

MARILANDICA

The Maryland Native Plant Society Quarterly

VOL. 7, NO. 3

Summer/Fall 1999

THIS ISSUE:

PLANT NUTRIENTS,
FIELD BOTANY UPDATES,
SEA BEACH AMARANTH,
AMERICAN LOTUS,
INVASIVE EXOTIC PLANTS



The Maryland Native Plant Society

(MNPS) is a nonprofit organization that uses education, research, and community service to increase the awareness and appreciation of native plants and their habitats, leading to their conservation and restoration. Membership is open to all who are interested in Maryland's native plants and their habitats, preserving Maryland's natural heritage, increasing their knowledge about native plants, and helping to further the Society's mission.

MNPS sponsors monthly meetings, workshops, field trips, and a fall conference.

Roderick Simmons-President

Louis Aronica-Vice President

Karyn Molines-Vice President

Samuel Jones-Secretary

Joseph Metzger, Jr.-Treasurer

LETTER FROM THE PRESIDENT

Dear Members,

As you have likely noticed, the name of the newsletter has changed from *Native News* to *Marilandica*. The Newsletter Committee and the Board decided to use a botanical name that pertains to Maryland and one that better depicts MNPS as a botanical organization. Items included in the announcements section of the newsletter are recorded as business of the Society since the newsletter also functions as the Society's journal. Upcoming events and programs are advertised with the monthly mailings and at our website, thanks to Joe Metzger and Nancy Adamson.

On the educational front, MNPS and other native plant societies need to be doing more to help prevent the spread of ornamental invasive exotic plants, such as *Miscanthus* Grass, Sawtooth Oak, Purple Loosestrife, English Ivy, and others, that are being recommended by landscape designers and widely sold by many nurseries. In response to this problem, MNPS member Carol Jelich has designed a card to be left with nurseries and garden centers that contains a brief message about the threat of invasive exotic plants and a space to list the invasives you wish them not to sell. This will be mailed to members soon. Additional cards will be available at MNPS' fall conference and at each monthly meeting. Other native plant societies may reproduce this card, if they wish, for their members to use at nurseries in their state.

The severe drought this year, one of the worst of the century in our area and the fourth drought year to occur in the last five years, has greatly stressed native plant communities throughout the region. This, together with other climatic changes, encroaching development, pollution, and invasive exotic species, increasingly threatens the future sustainability of our native flora and natural communities. Besides preventing damage to existing areas, the most important way to prevent habitat fragmentation and degradation is to set aside large tracts of land throughout each region of the state, not just the undeveloped places away from the cities. Large-scale land preservation policies have recently taken root in several states throughout the country, such as New Jersey and Alaska. Maryland is also expanding its conservation programs, acquiring large areas like Chapman Forest and Deep Creek Lake and negotiating for a 60,000 acre site on the Eastern Shore. Our fall conference this year will feature some of these new directions in land preservation, as well as explore forests, wetlands, and meadows in the Catoctin Mountains and vicinity. Hope you can join us.

Sincerely,

Rod Simmons

GROWING, GROWING, GONE

By Daniel A. Herms

[Reprinted with permission from the July 15, 1996 issue of *American Nurseryman*]

Numerous studies provide strong evidence that fertilization decreases tree resistance to insects and other pests. In one case, fertilization of the Gray Willow (*Salix aquatica*, reclassified as *S. cinerea*) increased growth, but decreased concentrations of starch, lignin, and tannins, as well as resistance to a leaf-feeding beetle (*Galerucella lineola*). Similarly, fertilization of Yukon White Birch (*Betula resinifera*, reclassified as *B. neoalaskana*) and Quaking Aspen (*Populus tremuloides*) also increased growth while decreasing concentrations of defensive compounds and resistance to snowshoe hares and leaf-feeding insects, respectively. In another case, fertilization of Grand Fir (*Abies grandis*) and Loblolly Pine (*Pinus taeda*) increased growth and decreased foliar phenolic concentrations. Regarding the Loblolly Pine, these fertilization-induced changes were accompanied by decreased resistance to the Nantucket Pine Tip Moth (*Rhyacionia frustrana*). Additionally, fertilization decreased the resistance of Balsam Fir (*Abies balsamea*) to the Spruce Budworm (*Choristoneura fumiferana*).

Fertilization also generally increases a tree's susceptibility to sucking insects including aphids, scales, leafhoppers, and psyllids, as well as spider mites. Higher nutrient concentrations also make the plant more nutritious for insects. The growth and reproduction of insects almost always increases as the nutrient content of the plant they are feeding on increases.

As with insects, fertilization can affect a tree's resistance to disease. In "Effects of Nutrient Stress on Susceptibility of Plants to Disease with Particular Reference to the Trace Elements," R.D. Graham concluded that plant resistance to disease is generally decreased by fertilization, which stimulates the production of disease-susceptible succulent new growth and diverts resources from chemical defense.

In addition to contributing to decreased insect resistance, fertilization may decrease drought-stress tolerance. As with insect defenses, trees have natural mechanisms for coping with drought-stress



— particularly during midsummer — that include decreasing shoot growth and increasing root growth.

Water and nutrient availability are highly correlated in natural environments. Generally, moist habitats are fertile and dry habitats are infertile. Hence, landscape plants that are fertilized during dry spells but not irrigated may find themselves in a situation to which they are not accustomed: high soil fertility coupled with low soil moisture.

In some cases, research has shown fertilization to decrease tree resistance to drought stress. Since fertilization stimulates shoot growth to a greater degree than root growth, it may simultaneously increase water demands while decreasing the tree's ability to acquire water during drought. Thus, the tree becomes more susceptible to drought stress. More research is needed to determine how and when fertilization will affect the drought tolerance of landscape plants.

