

MARILANDICA

The Maryland Native Plant Society Quarterly

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THIS ISSUE:

**ACCOKEEK SHELL-MARL
RAVINE FOREST,
FIELD BOTANY UPDATES,
FERNS, CHELONES, AND
GLOBAL WARMING**



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.

Karyn Molines-President

Louis Aronica-Vice President

Roderick Simmons-Vice President

Samuel Jones-Secretary

Joseph Metzger, Jr.-Treasurer

LETTER FROM THE PRESIDENT

Dear Members,

Welcome to the new year. I am honored to be elected President and I am proud to be part of this active grass roots organization. I want to thank Rod Simmons for all his hard work over the past five years as President. He put so much effort into many Society initiatives—the preservation of the Chapman Forest ecosystem being the landmark success of the Society's endeavors. In addition to the Presidential duties, Rod helped coordinate the monthly meetings and produced the newsletter. The Society is held with high regard because of his efforts. His footsteps will be a challenge to follow. Fortunately, Rod is still active with the Society as Vice President and editor of *Marilandica*.

In addition to thanking Rod for his years of service, this is an opportunity to introduce myself to those who may not know me. I live in Calvert County in the Bay-front community of North Beach and am active with Town politics as chair of the Tree Committee. I am the naturalist for Anne Arundel County, and work at the Jug Bay Wetlands Sanctuary. I have been involved with Society activities since its inception in 1991 as one of the founding Board members. I was secretary for three years, and just completed two terms as Vice President. In 1998, I chaired the fall conference and was the program chair from 1992-1995.

Of course, one person alone cannot be responsible for the success of the Society. The work that is done by many others, including Sam Jones, Amy Doll, Tina Schneider, Nancy Adamson, Lou Aronica, and Joe Metzger, Jr., provides the real heart of the Society. As I stress to everyone I talk to, MNPS is completely volunteer run. We do this work because we have a vested interest in maintaining the integrity of the local ecosystem. Not for financial gain, but for maintaining a healthy environment that is safe, clean, and beautiful. I make a plea to all members to consider how they might be able to help further the goals of the Society: stewardship, education, and research of Maryland's native plants and their habitats. Come remove invasive plants at Swann Park or Patapsco State Park. Volunteer as a field trip leader, even if you are not a skilled botanist. (Often the best field trip leader is someone who knows and loves a natural area and wants to share the place with others. The more learned botanists will be the participants. As a leader, you'll get to benefit from their skills. Don't be shy, lead a trip and meet many wonderful nature enthusiasts.)

We try to keep members up-to-date on Society activities, but visit our web site at <http://www.mdflora.org/index.html> often to find out all the 'late-breaking' news of field trips and meetings. The site has back issues of the newsletter, plant lists and photos, and links to other plant related sites. If you know of something that may interest other members, contact one of the MNPS Committee Chairs listed on page 10 of the newsletter with the details, and we'll get it on the site. I would also like to see an "Action Alert" section on the site that would inform members of legislative issues to be aware of and to take action on.

Pres. Continued on Page 9

The Accokeek Creek Shell-Marl Ravine Forest

By Brent Steury

The Shell-Marl Ravine Forest in the Accokeek Creek Watershed lies within the upper Coastal Plain physiographic region of Maryland in southern Prince Georges County. This unusual Coastal Plain plant community is largely contained within the easement land of Piscataway Park between Bryan Point Road and the park's southern boundary. The two main stems of Accokeek Creek converge near the center of this area and flow into the Potomac River just north of Bryan Point Road.

The creek has a rich, broad floodplain branched by numerous tributaries joining from the east and west. The natural floodplain levee and sides of the tributary ravines are often as steep as 45 to 60 degrees and cut deeply into the soils of the Sassafras-Croom association exposing underlying Paleocene fossil deposits. The shells of *Ostrea* oysters, *Cucullea* clams, and *Turritella* snails from the Paleocene Epoch abound in the glauconite-rich, gray clay substrata. The deep, rich-loam, surface soil is derived, in part, from the calcium carbonate shell material giving these soils a circumneutral pH.

Brief explorations into this maze of ravines during the growing seasons between 1995 and 1999 revealed a diverse flora with many species uncharacteristic of the Maryland Coastal Plain. The cool, moist ravines associated with this forest were observed to be shaded by a canopy dominated by *Quercus rubra* (northern red oak), *Liriodendron tulipifera* (yellow poplar), *Fagus grandifolia* (American beech), and *Carya cordiformis* (bitternut hickory). Many of the northern red oaks had a diameter at breast height greater than 40 inches indicating a tree age of at least 150 years. *Quercus muehlenbergii* (yellow or chinquapin oak), a state watch list tree chiefly confined to calcareous soils, was found on the bank slopes and crests. The thick shrub layer was strongly dominated by *Asimina triloba* (pawpaw), however *Lindera benzoin* (spicebush) was also common. The shrubs *Hydrangea arborescens* (American hydrangea) and *Staphylea trifolia* (bladdernut), rarely found on the Coastal Plain of Maryland, were also observed.

The diverse herbaceous flora included three species of calciphilic sedges, *Carex albursina* (white bear lake sedge), *Carex jamesii* (James' sedge) and *Carex*

laxiculmis (loose-culmed sedge), and a fern, *Athyrium pycnocarpon* (glade fern), which is also a calcicole. Other common ferns included *Athyrium thelypteroides* (silvery fern), *Cystopteris protrusa* (lowland brittle fern), and *Polystichum acrostichoides* (Christmas fern). *Adiantum pedatum* (northern maidenhair fern) was also present but less common. Other Coastal Plain rarities found on the rich, calcareous soils of the Accokeek Creek ravines included *Arabis canadensis* (sicklepod), *Cimicifuga racemosa* (black cohosh, bugbane, or snakeroot), *Claytonia caroliniana* (Carolina spring beauty), *Hepatica americana* (round-lobed hepatica), *Lycopodium lucidulum* (shining clubmoss), *Mitella diphylla* (two-leaved miterwort), *Panax trifolius* (dwarf ginseng), *Saxifraga virginiana* (early saxifrage), *Sedum ternatum* (wild stonecrop), *Solidago flexicaulis* (zigzag goldenrod), and *Viola striata* (pale violet).

