

The Journal of the South Carolina Native Plant Society



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Name That Native Plant!

I am a native cool-season annual grass. You may not realize it to look at me, but I was once an important food source for humans. Seeds of my ancestors may be found in archaeological digs around ancient campfire sites, and I played a part in early development of agriculture in the area east of the Mississippi River. My lifestyle may be a little more

relaxed these days, and you may not have noticed me lounging around in regularly disturbed sites. I'm just as good as I was once was, so don't forget all about me - you may need me again some day.



The answer is embedded in the text somewhere in this newsletter. Photo by Bill Stringer.



A colony of *T. oostingii* in May on the banks of the Wateree River.
Photo courtesy of the author

The Wateree Trillium a New Sessile-Flowered Trillium from Kershaw and Richland Counties, South Carolina

By L. L. Gaddy

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In the spring of 2002, I was walking along Big Pine Tree Creek in Kershaw County, South Carolina, on the lookout for interesting spring wildflowers, when I noticed the tendrils of Canada moonseed (*Menispermum canadense*) climbing on a black walnut tree. Knowing that both of these species are good indicators of rich soils, I carefully scanned the understory for what it might yield. A large yellow-flowered toadshade (as the sessile-flowered trilliums are commonly called) was blooming under the black walnut and a nearby bitternut hickory. I stared at the plant for a while; then suddenly realized that nothing was registering in my botanical memory bank built on 36 years of field experience. I had never seen this plant before. Interestingly, that is the same reaction most people—including experts on the genus *Trillium*—have when they see the Wateree trillium: “What on earth is that?”

(See *Trillium*, page 4)

Greetings fellow SCNPS members!

If you were not able to attend our 12th Annual Symposium last month, you missed a fantastic event. The Lowcountry Chapter symposium team did a wonderful job putting together a very informative and fun weekend. Magnolia Plantation and Gardens was a perfect venue which, together with neighboring Drayton Hall, provided botanically rich field excursions and offered a glimpse into the historical rice culture, a culture defined by botanical ecology. We had a great group of presenters covering a wide variety of topics from hands-on workshops in plant propagation and diseases, landscape design, and creating your own herbarium; to presentations on local floral and faunal natural history; and of course the natural history of our rice plantations.

Dr. Doug Tallamy (Chair of the University of Delaware Department of Entomology and Wildlife Ecology and author of [Bringing Nature Home: How You Can Sustain Wildlife with Native Plants](#)) was our plenary speaker. He provided an excellent presentation on how native plants and sustainable landscape design can result in a richer ecology for our personal landscapes, and if employed on a large scale, can have important positive effects on regional conservation of native plants and animals alike. The panel discussion that followed Dr. Tallamy's presentation generated very passionate discussion on the importance of education and outreach, and this topic became a dominant theme of discussion throughout the symposium.

Educating the public about preservation of our native plants and ecosystems is a daunting agenda, especially given the overwhelming dominance of the "big box" gardening centers in our country. There was much discussion on how we might penetrate this force, and I heard a lot of angst about the prospects of making a real difference. Our collective wrestling with this issue is central to the agenda of the SCNPS. The common conclusion that I heard in the presentations and conversations at the symposium is: "This is really about cultural change." In the not too distant past, any great optimism about affecting a shift in the "big box" forces and the prominence of

landscape designs of monocultured lawns and puffball shrubs would have been viewed as starry-eyed dreaming. However, times have changed...somewhat. Our education agenda is still no doubt ambitious, but in discussions at the symposium, I heard many take stock in the fact that we have entered an era that may give us more hope of making effective change. That is, the "go green" movement that our culture has largely embraced represents a true shift in the way the general public views our place in the planet's ecosystem. Much of this cultural shift may be more superficial than substantive. Nevertheless, the fact that it is now generally "cool" to be green, no matter what your political leaning, is a significant step. This new mindset is a foundation that has allowed the commercial growth of sustainable landscape design and architecture (e.g., there are a growing number of LEEDs and EarthCraft projects in the Carolinas and Georgia) where not so long ago there was none. And I offer here some very encouraging data about our own organization. Pam Howe (state membership committee chair) has looked at our membership data, and reports that we currently have 440 members, and that new memberships are coming in weekly.

I have been involved in many volunteer conservation organizations. However, the SCNPS stands out like none other in the way members step up to provide conservation and education resources one can use on one's own land, and effective activism by our chapters has made a real difference in local conservation efforts for many of our special ecological areas. As we continue in our mission, I invite all to explore new ways we might fulfill our education and outreach agenda, and I am sure we will see growth in our organization and, with time, growth in the preservation and restoration of our special native ecology that works in concert with our growing population.

Jeff Beacham, President

Rescuing in Woodlands - Observations

Jeane Saylor Reeves

Our Georgia woods are a wonder, filled in all seasons with treasures, beauty, and release from the pressures of daily life. When we stroll or hike into a rescue site with the intent of saving plants from the imminent, catastrophic effects of earthmoving machines, our hearts are in the right place. These native plants, from small trees and lovely shrubs to delicate wildflowers and graceful ferns, can and will adapt to new, safe homes. But, to ensure their survival, each rescuer should be aware, alert, and contemplative as to the plants' indigenous situations.

