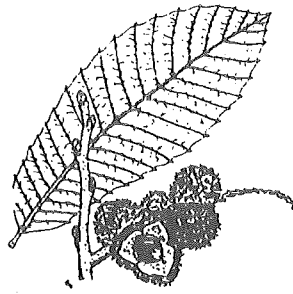


# Chinquapin

THE NEWSLETTER OF THE  
SOUTHERN APPALACHIAN BOTANICAL SOCIETY



VOL. 7, No. 1

SPRING 1999

## From The Editor's Desk...

This seventh year that this desk has received more Chinquapin submissions than ever, thanks to the readers and contributors. This is also the first time that we have not had a submission from naturalist, writer and publicist, George Ellison and his wife, illustrator and artist, Elizabeth. If you miss their column on "Botanical Excursions," George and Elizabeth would be happy to hear from you. One of the reasons they did not contribute a column (which they have done without compensation and generously for these past 24 issues!) is the fact they just returned from a visit to their son in Colorado. Drop a note or card to them at P. O. Box 1262, Bryson City, NC 2828713 or send an e-mail: ellison@dnet.net.

I would like to remind you of the "Wild Ideas," "In the Garden" and "Book Corner" columns which are also missing in this issue. Surely you have not run out of some creative thought that you probably will never have an opportunity to investigate in our fast-paced society but would not like to stay mum on

forever. Drop a note on it and let's hope some of our young budding botanists pick up and run with it. Some of you must also have a favorite garden that you would like to describe or request information about. We are not trying to single out only those famous ones but also some of the less-known gardens of the East. And lastly, what new book have you just read that you can describe in a brief paragraph to share with others?

Finally, our East drought has pretty well abated, though some city reservoirs are still running low. Do you suppose this summer will be dry as well? For those of us here in the lower Southeast, don't be surprised if we have another period of unusually dry weather. At least prepare as best you can for that eventuality.

**One last question for those versed in evolution theory: What does Robert FitzRoy have to do with the unraveling of the theory of evolution? (I'll publish the results of this question in the next issue).**

## Letters To The Editor:

Dr. Larry Brasher of Catawba College writes:

I read with interest your observations on the severe drought in the Southeast, especially in the Fort Payne, Alabama, area. Probably many of the seemingly dead trees will revive after the replenishing winter rains. Some dogwoods, however, may not be so fortunate. Visiting an old-growth mesophytic forest about 30 miles south of Fort Payne in mid-October, I noted many large dogwoods whose leaves AND terminal twigs were dead. My friend, Jonathan Evans, who teaches at University of the South at Sewanee, suggests that some of the typically cove species that have been creeping up onto the Cumberland Plateau in recent decades may have been

"Letters," cont. on page 7

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## Society Endowment Passes the \$100,000 Halfway Point Toward the \$200,000 Goal

Thanks to all of you who have contributed to the Castanea Endowment in 1998. The Society has, for the third time in four years, passed the \$10,000 mark for annual donations. Most of this year's donations came from past donors. Fourteen donors were added to the Roster of Donors this year, 13 at the \$100 level and one at the \$1,000 level.

In order for the Society to reach its goal of \$200,000, it will need the support of the 500

to 600 of our members who have not given at least \$100. If you have not supported the endowment in this or prior years, please make 1999 the year you make a contribution. Any donation received by mid-March will be reflected on the 1999 Roster of Donors at the annual meeting in Wilmington.

The following list includes the names of donors who moved up in the Roster in 1998.

**PRESIDENT'S CLUB LEVEL**  
(\$5,000 OR MORE)  
Don Windler

**CASTANEA CIRCLE LEVEL**  
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# Organizational Spotlights

## The Drifting Seed and The Drifters

The *Drifting Seed* is an international newsletter distributed to over 500 people in 20 countries to share information about things that drift in the ocean, particularly sea-beans, and about the people who study them. Sea-beans are tropical drift seeds and fruits that travel with the ocean currents. Cathie Katz (beachcomber, writer and publisher) and Dr. Charles Gunn, (retired research botanist at the USDA's BARC) met in 1993 and decided to publish a newsletter to address this unexplored area of botany. The newsletter's initial distribution was about 50, mostly to libraries and herbaria; within a few years, the organization had grown to over 500. Members and contributors include beach walkers, botanists, surfers, jewelry makers, medical researchers and oceanographers. Dr. Curtis Ebbesmeyer, the West Coast contributor, studies drift trajectories of anything afloat in the world's oceans and has concentrated in the past few years on tracking international shipboard spills, the most recent being millions of LEGO toy pieces (see *Chinquapin* 3[1], Spring 1995) from a ship leaving Denmark in 1997. Pete Zies, an attorney from Orlando, is now curating the world's most complete drift seed collection. Other contributors include park rangers with information about ocean drift material and jewelry makers who travel to Central America to collect drift seeds. Any material related to sea-beans and other things

that drift in the ocean are welcomed for worldwide study of ocean currents. Activities include presentations to local schools, beach clean-ups and beach walks with the state park service and other wildlife organizations. An international symposium is held each year in Florida in mid-October (sea-bean season) to exchange information. The symposium this year will be in the Cocoa Beach Library, Florida, October 22-24, 1999. For more information about the group or publications about sea-beans, contact Cathie Katz at Atlantic Press, Inc, PO Box 510366, Melbourne Beach, FL 32951.