Eleven of the plant species found in the Accokeek Creek ravines are listed as rare, threatened or endangered in the State of Maryland, by the Maryland Department of Natural Resources, Natural Heritage Program. These species include *Quercus muehlenbergii*, *Athyrium pycnocarpon*, *Claytonia caroliniana*, *Carex albursina*, *Carex jamesii*, *Carex hitchcockiana* (Hitchcock's sedge), *Carex hirtifolia* (hairy-leaved sedge), *Myosotis macrosperma* (large early forget-me-not), *Scutellaria nervosa* var. *nervosa* (veined skullcap), *Passiflora lutea* (yellow passionflower), and *Corallorhiza wisteriana* (Wister's coralroot orchid). Although not state rare, other orchid species found along Accokeek Creek included *Orchis spectabilis* (showy orchid), *Tipularia discolor* (cranefly orchid), *Aplectrum hyemale* (putty root orchid), *Goodyera pubescens* (downy rattlesnake plantain orchid), and *Cypridium acaule* (pink lady's slipper).

Brent Steury is a Natural Resource Specialist for the National Park Service - National Capital Parks-East.

MNPS Field Botany Updates

By Rod Simmons

MNPS conducts field surveys in Maryland each year to assess natural communities, inventory flora, and study plant associations. Besides having fun discovering new plants and places, 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 urbanization, invasive exotic plants, and 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):

Araby Bog, Charles County: A diverse, 50 acre Magnolia Bog with a large, open, sphagnum section



that gives rise to pristine perennial streams that flow into adjacent Mattawoman Creek. Magnolia Bogs are acidic wetland seeps associated with gravel terraces of the inner Coastal Plain near the fall line that are named for the predominance of *Magnolia virginiana* in the canopy. Characteristic Magnolia Bog species typical of the southern Maryland region that occur here include *Alnus serrulata*, *Amelanchier canadensis*, *Aronia arbutifolia*, *Carex albolutescens*, *Carex crinita*, *Carex debilis*, *Carex folliculata*, *Carex intumescens*, *Carex leptalea*, *Carex lurida*, *Carex seorsa*, *Carex stricta*, *Carex styloflexa*, *Chelone glabra*, *Chionanthus virginicus*, *Cypripedium acaule*, *Eleocharis tortilis* (S2), *Gaylussacia frondosa*, *Glyceria striata*, *Gratiola virginiana*, *Ilex laevigata*, *Ilex verticillata*, *Isotria verticillata*, *Juncus acuminatus*, *Juncus canadensis*, *Juncus coriaceus*, *Juncus subcaudatus*, *Leersia virginica*, *Leucothoe racemosa*, *Lilium superbum*, *Lyonia ligustrina*, *Magnolia virginiana*, *Maianthemum canadense*, *Medeola virginiana*, *Nyssa sylvatica*, *Orontium aquaticum*, *Osmunda cinnamomea*, *Osmunda regalis*, *Oxypolis rigidior*, *Platanthera clavellata*, *Polygonum sagittatum*, *Rhododendron viscosum*, *Rhus vernix*, *Rhynchospora capitellata*, *Rhynchospora gracilentata*, *Rosa palustris*, *Smilax pseudochina* (S1 E), *Smilax walteri*, *Symplocarpus foetidus*, *Thelypteris noveboracensis*, *Uvularia sessilifolia*, *Vaccinium atrococcum*, *Vaccinium corymbosum*, *Viburnum nudum*, *Viola primulifolia*, *Wisteria frutescens*, *Woodwardia areolata*, and *Woodwardia virginica*.

This site is currently threatened by the Falcon Ridge and Hunters Brook development projects because of the extensive clearing, re-grading, and construction proposed for the land surrounding the wetlands, including the recharge areas for the bog. Contact (301) 753-6175 for more information.

Surveyors: Lou Aronica, Dave Linthicum, Rod Simmons, and Mark Strong

Chapman Shell-Marl Ravine Forest, Charles

County: An approximately 150 acre, old-growth, Shell-Marl Ravine Forest adjacent to the Potomac River in northwestern Charles County. The site is distinguished by extensive, deep ravines, rich soils produced by underlying Paleocene deposits of fossilized shells and glauconite sand, and a flora more typical of the outer Piedmont and Mountains than the Coastal Plain. Additions to the flora of this site include *Aster schreberi*, *Bromus pubescens*, *Carex abscondita*, *Carex albicans*, *Carex digitalis*, *Carex grisea*, *Carex laxiflora*, *Carex oligocarpa*, *Carex rosea*, *Galium concinnum*, *Mitella diphylla*, *Muhlenbergia sobolifera*, *Sanicula canadensis*, and *Solidago ulmifolia*. (See the Spring 1999 MNPS Newsletter for a flora list and description of this site.) Bordering the Shell-Marl Ravine Forest along the Potomac is a very large, non-tidal, scrub-shrub palustrine wetland with some forested sections. New species discovered here include *Carex amphibola* var. *amphibola*, *Carex seorsa*, *Carex straminea*, *Carex stipata* var. *maxima*, *Iris versicolor*, and *Quercus michauxii*.

Surveyors: Chris Frye, Rod Simmons, and Meghan Tice

Bryans Road Bog (Oxford Bog), Charles County:

A diverse, several acre Magnolia Bog with an open, sphagnum section under a power line easement near Indian Head Highway (Rt.210) and Bryans Road. This wetland is the source of a perennial stream that flows into Mattawoman Creek. Recently discovered noteworthy species include *Juncus acuminatus*, *Phoradendron flavescens*, *Platanthera lacera*, and *Solidago uliginosa*.