There are a number of factors that aren't readily apparent to the novice rescuer, and even seasoned rescuers sometimes fail to consider that each plant has its own needs. Some flora are very "picky" when it comes to relocation. For instance, native ladyslippers (*Cypripedium* spp.), trailing arbutus (*Epigaea repens*), running ground pine (*Lycopodium digitatum*), and horse sugar (*Symplocos tinctoria*), although different in their needs, are all demanding, but well worth the effort of educating oneself. Of course we all know that moisture, light, and nutrients are the basic elements that all plants require in varying amounts. But other factors aren't so obvious, and even moisture, light, and nutrients aren't so simple.

A water-loving plant growing on the bank of a stream is there because it needs the oxygen contained in moving, bubbling water. Gentians (*Gentiana* spp.), cardinal flower (*Lobelia cardinalis*), foamflower (*Tiarella cordifolia*), and grass-of-Parnassus (*Parnassia asarifolia*) come to mind. Other plants such as Jack-in-the-pulpit (*Arisaema triphyl- lum*) and Virginia sweetspire (*Itea virginica*) are found in damp or boggy conditions, and are at their happiest there. Northern maidenhair fern (*Adiantum pedatum*), wild hydrangea (*Hydrangea arborescens*), mountain laurel (*Kalmia latifolia*), and galax (*Galax urceolata*), among others, often prefer the conditions they find at the top of stream banks and ravines. While they need ample moisture, they hate "wet feet." Once in a while, a plant will be noticed growing out of context, so to speak. For instance, a southern lady fern (*Athyrium filix-femina*) might be spotted at the top of a dry slope; that doesn't mean that lady ferns like dry conditions. On the contrary, there is probably an underground seep close by.

Seasoned native plant gardeners come to realize that certain plants, such as foamflower, galax, and Shuttleworth ginger (*Hexastylis shuttleworthii*), can be moved into a garden setting and will do quite well. While, in their natural settings they prefer given conditions, these amenable plants manage nicely elsewhere, as long as they (See *Rescuing in Woodlands*, page 8)

SC Native Plant Society Plant Rescues

It has been the policy, whether formal or informal, of the SC Native Plant Society to place high priority on placing rescued native plants into visible restoration projects to which the public has access. This helps to facilitate the objectives of the Society dealing with education on, and restoration and preservation of native plant communities in SC.

The following draft language has been guiding the Upstate Chapter in managing rescue opportunities:

1. Priorities for plant placement. All things being equal, priorities for placement of rescued plants will be as follows (from highest to lowest).
 - a. Allocation to projects of the Upstate Chapter of the Native Plant Society. In this sense projects would include both those administered directly by the Chapter and projects we are working on cooperatively with other organizations.
 - b. A reasonable allocation of plants or seeds for the personal use of participants in the rescue itself.
 - c. Allocation to a plant sale sponsored by the Upstate Chapter of the Native Plant Society.
 - d. Allocation to educational institutions from elementary through high school.
 - e. Allocation to other public landscaping projects.
 - f. Allocation to botanical gardens.
 - g. Allocation for the purposes of research.
2. The unifying theme in determining the allocation of rescued plants is based on the policy:

Placement of rescued plants is made first on the basis of the long-term welfare of the plants rescued and second on the benefits that accrue to the Upstate Chapter, as a result of that rescue.

The spirit of this policy is reflected in the language of a consent form that participants in rescues facilitated by the Upstate Chapter are asked to sign:

Upon signing, each participant agrees to the following:

1. I will not return to any SCNPS rescue site for the purpose of removal of additional plants for private purposes or for the purpose of protesting or impeding development.

(See *SCNPS Rescues*, page 5)

Trillium, from page 1

From 2003 to 2007 I revisited the general area each year and discovered additional nearby sub-populations of the Trillium, and also continued researching the identity of the plant. While reviewing the database of the South Carolina Natural Heritage Program in 2002, I had noticed a *Trillium* collection by H. J. Oosting on April 7, 1937 from same general area. Oosting had originally called the plant *Trillium viride* Beck; Oosting's specimen was later annotated *Trillium lancifolium* Raf. After an examination of Oosting's specimen at the Duke University Herbarium, I concluded that the plant I was seeing in the Wateree floodplain was probably the same species that he had collected in 1937.

Most of the plants on the Wateree site were more robust and had broader petals than any *T. lancifolium* I had ever seen (In South Carolina, *T. lancifolium* is only found along the Fall Line in the Savannah River drainage.). Furthermore, the intra-floral structure of its flowers was significantly different from that of the flowers of *T. lancifolium*. I, therefore, concluded the plant was not *T. lancifolium* (as the Duke specimen had been annotated), but I had no idea what it really was. After examining images of the Wateree trillium, Mr. Tom Patrick of the Georgia Natural Heritage Program, an expert on the genus *Trillium*, pointed out to me that the plant appeared to exhibit some morphological elements of *Trillium recurvatum* Beck, a mid-western species never reported from South Carolina, and could represent a disjunct population of that species. Mr. Patrick's

observations were partially borne out after measurements and images of the Wateree trillium were compared to those of *T. recurvatum*, but, in the end, I concluded that the plants were not *T. recurvatum*.

