that the invasives and non-natives would disappear or be significantly reduced, were dashed. Some invasives are so pervasive in this watershed that their impacts to the forest ecosystem are great. A few of the more prominent invasives included garlic mustard (*Alliaria petiolata*), bittersweet (*Celastrus orbiculatus*), winged euonymus (*Euonymus alatus*), Japanese stiltgrass (*Microstegium vimenium*), and multiflora rose.

*Continued on page 6*

**LETTER FROM THE PRESIDENT***Continued from page 1*

sycamore, wax myrtle, swamp rose, cardinal flower, red chokeberry, partridge berry, skunk cabbage, and others. I was especially glad to see the partridge berry and skunk cabbage germinating, as these were just collected in late March (during our recent field trip to Grove Neck); although I am not too sure of the desirability for the latter species.

A hearty thanks go to DNPS member Bob Edelen, who propagated the majority of these seedlings (we are going to copy his propagation methodology this year).

During May and June, DNPS members were busy transplanting many of the hundreds of seedlings into larger pots. We still have hundreds more to transplant, so we will be scheduling several more re-potting sessions in July. Please join us and take home some complimentary native plants.

Unfortunately our field trips for the summer are not yet finalized (sorry about that). However, We hope to have the details worked out in the next 10 days and notices will be sent out separately. We are also planning to schedule another canoe/kayak later this summer (probably towards the end of August) along one of the many marvelous and scenic Delmarva streams. In addition, we may look into joint field trips with other organizations.

Please note that the location for our next Society meeting, July 15, 2003, has been changed. We will be meeting at the St. Jones Reserve, Kitts Hummock Road (details elsewhere in the newsletter). All members are encouraged to attend and come early so they can see all the progress we've made at the nursery.

I want to give all members an early heads-up on events that will be occurring this fall. The DNPS will be concentrating on two direct-seeding reforestation projects; one along Cedar Creek, Sussex County and the other along Blackbird Creek, New Castle County. We will be scheduling many days out at these two sites. We will spend the mornings collecting seeds of native plants, and then will spend the afternoons "direct-seeding" in the two fields dedicated for reforestation. So please join us when you can; your help is needed for the success of these two projects.

If anyone has ideas for field trips or of ways that we can better serve our members please let me know. We really want to be an organization that is sensitive to the needs of its members and flexible enough to go in different directions.

Again, I want to express my hope that I will see each and everyone of you at an upcoming Society event. 🌿

Floristically yours,

Keith Clancy



*Conocephalum conicum* liverwort,  
Southern IL Univ.

**NATURAL QUOTES**

"Annihilating all that's made  
To a green thought in a green shade."

Andrew Marvell

**FEATURE ARTICLE****BETTER LIVING THROUGH BRYOMONITORING**

Bryophytes are small green plants that include the mosses, hornworts and liverworts. Within the Kingdom Plantae three Divisions of plants are collectively considered bryophytes. Division Marchantiophyta consists of about 6,000 species known as liverworts. These are the simplest plants on earth. Division Anthocerotophyta contains only about 100 species called hornworts which are probably close relatives of the green algae, and Division Bryophyta includes about 15,000 species of mosses. Though not in the same divisions as the bryophytes, lichens have many similar characteristics as bryophytes. They are a symbiotic relationship between a fungus and filaments of an algae, usually green algae or cyanobacteria. Compared to vascular plants, bryophytes and lichens have primitive tissues for conducting water and nutrients, and they lack structural outer surface barriers (a cuticle). This leads to the inability to maintain water balance, and limit the entry of gases and other harmful substances. They obtain many of their nutrients from the dissolved substances in the ambient humidity and other nutrients are probably absorbed directly from the substrate by diffusion through the cells. They live in a huge variety of habitats, especially humid habitats. They live on the ground, rocks, trunks and branches of trees and shrubs, or fallen trunks, on bones, and even animal dung. They can be found from the Arctic to the Antarctic, in deserts and mountain streams, in fresh water, and near the ocean, though these species are rarer. Because of the method of transport of water and the inability to keep out harmful substances, these plants have been used as a means to trend environmental change, particularly changes in air quality because they respond in a measurable way to climatic factors and to pollutants. Air pollution is a significant threat to the diversity of life, and it is known that plants are less able to adapt to sudden changes in pollution levels and climate than animals, thus making them ideal subjects to use for this type of monitoring. Additionally, The widespread distribution of bryophytes and lichens enables scientists to track, compare, and contrast environmental changes on a global level.

As early as the mid 1800s, botanists became aware that lichens and mosses were becoming uncommon in areas within and surrounding large towns and cities. They began to recognize that air pollution emitted from these urban areas was affecting the colonization and growth of these organisms. Species that are sensitive to pollutants have a stunted, aberrant appearance, and slowed growth rates, and in a ecosystem view have lower species assemblages, which may give an indication of the severity of ecosystem stress. Sensitivity varies, generally

*Continued on page 6*

**NATURAL COMMUNITY HIGHLIGHT****Yellow-eyed grass floating peat mat***Xyris difformis* Herbaceous Vegetation

Bog yellow-eyed grass Herbaceous Vegetation

**Description**

Hidden away in some seldom-visited freshwater ponds near the Delaware Bay, these unique habitats are known from fewer than five occurrences in the state. This unusual community occurs on "floating peat mats" that are found in open-water depressions within a shrub-dominated swamp matrix. During periods of high water, the peat mats actually float on the water surface. The most abundant species on these mats is bog yellow-eyed grass (*Xyris difformis*), but other common species may include marsh St. John's wort (*Triadenum virginicum*), slender St. John's wort (*Hypericum mutilum*), brown-fruited rush (*Juncus pelocarpus*), and spike-rushes (*Eleocharis* spp.). Other species that may occur in this community include slender fimbry (*Fimbristylis autumnalis*), spoon-leaved sundew (*Drosera intermedia*), umbrella-sedges (*Fuirena squarrosa*, *F. pumila*), Canada rush (*Juncus canadensis*), and tall beak-rush (*Rhynchospora macrostachya*). American waterlily (*Nymphaea odorata*) may be abundant in adjacent open-water habitats. Seedlings of shrub species from the surrounding vegetation may also be present, and include, red maple (*Acer rubrum*), wax-myrtle (*Myrica cerifera*), seaside alder (*Alnus maritima*), and sweet pepperbush (*Clethra alnifolia*).

**Significance**

In addition to being fascinating and delicate habitats, these communities are home to a number of state-rare plants, including brown-fruited rush (*Juncus pelocarpus*), small-fruited beggars-ticks (*Bidens mitis*), umbrella flatsedge (*Cyperus dianthus*), Engelmann's umbrella-sedge (*Cyperus engelmannii*), long-beaked baldrush (*Rhynchospora scirpoides*), Engelmann's arrowhead (*Sagittaria engelmanniana*), and the globally-rare Parker's pipewort (*Eriocaulon parkeri*).

**Distribution**

This community is known only from Prime Hook National Wildlife Refuge, Sussex County. Communities of similar species composition may occur north to Massachusetts, but other locations of similar floating peat mats are unknown. 🐸

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

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**RESOURCES AND REVIEWS****NATIVE PLANTS OF PHILADELPHIA BOOKLETS**

Published by the Fairmount Park Commission, these two booklets on herbaceous plants and woody plants are an excellent source of very detailed information on a selected number of plants native to Philadelphia County, PA. To order a copy, contact Amy Hutchinson at 215.685.0279, or e-mail at amy.hutchinson@phila.gov.

**LIVES AND LORE OF NORTH AMERICAN PLANTS**

*The Secrets of Wildflowers* by Jack Sanders. A fun 320 page book on the natural history, folklore, uses, and horticulture of wildflowers. From Lyons Press, ISBN 1585746681.

**NATIVE PLANT HIGHLIGHT****A BRIEF INTRODUCTION TO BRYOPHYTES**

Let's begin by answering the questions, what is a moss and how are they different from the higher vascular seed plants? Mosses are small, green herbaceous plants that contain chlorophyll and are photosynthetic. Mosses do not have true flowers, and do not produce seeds, they reproduce by spores. Most mosses have no internal means for transporting water and nutrients (non-vascular), they absorb water and nutrients directly into the cells of their stems and leaves. Mosses do not have true roots, but they do have root-like structures called rhizoids, which primarily serve for attachment to the substrate. Mosses are extremely dependent upon water for their survival and reproduction, and are therefore typically found in cool, moist, humid areas like in swamps, marshes, along creeks, and in forests. Most mosses usually grow closely packed together in mats or cushions, and are found growing on rotting logs and stumps, rocks, soil, or on the bases and trunks of trees.

Mosses are distinguished from the higher vascular seed plants by two distinct traits. The first trait is the lack of a true vascular system, the xylem and phloem, the water-conducting tissue that is found in all vascular plants. The second trait concerns their life cycle, or mode of reproduction. As stated, mosses do not have true flowers and do not produce seeds, but reproduce by spores. The moss life-cycle is comprised of two separate generations: the gametophyte generation, which is the leafy green plant we associate as a "moss", and the sporophyte generation, which consists of a smaller spore-producing plant called a sporophyte.

The gametophyte is the dominant generation in the life cycle of the mosses and is perennial. The sporophyte is an annual, and consists of an unbranched stalk, or seta, and a single, terminal spore capsule, or sporangium. The sporophyte is always attached to the top of the gametophyte by a foot, which penetrates the gametophyte tissue. The sporophyte is dependent on the gametophyte for water and nutrients. The gametophyte of mosses can also reproduce asexually by vegetative means. They can shed fragments of leaves or other parts of the plant body, that can regenerate into new plants.

A moss begins its life cycle when spores land on a moist substrate and begin to germinate. After germination, the spore, which contains one set of chromosomes (haploid) develops into a long, highly branched filament known as a protonema. After several weeks, buds form on the protonema. These buds develop into the gametophyte, the leafy green moss plant. The plant develops leaves arranged spirally and begins to grow taller, and near the base of the plant rhizoids develop to anchor the moss to its substrate. When mature, the leafy gametophyte produces sex organs at the tips of stems or on short branches. The female reproductive structure, the archegonium, encloses a single egg at its base. The male structure, the antheridium, encloses a mass of sperm. As the sperm mature, the antheridium swells and bursts open, releasing the sperm. A continual path of water (rain drops or dew) is needed for the sperm to swim to the archegonium and fertilize the egg. After fertilization of the egg, an embryo develops, which now contains two sets of chromosomes (diploid) that will become the sporophyte generation. A foot develops that anchors the sporophyte to the gametophyte and a capsule develops where spores are formed. The seta then elevates the capsule away from the gametophyte for greater dispersal of spores. A cap, or calyptra covers the

spore capsule and as the mature capsule swells with developing spores, the calyptra falls away, which allows the capsule to dry and break open. The opening to the spore case is surrounded by teeth-like appendages called the peristome. These teeth are hygroscopic, meaning that they are very sensitive to changes in humidity. They move outward when the humidity is low, flinging the spores into the air, and as the humidity increases, the teeth move inward and close the mouth of the capsule until more favorable conditions for spore dispersal exist. Dispersed spores deposited on a suitable substrate will germinate and complete the life cycle of the moss. Moss spores can travel great distances on the winds and some spores can remain viable for up to 40 years due to a protective coating around the spore.