Growing continued on page 9

MNPS Field Botany Updates

By Roderick Simmons

MNPS conducts field surveys in Maryland each year to assess natural communities, inventory flora, and study plant associations. The Society performs an important role in conducting these surveys by documenting Maryland's native flora and habitats, both common and rare. Most of the survey sites are unknown or have not been seen in a long time and many are threatened by encroaching development or degradation by utility easements. Today, there are very few intact examples of these communities in parts of the state, especially the overdeveloped Washington-Baltimore area. It is hoped that this information will bring attention to these sites as irreplaceable remnants of Maryland's natural heritage, and lead to their conservation.

These surveys also help the Maryland Natural Heritage Program track Rare, Threatened, and Endangered (R,T,&E) plants and special communities in Maryland. The location of R,T,&E species and communities is reported to the Natural Heritage Program to be added to a database that includes all the known occurrences of state-listed R,T,&E species in Maryland. Voucher specimens for some rare plants, provided the population is large enough to allow a collection of one, are deposited at the Frostburg State University Herbarium, the Tawes Herbarium, or the U.S. Herbarium.

The following is a list of some of the noteworthy sites and flora in the Piedmont and inner Coastal Plain surveyed by MNPS this year. Only scientific names for plants are given because it is difficult to find common names for some plants. Species actively tracked by the Natural Heritage Program (noted below) have a state rank of S1 (highly state rare) or S2 (state rare) and sometimes a state status of E (endangered) or T (threatened):

Hollywood Swamp, Prince Georges County: A 250 acre bottomland along Indian Creek inside the Beltway consisting of silty, alluvial soils and floodplain topography, extensive braided streams, vernal pools, palustrine forest, and wet meadows. The native vegetation is very diverse and typical of floodplains and wetlands. Many interesting communities occur throughout. However, the most

notable is the *Quercus michauxii*-*Clethra alnifolia* community. Here, dense stands of *Clethra alnifolia*, *Ilex verticillata*, *Leucothoe racemosa*, *Vaccinium corymbosum*, *Viburnum dentatum*, and other shrubs thrive in sandy-silty soil under a canopy of large *Acer rubrum*, *Liquidambar styraciflua*, *Nyssa sylvatica*, and *Quercus michauxii*. It is very unusual to find *Quercus michauxii* so close to Washington, D.C. as a major component of the forest, with many large canopy trees and abundant seedlings. The combination and abundance of *Clethra alnifolia* and *Quercus michauxii* at this site suggest a relic community of Coastal Plain flora typical much farther south and east of the D.C. metro area.

It is also noteworthy that this is the only known location inside the beltway for *Clethra alnifolia* and the closest recorded station to Washington, D.C. for this plant. In fact, it was collected for the first time in the Washington, D.C. vicinity from this very place in 1915 by W.R. Maxon. Further research revealed this floodplain section of Indian Creek to be the heart of the historic Hollywood Swamp, one of many once-familiar place names in the Washington area that has been long forgotten.

Field Botany Continued on page 12



USGS Research Upsets Conventional Wisdom On Invasive Species Invasions

Invasive plant species are able to make themselves at home in habitats far from their native ranges. But is there ever simply no more room at the inn? Many ecologists have long accepted the view that a "no vacancy" rule applies to habitats rich in native species diversity. Areas with more native species are often presumed to use available resources more completely, leaving nothing left over for wandering weeds.

This and several other pieces of conventional ecological wisdom are challenged in a recent series of publications by USGS ecologist Thomas Stohlgren, of the Midcontinent Ecological Science Center, and colleagues at the Natural Resource Ecology Laboratory at Colorado State University. In the current issue of the journal *Ecological Monographs*, the team reports that across a broad array of Central Grassland and Rocky Mountain habitats, from Colorado to Minnesota, areas with the most native species are exactly where invasives tend to take up residence.

The findings suggest that where resource levels are high, invasives are able to grab a share. This means that invasibility depends more on the presence of basic resources, such as sunlight, water, and soil nutrients, than on an absence of competitors. Conversely, in less favorable habitats, a small number of native plants may monopolize existing resources, making the community more resistant to invasion.

Stohlgren says that previous studies, suggesting that low-diversity communities are more invasion-prone, may have simply not cast a wide enough net. In his Central Grasslands study sites, for example, data from small, one-meter square plots did support the classical view that high native species richness deters invasives. But this changed as the scale of vegetation sampling expanded to ten, one hundred, and one thousand meter-square plots.

"The pattern reversed itself at larger scales because resources are patchily distributed in the landscape," says Stohlgren. "Nitrogen, light, and water are present in some areas but not in others. At large spatial scales, it's those hot spots of resources that are being invaded."



Just as human immigrants may find more opportunities in an already-overcrowded city than a small town, invasive plants take advantage of the constant turnover and jockeying for position that characterizes species-rich ecological communities. The classical dictum that "diversity begets stability," Stohlgren says, is simply not true in some ecosystems. Communities with high diversity tend to be in constant flux, creating openings for invasives.

Stohlgren's team also carried out an extensive investigation of the effects of grazing on native and invasive species richness. One branch of ecological theory predicts that regular disturbance, such as that caused by grazing, allows a greater number of plant species to co-exist. Such disturbances may also set the stage for fast-growing invasive species to colonize new areas.