Surveyors: Rod Simmons and Mark Strong

Rock Creek Park, Washington, D.C.:

The following species are recent additions to the *Annotated Checklist of Vascular Plants of Rock Creek Park* by Fleming and Kanal, published in the December 1995 issue of *Castanea*. Additions to the checklist of flora include *Carex umbellata*, *Carex willdenowii*, *Castanea pumila*, *Celtis occidentalis*, *Chrysogonum virginianum*, *Dentaria heterophylla*, *Dryopteris intermedia*, *Gaylussacia baccata*, *Ilex*



verticillata, *Krigia dandelion*, *Leucothoe racemosa*, *Pteridium aquilinum*, *Pyrola elliptica*, *Quercus bicolor*, *Rubus flagellaris*, *Sanicula gregaria*, *Smilax tamnoides*, *Uvularia sessilifolia*, *Vaccinium atrococcum*, and *Viburnum nudum*. (Visit the MNPS website for habitat descriptions of the above plants as they occur in the Park.)

Surveyor: John Parrish

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 and are remnants of the once-extensive Powder Mill Bogs. Additions to the flora noted in the last newsletter for the gravelly seep just above the south bank of the Little Paint Branch include *Andropogon glomeratus*, *Aster puniceus*, *Bartonia paniculata*, *Carex howei*, *Drosera rotundifolia*, *Eleocharis tenuis*, *Liatris graminifolia*, *Linum medium* var. *texanum*, *Lobelia puberula*, *Panicum verrucosum*, *Sabatia angularis*, *Selaginella apoda*, *Spiranthes cernua*, and *Spiranthes gracilis*.

Farther south, at the terrace summit, is a large Magnolia Bog that extends several hundred feet along the edge of the power line easement in the adjacent forest. A large, open sphagnum section of the bog also extends out from the forest under the power line. Additions to the flora noted in the last newsletter that occur here include *Andropogon glomeratus*, *Bartonia*

virginiana, *Carex bullata* (currently S1 T, but proposed new status to be S3), *Juncus subcaudatus*, *Rhynchospora gracilentia*, *Sagittaria latifolia* var. *pubescens*, and *Vaccinium atrococcum*.

Interesting plants such as *Baptisia tinctoria*, *Carex complanata*, *Linaria canadensis*, *Penstemon digitalis*, *Robinia hispida*, *Rosa carolina*, *Schizachyrium scoparium*, *Solidago odora*, *Sorghastrum nutans*, and many others occur in the dry, gravelly soil surrounding the bogs.

Surveyors: Lou Aronica, Jake Hughes, Katharine McCarthy, John Parrish, Rod Simmons, Mark Strong, and Meghan Tice

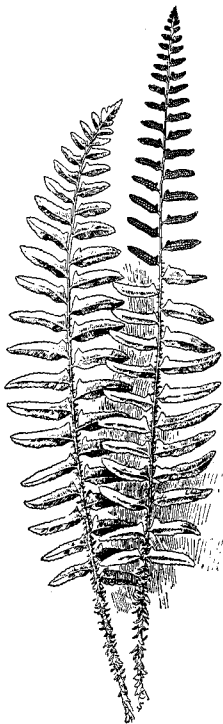
Bald Hill Barrens, Harford County: A small, serpentine rock outcrop along a ridge overlooking the Susquehanna River Gorge. Species typical of serpentine barrens that occur here include *Asclepias verticillata*, *Asclepias viridiflora*, *Cerastium arvense*, *Eragrostis spectabilis*, *Quercus marilandica*, *Quercus stellata*, and *Sporobolus vaginiflorus*. (Maryland botanist Clyde Reed surveyed this site in the 1960s and 70s and included his findings in his book *Floras of Serpentine Formations in Eastern North America*.)

Adiantum pedatum, *Betula lenta*, *Campanula rotundifolia* (S2), *Cirsium muticum*, *Dryopteris marginalis*, and *Woodsia obtusa* grow in rich soil on the steep, rocky banks below the ridge along the Susquehanna River.

Surveyors: Sam Jones, Rod Simmons, and MNPS field trip participants

Stony Run Bog and Wetland, Anne Arundel County: A several acre, acidic seep that becomes a large, forested swamp. An extensive patch of *Maianthemum canadense* grows in the acidic seep with *Carex bullata*, *Carex howei*, *Carex seorsa*, and *Carex styloflexa*. A small number of the federally-listed *Helonias bullata* (S2 E) grows amidst Skunk Cabbage in the seep.

Surveyors: John Parrish and Mark Strong



"Move along these shades.
In gentleness of heart; with gentle hand.
Touch – for there is a spirit in the woods."
- Wordsworth

Early Blooming Linked To Global Warming

Smithsonian scientists have evidence that Washington's famous cherry trees are blooming on the average seven days earlier than 30 years ago, apparently due to global warming. The Smithsonian's National Museum of Natural History released background on the results of a 30-year study of flowering plant species common in the Washington, D.C. metro area. The study conducted by the museum's Department of Botany indicates that the rise in the region's average minimum temperatures is producing earlier flowering in 89 of the 100 common plant species investigated. On average, flowering plants are blossoming 4.5 days earlier in 2000 than in 1970. The study suggests that the trend toward earlier blooming of flowering plants may be the result of global warming.

Smithsonian scientists Stanwyn Shetler, Mones Abu-Asab, Paul Peterson, and Sylvia Stone Orli examined botanical data collected by more than 125 individuals over a 30-year period beginning in 1970 in order to reach their findings. Data was obtained at sites in Washington, D.C., Arlington, Virginia, Beltsville and Silver Spring, Maryland, and other regional locations.