After five years of morphological and bio-geographical research and a review of the Wateree trillium's DNA and chromosome data, I concluded that the Wateree trillium was a new species. In a paper published in the online journal *Phytologia* in 2008, I named it *Trillium oostingii*, in honor of its original collector Henry John Oosting, professor of Botany at Duke University from 1932 to 1968.



A close-up comparison of *T. oostingii* (left) and *T. lancifolium* (right).
Photo courtesy of the author.

Trillium oostingii is closely allied with *T. lancifolium* and *T. recurvatum*. The nearest known population of *T. lancifolium* is in South Carolina 100 km to the west in the Savannah River drainage, and the closest population of *T. recurvatum* is a disjunct population in central North Carolina about 120 km to the north. (*Trillium recurvatum* is known from the Midwest and Mississippi Valley and ranges east to eastern Alabama and central Tennessee. The North Carolina disjunct population is in

Catawba County, in the same drainage system as the Wateree River.)

Trillium oostingii has the tall and elongate "look" of these two species, and like both of these species, it has relatively thin (usually less than 20 mm in diameter) creeping rhizomes and forms small to large clones. Its intra-floral structure, however, is more similar to other sessile-flowered *Trilliums* unrelated to *T. lancifolium* and *T. recurvatum*. The stamens of *T. oostingii* are shorter than those of *T. lancifolium* and *T. recurvatum*, and, unlike those of *T. lancifolium* and *T. recurvatum*, whose filaments are about the same length or slightly shorter than the anthers, *T. oostingii*'s filaments are less than one-half the length of its anthers. Furthermore, its anthers are only slightly in-curved, and the stamens are only slightly taller than the stigma. The intra-floral region in *T. oostingii* is, therefore, compact, with the area inside of the stamens completely filled with the ovary and its tall stigma. On the other hand, in *T. lancifolium* and *T. recurvatum*, the strongly in-curved stamens and the short ovary creates an open area within the stamens.

When *T. oostingii* first appears in late March, its leaves (bracts) angle downward like those of *T. lancifolium* (not arching upward as do those of *T. recurvatum*), but as the plant matures, the leaves become parallel to the ground. The sepals are strongly reflexed early in some *T. oostingii* plants, but, again, as the plants mature, the sepals become parallel to the ground. Most mature *T. oostingii* plants are large, broad-leaved, robust plants with broad, long petals, with little resemblance to *T. lancifolium*. Occasionally, however, a narrow-leaved, narrow-petaled plant is found in a *T. oostingii* subpopulation; an ex-

amination of the intra-floral parts of the flower then becomes necessary to separate the two species. No flowering *T. oostingii* plants in any of the 20 subpopulations had petiolate leaves, as is usually the case in *T. recurvatum*. When the Wateree trillium first opens, its petals are greenish. As it matures, the petals gradually turn yellowish until they are bright yellow as they mature and fall off the plant.

Early in my studies of *T. oostingii*, I thought that it might be *Trillium maculatum* Raf. forma *similans* Freeman (a form of *T. maculatum* with yellow petals and maroon claws), or a hybrid between forma *similans* and *T. lancifolium*. After further research, however, the only real similarity between the two taxa was flower color and intra-floral structure. It later occurred to me that *T. oostingii* may be a natural hybrid between *T. lancifolium* and *T. recurvatum*, but DNA sequences indicate that the all three species are unique. In fact, according to a DNA sequence generated by Dr. Susan Farmer (now at Abraham Baldwin College), *T. lancifolium* and *T. recurvatum* are more closely related to each other than either is to *T. oostingii*. Furthermore, chromosome counts (by Dr. Gerald Moore of High Point College) revealed that the Wateree trillium has a chromosome number of $2n=10$, the same number as all known North American *Trillium* species, and is probably not a hybrid. (All known *Trillium* hybrid species are polyploids.)

Found on both sides of the Wateree River, just southwest of Camden, in Kershaw County, South Carolina, and along the Wateree River southward in Richland County, SC, *Trillium oostingii* grows in large colonies in rich, floodplain alluvium under a canopy of bitternut hickory, black walnut, slippery elm, willow oak, cherrybark oak, and Shumard oak. In the understory, native cane, Chinese privet, and spicebush are often present with the *T. oostingii*.

Nearly every known colony of *T. oostingii* is associated with a colony of mayapple (*Podophyllum peltatum*). Like mayapple, the Wateree trillium produces large, interconnected clones with thousands of stems. So if you happen to be in the Wateree floodplain along the Fall Line and find the Wateree trillium, you probably won't see just one—you'll see hundreds (or maybe thousands).

Reference

Gaddy, L. L. 2008. A new sessile-flowered trillium from South Carolina. *Phytologia* 90:374-382.