Mosses can be found almost anywhere on the planet, in fact in the Arctic and in Antarctica, they are the most common land plants, and mosses can even be found in deserts. Mosses may be small in size, but they are one of the largest groups of land plants in the world with about 25,000 species. By comparison, there are about 350,000 species of flowering plants in the world, and about 10,000 species of ferns and fern allies. Here in Delaware there are 211 species and varieties known to occur.

Mosses are generally classified into three distinct divisions, which indicates three separate evolutionary lines: the Bryophyta (true mosses), Marchantiophyta (liverworts) and Anthocerotophyta (hornworts). Collectively, these 3 divisions are known as bryophytes. Members within these divisions are very different in appearance from division to division, and perhaps are only distantly related to one another, but what they all have in common is their similar reproductive structures and life cycle. Of the three divisions, the greatest species diversity is found in the Bryophyta, with up to 15,000 species recognized. In Delaware, there are 167 species and varieties of true mosses known to occur. The true origin and evolutionary lineage of bryophytes is still uncertain since the fossil record is rather poor. But what is known is that bryophytes appeared about 400 to 500 million years ago in the Paleozoic era about the same time as the vascular plants.

Mosses comprise a significant part of the biodiversity of our natural areas and most mosses can be seen throughout the year because they stay green all year. The best time to look for mosses is after a rain, at that time the plants are most vigorous and bright green in color. During times of drought, mosses tend to lighten in color and shrivel-up due to water stress.

The ecological roles of mosses are many. They provide seed beds for the larger seed plants, they capture and recycle nutrients that are washed down with rainwater from the canopy, they help to bind the soil to keep it from eroding, and they help soil to retain moisture.

Mosses are good ecological indicator species because they tend to be highly specific for particular microenvironments and respond to factors such as temperature, light, water availability, and substrate texture and chemistry.

Perhaps more than any other plant, mosses can handle extremes in environmental conditions, but are sensitive to air pollution, especially sulfur dioxide, which breaks-down chlorophyll, so mosses are good indicators of local air quality. 🌿

oooo William McAvoy, DNPS Vice-President

## THOUGHTS FROM THE EDGE OF THE GARDEN DNPS NURSERY UPDATE

Our new greenhouse is up and running, and we thought you'd like a pictorial of the grand time we had putting it together!



Photos by Keith Clancy and Eric Zuelke

Pouring 3/8" gray chip stone base (gravel from All Seasons Nursery)



The completed base and electrical line (thanks to the St. Jones Reserve staff for the full electric installation)



The jigsaw puzzle of PVC pipes, fortunately they were colored coded with a good instruction manual and a construction video



Eric and Lynn putting part of the jigsaw puzzle together



Keith tying up tension wires to tighten the PVC frame



And the almost completed product with 4 mil plastic covering, it now has wooden benches, a fan, thermometer, thermostat, and lots of plants! 🌿

**FEATURE ARTICLE***Continued from page 3*

speaking, from species to species within each group of organisms and according to such things as the pollution load, the stage of life at which the individual is exposed, and the way competition becomes changed within a particular ecosystem. Sensitive species have the capacity to bioaccumulate organochlorine compounds, chlorinated hydrocarbons, benzo-hexachloride, polycyclic aromatic hydrocarbons, nitrogenous compounds, sulphur dioxide, ozone, fluoro-compounds, radionuclides, and metals (up to a total of 39 different types throughout all the different habitats). The mixtures of airborne pollutants to which organisms are exposed can vary in composition, and each combination will have a slightly different effect. Different substances in combination can sometimes have a synergistic effect (a greater effect than the sum of the effects each one would have separately), while in other combinations they can cancel each other out. Though knowledge of pollutant interactions is still limited, it is known that certain lichens, for instance, are more sensitive to gaseous sulphur dioxide than to wet deposition of acid, while for other species the reverse is true. Several species of sphagnum mosses decline where there is high sulphur-dioxide pollution, and a few are susceptible to nitrogen oxides also, but in acidified waters many of them increase in population size. Different species of bryophytes and lichens will bioaccumulate different harmful substances at different rates. The species able to tolerate elevated concentrations can be used to compare the spatial and temporal distribution of contaminants. Transplanted moss samples at sites of differing levels of contamination can provide information on accumulation rates which can be compared with instrumental measurements.

The primary goal of bryomonitoring is to trend changes in the lower plants of an ecosystem to predict ecosystem stress levels secondary to pollution, and to predict ecosystem response to these stresses. Whether and in what way ecosystems are affected by air pollutants depends especially on the nature, concentration, and time of arrival of the pollution, but also on the existing status and nature of the particular habitat. Various stress parameters have been investigated in an endeavour to relate exposure to response, including enzyme activities, photosynthetic rate and pigment composition. Effects on growth under changing climatic scenarios have also been investigated with regard to species distribution. Data collected from local, regional, and national research efforts can be used as ammunition, along with accurate environmental response predictions, to possibly influence governmental entities to enact legislation to lower pollution levels. It has been shown that many species of bryophytes and lichens will slowly rebound in numbers once air pollutant levels lower, and air quality improves.

Air pollution is a significant source of environmental degradation and all of us should be concerned about it, and try to do something to reduce air pollutants. Very few of us are going to tackle this issue by studying bryophytes, but there are a number of easy things we can all do: 1) drive the most fuel efficient car you can find, 2) use fluorescent light bulbs, 3) turn off electrical items when not in use, 4) use solar power and wind power to generate electricity), and 5) plant trees, lots!

**EVENT HIGHLIGHTS***Continued from page 2*

However, lest the reader get the idea that all we saw were exotics, let me put that impression to rest. Common native species that we observed included white ash (*Fraxinus americana*), box elder (*Acer negundo*), maple-leaved viburnum (*Viburnum acerifolium*), may-apple (*Podophyllum peltatum*), jack-in-the-pulpit (*Arisaema triphyllum*), solomon's seal (*Polygonatum biflorum*), wild ginger (*Asarum canadensis*), basswood (*Tilia americana*), toothwort (*Cardamine concatenata*), wild sarsaparilla (*Aralia nudicaulis*), Indian cucumber-root (*Medeola virginiana*), dutchmen's breeches (*Dicentra cucullaria*), and rue anemone (*Thalictrum thalictroides*).

We were also treated to a number of very interesting plants. Some examples of these included the uncommon wood stonewort (*Sedum ternatum*), that was in full bloom and that some of us had never seen before, the state rare sedge (*Carex torta*) found along a gravel bar in the creek, the always intriguing bladder-nut (*Staphylea trifolia*), the rare nodding trillium (*Trillium cernuum*), the unusual and infrequent greendragon (*Arisaema dracontium*), the American spikenard (*Aralia racemosa*), and a shrub called sheepberry or nannyberry, *Viburnum lentago*, that may be new to the state.

We walked north along the trail and crossed into Pennsylvania. It seemed as though after crossing the state line there were far fewer aliens and more native plants in the forest. This anomaly undoubtedly reflected past human activities in the watershed.

Although the trip was somewhat disappointing because of the sheer number and extent of invasive exotics, it was also a good experience in that it provided a wake-up call. If we want to enjoy field trips through habitats that support good assemblages of native plants then we must take action. It is imperative that we begin to work with land managers at our state parks and other public as well as private lands in control and removal of these invasive exotics that are wreaking such havoc on our State's indigenous plant communities.

**DNPS 5TH ANNUAL MEETING**

The annual meeting this year, held at Abbott's Mill Nature Center was a great success! We had a great presentation on bryophytes, lots of good food for our potluck lunch, a native plant raffle, and a very interesting walk on the boardwalk through the swamp on the Abbott's Mill property where we focused on learning about the resident bryophytes.

We also had an election for the one Board position that is out of sync with our other positions; that of Treasurer. Yours truly, Eric Zuelke, was re-elected to the Treasurer position for another two-year term.

We hope everyone can make it out to next years annual meeting as they keep getting bigger and better each year, and it's an excellent opportunity to get involved in the activities of your society. Details will be announced at a later date for next years meeting time and place.



*Polytrichum piliferum*,  
Lyrae Emerson

## ***UPCOMING EVENTS***

**WEDNESDAY, 06 AND THURSDAY, 07 AUGUST 2003** – INVASIVE PLANT CONFERENCE AT THE MORRIS ARBORETUM OF THE UNIVERSITY OF PENNSYLVANIA. COST IS \$150.00 PER PERSON AND INCLUDES LUNCH FOR BOTH DAYS. FOR MORE INFORMATION CONTACT 215.247.5777 EXT. 159, OR ON THE WEB AT [WWW.UPENN.EDU/PAFLORA](http://WWW.UPENN.EDU/PAFLORA).

**SATURDAY, 06 SEPTEMBER AND SUNDAY, 07 SEPTEMBER 2003 + THE FOLLOWING WEEKEND** – BOWMAN'S HILL WILDFLOWER PRESERVE ANNUAL NATIVE PLANT SALE. HUNDREDS OF NATIVE PLANTS FOR SALE TO THE PUBLIC AT THE PRESERVE IN NEW HOPE, PA. FOR MORE INFORMATION CONTACT 215.862.2924, OR ON THE WEB AT [WWW.BHWP.ORG/CALENDAR.HTM](http://WWW.BHWP.ORG/CALENDAR.HTM).

**SATURDAY, 13 SEPTEMBER 2003** – BACKYARD INVADERS: PLANTS IN AND OUT OF THE GARDEN. FROM 9 AM TO 4 PM AT THE DELAWARE CENTER FOR HORTICULTURE. FOR MORE INFORMATION CONTACT THE CENTER AT 302.658.6262, OR ON THE WEB AT [WWW.DEHORT.ORG](http://WWW.DEHORT.ORG).

**SATURDAY, 20 SEPTEMBER 2003** – ANNUAL TREE SPREE FAIR FROM 10 AM TO 3 PM AT CAROUSEL PARK ON LIMESTONE ROAD, NEW CASTLE COUNTY. TREE PLANTING, FREE TREES, HIKES, EXHIBITS, AND RIDES. FOR MORE INFORMATION CONTACT THE CENTER AT 302.658.6262, OR ON THE WEB AT [WWW.DEHORT.ORG](http://WWW.DEHORT.ORG).

**SATURDAY, 04 OCTOBER AND SUNDAY, 05 OCTOBER 2003** – NATIVE PLANTS AND GEOLOGY OF THE BLUE RIDGE PROVINCE, MULTI-STATE FALL CONFERENCE AT THE USFWS CONSERVATION TRAINING CENTER IN SHEPHERDSTOWN, WV. WITH FIELD TRIPS, POSTER SESSIONS, AND WORKSHOPS. FOR MORE INFORMATION CONTACT 301.809.0139, OR ON THE WEB AT [WWW.MDFLORA.ORG/CURRENTEVENTS.HTML](http://WWW.MDFLORA.ORG/CURRENTEVENTS.HTML).

**SATURDAY, 04 OCTOBER AND SUNDAY, 05 OCTOBER 2003** – DELAWARE NATURE SOCIETY HARVEST MOON FESTIVAL FROM 10 AM TO 5 PM. FARM ANIMALS, HAY RIDES, FOLK MUSIC, FARM GAMES, ANIMAL EXHIBITS. FOR MORE INFORMATION CONTACT 302.239.2334, OR ON THE WEB AT [WWW.DELAWARENATURESOCIETY.ORG](http://WWW.DELAWARENATURESOCIETY.ORG).