As reported in the current issue of the journal *Ecological Applications*, the researchers measured

USGS Research Continued on page 14

My Experience With Invasive Exotic Plants

By Marc Imlay

It all started for me when I pulled a few English Ivy vines. I knew it could get bad. That is, English Ivy could take over much of an eastern deciduous forest such as where I was, at Swann Park in Southern Maryland. I came back next year and thought it was neat that none had come back. So I started to pull out more English Ivy around the bend but realized this was too much for me to do alone. So on July 15, 1998, I asked the 15 hikers on the Maryland Native Plant Society field trip I was leading to help me finish the job. We got 75% of the English Ivy in the 200 acre Swann Park. But to be sure, I inventoried the entire park for invasive plants and characterized the natural features. Later 5 of us finished the job. We also eliminated Mile-a-Minute Weed from Swann Park. We are close with Periwinkle (95% removed) and Beefsteak Plant (90% removed). We now realized this work was important. With enough volunteers we were preventing a relatively pristine park (5% invaded) from becoming like so many other parks (20-50% invaded). Invasiveness may be measured by



the percent acres or percent biomass that is overtaken, typically forming monocultures of one to five alien species instead of hundreds of native species. Later, we expanded our program to the nearby 2,250 acre Chapman Forest and to Patapsco Valley State Park near Baltimore. (See announcements for stewardship at Chapman Forest/Swann Park held the first Sunday of each month, and Patapsco Valley State Park held the third Saturday of each month.) Since these early successes several key principles have emerged:

1. Have enough volunteers, usually 10 or more, to get the job done and see real results.
2. Use herbicides judiciously, carefully targeted to the alien invasive species where they biodegrade relatively quickly and do not move to other plants.
3. Flexibility. Pull after a rain storm when it is easy. You can remove annuals when the weather is dry, or spray at that time. See MNPS bulletin (www.geocities.com/RainForest/Vines/2996).
4. Compare fact sheets from different groups, especially Maryland Native Plant Society (see MNPS bulletin), Virginia Natural Heritage/Virginia Native Plant Society (www.state.va.us/~dcr/dnh/invallia.htm), Tennessee Natural Heritage/Tennessee Native Plant Society (www.webriver.com/tn-eppc/manual/), Invasive Plants of Canada Project (<http://infoweb.magi.com/~ehaber/factgarlic.html>), Alien Plant Working Group (www.nps.gov/plants/alien/fact/), and The Nature Conservancy at 4245 North Fairfax Drive, Suite 100, Arlington, Va. 22203 (<http://tncweeds.ucdavis.edu>).
5. Inventory and prioritize by invasiveness, feasibility, and incipency. Some invasives cause more harm than others. Some may be too difficult to remove at certain times. Newly established invasives are a high priority.
6. Follow through. Plan on coming back to get them all.

Marc Imlay is a conservation biologist and the chair of MNPS' Invasive Exotic Plant Committee.

American Lotus Observed In Mattawoman Creek

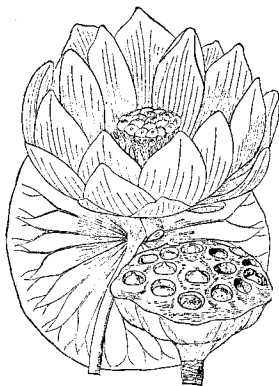
By James Long

On August 23, 1998, we (myself, Teresa Simmons, and Julie Crenshaw) put in at low tide at Mattingly Park on the tidal Mattawoman and motored upstream for 2.0 miles. Here a small inlet occurs on the right-bank-descending (i.e., on the left as one proceeds upstream), roughly 1,200 feet upstream of some iron shoring that marks a close approach to the creek by the government railroad. At this point, one could easily see from the boat the large, circular Lotus (*Nelumbo lutea*) leaves (up to 16-18 inches in diameter) and yellow flowers rising above a marsh of Arrow Arum. This marshy area where the plants are concentrated lies between the small inlet and the main stem downstream of the inlet.

Both the main stem and the shallow inlet have dense beds of submerged aquatic vegetation, comprising mainly Hydrilla (*Hydrilla verticillatum*), but with *Najas minor* and occasional Coontail (*Ceratophyllum demersum*) as well.

No Lotus were observed in open water. Instead, the plants were distributed among an extensive bed of Arrow Arum, with which they appear to be competing. The Lotus plants observable from the boat, with leaves at or above the height of the Arrow Arum, were stretched out for about 300 feet (possibly more) in an irregular array of patches, which gave the impression of three areas of concentration. I counted about 150 leaves in the concentration most upstream. I estimated that the middle concentration held three times that number, while the last concentration, furthest downstream, was about the same size as the upstream patch.

In order to shoot slides, I approached the periphery of the Lotus beds on foot at two locations, taking care not to walk too near the beds themselves to avoid damaging any tubers. At the periphery of the beds, at both locations, were occasional smaller Lotus leaves floating in water just inches deep at low tide, with Arrow Arum all about. Sheet flow over the mud in which the Lotus and Arum were rooted was observed as the tide came in.



"It is certainly a pity that man so selfishly is bent on spoiling the treasures which future generations must do without, he is looking upon his temporary profits as outweighing all else."

- M. L. Fernald, 1937

Lotus buds, flowers, and seed-pods were all present in the population. The flowers are thrust up on thick stems, often a foot or more above the leaves. Lotus flowers were also seen on August 9, 1998 during a submerged aquatic vegetation survey, although their significance was not realized at that time.

Note: Another large colony of Lotus was discovered downstream from these sites and closer to Mattingly Park by James Long in August, 1999.

James Long is a physicist and the coordinator of Friends of Mattawoman Creek, which monitors vegetation and aquatic wildlife in Mattawoman Creek and its tributaries.

TREE LOSS INTENSIFIES IN CHESAPEAKE BAY REGION

[Reprinted from the Summer 1999 issue of *River Scape*,
The Potomac Conservancy Newsletter]

According to a new study by American Forests, the average tree cover throughout the 11.4 million acre Chesapeake Bay region has declined from 51% to 39% from 1973 to 1997 because of suburban sprawl. The tree loss in the 1.5 million acre Washington-Baltimore corridor is even greater, with average tree cover dropping below 37% of land area.

