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Tipularia

The Journal of the Georgia Botanical Society Volume 18 • 2003

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Contributors

Jim Allison is one of two botanists with the Georgia Department of Natural Resources (Wildlife Resources Division, Georgia Natural Heritage Program), a job that has led him to botanize in every county of the state. Along with the other GNHP botanist, Tom Patrick, and the program's Data Manager, Greg Krakow, he authored Protected Plants of Georgia. He is also known to most BotSoc members from past articles for Tipularia, on Stone Mountain (1994), and on the prairies of Floyd County (1995), as well as from BotSoc field trips he has led over the years to various places in Georgia and even to Bibb County, Alabama (where he had discovered eight plants new to science and another one not seen anywhere in over 160 years and believed extinct).

Tom Baugh began his career in natural resource management and conservation biology with the USDA Forest Service. He completed his Master of Science in biology working on desert fish conservation, as Research Associate to James E. Deacon at the University of Nevada, Las Vegas. From 1985 until his 'retirement' in 2000, Tom worked for the U.S. Fish and Wildlife Service on issues relating to coastal and urban ecology. Tom now lives in rural Chattooga County near Simms Mountain.

Carol Helton Denhof is a Georgia native who grew up in the southwest Georgia town of Blakely. She earned both her B.S. and M.S. in Biology from Georgia Southern University. Her Master's degree emphasis was on plant taxonomy and plant ecology. After completing her degree, Carol went to work as an Ecology Intern with The Nature Conservancy at the Disney Wilderness Preserve in Kissimmee, Florida. From 1996–1999 she worked as a Research Technician at the J.W.

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Membership

The Georgia Botanical Society is open to all persons interested in the botany of Georgia. Annual dues: individual or family, $25; group, $30; student, $10. Send address and check payable to Georgia Botanical Society to Hugh Nourse (320 Ashton Dr., Athens, GA 30306–1622). Members receive *Tipularia* without extra charge. Persons wishing only to receive the magazine may become *Tipularia* associates for $10 a year. Single copies, when available, may be ordered from Richard Ware (see previous page), (1991 and before, $5; 1992 and after, $10).

Editorial information

Tipularia strives to combine the scientific authority of a botanical journal with the readability of a magazine. Some articles are assigned; unsolicited manuscripts are welcomed for consideration. Tipularia is unable to pay for articles or art, but there is no charge for publication of them.

Cover

Scutellaria montana (large-flowered skullcap) by Hugh and Carol Nourse

Tipularia

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BOTANICAL GARDEN

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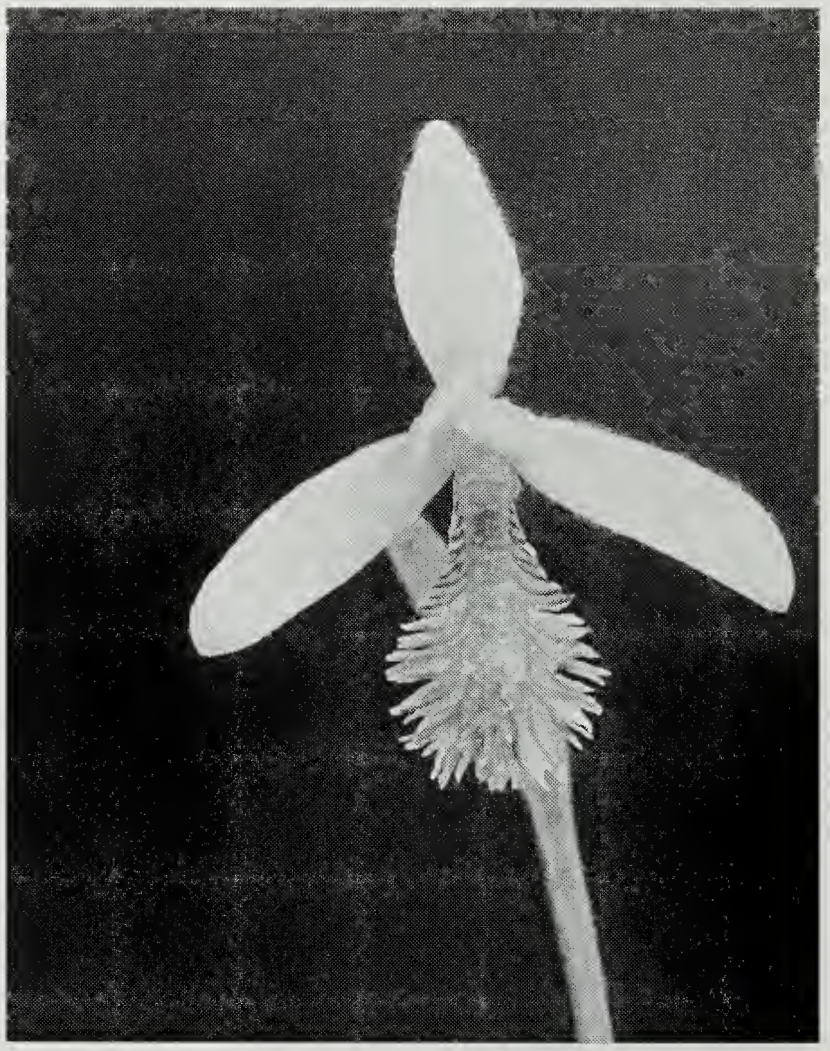

Above: native terrestrial orchid *Pogonia ophioglossoides* (rose pogonia)

Left: federally endangered *Sarracenia rubra ssp. alabamensis* (canebrake pitcher plant)

New Orchid Conservatory at Atlanta Botanical Garden

Carol Helton Denhof

The Fuqua Orchid Center is the newest expansion to the already phenomenal glasshouse facilities of the Atlanta Botanical Garden (ABG). The addition to the Fuqua Conservatory includes not only one of the most state-of-the-art orchid facilities in the country but also the Center for Conservation and Education. The Center contains the Georgia Pacific Classroom, Orchid Reference Library, Conservation Greenhouse and Plant Tissue Culture Laboratory.

The Georgia Pacific Classroom is a wonderful learning space that is available for a variety of events including classes, workshops, and meetings. The focus of the Orchid Reference Library is the study of orchids and plant conservation. This library is available to staff and researchers by prior appointment only.

The cornerstone of the ABG Conservation Program is the newly constructed conservation greenhouse. With the construction of this facility the conservation program has been brought out into the public eye. Visitors touring the High Elevation House are allowed to view the native plant conservation collections through a glass wall separating the two rooms. This viewpoint also allows the public to see the work being done by ABG Conservation Staff to maintain these plants on a daily basis.

This greenhouse is dedicated to growing native plants for the purposes of restoration, safeguarding and education. In contrast to the greenhouse that previously housed the conservation collections, the new conservation greenhouse will maintain environmental settings similar to outside conditions. The ambient temperature, light and humidity provide a perfect setting for growing the Southeastern native species that are a major focus of the conservation program. Many of these plants are federally protected and the Atlanta Botanical Garden is working in conjunction with the USFWS to grow them for specific restoration projects. Some of the rare species that are grown in this new facility include *Sarracenia oreophila* (green pitcherplant), *Sarracenia rubra* ssp. *alabamensis* (Canebrake Pitcher Plant), *Schwalbea americana* (American chaffseed), *Geum radiatum* (spreading avens), and *Helonias bullata* (swamp pink). In addition, native terrestrial orchids propagated in the ABG tissue culture lab are

Tissue Culture Lab Manager Ron Gagliardo working in the Tissue Culture Lab

transferred to this greenhouse when they are large enough to survive outside of the lab.

The Plant Tissue Culture Laboratory, mentioned above, is another significant component of the Center for Conservation and Education. One of the primary objectives of the new lab is to assist in the research, propagation and recovery of some of our native terrestrial orchids. These include plants such as *Platanthera integrilabia* (monkey-face orchid), a number of *Calapogon* species (the grass pinks), and *Cypripedium kentuckiense* (Kentucky ladyslipper). The propagation of native orchids can be challenging since many species grow only in association with specific soil mycorrhizae. Seeds can be grown on special media formulations in the lab and the seedlings produced may be reintroduced into the wild under certain circumstances. Learning to propagate and grow these native treasures will also eventually help to reduce the pressure from wild collecting, a method that has been used for decades in order to offer these species to the garden trade. It is hoped that the vigor of some of the last remaining populations of these plants can be increased by propagating them in the ABG facilities and then returning their offspring to their natural habitats. ❀

Conservation greenhouse

The Spring-fed Streams of Simms Mountain

Tom Baugh

This article offers some general observations on the spring-fed streams on the northern end of the West slope of Simms Mountain in Northwest Georgia. Little attention has been paid to the natural history of these or similar aquatic systems throughout Northwest Georgia. It is the purpose of this paper to encourage timely professional evaluation of the natural history of these systems in light of increasing development. Of course, the law, prudence and personal safety dictate that those interested in analyzing the natural history of features on privately owned lands only do so with the approval of the owner(s).

Simms Mountain is located in Floyd and Chattooga counties, Georgia. A component of Ridge and Valley, Simms Mountain runs in a roughly southwesterly/northeasterly direction with its northernmost point just south of US 27 at Crystal Springs. Simms Mountain is bordered on the east by Big Texas Valley and on the west by a valley extending west to Taylor's

Half Time Creek at the authors home

Photo by Tom Baugh

An unnamed stream draining the west slope of Simms Mountain, Chattooga County, Georgia

Photo by Tom Baugh

Ridge. The northernmost streams on Simms Mountain can be reached by driving roughly southwest from Crystal Springs on Silver Hill/Foster Manning Road. The name of the road changes at the line dividing Floyd County (north) from Chattooga County (south). The road is asphalt for about three miles before turning to dirt.

An unknown number of small, spring-fed streams drain the slopes of Simms Mountain. These streams range from seasonal, intermittent systems, through perennial systems whose length varies by the season, to perennial systems that connect with Moss Creek. In addition, some of these streams are interdicted by ponds that fully impede and contain the downstream flow; ponds that allow flow-through depending on the season; and, ponds that allow year-round flow-through.

Altough differing in some specifics, these small drainages have much in common. They generally begin high up on the steeper slopes below the crest of the ridge and then drain downstream across gravel and sand beds and over small falls before reaching the valley floor. The riparian overstory species include white oak, red oak, tuliptree, sweetgum, and other species normally associated with such mesic areas in Ridge and Valley. Riparian understory species include dogwood, black cherry, red bud, maple, red buckeye, and azalea among others. The relatively rich perennial community can include trilliums, orchids, ferns, and a rather larger assemblage of other species usually found in association with the forest floor adjacent to streams in this area. Fish in these streams include representatives of the darters, true minnows, and sunfish.

Little attention has been paid to the natural history and biota of these systems. For a number of years there has been a slow development in the area specifically addressed here. Within the past decade, however, that situation has changed, with homes built on plots ranging from less than ten acres to more then 100 acres. Current forecasts are for a substantial increase

A large spring at the base of the west slope of Simms Mountain, Chattooga County, Georgia

Photo by Tom Baugh

in development in the area. The land in northwest Georgia not available for single-family homes is currently owned by commercial timber companies and other commercial interests, or is under the stewardship of the State of Georgia, or the federal government.

Stream systems such as those described above are found throughout the Ridge and Valley component of northwest Georgia. The author lives on such a system, referred to as Half Time Creek. This stream experiences an intermittent seasonal flow. During periods of heavier precipitation the waters of Half Time Creek flow from the spring source on Simms Mountain into Moss Creek. While clearing the home site, small cyprinids were noted moving down stream with advancing waters. Adjacent neighbors built a 'farm pond' across the upper reaches of the stream. It has been several years since the cyprinids have been seen. It is possible that the cyprinids exist in the stream above the pond but are eaten by gamefish that now occupy the pond. The rapid rate of development and the modification of these systems would seem to indicate the need for a professional bioassesment. ❀

The Native Maples of Georgia

Richard T. Ware, Sr.