## The Botanical Society of Western Pennsylvania

In October 1886, 36 western Pennsylvanians who wished to advance the study of botany, met in a Pittsburgh schoolhouse to form the Botanical Society of Western Pennsylvania (BSWP). The group, consisting chiefly of botanists, teachers, physicians and pharmacists, met monthly to hear lectures or view "lantern" shows. Organized field trips began in 1888 to areas accessible by train and streetcar, and members shared their sightings and plant specimens at the meetings. The BSWP sponsored an herbarium, which eventually formed the core of the Herbarium of the Carnegie Museum of Pittsburgh.

President John Bright, in 1931, stressed the need for thorough studies of the local region

due to the rapid pace at which man's activities were destroying the plant life. Otto E. Jennings, museum director, professor and botanist, spent weekends on BSWP field trips in the first half of the century, learning the plants and sharing that knowledge with others. This direct experience with plant life was said to encourage community leaders to preserve the area's significant botanical areas.

Today the BSWP continues a strong membership of botanists, teachers, researchers and amateurs. Members meet monthly to discuss plants observed and to advance their knowledge through lectures.

BSWP sponsors year-round field trips, open to all. Members explore the floristic diversity of western Pennsylvania, which offers a meeting and mixing of northern, southern and mid-western forest types. Specialized habitats such as freshwater fens, bogs, hemlock ravines and limestone outcrops offer a satisfying day of botanizing. In addition to field trips, members have volunteered their time and expertise for local organizations in botanical assessments of natural areas.

The BSWP will soon publish a book devoted to wildflowers of Pennsylvania. The book will introduce the state's native plants by way of color photos and descriptions. For more information, call or write Loree Speedy, 5837 Nicholson Street, Pittsburgh, PA 15217 (412) 521-9425; e-mail address is <yoree@sgi.net>. Visit the BSWP web page at <http://home.kiski.net/speedy/b1.html>.

## England-Scotland Dales and Moors

The NC Botanical Garden's Ken Moore along with English geologist Tim Summer and travel counselor Mary Howes are leading a trip in the Northumberland region June 25-July 11 this year. Contact Ken at 919-962-9457 or Mary at 919-942-3688 for details.

*"A thing is right when it tends to preserve the integrity, stability, and beauty of the biotic community. It is wrong when it tends otherwise."*

—Aldo Leopold, 1949.

## Botanists Celebrate Herbarium and Carolinas Manual

On November 14, 1998 the UNC Herbarium and the North Carolina Botanical Garden celebrated the 90th birthday of the herbarium and the 30th anniversary of the publication the *Manual of the Vascular Flora of the Carolinas* with reception in the herbarium followed by a tour of the arboretum and a banquet at the Morehead Building on the UNC Campus. More than 300 friends and former students attended. In addition to the Radfords and Bells, members of the Coker, Totten and Couch families were also present. As a part of the celebration the first public viewing of the architectural plans for a new home for the herbarium and a botanical library to be built in the North Carolina Botanical Garden were presented. Architects were present to discuss the plans with guests. The new facility will house approximately 2 million specimens and provide adequate

research and work space for staff and visitors. The celebration began on Nov. 13 with a talk and book signing by Jim and Peggy Duke (*The Green Pharmacy*). The tours and banquet occurred on Saturday. Dr. Betsy Bennett, Director of the Museum of Natural Sciences, spoke on the relevance of museums and botanical gardens in today's society. Jim Duke performed a song especially written for the occasion. The celebration ended with Dr. Bruce Baldwin of the University of California, Berkeley presenting a seminar in Coker Hall on the "Origin and adaptive radiation of Hawaiian Silverswords alliance (Compositae)."

Pictures taken at the reception and banquet and other information may be seen on the UNC Herbarium's website at <<http://metalab.unc.edu/unc-biology/herbarium>> – Jim Massey, NCU Herbarium.

# National Vegetation Classification Now Available

After more than a decade of work, The Nature Conservancy is making public its vegetation classification system for the United States. The classification, a systematic way of describing and assessing the ecological diversity of the United States, is the result of an extensive and ongoing collaborative effort among Conservancy ecologists and scientists in state Natural Heritage programs, federal agencies and academia. A variety of recent and upcoming publications present the classification and detail how it can be used for making conservation decisions and for other purposes.