The environmental implications of this change are significant. Tree loss in the Washington-Baltimore area has increased soil erosion and non-point source pollution run-off, putting more pressure on existing water treatment and stormwater retention systems. The cost for building new stormwater retention systems alone exceeds \$1.08 billion. In addition, the lost tree canopy would have removed about 9.3 million pounds of pollutants from the atmosphere annually, which, according to American Forests, will require \$24 million per year to control conventionally.

To counter this trend, forest conservation measures and innovative land-use plans that save existing trees and plant new ones are needed. For more information about conservation easements to protect tree cover on your property, contact the Potomac Conservancy at (202) 338-4700. For a copy of the report, contact American Forests at (202) 955-4500.



"We can turn the most luxuriant forests into throwaway paper products. We can tear apart the great grass cover of the western plains, and pour toxic chemicals into the soil and pesticides into the fields, until the soil is dead and blows away in the wind. We can pollute the air with acids, the rivers with sewage, the seas with oil... We can invent computers capable of processing ten million calculations per second. And why? To increase the volume and speed with which we move natural resources through the consumer economy to the junk pile or the waste heap... But our supposed progress is bringing us to a waste world instead of a wonder world."

- Thomas Berry

RETURN OF A RARE SPECIES

By Chris Lea

Last August, a park wildlife technician discovered Sea Beach Amaranth (*Amaranthus pumilus*) growing in Assateague Island National Seashore Park. Sea Beach Amaranth is a threatened species under the federal Endangered Species Act and had not been recorded in the park for 32 years. The plant must grow each year from a seed presumed to have adapted to transportation by salt water and possibly be very long-lived. The plant grows on open, often recently overwashed upper beach areas of barrier islands and spits and is regarded as an indicator of unimpaired natural shoreline processes. It is a "fugitive" species that does not tolerate competition from other plants. The number of plants at any given location may fluctuate greatly, and the plant may suddenly disappear or appear from an area from year to year. It has been considered extirpated from most states throughout its historic range from Massachusetts to South Carolina. Shoreline development has undoubtedly interfered with creation of new habitat where Sea Beach Amaranth can disperse and maintain its population. As of 1998, the species was known to exist only on Long Island and in the Carolinas. NPS wildlife technician Shanna Ramsey found a single plant on Assateague while she was monitoring piping plovers. Ramsey's familiarity with the plant from previous work at Cape Lookout NS was crucial in her recognizing the small plant. A subsequent parkwide search located only one other plant, which was growing nearby. In late August, storm surges from Hurricane Bonnie threatened both plants as they were beginning to produce fruit. While Sea Beach Amaranth seeds are well adapted to salt water transport, growing plants have little tolerance for salt water inundation. Because of the potential importance of these two plants for restoring the species in the mid-Atlantic gap between known populations, a decision to intervene was made by the park, the Maryland Department of Natural Resources, and the U.S. Fish and Wildlife Service. One entire plant was removed, while branch cuttings were taken from the second plant, leaving the root system and central stem in place in hopes that it might survive and produce fruit on site. Volunteer horticultural staff from the Adkins Arboretum provided invaluable expertise in transplanting the cuttings. The locations of both plants were subsequently inundated, and the plant left in place died soon thereafter. Branch



cuttings survived, but did poorly and failed to produce viable seed. The intact plant thrived in a greenhouse, producing hundreds of apparently viable seeds. The different responses of cuttings and rooted plant were the reverse of previous experience with transplanting the species. The park and Fish and Wildlife Service will be funding a seed production effort by the Maryland Department of Agriculture and the University of Kentucky to produce the thousands of seeds needed for an experimental restoration. Since propagating this number of seeds would take two generations of plants, it's anticipated that reintroduction will be undertaken in 2000. As it is possible, and perhaps likely, that a seed bank exists on the island, intensive searches will be made in 1999 to attempt to locate naturally recruited plants.

Chris Lea is a plant ecologist with the National Park Service at Assateague Island National Seashore.

By Joseph F. Metzger, Jr.

I've decided to initiate this column as a way for people to locate places where a particular species grows. Anyone who wants to know where a particular species can be found in Maryland or a nearby area should write to me at the MNPS P.O. Box. Just include Flora and Atlas Committee in the address and I will place the request in this column. In this issue I'd like to concentrate on Clover.

Of the twelve species listed in *Herbaceous Plants of Maryland* by Brown and Brown, only two are native to Maryland. The first, Kate's Mountain Clover (*Trifolium virginicum*), is primarily a plant of shale barrens. It is found in the Ridge and Valley Region of Maryland and nearby states between the Blue Ridge (represented in Maryland by Catocin and South Mountains and the mountains between them) and the Appalachian Plateau (essentially Garrett County). The other species is Buffalo Clover (*Trifolium reflexum*).

According to MD DNR's most recent rare plant list, Buffalo Clover has been extirpated from Maryland. I'm hoping this is wrong and that we still have some growing here. The *Manual of Vascular Plants* by Gleason and Cronquist describes the plant as a "biennial or winter-annual, forming an overwintering rosette...not stoloniferous...heads globose; flowers 8-12 mm, on pedicels to 1cm." I believe the key to locating this plant will be the overwintering rosette. Very few clovers have green leaves throughout the winter and any plant with them should be suspect. Contact me if you think you have found Buffalo Clover. Good hunting.



The environmental impact of fertilizer applications should also be considered. Urban and suburban landscapes represent a major source of fertilizer use and runoff in the U.S. Fertilizer runoff has a number of adverse ecological effects, including decreased quality of wetlands, lakes, and ponds. More judicious use of fertilizers in the landscape will decrease nutrient runoff and subsequent contamination of ground and surface water.

The long-term health of trees in low maintenance landscapes may be best maximized by the judicious use of fertilizers. Unless trees are showing visible symptoms of nutrient deficiency, fertilization will increase growth without increasing photosynthesis. The effect will be to decrease insect resistance and stress tolerance. Even if a tree is showing symptoms of nutrient deficiency, fertilization should not occur until foliar and soil testing reveal which nutrient is deficient, and that the deficiency is actually caused by a shortage of the nutrient in the environment, rather than by some other environmental factor preventing uptake (such as soil pH, temperature, or moisture levels).