"This trend of earlier flowering is consistent with what we know about the effects of global warming," said Dr. Stanwyn Shetler, botanist with the Smithsonian's National Museum of Natural History. "When we compared the records from the Smithsonian study with local, long-term temperature records we discovered statistically significant correlations. The minimum temperature has been going up over these years and the early arrival of the cherry blossoms appears to be one of the results."

Utilizing data from the National Park Service, Smithsonian scientists examined two predominant species of Japanese flowering cherries located near the Tidal Basin in Washington, D.C. which have been blooming on earlier dates over the past 30 years. The *Oriental cherry blossom* (*Prunus serrulata*) and the

Yoshino cherry blossom (*Prunus yedoensis*) have been reaching peak bloom six and seven days earlier since the 1970s, respectively. This year, the Yoshino variety reached peak bloom on March 20, the second earliest date on record. The average date to bloom is April 4.

Analysis of the database infers that early blooming is not a phenomenon isolated to cherry blossoms. Among the 100 native and naturalized plant species analyzed by the researchers, 89 have shown a consistent trend of flowering earlier and earlier each year. Eleven species in the study actually show a reverse trend by blooming later, including the Japanese honeysuckle, which blooms on average 10.4 days later and the Dutchman's-breeches, opening 3.2 days later.

The consequences could be significant, as Shetler explained, "Based on this study, we can expect a gradually expanding growing season, which may be lengthened at both ends if the warmer temperatures prolong the end of summer as well. Over a long period the species composition of our local flora could change. Species like the sugar maple that require a long cold period may die out in our region. Invasive alien species, especially from more southern climes, may become more and more of a problem. Weedy species like false-strawberry that can bloom throughout relatively mild winters could spread. If these trends continue, persons with allergy problems will experience them earlier because some of the first plants to bloom are wind-pollinated trees, such as the American elm and common alder."

Smithsonian botanists will continue to study the flowering patterns of local plant species in order to contribute to the general understanding of the effects of global warming. Shetler and Orli are the authors of the new *Annotated Checklist of the Vascular Plants of the Washington-Baltimore Area* (Ferns, Fern Allies, Gymnosperms, and Dicotyledons). Its publication represents the initial step toward providing the first inventory of vascular flora in the Washington, D.C. area in more than 50 years. Data on the flora of the Washington-Baltimore area is maintained by the museum on the World Wide Web at <http://www.nmnh.si.edu/botany/projetes/dcflora>.

Easy Ferns for the Garden (All Native to Maryland)

by Joseph F. Metzger, Jr.

Ferns with Crowns

Large Ferns

<i>Osmunda cinnamomea</i>	Cinnamon Fern	Shade ¹ to Sun	Moist to Wet
<i>Osmunda claytoniana</i>	Interrupted Fern	Shade to Sun	Moist to Wet
<i>Osmunda regalis</i>	Royal Fern	Shade to Semishade ²	Moist to Wet

Medium Ferns

<i>Athyrium angustum</i>	Northern Lady Fern	Shade to Semishade	Moist
<i>Athyrium asplenoides</i>	Southern Lady Fern	Shade to Semishade	Moist
<i>Athyrium thelypteroides</i>	Silvery Spleenwort	Shade to Semishade	Moist
<i>Dryopteris cristata</i>	Crested Wood Fern	Shade to Semishade	Moist to Wet
<i>Dryopteris intermedia</i>	Evergreen Wood Fern	Shade to Semishade	Dry to Moist
<i>Dryopteris marginalis</i>	Marginal Wood Fern	Shade to Semishade	Dry to Moist
<i>Dryopteris spinulosa</i>	Spinulose Wood Fern	Shade to Semishade	Moist
<i>Polystichum acrostichoides</i>	Christmas Fern	Shade to Semishade	Dry to Moist

Small Ferns

<i>Asplenium platyneuron</i>	Ebony Spleenwort	Shade to Semishade	Dry to Moist
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Ferns with Runners

Moderately Spreading Ferns

<i>Adiantum pedatum</i>	Maidenhair Fern	Shade to Semishade	Moist
<i>Cystopteris protrusa</i>	Lowland Fragile Fern	Shade to Semishade	Moist
<i>Phegopteris hexagonoptera</i>	Broad Beech Fern	Shade to Semishade	Moist
<i>Polypodium virginianum</i>	Common Polypody	Shade to Semishade	Dry to Moist
<i>Thelypteris noveboracensis</i>	New York Fern	Shade to Semishade	Moist to Wet

Aggressive Ferns

<i>Dennstaedtia punctilobula</i>	Hay-scented Fern	Shade to Semishade	Dry to Moist
<i>Mattuceccia pennsylvanica</i>	Ostrich Fern ³	Shade to Semishade	Moist to Wet
<i>Oncoclea sensibilis</i>	Sensitive Fern	Shade to Sun	Moist to Wet
<i>Pteridium aquilinum</i>	Bracken	Shade to Sun	Dry to Moist
<i>Thelypteris palustris</i>	Marsh Fern	Shade to Semishade	Moist to Wet
<i>Woodwardia areolata</i>	Netted Chain Fern	Shade to Sun	Moist to Wet
<i>Woodwardia virginica</i>	Virginia Chain Fern	Shade to Sun	Moist to Wet

¹ Light level similar to a mature woods.

² Light level similar to the edge of a mature woods.

³ Forms both runners and crowns. Northern Maryland is at the southern edge of its natural range.