**DNPS BI-MONTHLY MEETINGS FOR 2003** – ARE CURRENTLY SCHEDULED THE 3RD TUESDAY OF EVERY OTHER MONTH. OUR NEXT MEETINGS WILL BE: 15 JULY, 16 SEPTEMBER, AND 18 NOVEMBER. 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. WE PLAN TO HAVE GUEST SPEAKERS AT EACH MEETING (SPEAKERS AND THEIR TOPICS WILL BE ANNOUNCED AT LATER DATES). CHECK OUR WEBSITE FOR ADDITIONAL DETAILS OR EMAIL US AT [DNPS@DELAWARENATIVEPLANTS.ORG](mailto: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: \_\_\_\_\_

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

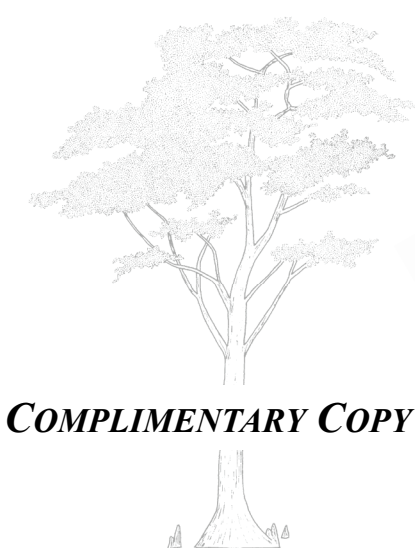
Membership benefits include:

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

**Total Amount Enclosed: \$** \_\_\_\_\_

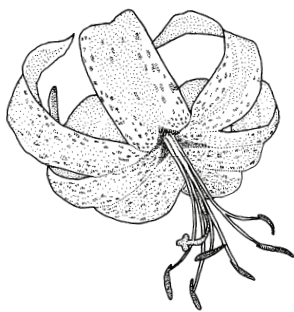
**Make check payable to:  
DE Native Plant Society  
P.O. Box 369, Dover, DE 19903**

**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 2003

## IN THIS ISSUE

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

## 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 are in the midst of several reforestation projects, using a "direct-seeding" approach at Prime Hook National Wildlife Refuge, and along Blackbird and Cedar Creeks during October and November, 2003. In addition, help is needed with our native plant nursery at the St. Jones Reserve with the monitoring and watering of plants in our recently acquired greenhouse.

For more information on how to get involved, E-mail us at [dnps@delawarenativeplants.org](mailto:dnps@delawarenativeplants.org). Or visit our website at [www.delawarenativeplants.org](http://www.delawarenativeplants.org). Our website will have all of the past issues of *The Turk's Cap* along with a large section on native plants, as well as links to other environmental and plant related

## 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 ([ezuelke@juno.com](mailto:ezuelke@juno.com)), or Keith Clancy at 302.674.5187 for more information.

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## A MEADOW OF GOLDEN ASTERS WELCOME TO OUR NEWEST MEMBERS

### July through September

Heather Baker  
Danielle Downs  
Jessie Keith  
Annie Larsen  
Joseph McLaughlin  
George O'Shea  
George & Barbara Pettyjohn  
Mary Ellen Sauser  
Quentin Schlieder, Jr.  
Marion Zuefle

## LETTER FROM THE PRESIDENT

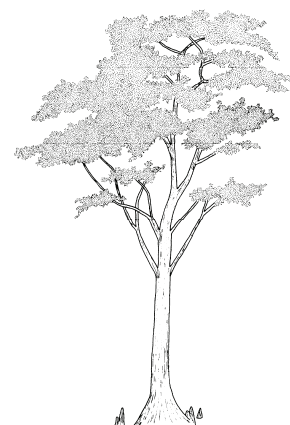
I hope everyone is enjoying the last few weeks and days of warm weather before the deep freeze of winter takes hold. As usual, the summer flew by and autumn is quickly disappearing. Is it just me, or is time going by too fast for you too?

The Society will be active throughout October and into November with reforestation projects. These projects are taking place in three watersheds: Blackbird Creek (in New Castle County), and Cedar Creek and Prime Hook Creeks (in Sussex County). The sites are within the Blackbird Creek National Estuarine Research Reserve, the Cedar Creek Natural Area and the Prime Hook National Wildlife Refuge, respectively. We are planting mostly acorns and hickory nuts on nearly 35 acres of former agricultural fields. The nuts have

been and will be collected from nearby intact forest

## 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****AUTUMNAL TRAVAIL**

As Autumn descends upon us, so has a lot of hard work for the Society. If preparing for our annual plant sale wasn't enough, we've also dived into a reforestation project on three sites for which we got grant money from the Partnership for the Delaware Estuary Program. Of our 3 sites, Blackbird creek, Cedar Creek, and Prime Hook National Wildlife Refuge, the Prime Hook site is shaping up to be very challenging simply because of it's size (about 18 acres), but the work is very gratifying and we know it will all be successful. We're very excited about these reforestation sites because they are a direct, palpable way to do something good for the earth.

We're also very excited about our plant sale this year. The addition of the greenhouse in our nursery has added a whole new venue for germinating every native plant seed we can get our hands on, and it has enabled us to have a wide diversity of plants for sale. We hope everyone can come out for the fun.

On the education and Public Relations front, we've had some excellent field trips and presenters lately. Our mushroom foray was really interesting. We've also completely renovated our display board which has resulted in a very professional looking display to show at events around the state.

Have a great Autumn and enjoy the crisp, frosty air. And definitely don't forget to eat a lot of pumpkin pie! 🍂

○○○○ Eric Zuelke, Editor

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**PLANT-ANIMAL HIGHLIGHT****DON'T EAT THAT MUSHROOM**

Though not plants-in fact they have been placed in their own kingdom-mushrooms have just as an important role in the global environment. The mycorrhizal fungi that mushrooms sprout from (mushrooms are just the fruiting bodies, or sporocarps) are one of the most important organisms on earth for decomposing biological litter and wastes. The mushrooms themselves serve as an important food source for many animals such as deer, squirrels, mice, chipmunks, turtles, slugs, and numerous species of insects.

It is commonly known that many species of mushrooms contain toxins such as cyclopeptides, orellanine, ibotenic acid, monomethylhydrazine, muscarine, amatoxin, and psilocybin that at best cause gastrointestinal distress and at worst death in humans. However, many animals eat mushrooms with no ill effect at all. In fact, some animals thrive on mushrooms. Animals have uniquely different digestive systems than humans and some have evolved digestive mechanisms that can break-down the chitin contained in mushroom cell walls to extract the nutrients while at the same time breaking down toxins with enzymes in their stomachs, or neutralizing toxins in their liver. Mushroom cell walls are primarily made of chitin and other indigestible complex polymers, and the cells need to be broken down to extract the nutrients. Many animals such as deer and some squirrels have foregut fermentation, or a functional cecum pouch (similar to the vestigial human appendix) that houses bacteria that begin to break down the chitin to release those nutrients.

In researching this article, I found hardly anything on

the topic of mushroom consumption by animals, and even less on the physiologic process of toxin digestion. Scientists are always looking for something to study, and here is a perfect opportunity! 🍄

○○○○ Eric Zuelke, Editor

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**EVENT HIGHLIGHTS****ST. JONES RIVER KAYAK TRIP, SATURDAY, SEPTEMBER 6**

Sixteen of us put in our canoes and kayaks at the public access dock in the heart of Dover, just a stones' throw from the State's capitol. The water was cool in contrast to the warm air that would get hotter as the day wore on.

We paddled from Dover to Barker's Landing along a meandering river that would take us from freshwater forested river banks to saltwater cordgrass marshes. With a brief stop at Lebanon Landing for lunch the entire paddle took us nearly 5 hours. During the course of this trip we all got pretty spread out on the water so I am not sure that everyone saw the same things, and some of the species that I am discussing in this highlight may not have been seen by all.

The low-lights included an abundance of excessive algal growth in the water, especially near downtown Dover, suggesting too much nutrient run-off and a super-abundance of invasive non-native plant species. One of these included, what we (I) first thought was the native Virginia virgin's-bower (*Clematis virginiana*), but upon closer inspection turned out to be Japanese virgin's-bower (*C. terniflora*). This, admittedly attractive flowering vine was smothering many native woody and herbaceous plants along the river's edge from Dover to just upriver from Lebanon Landing. Another abundant invasive we observed was the Asian vine known as porcelain-berry (*Ampelopsis brevipedunculata*); this vine is appearing more and more frequently throughout Kent County and probably elsewhere in the state. Tree-of-heaven (*Ailanthus altissima*) and empress-tree (*Paulownia tomentosa*) were 2 Asian trees that seemed right at home along the St. Jones River.

Another non-native that we all saw was one that I had found while doing reconnaissance the day before. It was a prostrate, mat-forming plant growing on the base of a black gum tree. I had not seen it before and did not have time to identify it by the next day. So, we stopped at the tree where this plant was growing and I asked one of the kayakers to grab a piece of the plant and pass it around for everyone to get a good look at. Someone said it looked like a Sedum; and sure enough that's what it was: Stringy stonecrop (*Sedum sarmentosum*). As far as I can tell, this is the first record of this species in the wild in Delaware.

Lest the reader think the only plants we saw were invasive, non-natives let me assure you that we did see many natives typical of Delaware's coastal plain rivers, too many to list them all here. But a few of the more significant ones included some individuals of bald cypress (*Taxodium distichum*), growing at or near the northern-most edge of its range, and the only known Delaware population of the impressive, beautiful and remarkable American lotus (*Nelumbo lutea*). We had to take turns paddling into a small cove to get a close look at this aquatic with its large round, peltate leaves and huge white to

*Continued on page 6*

Continued on page 3

## LETTER FROM THE PRESIDENT

Continued from page 1

communities. By planting nuts we hope to establish a more desirable oak-hickory forest rather than a pine, sweet gum or red maple-dominated forest. Your help is still needed, so please come out and join the die-hards in these important restoration projects. I want to thank everyone that has helped with these projects so far. And I want to especially thank the hard work done by Annie Larsen, in coordinating and planning for the planting at Prime Hook National Wildlife Refuge; on our first day at the Refuge (during Prime Hook's Waterfowl Festival) we were able to plant 2,404 nuts! Stay tuned for upcoming planting dates.

We are also busy preparing for the DNPS's 3<sup>rd</sup> Annual Native Plant Sale scheduled for Saturday, November 1, 2003. Many species of native plants will be available, and all of these have either been propagated from seeds collected from local indigenous natural communities or are plants that have been rescued from sure doom on sites about to be destroyed. What I especially like about the plants we have, aside from their wildlife values and aesthetic beauty, is that we know the ages of many of these plants and so one will know (if you keep track of such things) that 50 years (or whenever) from now, exactly how old that tree is that's in your yard and that was planted in the fall of 2003.

