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 undertaking reforestation projects at Prime Hook National Wildlife Refuge, at Blackbird Creek in New Castle County and Cedar Creek in Sussex County where we have installed tree tubes around newly sprouted seedlings. Help is also needed at our native plant nursery at the St. Jones Reserve with the monitoring and watering of plants along with many other nursery activities.

For more information, E-mail us at dnps@delawarenativeplants.org. Or visit our website at 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 organizations.

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.

A FROSTY WHITE WELCOME TO OUR NEWEST MEMBERS

October through December
Robert Coxe
Nancy Davis
Mike & Laura Kelly
Richard & Marilynn Okeson
Patricia Roy
Robert, Virginia, & Nathan Sanders
Anne & Guy Veach
Carla Young
**Thoughts From The Edge Of The Garden**

**Errors and Apologies**

We wanted to apologize for the scheduling mix-up we had for the November bi-monthly meeting. A barrage of emails went around on the day before, and the day of the meeting. The meeting was accidentally scheduled for the wrong day, then some miscommunications happened, then the meeting was rescheduled to another day, and things got confusing quickly! We hope we didn’t inconvenience anyone and we will make sure that this doesn’t happen again.

At our plant sale in November, there were some plants that were mislabeled:

- red cedar was mislabeled as Juniperus communis (the plants were actually Juniperus virginiana)

- flattened pipewort were mislabeled as Salvia lyrata (the plants were actually Eriocaulon compressum), but the lyre-leaf sage were correctly labeled as Salvia lyrata

If you happened to have purchased any of these plants, we’re sorry for the mistakes, and don’t forget to change your labels.

**Nursery Update**

The nursery is slumbering peacefully in its winter hibernation right now. All the plants are under the frost blankets, the overwintering seeds are under burlap covers, and the greenhouse is empty (and fortunately still intact despite the recent windy weather). We will be coaxing them all back to life in late March or early April and there will be plenty of volunteer opportunities if anyone is interested, so stay tuned.

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**Learning and Research Opportunities for Students**

Adkins Arboretum offers summer internships in environmental science and horticulture. Interns work with staff on garden maintenance, plant propagation, invasive plant control, research projects, trail maintenance and special events, and they can do their own independent projects. This is a great opportunity to learn about native plant propagation and conservation and to learn about the operation of a small non-profit. Field trips to other local parks and botanic gardens will be offered.

Adkins Arboretum is also offering awards of up to $2000 for research projects contributing to the understanding, conservation, or restoration of the coastal plain’s native flora, including connections with wildlife. Priority will be given to research within the Delmarva Peninsula, but research in botany, ecology, forestry, horticulture, landscape architecture, geology or geography will be considered. Advanced undergraduate, graduate and postdoctoral applicants will be considered.

Applications for internships and stipends are due in March. For more information and application instructions, please visit www.adkinsarboretum.org under Resources and Research or contact Sylvan Kaufman, skaufman@adkinsarboretum.org, 410.643.2847 ext 24.

**Native Plant Booklet**

We are in the process of creating a second edition of our booklet: “Delaware Native Plants for Landscaping and Restoration.” We have added quite a few new species to it, and added a whole new category of plants. We are currently seeking funding to help pay for it. Stay tuned for more details later.

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**Resources & Reviews**

**Noah’s Garden: Restoring the Ecology of Our Own Backyards**

Authored by Sara Stein. This book deals with the unwitting destruction of the suburban environment caused by traditional landscaping practices. The author uses her own property and gardens as the focus for ecological landscaping and her fight with invasive exotics while trying to reclaim space for native meadows and woodlands.
Plants Noah’s Garden: Further Adventures in Backyard Ecology

Authoring by Sara Stein. In this book, the author travels beyond her own garden to report on the many and diverse ways in which people in all parts of the country are working to undo the damage and help restore their backyard ecosystems. The book is both inspirational and practical. Of particular interest is chapter 4 called “Ellen’s Lot” devoted to restoring a typical new suburban lot in New Jersey into the kind of natural landscape that existed before the bulldozers of suburban sprawl erased everything in their path. May be found in the bookstore at the Brandywine River Museum.

Feature Article

THE SOIL OF SOIL

(Editor’s note: This is a condensed version of an article, reprinted with permission, from the Sep/Oct 1999 issue of Countryside Magazine taken from the 1909 book Elements of Agriculture by G. F. Warren).