A two volume publication is currently available. Volume I provides an in-depth description of the classification system, including its development, present status and how it is being used. The second volume presents the list of natural and semi-natural vegetation types that have been defined through applying this system across the United States. Both volumes can be viewed and downloaded from the Nature Conservancy's website (<http://www.tnc.org>, then click on "Conservation Science"). A printed copy of Volume I can be obtained by contacting Angella Streeter at 703-841-5378 or via email at <[astreeter@tnc.org](mailto:astreeter@tnc.org)>. (Volume II is no longer available in print.) A printed and bound subset of the National Vegetation Classification covering the southeastern United States (Alabama, Arkansas, Florida, Georgia, Kentucky, Louisiana, Mississippi, North Carolina, Oklahoma, South Carolina, Tennessee, Texas and Virginia) with more detailed descriptive information, is also available for \$40.00, from the Conservancy's Chapel Hill office (Laura Mason, P.O. Box 2267, Chapel Hill, NC 27515-2267). In the near future, the Conservancy will begin presenting the classification on its web site in the form of a fully searchable, periodically updated list of vegetation types. That list, which the Conservancy expects to be available by this coming summer, will include much more detailed information about the types than has been available previously.

In addition to these scientific publications, a more general description of the classification, with emphasis on how it is being used for conservation, should be available in print and on the Conservancy's web site by the time this newsletter reaches you. Conservancy ecologists say that this flurry of print and electronic publication represents a push to get the classification to a much wider audience of conservation practitioners so that its enormous potential for improving conservation decisions can be realized. Just as important,

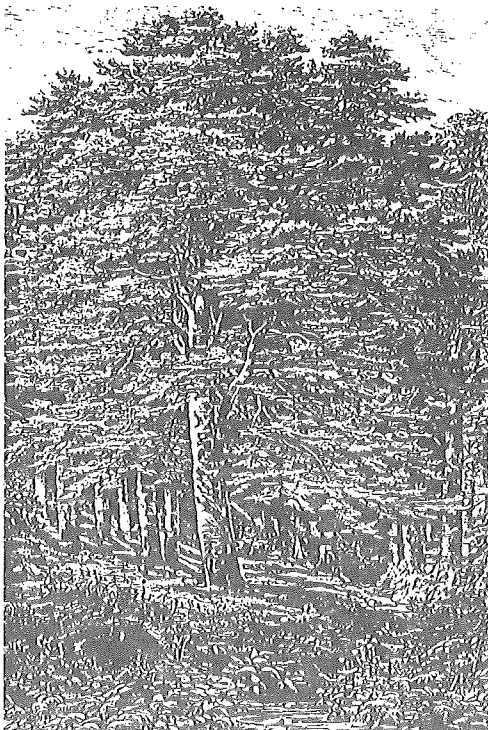
the ecologists are actively looking for partners of professional and amateur botanists and ecologists alike to become involved in the ongoing process of refining and expanding the classification. Collaborative review has been a major part of the development of the classification all along, but the ecologists expect that having the entire classification, including fairly detailed descriptions of most of the types, up on a publicly accessible web site will greatly increase the amount of valuable feedback they receive. Additional guidance on classification development will be coming from the Ecological Society of America, which is helping to set standards for type definition, ensuring that the classification will continue have the most rigorous scientific basis possible.

Although the classification effort is clearly ongoing, what's been accomplished to date is significant. The classification, which is based on vegetation, is the first to be both national in scope and fine enough in scale to be used in making on-the-ground conservation decisions. Most national and global-level classifications place vegetation or environmental features into fairly coarse categories that cover vast expanses of land, but obscure finer detail that may be of great ecological significance. In contrast, ecologists working at local levels have long recognized finer scale vegetation patterns, and have used them to identify ecological systems and habitats of special con-

cern within their jurisdictions. In developing this new national classification system, Conservancy ecologists have worked to integrate these numerous state and local classifications, and other fine-scale information on vegetation pattern, into a standardized, structured system that covers most of the United States. Along with Heritage Program ecologists, they have also begun to expand the classification into areas not well understood at the local level. The result is a single system that allows ecologists to identify and evaluate particular plant communities across their full geographic range.

At the finest level of the classification, these plant communities are called associations. Simply put, associations are plant assemblages that exhibit similar total species composition and vegetation structure and that occur under similar habitat conditions. An example is the *Fagus grandifolia* / *Carex pennsylvanica* - *Carex brunnescens* Forest, a southern Appalachian "Beech Gap" type that occurs at high elevations and is characterized by stunted, gnarled beech trees and a dense, relatively diverse mixture of sedges and other plants.

Each association is placed into the next, coarser level of the classification system called the alliance. Somewhat akin to a cover type, alliances encompass all associations that share common dominant species in the upper stratum, and that have other similarities in total floristic composition and habitat conditions. The beech gap association listed above is one of seven associations in the *Betula alleghaniensis* - *Fagus grandifolia* - *Aesculus flava* Forest Alliance, which might informally be called the Southern Appalachian Northern Hardwoods Alliance. Alliances are nested into coarser levels of the system based primarily on the structure of the vegetation and on characteristics of the leaves, characteristics that are discernible even when detailed floristic data are lacking. At the coarsest level of the system, the class, only seven broad classes are recognized: forests, woodlands, shrublands, dwarf-shrublands, herbaceous vegetation, nonvascular vegetation and sparse vegetation. These coarser levels are based on UNESCO's worldwide classification of vegetation, and they allow the local types to be tied to global ones at whatever level the data will allow. In addition to nesting within this hierarchy, associations can also be aggregated into groups of ecologically and geographically related types. Examples include Rocky Mountain alpine meadows, southwestern riparian woodlands and Midwestern beech-maple forests.