Introduction: The maples are an important genus of mainly deciduous trees that are used for shade or ornament, shelterbelt plantings, maple syrup production and are a major component of the extensive deciduous, hardwood forest covering vast areas of North America. The maple is the national tree of Canada. Also, the excellent wood is used to make furniture, veneer, flooring, cabinets and for many other items. The hard, durable wood of "hard" or "sugar maple" is the number one choice in the construction of such things as bowling alley lanes. Maples are in the genus *Acer*, the classical Latin name for the maples, which means sharp, and was named either from its use for lances, or its leaf. They are in the Aceraceae, or maple family, which is comprised of two genera, the genus *Dipteronia*, that contains only two species, found in mainland China, and *Acer*, which contains about 120 species. About two-thirds of the species of *Acer* are found in China, with the remainder occurring in North America, Europe, Asia Minor, and Japan. There are thirteen species of maples native to North America, with nine species and two varieties found in the Eastern United States and Canada, and four in the Western states and provinces. Evidently all of the Eastern species are found in Georgia.

Common characteristics of the maples: The maples are usually trees, sometimes shrubs, with opposite, deciduous (rarely evergreen) leaves. The leaves are usually simple, but may be compound (as in boxelder *A. negundo*), entire or variously lobed or toothed. Male and bisexual flowers are on the same or separate plants, or male and female flowers occur on separate plants. The flowers have five sepals, five or no petals, four to ten stamens, and one pistil. Most people know maples from their distinguishing characteristic fruit. These are the familiar "helicopter" seeds or keys (samaras), which are always paired, and each with a conspicuous wing. Most of the maples are used ornamentally for shade, or their brilliant fall color.

Red Maple (*A. rubrum var. rubrum* L.): The red maple is probably one of the most common trees planted in Georgia, as a landscape tree for shade, fall color, and perhaps its brightly colored flowers or fruits in spring. Red maple is usually treated as one species with two varieties, and that thinking is followed here. The specific name *rubrum*, of course, means red, and could refer to the twigs, fruit, or flowers. While the boxelder has the largest range of the maples, red maple probably has the greatest adaptability. It seems that you can find red maple growing in just about any habitat situation, and it is arguably the most abundant species in the Eastern Deciduous Forest. It reproduces aggressively by seeds and sprouts after fire, logging, and abandonment of farmland. It is most abundant on bottom lands and is tolerant of water-logged soils and flooding, but because

of its super-adaptability it can be found growing on the widest variety of sites and in the greatest range of conditions (sunny or shady, high or low nutrients, dry or moist) of any North American species, and to an elevation of almost 3,000 feet. Red maple is aggressively replacing more important species, like oak and hickory, because of its adaptability and because fire is being kept out of the mountains. Maple, with its thin bark (especially when young), is more susceptible to fire than most species of oak and hickory.

Maples are in the genus Acer, *the classical Latin name for the maples, which means sharp, and was named either from its use for lances, or its leaf*

Description: This is a medium to large tree, up to 100 feet tall, with a narrow to broadly round crown, and straight trunk, up to 5 feet in diameter. The leaves are simple, opposite, primarily five-lobed with prominent coarse teeth on the margin, and from 2–6 inches in diameter. The flowers are usually red, but can be yellowish, with the fruit being the familiar double samara, with wings 3/4 inch and commonly red in color. The red maple usually flowers in March–April, but flowers can open as early as February, if weather is warm.The bark usually stays thin and gray (perhaps a shade darker than American beech), but with age the tree develops ridges with thin scaly plates, which are free on each end. This taxa can be found from Maine to Georgia, westward to Texas, then northward to Minnesota, and back across the lake states to New England. You could say that red maple is found in every county in Georgia, but since there is no reference which shows the ranges of the three different varieties, we don't know for sure if any one variety is found state wide.

Carolina or Trident Red Maple (*A. rubrum var. trilobum* Torr. & Gray ex K. Koch): This variety of red maple can be distinguished from the species by its somewhat smaller leaves, which are either three-lobed, or un-lobed, with much blunter, smaller, and fewer teeth. The flowers are usually yellow with smaller fruits, which can also be yellow. It's range is similar to *var. rubrum* except that it is not found (or recognized) in Iowa, Minnesota, Wisconsin, Michigan, and Indiana. I can't speak about the whole range of this variety, but at least in my area, it is more likely to be found in the floodplains or bottomlands, while *var. rubrum* is more likely on the mountains or at least somewhat higher ground. The variety name *trilobum* means three-lobed, referring to the leaves.

Drummond's red maple (*A. rubrum var. drummondii* (Hook. & Arn. ex Nutt.) Sarg.): This variety is separated from the species by

Key to the varieties of red maple:

1. Leaves glabrous beneath; fruit less than 1.58″ long; wings spreading 2
   2. Leaves prominently and sharply 5-lobed, the lobes prominently toothed; fruit mostly less than 1.19″ long . . . . . *A. rubrum var. rubrum*, red maple
   2. Leaves mostly shallowly 3-lobed, the lobes shallowly toothed; fruit mostly over 1.19 ″ long . . . . . *A. rubrum var. trilobum*, Carolina or trident maple
1. Leaves copiously woolly beneath; fruit over 1.58″ long; wings tend to converge; tree of the swamps of South Georgia . . . . . *A. rubrum var. drummondii*, Drummond's red maple

five-lobed leaves that are broader than long and woolly or hairy below; the petioles are likewise very hairy. The fruits, which are a brilliant red, are almost twice as long as those of the species. This taxa has a more southern range, extending from New Jersey south to Florida, westward to Texas, hence northward to Illinois and Indiana, but evidently not found in the Northeastern states. This is a tree of river swamps in the coastal plain and rarely adjacent provinces. This variety is named for its discover, Thomas Drummond.

Silver Maple (*A. saccharinum* **L.**): Silver maple is also used extensively as a ornamental shade tree, but has somewhat fallen from favor for two reasons. First it is more susceptible to wind and ice damage because of its brittle twigs, and secondly it is not as adaptable to dry conditions as many other trees, because its native habitat is always (at least here in Georgia), in locations with more readily available moisture such as along rivers and creeks. It gets its common name from the silvery undersides of its leaves, which are strikingly revealed by the slightest breeze. The species name *saccharinum* means sweet, sugary, although not nearly as sweet as the sugar maple (*A. saccharum*). Silver maple is one of the fastest growing deciduous trees of the Eastern and Midwestern forests, and can grow 3–7 feet per year. It is a natural for use in riparian forest buffer installations, and is much preferred to box elder (*A. negundo*) in any planting.

Description: Silver maple is a medium-sized tree, up to 80 feet tall by 3 feet in diameter, or sometimes larger; the trunk usually dividing close to the ground into several stout, erect, divergent branches, forming a wide-spreading, rounded crown; roots, shallow and frequently very near the surface of the soil. The leaves are slightly larger than red maple, 6–7 inches in diameter, deeply five-lobed and long-pointed with V-shaped sinuses, doubly and coarsely toothed. The flowers are not as colorful as red maple because there are no petals, but are still noticeable as they (like red maple) appear on the naked twigs in very early spring. As I write this article (February 15), there is a silver maple up the street that already has flower buds popping! The fruit is also larger than red maple, 1–2 inches long; maturing in the spring, with the seed germinating soon after falling. The bark is at first thin, smooth, silvery; then with age becoming scaly, breaking into long, loose, plates, that are sometimes free at the ends, giving it a somewhat shaggy appearance. It is found from Maine, south to Florida, west to Louisiana, then northward to North Dakota. The UGA Atlas indicates that it has only been collected from eight counties, but the BotSoc Atlas shows it found in every county in North Georgia and many South Georgia counties.

Striped Maple (*A. pensylvanicum* **L.**): Striped maple or moosewood is an interesting, and delightful little tree that I always enjoy finding on field trips to the North Georgia mountains, where it is confined to the extreme northern counties. This lovely tree has larger leaves than the preceding two species, and can be identified by twigs and young bark that is green with longitudinal white striping. Also, the flowers, appearing after the leaves, are in slender, drooping, long-stalked racemes, unlike red and silver maples, which are in dense axillary clusters. It is sometimes used as an ornamental tree (farther north), for its beautiful green, white-striped bark and lovely foliage. But, it probably wouldn't be too happy elsewhere in Georgia,since it requires the cool, moist conditions of the mountains. The species name *pensylvanicum* means from Pennsylvania, referring to the state where it was originally collected and described.

Description: Striped maple is usually a shrub or small tree up to 40 feet in height with a trunk 10 inches in diameter, with small branches forming an oblong, rounded crown. The leaves are 6 inches long and 5 inches wide, with a three-lobed apex, and a doubly-serrate margin; flowers are in drooping racemes up to 5 inches long with canary-yellow petals; fruit is the familiar double-samara, 3/4 inch long, with

thin, widely divergent wings; bark is at first bright green, with broad longitudinal whitish stripes, becoming somewhat roughened and warty with age. The range extends from Maine to North Georgia, northward to Michigan, and westward to Minnesota. In Georgia, it is only found in Rabun, Towns, Union, and Fannin counties in the extreme north.

Mountain Maple (*A. spicatum* Lam.): Mountain maple is another shrub or small tree that is confined to the high mountains in extreme North Georgia, and is even smaller than striped maple. I believe it to be rarer than striped maple, but it could have been over-looked because its foliage might be confused with red or even striped maple. We have seen it on the north side of Tray Mountain, and along the Wagon Train Trail on Brasstown Bald, but in the later case we were searching for it. Mountain maple grows in moist soil on slopes or rocky hillsides in the shade of other species; usually shrublike, but becoming tree-like on the mountains of Tennessee, North Carolina, and Georgia. This species is also used as an ornamental where there is ample moisture and cooler temperatures. The specific name *spicatum* should refer to an elongate inflorescence of sessile flowers (a spike), however, mountain maples flowers are in a raceme or panicle.

***Description*:** Mountain maple is a shrub or small tree up to 30 feet, with a trunk only 6–8 inches in diameter, with several upright branches, forming a bushy head; leaves seem to be somewhat intermediate between striped and red maple and are 4–5 inches long, with three or rarely five tapering lobes, the base is rounded to slightly heart-shaped, and the margins are more coarsely toothed than those two species. The flowers, like striped maple, appear after the leaves, but unlike striped maple, are in an upright raceme or panicle; flower petal color is yellow; fruit is a bright-red, yellow or brown, double samara with divergent wings, 1/2 inch long; bark is thin, brown or reddish brown; smooth or at maturity becoming remotely furrowed. The range of mountain maple is from Maine westward to Minnesota and Iowa, and along the mountains to Georgia and Alabama. In Georgia it has only been collected from Towns and Union counties.

Boxelder (*A. negundo* L.): The species name for boxelder, *negundo,* comes from a Sanskrit name for a tree (*Vitex negundo*) because of a supposed similarity of leaf. The common name boxelder refers to a resemblance of the leaves to elderberry (*Sambucus*) and the use of the soft wood for box making. Boxelder should be the easiest maple to recognize, because unlike the other maples native to the Southeast which have simple leaves, it has a compound leaf (odd-pinnate), and really green twigs with no striping, with opposite leaf scars. Boxelder is a native tree of river bottoms and disturbed sites on heavy, wet soils, seasonally flooded, and is one of the most common bottomland trees throughout its range. It is associated with willow, American elm, sycamore, sweetgum, river birch and silver and red maples. Because of its fast early growth and drought and cold tolerance, it can be valuable for shade and rapid re-greening in disturbed city sites, especially in the Great Plains and West, but it is short-lived and disease-prone, and would therefore eventually be replaced by slower growing but longer lasting trees.

***Description*:** Boxelder is a small to medium sized tree, usually less than 50 feet but sometimes up to 75 feet in height, with a trunk 2–4 feet in diameter; the bole is usually short and divides 6–20 feet above the ground into several stout, horizontal limbs and branches to form a wide, rounded, bushy crown; the leaves are compound (odd-pinnate) and are made up of three to five (rarely seven) leaflets, each leaflet 2–4 inches long, 1.5 to 2.5 inches wide, with coarsely toothed margins, hence the other common name, ash-leaf maple. The bark is thin, gray-brown, with shallow fissures separating narrow, rounded reticulate ridges. It has the widest distribution of all American maples, with a native range extending from the east coast of the U.S. to California, and from

Alberta to southern Mexico and Guatemala. Although it has been collected from all the forty-eight contiguous states, its range is broken into small areas in the West and toward Central America. In Georgia, although it is probably found in every county, it has only been collected from twenty-one counties, most of these north of the Fall Line.