Most people see soil as “dirt.” They almost invariably think of it as a dead thing. But in reality, soil is teeming with life, and is full of activities of the most complex and interesting kinds.

The almost universal idea is that soil consists of small particles of rock that have been ground down by the process of weathering. But no crop could grow on a soil composed entirely of rock particles. An agricultural soil also needs water: air, decaying organic matter, and living organisms in order to be productive. (Organic matter is defined as any material that is, or once was, an organism or living thing, such as wood, straw, manure, etc.).

Rock particles

Rock particles are 65 to 95 percent of the weight in most soils. (One exception is muck soils, where nearly all the solid matter is made up of organic materials. These are some of the most fertile soils on the planet.) Organic matter usually constitutes 2 to 5 percent. Most of the remaining weight is water.

The finest soil particles are called clay, the next smallest silt. The larger particles are different grades of sand and gravel.

How soils are named

The soils that contain a large proportion of the finest particles are called clay. At the other extreme we have sands and gravels. Soils that are intermediate in texture are called loam. Those with a large proportion of silt particles and not too much clay are called silt-loams.

Then these words are joined together to describe intermediate types. There are gravelly loams, sandy loams, fine sandy loams, clay loams, etc.

Soils are also named in many other ways. Glacial soils are those formed as a result of glaciation. Arid soils are those that do not receive enough rain to produce regular crops without irrigation. Humid soils are those that receive sufficient rainfall to produce crops.

The importance of the size of soil particles

The size of the soil particles influences the water-holding power of the soil, the amount of food that can be dissolved for plant use, the ease of movement of water and air, the growth of organisms in the soil, and the crop-producing power.

The rock particles of the soil can hold water on their surfaces only. Therefore the water-holding power of the soil increases when the surface area of the particles is decreased.

The finest soil particles are extremely small - less than four hundred-thousandths of an inch in diameter. Such fine particles do not always act as individuals in holding water: some of the particles usually stick together.

The water capacity of a soil is the amount of water it will hold when all the free water is allowed to drain out. Some clay soils will retain about 40 percent of water. A cubic foot of clay weighs about 80 pounds and could, therefore, hold about 32 pounds of water. Sandy soils might have a water capacity as low as five percent.

Air

About half the volume of a dry soil is air; that is, a cubic foot of such soil contains about half a cubic foot of air. The small particles of which a clay soil is composed do not pack so closely as do the larger sand particles, because they are lighter. Therefore, there is more pore space in clay than in sand. But the spaces in a sandy soil are larger, so the air moves more freely, making such a soil better aerated.

Temperature

The temperature of a soil is influenced by its color, topography, humus content, and several other factors. But the chief factor is water capacity.

It requires about 20 heat units to raise the temperature of 100 pounds of dry soil 1 degree F. To raise the temperature of the same weight of water 1 degree requires 100 heat units. This is why gardeners often speak of “wet” and “dry” soils in the same breath.

But the effect of water is most striking when it evaporates. To evaporate 100 pounds of water requires 966.6 heat units. This explains why wet soils are always cold soils. Clay soils are cold chiefly because of the large amount of water that evaporates from them.

Few crops begin growth until the soil is 45-50 degrees...

Sandy and other well-drained soils are not only easier to till, but the number of days on which they can be worked is much greater. They can be tilled earlier in the spring, and more quickly after rains.

Flocculation

When a silt or clay soil is in good condition, many of the particles are united into compound particles. Such a soil is “flocculated.” Good management of such a soil consists very largely in maintaining this granulated condition.

The relative fineness of the soil is called its texture,

Continued on page 6
**Gardening With Native Plants**  
**American Holly (Ilex opaca)**