The inherent ability of trees in natural environments to effectively manage resources should convince professionals to moderate the use of fertilizers, as realized by the eminent arborist Richard W. Harris: "I now look at native stands of trees with awe and new respect, knowing it should be possible to have good leaf color, low to moderate growth, and trees in balance with their surroundings with little or no fertilization needed." Perhaps it is time to shift from the paradigm that rapid growth equals a healthy tree. We should recognize that rapid growth can also have consequences, and moderate environmental stress may be more beneficial than once thought.

Daniel A. Herms holds dual master's degrees in landscape horticulture and entomology from The Ohio State University and a PhD in entomology from Michigan State University. He is currently a research entomologist at The Dow Gardens in Midland, MI, where his work focuses on the effects of environmental stress and cultural practices on tree resistance to insects.

ANNOUNCEMENTS

NATIVE PLANT SEMINAR AND NATIVE PLANT SALE

"The Natives Are Friendly,
Come And Get To Know Them"

September 25, 1999

Harford County Community College, Edgewood Hall

Sponsored by the Northeast Chapter of the Maryland Native Plant Society and the Harford County Master Gardeners.

Speakers include Louisa Thompson, Master Gardener and educator; Cris Fleming, field botanist and educator; and Robert Chance, environmental science instructor and naturalist. Field trips to sites in Harford County Saturday afternoon.

Fee: Member \$30.00, student \$30.00, non-member \$40.00 (includes lunch)

MNPS FALL CONFERENCE AND ANNUAL MEETING

"New Directions in Land Preservation: Thinking Big
So Nature Can Work"

October 2 & 3, 1999

Mount Saint Mary's College, Emmitsburg, MD

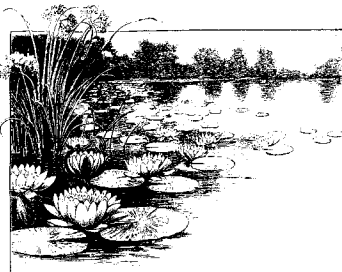
Speakers include David Burke, coordinator of MD DNR's Green Infrastructure Program; Larry Morse, Chief Botanist for The Nature Conservancy; and Robert DeGroot, President of the Maryland Alliance for Greenway Improvement and Conservation. Field trips to Catoctin area and beyond Saturday and Sunday.

Fee: \$30.00 for members, \$40.00 for non-members (does not include lunch)

NATIVE PLANT AND SEED DIRECTORY

The EPA is creating a national directory of native plant and seed suppliers. Companies that propagate and grow native plants and wish to be listed should visit the University of Washington's Center for Urban Horticulture Web site at depts.washington.edu/urbhort/ and click on the "Native Plant and Seed Supplier Survey" option.

The directory is being created in cooperation with the University of Washington's Center for Urban Horticulture, Seattle; the Native Plant Conservation Initiative; the Society for Ecological Restoration; the National Park Service; and the Lady Bird Johnson Wildflower Center, Austin, TX.



ANNOUNCING THE PUBLICATION OF *DAYS AFIELD, EXPLORING WETLANDS IN THE CHESAPEAKE BAY REGION* by William S. Sipple

Since moving to Maryland in 1971, the author has maintained an extensive journal of his outdoor experience exploring and studying the Chesapeake Bay Region's wetlands. *Days Afield* is a spin-off of his journal. The book represents considerable field work in the Chesapeake Bay Region - somewhere in excess of 1,500 site visits.

Days Afield is a 6x9, perfect bound, glossy paper-cover book with xiv + 560 pages and 75 photos/illustrations. Each copy is \$19.95, plus \$2.00 shipping and handling for the first copy and \$.50 each for shipping and handling of additional copies (Maryland residents add 5% sales tax). To purchase, make checks or money orders payable to William S. Sipple and mail remittance to: William S. Sipple, 518 Red Bluff Court, Millersville, MD 21108.

EXPLORING WETLANDS IN THE CHESAPEAKE BAY REGION
October 26, 1999 7:30 pm

Long Branch Library

Bill Sipple, ecologist and USDA Graduate School instructor, will give a presentation on his many years of experience in the field studying the region's wetlands, including wetlands of the Delmarva Peninsula, bogs of Anne Arundel County, and watersheds of the Western Shore of the Chesapeake. Bill will also have copies of his new book *Days Afield, Exploring Wetlands in the Chesapeake Bay Region* available for sale and signing. The regular plant identification feature by Joe Metzger will be held between 7:00 pm and 7:30 pm. Refreshments and door prizes. Pot luck refreshments welcomed.

MNPS MONTHLY GENERAL MEETINGS

MNPS SUMMER PARTY
July 10, 1999, 4:00 pm

Louisa Thompson's home, Ellicott City, MD

WETLAND ECOLOGY
August 31, 1999 7:30 pm

White Oak Library

Jim Long, coordinator of Friends of Mattawoman Creek, will give a slide presentation on wetland ecology, including "Magnolia Bogs," streams, forested wetlands, and tidal marshes. The regular plant identification feature by Joe Metzger will be held between 7:00 pm and 7:30 pm. Refreshments and door prizes. Pot luck refreshments welcomed.

GROUNDS FOR PLAY, GROUNDS FOR LEARNING; CHILDREN'S GARDENS AND SCHOOLYARD HABITAT
September 28, 1999 7:30 pm

Hyattsville Municipal Building, Multipurpose Room

Elmina Hilsenrath, naturalist and environmental science instructor, will give a presentation on native plant gardens and children's gardens. The regular plant identification feature by Joe Metzger will be held between 7:00 pm and 7:30 pm. Refreshments and door prizes. Pot luck refreshments welcomed.