The next four species discussed are in what I call the "Sugar Maple Complex." These four species are so closely related that some experts consider them to be varieties of the same species. And, it seems to be a matter of opinion by professional botanists, based purely on morphological traits. But, the latest thinking seems to indicate that they are different enough to be called four separate species. The four are: Northern sugar maple (*A. saccharum*), southern sugar or Florida maple (*A. barbatum*), chalk maple (*A. leucoderme*), and black maple (*A. nigrum*). There are two things to be cautious about when trying to determine the identity of trees in this "complex." Number one, always pick a mature tree, if possible, and stay away from juvenile saplings, for they are like the oaks, and have very different leaves than the mature tree. Secondly, I believe that the shape and habit of the leaf are directly affected by how much sunlight to which those leaves are exposed. Upon examination of several chalk maples, it is evident that the lower leaves, which are never exposed to much sunlight, are mostly flat and are more predominately five-lobed, whereas the top leaves are really drooping with the sides of the leaves curled downward and mostly three-lobed. The maples in this complex should never be pruned in spring, because they will bleed severely. They should be pruned in late summer, or early fall.

Northern Sugar Maple (*A. saccharum* Marsh.): This is the tree that most people think about when the word "sugar maple" is mentioned. This is also the tree so prominent in the New England states, where the production of maple syrup reigns supreme and whose stunning fall colorings are the subject of many a beautiful photograph. A large portion of the sugar or hard maple lumber comes from this species, with black maple and Southern sugar maple also contributing to the output. The Northern sugar maple is a medium to large tree and has a uniform, full, round-topped crown which makes an extremely dense shade. It is found from Maine to Georgia, west to Louisiana, Oklahoma, north to North Dakota and eastward to Nova Scotia. In Georgia it has been collected from six extreme North Georgia counties and Bartow and Floyd, then six Middle Georgia counties which makes me wonder about misidentification or confusion with one of the other "sugar maple" species. It gets its common name for the extremely high sugar content of the sap, which varies from 2–6 percent. In late winter the sap is collected, boiled and concentrated into a delicious syrup, where it takes thirty-two gallons of sap to make one gallon of syrup. The species name *saccharum* means sweet, sugary. It is an extremely valuable timber tree, with the wood being used in furniture, flooring, trim and woodenware. Also, along with beech and birch, it is used in the hardwood distillation industry as a source of wood alcohol, acetate of lime and charcoal. But, best of all, it is a highly prized ornamental. You are very likely to encounter it, or one of its cultivars, in residential or commercial plantings, parks or anywhere a beautiful, dense shade tree with wonderful hues of fall color ranging from yellow to red or anything in between is desired.

***Description*:** Moderately large tree usually up to 80 feet in height and 3 feet in diameter; branching a few feet from the ground to form a large, dense, pyramidal or rounded crown; leaves are palmately five lobed (rarely three), up to 5 feet in diameter; lobes of leaves acuminate; margins entire or irregularly toothed at wide intervals; rich green above and pale and glabrous below. The flowers appear with the leaves in dense, many-flowered corymbs, with the individual flowers hanging down on long, hairy, slender stalks. The familiar double-

samara is reddish-brown, parallel to slightly divergent, with thin wings about 1 inch long. The young bark is light gray and smooth, but becomes darker, thicker and deeply furrowed into long longitudinal scaly ridges on large trunks. It is most common on rich soils of slopes and ridges, but can also be found on poorer soils and is common on those of limestone origin.

Southern Sugar or Florida Maple (*Acer barbatum* Michx.): *A. floridanum* is listed as one of at least eleven synonyms for this species. The species name *barbatum* means bearded, and is so named for the long beard in the summit of the flower. This is a small to medium-sized tree of the Southeastern United States, and is found from Virginia southward to Florida; west to Eastern Texas; and north to Oklahoma and Arkansas. Its range seems to be restricted to the Piedmont and northwestern portion of the Coastal Plain, with some encroachment into the low mountains and hills of the Carolinas, Georgia and the Ozarks. This maple prefers the rich soils along rivers, streams and in low, wet woods. In Georgia, it has been collected in a broad swath from East Central Georgia (Elbert to Burke Counties), extending to the southwest corner of the state. The only collection anywhere near the coast is Effingham County and only Cherokee, Floyd, and Walker counties in North Georgia.

***Description*:** Tree to 60 feet tall, with single straight trunk, young bark uniformly light gray (to almost white) or light tan, older bark becoming darker with shallow furrows producing long, irregular plates. This tree usually has a dense rounded crown of leaves. The leaves are simple, up to 3 1/2 inches long; with 3–5 lobes; often as wide as long; margins wavy, as with the other "sugar maples," lobed but not serrate (no uniform teeth); upper surface dark green; lower surface whitish, glaucous (covered with a whitish bloom that can be rubbed off), can also be hairy along veins. This species is probably more similar to the more Northern sugar maple (*A. saccharum*), than any of the others, but you should be able to identify it by it's smaller leaves that are glaucous beneath; *A. barbatum's* leaves are not as prominently five-lobed (as is characteristic of *A. saccharum)*, with each lobe having several long acuminate tips; and tree is also usually smaller in stature.

Chalk Maple (*A. leucoderme* Small): This small tree or shrub has an even more southern distribution than Southern sugar maple (*A. barbatum*). The native range is from North Carolina south to Florida, westward to Texas, northward to Oklahoma and eastward to Tennessee. The Georgia range indicates collections from five counties south of the Fall Line, but it is most common in the Piedmont, Ridge & Valley, and Cumberland Plateau and seems to be absent from the mountainous counties of extreme North Georgia. The species name *leucoderme* comes from two words, *leuco*, which means white, and *derme*, which actually means skin or covering referring to the white bark that young chalk maples exhibit. However, old trees can have black bark on the lower trunk as if it had been burned. There is some speculation that the black coloring of chalk maple may be caused by woodpeckers visiting the trees in the spring with the resultant sap flow down the trunk causing it to turn black. The chalk maple is a little used, but excellent landscape plant. Because of it's smaller size it is a superior choice for the smaller property since it wouldn't have the overpowering effect of say, a large oak.

Description: Chalk or white-barked maple is the rarest and smallest of the maples found in the South. It is found in widely scattered locations, in moist woodlands, along streams, river banks and in ravines. It is usually a small understory tree, sometimes to 40 feet, often with multiple trucks and a dense wide spreading crown. But, sometimes it has a single trunk that still branches fairly early, and produces a dense rounded head. The leaves are from 2–5.5 inches wide and slightly less in length; dark green above, yellow-green and hairy beneath. The tiny yellow flowers are borne on long, slender, hanging stalks. Fruits are the familiar

paired samara, up to 1 inch long, with the wings spreading widely. This is a good identifying character as the other three species seed wings do not spread nearly as wide. As referred to earlier it is named for it's white bark, but, it would more properly be called light tan or even light gray and, as also indicated earlier, the bark on old trees can be completely black as if charred by a fire. The fall foliage usually turns a beautiful orange-scarlet color, but can be pure yellow.

Black Maple (*A. nigrum* Michx. F.): Black maple has been considered by some a variety of Northern sugar maple (*A. saccharum)*, but botanists now agree that it is different enough to be acknowledged as a separate species. It is primarily a Midwestern species, being found mostly from the Appalachian Mountains westward, but can be found from Vermont westward to the eastern edge of South Dakota, southward to Arkansas, eastward to North Carolina and northward to Massachusetts. There are also small populations in extreme North Alabama, and the northwesternmost (Dade) county in Georgia, making it the rarest maple in Georgia. This maple is comparable in size with *A. saccharum* and is used for many of the same purposes, including maple syrup production. Of course, the species name *nigrum* means black, probably referring to the bark which is darker than *A. saccharum*. It is large tree with a dense, flat-topped to rounded crown. Although the normal habitat is near streams and rivers, it can be found in rich woods over 5,000 feet in the Southern Appalachians and is said to be more drought tolerant than *A. saccharum*, therefore making it a better candidate for planting in the Midwest.

Description: Black maple can grow up to 82 feet or taller, with a straight trunk up to 4 feet in diameter. The leaves are mostly three-lobed (rarely five), up to 6 inches long, with the edges drooping, as if wilted; the upper surface is dark green; the lower yellowish-green and densely pubescent, usually with *a prominent stipule* at the base of the petiole. The flowers and fruit are similar to *A. saccharum* and *A. barbatum*. There are several foliar traits which can help us differentiate between black maple and Northern sugar maple, and some of these will also help us distinguish black maple from chalk and Southern sugar maple. (1) Stipules are usually present on the petioles of black maple, not sugar maple. (2) The basal lobes are reduced in size on black maple compared with sugar maple. (3) The sinuses of black maple leaves are comparatively shallow. (4) Lower surfaces of black maple leaves are densely pubescent. (5) Leaves of black maple may turn more yellow or orange than red. (6) Leaf blades of black maples appear as if they are wilting.

Conclusion: The differences between red maple, silver maple, striped maple, mountain maple, boxelder and "the sugar maple complex" as a whole are clearly defined. However, because of the variation in leaf size, shape and hairiness the four members of this "complex" are not nearly as easily identified. Some possible explanations for these variations are (1) the natural variation within a species, (2) the leaves on the lower part of the tree vary from those at the top in shape, size, and hairiness, (3) possibly related to number 2, the leaves vary in size, shape and hairiness depending upon their exposure to the sun, (4) intergradation between the four different species. I have tried to supply two simple keys, one based mainly on leaf and habitat characteristics, and the other using all morphological features.

Leaf & Habitat key to the species of Acer in Georgia

1. Leaves compound. . . . . *Acer negundo*, boxelder
1. Leaves simple 2
    2. Leaf margins with closely, irregularly or doubly toothed margins. . . . . 3, soft maples
        3. Leaves whitish, glaucous or silvery beneath; distributed throughout Georgia 4
            4. Leaves whitish to glaucous beneath; 3–5 shallow lobes; middle lobe widest at base; up to 6″ long; wide sinuses with rounded bases; dark green above; various habitats . . . . . *Acer rubrum*, red maple
            4. Leaves silvery beneath; very deeply 5-lobed; middle lobe widest at middle; up to 7.9″ long; narrow sinuses with sharp bases; light green above; usually found along watercourses . . . . . *Acer saccharinum*, silver maple
        3. Leaves green or light green beneath; trees of extreme North Georgia Mtns. 4
            5. Leaves coarsely glandular toothed; 5–8 teeth per inch; softly hairy beneath; up to 5″ long . . . . . *Acer spicatum*, mountain maple
            5. Leaves finely toothed (not glandular); 12–25 teeth per inch; glabrous beneath; up to 8″ long . . . . . *Acer pensylvanicum*, striped maple
    2. Leaf margins smooth, sometimes wavy or with a few large teeth . . . . . 6, hard or sugar maples
        6. Typical leaves small, up to 3.5″ wide; glaucous beneath; with terminal lobes usually widest at apex . . . . . *Acer barbatum*, Southern sugar maple
        6. Typical leaves larger, up to 6–7″ wide; not glaucous beneath; terminal lobes usually widest at base. 7
            7. Leaves flat; lobes with acuminate tips; whitish or light green beneath; strongly 5-lobed; glabrous or hairy mainly on the veins beneath. . . . . *Acer saccharum*, sugar maple
            7. Leaves exposed to strong sunlight drooping at tips and sides; dark green above, yellowish-green and hairy beneath; 3–5 lobed 8
                8. Leaves mostly 5-lobed; no stipule at base of petiole; lobes long, acute to acuminate; almost glabrous to hairy underneath; tree well distributed over the northern half of Georgia. . . . . *Acer leucoderme*, chalk maple
                8. Leaves mostly 3-lobed; usually with a prominent stipule at base of petiole; lobes short, acuminate; densely hairy beneath; rare tree in Georgia, only reported from Dade County. . . . . *Acer nigrum*, black maple