During November we will finish our reforestation projects and will be preparing our nursery for the long winter ahead, including collecting and potting-up numerous seeds of many species of native plants. We are going to follow the methods of one of our members, Bob Edelen, who had great success last year in germinating thousands of seeds. His method was rather simple: he prepared a long wooden cold frame, within which he placed many plastic pots full of potting soil and native plant seeds, he covered these with a layer of mulch and a sturdy sheet of hardware cloth to protect against seed poachers. In essence, he was trying to mimic (and I think he did a superb job) the natural conditions that these seeds would be going through in nature (e.g., the long cold period provided during the winter months, followed by fluctuating daily temperatures of cool nights and warm days that characterize the spring). We will also be trying our hand at propagating many new native plant species, including swamp rosemallow (*Hibiscus moscheutos*), yellow passion-flower (*Passiflora lutea*), turk's-cap lily (*Lilium superbum*), black-eyed Susan's (*Rudbeckia hirta*), and American lotus (*Nelumbo lutea*), to name a few. It is very exciting to collect seeds from the wild, plant them and then to wait with anticipation for the emergence of the first leaves signaling a successful germination. We are learning much as we attempt to propagate more and more species. For example, did you know that if you collect black-eyed Susans in early fall and then plant them immediately, they will start to germinate in just a week or two? I just found that out after Eric Zuelke planted hundreds of seeds in pots out at the nursery.

Well, I better wrap-up this letter. But before I do, I again want to extend my invitation to all members to become more involved in their society. Come on our field trips or out to the nursery, help with our reforestation projects,  and come to our meetings; we welcome and need your input.

Best wishes,

## NATURAL QUOTES

"I am the Lorax, I speak for the trees, for the trees have no tongues."

Dr. Seuss

## FEATURE ARTICLE

### ALIEN INVADERS

Delaware's flora appears to be undergoing a sea change. Species not previously known from Delaware are appearing on a regular basis; and most of these are non-native, or exotic species. The most recent publication on Delaware's Flora is McAvoy and Bennett's (2001) *The Flora of Delaware: An Annotated Checklist*. This publication lists a total of "... 2,175 species, varieties, and hybrids of native (1,565) and non-native (610) vascular plants...." I would like to report on the discovery, during the 2003 field season, of several newly documented non-native vascular plants found in the wild in Delaware.

While undertaking surveys in a field at Prime Hook National Wildlife Refuge on June 5, 2003, with wildlife biologist Annie Larsen of the U.S. Fish & Wildlife Service, we observed a curious-looking plant that formed a carpet of dense growth. The low-growing, herbaceous plants were rather small, and consisted of alternate and sub-opposite, oblong leaves and, small axillary, pale purple flowers. I had not seen it before and after keying it out, determined it to be a plant called annual or hyssop-leaved loosestrife, *Lythrum hyssopifolia*. When I related the identification to Annie she recalled that she and George O'Shea had collected this plant in the same field in 2001 and it had been identified, by USFWS biologist Laura Mitchell, also as *L. hyssopifolia*; at that time it was not recognized as being new to Delaware.

This species has a rather unusual distribution. According to Gleason and Cronquist's (1991) *Manual of the vascular plants of northeastern United States and adjacent Canada*, *L. hyssopifolia* occurs from Maine, to New Jersey, eastern Pennsylvania, southern Ohio, the Pacific coast, in South America, and common in the Old World. In a 1997 paper in *The Canadian Field-Naturalist* it was newly reported to occur in Ontario, Canada by Blaney et al. The discovery in Delaware extends its range further south in the eastern United States. The plants were so dense and covered such a large area (estimated at more than 5 hectares) that their appearance reminded one of a low-growing *Spartina* marsh. Larsen mentioned that the field we were surveying was a popular "eat-out" area for Snow geese and we speculated that the plants could easily have been transported to Delaware by these birds. I discovered a second population for this species, on June 24, 2003 in a field at Bombay Hook National Wildlife Refuge.

On June 15, 2003 while surveying a field at Bombay Hook National Wildlife Refuge, I spied a curiously Eurasian blue-flowered scarlet pimpernel, *Anagallis arvensis* var. *caerulea*. I had never seen one with blue flowers before. I discovered

Continued on page 6

**NATURAL COMMUNITY HIGHLIGHT****Smooth Alder-Arrowwood Shrub Swamp***Alnus serrulata*-*Viburnum dentatum* Shrubland

Smooth Alder-Arrowwood Shrubland

**Description**

Found along freshwater tidal rivers, these shrub swamps are seldom visited by anyone, as they are some of the most inhospitable communities in Delaware. Typically characterized by a tall layer of dense shrubs, and often resting upon mucky soils with the consistency of thick soup, these habitats generally don't make for a pleasant excursion. However, these communities are a distinct habitat unto themselves, and are frequently quite diverse. The dominant species in the shrub layer are smooth alder (*Alnus serrulata*) and arrowwood (*Viburnum dentatum*), and are joined by other common species such as winterberry (*Ilex verticillata*), silky dogwood (*Cornus amomum*), red maple (*Acer rubrum*), spicebush (*Lindera benzoin*) and swamp rose (*Rosa palustris*). Vines such as poison ivy (*Toxicodendron radicans*), Virginia creeper (*Parthenocissus quinquefolia*) and climbing hempweed (*Mikania scandens*) are often abundant. The herbaceous diversity is attributable to hummock and hollow microtopography, which provides suitable spots for herbs to germinate. Characteristic species include orange jewelweed (*Impatiens capensis*), tussock sedge (*Carex stricta*), arrow-leaved tearthumb (*Polygonum sagittatum*), wild rice (*Zizania aquatica*), groundnut (*Apios Americana*), long-leaved aster (*Symphyotrichum novi-belgii*), hemlock water-parsnip (*Sium suave*), stout wood-reed (*Cinna arundinacea*), arrow arum (*Peltandra virginica*), and rice cutgrass (*Leersia oryzoides*).

**Significance**

These shrub communities typically form a transition zone between tidal marsh or open water and the tidal swamp forest adjacent to the upland. There are a number of bird species which specialize in shrubby habitats, one of the most conspicuous of which is the common yellowthroat.

**Distribution**

This community is restricted to freshwater sections of tidal rivers. In Delaware, this is most notably the Nanticoke River and its larger tributaries, such as the Broadkill. There may also be occurrences along some rivers that drain into Delaware Bay, particularly the Murderkill and its tributaries.

**References**

This description comes primarily from a report by ecologists Jason Harrison and Peter Stango, who have done a tremendous amount of work on these communities in Maryland. 🌿

oooo Peter Bowman, DE Natural Heritage Program Ecologist

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**NATIVE PLANT HIGHLIGHT****GENTIANAS**

The gentians of early to late fall are some of the most lovely wildflowers to be seen at this time of year. Their showy, light to dark blue flowers are always a pleasure when encountered.

The gentians represented in Delaware are in the genera *Gentiana* and *Gentianopsis*, and all are in the family

Gentianaceae. Another genus in the eastern U.S. considered to be a gentian is *Gentianella*, but species within this genus are not known from Delaware.

In Delaware, there are currently 6 species of native gentians known to occur and all are either uncommon to rare. In fact, one species is thought to be historical (not reported for 20 or more years), and two are considered to be extirpated from the state. Uncommon species include: the soapwort gentian and Elliott's gentian (both found in all three counties of the Coastal Plain province). The rarest of our gentians that can still be found is the fringe-top bottle gentian, known from only two populations in the Piedmont province of New Castle County. The historical species is the striped gentian, last collected in 1878 from the Piedmont province of New Castle County. Species considered to be extirpated are the fringed gentian (last collected in 1928 from the Piedmont of New Castle Co.), and the pine barren gentian (last collected in 1875 from Sussex Co.).

|                                            |                           |
|--------------------------------------------|---------------------------|
| <i>Gentiana andrewsii</i> Griseb.          | fringe-top bottle gentian |
| <i>Gentiana autumnalis</i> L.              | pine barren gentian       |
| <i>Gentiana catesbaei</i> Walt.            | Elliott's gentian         |
| <i>Gentiana saponaria</i> L.               | soapwort gentian          |
| <i>Gentiana villosa</i> L.                 | striped gentian           |
| <i>Gentianopsis crinita</i> (Froel.) Ma    | fringed gentian           |
| (synonym = <i>Gentiana crinita</i> Froel.) |                           |

All of Delaware's gentians are perennial plants with the exception of the fringed gentian which is a biennial.

Gentians in Delaware can be found growing in habitat such as, moist meadows and edges, open woods, seeps, sandy swales, and stream banks.

The fringe-top bottle gentian, Elliott's gentian, soapwort gentian, and the striped gentian are also known as bottle, or closed gentians. This is because the flowers are shaped like bottles and are closed to partially open. An insect with the desire to obtain nectar from one of these species must wiggle and squeeze its way into the interior of the flower to reach the sweet taste of nectar it covets.

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**RESOURCES AND REVIEWS****INTRODUCTION TO DE BASED PLANT BOOK REVIEWS**

What do the authors Hal Bruce, Lorraine Fleming, William McAvoy, Claude Phillips, William Taber and Robert Tatnall have in common? They all have written about the flora of Delaware! Their publications are important for a variety of reasons; some increase awareness with respect to which native Delaware plants are common, rare, or extinct, the books/booklets provide gardeners with a list of native plants that can be successfully grown in Delaware, and certain publications are helpful in plant identification. Selected works from these authors are available for purchase and most are found in libraries around the state. Starting with the January issue of *The Turk's Cap* I will be reviewing Delaware flora books and booklets. 🌿

oooo Gwendolyn Elliott, DNPS Member

# 3rd Annual Native Plant Sale

When: Saturday, 1 November 2003, 10:00 AM – 3:00 PM

Where: DE Native Plant Society's native plant nursery. Directions: St. Jones Reserve, take Route 1/Route 113 to just south of the Dover Air Force Base to the Route 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).

What's for sale: Hundreds of trees (oaks, hickories, maples, pines), shrubs (blueberry, chokeberry, inkberry, pepperbush, viburnum, magnolia), and many native herbaceous species will be available at very reasonable prices. Come early, some quantities are limited!

For more information: Call 302.674.5187, email [dnps@delawarenativeplants.org](mailto:dnps@delawarenativeplants.org), or on the web at [www.delawarenativeplants.org](http://www.delawarenativeplants.org).

We had a great sale last year and hope to have an equally great sale this year.  
So come out and join the fun!



**FEATURE ARTICLE***Continued from page 3*

that Gleason and Cronquist recognized blue-flowered plants of scarlet pimpernel as a variety of *A. arvensis*. The typical variety, var. *arvensis*, as the common name implies, has scarlet flowers. Gleason and Cronquist noted the distribution of the blue variety as "...rare in our range, mostly more southern...." This occurrence appears to be the first record for this variety in Delaware.

While driving along Rte 9A in an industrial area of south Wilmington on July 11, 2003, I stopped to get a closer look at an attractive composite with highly dissected leaves and numerous small yellow-flowered heads. the foliage reminded me of tansy, *Tanacetum vulgare*, but the inflorescence and flower heads looked more like a yarrow. In fact, it turned out to be a yellow-flowered yarrow, fern-leaf yarrow, *Achillea filipendulina*. There was only a small population growing in a weedy lot adjacent to an electric sub-station. This species is not even mentioned in Gleason and Cronquist. It's undoubtedly an escape from cultivation and whether or not it persists in the wild is not presently known, but we should keep our eyes on this one to see just how persistent it is.