Earthlings versus Aliens

[Reprinted with permission from the August 2000 issue of *Journal of Forestry*]

One of the thorniest issues facing natural resource managers is how to deal with invasive alien plants. The sheer magnitude of the problem is itself daunting. According to the Plant Conservation Alliance, a consortium of 10 federal agencies and more than 160 state and private groups, 4,000 species of exotic plants are established in the United States. Invasive alien plants can cause a variety of problems: loss of habitat for native plants, wildlife, and insects; reductions in biodiversity; changes to natural ecological processes, such as plant community succession; changes in the frequency and intensity of natural fires; and disruption of such native plant-animal associations as pollination, seed dispersal, and host-plant relationships.

The alliance's Alien Plant Working Group reports that each year the U.S. Fish and Wildlife Service spends \$10 million on controlling invasive plants, and the National Park Service spends about \$2 million. Invasive plants cause great economic losses in agriculture, forestry, rangelands, and roadways management, and these losses are measured in billions of dollars a year. In 1992, President Clinton signed an executive order establishing the National Invasive Species Management Plan, designed "to prevent the introduction of invasive species and provide for their control and to minimize the economic, ecological, and human health impacts that invasive species cause."

Parks, reserves, and other public natural areas are focal points for efforts to remove invasive species. Marc Imlay, chair of the invasive exotic plants committee for the Maryland Native Plant Society, says that organizing citizen volunteers is the key to effective removal projects. Volunteers perform critical work that would otherwise not get done, such as manual removal, application of herbicides and biological controls, preventing the introduction of alien species, and planting native ones. "It seems that almost every day I learn about a newly formed group of volunteers and successful projects across the country," says Imlay, who has organized volunteers



in Hawaii and Maryland. According to Imlay, 5 percent of all endangered plants species on the national list are native to Kokee, Waimea Canyon, and Na Pali Coast state parks in Hawaii. Imlay helped organize volunteers to prevent these species from being smothered by strawberry guava, Kahili ginger, melaleuca, black wattle, silky oak, and privet. "We had been advised that it was impossible to control these species," he says. "Nonetheless, in 12,000 person-hours of work over 18 months, the volunteers have converted more than 500 acres from 50 percent or so native species to over 95 percent native species."

Imlay says weed-control strategies involve manual and mechanical methods where practical, such as the pulling of seedlings in areas of new infestations and the judicious use of herbicides. For weed tree species, such as strawberry guava and fire tree, methods such as notching and thinline drizzle application of selective herbicides are effective.

Although the use of herbicides in parks is often unpopular with the public, Imlay recommends low-volume applications of weed-specific chemicals, which allow time for native species to take over the niche as the weed plants die slowly in place. For the control of Japanese stilt grass in Ruth B. Swann Memorial Park in Maryland, for instance, Imlay and his volunteers applied Round-Up with a backpack sprayer and carefully avoided native plants. Says Imlay, "Round-Up at 2 percent solution does not migrate, and it biodegrades."

In the past, most people simply assumed it was too difficult to remove invasive species. "Given the scope of the problem," says Imlay, "we have no choice. Fortunately, a few individuals and groups have shown us the way. All we have to do is do it."

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

Invasive Exotic Plant Update

Sawtooth Oak (*Quercus acutissima*) is an invasive exotic tree that is rapidly spreading into forested areas and thickets along highways in Maryland where it was introduced as an ornamental for landscaping. Mature specimens along I-95, BW Parkway, 495, I-70, I-68, Rt. 50, and other roads in Maryland are sending up volunteers, many of which are beginning to invade relatively undisturbed natural areas.

Like many of our most troublesome weeds, this plant was introduced as a horticultural selection for landscaping purposes. Unfortunately, this situation keeps repeating itself over and over again as plants that become extremely invasive like Bradford Pear, Miscanthus Grass, Burning Bush, and many others are introduced each year and widely planted. The cumulative effect of these plants on natural systems is staggering, and in many ways is just beginning. The problem at root is an ignorance of our natural communities and the diversity of native species that comprise them. For example, both the Maryland and Virginia State Tree Nurseries grow many thousands of Sawtooth Oak seedlings and other invasives each year for planting throughout both states, despite warnings from federal and state agencies and groups like MNPS and VNPS. This leads land managers and property owners to believe that there is nothing wrong in using these plants.

The detrimental effects of many exotic species have been well-documented, with new reports coming in all the time. We also know that the surest way to prevent future problems with plants becoming invasive is to plant locally-occurring natives that are matched to the appropriate environment; because it is nearly impossible to gauge whether or not a species will become invasive if introduced to an area outside its natural range.

If we are to have anything left of our woodlands and natural areas in the decades to come, we need to halt the unnecessary introduction of species and draw from the wealth of our native flora when planting.

Pres. Continued From Front Page

We are also trying to develop an e-mail service for updates on field trips and meetings (we promise no spam or advertising) so let Jim MacDonald know your e-mail address (see Jim's e-mail address on page 10). If we get enough interest, we'll save money on our monthly mailings.

Keep in touch through the Society post office box and let us know what you think. Feel free to contact me at kmolines@chesapeake.net or by mail P.O. Box 228, North Beach, MD 20714.

I hope that under my leadership, the Society will continue to be a leader in the Maryland environmental community.

Sincerely,
Karyn Molines



Editor's Note: The Newsletter Committee hopes to have future issues published on a timely, quarterly schedule. As always, we rely on articles and newsworthy items about native plants and ecology from our members. If you wish to contribute articles or information to *Marylantica*, please send by e-mail to Rod Simmons (see address on page 10) or mail to MNPS (address on back of issue). Electronic text is preferred, but not necessary.

Thanks to Meghan Tice for assistance in typing and editing this issue. Thanks also to Lou Aronica and Joe Metzger for helping with printing, folding, and mailing.

ANNOUNCEMENTS

JAMES VINCENT O'CONNOR ENVIRONMENTAL EDUCATION MEMORIAL SCHOLARSHIP FUND

Jim dedicated his life to educating people about the world around them. He taught people how to read the land, how to explore their own surroundings, how to form questions about their world and look for answers, and how to use the outdoors as a fabulous classroom. He touched the lives of hundreds, perhaps thousands of teachers, who in turn shared these wonderful gifts with countless young people.