Beech forest, copied from *Plants and Flowers* (1992) by A.E. Bessette and W.K. Chapman, Dover Publ. Inc., p. 178.]

# Report on an Ecological Analysis of Ouachita River Floodplain Forest in Louisiana

An ecological study of the vegetation of a Ouachita River floodplain forest is currently in progress. The study area is located in Caldwell Parish, Louisiana, which is in the northeast part of the state. The study involves quantitatively describing the vegetation and determining how it is influenced by site factors such as elevation, hydrology and soils. Eighty-six systematically placed permanent points have been marked. At each point, elevation has been measured and soil samples have been analyzed for texture, pH, percent organic matter and certain extractable nutrients. Historical Ouachita River water level information has been gathered. Vegetation was sampled at each point in a series of nested plots to provide quantitative data on all vascular plant life forms. The study area is about 40 acres in size and is bound by the Ouachita River to the south, a steep escarpment to the west and pastureland to the north and east. A small drainage called Sillars Bayou runs through the center of the area in a north-south direction and empties into the Ouachita. The area is usually inundated from late winter to early spring due to backwater pressure from the Ouachita River. The results given in this report are those of the vegetation characteristics, such as community physiology data and population data.

The forest appears to be a variant of the overcup oak-water hickory (*Quercus lyrata-Carya aquatica*) forest type, with a very con-

spicuous showing by swamp privet (*Forestiera acuminata*). Planertree (*Planera aquatica*), persimmon (*Diospyros virginiana*) and green hawthorn (*Crataegus viridis*) are not uncommon. Conspicuous woody vines are climbing dogbane (*Trachelospermum difforme*), red grape (*Vitis palmata*) and ladies' eardrops (*Brunnichia ovata*). The herbaceous layer is scant, mostly dominated by powderpuff (*Mimosa strigillosa*).

Fifty-nine species of plants were encountered in the plots, including 19 species of trees/shrubs, 20 species in the shrub/sapling/seedling category, 14 species of woody vines and 21 species of herbaceous plants. For the tree/shrub category, mean richness (average number of species per 314 m<sup>2</sup> radial plot) was 5.35; mean density was 43.1; and mean basal area was 7059 cm<sup>2</sup>. Mean richness for the shrub/sapling/seedling life form was 7.13. Mean density and mean cover were 28.7 and 1.51%, respectively. Mean richness for woody vines was 5.62. Mean density and cover were 5.33 and 10.2%, respectively. The high density of woody vines was due to climbing dogbane, which was very thick in most areas because it dies back to the ground line each year due to flood waters. The mean richness for herbaceous plants was 0.67; the mean density was 2.16; and the mean cover was 1.86%.

Importance values (IV) were calculated for each species by summing the relative values

of frequency, density and dominance. Dominance was represented by basal area for trees/shrubs and percent cover for the remaining life forms. The most important species of trees/shrubs based on their IV were water hickory (104.44), swamp privet (62.10) and overcup oak (43.37). The top species in the shrub/sapling/seedling life form were persimmon (37.42), planertree (31.61) and overcup oak (31.03). Not surprisingly, climbing dogbane had the highest IV of woody vines at 162.61. Peppervine (*Ampelopsis arborea*) was a distant second with an IV of 27.28 and rattan (*Berchemia scandens*) was third with an IV of 25.08. Powder puff had by far the highest IV of the herbaceous plants with 148.71, followed by *Sida spinosa* (20.72) and *Dioclea multiflora* (20.35). Herbaceous plants will be sampled again in the spring.

Vegetation data will be correlated to site factors such as elevation, soil and hydrology variables. Cluster analysis will be performed to investigate associations between species. This study is being carried out to offer more insight into this type of forest and to document existing vegetation on the site. — Christopher S. Reid, Northeast Louisiana University.

*Ed. Note: Christopher is one of the recipients of the 1998-99 SABS Student Research Grants and his advisor for this project is Dr. Charles Allen*

## Polygonum perfoliatum (mile-a-minute weed)

*Polygonum perfoliatum* (mile-a-minute weed, devil's tail tearthumb) is an herbaceous, vine-like species introduced into North America in both western and eastern sites several times in the last century. However, it only became established ca. 1940 in York County, PA. Since that time it has extended its range over at least 19 counties in PA, most (or all) of MD and to sites in VA, WV, DE, OH, NJ and DC.

Although it appears to pose little threat to cultivated fields and mature forests, the species rapidly forms dense colonies up to 8 meters tall in such habitats as disturbed areas and reforestation sites. Suitable habitats may be found in much of the Appalachian states, and because the plant can overgrow native species such as *Sambucus* and *Rubus* spp. as well as immature trees, it threatens natural succession.