While driving along country roads in Kent Count photographing wildflowers on August 29, 2003, I drove into the small town of Felton and alongside the railroad I observed a large population of the distinctive cup-plant, *Silphium perfoliatum*. I did not think this plant, with its very large, distinctive perfoliate leaves, was known for Delaware. I checked McAvoy and Bennett's *Flora of Delaware* and its absence was confirmed. Although these plants were growing along the railroad r-o-w they were also at the edge of the lawn on the east side of the Felton Post Office. I still need to check with the Post Office staff to see if perhaps it was planted there. On October 10, 2003 I observed a large population of this species at a second site: along the edge and in a drainage ditch on the north side of NW Front St. just west of Truitt Ave, in Milford. According to a Mr. Ormond Hobbs, who lives on Truitt Ave., this plant was not planted along this ditch but just showed up one year. It still needs to be determined if these populations of cup-plant represent escapes from cultivation or were planted in the locations mentioned above.

While kayaking along the St. Jones River, just south of Dover on September 5, 2003, in preparation for a Society field trip the following day I observed two very interesting species that were new to me, and is it turns out, to Delaware. The first one I observed was a, low-growing mat forming herb with very interesting fleshy leaves that occurred in 3's at each node; there were no flowers or fruits on the plants. The plants were growing on the base of the trunk of a black gum overhanging the St. Jones. During the field trip the next day I showed this plant to everyone and someone, I apologize but I did not find out who, said they thought the plant was a sedum. And indeed, it was a sedum called stringy stonecrop, *Sedum sarmentosum*. The USDA PLANTS database website noted that this species was present in all states east of the Mississippi except for Mississippi, Delaware and Rhode Island; we can now add Delaware to the list. Robert Clausen, in his 1975 book *Sedum of North America North of the Mexico Plateau* wrote that this *Sedum* "...has spread from cultivation and become widely naturalized in temperate, eastern North America." This may be another species we need to monitor for its potential spread and

invasiveness.

The second new species that I found along the St. Jones was observed about 1 km further down river on the west side of the St. Jones. A very attractive evergreen holly with dark green narrow, spiny-margined leaves was growing next to a large bald cypress, *Taxodium distichum* tree. It resembled, but I knew that it was not, our native American holly, *Ilex opaca*. A perusal of specimens at the Claude E. Phillips Herbarium at Delaware State University turned-up specimens that looked just like the collection I had made of this holly. These were labeled *Ilex x attenuata* (*I. cassine* x *I. opaca*), a hybrid known as Foster's #2 Holly. The one parent *I. cassine*, or dahoon holly, is a southern species found from North Carolina to Florida. I checked for this hybrid at Willey's Nursery north of Smyrna and found several specimens for sale. And I also showed my specimen to Dr. Art Tucker of the C. E. Phillips Herbarium, an expert on cultivated plants, and he immediately identified it as *I. x attenuata*.

These are just a few of the most recent new arrivals to Delaware's shores. In the past ten years the state has seen an influx of dozens of non-natives or alien plant species. Most of these seem to be plants that have probably escaped from cultivation, while a few may have been dispersed here by animals, principally by birds. We already have many intractable alien plants that are wreaking havoc with our natural communities and now we have new aliens to contend with. We can expect to continue to find non-native plants new to the state that just haven't been discovered yet. Likewise, we can expect an influx of new aliens in the years to come as barriers to their introduction are non-existent or ineffectual. ♀

oooo Keith Clancy, DNPS President

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**EVENT HIGHLIGHTS***Continued from page 2*

creamy blooms and curious fruits set on tall peduncles.

The trip did drive home the fact that Delaware's ecosystems are under assault from non-native invasives. This is a problem that I think is much bigger than anyone realizes and will get much worse before it gets better.

**MUSHROOM FORAY**

Our mushroom field trip on 27 September 2003 to the Maidstone Branch old growth forest started out great for the nine people in attendance, but then it rained, and then we got off the trail and got lost, and then had a hefty hike back to our cars! But we didn't care, and neither did the mushrooms, in fact they were out in their height of glory. We saw over 27 species!

This trip was part II of a mushroom series we had in September given by Mr. Michael Maciarello. Mr. Maciarello is a noted fungi expert in this region and offered decades of his experience as a mycologist. We learned a great many tidbits of information about our fungal friends and we learned some basic identification skills to boot.

Some highlights were the honey mushroom, poison Amanita, puffballs, shelf fungi and the related shellac shelf fungi, turkey tail, and fairy umbrella. We also saw fairy rings which are circular patterns of mushrooms around the parent underground fungal mass.

## ***UPCOMING EVENTS***

**WEDNESDAY, 22 OCTOBER 2003** – ENJOYING FALL COLOR. FROM 10 AM TO 12 NOON. EVER WONDER ABOUT THOSE AMAZING FALL COLORS? FIND OUT WHERE THE COLORS COME FROM AND WHAT TRIGGERS THE CHANGES. WHICH TREES, SHRUBS, AND PLANTS ARE RESPONSIBLE FOR THE LOVELY REDS, ORANGES, PURPLES, AND YELLOWS IN THE FALL SCENERY THAT WORK IN A HOME LANDSCAPE AS WELL? JOIN TWO OF OUR OWN ADKINS DO-CENTS, CHRIS AND JULIANNA PAX, FOR A SLIDE PRESENTATION AND A WALK IN THE WOODS TO OBSERVE OUR FALL COLORS FIRST-HAND. CHRIS IS A MASTER GARDENER, A VOLUNTEER AT THORPEWOOD ENVIRONMENTAL CENTER IN FREDERICK COUNTY, AND COORDINATOR FOR THE CATOCTIN COMMUNITY SUPPORTED AGRICULTURE PROJECT. JULIANNA IS A RETIRED CHEMISTRY TEACHER AND FORMER NUTRITION SCIENCE CURRICULUM DEVELOPER FOR MONTGOMERY COUNTY WHO LIVES IN CAMBRIDGE. \$8 MEMBERS, \$10 GENERAL PUBLIC. FOR MORE INFORMATION CONTACT THE ARBORETUM AT 410.634.2847, OR ON THE WEB AT [HTTP://WWW.ADKINSARBORETUM.ORG/](http://WWW.ADKINSARBORETUM.ORG/)

**DNPS BI-MONTHLY MEETINGS FOR 2003** – ARE CURRENTLY SCHEDULED THE 3RD TUESDAY OF EVERY OTHER MONTH. OUR NEXT MEETING WILL BE: 18 NOVEMBER. MEETINGS WILL TAKE PLACE (UNLESS OTHERWISE NOTIFIED) AT 7 PM AT THE ST. JONES RESERVE, KITTS HUMMOCK RD. ABOUT 3/4 MILE EAST OF THE RT. 9/113/ KITTS HUMMOCK ROAD INTERCHANGE JUST AT THE SOUTHERN EDGE OF DOVER AIR FORCE BASE. WE PLAN TO HAVE GUEST SPEAKERS AT EACH MEETING (SPEAKERS AND THEIR TOPICS WILL BE ANNOUNCED AT LATER DATES). CHECK OUR WEBSITE FOR ADDITIONAL DETAILS OR EMAIL US AT [DNPS@DELAWARENATIVEPLANTS.ORG](mailto:DNPS@DELAWARENATIVEPLANTS.ORG).

**OCTOBER AND NOVEMBER 2003** – REFORESTATION PROJECTS. WANT AN OPPORTUNITY TO MAKE A DIFFERENCE TO OUR ENVIRONMENT? THE DELAWARE NATIVE PLANT SOCIETY (DNPS) IS LOOKING FOR VOLUNTEERS TO HELP WITH THEIR REFORESTATION PROJECTS. THE DNPS IS UNDERTAKING REFORESTATION PROJECTS ALONG CEDAR CREEK, IN SUSSEX COUNTY, AND PRIME HOOK NATIONAL WILDLIFE REFUGE ALSO IN SUSSEX COUNTY. THE DNPS WILL BE EMPLOYING A DIRECT SEEDING APPROACH FOR EACH OF THESE FIELDS. DNPS MEMBERS AND VOLUNTEERS WILL COLLECT SEEDS OF NATIVE TREE SPECIES (MOSTLY OAKS AND HICKORIES) FROM HIGH QUALITY FORESTS NEAR THE SITES AND THEN WILL "DIRECTLY" PLANT THESE SEEDS IN THE FIELDS THAT ARE TO BE REFORESTED. THIS METHOD OF REFORESTATION WAS QUITE SUCCESSFUL IN AN EARLIER DNPS REFORESTATION PROJECT. DATES REMAINING: CEDAR CREEK, OCT17-18, 23-25, NOV 8; PRIME HOOK WILDLIFE REFUGE, OCT 15, 17, 19, 23-24, 26, NOV 6-7, 9 (WE BEGIN AT 10 AM ON EACH DATE). FOR MORE INFORMATION (INCLUDING DIRECTIONS) OR IF YOU ARE INTERESTED IN VOLUNTEERING FOR THIS PROJECT YOU CAN CONTACT KEITH CLANCY AT [DNPS@DELAWARENATIVEPLANTS.ORG](mailto:DNPS@DELAWARENATIVEPLANTS.ORG) OR 302.674.5187, OR ERIC ZUELKE AT [EZUELKE@JUNO.COM](mailto:EZUELKE@JUNO.COM). LET US KNOW WHICH DAY(S) YOU CAN HELP OUT. ALSO, VISIT OUR WEBSITE, [WWW.DELAWARENATIVEPLANTS.ORG](http://WWW.DELAWARENATIVEPLANTS.ORG), FOR ADDITIONAL DETAILS.

# Membership Application

## DELAWARE NATIVE PLANT SOCIETY

### Member Information

Name: \_\_\_\_\_

Business Name or Organization: \_\_\_\_\_

Address: \_\_\_\_\_

City and Zip Code: \_\_\_\_\_

Telephone (home/work): \_\_\_\_\_

E-mail address: \_\_\_\_\_

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

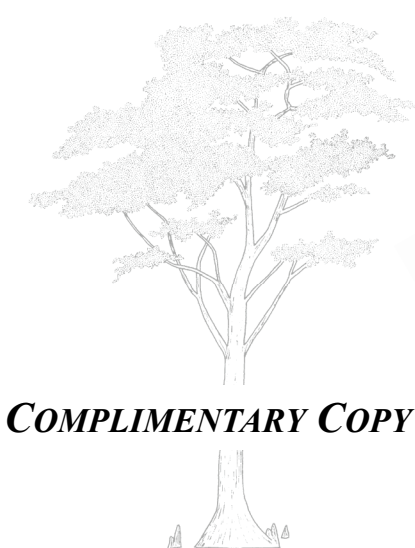
Membership benefits include:

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

**Total Amount Enclosed: \$** \_\_\_\_\_

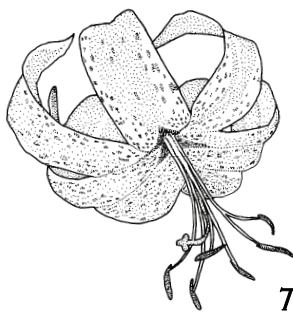
**Make check payable to:  
DE Native Plant Society  
P.O. Box 369, Dover, DE 19903**

**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 2003/04

## IN THIS ISSUE

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

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

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## A CRYSTALLINE BLUE WELCOME TO OUR NEWEST MEMBERS

### October through December

Cynthia Albright  
 Robert Collins  
 Kim Furtado  
 Erich & Vera Mrohs  
 Roger Redden