General Key to the species of Acer in Georgia

1. Leaves compound. . . . . *Acer negundo*, boxelder

1. Leaves simple 2

2. Leaf margins with closely, irregularly or doubly toothed margins. . . . . 3, soft maples

3. Flowers appearing before the leaves, in axillary clusters; leaves white or silvery beneath; trees well distributed across Georgia; buds not stalked, with more than two scales . 4

4. Flowers with red or orange petals, long-stalked; twigs without fetid odor when crushed; leaves whitish beneath, with 3–5 shallow lobes, middle lobe widest at base; wide sinuses; various habitats. . . . . *Acer rubrum*, red maple

4. Flowers with no petals, greenish yellow, nearly without stalk; twigs with fetid odor when crushed; leaves silvery beneath, deeply 5-lobed, middle lobe widest at middle; narrow sinuses; found along watercourses . . . . . *Acer saccharinum*, silver maple

3. Flowers appearing after the leaves, in terminal clusters; leaves green beneath; trees of the extreme North Georgia Mtns.; buds distinctly stalked, with 2 opposing scales . 5

5. Flower clusters erect; leaf margins coarsely glandular toothed, with 5–8 teeth per inch; softly hairy beneath; bark brown or gray, not streaked . . . . . *Acer spicatum*, mountain maple

5. Flower clusters drooping or pendulous; leaf margins finely toothed, with 12–25 teeth per inch; glabrous beneath; bark green, streaked with white . . . . . *Acer pensylvanicum*, striped maple

2. Leaf margins smooth, sometimes wavy or with a few large teeth . . . . . 6, hard or sugar maples

6. Typical leaves small, up to 3.5″ wide; glaucous beneath; terminal lobes usually widest at apex; wings of fruit not wide spreading; bark uniformly light gray or tan when young, becoming darker and furrowed, sometimes with lighter streaks, and becoming almost black at the base. . . . . *Acer barbatum*, Southern sugar maple

6. Typical leaves larger, up to 6–7″ wide; not glaucous beneath; terminal lobes usually widest at base. 7

7. Leaves flat; lobes with acuminate tips; whitish or light green beneath; strongly 5-lobed; glabrous or hairy mainly on the veins beneath; bark smooth and gray when young, becoming dark gray, with vertical plates, and becoming scaly with age. . . . . *Acer saccharum*, sugar maple

7. Leaves exposed to strong sunlight drooping at tips and sides; dark green above, yellowish-green and hairy beneath; 3–5 lobed 8

8. Leaves mostly 5–lobed; no stipule at base of petiole; lobes long, acute to acuminate; almost glabrous to hairy underneath; tree well distributed over the northern half of Georgia; small tree with rounded crown; sometimes with multiple trunks or if with single trunk, branching close to ground; bark on young trunks whitish to light gray or tan, becoming black on old trunks . . . . . *Acer leucoderme*, chalk maple

8. Leaves mostly 3-lobed; usually with a prominent stipule at the base of the petiole; lobes short, acuminate; densely hairy beneath; rare tree in Georgia, only reported from Dade County; large, single-trunk tree; bark nearly black on old trunks . . . . . *Acer nigrum*, black maple

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left: *Acer rubrum var. drummondii* (Drummond's red maple)
Courtesy of Duke University

center: *Acer rubrum var. trilobum* (trident or swamp maple)
Richard and Teresa Ware

right: *Acer rubrum var. rubrum* (red maple)
leaves by Richard and Teresa Ware, bark by Hugh and Carol Nourse


Acer barbatum (southern sugar maple)
Richard and Teresa Ware

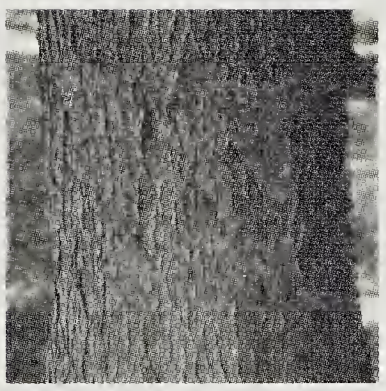


Acer leucoderme (chalk maple)
Richard and Teresa Ware

old bark

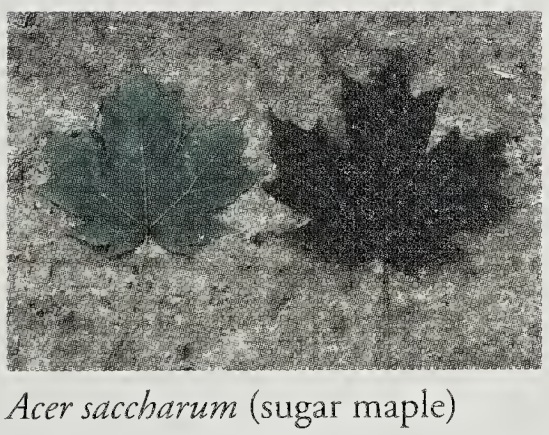
young bark


Acer negundo (boxelder)
Richard and Teresa Ware

Acer saccharinum (silver maple)
Richard and Teresa Ware

Acer nigrum (black maple)
Courtesy of Virginia Institute of Technology




Acer saccharum (sugar maple)
Richard and Teresa Ware


Acer spicatum (mountain maple)
Hugh and Carol Nourse


Acer pensylvanicum (striped maple)
Hugh and Carol Nourse

Georgia's Alien UFO's...

A Devil's Dozen of Deadly Denizens

James R. Allison

They're here. All around us. Breeding more of their kind every day. And while none are from Mars, many are green. Of course, I'm talking about the UFOs, or Uncontrolled Foreign Organisms.

All kidding aside, surely invasive exotic plants pose the greatest long-term threat to our botanical diversity, the celebration of which has been the point of nearly every article ever written for *Tipularia*. While people have long combated troublesome weeds, until recently most of the attention has been devoted to those causing great economic injury to farmers and aggravation to homeowners with lawns and gardens to maintain. Recognition of the harm to natural landscapes has dawned late, starting with valuable rangelands in the Western states and closer to home in park lands like Florida's Everglades. In the other Southern states, most of the attention and name recognition has been focused on a single plant, a distinctive one that even the botanically challenged now recognize, kudzu. Though the public understands how aggressive kudzu is, they also know that it isn't everywhere, and that it seems to spread laterally from existing infestations rather than popping up on its own, everywhere. And so it has come to be accepted as part of the Southern landscape. We even crack jokes about it, such as calling it The Vine that Ate the South.

Nationally the area of natural landscape newly degraded each year by exotic plants is said (www.usgs.gov/invasive_species) to be an area twice the size of Delaware, and to cost 100 billion dollars in lost resources and productivity. Readers who have noticed the extent of Chinese privet, tallowtree, etc. in Georgia will find these figures entirely plausible.

To call attention to the invasive exotics I consider to be causing the most harm to natural areas, I provide the following rogues gallery. On the maps I have used shading to indicate the regions of the state where I have observed serious infestations, the darker the shading the higher my estimate of their prevalence. The maps are merely rough approximations. If the reader has information that could help to correct them (e.g., locations in the lower coastal plain with serious problems with multiflora rose), please e-mail me at ***jim_allison@dnr.state.ga.us***, call me at (770)918–6411, or write me at Georgia Natural Heritage Program; 2117 U.S. Hwy. 278 SE; Social Circle, GA 30025

***Albizia julibrissin* Durz.**

Common Names:
Mimosa, silktree

Botanical Family:
Mimosaceae (mimosa family)

Continent of Origin: Asia

Habitats Infesting:
Woodland margins, open woodlands

Elaeagnus umbellata Thunb.

Common Names:
Autumn olive,
silverberry, oleaster

Botanical Family:
Elaeagnaceae (Russian-olive or oleaster family)

Continent of Origin: Asia

Habitats Infesting:
Woodlands, especially when rocky

Hydrilla verticillata (L. f.) Royle

Common Names:
Hydrilla, water-thyme

Botanical Family:
Hydrocharitaceae (waterweed family, frog's-bit family)

Continents of Origin:
Asia, Africa, Australia

Habitats Infesting:
Spring runs, impoundments, and other freshwater aquatic habitats

Ligustrum sinense Lour.

Common Names:
Chinese privet

Botanical Family:
Oleaceae (olive family)

Continent of Origin: Asia

Habitats Infesting:
Woodlands, especially low woods, streamsides, rock outcrops, disturbed areas

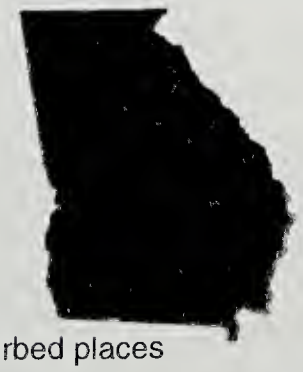
Lonicera japonica Thunb.

Common Names:
Japanese honeysuckle,
Hall's honeysuckle

Botanical Family:
Caprifoliaceae
(honeysuckle family)

Continent of Origin: Asia

Habitats Infesting:
Woodlands, usually mesic, disturbed places



Melia azedarach L.

Common Names:
Chinaberry, Pride-of-India

Botanical Family:
Meliaceae (mahogony family)

Continent of Origin: Asia

Habitats Infesting:
Woodlands (mostly mesic to wet-mesic), disturbed areas.

Microstegium vimineum (Trin.) A. Camus

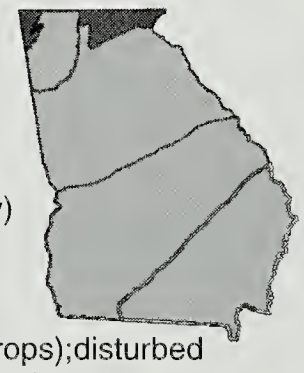
Common Names:
Microstegium, Nepal-grass, etc.

Botanical Family:
Poaceae (grass family)

Continent of Origin: Asia

Habitats Infesting:
Woodlands (often mesic to wet-mesic); streambanks,fresh-water marsh-edges, etc

Paulownia tomentosa (Thunb.) Sieb. & Zucc. ex Steud.



Common Names:
Princess tree, empress tree, etc.

Botanical Family:
Paulowniaceae (paulownia family)

Continent of Origin: Asia

Habitats Infesting:
Rocky places (woodlands or outcrops);disturbed areas, especially when sandy or rock

Phyllostachys aurea Carr. ex A. & C. Riviere

Common Names:
Golden bamboo, fishpole bamboo, running bamboo

Botanical Family:
Poaceae (grass family)

Continent of Origin: Asia

Habitats Infesting:
Woodlands and other habitats near home sites where planted

Pueraria montana (Lour.) Merr.

Common Names:
Kudzu; the vine that ate the South

Botanical Family:
Fabaceae (bean family)

Continent of Origin: Asia

Habitats Infesting:
Spreading into non-wetland habitats (forested or cleared), mostly from old plantings for erosion control

Rosa multiflora Thunb. ex Murr.

Common Name:
Multiflora rose

Botanical Family:
Rosaceae (rose family)

Continent of Origin: Asia

Habitats Infesting:
woodlands, forest margins and unnatural habitats such as roadsides and old pastures

Sapium sebiferum (L.) Roxb.

Common Names:
Chinese tallowtree, popcorn tree

Botanical Family:
Euphorbiaceae (spurge family)

Continent of Origin: Asia

Habitats Infesting:
Wet to mesic woodlands, marshes and other shallow-water habitats, disturbed areas

Chinese wisteria

Common Name(s):
Chinese wisteria

Botanical Family:
Fabaceae (bean family)

Continent of Origin: Asia

Habitats Infesting:
Woodlands, usually near old home sites where planted

Flora Of New Echota State Historic Site

Printing office of the *Cherokee Phoenix*

Carol Howel Gomez

Introduction

A survey of the vascular flora of New Echota State Historic Site, Gordon County, Georgia was conducted from July 1997 through November 2000. Based on Jones and Coile (1988), very few plant species have been documented from Gordon County and it is hoped that this study will add to our knowledge of the flora in this part of Georgia. New Echota was the location of the Cherokee National Capital from 1825–1838. Today, the former capital has been designated a State Historic Site, a National Historic Landmark, and a Traditional Cultural Property (a Federal Highway/State Department of Transportation designation).

