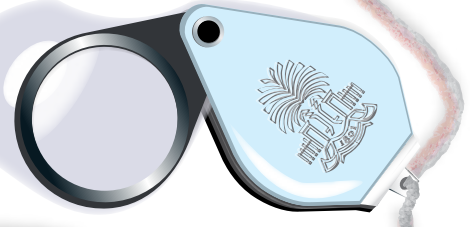


Floroscope



The Newsletter of the University of South Carolina Herbarium

We have a new logo.

Or perhaps we should say: We NOW have a logo!

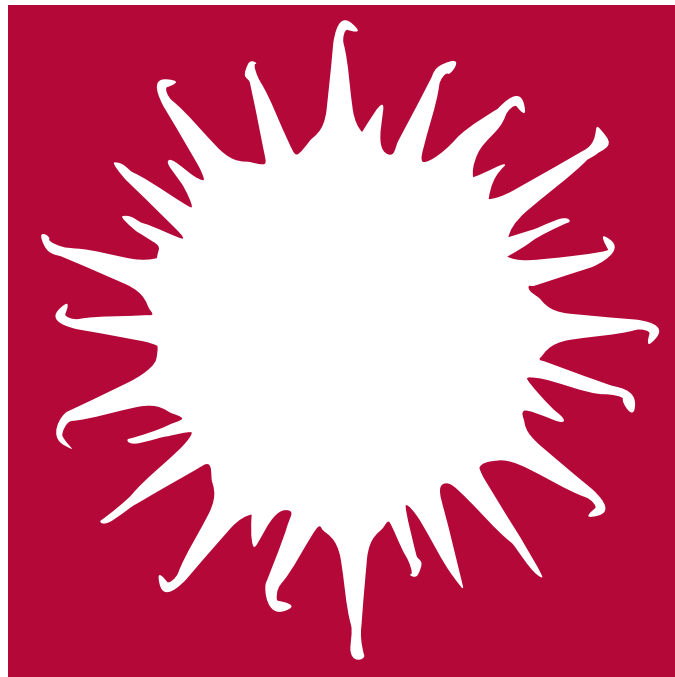
We have adopted a botanical image for the Herbarium's graphic logo, and we think that you will recognize it. Of course, it is the fruiting structure of a sweetgum tree (*Liquidambar styraciflua*), a tree also known, and due to the fruits, as the "gumball tree".

Sweetgum is widely distributed in the eastern United States from lower New England to southern Indiana and Illinois, and south to eastern Texas and nearly all of Florida. It is potentially a very large tree, sometimes up to 100 feet tall, and large individuals generally have a handsome, conical crown. This species grows in a variety of habitats and elevations, but seems to do best on deep, moist soils, especially in association with floodplain forests. Bark on older trees is dark gray and ropy. Its wood is hard and durable, and has a variety of uses. A clear gum will exude from wounded bark; a gum which has been used medicinally in the past. (It also makes a woody kind of chewing gum, but the herbarium staff agrees that you should stick with Juicy Fruit!) The foliage is characteristic, with each leaf exhibiting a star-like shape. The leaves, when crushed, yield a pleasant, aromatic smell, and in the fall, com-

monly turn an attractive red or russet shade. The female flowers are very tiny, and congested into tight spheres. When ripe, the ovary of each flower will dry and split, releasing a few small seeds. These fruiting structures, each on a long stalk, usually last on the tree well into winter before falling away.

Why have we chosen sweetgum for our logo?

Because we wanted to use an image of a common plant, one that is widely distributed, and one that is easily recognized. Like the USC Herbarium, sweetgum trees are easy to find. Someone might say that the leaf of a sweetgum tree is so similar to certain maples, that the two trees might be confused. That is true, but in a way, this speaks to the need of having herbarium collections as ways of comparing different plants. (By the way, sweetgum has alternate leaves, while all maples have opposite leaves, so they are very easy to distinguish as long as you have a leafy branch.) We hope that eventually the starburst image of this native plant species might remind you of our Herbarium.



USC HERBARIUM

This is the compact version of the new USC Herbarium logo. See the back page of this issue of *Floroscope* for the complete version.