L. L. (Chick) Gaddy, Ph D., is a naturalist originally from Timmonsville, South Carolina. He is author of *A Naturalist's Guide to the Blue Ridge Front*; *Biodiversity: Przewalski's horse, Edna's trillium, the giant squid, and over 1.5 million other species*; and *Spiders of the Carolinas*. The Wateree trillium is the third new plant species he has named—the others are Radford's sedge (*Carex radfordii*, a GA-NC-SC endemic), and the Carolina heartleaf (*Hexastylis rhombiformis*, a NC-SC endemic).

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Definitions:

intra-floral - within the structure of a flower, ie., the interior parts

disjunct - A population of a species found outside the normal geographical range of the species.

forma – In **botanical nomenclature**, a form (forma) is a low-level **taxonomic rank** below that of **variety**; it is an infra-specific taxon (infra = below). Its name consists of three parts: a **genus** name, a **specific epithet**, and an **infra-specific epithet**. The abbreviation “f.” or the full “forma” should be put before the infra-specific epithet to indicate the rank.

SCNPS Rescues, from page 3

2. I understand that all plants removed during a rescue operation are the property of the SCNPS except those plants that the facilitator may allow me to keep for my personal use. I will not sell any of the plants I take from this or any rescue site.
3. I will not do anything to antagonize or interfere with the developers/property owners of this site, or to impede development.
4. I will listen to and conform to the rules and guidelines as explained by the SCNPS rescue facilitator.
5. I will not discuss with or disclose any information to outside agencies, organizations or the media concerning any rescue site location, its disposition or the plants discovered there. All such inquiries should be referred to the President of the Upstate Chapter, SCNPS.
6. I will not hold the SCNPS or the developer responsible should I suffer an adverse medical reaction to any plant, animal or insect I encounter while on a rescue. Furthermore, I understand that if I have a known pre-existing life-threatening allergy to insects and/or plants, it is my responsibility to carry my own medication and be able to administer it to myself should the need arise. I will not hold SCNPS responsible for accidents or injuries while on this field trip.
7. I understand that if I violate this agreement, I may not be able to participate in any future SCNPS rescues.

Spring Seed Collection Field trip

Ann Barklow, Garden Magic Company

In early June I joined a group of 10 SCNPS members for seed collecting of natives along upstate South Carolina roadsides. Having recently relocated to Greenwood, SC from Manhattan Beach, CA, this was my second outing with the group. My first was in the winter at Twin Chimneys landfill where we rescued native plants in 27°F weather. The seed collecting trip was a humid 90 degree day. Coming from a city where the temperature high is 78 and low is 50, I promised myself I wouldn't whine.

I was welcomed with the usual southern charm that I don't think I will ever take for granted here. Being a landscaper and horticulturist I have two criteria when I volunteer for plant societies. I have to learn something and have fun. I came away with both thanks to "foreman" and leader Bill Stringer from Clemson University and the great group of members who came to work.

At our first stop I watched my companions spray their socks and the bottom of their pants with DEET for tick and chigger prevention. I reluctantly sprayed my clothes, flashing back to years of eating organic produce and having just received a lifetime environmental hero award. Preventing days of itching and unknown diseases made it May grass *Phalaris caroliniana* seem okay.

We were shown *Lespedeza hirta* which we learned to identify because of the trifoliate leaves and stipules that we inspected with our hand lenses. Nearby were several *Silphium compositum* or Kidney-Leaf Rosinweed (Fig. 1). These large basal rosettes of leaves in the Aster family were hard to miss along the roadside. The summer bloom promises to be showy yellow daisies on an impressively tall spike (Fig 2). A perennial herb, also in the Aster family, *Liatris squarrosa*, was briefly removed from the soil so we could examine the underground globose root stock where the plant stores its reserves for the following season. We saw sassafras, the flavor source for root beer. *Sassafras albidum*, an aromatic shrub to small tree has a distinctive quality of having one or sometimes two lateral lobes on its leaves.

I placed stars next to my favorite plants. They made this list because they were neat in appearance and I often think of plant combinations that will look good together in a more structured garden landscape. *Ruellia carolinensis*, Wild Petunia (Fig. 3), with its purple flowers (no relation to petunias), was a pretty sight, along with *Stylosanthes biflora*, Pencil Flower (Fig. 4) with its delicate yellow flowers on a very neat, compact plant. Nothing stood out



Figure 1. Vegetative stage of kidney-leaf rosinweed, *Silphium compositum*. Photo courtesy of Janie Marlow, www.namethatplant.net



Figure 2. Flowering kidney-leaf rosinweed. Photo courtesy of Janie Marlow, www.namethatplant.net



Figure 3. Wild petunia, *Ruellia carolinensis*. Photo courtesy of John D. Byrd, Mississippi State University, Bugwood.org



Figure 4. Pencil-flower, *Stylosanthes biflora*. Photo courtesy of Janie Marlow, www.namethatplant.net

more to me than the frequent appearance of *Asclepias tuberosa*, butterfly milkweed. Its brilliant orange flowers and nectar and food source for butterflies make it a must in my garden. Both of the *Tephrosia*'s made my list. *Species spicata* with green leaves and white flowers turning pink and then carmine and *virginiana* or Goats Rue with



Figure 5. False indigo bush, *Amorpha fruticosa*. Photo courtesy of Sally & Andy Wasowski, Lady Bird Johnson Wildflower Center

a pubescence that gives the leaves a silvery appearance and the flowers a bicolor of yellow and rose.