○ ○ ○ ○ ○ ○ ○

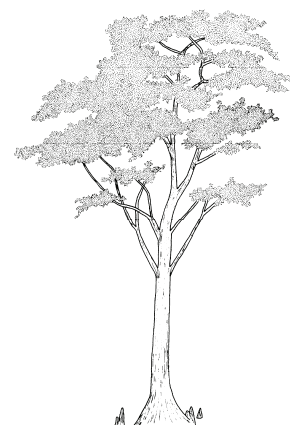
## LETTER FROM THE PRESIDENT

I hope everyone had a wonderful holiday season and is enjoying the cold and crisp days of winter. As I write this letter snow is beginning to swirl outside my window and I am trying to avoid the urge to while away the afternoon daydreaming about spring. Unless there's an abundance of snow I am not a big fan of cold wintry days and my mind tends to wander to thoughts of spring (i.e., warmer days, spring wildflowers and native plant landscaping). However, in spite of winters' cold this is an excellent time of year to collect seeds of some very attractive native plants that can be started now. If you head out into the country look for stream crossings and roadside forest edges for native plants still displaying their fruits beckoning animals or native plant enthusiasts. I have just collected handfuls of winterberry (*Ilex verticillata*), buttonbush (*Cephalanthus occidentalis*), American holly (*Ilex opaca*), and big cordgrass (*Spartina cynosuroides*) fruits, to name a few. These will be planted in soil in plastic pots that will be placed

*Continued on page 3*

## The DNPS Vision

**T**he 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.



## 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 completed several reforestation projects, using a "direct-seeding" approach at Prime Hook National Wildlife Refuge, and along Blackbird and Cedar Creeks in October and November, 2003. In addition, help is needed with our native plant nursery at the St. Jones Reserve with the monitoring and watering of plants in our recently acquired greenhouse.

For more information on how to get involved, E-mail us at [dnps@delawarenativeplants.org](mailto:dnps@delawarenativeplants.org), or visit our website -[www.delawarenativeplants.org](http://www.delawarenativeplants.org). Our website will have all of the past issues of *The Turk's Cap* along with a large section on native plants, as well as links to other environmental and plant related organiza-

**LETTER FROM THE EDITOR****GLIMPSES OF THE PAST**

The theme of this *Turk's Cap* is dedicated to the history of botany in Delaware and a remembrance of some of the beautiful species that no longer occur here. This issue has some of the present, a little of the future, and a lot of the past.

To address the present, I have some good news. For those of you who know me, you may remember that for the past three years I have been going to Delaware Technical and Community College for my AAS degree. I've been training to become a paramedic. I finished my academic program, passed a summer internship, and passed my National Registry exams with flying colors, so I'm proud to announce that I am now a Nationally Registered EMT-Paramedic. And on top of that, I've been hired by Sussex County for a full-time paramedic position which I will be starting near the end of January. I've successfully transformed myself from a biologist to a medic, and all I can say to those of you out there who are working on your own life transformations, is keep at it. Persistence pays off! Though I'm embarking on a new career, I intend on continuing in my roles as newsletter editor, treasurer, assistant nursery manager, and membership database administrator for the Society for as long as everyone wants me to be, which I hope is for awhile because I thoroughly enjoy it. And besides, you wouldn't want our president balancing the checkbook! Trust me! ; - )

In addressing the past, we have some great articles on the history of botany in Delaware, so I hope you enjoy them.

And don't forget to check out a new series of book reviews by DNPS member Gwendolyn Elliott. In the last issue she gave us an introduction to some of the great botanical books available in Delaware. 🌱

oooo Eric Zuelke, BS, AAS, NREMT-P

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**PLANT-ANIMAL HIGHLIGHT****A DISHEARTENING LOSS**

One of the most tightly knit natural relationships is that between herbaceous plants and insects. The plants need the insects to pollinate their flowers to produce seeds to carry on their genetics and that species line. The insects need the plants for food, shelter, and microhabitat for laying eggs. The destruction of habitat by humans is an endeavor that works in subtly tragic ways to permanently alter or destroy these insect-animal relationships. Changes in lighting conditions, moisture conditions, or soil composition can create unfavorable growing conditions for certain plants leading to their slow demise and the loss of all the insects that depend on them as well. Changes in floral species composition, lighting conditions, or moisture conditions can create unfavorable habitat conditions for certain insects leading to their slow demise and the eventual loss of the plants that depend on them as well.

In Delaware, and many other parts of the United States also, there has been a slow, steady loss of prairie and pineland habitats as they are developed, converted for other uses, or allowed to succeed to forest. All these changes have resulted in the loss of a very unique, and quite special relationship; that of the regal fritillary and the birdsfoot violet.

The birdsfoot violet (*Viola pedata*) is listed as an S1G5 species in Delaware. That means on a statewide basis

there are 5 or fewer known occurrences, and that on global level the species is secure, but may be locally uncommon.

This native perennial has evolved in the dry, rocky or sandy soils of sunny open woods, sandy prairies, black soil prairies, sand dunes, open pinelands, and savannas. This species is a low, clumped perennial, 4-10 in. high, with large, almost pansy-sized flowers that range from purple to white in color and bloom from March through June.

The regal fritillary (*Speyeria idalia*) is an SxG3 species in Delaware. That means on a statewide basis this species is locally extinct (extirpated), and that on a global level it is very rare or Threatened throughout its range with only 21 to 100 known occurrences, or is found locally in a restricted range. This butterfly is in the Nymphalidae family (the brush-footed butterflies). The adults feed on nectar from the flowers of milkweeds, thistles, red clover, and mountain mint. The caterpillars, like most fritillaries, feed only on violets, therefore, without the proper larval host plant, the species cannot continue to exist. In particular, regal fritillaries prefer the birdsfoot violet (*Viola pedata*) and prairie violet (*Viola pedatifida*). The eggs are laid in late summer and the caterpillars do a majority of their feeding in the spring. The adults emerge in early summer and may be seen through September. Only one generation appears in a year. This butterfly is characteristic of tallgrass prairies, but can also occur in wet meadows and marshes.

There are some common themes that have led to the loss of these species in Delaware. The loss of suitable habitat is certainly the most common and most profound cause. Others include lack of proper management of existing prairie and pineland habitats, the copious use of insecticides and herbicides, and the lack of habitat restoration in areas with the potential to be suitable habitat.

The most significant aspects to this story are the losses that most do not even notice. Butterflies pollinate flowers and fill important roles in the food chain. Violets and all other plants are vital sources of food and reproductive habitat for many animals, but especially insects. Many people enjoy watching and photographing butterflies and flowers, such as violets, also. Though the loss of this plant-animal relationship may not affect your everyday life in a tangible way, we have all been affected because a small, exquisite piece of Delaware's natural world is gone forever. We'll never again be able to revel in that butterfly's splendor, or gaze in awe of that plant's beauty, and we are only the poorer for it. 🌱

oooo Eric Zuelke, Editor

*Viola pedata* (birdsfoot violet)



© Virginia Kline

**LETTER FROM THE PRESIDENT***Continued from page 1*

outside in the ground and covered with wire mesh to protect from predation. Gathering and planting seeds of native plants ought to shorten winter's duration.

I want to thank everyone again that participated in our reforestation projects last fall. It was a huge success as we were able to plant more than 28,000 seeds (acorns and hickory nuts mostly) on almost 34 acres of fields! See a summary of this project in this newsletter. I can't wait for the spring to see the fruits (er seedlings) of our labors. And again we will be asking for your help in managing these sites. We will need to install tree tubes around the developing seedlings, transplant seedlings in cases where more than one seedling germinated at a flag, and weed invasive species that may out-compete our oaks and hickories.

Our 3<sup>rd</sup> annual native plant sale last November was also a tremendous success. We sold over 800 plants; an estimated 200 people came out for the sale. In the weeks after the sale several DNPS members were busy collecting and planting native plant seeds in cold frames at the nursery or at their homes. We concentrated on collecting seeds from species that we thought would be more desirable. For example, we collected and planted seeds of cardinal flower (*Lobelia cardinalis*), Turk's-cap lily (*Lilium superbum*), butterfly weed (*Asclepias tuberosus*), goldenrods (*Solidago* spp.), swamp rose-mallow (*Hibiscus moscheutos*), American lotus (*Nelumbo lutea*), American holly (*Ilex opaca*), inkberry (*Ilex glabra*), winged/smooth sumac (*Rhus copallinum*), swamp azalea (*Rhododendron periclymenoides*), mountain laurel (*Kalmia latifolia*), and sweet bay magnolia (*Magnolia virginiana*), to name just a few. We are excited about these plantings and are hoping for excellent germination rates and an even bigger and better sale next year.

We are now beginning to plan for our 6<sup>th</sup> annual meeting to be held in early May and would welcome your help in this effort. Please contact us immediately if you are interested in helping with this event. We still have not decided on a location for the meeting, field trips or speakers. So, if you have some ideas and want to help organize this affair, here's your chance.

Also, we are in the beginning stages of organizing some late winter and early spring field trips so please stay tuned for upcoming announcements.

Well, I believe this is my shortest letter to date, but I need to get back to work on cleaning and planting all those seeds I recently collected. 🌱

Best wishes for a wonderful and warm winter,

Keith Clancy



DNPS member Pat Groller planting nuts at Prime Hook Refuge

**NATURAL QUOTES**

"The sixth great extinction spasm of geologic time is upon us... Species are disappearing at an accelerating rate through human action, primarily habitat destruction, but also pollution, and the introduction of exotic species into residual natural environments. I have said that a fifth or more of the species of plants and animals could vanish or be doomed to early extinction by the year 2020 unless better efforts are made to save them."

E. O. Wilson, *The Diversity of Life*, 1992

**FEATURE ARTICLE****BOTANICAL COLLECTORS OF DELMARVA: ALBERT COMMONS**

In 2000, the seabeach amaranth (*Amaranthus pumilus*) was discovered at Delaware Seashore State Park in part by Delaware Natural Heritage Program botanist William McAvoy. This plant had been last collected in 1875 by Albert Commons.

On December 24, 1908, Albert Commons wrote to his nephews Franklin W. and Howard W. Commons: "Dear Nephews: your favor of 22<sup>nd</sup> came to hand a few hours after I had mailed you a letter of the above date. Have read the letter of Witmer Stone, curator of the Acad. Nat. Sci. Philadelphia enclosed, regarding the collection and think it would be right and proper to donate it to them, under the same conditions that others have been presented to them and will be satisfied with what you may do in the matter..." On February 27, 1909, Albert Commons wrote to Gilbert Cope of the Chester Co. Historical Society: "My nephews, Franklin W. and Howard W. Commons of Minneapolis, Minnesota. Have taken my collection of Delaware plants & donated them to the Academy of Natural Sciences at Philadelphia, where they now are." Francis Pennell (1943) called these collections the "most ample botanical collections ever assembled from Delaware." Robert Tatnall (1946) stated: "It gives evidence of care and discrimination on the part of the collector in the identification of his specimens, and of his keenness in detecting new or rare material in the field." At his death on July 11, 1919 of myocarditis at the age of 90 years, Albert Commons was also known as a mycologist, having collected 1300 species of fungi (now at the Carnegie Museum of Natural History, and the Academy) and 160 species of lichens (Harshberger 1899). Many duplicates of Commons' collections were sent out, notably to the Plant Pathology Herbarium of Cornell University, Herbarium Universitatis Florentinae, Gray Herbarium of Harvard University, Missouri Botanical Garden, New York Botanical Garden (639 sheets) and the Smithsonian Institution (Lanjouw and Stafleu 1954). His importance was such that W. Ashe (1898) named *Panicum commonsianum* after him.