MNPS COMMITTEE CHAIRS

Conservation.....	Lou Aronica (202) 722-1081
Field Trips & Programs...	Amy Doll & Tina Schneider adoll@haglerbailly.com Schneider@mncppc.state.md.us
Flora of Maryland.....	Joe Metzger (410) 775-7737
Invasive Exotic Plants.....	Marc Imlay (301) 283-0808
Newsletter.....	Rod & Teresa Simmons rod77@juno.com
Nominations.....	Gordon Brown (301) 589-5086
MNPS Library.....	Nancy Adamson (301) 277-5905
Membership.....	Joe Metzger (410) 775-7737
MNPS Web Site.....	Nancy Adamson & Carol Allen (301) 277-5905 (301) 258-0313
Botany.....	Rod Simmons rod77@juno.com

The earliest floristic documentation of the Hollywood Swamp appeared in the 1919 *Flora of the District of Columbia and Vicinity* by Hitchcock, A.S. and Standley, P.C.: "Between...Washington and Takoma Park...there are several localities mentioned in Ward's Flora [1881] which have now been converted into residential districts, but the vicinity of Takoma Park itself still offers much of interest. The trolley line to Laurel, lying in the valley of Indian Creek and Eastern Branch or Anacostia River, opens up fine collecting grounds. There is a long swamp or series of swamps on the east side of the Baltimore and Ohio Railroad from Hyattsville to Berwyn and on to Beltsville, the section from Berwyn to Beltsville being known as the Hollywood Swamp."

Other noteworthy plants discovered here are *Carex typhina*, *Scirpus hattorianus*, and *Stellaria alsine* (S1 E). *Stellaria alsine* is a record for PG County and is disjunct from a primary range north of Maryland, reaching its southernmost limits here.

This site, a section of palustrine forest along Indian Creek on the other side of the beltway, and sections of the Agricultural Research Center are the only large, mostly undisturbed natural areas that remain along Indian Creek.

Surveyors: Lou Aronica, Rod Simmons, Kate Spencer, and Mark Strong

Powder Mill Bogs remnant, Prince Georges County: A small (app. 1/2 acre) hillside gravel seep at the edge of the Naval Ordinance Laboratory above an unnamed tributary of the Paint Branch near Powder Mill Road. This is a remnant of the historic Powder Mill Bogs which were located very near the intersection of Cherry Hill and Powder Mill Roads, but are now destroyed. The heart of the seep is somewhat open, permanently saturated and sphagnum, and supports a diverse community of *Carex debilis*, *Carex folliculata*, *Carex leptalea*, *Carex seorsa*, *Eriocaulon decangulare* (S2), *Fuirena squarrosa*, *Juncus debilis*, *Linum striatum*, *Oxypolis rigidior*, *Platanthera clavellata*, *Pogonia ophioglossoides*, *Rhus vernix*, *Rhynchospora capitellata*, *Solidago uliginosa*, and *Triadenum virginicum*. The seep is surrounded by characteristic "Magnolia Bog" flora that is more tolerant of shade, such as *Gaylussacia frondosa*, *Leucothoe racemosa*, *Magnolia virginiana* (canopy), *Osmunda cinnamomea*, *Osmunda regalis*,

Rhododendron viscosum, *Rhus vernix*, *Symplocarpus foetidus*, *Vaccinium corymbosum*, and *Viburnum nudum*.

A colony of the highly state-rare *Juncus longii* (S1) grows several hundred feet away in a sandy seep on an exposed road bank, along with *Eleocharis olivacea*, *Sabatia angularis*, and *Xyris difformis* (S2).

Thick stands of *Clethra alnifolia* occur on the steep, shady banks of the Paint Branch tributary near the intersection of Powder Mill and Cherry Hill Roads, but are absent from the seeps. *Clethra alnifolia* is not typically a component of seeps and bogs near the Fall Line in the Washington-metro area. However, this plant was noted at this location by Hitchcock and Standley in 1917.

Surveyors: Lou Aronica, Rod Simmons, and Mark Strong

Travilah Serpentine Barrens, Montgomery County: This 258 acre serpentine community is one of the largest remaining in Maryland. It is also regionally significant because it is Montgomery County's largest serpentine barrens and the largest, southernmost expanse of this globally rare community in Maryland. Moreover, some of the species that occur here are not found at other serpentine sites in Maryland.

John Parrish has compiled a flora list of the Travilah Barrens, representing many years of field surveys. Noteworthy plants include *Aristolochia serpentaria*, *Asclepias purpurascens*, *Aster infirmus*, *Cardamine parviflora*, *Ceanothus americanus*, *Coreopsis verticillata*, *Eleocharis engelmannii*, *Eupatorium altissimum*, *Isoetes engelmannii*, *Krigia dandelion* (S1 E), *Lespedeza violacea*, *Myosotis verna*, *Quercus imbricaria*, *Scirpus verecundus* (S2/3), *Senecio pauperculus*, and *Veronicastrum virginicum*. Several additional plants were discovered this past year, including *Dirca palustris* (S2 T), *Melica mutica* (S1 T), and *Scutellaria leonardii* (S2 T). The *Dirca palustris* population is probably the largest in the state. Maryland Natural Heritage Program staff have also discovered *Gentiana villosa* (S1 E) and *Stenanthium gramineum* (S1 T) at this site.
Surveyor: John Parrish

Hoyles Mill Diabase Area, Montgomery County: A diabase community in Boyds, Md. Diabase is a weather resistant, igneous rock that intruded during

the Triassic Period in the form of dikes (structures that cut across beds) and sills (structures that are parallel to beds) into fault fissures slightly west of the Fall Line in the Washington-metro area. Diabase soils are rocky, magnesium rich, and support a diversity of native species and communities such as cedar glades, oak forests, and prairie-like meadows dominated by warm season native grasses. Noteworthy species at this site include *Xanthoxylum americanum* (S1 E) and *Scutellaria nervosa* (S1 E). The Giant Swallowtail butterfly was also observed feeding on the *Xanthoxylum*.