Driving down a rocky road along the Tyger River we discovered a large 8-foot tall *Amorpha fruticosa*, Indigo Bush (Fig. 5) with its airy loose growth habit. Under close inspection we found a *Clematis*

viorna scrambling nearby with its delicate bell shaped purple flowers (Fig. 6). The team photographers snapped many photos and were the last to return to the van.

Even with all this botanical knowledge we still had time to collect seeds from *Danthonia sericea*, Silky Oat-



Figure 6. Leather-flower, *Clematis viorna*. Photo courtesy of Janie Marlow.

grass, that will be used for germplasm by the US Forest Service. Seed collecting was peaceful and enjoyable and took place along US 176 and SC 72. When Bill would honk the horn for us to turn in our seeds and get back in the van, many of us rebelled, wanting to spend more time collecting.

Discussions in the van were equally informative. I am very familiar with invasive plants in California but hearing the names of South Carolina invasives was a big education. In particular because they are common in landscapes in both Southern California and South Carolina. *Ligustrum*, Privet; *Elaeagnus*, Autumn Olive; *Lonicera japonica*, Japanese Honeysuckle; *Pyrus calleryana*, Bradford (or Callery) pear; *Albizia julibrissin*, Mimosa; *Buddleia*, Butterfly Bush; and *Euonymus alata*, Burning Bush; to name a few. Considering I had my sunroom chairs designed to bring in the color from my Burning Bush I had to laugh.

Learning plant botanical names and identifying them in the field is the first step in learning. Until I grow and observe them I don't feel I really **know** them. Fortunately, I have plenty of room where we live to get acquainted. For instance, are they deer resistant, do they like the soil here, are their cultural needs met, are they poisonous to my dogs, or do they get too many chewed up leaves from caterpillars to be center stage in my garden?

I have so much to learn and I am so grateful for the SCNPS for helping along this long path of knowledge and to help me be a good steward of the land. In the meantime a few books that are helping me are: [A Guide to the Wildflowers of South Carolina](#), by Porcher and Rayner, [Bringing Nature Home](#), by Douglas Tallamy, and for the serious plant geeks, [Manual of the Vascular Flora of the Carolinas](#) by Radford, Ahles and Bell.

Rescuing in Woodlands, from page 3

are given dappled sunlight, adequate water, and decent soil.

About water: we have found that most native plants, if given the choice, would reject chlorinated tap or hose water in favor of rainwater. Since that isn't always an option - the years-long drought has made us vividly aware of the glory of a soaking rainstorm - the next best thing is to collect tap water in containers and let it stand for a day or so. Just keep it lightly covered to let the chlorine gas escape and to keep out mosquitoes.

Cardinal flower and green-and-gold (*Chrysogonum virginianum*) are two of a fairly small number of plants that need to be kept free of winter leaf litter. If these wildflowers with winter rosettes are planted on slopes, the canopy's autumn leaves will slide off and let winter sunshine in to do its work.

Another horticultural consideration is that some plants require certain minerals, enzymes, or fungi for obtaining or assimilating nutrients. For example, if a downy rattlesnake plantain (*Goodyera pubescens*) is to survive in a new site, a good quantity of the surrounding, allied soil should accompany it. It should then quickly be placed in a comparable wooded setting. At that point, and with proper watering, the gardener can only hope for the best.

On the contrary, other plants, such as Christmas fern (*Polystichum acrostichoide*s), Catesby's trillium (*Trillium catesbaei*), and mouse-eared coreopsis (*Coreopsis auriculata*), are an easy pleasure. Another agreeable fern, the small, charming ebony spleenwort (*Asplenium platyneuron*), enjoys often acidic, less-than-moist soil. It can be found colonizing on disturbed soil (once, even in a local vineyard!), or among lichen-spotted rocks on small, mossy ridges.

Please do keep in mind that a clump of green that is seemingly insignificant, even boring in appearance, may sport delightful flowers, fall

color, or berries in another season. And there are a few plants, such as toothwort (*Cardamine diphylla*) and crane-fly orchid (*Tipularia discolor*), whose foliage appears in late autumn and remains green through the winter, while flowering in the spring and going dormant for the summer. It really does serve a new rescuer well to study a few books on native plants and to keep the eyes and ears open to learn from other rescuers.

When we are fortunate enough to have a rescue site that holds trout lilies (*Erythronium* spp.), we quickly learn that the bulbs, more often than not, are nestled among rocks under the soil. The rocks help prevent rodents from digging and eating the bulbs, and they also provide a cool root run. (By the way, trout lilies, as they grow older and bigger, place their bulbs deeper underground; we must allow for that when we dig, so as not to sever the bulbs. Another aside: we find trout lilies in a given site springing from the tops of mesic hillocks, growing down the slopes, and almost into creeks.)