The physiology of this *P. perfoliatum* has not been previously studied, but it has been suggested that it requires full sunlight and is competitive enough to overgrow *Lonicera japonica*, an exotic perennial. Over the last two summers I have examined the photosynthetic and growth parameters of this species in the field, garden and glass-house studies. The light response curve for this species does not resemble that of a heliophyte, as photosynthesis maximum is less than  $\mu\text{mol m}^{-2}\text{s}^{-1}\text{CO}_2$ , and this is reached at low photon flux densities. The species also prefers high soil moisture content (> 25%, up to 45% relative water content), exhibiting predawn water potentials in the field often less than -1 bar, seldom greater than -2 bars. Finally, although the data is not completely analyzed, it appears that the species exhibits limited plasticity in such parameters as leaf area ratio, specific

leaf weight, root/shoot and osmotic potentials. Thus the species may be restricted to wet, partially shaded habitats, except in cases where it can complete its life cycle prior to adverse conditions such as the dry summer months.—Leon Adler, Towson University, NJ

*Ed. Note: Leon is one of the recipients of the 1998-99 SABS Student Research Grants and his advisor for this project is Dr. James Hull of the Department of Biology.*

*"Up to now man has generally acted as a parasite on his environment, taking what he wants with little regard for the welfare of his host (i.e., his life-support system)."*

—E. P. Odum. 1971. *Fundamentals of Ecology*, W. B. Saunders Co., Philadelphia. 574 pp. (p. 510).

## First Annual Exotic Pest Symposium

The Southeast Exotic Pest Plant Council will hold its first annual symposium in Oak Ridge, TN on March 18-20, 1999, at the Pollard Auditorium. The purpose of the symposium is to provide a forum for discussion of exotic pest plant issues throughout the southeastern United States. Presentations will feature discussions on the control and management of exotic pest plants, research, public policy issues, native plant use, and restoration. It will include an afternoon of field trips to the Great Smoky Mountains National Park, Native Gardens Nursery and surrounding natural areas. The keynote address will be given by Dr. Dan Simberloff, Professor and Gore Hunger Distinguished Scientist at the University of Tennessee. For registration information call 1-800-449-6339. The Garden Plaza Hotel (phone 423-481-2468) is holding 60 rooms for the symposium.

## Federal Noxious Weed Act

The Federal Noxious Weed Act (FNWA) of 1974 requires the Animal and Plant Health Inspection Service (APHIS) to list in the regulations those plant species officially designated as noxious weeds. APHIS uses risk assessments as a basis for weed exclusion decisions. Individuals with an interest in seeing a particular plant species listed as a Federal noxious weed may submit a draft risk assessment for review and consideration.

To request a copy of the guidelines for writing qualitative weed-initiated risk assessments, or to volunteer as a risk assessment reviewer, please contact: USDA, APHIS, PPQ, Scientific Services, Attn. Botanist, 4700 River Road Unit 133, MD 20737-1236, Fax (301) 734-4300.

## Franklinia altamaha

The John Bartram Association of Philadelphia is celebrating the 300th anniversary of John Bartram's birth May 19-22, 1999 at the Historic Bartram Gardens. As a part of this celebration, the first ever census is taking place to document all the *Franklinia altamaha* trees growing in botanical gardens, arboreta, home gardens, etc. To our knowledge, all the trees originated from the collection the Bartrams made in the mid-1700's in Georgia along the Altamaha River. If you have one or know of locations of living trees, call Michele DeGirolamo at 215-729-5281 or e-mail her at <bartram@libertynet.org>. If you have web access, you might check out their address at [www.libertynet.org/~bartram](http://www.libertynet.org/~bartram).

## Purple Loosestrife Control

Recently Audubon and other publications have noted that purple loosestrife (*Lythrum salicaria*) a 200 years old European introduction now decimating many of our native wetland plants, has newly released biological control grazers.

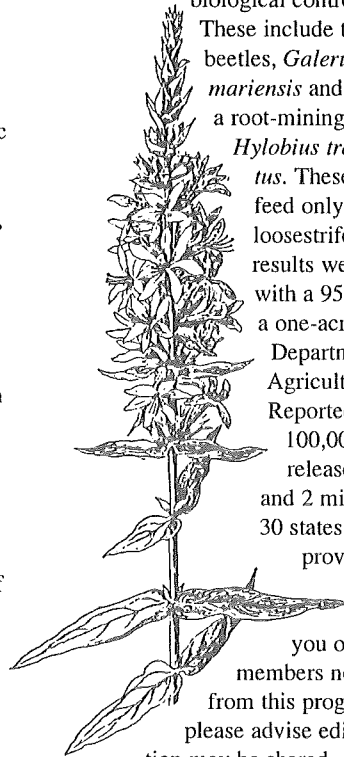
These include two leaf-eating beetles, *Galerucella californiensis* and *G. pusilla*, and a root-mining weevil,

*Hylobius transversovittatus*. These supposedly feed only on the purple loosestrife. Earlier results were spectacular, with a 95% reduction on a one-acre trial by US

Department of Agriculture scientists. Reportedly over 100,000 weevils were released in 26 states and 2 million beetles in 30 states plus six provinces in

Canada. Have any of you of you SABS

members noted results from this program yet? If so, please advise editor so information may be shared.