**Natural History**
It’s mid-winter and a stroll through the low-forested woodlands of Delaware will most certainly reveal the bright shiny leaves and red berries of the American Holly. The only North American holly to reach tree size, the American Holly can be found in moist mixed hardwood forests from Massachusetts south to Florida and west to south-central Texas. The evergreen nature and persistent red fruits make the American Holly a valuable resource for wildlife. Its thick lush foliage makes it a favorite place for nesting birds and a refuge for birds and small mammals throughout the harsh winter season. Because of their relatively low fat content the bright red berries are not readily consumed and persist well into the winter months contributing the year round beauty of this popular tree. But as winter takes its toll on more favored fruits, the berries of American Holly become a critical mainstay for numerous small mammals and birds that rely on them. Over 20 species of birds including bluebirds, robins, thrushes, mockingbirds, catbirds, cedar waxwings, sparrows, grouse, dove and woodpeckers feast on American Holly berries throughout the late winter months. Mammals such as raccoons and mice also consume the fruits and white tailed deer often browse on the young tender new growth before the prickly leaves have time to stiffen. In May and June, the numerous tiny flowers of American Holly are a boon to numerous bees, bumblebees, small butterflies and other insects that seek them out for their rich nectar and pollen. The state tree of Delaware, the American Holly makes a beautiful specimen in any landscape, typically reaching heights of 40 to 50 feet. In deep woods when competing for light, the American holly may occasionally reach heights approaching 100 feet.

**Where to Grow**
*Ilex opaca* or American Holly makes an outstanding addition to any landscape. Its popularity is evident in the hundreds of cultivars registered for this spectacular tree. Though the American Holly is primarily a tree of moist woodlands, it will thrive under most soil and light conditions. It can be planted in a forest understory, at the edge of a woodland and along stream banks. It can be regularly trimmed to maintain a lush, impenetrable hedge. For the best fruiting, thickest foliage and most attractive shape and display, grow your American Holly in an open landscape with ample light. Since the fruits are only produced on the female trees, both male and female specimens are required to produce fruit. One male tree is suitable for pollinating up to 3 female trees. One common problem of the American Holly is its tendency for suckering. An adult tree will often produce offshoots that may need to be pruned to achieve the desired affect.

**Propagation and Care**
Propagation of the American Holly can either be accomplished from seed or by taking cuttings. Holly can be produced from semi-hardwood cuttings taken in late summer/early fall. Cuttings should be taken from the current seasons ripened wood and placed in a peat moss, soil and sand mixture. Keep the soil evenly moist and grow in a humid environment. Growing American Hollies from seed can be successfully accomplished, but the seeds need an extended stratification period to break dormancy. Collect berries in late fall and macerate to separate the seeds. Plant the seeds in a mix of peat moss, sand and soil 1/4 inch deep and put in a cold frame outside in a shady place. Keep the mixture evenly moist. Seeds will germinate in 2 to 3 years. After seed germinate and develop several leaves, transplant into individual containers and continue growing in the cold frame for one year before setting out in the land.

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**Resources & Reviews**

*Butterfly Gardening: Creating Summer Magic in Your Garden*

Authored by the Xerces Society Staff. Sierra Club Books. This book gives you comprehensive advice on starting and appreciating a butterfly garden with beautiful photos, and good design advice. The Xerces Society was established in 1971 as a non-profit organization dedicated to the prevention of human-caused extinction of rare invertebrate populations and their habitats. The Society's efforts include the Monarch Project and publication of Wings, a magazine devoted to the natural history and conservation of butterflies and other invertebrates.
Resources & Reviews

Last Child in the Woods: Saving Our Children from Nature-Deficit Disorder

Authored by Richard Louv. Today's kids are increasingly disconnected from the natural world, and in this book, Louv talks with parents, children, teachers, scientists, religious leaders, child-development researchers, and environmentalists who recognize the threat and offer solutions. Louv shows us an alternative future, one in which parents help their kids experience the natural world more deeply — and find the joy of family connectedness in the process.

scape. American Hollies form an extensive root system and are very difficult to transplant once established, therefore, your plants should only come from your own plants or nursery grown stock.

LORE
Hardly anyone does not know the value of American Holly for its use in holiday decorations. Delaware and particularly the town of Milton was once a thriving hub for harvesting and shipping holly cuttings throughout the east. Native Americans dried the berries of the American Holly to be used in the manufacture of jewelry and as a valued trade item. The fruits of the American Holly are toxic to humans and were once used to induce vomiting and expel worms. The wood of American Holly is tough and hard but not strong. It is one of the whitest woods known, with white sapwood and ivory-white heartwood. The wood is used for veneer and to a limited extent as pulpwod and lumber. Greatest use of the wood is for specialty items such as fancy cabinet inlays, handles, novelties and carvings.

Bob Edelen, DNPS Member

Event Highlight

5th Annual Native Plant Sale, Saturday, November 5

The plant sale this year was a huge success; our best yet! We had excellent weather and some terrific food. I want to thank all of you who brought the spiced apple cider, doughnuts, and banana bread.