In fact, many plants benefit from including local stones in the planting hole. In addition to a cool root run, the rocks aerate soil that may otherwise become compacted over time. Some plants such as hepatica (*Hepatica nobilis* var. *obtusa*) and Oconee azalea (*Rhododendron flammeum*) grow best in rocky, dryish soil that has a rather high lime content. Even here in our lower piedmont, with its many acid-loving plants, we find pockets of basic (high pH) soil and the plants that thrive in them. A quick mention of another factor is that of "lean" soil. Some plants, such as bird's-foot violet (*Viola pedata*) and certain asters (formerly *Aster* spp., now reclassified into several genera), prefer soil that is not rich and friable but rather thin, sometimes hard-packed, and usually dry, often in sunnier sites. Erma Bombeck, the late columnist, once wrote of rearing her children with "benign neglect." Sometimes green things, too, don't take to being coddled.

Rescuers need to consider that some plants, from buckeye (*Aesculus* spp.) to Shuttleworth ginger, have root systems that require special attention. Their roots are few in number, and therefore, must be worked out of their homes with care. Patience is a virtue - in fact, perhaps a matter of vegetative life or death. But with any plant, don't give up too soon if it seems to have passed into the Great Beyond. "Goner" shrubs and trees, while appearing to be dried-up sticks, may send out new growth from the roots or stems a year or two later.

As for small trees, some are readily transplanted; others hate being moved. Beech (*Fagus americanus*) and chalk maple (*Acer leucoderme*) are quite tolerant, while redbud (*Cercis canadensis*), which seeds abundantly, often rebels at having its taproot disturbed. Rescuers have joked over the years about a small number of plants "dying just to spite you." Of course, trees and shrubs are certainly more amenable to being uprooted during dormancy. Unfortunately this isn't usually an option at a site on the verge of being developed. Selective pruning before transplanting can help lessen the strain on the plant, as fewer leaves mean lower water demand.

Along the same lines, it is important to keep in mind that the ferns, wildflowers, trees, and shrubs one comes across on a rescue in the woods emerged through seed dispersal or offshoots. Almost never were they dug from another place and plopped into new sites. While we rescuers must do just that, extra care - especially regular watering for a year or so - will help to ensure their survival. Some of these stressed plants may wilt badly, especially in the heat of summer. (Again, cutting the foliage back can reduce the strain on the roots.) Others, surprisingly, don't miss a beat and continue to adjust and thrive.

Canopy is another consideration; the treetop leaf cover that starts out sparsely, with pioneering trees, over the years becomes denser, heavily

shading the ground below. The plants that bloomed in bright dappled shade may not do so when sunlight is notably reduced. Piedmont azaleas (*R. canescens*), in particular, might stop forming buds, even though the shrubs themselves are quite healthy. Moving one (while cutting it back as necessary) to a more open area could be all it needs to start flowering again. The larger lilies - Turk's-cap (*Lilium superbum*) and Carolina lily (*L. michauxii*) - fall into the same category. Another aspect of canopy is that, occasionally, rescuers will discover a fresh point of view regarding flora that they are only accustomed to seeing in a sunny spot. If southern, or bull-bay, magnolia (*Magnolia grandiflora*) is found in a rich, moist, wooded area, it will look so different from its lawn or roadside version as to be quite surprising. It grows tall and slender, not so laden with leaves (and not usually blooming). In the winter it reveals itself nicely through the stark hardwoods as a bright, almost delicate, tower of green.

What about a rescuer who dearly wants that clump of blooming fly poison (*Amianthium muscotoxicum*) but can't provide the loamy, wooded

slope that is commonly its choice? Or, say, a fine turtlehead (*Chelone* spp.), thriving in a bright, damp swale? If one studies the area in which a plant is distributed and chooses a particular plant on the locale's outer reaches that most closely matches the new home destination, chances for its survival improve. (Genetics at work?) On the other hand, desire can and should go only so far. Rescuers who can't come close to providing a suitable adoptive home are well advised to let someone else with a more acceptable garden, woodland, or creek setting take a treasure and keep it healthy - or alive!

On a horticultural note, if a rescuer comes across a plant that self-seeds readily, for instance *Coreopsis* spp., Indian pink (*Spigelia marilandica*), or wild geranium (*Geranium maculatum*), placing it at the upper end of a slope will help to ensure that the seeds will work their way down over the years. A "drift" of such a plant can be a lovely thing. Another gardening tip: when one observes two or more plants blooming at approximately the same time, and appreciating the same conditions, placing them as companions can create a de-

lightful picture. Try the pale yellow of bellwort (*Uvularia* spp.) nodding over the dwarf crested iris (*Iris cristata*), with its yellow patch, for instance, or note how the rich, plummy red of sweet shrub (*Calycanthus floridus*) is echoed in the tiny dots of red seen in the white bells of mountain laurel.

The education of a rescuer is a joyous thing for both the neophyte and the facilitator or old hand who helps. At the beginning of the learning curve, it may all seem overwhelming, and even cause anxiety. But our native plants are for the most part quite forgiving and hearty. Out in the woods, after a few rescues are "under the belt," the many questions and concerns soon give way to the camaraderie and good will that pull us all together.