Description of Study Area

New Echota State Historic Site (here after referred to as New Echota) comprises 202 acres

in Gordon County, Georgia. The site is bordered to the west in part by New Town Church Road, to the north by Georgia Highway 225, and to the east by the Coosawattee River (figure 1). Soils on the site range from shallow to deep soils on shale ridges to somewhat poorly drained soils along creek flood plains. Precipitation in Gordon County averages fifty-three inches annually. Average daily maximum temperature is 54°F in January and 90°F in July. Gordon County has a growing season of approximately 215 days (Bramlett 1965).

Most of Gordon County, including New Echota, is located in the Great Valley District of the Ridge and Valley Province and is characterized as broad and open with a few scattered ridges and hills (Clark and Zisa 1976). This feature is called a valley because its general surface is 1000 to 1200 feet below the summit of the mountains on either side. In Georgia, the valley comprises 2800 square miles and is fifty-three miles wide at Cartersville (LaForge 1926). Elevations at New Echota range from 620–680 feet.

New Echota was a planned community laid out by Cherokee surveyors and by 1830 had several government buildings and approximately fifty residents

New Echota is drained by New Town Creek and its tributary Tarvin Spring Branch. At the northeast corner of the site, the Coosawattee River flows into the Conasauga River to form the Oostanaula River. New Town Creek drains into the newly formed Oostanaula River which forms the Coosa in Rome and from there drains into the Gulf of Mexico.

History

Much has been written about the history of New Echota, making it easy for the researcher to investigate land use patterns at this location. The following brief history has been paraphrased from a park pamphlet entitled "New Echota State Historic Site" which provides a concise summary of the significance of New Echota. By the early 1800s, the Cherokee Indians had adopted a government similar to that of the United States. During the fall of 1819, the Cherokee Council began holding their annual meetings in Newtown, a small community located at the junction of the Coosawattee and Conasauga rivers in present-day Gordon County. On November 12, 1825 the Council adopted a resolution making Newtown the nation's capital and changing the name to New Echota. New Echota was a planned community laid out by Cherokee surveyors and by 1830 had several government buildings and approximately fifty residents. During meeting times, several hundred Cherokees filled the town.

In 1821 the Council adopted a written form of their native language. The new alphabet was developed by a mixed-blood Cherokee named Sequoyah and was put to use in 1826 when a national press and newspaper, the *Cherokee Phoenix*, was approved by the National Committee and Council. The first issue of the *Cherokee Phoenix*, a four page weekly, was published February 21, 1828 at New Echota. The bilingual newspaper was circulated throughout the Cherokee Nation and parts of the United States and Europe. The last issue of the *Cherokee Phoenix* was printed May 31, 1834. The first editor of the newspaper was a Cherokee named Elias Boudinot who lived in a two story frame house near the printing office. Among his friends was Reverend Samuel A. Worcester, a missionary who arrived in New Echota in 1827. Worcester helped bring the *Cherokee Phoenix* into existence and served as the town's minister, schoolmaster and postmaster.

On the night of December 29, 1835, in Elias Boudinot's home, the Treaty of New Echota was signed, ceding all Cherokee lands east of the Mississippi for lands in Oklahoma. Most

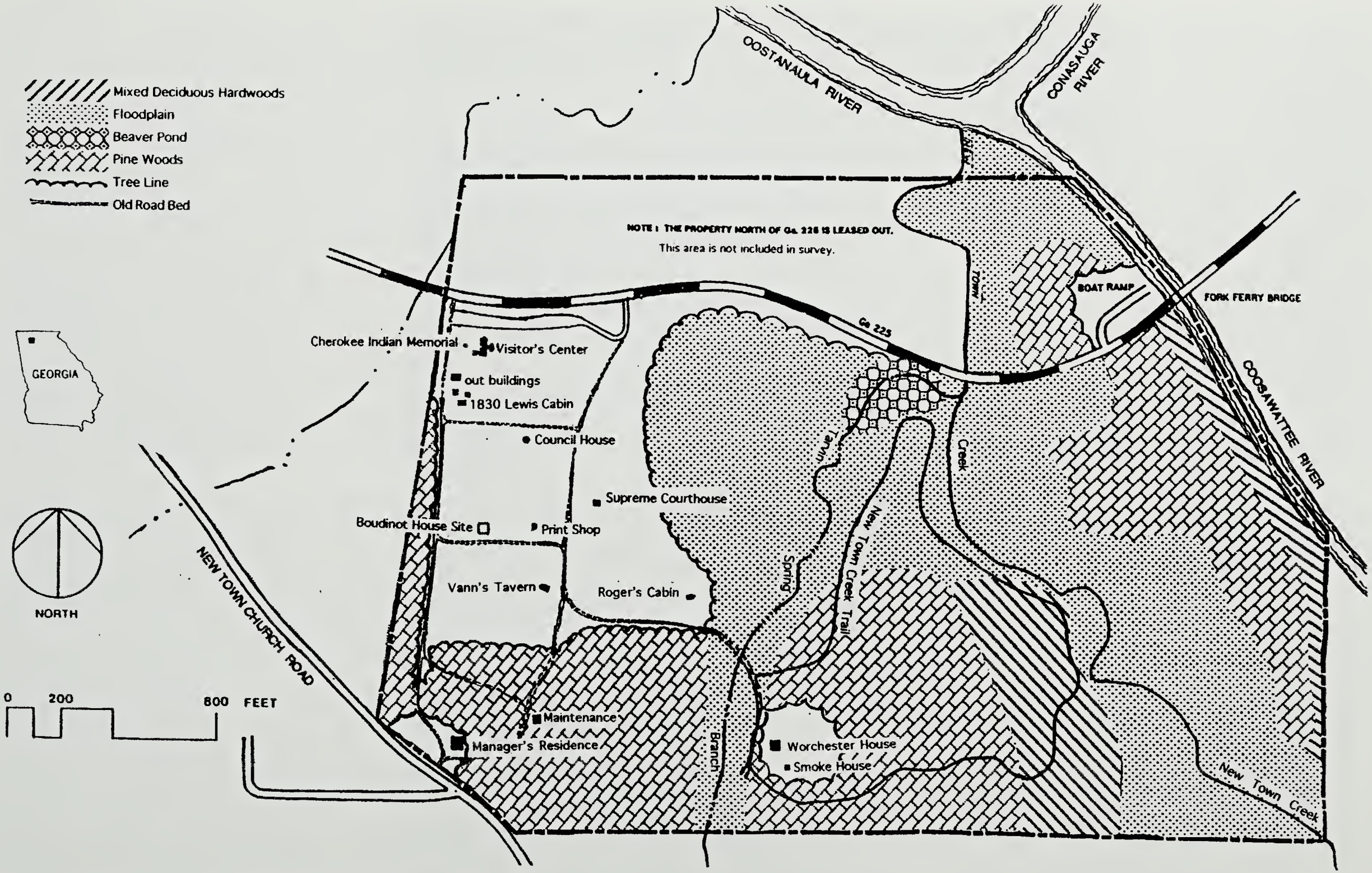


Figure 1. Major features at New Echota State Historic Site
Vegetative community boundaries are approximate

TABLE 1: Summary of taxa for New Echota

	Pteridophytes	Gymnosperms	Monocots	Dicots	Totals
Families	7	3	13	74	97
Genera	9	3	60	176	248
Species	10	4	88	266	368
County Records	4	3	80	224	311
Introduced Species	0	0	18	47	65

Cherokees considered the treaty fraudulent and refused to leave their homeland. Beginning in 1838, state and federal troops were ordered to remove those Cherokees and began placing them in a series of stockades. The imprisoned Cherokees were then forced to begin their journey to the west. Many Cherokees died along the way, and the removal became known as the Trail of Tears.

Land Use

Following the removal of the Indians, the town of New Echota disappeared and property was distributed in a land lottery. The land changed hands many times and in the late 1800s was cleared for farmland and planted in corn. In the early 1900s the fields were planted in cotton. The only building not destroyed was the Worcester House. In the early 1950's, a group of Calhoun citizens purchased 200 acres of the old town and deeded it to the state. Archaeological excavations began in 1954 and discovered the locations of old buildings and roads. After restoring the Worcester House, moving Vann's Tavern and reconstructing the Supreme Courthouse and printing office (see page 24), New Echota State Historic Site was officially dedicated on May 12, 1962. A museum was added in 1969, followed by an 1830s cabin in 1983. Eight years later, a common Cherokee homestead with a small cabin, corncrib and stable was brought to the site. The most recent addition is the 1994 reconstruction of the Council House. Today New Echota provides interpretive tours to the public and numerous school groups with an approximate annual visitation of 17,000.

Like most of the vegetation in the Great Valley District, the majority of the vegetation on New Echota's 202 acres has been altered from its original condition. Nearly all of the park was completely cleared for agriculture and was still producing cotton as recently as the 1950s. Based on Soil Conservation Service aerial maps and Bramlett (1965), pines were planted in the 1950s in an area northeast of the Worcester House. In the 1960s pines were planted in the southwest corner of the property and in the area between New Town Creek and the Coosawattee River. In the 1970s, pine plantings were made through the midsection of the park including much of the Tarvin Spring Branch floodplain west of the creek. Within the last ten to fifteen years, more pines have been planted along the southwestern edge of the site. The Gordon County Soil Survey (Bramlett 1965) indicates a former gravel pit located just south of Georgia Highway 225 and just west of the Coosawattee River. Currently, twenty-eight acres north of Georgia Highway 225 are being leased to the Calhoun Elks Club, who maintain a golf course and clubhouse on the property. Tarvin Spring Branch has also been impacted by beavers that have dammed the creek just west of its junction with New Town Creek, creating a small impoundment. A

Figure 2: Deciduous woods along New Echota Trail.

mixed deciduous hardwood community along a ridge above New Town Creek appears to have been minimally impacted, though it could possibly have been logged.

Materials and Methods

Cursory work began in July 1997 and collections continued through November 2000. Regular excursions were made to locations throughout the site, excluding the twenty-eight acres which are being leased for the golf course. Two collections of most species were made and all have been sent to the University of Georgia Herbarium in Athens. Standard survey and collection methodologies were used.

Protected species information was derived from Patrick, Allison and Krakow (1995), Georgia Natural Heritage Program (1997), and the database of the Georgia Department of Natural Resources' Natural Heritage Program. Information on species distribution in Georgia was derived from Jones and Coile (1988). Plant nomenclature primarily follows that of Wofford (1989) and USDA (1995). Supplementary sources include: Cronquist (1980), Flora of North America Editorial Committee (1993, 1997), Godfrey and Wooten (1979, 1981), Hitchcock (1950), Isely (1990), and Radford et al. (1968). Identifications were made by the author.

Floristic Survey Results

No systematic floristic surveys have been conducted in Gordon County. Collections made prior to this study were largely random collections or targeted specific plant groups such as ferns and oaks. Based on Jones and Coile (1988), only 160 species have been documented for the county. During the current study at New Echota, 526 collections were made, documenting 368 species. A taxonomic summary is provided in Table 1. Not surprisingly, the largest family is Poaceae with forty-three species and the second largest family is Asteraceae with forty-two species. The largest genus is *Carex* with eight species. Of the 368 species documented in this survey, 311 species (85%) are county records. The determination of county record is based on Jones and Coile (1988) and holdings in the University of Georgia Herbarium in Athens. Copies of the plant list are available from the author.

Plant Communities Discussion

Though ecological community sampling and mapping is beyond the scope of this study, rough community boundaries were delineated to ensure adequate documentation for each area. For the purposes of this paper, each community has been assigned a simple descriptive name. There are four vegetative communities at New Echota: mixed deciduous hardwoods, wetlands (floodplain and beaver pond), pine

Figure 3: Beaver pond at New Echota

woods and disturbed areas. Approximate boundaries of these communities are illustrated in Figure 1. Representative portions of each of these communities can be found along the park's New Town Creek Trail, which also provides an observation deck at the beaver pond and an overlook platform on a ridge above New Town Creek floodplain.