The James Vincent O'Connor Environmental Education Memorial Scholarship Fund will continue Jim's legacy by offering mini-grants to educators, formal and non-formal, who wish to learn how to teach about the environment. The fund will sponsor teachers who would like to take a course, or attend a conference or workshop focusing on environmental content or outdoor educational methods. A requirement for the scholarship will be that the course, conference, or workshop must contain a field component - getting the participants outdoors, as Jim would have done.

The fund will be administered jointly by committee with representatives from Jim's family, the Audubon Naturalist Society, and the District of Columbia Environmental Education Consortium.

To make a donation to the fund, make out a check to The Audubon Naturalist Society and write *J.V. O'Connor Scholarship Fund* on the memo line. All donations are fully tax-deductible. Checks may be sent to The Audubon Naturalist Society, 8940 Jones Mill Road, Chevy Chase, Maryland 20815.

Tanka Shozo wrote, "*The care of rivers is not a question of rivers, but of the human heart.*" Jim's heart was full of care for our world. Together we can continue his work touching the hearts and stimulating the minds of future generations to care for our shared environment.



MNPS COMMITTEE CHAIRS

Conservation.....	Lou Aronica (202)722-1081
Field Trips & Programs...	Amy Doll & Tina Schneider doll@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 Simmons rod777@telocity.com
MNPS Library.....	Jake Hughes (301) 490-4179
Membership.....	Joe Metzger (410) 775-7737
MNPS Web Site.....	Jim MacDonald jmacdon@im.digex.net
Botany.....	Rod Simmons

By Sam Jones

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Most members of our Society are familiar with the genus *Smilax*. There are easily ten species of this group found within Maryland. Some are herbaceous and some woody, which rarely occurs in a single family. The greenbriers and catbriers are frequently encountered forming impenetrable, prickly barriers in forests and equally unwelcome, tangled mats in open fields. Whenever I am out botanizing, the plants that I want to see the most are usually on the other side of such barriers. This leaves me wondering; is there any good to this lot? Well, it appears that the Cherokees made use of at least one species; *Smilax pseudochina*.

At the Society's 1999 fall conference on the campus of Mount Saint Mary's College, I was given a copy of Bartram's *Travels and Other Writings*. In this book, William Bartram captures the now-vanished wilderness of the southern American forests and swamps of the 1770s. The following is his account of how the Cherokees of the Carolinas used Bull Briar:

"They dig up these roots, and while yet fresh and full of juice, chop them in pieces and then macerate them well in wooded mortars; this substance they pour in vessels nearly filled with clean water, when, being well-mixed with paddles, whilst the finer parts are yet floating in the liquid, they decant it off into other vessels, leaving the farinaceous substance at the bottom, which being taken out and dried, is an impalpable powder or farina, of a reddish color. This, when mixed with boiling water, becomes a beautiful jelly, which when sweetened with honey or sugar, affords a most nourishing food for children or aged people; or when mixed with fine corn flour and fried in fresh bears' grease, makes excellent fritters."

Brown and Brown's *Woody Plants of Maryland* states that *Smilax* berries are eaten by a wide variety of species including wood duck, ruffed grouse, wild turkey, fish crow, black bear, opossum, raccoon, squirrel, and numerous species of songbirds, especially catbird, mockingbird, robin and other thrushes.

Ed. Note: Since *Smilax pseudochina* is a rare plant in Maryland, perhaps other more common *Smilax* species would substitute for it in the above recipe.

SONGBIRD DECLINE LINKED TO NON-NATIVE SHRUBS

[Reprinted from the Winter 2000 issue of *Douglasia*, the newsletter of the Washington Native Plant Society]

New evidence suggests that the decline of songbirds is linked to the rise of non-native plants. Birds that nest in non-native plants lose more eggs to raccoon and other predators, according to research presented in the December issue of *Conservation Biology*.

"Here is an ecological trap if there ever was one!" says Christopher Whelan of the Illinois Natural History Survey in Wilmington, Illinois, who co-authored the study with Kenneth Schmidt of the Department of Biology at the University of Memphis.

"Introduced honeysuckle and buckthorn can dominate the understories of forest preserves, particularly small, fragmented preserves surrounded by urban sprawl," says Schmidt.

Schmidt and Whelan studied nest predation of American robins and wood thrushes in a 500-acre deciduous woodland preserve near Chicago for six years. There, non-native shrubs have largely replaced the native shrubs where the songbirds once nested: honeysuckle (*Lonicera maackii*) has replaced arrowwood (*Viburnum rafinesquianum*) and buckthorn (*Rhamnus cathartica*) has replaced hawthorn (*Crataegus crus-galli*).

Schmidt and Whelan found that the predation of both robin and thrush nests was higher in the non-native shrubs than in the native shrubs and trees. The researchers suggest that this increase is partly due to physical differences between the native and non-native shrubs. Buckthorn lacks hawthorn's sharp thorns, which could deter mammalian predators. Honeysuckle has sturdier branches, which could both help predators climb higher and support nests closer to the ground, where they are more accessible to predators. Wood thrushes built about half their nests in exotic shrubs. During the study period, the number of robins nesting in honeysuckle increased six-fold (from 5% to more than 30%). The researchers suggest that honeysuckle is an attractive nesting site

because it sometimes leafs out before the native shrubs.

The good news is that solving the non-native shrub problem could also help solve the songbird problem. The bad news is that removing exotic shrubs and restoring natives will be a big job. But the longer we wait, the worse the problem will grow.

For more information, contact Kenneth Schmidt (901) 678-4408, Caracal@aol.com, or Christopher Whelan (815) 476-3134, virens@attglobal.net *Conservation Biology* is published by the Society for Conservation Biology, www.conbio.rice.edu/scb/.