Dr. Batson's Birthday Celebrated

This past May 3, a special group of people got together in Marietta, South Carolina, to celebrate a special man's 97th birthday. The special man was none other than Wade T. Batson, or "Dr. B" as he is known to so many of the former students and colleagues who were able to come and enjoy a marvelous warm spring day with the family. The scene was this: a perfect day



No 97th birthday party is complete without a cake.

in late spring, with plenty of flowers decking the hillsides and road banks, very fitting for such an occasion. The birthday party included a terrific barbecue dinner, with all the trimmings, of course, plus plenty of iced tea. Before the party, guests clamored all around the old farmhouse, which had been restored, and featured the room in which the infant Wade drew his first breath. The fragrance in the air included a host of old-timey garden shrubs and flowers, as well as the ethereal wonderfulness of sauce-slathered chickens on the grill in the pit. Dr. Batson's beautiful Gamecock was there to be seen, too... never having to worry that the Tiger fans in attendance would have any ideas on his demise! Plenty of old stories went around, adventures and yarns from the days of tromping along, learning the flora from a true botanical icon. Then, of course, there was a stormy interlude with a dramatic (but short-lived) thunderstorm, which cooled everything off a bit, just before the main event. Potato salad, rice and hash, baked beans, pulled pork, and savory chicken, followed by platters of homemade brownies, cakes, and fresh strawberries---What a feast!

Outreach

The Herbarium continues to provide **free plant identifications** to the public. In 2008, we had slightly more than 600 answered requests, and as of early September 2009, we had made about 400. The total for calendar year 2009 will surely set a new "record". We account for the high number of plant identification queries due to an increasing number of plant enthusiasts (gardens, commercial growers, landscape professionals, etc.) and also to the increased visibility we have enjoyed due to our web site, which advertises this service. Other reasons for increased activity surely include the wonderful exposure received during John Nelson's appearances on Clemson University's "Making it Grow!" series on SC public television, as well as the con-

tinuing "Mystery Plant" column in a variety of hard-copy and online newspapers. We like to think, also, that our flashy bumper stickers ("Support your local Herbarium" and "It's not HIS barium...") are helping out, too!

One part of the Herbarium's outreach includes **speaking events**, as well as other kinds of activities, both indoor and outdoor. As an example, our Herbarium was represented on January 28th at the 33rd annual trade show and conference of the South Carolina Landscape & Turfgrass Association. John Nelson offered a PowerPoint presentation and discussion on invasive species, followed up by an accounting of South Carolina's "Top 10" list of invasive plants (see elsewhere in this newsletter for the breakdown!). For more information on the activities of SCLTA, visit http://sclta.com/SCLTA_website/index.html or call 803-787-0996.

The Herbarium was featured in a presentation, on February 7, at the Aiken County Museum, with a discussion and presentation on **the life and botanical work of Henry W. Ravenel**. Specimens from the Converse Collection of Ravenel's specimens amassed shortly after the Civil War were displayed. Ravenel's adult life and subsequent interment in an Aiken churchyard made this presentation something of a "homecoming" event.

USC hosted its 53rd Annual Region II Science and Engineering Fair on March 20, and the **Herbarium provided an in-house tour** for about a dozen young scholars. We hope that some of them will consider academic paths leading to botany.

Another botanical outing took place at the Congaree National Park on April 19, during the 12th annual **NatureFest celebration at Congaree National Park**. Once again, USC's Department of Biological Sciences was represented by Sue Carstenson and the Herbarium's John Nelson, who led the crowd on a rousing walk down the boardwalk. This year, and again, we didn't really get too far down the boardwalk before time was up. There is simply so much interesting plant life to talk about, that we don't get very far on these walks! We are especially pleased with the turnout of young people on these hikes. In spite of what you sometimes hear, young people are still very interested in the world of nature (See articles on page 6.)

For the past several years now, the USC Herbarium has been a featured resource during the special **garden tours held at the estate of Darla Moore**, near Lake City. Participants in these tours very generously provide a donation to the Herbarium's Endowment. We are most grateful for the kindness shown to the Herbarium by Mrs. Moore and her staff, and as well to the many patrons who have become friends of the Herbarium. This year's tour, on May 16, was of special interest, with the presence of Dr. John Fairey as a special Guest. Dr. Fairey, an alumnus of USC and former student of Dr. Batson's, retired after three decades of botanical service to the state within Clemson University's Herbarium. (One of his many students was John Nelson, now the curator of the USC Herbarium.)