Mixed Deciduous Hardwoods

The mixed deciduous hardwood community is found primarily west of New Town Creek (Figure 2). The canopy, which is dominated by oak and hickory, supports white oak (*Quercus alba*), swamp chestnut oak (*Quercus michauxii*), mockernut hickory (*Carya tomentosa*), tuliptree (*Liriodendron tulipifera*), and silver maple (*Acer saccharinum*). The understory is fairly open and includes the following species: redbud (*Cercis canadensis*), sweetshrub (*Calycanthus floridus*), American strawberrybush (*Euonymus americana*), scattered patches of mayapple (*Podophyllum peltatum*), eastern bluestar (*Amsonia tabernaemontana*), Christmas fern (*Polystichum acrostichoides*), pipsissewa (*Chimaphila maculata*), helmet flower (*Scutellaria integrifolia*), rue anemone (*Thalictrum thalictroides*), mercury spurge (*Euphorbia mercurialina*), hairyfruit chervil (*Chaerophyllum tainturieri*), partridge berry (*Mitchella repens*), anise root (*Osmorhiza longistylis*), Solomon's seal (*Polygonatum biflorum*), feather Solomon's seal (*Smilacina racemosa*), cranefly orchid (*Tipularia discolor*), bloodroot (*Sanguinaria canadensis*) and little brown jug (*Hexastylis arifolia*).

One particular spot within the mixed deciduous hardwoods supported an assemblage of species found nowhere else on the park. Species in this patch include: American bladdernut (*Staphylea trifolia*), lanceleaf wakerobin (*Trillium lancifolium*), wild comfrey (*Cynoglos-*

sum virginianum), and a lone dwarf larkspur (*Delphinium tricorne*). Since most of these species are often found in basic soils, samples were taken in this immediate area and analyzed by the University of Georgia's Cooperative Extension Service. The results indicate that the soil here is not particularly high in calcium and is acidic.

A small strip of mixed deciduous hardwoods was also discovered along the eastern property line formed by the Coosawattee River. Though a small levee system appears to be present, soils in this area are not wetland soils and there is not a predominance of wetland vegetation. The banks of the river are essentially vertical for most of the length of the park property and support no vegetation. Banks on the eastern side of the river are much lower, and floodwaters typically divert in that direction into an agricultural field. The top of the levee was once used as a road, but has long since been abandoned and is quite grown up. The hardwood canopy extends west beyond the levee for a short distance and then grades into pinewoods. Species composition in this area is similar to that previously described. Additional species include: sourwood (*Oxydendrum arboreum*), eastern hophornbeam (*Ostrya virginiana*), oakleaf hydrangea (*Hydrangea quercifolia*), sassafras (*Sassafras albidum*), possumhaw (*Ilex decidua*), southern arrowwood (*Viburnum dentatum*), flame azalea (*Rhododendron calendulaceum*), wild yam (*Dioscorea villosa*), and beechdrops (*Epifagus virginiana*).

Wetlands

Floodplain. At New Echota, floodplains can be found along the lengths of both Tarvin Spring Branch and New Town Creek. Wetland soils, vegetation and hydrology extend outward for quite a distance at the confluence of the two creeks, and narrows toward the head waters of Tarvin Spring Branch. Along New Town Creek, the eastern side of the floodplain is 180 feet wide near the southeastern corner of the park.

Though detailed measurements on flooding frequency were beyond the scope of the current study, casual observations were made during the wet seasons. In early 1998, the floodplains were inundated roughly once a month during the late winter and spring. In the acres surrounding the confluence of Tarvin Springs Branch and New Town Creek, the high watermark on the trees is roughly eight feet. A canoe trip was made during one flood to verify this depth. Flooding of this depth took approximately seven days to completely recede. In 1991, flood waters crept into the Courthouse to a depth of one foot. Flooding would likely be much more frequent and severe were it not for the creation of Carter's Lake and the berm formed by Georgia Highway 225. Flooding has even been reported in the *Cherokee Phoenix*.

Canopy vegetation is similar throughout the floodplains and includes: swamp chestnut oak (*Quercus michauxii*), several very large shagbark hickories (*Carya ovata*), white oak (*Quercus alba*), Florida maple (*Acer barbatum*), green ash (*Fraxinus pennsylvanica*), water oak (*Quercus nigra*), American beech (*Fagus grandifolia*), sweetgum (*Liquidambar styraciflua*) and occasional tuliptree (*Liriodendron tulipifera*). The western limits of Tarvin Spring Branch contain loblolly pine (*Pinus taeda*).

The floodplain understory composition varies quite a bit. Along the upper reaches of Tarvin Spring Branch, from the edge of park property to the service road to the Worcester house, the understory is dominated by thick privet (*Ligustrum sinense*). For most of the rest of the floodplain of both creeks, the understory is very open with only a few scattered shrubs including: hazel alder (*Alnus serrulata*), American hornbeam (*Carpinus caroliniana*), hophornbeam (*Ostrya virginiana*), boxelder (*Acer negundo*), crossvine (*Bignonia capreolata*), a lone red buckeye (*Aesculus pavia*), and an occasional pawpaw (*Asimina triloba*).

The herbaceous layer for most of the floodplain habitat is dominated by cane (*Arundinaria gigantea*), Indian woodoats (*Chasmanthium latifolium*), and poison ivy (*Toxicodendron radicans*). Additional herbaceous species in-

clude: green dragon (*Arisaema dracontium*), creeping Jenny (*Lysimachia nummularia*), dotted smartweed (*Polygonum punctatum*) Virginia water horehound (*Lycopus virginicus*), cardinal flower (*Lobelia cardinalis*), two clumps of spiderlily (*Hymenocallis caroliniana*), Virginia dayflower (*Commelina virginica*), moonseed (*Menispermum canadense*), and numerous species of Carex.

Flooding would likely be much more frequent and severe were it not for the creation of Carter's Lake and the berm formed by Georgia Highway 225. Flooding has even been reported in the Cherokee Phoenix.

A small tract north of Highway 225 along New Town Creek is also floodplain. This area is heavily impacted by fishermen and boaters, and the canopy contains scattered pines. Additional species in this area are: forget-me-not (*Myosotis macrosperma*), branched foldwing (*Dicliptera brachiata*), and water pimpernel (*Samolus valerandi ssp. parviflorus*).

Beaver pond. Based on Soil Conservation Service aerial photos, the beaver pond is at least 30 years old, but the exact age is uncertain. This area is characterized by open water with numerous standing dead tree trunks (Figure 3). Though the water level fluctuates seasonally, the beaver pond is inundated year round. Casual observations indicate that late spring depths average four to five feet. The beaver pond edges support rooted emergents and occasionally the entire surface is covered by blooms of *Lemna minor*.

Species seen in and along the edges of the beaver pond include climbing hempvine (*Mikania scandens*), broadleaf arrowhead (*Sagittaria latifolia*), American water plantain (*Alisma subcordatum*), wingleaf primrose willow (*Ludwigia decurrens*), scaldweed (*Cuscuta gronovii*), monkeyflower (*Mimulus ringens*), roundfruit hedgehyssop (*Gratiola virginiana*), Canadian clearweed (*Pilea pumila*), sensitive fern (*Onoclea sensibilis*), lizard's tail (*Saururus cernuus*), ditch stonecrop (*Penthorum sedoides*), common duckweed (*Lemna minor*), Brazilian watermeal (*Wolffia brasiliensis*), Carolina coralbead (*Cocculus carolinus*), brittle waternymph (*Najas minor*), parrotfeather watermilfoil (*Myriophyllum aquaticum*), smallspike falsenettle (*Boehmeria cylindrica*), and Virginia sweetspire (*Itea virginica*).

Pine Woods

The pine woods community occupies the southwestern corner of the property, the western property line, the south central nature trail area and extends along the eastern edge of the park between New Town Creek floodplain and the Coosawattee River. The canopy is almost exclusively loblolly pine (*Pinus taeda*) with an occasional Virginia pine (*Pinus virginiana*). The developing hardwood subcanopy includes: mockernut hickory (*Carya tomentosa*), water oak (*Quercus nigra*), American beech (*Fagus grandifolia*), sweetgum (*Liquidambar styraciflua*), redbud (*Cercis canadensis*), winged elm (*Ulmus alata*), black cherry (*Prunus serotina*), and eastern redcedar (*Juniperus virginiana*). The often dense understory includes: muscadine (*Vitis rotundifolia*), abundant Virginia creeper (*Parthenocissus quinquefolia*), blackberry (*Rubus* spp.), broad beechfern (*Thelypteris hexagonoptera*) and occasional Virginia snakeroot (*Aristolochia serpentaria*). Near the maintenance area where the community is younger, the dominant understory species is flowering dogwood (*Cornus florida*).

In late 1999, aerial reconnaissance by Georgia Forestry Commission and Georgia Department of Natural Resources indicated the beginnings of a pine beetle infestation on the eastern side of the site. Since then, pine beetles have destroyed most of the pines east of Tarvin Spring Branch and scattered pockets of beetle damage are evident throughout the remaining pine woods. At the time of this writing, park officials were in the process of determining the best course of action to mitigate any further

Figure 4: *Scutellaria montana*

impacts. Standing dead pines along the nature trail will likely be felled for safety reasons.

Disturbed Areas

Disturbed areas include all the open fields around the historical buildings (see page 24). Most of this area is mowed on a regular basis and portions are bush hogged seasonally. For the most part, this community lacks woody vegetation, though a few water oaks have been planted around some of the buildings, and a few peach trees have been planted near the Boudinot homesite and in the Roger's Cabin side yard.

The disturbed areas support a diverse assemblage of graminoids and composites including: broomsedge (*Andropogon virginicus*), prairie three awn (*Aristida oligantha*), three species of panic grass (*Dichanthelium* spp.), Indian goose grass (*Eleusine indica*), lace grass (*Eragrostis capillaris*), beaked panicum (*Panicum anceps*), field paspalum (*Paspalum laeve*), bristlegrass (*Setaria parviflora*), rough dropseed (*Sporobolus clandestinus*), purpletop (*Tridens flavus*), white snakeroot (*Ageratina altissima*), rice button aster (*Aster dumosus*), annual ragweed (*Ambrosia artemisiifolia*), oxeye daisy (*Chrysanthemum leucanthemum*), yellow thistle (*Circium horridulum*), prairie fleabane (*Erigeron strigosus*), thoroughwort (*Eupatorium hyssopifolium*), Allegheny hawkweed (*Hieracium paniculatum*), grassy gayfeather (*Liatris graminifolia*), orange coneflower (*Rudbeckia fulgida*), roughstem rosinweed (*Silphium dentatum*), and goldenrod (*Solidago* spp.).

Additional species discovered in the open areas include the following: field clover (*Trifolium pratense*), man of the earth (*Ipomoea pandurata*), Japanese honeysuckle (*Lonicera japonica*), four species of lespedeza (*Lespedeza* spp.), narrowleaf mountainmint (*Pycnanthemum tenuifolium*), several species of ticktrefoil (*Desmodium* spp.), purple false foxglove (*Agalinis purpurea*), common vetch (*Vicia sativa* ssp. *nigra*), Japanese clover (*Kummerowia stricta*), juniper leaf (*Polypremum procumbens*), honeyvine (*Cynanchum laeve*), lentil vetch (*Vicia tetrasperma*), and dwarf St. Johnswort (*Hypericum hypericoides*).

There are two low spots, once reported to be springs, that occasionally have standing water after a hard rain. These areas lack the hydric soils and hydrological indicators needed to be classified as wetlands, but they support a number of facultative wetland species including: ladies tresses (*Spiranthes vernalis*), grassleaf rush (*Juncus marginatus*), strawcolored flatsedge (*Cyperus strigosus*), needlepod rush (*Juncus scirpoides*), blunt spikesedge (*Eleocharis obtusa*), creeping eryngo (*Eryngium prostratum*), Virginia buttonweed (*Diodia virginiana*), rose pink (*Sabatia angularis*), and Carolina foxtail (*Alopecurus carolinianus*).