We did $2344.00 in sales, sold 976 plants (from an inventory of 2000 plants of 77 species), and had 125 customers. That’s more money than we’ve ever made, and more species than we’ve ever had! Our record inventory would not have been possible without the generous donations of plants and effort from two regional nurseries, and from all our volunteers. Thanks! Your work is greatly appreciated!

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.

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Photos by DNPS member Bob Edelen
just as the word is used when speaking of the texture of cloth. If the soil is composed of very small particles that are flocculated, it can still be of a coarse texture.

Structure refers to the arrangement of soil particles. If small particles are united, it is possible to have a soil of fine texture and coarse structure.

**Soil water**

Soil water is very different from rain water. It contains all the plant foods in solution. The solution is very dilute, but plants use a large amount of it.

Water also evaporates within the soil, into the soil air. There is a constant movement of this air in and out of the soil, and this aids in drying a soil. If there is not an abundance of rainfall, it is desirable to stop this movement of water to the surface where it evaporates. Any loose mulch, like straw, on the surface of the soil will accomplish this purpose.

**Amount of water**

Optimum water content is 50 to 60 percent of the soil’s capacity... The most serious result of too much water in the soil is the exclusion of air, which is essential for plant growth and for the activities of soil organisms. It also prevents roots from growing deeply into the soil, makes the soil cold...

One of the first effects of too-wet soil is yellowing of leaves. This is due to the lack of nitrogen. Not only does the fixation of nitrogen cease when air is excluded from the soil, but under these conditions the organisms that break down nitrogen compounds are very active, so that the nitrogen that was fixed previously is being lost.

**Organic matter**

All productive soils contain decaying roots, leaves and animal life. This partly decayed organic matter is called humus. It is humus that gives soils their dark color.

Humus...increases the water-holding power of soils..... It loosens heavy soil and promotes aeration.... It furnishes food for bacteria... These, acting on the humus, change nitrogen to nitric acid so that it is ready for plant food.

Another extremely important function of humus is that it encourages the growth of bacteria that fix free nitrogen from the soil air, making it available as plant food.

...If a soil is saturated with water, the oxidation practically stops and organic matter accumulates. This is the way that peat and muck are formed...

**Life in the soil**

As we have seen, soil is not a dead thing. It is much more than a collection of rock particles. It is teeming with life.

Earthworms serve a useful purpose in the soil by helping to break down the organic matter. They also do much good by making the soil porous. A soil that is full of earthworms is nearly always fertile.

The molds help in breaking down the organic matter, particularly the woody matter. But the most important forms of life in the soil are the microscopic organisms, yeasts and bacteria.

**Soil bacteria**

...bacteria are present in all soils, ranging from less than 28,000,000 per ounce of soil (and far fewer than that in many soils today) to many times that number. In fertile soils like gardens there are many billions per ounce. There is usually a relationship between the number and kinds of soil bacteria and fertility. The different chemical changes produced by soil bacteria are quite numerous...

**Materials used as fertilizers**

Naturally fertile soils were made that way over thousands, and sometimes tens of thousands of years, by a combination of the basic rock, plant growth and the return to the Earth of the plants, as well as the animals that fed on them, and their waste products, all worked upon by the activity of soil biology.

Barnyard manure and wood ashes are among the oldest fertilizers used by humans to maintain or restore natural fertility. The Indians taught European settlers in America how to grow corn and use fish as fertilizer.

**Nitrogen**

All nitrogen comes from the air. There is no nitrogen in stone. Nearly four-fifths of the air is nitrogen... No plants except legumes are able to use atmospheric nitrogen. Nitrogen from the air can be "fixed" by bacteria on legumes.

Note that the legumes themselves do not fix nitrogen. This is done by the nitrogen-fixing bacteria that live in the root nodules of the plants. If the right kind of bacteria are not in the soil, a legume cannot produce nitrogen, for itself or for subsequent crops.

Grasses don't have the power to obtain nitrogen from the air, but when land is left in sod there is usually a considerable gain in nitrogen... This is partly due to the humus added by the decaying roots... Probably the humus has much to do with the nitrogen fixation.

**Manure management**

There are other organisms in the soil which accomplish the opposite results. They act on nitrogen compounds and break them up so that the nitrogen escapes into the air as free nitrogen. This is called denitrification. Composting manure is the best way to retain the nitrogen in it.