Our cause is good, and the results are a blessing.

This article reprinted from NativeSCAPE, the Georgia Native Plant Society Newsletter.

We were saddened to learn of the passing of Ms. Reeves, and wish to express our gratitude to her family and to the Georgia Native Plant Society for the use of her wonderful article.



Members of the SCNPS Lowcountry Chapter rescuing native plants on the construction site of the new Boeing plant near Charleston. Photos by Jean Everett, PhD, College of Charleston.

Epiphytic Plants in South Carolina

Joel M. Gramling, Biology Department, The Citadel

For many people the image most associated with coastal South Carolina is that of venerable live oaks draped in Spanish moss and punctuated by dense colonies of resurrection fern. While the oaks themselves are quite impressive, the Spanish moss and resurrection fern imbue them with a lushness that tells you that moist ocean breezes or slow meandering rivers are nearby. These are just two of our better known epiphytes in South Carolina.

An epiphyte is a plant that lives upon (*epi-*) another plant (*phyte*). True epiphytes are classified as non-parasitic organisms. Ecologically we classify the tree-epiphyte relationship as **commensalism**. Unlike parasitism, the host in a **commensal** relationship is unharmed by the symbiont living upon it. While the epiphyte is frequently anchored to the host plant with roots, these roots are absorbing water and nutrients from the air and sediments that land on the tree. The epiphyte benefits from the height it gains through this association. Being elevated above the forest floor may prevent the plant from being trampled, covered in leaves or grazed upon by large herbivores. The greatest advantage of being an epiphytic plant may be the opportunity to gain more sunlight than it would at ground level.

Several epiphytes are clearly native in South Carolina:

resurrection fern (*Pleiopeltis polypodioides*), Spanish moss (*Tillandsia usneoides*) and green-fly orchid (*Epidendrum magnoliae*). These species are primarily found in the outer Coastal Plain, but may be found further inland along

rivers. The high humidity characteristic of these parts of the state is essential for our native epiphytes. In places where the habitat has been altered we may observe fewer or no epiphytes. Large oaks that support spanish moss and resurrection fern may lose these taxa when surrounded by asphalt or other built structures that raise the ambient air temperature and retain less water than forests or meadows.

Resurrection fern gets its name from its water-conserving habits. When moist with rain or fog, resurrection fern is green and lush in appearance. As the plant dries out the fronds curl up, turn grey and appear to have died (see Fig. 1). Following the next rain event, the plant will quickly reactivate and appear to have

come back to life (see Fig. 2). Resurrection fern has even been used as a traditional medicine throughout Central America to treat liver ailments, low blood pressure, fever and cough.

The mostly free-hanging Spanish moss is not a moss, but a flowering plant. The obscure flowers of this unique plant may be found from April to June and are evidenced by three delicate green petals (see Fig.3). Just like the pineapple



Figure 1. Drought-stricken resurrection fern.
Photo courtesy of Rebekah D. Wallace, Bugwood.org



Figure 2. Resurrection fern after a rain.
Photo courtesy of Rebekah D. Wallace, Bugwood.org

plant and some houseplants, Spanish moss is a bromeliad. Bromeliads are a diverse family of plants found in tropical and sub-tropical regions worldwide. Other species in the genus *Tillandsia* are sometimes marketed as “air plants” and sold as keepsakes to tourists in Florida or as novelties in some garden centers.

Showy tropical orchids are the prototypical epiphytes for many plant enthusiasts. While South Carolinians may be familiar with non-native epiphytic orchids that are commonly cultivated on bark or moss and traded worldwide, the green-fly orchid is a relatively obscure native plant that is frequently found mixed in with resurrection fern on the branches of live oak trees. The green-fly orchid is the only epiphytic orchid north of Florida and reaches its northern limit just across the North Carolina border in Brunswick and New Hanover Counties. The green-fly orchid has a delicate white flower that blooms from mid-summer through the fall in South Carolina (see Fig. 4). Dr. Richard D. Porcher argues that this taxon should be considered “common rather than rare.... It is often overlooked because it grows high up in the trees where it is sometimes hidden in resurrection fern and/or Spanish moss.” Recently discovered in Marion County, this epiphyte is one to look out for when paddling or hiking along our rivers in the Coastal Plain.

Just as we find terrestrial and aquatic non-native plants spreading across South Carolina there are two epiphytes that are expanding their ranges as well. Ball moss (*Tillandsia recurvata*) is a sister species of Spanish moss more commonly found in Florida. Until this century ball moss had not been documented in South Carolina. In the last five years it has been found in nearly every coastal county, but it almost certainly hasn't been spreading on its own. Today ball moss in South Carolina is mostly found

on young, planted live oaks. It is thought that this “air plant” from Florida has hitchhiked its way up the coast on nursery plants. While it is mostly confined to streetscapes, neighborhoods and parking lots, ball moss can be observed colonizing new hosts (such as magnolias, cypresses, crape myrtles and even Japanese privet that may be planted nearby).