Albert Commons was born January 23, 1829 as the son of Ann Phipps and John Commons at Doe Run, Chester Co., PA. Albert's siblings included Caroline E. Commons (July 4, 1831-?), and William Commons (May 20, 1834-?, father of Franklin W. and Howard W. Commons), but his father had apparently been previously married, because Albert was greatly influenced by an older brother, Franklin, of whom little is known. Albert wrote to Gilbert Cope on February 27, 1909:

*Continued on page 6*

**NATURAL COMMUNITY HIGHLIGHT****SERPENTINE BARRENS**

When we say a plant species has been “extirpated” in a given area, such as Delaware, we mean that all of the occurrences of that species have been destroyed, and that it is unlikely this plant will ever be seen again in the state unless it is reintroduced by humans. Taking this concept a step further, we can also talk of natural communities that have been extirpated. Much like rare species, communities that have been extirpated were typically rare to begin with, often because they occurred in unusual hydrologic or edaphic (soil) conditions, which were subsequently destroyed through human activity.

In Delaware, one such extirpated community is the serpentine barren. The name has nothing to do with snakes, but instead refers to a type of rock called serpentine, so-named apparently because its patterned greenish color is reminiscent of snake skin. The vegetation of this community derives from the chemical composition of the rock, which contains unusually high levels of toxic metals, particularly magnesium, chromium and nickel, and very low levels of calcium—an essential plant nutrient. These harsh conditions have led to a highly specialized community of plants adapted to the shallow, nutrient-poor soils. In addition to the poor soils, this community is also dependent upon regular disturbance, typically in the form of fire, to maintain its open structure. These “barrens” are open grasslands or sparse woodlands with scattered individuals of pitch pine (*Pinus rigida*), Virginia pine (*Pinus virginiana*), eastern red-cedar (*Juniperus virginiana*), blackjack oak (*Quercus marilandica*) and post oak (*Quercus stellata*) over a grassy herbaceous layer. The herb layer is generally dominated by little bluestem (*Schizachyrium scoparium*), but can be quite diverse, and often includes Indian grass (*Sorghastrum nutans*), starved witchgrass (*Dichanthelium depauperatum*), slim-leaf witchgrass (*Dichanthelium linearifolium*), Scribner’s witchgrass (*Dichanthelium oligosanthes*), sheathed dropseed (*Sporobolus vaginiflorus*), and green milkweed (*Asclepias viridiflora*). Many of the species characteristic of this community are rare in Delaware, including lyre-leaf rockcress (*Arabis lyrata*), mouse-ear chickweed (*Cerastium arvense* var. *villosum*), pale-spike lobelia (*Lobelia spicata*), Philadelphia panic grass (*Panicum philadelphicum*), Small’s ragwort (*Senecio anonymus*), and Michaux’s blue-eyed grass (*Sisyrinchium mucronatum*). There are also several serpentine species that are historical or extirpated in the state: whorled milkweed (*Asclepias verticillata*), Bicknell’s sedge (*Carex bicknellii*), annual fimbry (*Fimbristylis annua*), plains frostweed (*Helianthemum bicknellii*), rock sandwort (*Minuartia michauxii*), downy phlox (*Phlox pilosa* spp. *pilosa*) slender knotweed (*Polygonum tenue*), and fameflower (*Talinum teretifolium*).

The globally-rare serpentine communities of the mid-Atlantic are collectively referred to as the “state-line barrens”, because they are found in a narrow band generally following the Maryland-Pennsylvania state line. In Delaware, the only occurrences of serpentine bedrock are found in the Red Clay Creek valley. Unfortunately, the majority of this formation is now underneath Hoopes Reservoir. The portions of the serpentine outcrops that are not inundated have either been converted to manicured lawn, or allowed through absence of disturbance to succeed to closed canopy forest. The reason we have any knowledge of the rare plants that occurred on these barrens is the work done by botanists when they were still intact, such as

Edward Tatnall (1818-1898), Albert Commons (1828-1919), William Canby (1831-1904), and Robert Tatnall (1870-1957). Although this community is considered extirpated in Delaware, there is the potential to restore a portion of this habitat on some of the remaining serpentine, but it would require a significant commitment of resources and management effort to make it a reality. 🌿

oooo Peter Bowman, DE Natural Heritage Program Ecologist

**NATIVE PLANT HIGHLIGHT****TWO AMAZING DAYS IN THE LIFE OF ALBERT COMMONS**

All botanists’ dream of a day in the field where they discover a unique habitat that is just loaded with rare plants, or dream of a day where a rare plant is found at nearly every stop. Considering the current state of the environment, days like these are hard to come-by. Many botanists are fortunate enough to have such special days during their careers, and one botanist who did, was Albert Commons (1829–1919). Commons was a local botanist from the Centerville area of New Castle Co., Delaware, and was a very important figure in the history of Delaware botany and contributed much to our current knowledge of the flora of the state. Although Commons had many successful days in the field, there were two days that were particularly noteworthy, August 5, 1874 and September 10, 1875.

On August 5, 1874, Commons visited southwest and south central Sussex Co. in and around the towns of Laurel, Pepperbox, Little Hill, and Gumboro. He explored habitats he described as “sandy swamps,” “ponds,” “wet sand,” “pine barrens,” “bogs,” “wet places,” “dry sand,” and “dry woods.” On this day he collected 19 species, in addition to others, that are today rare in the state and are considered to be of conservation concern by the Delaware Natural Heritage Program (see table below). One species is known today in the state from only a single population (*Minuartia caroliniana*). Two species have not been reported in the state since Commons collected them on this day 130 years ago, *Lophiola aurea* and *Xerophyllum asphodeloides*. One species (*Rhynchospora knieskernii*) is today listed as threatened by the U.S. Fish and Wildlife Service, and two are considered today to be globally rare by The Nature Conservancy (*Eupatorium resinosum* and *Rhynchospora knieskernii*). The majority of the species Commons collected on this day are at or near their northern limits of natural distribution (12), and three are at or near their southern limits of natural distribution.

On September 10, 1875, Commons spent time in southeast Sussex Co. in and around the areas of Baltimore Hundred, which includes the town of Frankford, and the areas of Indian River and Cedar Neck. He explored habitats he described as “salt marshes,” “sea beach’s,” “ocean shores,” “wet places,” “low and sandy pine barrens,” “pond,” and “swamp.” On this day he collected 27 species, in addition to others, that are today rare in the state and are considered to be of conservation concern by the Delaware Natural Heritage Program (see table below). Two species are known today from only single populations in the state (*Amaranthus pumilus* and *Polygonum glaucum*). Five species have not been reported in the state since Commons collected them on this day 131 years ago (*Eupatorium resinosum*, *Gentiana autumnalis*, *Oclemea nemoralis*, *Rhynchospora knieskernii* and *Triglochin striata*).

Two species (*Amaranthus pumilus* and *Rhynchospora knieskernii*) are today listed as threatened by the U.S. Fish and Wildlife Service, and five are considered today to be globally rare by The Nature Conservancy (*Amaranthus pumilus*, *Eupatorium resinosum*, *Gentiana autumnalis*, *Polygonum glaucum* and *Rhynchospora knieskernii*). The majority of the species Commons collected on this day are at or near their northern limits of natural distribution (17), and three are at or near their southern limits of natural distribution.

Any botanist would be envious of such days in the field, but any botanist would also be very impressed with the botanical field skills of Albert Commons.

I would like to acknowledge Dr. Arthur Tucker and Dr. Norman Dill for the following publication which reconstructed Albert Commons' field activities for the days discussed: Tucker, A.O., and N.H. Dill. 1993. The collections of Albert Commons on Delmarva, 1861-1901, with attention to August 4-5, 1874 and September 9-10, 1875. *Bartonia* No. 57: 9-15.

## August 5, 1874

### Scientific Name

*Cyperus compressus*  
*Cyperus dentatus*  
*Eleocharis equisetoides*  
*Eleocharis melanocarpa*  
*Eupatorium resinosum*  
*Hypericum denticulatum*  
*Lophiola aurea*  
*Minuartia caroliniana*  
*Najas gracillima*  
*Paronychia fastigiata*  
*Pityopsis graminifolia*  
*Quercus ilicifolia*  
*Rhynchosia tomentosa*  
*Rhynchospora knieskernii*  
*Rhynchospora torreyana*  
*Schoenoplectus etuberculatus*  
*Smilax pseudochina*  
*Viola pedata*  
*Xerophyllum asphodeloides*

### Common Name

poorland flatsedge  
toothed sedge  
horse-tail spike-rush  
black-fruited spike-rush  
pine barren boneset  
coppery St. John's-wort  
golden crest  
pine barren sandwort  
thread-like naiad  
cluster-stemmed nail-wort  
grassleaf golden aster  
scrub oak  
hairy snoutbean  
Knieskern's beak-rush  
Torrey's beak-rush  
Canby's bulrush  
long-stalk greenbrier  
bird's-foot violet  
eastern turkeybeard

## September 10, 1875

### Scientific Name

*Agalinis maritima*  
*Amaranthus pumilus*  
*Aristida lanosa*  
*Asclepias lanceolata*  
*Centella erecta*  
*Dichanthelium aciculare*  
*Eriocaulon decangulare*  
*Eryngium aquaticum*  
*Eupatorium resinosum*  
*Gentiana autumnalis*  
*Lachnanthes caroliniana*  
*Myriophyllum pinnatum*  
*Oclemena nemoralis*  
*Paspalum dissectum*  
*Pityopsis graminifolia*  
*Polygonum glaucum*  
*Polygonum ramosissimum*  
*Prenanthes autumnalis*  
*Rhynchospora knieskernii*  
*Rhynchospora scirpoides*

### Common Name

saltmarsh false-foxtail  
seabeach amaranth  
woolly three-awn  
smooth orange milkweed  
erect coinleaf  
needle-leaf witchgrass  
ten-angle pipewort  
marsh rattlesnake master  
pine barren boneset  
pine barren gentian  
Carolina redroot  
cutleaf water-milfoil  
bog aster  
Walter's paspalum  
grassleaf golden aster  
seabeach knotweed  
bushy knotweed  
slender rattlesnake-root  
Knieskern's beak-rush  
long-beaked bald-rush

*Salicornia bigelovii*  
*Scleria muehlenbergii*  
*Scleria pauciflora*  
*Spiranthes tuberosa*  
*Symphotrichum concolor*  
*Triglochin striata*  
*Utricularia inflata*

dwarf glasswort  
Muhlenberg's nutrush  
few-flowered nutrush  
little ladies'-tresses  
eastern silvery aster  
three-ribbed arrowgrass  
swollen bladderwort

Nomenclature for plant names follows: McAvoy, W.A., and K.A. Bennett. 2001. The flora of Delaware, an annotated checklist. Delaware Dept. of Natural Resources and Environmental Control, Dover, Delaware. 🌿

oooo William McAvoy, DNPS Vice-President

## THOUGHTS FROM THE EDGE OF THE GARDEN A REMEMBRANCE OF SOME HISTORICAL AND EXTIRPATED PLANTS OF DELAWARE



© Thomas G. Barnes

*Platanthera grandiflora* (large purple-fringe orchis)

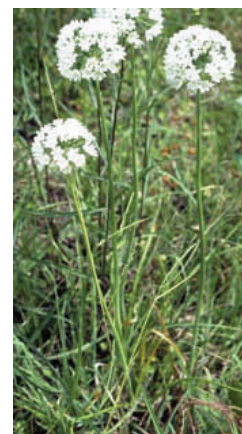


© Jim Stasz



© Jim Stasz

*Zigadenus leimanthoides* (death-camus)



© Mrs. W.D. Bradford

*Xerophyllum asphodeloides* (eastern turkeybeard)



© Larry Allain

*Spiranthes tuberosa* (little ladies'-tresses)



© Keith Clancy

*Lophiola aurea* (golden crest)

**FEATURE ARTICLE**

Continued from page 3

"also a tin vasculum or collecting box, made for, and used by my brother Franklin Commons while a student under Jonathan Gause at the Unionville Academy in 1839. was used for carrying Botanical & mineral specimens collected in excursions made in the vicinity of the School and later by myself (using his copy of Darlington's Flora Cestrica) while on the farm near Centerville, Delaware 1842-1878." This vasculum may be the one at the Academy of Natural Sciences in Philadelphia, but the Claude E. Phillips Herbarium recently purchased a similar vasculum from this period, originally from a flea market in Chester Co., and this was most likely made by the same tinsmith.