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**Resources & Reviews**

**Greenhouse Gardener's Companion: Growing Food and Flowers in Your Greenhouse or Sunspace**

Authored by Shane Smith, and Marjorie C. Leggitt (Editor). An environmentally friendly sourcebook that is actually two books in one, providing everything the gardener needs to know about setting up a healthy growing environment within a sunspace, plus a complete guide to growing flowers, vegetables and herbs in the greenhouse. Veteran greenhouse gardener Shane Smith is the author of The Bountiful Solar Greenhouse. Two color: line illustrations.
Upcoming Events

Saturdays, 7 January, 21 January, 18 February from 9 AM - 12 Noon, and Saturday 4 February 2006 from 1 PM to 4 PM—Get outdoors this winter with the Delaware Division of Fish and Wildlife “Restoration Saturdays.” A unique “rich woods” pocket near Smyrna hosts plants that are typical in the Piedmont region but rare to the Coastal Plain such as Canada Lilly, Waxleaf Meadow Rue, Wild Columbine and Bloodroot. In order to give the wildflowers more room to grow and thrive, volunteers will work with the Delaware Natural Heritage Program to hand-remove invasive wineberry. Once enough is removed, efforts will focus on adding stepping stones and an interpretive trail! This will be an exciting, on-going project for volunteers of all ages. Meet at the Woodland Beach Boat Launch. Contact Annie Jacobs at 302.653.2880 or annie.jacobs@state.de.us.

Thursday, 6 February 2006—6th Annual Land Ethics Symposium – “Creative Approaches for Ecological Landscaping” at the Bowman’s Hill Wildflower Preserve near New Hope, PA. Go to www.bhwp.org for more information. Sessions include “Successful Native Groundcovers” and “Native Plants for Difficult Sites.”

Saturday, 25 February 2006—Winter Lecture “Native Plants on Display, The Fern Valley Native Plant Collection.” The Eastern Shore Chapter of the Maryland Native Plant Society is sponsoring a lecture by Joan Feely, Curator of the Native Plant Collection at the U.S. National Arboretum, at 2 PM at the Talbot Historical Society Auditorium in Easton (25 South Harrison Street). Join us on this winter day to hear about the native plant garden at the National Arboretum. Fern Valley is a naturalistic landscape that includes five acres of woodland, two acres of meadow, and a spectacular hedgerow-like planting straight out of the coastal plain of the deep south. Her presentation will review a year in the garden, detailing the interesting and beautiful native plants that flourish in this remarkable urban oasis.

10-11 March 2006—Delaware Nature Society’s “Native Plant Symposium” will be held at the Ashland Nature Center. For more information call Helen Fischel at 302.239.2443 ext. 114 or on the web at www.delawarenature.org.

Saturday, 11 March 2006—Copeland Native Plant Seminar from 9 AM to 4 PM at the Ashland Nature Center, Hockessin, DE. For more information, call 302.239.2334 or on the web at www.delawarenature.org.

6-26 April 2006—Delaware Cooperative Extension Ornamentals Short Course Series 2006. Ecological Landscape Series at the New Castle County Extension Office in Newark. $5.00 each session or all four sessions for $15.00.
- Horticultural Ecosystems – 6 April from 7 to 9 PM Landscaping from an ecological perspective.
- Ecosystem Diversity from an Animal Perspective – 13 April from 7 to 9 PM Diversifying the landscape to promote species diversity and aesthetic appeal.
- Ecosystem Diversity from a Plant Perspective – 20 April from 7 to 9 PM Invasive plant control and reestablishing desirable species.
- Managing Water in the Landscape: Wetland Creation and Rain Gardens – 26 April from 7 to 9 PM Stormwater management, restoration, wetland creation and rain garden technology.

DNPS Bi-monthly Meetings for 2006—are currently scheduled for 17 January, 21 March, 6 May (annual meeting), 18 July, 19 September, 4 November (annual plant sale). All meetings are on the third Tuesday of every other month at the St. Jones Reserve at 7 PM, unless otherwise noted.
# Membership Application

## Delware Native Plant Society

### Member Information

Name: 

Business Name or Organization: 

Address: 

City and Zip Code: 

Telephone (home/work): 

E-mail address: 

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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

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**Delaware Native Plant Society**
P.O. Box 369
Dover, Delaware 19903

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Complimentary Copy