To The Fringed Gentian

"Thou blossom bright with autumn dew,
And colored with the heaven's own blue,
That openest when the quiet light
Succeeds the keen and frosty night.

Thou comest not when violets lean
O'er wandering brooks and springs unseen,
Or columbines, in purple dressed,
Nod o'er the ground-bird's hidden nest.

Thou waitest late and com'st alone,
When woods are bare and birds are flown,
And frosts and shortening days portend
The aged year is near his end.

Then doth thy sweet and quiet eye
Look through its fringes to the sky,
Blue - blue - as if that sky let fall
A flower from its cerulean wall..."

- Bryant

CHASING CHELONES

By Edgar T. Wherry

[Excerpts reprinted from *Bartonia*, No. 10, 1927-1928]

Early in September, 1924, while riding in an automobile along the road from Washington from Upper Marlboro and Annapolis, I noticed a plant which looked strange in the roadside ditch near Hills Bridge, in Anne Arundel County, Maryland. Mr. E. J. Besson, who was driving, at once stopped to permit it to be examined more closely; it proved to be a purple-flowered species of *Chelone*, quite distinct from the common *C. glabra* of the region, and in manuals fitting most closely the description of *C. obliqua* L. It then came to mind that Mr. J. E. Benedict, Jr., of Washington, had mentioned the finding of this plant at the same locality several years previously, although no particular importance was at that time attached to the find. A bit of the *Chelone* was pressed in newspaper and forwarded to Dr. Francis W. Pennell, who immediately pointed out the significance of this discovery; the description of *C. obliqua* in the manuals appeared to be based chiefly on a plant from the lower Ohio valley, whereas the material to which Linnaeus assigned that name had been collected by Clayton in Virginia, and probably on the Coastal Plain over 175 years ago. In the latter region, however, the plant was "lost" in the sense that there were no specimens from Virginia or Maryland in any American herbarium, and no data as to whether it was still growing at any locality in this part of the country. As a result, it had never been possible to compare specimens from the type region and from the central United States, to ascertain whether they were identical or not; but its rediscovery on the eastern Coastal Plain now made possible direct comparison.

In the latter part of August of the following year Dr. Pennell came to Washington, and Mr. Benedict drove us out to the locality. The purple *Chelone* proved to grow on both the Anne Arundel and Prince Georges County sides of the Patuxent River, in thickets on moist, subacid, sandy soil. A variety of *C. glabra* with long spikes of greenish-white flowers occurred in the same vicinity, but was restricted to circumneutral soil in the open river marsh, and there



seemed no tendency of the two to mingle or to hybridize. Most interesting of all, however, was the fact that the purple species was found to possess, as compared with the plant which had been passing under the name *C. obliqua* in the Ohio valley, differences of varietal rank. Another colony with similar features was subsequently found 40 km. further south, in a subacid cypress swamp east of Bowens, in Calvert County, Maryland (Battle Creek Cypress Swamp).

It was then in order to try to rediscover Clayton's original locality for *Chelone obliqua*; but first it seemed desirable to look up another purple *Chelone*, namely *C. grimesii*, which had been collected by Professor E. J. Grimes of William and Mary College shortly before his death in 1921, and a specimen of which had reached the Gray Herbarium and been subsequently described and named by Mr. C. A. Weatherby. This had sessile leaves, and as the plate published by Miller, representing a plant grown from roots sent to England by Clayton, showed rather obscure petioles, some doubt remained as to whether "*C. grimesii*" might not really be the original *C. obliqua*.

We stayed overnight at Williamsburg, Virginia, and took an early morning train to Elko, in Henrico County, where the specimen of *Chelone grimesii* had been collected. About one kilometer west of the station we were much pleased to come upon the plant, growing in moist, subacid to mediacid peat, and to

find that it was not at all rare, but occurred at frequent intervals for 3 kilometers along the track, practically to the station of Polar Springs. Full data as to the appearance of this plant in fresh condition being now in hand, the next point to be looked into was whether it or the Hills Bridge species grew in the region where Clayton had collected.

John Clayton was employed in the early 1700s at the Gloucester Court House, and the majority of the specimens which he sent to Gronovius and which formed the basis for the latter's classic "*Flora Virginica*" probably came from that vicinity. There being no railroads in Gloucester County, and the roads having until recently been none too good, modern botanists have neglected visiting Clayton's old collecting grounds; but with the advent of the hard-surfaced road and the motor bus, transportation there is no longer a serious problem. We had a comfortable ride one afternoon from Lee Hall on the C&O Railroad to Gloucester Court House, where we spent the night in the local hotel. The next morning we hired an auto to take us 13 kilometers (8 miles) northeastward to Soles, in Mathews County where Clayton had lived. His house, which had been located 1 km. southwest of that place proved to have entirely disappeared, although Mr. Leigh who lives in a modern building on the property, informed us that he had struck the old foundation stones while digging in his yard.

Soles is in the northwestern part of the Mathews Quadrangle of the U. S. Geological Survey, and on looking over this to see if any habitats likely to yield *Chelone* occurred in the vicinity, we noted the symbol indicating "fresh marsh" north of Burke Pond, not far from the site of Clayton's house, so we at once investigated there. After a couple of hours searching in the swampy areas, which fortunately were nearly dry at the end of a hot summer, we came to a colony of a purple *Chelone* barely a kilometer west of the old Clayton place. From there southward along the valley of North End Branch for 2.5 kilometers to the tidal marsh at "Fort Nonsense," the same species was found to occur in scattered patches, in both Mathews and Gloucester counties. When collecting specimens in the neighborhood of his home, Clayton could not have failed to become acquainted with this striking plant, and it would seem far more likely to represent

his "*Chelone floribus speciosis pulcherrimis colore Rosae damascenae*," as he termed it in writing to Gronovius, than anything from a more remote region.