At Franklin's demise in 1842, Albert and Franklin had collected about 500 specimens. Albert's first botanical trip in Delaware appears to have been in 1842, soon after he moved to the Commons farm near Centerville, New Castle Co., Delaware.

We have located 4262 specimens of Albert Commons (Tucker and Dill 1993) and have them on FileMaker Pro for the Macintosh. These specimens from Delmarva, dated from 1861 to 1901, represent a significant portion (78%) of the 2259 vascular taxa listed by Tatnall (1946). Besides the seabeach amaranth, his collections of *Rhynchospora knieskornii* and *Eupatorium resinosum* in 1874 and 1875 are of concern because of their federal endangered or threatened status.

I have been collecting and mounting photographs of botanists who have contributed specimens or works to the Claude E. Phillips Herbarium at Delaware State University in Dover. Albert Commons had eluded me for the past 20 years. I even wrote to every Commons in the Pennsylvania phone book to no avail! Then, I happened to run across a letter from Albert to Gilbert Cope dated June 16, 1896: "will send a photograph as soon as I get some taken." On that note, I wrote to the Chester Co. Historical Society and voilà, Pamela Powell sent me scans of a daguerreotype taken ca. 1850 and a cabinet card by J. Paul Brown taken 1897. These are now being framed for display in the Claude E. Phillips Herbarium. Please contact the Educator, Dr. Susan E. Yost (302.857.6452) or the Curator, Dr. Robert F. C. Naczi (302.857.6450) to see these wonderful photos and those of other naturalists who have contributed specimens and/or works from the mid-atlantic region.

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oooo Dr. Arthur O. Tucker, Delaware State University

**RESOURCES AND REVIEWS****DELAWARE TREES BY WILLIAM TABER**

This book is the definitive work on trees in Delaware. The author was the first state's first state forester and worked in the Forest Service for forty years. *Delaware Trees* was originally published in 1939, and in 1995, it was reprinted for the third time with minor revisions. Bear in mind that some of the scientific and common names have changed through the years. The book's most important feature is Taber's comments pertaining to the range and distribution of both native and non-native tree species in our state. In this section, the author describes how common a species is and in which counties it is found. There is also a list of historic Delaware trees. The book is arranged by family and has extensive illustrations and photographs. Black and white photos of tree trunks, leaves, and acorns help in identification. Illustrations include the cross section of hickory nuts and the seed cone of the yellow poplar. In addition to helping identify Delaware trees, this book would also be useful for anyone using trees in their landscape, or an individual looking for historical information on Delaware trees.

*Delaware Trees* is available at the Delaware Dept. of Agriculture, 698-4547 for \$8 plus shipping. Thanks to Charles Newlon and Timothy Kaden (who is responsible for the Tabor reprint) for helping with this review. 🌿

oooo Gwendolyn Elliott, DNPS Member

**EVENT HIGHLIGHTS****3RD ANNUAL NATIVE PLANT SALE, SATURDAY, NOVEMBER 1**

The plant sale this year was a huge success; our best yet! We did \$1741.00 in sales, sold 817 plants (from an inventory of 1562 plants of 64 species), and had 120 customers.

Below is a table of data to show how our plant sales have grown from year to year for those of you who get a kick out of tables, and data analysis, and that kinda stuff.

| # of \ Year              | 2001 | 2002 | 2003 |
|--------------------------|------|------|------|
| <b>Species available</b> | 42   | 56   | 64   |
| <b>Plants available</b>  | 203  | 550  | 1562 |
| <b>Plants sold</b>       | 207  | 512  | 817  |
| <b>Customers</b>         | 38   | 107  | 120  |
| <b>Booklets sold</b>     | 5    | 11   | 9    |
| <b>Checklists sold</b>   | 0    | 3    | 1    |

**DE ESTUARY PROGRAM REFORESTATION PROJECT**

We started the seeding on 2 October 2003 and concluded on 16 November 2003. A total of 28,208 nuts were planted on approximately 34 acres at 3 sites (Blackbird Creek, Cedar Creek, and Prime Hook National Wildlife Refuge). There were a nearly equal number of volunteer hours as paid hours: 42 volunteers worked a total of 154.75 hours, while two paid project leaders worked a total of 180 hours. The species planted included the following: hickory (*Carya alba* & *C. glabra*), dogwood (*Cornus florida*), black walnut (*Juglans nigra*), white oak (*Quercus alba*), scarlet oak (*Q. coccinea*), southern red oak (*Q. falcata*), water oak (*Q. nigra*), willow oak (*Q. phellos*), chestnut oak (*Q. prinus*), northern red oak (*Q. rubra*), and black oak (*Q. velutina*). Thanks to all who helped out! 🌿

## ***UPCOMING EVENTS***

**FEBRUARY, MARCH, AND APRIL 2004** – ADKINS ARBORETUM HAS A SLEW OF VERY INTERESTING PROGRAMS AND EVENTS GOING THIS WINTER AND EARLY SPRING (TOO MANY TO LIST INDIVIDUALLY). FOR MORE DETAILS CONTACT THE ARBORETUM AT 410.634.2847, OR ON THE WEB AT [WWW.ADKINSARBORETUM.ORG](http://WWW.ADKINSARBORETUM.ORG).

**SATURDAY, 07 FEBRUARY 2004** – VOLUNTEER TRAIL DAY. FROM 9 AM TO 12 NOON AT CAPE HENLOPEN STATE PARK. JOIN THE FRIENDS OF CAPE HENLOPEN AS THEY WORK TO MAINTAIN THE PARK'S TRAILS, OR TAKE ON OTHER LIGHT MAINTENANCE PROJECTS. FOR MORE DETAILS CONTACT THE SEASIDE NATURE CENTER AT 302.645.6852 OR ON THE WEB AT [WWW.DESTATEPARKS.COM](http://WWW.DESTATEPARKS.COM).

**SATURDAY, 13 MARCH 2004** – COPELAND NATIVE PLANT GARDENING SEMINAR, 8:30 AM TO 4 PM, A SEMINAR CO-SPONSORED BY THE DELAWARE NATURE SOCIETY (DNS) AND MT. CUBA. COST FOR THIS SEMINAR IS \$75 (\$60 FOR DNS MEMBERS). CATERED LUNCH INCLUDED. FOR MORE DETAILS CONTACT DNS AT 302.239.2334 OR ON THE WEB AT [WWW.DELAWARENATURESOCIETY.ORG](http://WWW.DELAWARENATURESOCIETY.ORG).

**MAY 2004** – DE NATIVE PLANT SOCIETY ANNUAL MEETING. WE ARE CURRENTLY IN THE PLANNING PHASE OF THIS YEARS ANNUAL MEETING. MORE DETAILS TO BE ANNOUNCED LATER. THIS YEAR WE HAVE THREE OFFICERS WHOSE TERMS ARE EXPIRING. THEREFORE, WE ARE LOOKING FOR MEMBERS THAT MIGHT BE INTERESTED IN SERVING AS PRESIDENT, VICE-PRESIDENT, OR SECRETARY. IF YOU ARE INTERESTED IN TAKING A MORE ACTIVE ROLE IN THE SOCIETY AND WOULD BE INTERESTED IN SERVING A TWO-YEAR TERM, OR WOULD LIKE INFORMATION ABOUT THE DUTIES OF EACH OFFICE PLEASE CONTACT US. WE WILL BE HAVING ELECTIONS AT THE ANNUAL MEETING IN MAY. FOR MORE DETAILS CONTACT DNPS AT [dnps@delawarenativeplants.org](mailto:dnps@delawarenativeplants.org), 302.674.5187, OR ON THE WEB AT [WWW.DELAWARENATIVEPLANTS.ORG](http://WWW.DELAWARENATIVEPLANTS.ORG).

**DNPS BI-MONTHLY MEETINGS FOR 2004** – ARE CURRENTLY SCHEDULED THE 3RD TUESDAY OF EVERY OTHER MONTH. OUR NEXT MEETINGS WILL BE: 20 JANUARY 2004, 16 MARCH, 20 JULY, 21 SEPTEMBER, 16 NOVEMBER. MEETINGS WILL TAKE PLACE (UNLESS OTHERWISE NOTIFIED) AT 7 PM AT THE ST. JONES RESERVE, KITTS HUMMOCK RD. ABOUT 3/4 MILE EAST OF THE RT. 9/113/KITTS HUMMOCK ROAD INTERCHANGE JUST AT THE SOUTHERN EDGE OF DOVER AIR FORCE BASE. WE PLAN TO HAVE GUEST SPEAKERS AT EACH MEETING (SPEAKERS AND THEIR TOPICS WILL BE ANNOUNCED AT LATER DATES). WE WILL BE HAVING OUR ANNUAL MEETING IN MAY, DETAILS TO BE ANNOUNCED AT A LATER DATE. CHECK OUR WEBSITE FOR ADDITIONAL DETAILS OR EMAIL US AT [DNPS@DELAWARENATIVEPLANTS.ORG](mailto: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: \_\_\_\_\_

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

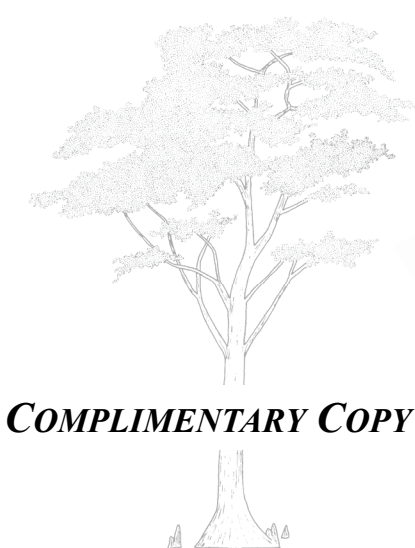
Membership benefits include:

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

**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**



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