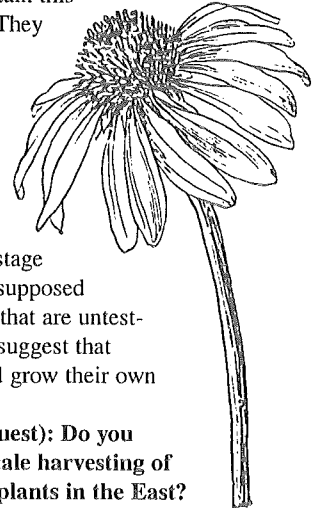


Purple loosestrife, *Lythrum salicaria*, copied from *Plants and Flowers* (1992) by A.E. Bessette and W.K. Chapman, Dover Publ. Inc., p. 254.]

## Echinacea

Last summer Monique Kolster and Curley Youpee reported in Kelsey (Newsletter of the Montana Native Plant Society) that figures from harvesters and buyers indicated 100,000 pounds or around 700,000 *Echinacea* plants were removed from the northeastern part of Montana. They questioned whether either the communities, often with 80% unemployment, or the plant populations could sustain this rate of removal. They suggest that the sources of the expanding consumption fad should be commercially grown material and that there may be wastage of the plants for supposed healing qualities that are untested. They further suggest that many users could grow their own plants.

**Ed. Note (request): Do you know of large scale harvesting of wild *Echinacea* plants in the East?**



Purple coneflower, *Echinacea purpurea*, copied from *Plants and Flowers* (1992) by A.E. Bessette and W.K. Chapman, Dover Publ. Inc., p. 88.]

## Rambo Apple

You probably think that "Rambo" of movie fame is just a little out of date, but it appears that the old Rambo apple is making a reappearance. John Chapman, a.k.a. Johnny Appleseed, made a concerted effort in the early 1800's to plant trees throughout the Midwest so that new settlers would have sustaining fruit. The tree originally celebrated as the last surviving apple Johnny planted turns out not to be an Albemarle pippin as first thought, but the Rambo, the "American folk hero favorite variety." The American Forests publishers is offering a limited number of direct offspring from scions of a surviving stump that was almost lost to a storm. For information, you may call American Forests at 800-320-8733, write at 8701 Old Kings Road, Jacksonville, FL 32219. Check their e-mail <famoustrees@msn.com> or the web site: <[www.amfor.org/ft](http://www.amfor.org/ft)>.



Apple, *Malus sylvestris*, copied from *Plants and Flowers* (1992) by A.E. Bessette and W.K. Chapman, Dover Publ. Inc., p. 94.]

# Coarse Woody Debris and Nutrient Dynamics in a Spruce- Fir Forest in the Southern Appalachians

A study of the coarse woody debris and nutrient dynamics in the red spruce (*Picea rubens* Sarg.) - Fraser fir (*Abies fraseri* [Pursh] Poir.) forests of the southern Appalachians is currently in progress. The study area is a 17.4 ha watershed (Noland Divide Watershed [NDW]) located in the Great Smoky Mountains National Park. There is evidence that some high elevation spruce-fir forests in the south may be nitrogen saturated. NDW receives some of the nation's highest rates of atmospheric deposition with 1900 eq/ha/yr of nitrogen coming into the watershed compared to watershed nitrate export of about 1090 eq/ha/yr. In order to better understand nitrogen cycling, all major components in a watershed need to be considered. Components including patterns of overstorey vegetation, amounts, distribution and Carbon/nitrogen (C/N) ratios of coarse woody debris (CWD), and spatial distribution of nutrient pools within the watershed have been systematically studied since 1993. Together these components give a clearer picture of watershed level processes.

Multiple stresses complicate our understanding of the high elevation system, including high atmospheric deposition inputs, previous land use and the invasion of the balsam woolly adelgid (*Adelges piceae* Ratz.). Since the 1980's this exotic pest has killed the majority of mature Fraser fir in the southern Appalachian area and as a result CWD has increased in these areas. To date, the relationship between nutrient cycling, environmental stressors and woody debris dynamics is poorly understood.

A system of 50 permanent plots has been established in NDW. The overstorey forest layer has been surveyed, CWD identified and mapped, and the three dominant tree species (red spruce, Fraser fir and yellow birch [*Betula alleghaniensis* Britt.]) in the watershed sampled for carbon, nitrogen and sulfur analysis. A five year remeasurement of these 50 plots took place this summer. This remeasurement will give an idea of short-term turnover rates in the watershed. CWD is important from a nutrient cycling perspective, because as wood decays the C/N ratio changes due to microbial actions. This could have far reaching implications in a system with extremely high volumes of CWD, and high levels of soil nitrogen. By quantifying the dead wood biomass levels and C/N ratios, I will estimate the potential sink of nitrogen in the wood and its capability to immobilize nitrogen from the surroundings. With high pulses of CWD, higher rates of nutrient export are expected as this wood decays. Using a CWD density study that is now in progress, the amount of system nitrogen currently tied up in CWD can be estimated. With this data and data from a decay rate study I will be able to predict when these dead trees will decay and how much nitrogen will be released.—Anita K. Rose, The University of Tennessee at Knoxville.