Protected Species Discussion

According to the Georgia Natural Heritage Program (GNHP), six species known from Gordon County receive one or more of the

Figure 5: *Delphinium tricorne*

Figure 6: *Trillium lancifolium*

following levels of protection: Federally Endangered (FE) or Threatened (FT), State Endangered (GE), Threatened (GT), Unusual (GU) or Rare (GR). Gordon County's protected species are: *Arabis georgiana* (GT, Federal candidate), *Cypripedium acaule* (GU), *Cypripedium calceolus* (GU), *Scutellaria montana* (GE, FT), *Thalictrum debile* (GE) and *Xyris tennesseensis* (GE, FE). The county also supports one known species of Special Concern (SC), *Carex hystericina*. The term Special Concern applies to those species that are not legally protected but whose biological status is uncertain or presumed to be in jeopardy. These species are monitored by the GNHP. Habitat is lacking on the site for most of these, however, a few good finds were made.

Scutellaria montana. In late May 1998, Park Manager David Gomez pointed out an interesting skullcap along the nature trail which was determined to be large-flowered skullcap (*Scutellaria montana*) (Figure 4). About a week later, Tom Govus, while conducting surveys in north Georgia for the GNHP, discovered additional plants in several locations away from the nature trail. Large-flowered skullcap is a state and federally protected species whose listing was downgraded from FE to FT in 2002. Large-flowered skullcap is found in mature oak-hickory forests of northwestern Georgia and adjacent Tennessee and is rare throughout its range. In Georgia, populations of large-flowered skullcap are known from Catoosa, Dade, Floyd, Gordon, and Walker Counties. At New Echota, large-flowered skullcap was discovered on a ridge above New Town Creek in mixed deciduous hardwoods. These groups have been informally monitored since their discovery and the numbers have remained fairly constant over the last five years. The largest group had nineteen flowering stems and approximately a dozen non-flowering stems in May 2002.

According to Patrick, Allison and Krakow (1995), management recommendations include hand thinning of shading trees in the vicinity which, if done carefully, may be

beneficial to this species. Additional recommendations include the control of exotic weeds, especially Japanese Honeysuckle and other aggressive weeds that tend to proliferate after any kind of disturbance. The New Echota large-flowered skullcap occurs in areas that are protected from development, however, during a tornado in May 2002, several large limbs fell near the biggest group of plants. Though none of the plants were directly damaged, a light gap resulted. These plants will continue to be monitored to determine what effects the disturbance may have on the population.

Cypripedium acaule. Two individual pink lady's slippers (*Cypripedium acaule*) were discovered at New Echota in pine woods along the nature trail. Listed as GU, pink lady's slipper is found in acidic soils of pinelands, upland hardwoods with pine, occasionally on the edges of rhododendron thickets, and in mountain bogs. Pink lady's slipper can be found in the foothills and mountains of Alabama, Georgia, and South Carolina north to Canada. It has been recorded from forty-nine counties in Georgia.

Patrick, Allison and Krakow (1995) made the following remarks about the listing of this species in Georgia: "Among the plants protected by law in Georgia are a few that are not particularly rare, but have a history of exploitation that raises concern about their future. Entire populations of this species have been wiped out by collectors and nurserymen who offer them for sale. Sadly, the plants are seldom provided conditions that mimic their natural habitat well enough to result in their survival. The listing of species such as this one is done to regulate commerce in them and to protect them on public lands. Management recommendations for pink lady's slipper include avoiding disturbance, possible periodic forest thinning, and winter burns to maintain its pine-dominated habitat." The two pink lady's slippers found at New Echota were located in an area hard hit by pine beetles. Though two individuals do not constitute a significant population, a relocation attempt will likely be made by park staff this year in order to protect them from impact resulting from the felling of the pines in this area.

Delphinium tricorne. Dwarf larkspur flowers from March to May in rich woods and mesic hardwood forests in calcareous soils in the mountains and lower piedmont of North Carolina, Georgia, Alabama, Mississippi, Tennessee, Kentucky and West Virginia. In Georgia, this special concern species has been recorded from Bartow, Floyd, Murray and Walker Counties. The current study discovered a single individual dwarf larkspur in the mixed deciduous hardwoods in April 1998 (Figure 5), but has not been seen since.

Trillium lancifolium. Lanceleaf wakerobin occurs in floodplain forests and rocky slopes over basic soils in Tennessee, Alabama, Georgia, Florida and South Carolina. In Georgia this special concern species is found in six counties: Walker, Floyd, Bartow, Decatur, Haralson and Houston. At New Echota (Figure 6), numerous plants were found along the nature trail in the mixed deciduous hardwood forest with *Delphinium* and *Staphylea.* ❀

Acknowledgements

The author would like to thank the Georgia Department of Natural Resources for granting permission to collect on the park. Thanks are also extended to Tom Patrick, who provided wonderful information on protected species in Gordon County. A special thanks goes to my husband, park manager David Gomez, for providing maps and information on park history and for providing field assistance.

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Chicopee Woods Nature Preserve/ Elachee Nature Science Center

Andrea Timpone, Executive Director

Just one hour north of Atlanta lies one of the largest public land trusts in north Georgia and one of the largest parks near a major metropolitan area east of the Mississippi River.

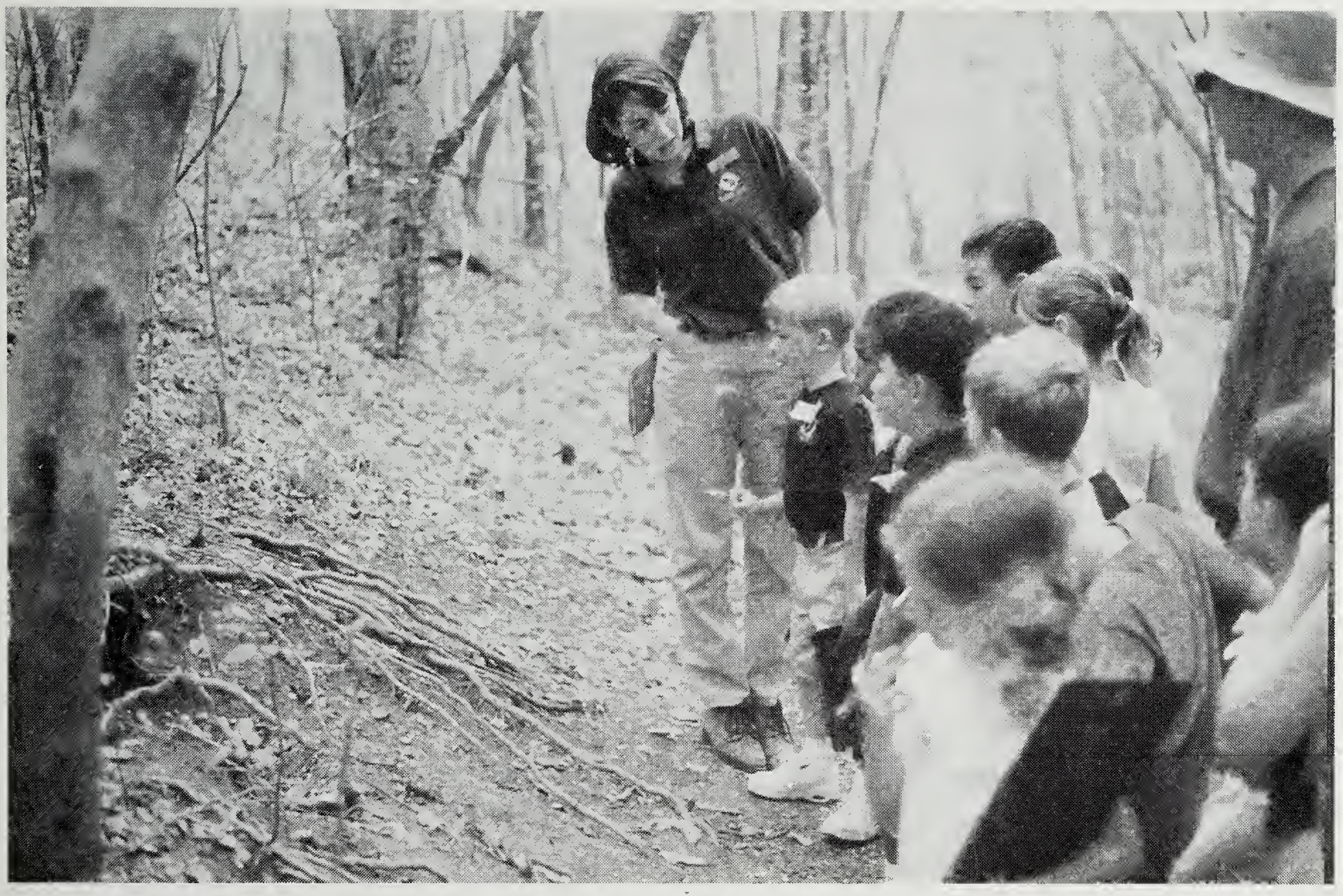
This is the site for an ideal natural outdoor classroom and laboratory where thousands of children and adults come to learn about ecosystems, the balance of nature, preservation and conservation, and to experience the wonder and awe that nature can inspire.

What is this natural wonder? It's the 1,300-acre Chicopee Woods Nature Preserve just outside Gainesville, Georgia and within its boundaries lies Elachee Nature Science Center, one of the premier environmental education centers in the Southeast. The mission of the Center... "provides interactive experiences in the Chicopee Woods Nature Preserve and elsewhere that enables students to understand that the earth and all its inhabitants are part of a complex and interdependent system." The entire area is part of the Chicopee Woods Area Park, a 2,674 acre greenspace restricted for recreation and nature preservation uses and administered by the Chicopee Woods Area Park Commission, a body created and empowered by and under an Act of the General Assembly of Georgia in 1980.

The word "Chicopee" has been interpreted to mean "Birch Bark Place." Other interpretations are "place of the elms" and "turbulent waters." "Elachee" is from the Cherokee language and means "new green earth." A fitting and appropriate name for this site offering place-based learning experiences for all ages.

Elachee Nature Science Center

Within this heavily forested wilderness preserve one can find thirty-eight species of upper story trees, eighteen species of mid-story trees, forty-four species of shrubs, twenty-five species of vines, and 197 species of herbaceous plants including ferns and lycopods including many rare and endangered species.



Outdoor learning at Chicopee Woods

It is also home to countless species of animals including deer, turkey, raccoon, opossum, squirrel, beaver, otter, red and gray fox, numerous fish, reptile and amphibian species, as well as many aquatic animals. It is also designated by the National Audubon Society as an Important Bird Area reflecting its significance as a habitat for nesting and migratory bird species.

The area possesses an interesting history. Chicopee Woods Nature Preserve is part of the 6,000-acre upper Walnut Creek watershed. It is located on what is known as the Gainesville Ridge area of Northeast Georgia, a set of ridges marking the transition zone from the Piedmont to the Blue Ridge Mountains created by the uplift of the Brevard Fault.

According to archaeological findings, the earliest human inhabitants in the area were archaic Indians who date back as far as 3000 BC. The Archaic Indians were followed by the Woodland and Mississippian tribes. By the sixteenth and seventeenth centuries the area was sparsely settled and hunted by both the Creek and Cherokee nations (Hudson 1976).

In the late 1700's the area was occupied by small frontier farmers who cultivated family farms until the 1800's when cotton reigned in the South and claimed the majority of cultivated land in North Georgia. However, the steep ridges and deep valleys of the Walnut Creek watershed did not lend itself to farming and the area escaped some of the abuse of cotton cultivation.

In 1927, Johnson and Johnson, Inc. under the leadership of Robert Wood Johnson, Jr., purchased the major part of the watershed in order to build a clean, safe and attractive mill and mill village that was ahead of its time. Johnson's plan was influenced by Thomas Edison, Fred Kilmer, a pioneer in pharmaceuticals, and Gifford Pinchot, the noted forest scientist. Earle Sumner Draper designed the mill village with gently curving streets, indoor plumbing and lighting with all utility lines located underground.

In the late 1970s, Johnson and Johnson began to cut back its mill production and sold the houses in the village to the residents.

Native plants surround the entrance to Elachee Nature Science Center

A municipal water supply became available to the area, and Johnson and Johnson closed the water filter plant. It was then that Johnson and Johnson decided that the watershed was no longer needed and donated 3,800-acres of the watershed to the Gainesville Area Park Commission for the establishment of a public park.