Surveyor: John Parrish

Northwest Branch Park, Montgomery County: A state-rare sedge, *Carex pellita* (S2), was discovered in a scrub-shrub wetland in the park. This is a record for Montgomery County.

Surveyor: John Parrish

Oxford Bog, Charles County: A diverse, several acre "Magnolia Bog" with a large, open, sphagnum section under a power line easement near Indian Head Highway (Rt. 210) and Bryans Road. This bog is the source of a perennial stream that flows into Mattawoman Creek. Noteworthy species include *Carex incornpta*, *Carex leptalea*, *Carex styloflexa*, *Rhynchospora gracilentia*, *Scleria reticularis* (S2), and *Smilax pseudochina* (S1 E).

Surveyors: Rod Simmons and Mark Strong; also MNPS field trip participants

Chapman Forest Potomac Swamp, Charles County: A large, non-tidal, scrub-shrub wetland that extends a distance of a mile and a quarter along the shore of the Potomac River within Chapman Forest. A colony of *Azolla caroliniana* (S1), a state-rare water fern, was discovered growing in a quiet cove of the swamp.

Surveyor: Rod Simmons

Little Paint Branch Bogs, Prince Georges County: A series of terraced wetland seeps under a power line easement adjacent to Interstate 95 near Powder Mill Road. These wetlands are collectively called the "I-95 Bog" by the Maryland Natural Heritage Program. *Carex seorsa*, *Chasmanthium laxum*, *Eupatorium pilosum*, *Eupatorium purpureum*, *Fuirena squarrosa*, *Helenium flexuosum*, *Juncus debilis*, *Juncus diffusissimus*, *Juncus scirpoides*, *Juncus validus*, *Lilium superbum*, *Lycopodiella appressa*, *Panicum scoparium*, *Rhexia virginica*,

Rhynchospora capitellata, *Scleria pauciflora*, *Triadenum virginicum*, *Woodwardia virginica*, *Xyris torta*, and many other bog plants occur in a large, open, gravelly seep above the south bank of the Little Paint Branch. *Juncus validus*, strongly disjunct from a primary range in Florida, Georgia, and the Carolinas, is a new state record for Maryland.

Several hundred feet north of this bog, the Maryland Natural Heritage Program staff discovered, in the mid-1980s, the state's largest occurrence of *Stenanthium gramineum* (S1 T) growing in damp, sandy, low ground. However, recent field surveys have been unable to relocate this species. Many factors, including intensive maintenance of the power line area by PEPCO may have contributed to the demise of this population.

Farther south, at the terrace summit, is a large "Magnolia Bog" that extends several hundred feet along the edge of the power line easement. Extensive thickets of *Gaylussacia frondosa*, *Ilex laevigata*, *Leucothoe racemosa*, *Magnolia virginiana*, *Rhododendron viscosum*, *Rhus vernix*, *Vaccinium corymbosum*, and *Viburnum nudum* grow intertwined with *Chionanthus virginicus*, *Nyssa sylvatica*, *Osmunda cinnamomea*, *Osmunda regalis*, *Symplocarpus foetidus*, and *Woodwardia areolata*. A large, open bog extends out from this thicket under the power line. A large colony of *Eleocharis tortilis* (S2) and *Juncus longii* (S1) occurs here with *Carex stricta*, *Platanthera clavellata*, *Pycnanthemum muticum*, *Rhexia virginica*, *Smilax pseudochina* (S1 E), *Solidago uliginosa*, *Thelypteris palustris*, and *Woodwardia areolata*.

MNPS is working with the Maryland Department of the Environment, Maryland Department of Natural Resources, and the PEPCO Environmental Resources staff to delineate these wetlands and protect them from power line maintenance, especially damage by utility vehicles, herbicide applications, and dumping. All the wetlands at the Little Paint Branch Bogs site comprise a "Wetlands of Special State Concern." Surveyors: Rod Simmons and Mark Strong

Note: With the exception of Northwest Branch Park and the Potomac Swamp at Chapman Forest, the sites listed above are not accessible to the public. Contact the MNPS Botany Committee if you would like to participate in a survey of a specific site or would like further information on any of these sites, including flora lists.

vegetation at multiple scales on 26 long-term grazing exclosures and surrounding rangeland in Colorado, Wyoming, Montana, and South Dakota. Surprisingly, the researchers discovered that numbers of native and invasive species were virtually identical for the fenced exclosures and adjacent grazed areas.

"In some habitats, grazing isn't quite the disturbance we thought it was in terms of invasive species," says Stohlgren. He notes that shortgrass steppe in Colorado has been grazed heavily by bison for thousands of years and, more recently, by cattle. "And yet the shortgrass steppe is a low-diversity site with a few dominant species and not very many weeds," he says. However, adds Stohlgren, the effects of grazing clearly differ according to climate; in more arid regions, studies have shown an association between soil disturbance by large grazers and the spread of invasive plants.

From a conservation perspective, the results of these multi-site, multi-scale studies are disturbing. "It's an alarming pattern," says Stohlgren. "In the Central Grasslands and the Rockies, the high diversity habitats are already becoming rarer and rarer because of both natural succession and human influences. And these are the places where invasive species are most heavily invading." The invasions may threaten some of the last strongholds of certain biologically rich habitats, such as tallgrass prairie, aspen woodlands, and moist riparian zones.

In a recent paper in the journal *Plant Ecology*, Stohlgren and his co-workers also document the proclivity of invasive plants for streamside, or riparian, areas. Many plant and animal species depend on streamside habitat for all or part of their life cycle, and conservationists have long stressed the importance of streamside corridors as biological lifelines for species migrations and dispersal. Unfortunately, the researchers found, streamside corridors also act as havens for invasive species, as well as networks for the spread of invasives from one pristine area to another.