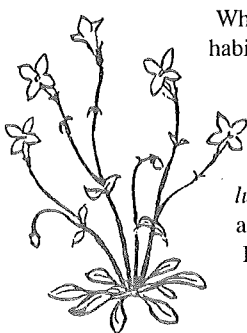
*Ed. Note: Anita is one of the recipients of the 1998-99 SABS Student Research Grants and her advisor for this project is Dr. Niki Nicholas.*

## Look Again

by Dick Smith

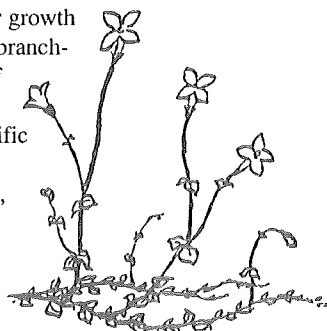
Enjoying the sight of a field strewn with bluet, one's thoughts are not likely to run to questions of floral anatomy and scientific names. It is only when the individual plants are seen closely that the existence of different kinds stirs our curiosity.

Actually, our only bluets which form carpets in the wet grassy areas are *Houstonia caerulea* and *H. serpyllifolia*. The tiny four-petaled salverform flowers are virtually identical — soft pale blue shading to white at the open center, which is ringed by a golden eight-rayed miniature sun. *H. serpyllifolia* is said to be darker in color, but since both species produce white forms and all the intermediate tints as well, that is of little help.



*Houstonia caerulea* L.

Where they differ markedly is in their growth habit, *H. caerulea* having erect stems branching from the base, while those of *H. serpyllifolia* are prostrate and root at the nodes. (The specific name of the latter is from *serpyllum*, an old generic name for thyme, and this in turn is derived from the Latin, *serpere*, meaning "to creep."). Also, the lower leaves of *H. caerulea* are long-petioled and spatulate; in *H. serpyllifolia* they have short stalks and are more nearly round.



*Houstonia serpyllifolia* Michx.

A bluet of drier habitats is *Houstonia pusilla* Schoepf — sometimes called "star violet." This might pass for a small version of *H. caerulea*, with flowers only half the size, but the corolla is violet and the markings in the throat are reddish-purple instead of yellow. —

## A new black locust arbor at the Coker Arboretum, University of North Carolina at Chapel Hill

1998 saw the opening and dedication of a project at the Coker Arboretum to restore the old Wisteria Arbor and create a new stone gathering circle and entryway from the Arbor to the Arboretum itself. This project has a number of unique botanical features:

The wood of both the Arbor and its benches is North Carolina mountain black locust, famed for its resistance to decay. The Garden staff had to search far and wide to find a logger with a patch of old field black locust of the right number and size. These logs then had to be debarked and dried for construction.

The North Carolina Botanical Garden aspires to be a conservation garden and has been a pioneer in setting policies against using invasive exotic plants in horticulture. When time came to replace the Wisteria vines we chose the native Wisteria to replace the weedy Chinese Wisteria formerly found on the Arbor. We also planted six other species of native vines. It was an opening and dramatic shot in the struggle to create an environmentally responsible horticulture.

"Arboretum" cont. on page 7

# Florida *Stillingia*: Taxonomy and Natural History

My current research focuses on a morphological examination of *Stillingia aquatica* Chapman (*Euphorbiaceae*) in the Florida panhandle and will also address the taxonomic status of a population of *Stillingia* occurring in Tate's Hell Swamp (Franklin County). I am specifically interested in determining whether the Tate's Hell Swamp population is worthy of nomenclatural recognition, and if so, is it best recognized as a full species, subspecies or variety.

The Tate's Hell Swamp population is morphologically distinct from those of "typical" *S. aquatica* found in the panhandle. The plants exhibit wider leaves and also possess thicker stems in relation to a given height. Examination of stomates with scanning electron microscopy has revealed that they are approximately twice as large of those of *S. aquatica*. This information suggests that the Tate's Hell Swamp population of *Stillingia* may be a polyploid race of *S. aquatica*. To answer this question, I am undertaking an effort to determine chromosome number for the Tate's Hell Swamp population and populations in the panhandle of *S. aquatica*. Very little is currently known on chromosome number in the genus *Stillingia*. This information will be useful not only in determining whether the Tate's Hell Swamp population is a polyploid race of *S. aquatica* but also in augmenting our knowledge on chromosome number in the genus. If found to be a polyploid population, the Tate's Hell form would be worthy of nomenclatural recognition as a separate species.

Preliminary evidence suggests that the nominate form of *S. aquatica* is  $2n = 22$ . This is consistent with published information on other species in the genus which indicate the base number for the genus is 11. Work is continuing on determining chromosome number for

the Tate's Hell Swamp population.