The characters of this *Chelone* were unmistakably those of the one which had first attracted my attention to the genus the year before at Hill's Bridge, 150 kilometers to the north. The leaves tapered to short petioles, and were but little reduced in size toward the inflorescence, the flowers were relatively large and uniformly purple-colored both without and within, and the sterile stamen was white. *C. grimesii* on the other hand had proved to possess leaves which narrowed abruptly to sessile bases and became much reduced in size toward the inflorescence, also somewhat smaller flowers which were purple-striped within, and a purple sterile stamen. Comparison with the Miller plate indicated that it represented, though somewhat crudely, the first rather than the second of these species; it showed leaves which tapered at the base (although the petioles were drawn abnormally broad) and which were not much reduced below the inflorescence, as well as large flowers uniformly colored within. The inference is clear that Clayton did not have *C. grimesii*, as had been suspected by Mr. Weatherby when he named the species, and had been further mentioned by Mrs. E. W. Erlanson in reviewing the work of her late husband, Professor Grimes. He had, instead, the other species here under discussion, which must therefore represent the real *Chelone obliqua*. So we had "the thrill that comes once in a lifetime" - we had rediscovered a plant lost to science for 175 years!

The settling of the question as to the identity of the original *Celone obliqua* increased rather than diminished my interest in the genus, for the relationship of these lowland species with the *Chelones* of the Allegheny mountains was still uncertain. A trip was planned, accordingly, for the fall of 1926, to visit the mountains and study the representatives which might occur there. It was not practicable to start on this trip until the second week in September, and Dr. Pennell was unable to go, but I was fortunate in being accompanied by Mr. W. W. Diehl, of the Bureau of Plant Industry, a specialist in fungi, but acquainted with the higher plants as well. An ancient Chevrolet automobile, dubbed by one of the officers of the Philadelphia Botanical Club

"Chevy of Chevy Chase," furnished transportation, and we carried cots and slept out, although no cooking was attempted because of the loss of valuable collecting time it would have involved. Two weeks were available for the trip, and in spite of some delays for repairs, it was completed according to schedule.

At least five different species of *Chelone* had been reported in the southern Alleghenies. The best known of these is a purple-flowered plant with long-petioled ovate leaves, named by Pursh *C. lyoni*, which is well represented in herbaria. In addition to this Muhlenberg had recorded a *C. latifolia* which Elliott considered distinct and first characterized, although later writers have combined the two. Many years later Small described a sessile-leaved species from Highlands, North Carolina, giving its flower color as white and naming it *C. cuthbertii*. Moreover, Millsbaugh included *C. obliqua* as occurring at two localities in West Virginia, and *C. glabra* was generally believed to extend from the lower country into the mountains. Finally, it should be noted that Rafinesque had reported in various publications a number of species and varieties, which as usually happened with his propositions, had been ignored by later botanists. The trip was planned to find out as much as possible as to the relations between these various plants.

The start was made on September 12th, and the mountains were entered west of Staunton, Virginia. The first species collected, at several points in Virginia and West Virginia, proved to agree in characters with *C. glabra* var. *elatior* Rafinesque, a large plant with corollas distally purple, in this seemingly intermediate between *C. glabra* and *C. obliqua*. On the third day we reached Cheat Bridge, Randolph County, West Virginia, where Millsbaugh had reported *C. obliqua*. Rev. Fred W. Gray, of Cass, W. Va., was our guide in this vicinity, and with his aid we soon found in thickets on mediacid soil an abundance of a *Chelone* similar to the one just mentioned but with narrower leaves. It was clearly not *C. obliqua*, the corollas being purple only toward the tip, but corresponded more or less to Rafinesque's "*Chlonanthes montana*." Two long disregarded plants known to this early worker were thus apparently rediscovered, although they may not prove to be specifically distinct one from another. We then

proceeded southward and after a day of bouncing over roads mostly "laid out by the French engineer, De Tour," we entered North Carolina at Elk Park, the beauty of the twilight trip up the mountains through the Doe River Gorge making up for all the discomforts of the day...the next morning, just after passing through Ivy Gap when entering Madison County, we came upon a large colony of *Chelone*. Here in subacid soil along a mountain brook grew two sorts, one with bright purple, the other with green-tipped white flowers. Although the leaves of the first were very large, and tapered towards the base, indicating it to correspond to Elliott's *C. latifolia*, this would seem to be only a variant of *C. lyoni*. The second had leaves resembling those of *C. obliqua*, but differed in having relatively small corollas strongly keeled above and totally lacking in purple color, being apparently unlike anything included in herbaria or mentioned in the literature. To the thrill of rediscovering a third long-lost plant we had added that of finding an entirely new one!

The next point to be visited was Highlands, Macon County, which was reached on Sunday, September 19th, a week after the start of the trip. Here we had the good fortune to meet Mr. Thomas G. Harbison, who took us to the original locality of *Chelone cuthbertii*. As had been suspected by Dr. Pennell from examination of the type specimen, the flower proved to be not white as stated in the original description (based solely on dried material), but strongly violet-purple. It grows along with "*Chlonanthes montana*," already observed in West Virginia in thickets on moist, mediacid peaty soil... It has proved to be identical in all essential respects with "*C. grimesii*" of the Coastal Plain, and was found in 1927 to be linked in range by occurrences on the Piedmont, so the latter name will unfortunately have to be discarded.

The last day of the trip had now arrived and it was scarcely to be expected there would be opportunity to locate anything more. But a swamp on subacid soil about midway between Petersburg and Richmond, Virginia, looked promising and a brief search disclosed the presence of *Chelone cuthbertii*, hitherto known from a very few localities...North of Richmond a little *C. glabra* was seen and the trip of 1926 came to a close.