The Park Commission developed a public golf course on the north side of the park, an agricultural demonstration pavilion on the west side of the park and set aside the heart of the property, approximately 1,300-acres in the center of the park, as a wilderness preserve. The wilderness area was eventually leased to Elachee Nature Science Center. In 1990 a one cent sales tax option helped build a museum and classroom complex for education purposes and a recently completed capital campaign expanded the classroom and public spaces to meet ever-increasing interest in the Center's programs. A conservation easement naming Elachee as trustee of the Nature Preserve was created in 2001.

Today the Nature Preserve offers many opportunities for recreation, education and research with Elachee serving as management steward for the land. Elachee is a private, not-for-profit environmental education center that utilizes the Preserve as an outdoor classroom.

Visit any weekday and you'll find groups of K-12 students and teachers actively engaged in learning. The Center offers some twenty-nine different educational field trip experiences featuring the Preserve, all correlated to meet state QCC (Quality Core Curriculum) guidelines. Most programs combine a classroom instructional period followed by an experiential session and hike in the Nature Preserve. Each year over 47,000 students take part in Elachee programs and visit from thirty-five different school systems representing all of North Georgia, metro Atlanta and even neighboring states. Elachee is the only SACS (Southern Association of Colleges and Schools) and CITA (Commission on Trans Regional Accreditation) nature center in Georgia and is accredited as a supplementary education school.

This attractive, biologically diverse and

serene setting offers miles of trails providing a respite for busy people seeking to return to nature. On weekends the Preserve is enjoyed by families and individuals who hike and picnic in the Preserve. They also stop by the visitors center to study the displays including live fish, amphibians and reptiles or take in major visiting exhibitions such as robotic dinosaurs or giant robotic bugs. The Center's facilities also include classrooms, natural history displays, picnic areas and pavilions, native plant and rain display gardens, and gift shop.

> *The mission of the Center... "provides interactive experiences in the Chicopee Woods Nature Preserve and elsewhere that enables students to understand that the earth and all its inhabitants are part of a complex and interdependent system"*

Other Elachee program offerings include a popular summer day camp for preschoolers through middle school youngsters, teacher education programs, overnight education programs, scout programs and family Saturday programs. Fundraising events, volunteer opportunities and facility rentals round out Elachee's offerings.

In addition to programming at the main campus off Atlanta Highway SR 13 in Gainesville, Elachee also offers programs at its Chicopee Woods Aquatic Study Center on Chicopee Lake on Calvary Church Road in Gainesville. Lake Lanier Aquatic Study Center has a specially equipped pontoon boat available to study this important watershed. Also, the Elachee staff conduct a variety of programs at school sites throughout the state at the request of teachers.

The year 2003 marks Elachee's 25th Birthday... twenty-five years of excellence in environmental education. Planning for the future of the Preserve, Elachee will soon conduct an exhaustive Preserve assessment and produce a plan for managing the preserve. Ongoing BioBlitz Days are scheduled in which teams of experts in the various environmental fields will gather data and document populations. Andrea Timpone, Executive Director for Elachee Nature Science Center, explains the vision for the Preserve by saying "Restoring and maintaining the biodiversity of the Chicopee Woods Nature Preserve is Elachee's priority. This resource will serve as an invaluable greenspace in an urban setting providing education and recreation for generations."

Come visit, come learn, come enjoy. For more information call us at 770/535–1976 or visit our website at www.elachee.org. ❀

Thank you to Frank Armstrong and the late Dr. Charles Wharton for their research regarding the Preserve and its history... much of their work contributed background for this piece.

Book Review

The Wild Orchids of North America, North of Mexico

by Paul Martin Brown
Drawings by Stan Folsom

The Wild Orchids of North America, North of Mexico, by Paul Martin Brown, with drawings by Stan Folsom, is published by University Press of Florida; © 2003; 236 pages; color photographs; black and white illustrations; $27.95.

Alright, I'll admit it, I'm not an orchid nut like some of our members! But, even I can recognize an excellent checklist and field guide, when I see one. This beautifully photographed book is small and light, thus easily carried in a back pack for field identification.

This completely up-to-date comprehensive work covers all currently recognized taxa, including 223 species, twenty-four subspecies and varieties, 103 growth or color forms, and twenty-four hybrids. The taxonomy and distribution date in this book complement information in the Flora of North America project, volume twenty-six, *Orchidaceae*.

For each taxa covered in the "Checklist of the Wild Orchids" section, the author offers a beautiful color photograph, detailed black and white drawing, scientific name w/author, synonyms, misapplied names, common name, forma(e), references, and comments.

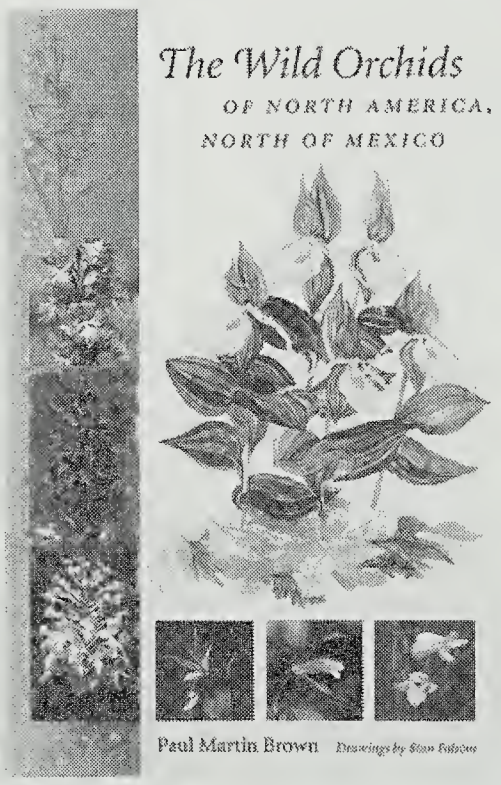
The section entitled "Key to the Wild Orchids," gives those using the book as a "Field Guide" the opportunity to key their plant to determine the species.

And, the last section of the book offers a rarely seen feature, a "Personal Checklist." This gives the user a place to jot down the date and location for each species of orchid observed.

I would think this book would be a must-have for all orchid lovers and anyone interested in being able to identify these botanical gems.

About the author and artist:

Paul Martin Brown is the author of *Wild Orchids of Florida: with References to the Atlantic and Gulf Coastal Plain* (UPF, 2001) and *Wild Orchids of the Northeastern United States*. He is a contributor to the *Orchidaceae* of volume 26 of the Flora of North America project. A research associate at the University of Florida Herbarium, Florida Museum of Natural History, he is the founder and editor of the *North American Native Orchid Journal*.



Stan Folsom, a botanical illustrator whose work appears in *Wild Orchids of Florida* and *Wild Orchids of the Northeastern United States*, recently retired after forty years of teaching art. ❀

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Jones Ecological Research Center. While at the Jones Center, Carol's work focused mainly on the ecology of the Longleaf Pine-Wiregrass community. In the Fall of 1999, she assumed the position of Conservation Coordinator at the Atlanta Botanical Garden. Her work at the garden deals with conservation of threatened plant communities through habitat restoration and species recovery programs.

Carol Howel Gomez has a master's degree in plant systematics from UGA. Prior to beginning a rather extended maternity sabbatical to raise three children, Carol was doing contract botanical work primarily for Garrow and Associates and the U.S. Forest Service. She has been working as a consultant for the Louise Gallant Herbarium at Rabun Gap-Nacoochee School since 1991 and has been the trip report editor for the BotSoc Newsletter since July 2000. Carol has contributed papers to Castanea and Tipularia.

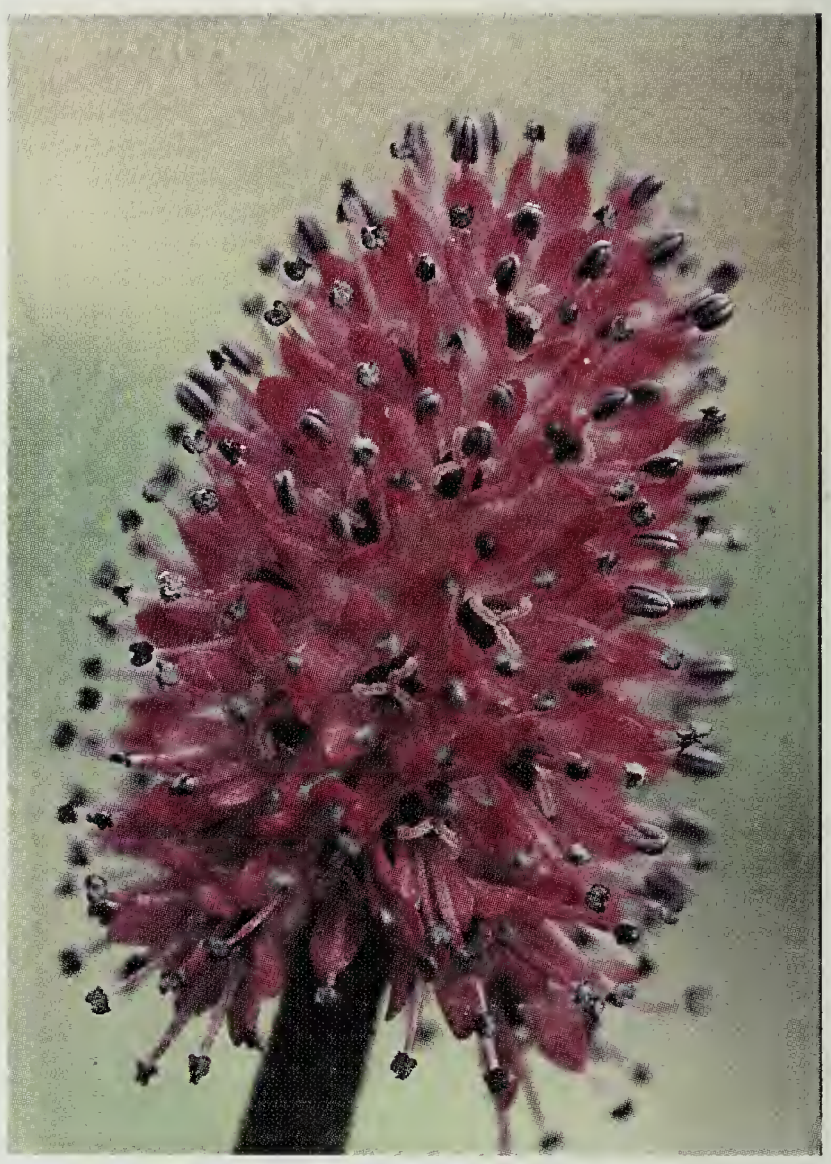
Andrea Timpone has been Executive Director for Elachee Nature Science Center for eighteen years. She has worked in the field of environmental education for twenty-seven years. She was raised in Chamblee, Georgia (when Chamblee was country) and has a B.S. in Biology and a Master's in Science Education. She and her husband Bill lived in Rabun County for five years before moving to north Hall County where they live with their two children.

Richard T. Ware Sr. is a self taught botanist that has studied trees, as a serious hobby, for thirty-two years, and wildflowers over sixteen years. He is a past Field Trip Chair, Vice-President, President, and Membership Chair of The Georgia Botanical Society, and now serves as Chair of the Tipularia Board of Editors. Richard, along with his wife Teresa, while engaging in their favorite pastime of searching for new plants, have been responsible for the discovery of many rare, and endangered plants, some new to the State of Georgia. He has published a "Checklist of the Vascular Plants of Floyd County, Georgia," is a frequent contributor to BotSoc News, Tipularia magazine, and has contributed a paper to Castanea, the Journal of the Southern Appalachian Botanical Society.

Acer leucoderme, leaves and fruit
(chalk maple)
Richard and Teresa Ware

Delphinium tricorne
(dwarf larkspur)
Fred Mileshko

Platanthera integrilabia
(monkeyface orchid)
Richard and Teresa Ware



Helonias bullata (swamp pink)
Hugh and Carol Nourse

Schwalbea americana (chaffseed)
Hugh and Carol Nourse