In addition to the work on chromosome numbers, I am also conducting a morphological analysis of the species across the Florida panhandle in relation to geographic variation and also local conditions. Six study populations have been established including one in Baldwin County, Alabama, at the western limit of the species range. This will allow for the detection of possible differences in morphological traits at the edge of the species range. A minimum of 40 individuals per population were flagged and monitored during the spring and summer of 1998. Measurements of height, circumference, height of first branching and ultimate number of branches were recorded in the field. Also, water depths were recorded for each individual on a monthly basis for three months. Specimens were made from marked individuals and a total of 972 leaves have been measured for a morphometric analysis of leaf shape. I also plan to examine stomate size and density from these specimens. Finally, flagged individuals were followed for three months to detect differences in phenology. The Tate's Hell Swamp population flowers approximately two to three weeks earlier than any other population in the panhandle.

An unexpected drought during May and June 1998 resulted in large mortality rate across the study sites, some of which had to be reestablished. Interestingly, the Tate's Hell Swamp population did not lose any plants to drought while experiencing the same rainfall conditions. This may suggest that the Tate's Hell population differs in physiological aspects related to drought tolerance. — Howard Home, The Florida State University.

Ed. note: Howard is one of the recipients of the 1998-99 SABS Student Research Grants and his advisor for this project is Dr. Loran Anderson

## "Beech" cont. from page 3

Ecological groupings such as these can help ecologists make a rapid assessment of coarser scale diversity over large areas.

Nationally, over 4,500 natural and semi-natural associations have been defined to date and an assessment of range wide conservation status has been completed for over 80 percent of these. The southeastern U.S. has been found to be rich in community types, apparently correlated with its high biological diversity, high edaphic diversity and long-term relative stability from catastrophic disturbance. A high proportion of its types (over 30 percent) are considered in the "imperiled" category. In the Southern Blue Ridge, 167 natural associations have been identified; an indication of (and tool to understand) the high biological diversity of the area. These include widespread associations, as well as restricted and imperiled types such as the Southern Appalachian Beech Gap Association mentioned previously.

Alan Weakley of the Conservancy's Chapel Hill office, one of the principal authors of the new classification, notes that if we can conserve representative examples of every association, we will holistically protect suites of species, the myriad interactions among those species, and the habitats on which the species depend. But getting the vegetation classification to its burgeoning numbers of users and contributors is the fundamental step in making this conservation strategy work efficiently. The recent and upcoming publications should go a long way towards that goal. Those interested in the classification of the eastern U.S. can also contact several of the principal authors directly. Alan Weakley can be reached at 919-967-5493 x128, or <aweakley@tnc.org>. Lesley Sneddon and Mark Anderson of the Conservancy's Boston office can be reached at 617-542-1908 or e-mailed <lsneddon@tnc.org>, <manderson@tnc.org> respectively. — Kathleen Mayberry, The Nature Conservancy

## "Arboretum" cont. from page 6

The stone gathering circle contains a mosaic of a leaf of Tulip Poplar, in honor of the giant Davie Poplar that is one symbol of our campus. The petiole of this mosaic leaf points towards the David Poplar itself.

The restoration project, supported by the fund raising efforts of the Class of 1997, won an Appearance Award from the Town of Chapel Hill. The Arboretum is nearing its 100th birthday (2003) and we hope to have other improvements in place by that date.— Peter S. White, Director NC Botanical Garden.

## "Letters" cont. from page 1

"shoved back down" to the valleys by the drought—the worst since the 1930's.

**Ed. Note: Larry, I think the climatic processes and their effect on vegetation is something all of us will be looking at for many years to come. Do you imagine the dogwood anthracnos was involved in these situations?**

*"Amongst the scenes which are deeply impressed on my mind, none exceed in sublimity the primeval forests, undefaced by the hand of man, whether those of Brazil, where the powers of life are predominant, or those of Tierra del Fuego, where death and decay prevail...No one can stand unmoved in these solitudes, without feeling that there is more in man than the mere breath in his body!"*

—Allan, *Mea. Darwin and his Flowers*.  
New York, Taplinger Publ. Co., p. 116  
(quoting Darwin).

## Welcome To Our New Members:

*Welcome aboard the fastest growing  
regional organization in botany!*

Chris Adams, Lexington, KY  
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Dana Cohen, Woodcliff Lake, NJ  
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Marcie Floyd, New Albany, MS  
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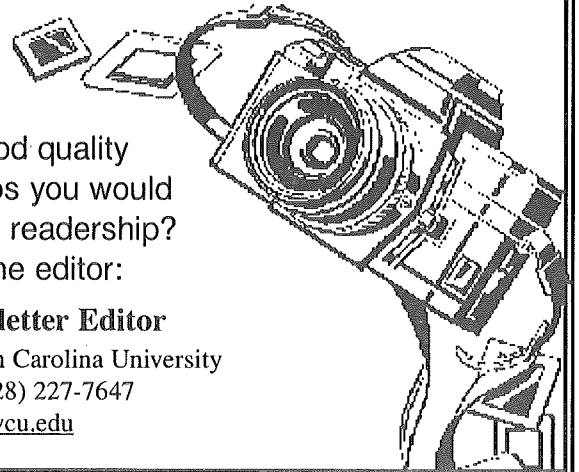
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