Figure 3. Spanish moss in flower. Photo courtesy of author.

Cabbage palmetto fern (*Phlebodium aureum*) is another example of an epiphyte that is increasing its presence in coastal South Carolina. This relative of resurrection fern lives on the fronds of palmetto trees (*Sabal palmetto*). A few records of this plant have been linked to South Carolina in the past, but today the number of sightings is on the rise. Apparently this plant is also riding up from Florida on trees purchased from nurseries and planted along the South Carolina coast.

Other plants may exhibit an epiphytic habit without being considered true epiphytes. Mistletoe (*Phoradendron leucarpum*) is a hemi-parasite that grows primarily upon oak trees. The striking green color and distinct growth form of mistletoe in winter gives it a bushy appearance in the otherwise barren branches of deciduous trees. We classify mistletoe as a hemi-parasite because it is capable of photosynthesizing its own food as evidenced by its greenness (a result of the abundant chloroplasts), but it also taps into the host tree to gain nutrients. Also, non-epiphytes will occasionally establish on a tree that has accumulated soil or humus on or in a stem or branch (see Fig. 5). While these opportunistic individuals usually don't survive over time, they can create an interesting sight.



Figure 4. Green-fly orchid. Photo courtesy of Jim Fowler

When looking for native plants it is easy to get into the habit of seeing a tree you are familiar with and looking past it to find something new. With epiphytes we need to take a second look at

the plants we know to find the extra “plant upon a plant”. As new epiphytes spread into South Carolina it will be interesting to see if they adopt new hosts, colonize natural areas or even survive in our climate long term. Take a look around, there may be more new epiphytes in South Carolina that haven’t been documented.

Dr. Joel Gramling is a Charleston native, and did his undergraduate study at College of Charleston, followed by a Masters in Education from The Citadel, and Doctorate from UNC-Chapel Hill.



Figure 5. Opportunistic pseudo-epiphytes on an oak.
Photo courtesy of author.

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Upcoming Activities

Cullowhee Native Plants Conference

The annual Cullowhee Conference: Native Plants in the Landscape will be held July 28-31, 2010, on the campus of Western Carolina University, Cullowhee, NC. For more information and/or registration, see <http://nativeplantconference.wcu.edu>

LowCountry Chapter

Lowcountry Fall Plant Sale – October 23 at Charlestowne Landing – Time and other details TBA. Watch <http://www.scnps.org/calendar.html>

Midlands Chapter

Field Trip: Savage Bay Heritage Preserve - July 10, 2010 (Saturday) Bert Pittman and Kathy Boyle will lead this field trip to Savage Bay Heritage Preserve. Approximately half of the 110 acre preserve consists of Carolina bay habitat. Please contact Ellen Blundy at ellenblundy@windstream.net to register. Directions will be sent at the beginning of July.

Field Trip: Goodale State Park - August 14, 2010 (Saturday) - For more information contact Ellen Blundy ellenblundy@windstream.net

Field Trip: Botany Bay Heritage Preserve, Edisto Island - Sept 11-12, 2010 (Saturday - Sunday) . The 4630 acre tract is ecologically and historically significant with many diverse habitats. The maritime forest beach has its own boneyard. The property is managed by SCDNR. For more information contact Ellen Blundy ellenblundy@windstream.net

Field Trip: Peachtree Rock Heritage Preserve - October 9, 2010 (Saturday) - Leader will be Wayne Grooms. For more information contact Ellen Blundy ellenblundy@windstream.net

Upstate Chapter

Field Trip: Lee Falls - Saturday, July 17, 8:00 am. Joe Townsend will lead us on a 1.5 mile hike to the 75-foot Lee Falls. To see it we hike through a hardwood hollow full of botanical rarities such as Oconee Bell (*Shortia galacifolia*) and Bulblet Fern (*Cystopteris bulbifera*). Meet at the Holly Springs Store dirt parking area at 8:00 am. For more information and registration contact Mary at mmcnettles@gmail.com

Presentation: Magnolias in the Carolinas - Tuesday, July 20, 7:00 pm - Dick Figlar, world authority on the genus Magnolia, and resident of Pickens County. Founders Hall in Dining Commons, Southern Wesleyan University, Central. For a map and more information, visit http://www.scnps.org/activities_ups.html

Field Trip: Coon Branch Trail / Lower Whitewater Falls. Thursday, July 22. Registration and details available from mmcnettles@gmail.com

Presentation: The Natural and Cultural History of Fire in the Southlands . Tuesday, Aug 17, 7:00 pm - Johnny Stowe. Heritage Preserve Manager for SC DNR’s Heritage Trust Program.
 Location: Greenville TEC @ McAlister Square, 225 S Pleasantburg Dr., Greenville.

Presentation: Mosses in the Landscape. Tuesday, Sept 21, 7:00 pm - Dr. Robert Wyatt, former Director of the Highlands Biological Station, will focus his talk on ten native moss species that make attractive subjects for a range of garden sites. Founders Hall in Dining Commons, Southern Wesleyan University, Central.