The transformation of rich riparian zones into communities dominated by invasives may accelerate the loss of native plant species and may also greatly affect some animals, such as birds and butterflies, that

rely on the natives for food or habitat, Stohlgren says. The invasions may also disrupt the relationships of

plants and pollinators that evolved together. "This is really troubling, because it means that all along their migratory routes, butterflies are running into more and more non-native plants that they may not benefit from as much," says Stohlgren.

One consistent message from these studies, Stohlgren says, is that ecologists should avoid making sweeping generalizations based on work done at a small spatial scale or a single study site. Conservationists and land managers should be aware of the potential for invasives to move into biologically rich areas, but conservation strategies need to be dictated by the particular characteristics of the habitats and species involved.

"We ought to turn our attention to finding out which weeds may be the biggest problem in our highest diversity areas, so we can work at saving native species while controlling invasives," Stohlgren says.

"But we need to be smart about it. That means selecting priorities based on landscape-scale science, instead of relying solely on smaller scale studies that may be misleading."

Being smart also means realizing that simply protecting an area from human disturbances may not be enough, Stohlgren says. "We had this comforting feeling that if we can maintain diversity everything will be stable. I don't think we can be that comfortable any more."

As the nation's largest water, earth, and biological science and civilian mapping agency, the USGS works in cooperation with more than 2000 organizations across the country to provide reliable, impartial, scientific information to resource managers, planners, and other customers. This information is gathered in every state by USGS scientists to minimize the loss of life and property from natural disasters, to contribute to the conservation and the sound economic and physical development of the nation's natural resources, and to enhance the quality of life by monitoring water, biological, energy, and mineral resources.

The Orion Grassroots Network, Fire & Grit Conference, and Local Volunteer Opportunities

By Nancy Adamson

In July, the MNPS board voted to become part of the Orion Grassroots Network. Many of you are already familiar with the Orion Society and its wonderful publications and programs. We will receive *Orion* and *Orion Afield* magazines, which will be available to be checked out from our library at monthly meetings. More information about the Orion Society is available on the web at <http://www.orionsociety.org/>. Please do take a look at the magazines and visit the website. Richard Nelson describes *Orion* as "our most important forum of creative, insightful, and intellectually sound discourse on humans and the environment." *Orion Afield* is a relatively new magazine highlighting the work of community groups working to protect local environments and build stronger communities.

In June, nature writers, educators, and individuals from community and environmental organizations gathered together for "Fire & Grit: Working for Nature in Community," a conference organized by the Orion Society at the U.S. Fish and Wildlife Service's new National Conservation Training Center in Shepherdstown, WV. In speaking about ecological restoration at the meeting, Stephanie Mills said, "mosaic seems the way of the biosphere." This was also the way of the meeting, building understanding and connections within a changing mosaic of people and their places across the country. John Elder opened the gathering by exploring the meaning of stewardship and education, noting that the deepest statement of education is, "You belong here; you are necessary." George Gann reiterated this theme, wondering how to help children and adults develop a healthy sense of place and remember that we are part of nature, of magical, mysterious life. Robert Hass took the theme one step further, encouraging us to find out what's going on in environmental education where we live, and to develop more place-based, hands-on, interdisciplinary education.

These ideas fit well with the goals and work of MNPS. Through our field trips and monthly meetings, we hope to learn more about and take better care of this region. We have had a very positive role in protecting many natural areas and restoring others.

We recently started a website for volunteer needs. We have some on-going restoration projects where more helpers are always welcome. We also want to encourage members with other ideas or interests to use the new website to explore other possibilities. If you don't have access to the web, you can call or write to me to share your ideas or find out about volunteer opportunities. If you have an idea and would like some support or if you want to volunteer, please contact me at 301/277-5905 or nadamson@wam.umd.edu. If you need any reading ideas, I also have a long list of delightful books to read, inspired by all the great speakers at Fire & Grit!

MNPS Welcomes New Members

Harold and Barbara Beck, Joan Beeler, Peter Boice, Eve Burton, Jody Cabezas, Sean Casey, Margaret Chanin, Gael Cheek, Janice Clark, Joy and Ed Cohen, Diane Davidowicz, Lois Dicker, Michael Dixon, Graham and Robin Donaldson, Elizabeth Ebersole, Janet Ebert, Martha Edens, Marian Elsassner, Simon Freyou, Stuart Gagnon, Helene Gardel, Christian Graham, Mary Ann Harper, Carol Henderson, Kathryn Henderson, Michael Hill, Jack Holt, Jake Hughes, Catherine Hunt, Joyce Keller, Kim Kennedy, Hilary Kozel, Kerrie Kyde, Ray LaSala, Roy List, Margie Litman, Tina Lorentzen, Tom Marshall, Mike McConnell, Elizabeth McNulty, Roger Metcalf, Jessica Milstead, Sami Mousa, George Mozal, Nancy Elizabeth Nimmich, Mary O'Lone, Jo Ann Palmer, Chris Partain, Michael Pertschuk, David Petty, Madonna Pool, Gemma Radko, John Rebstock, Elizabeth Reeder, T. Reid, Cecile Roth, David Rule, Lynne Scherbarth, Richard Schubert, Kirsten Scott, Nan Shellabarger, John Snitzer, Anna Sofaer, Kate Spencer, Sondra Stafford, John and Patricia Stamper, Bryan Strong, Leslie Sylvanus, Kathy and Russell Therrien, Kathy Treat, Fred and Faith Unger, Robin Van Mechelen, and Joan Willey.

Your membership supports the active conservation of native flora and natural communities in Maryland and vicinity. Thank you for your support.