Herbarium Partners with More SC State Agencies

For over three decades, the Herbarium has enjoyed a close working relationship with South Carolina's Department of Natural Resources. In the mid-70's, the then SC Wildlife and Marine Resources Department was closely tied to the development of a state-wide Atlas of vascular plants, a long-term activity which has pulled together the resources of all the states' herbaria. At that time, Doug Rayner, a previous student of Dr. Wade Batson, served as the botanist for the Nongame & Heritage Trust arm of the Wildlife Department, and he worked closely with Cynthia Aulbach-Smith, who was the Curator of the Herbarium. (Cindy was also a Batson student). This project culminated in the current on-line plant Atlas, which continues to receive many information requests for plant distributions. Since the 70s, the Herbarium has also actively supported the botanical inventory efforts of Heritage staff, which now includes Bert Pittman (yet another Batsonian!) and Herrick Brown, who is serving as the Herbarium's assistant curator. Bert and Herrick's inventory projects continue to bring in hundreds of new plant specimens each year, from a series of botanically significant sites across the state.

Most recently, the Herbarium has developed a partnership with SCDNR's wing devoted to management of aquatic weed species, specifically, the Aquatic Nuisance Species Program. Staff from ANSP have teamed with the Herbarium in identifying plant species from aquatic systems, with the goal of rapidly identifying and vouchering new invaders. Our state's aquatic resources are seriously threatened by new weeds, and there is reason to believe that early detection and warning is a powerful strategy to avoid the costly process of removing them, once established.

As a current example, on Thursday, September 24, we received confirmation from a colleague at the Herbarium of the Smithsonian Institution that a weed from Goose



Creek reservoir, near Charleston, is the invasive aquatic pest "Indian Waterweed" (*Hygrophilia polysperma*) previously unknown in South Carolina. Stay tuned for developments.

Left: Mike Hook displays a robust example of the invasive water-hyacinth, *Eichornia crassipes*.

USC Herbarium Hosts Biological Sciences Seminar



Dr. Lindqvist

On March 30, the Department of Biological Sciences featured a formal seminar presented by Dr. Charlotte Lindqvist, from the University of Buffalo. Dr. Lindqvist's research involves a critical understanding of DNA sequences in various members of the genus *Stachys*, especially those of North America. She spoke of an exciting current project which has suggested the close evolutionary relationship of all the native Hawaiian members of the mint family with contemporary species of *Stachys* in California, work that indicates a migration of Californian *Stachys* species to the Hawaiian archipelago at some time in the past. Dr. Lindqvist noted the importance of having ample herbarium collections to back up such work (for instance, with distributional evidence of modern taxa), in addition to the use of dried material as sources of "workable" DNA for sequencing. We are pleased to provide collaborative support for Dr. Lindqvist on her continuing phylogenetic studies. For more information on her work, visit Dr. Lindqvist's profile at <http://biology.buffalo.edu/Faculty/Lindqvist/lindqvist.html>

Update on the Endowment

The W. T. Batson Endowment for the A. C. Moore Herbarium and Garden continues to be managed by the USC Educational Foundation. Despite the less-than-rosy economic situation, the Endowment is still able to provide funds for a variety of applications in the Herbarium. For instance, the Endowment made it possible for John Nelson and Herrick Brown to attend the 70th Annual Association of Southeastern Biologists meeting, held in April 2009. Funds have also provided salary for Chanda Cooper, Robert Davis, and Allen Hord (see article elsewhere) on our staff. Additionally, portions of Liz Cronin's current research have been paid with Endowment funds. The Endowment made possible our purchase of our new logo from an arts consultant, and we have been able to buy enough "hard" herbarium supplies (paper, glue, etc.) for this year. The Endowment also paid for our second round of bumper-stickers, which are available to the public. The spendable account of our Endowment, as of 30 June 2009, was \$9,499.17, approximately equivalent to the amount at this time the previous year. The spendable account continues to lag considerably behind the principal, which for the same period was \$127,493, a substantial drop from 2008. Thus, in spite of current economy, the Endowment continues to earn much-needed funds. Fortunately, certain of the investments that have lost value have not shown a reduction in annual dividends. Two special notes of appreciation are due here.

First, the success that our herbarium has enjoyed through the Endowment is entirely due to the great generosity shown by the many people who have made donations. Without these, much of our activity would have to be slowed or even ended. We like to think that donations to our Endowment are especially valuable in being able to grow. Because of the very considerate gifts from our friends and supporters, we expect that the USC Herbarium will continue to provide educational, research, and outreach opportunities not only to the students and faculty at USC, but to all the citizens of South Carolina, and beyond.

Secondly, we would like to recognize Dr. John Herr, Professor Emeritus at USC, for his unlimited devotion to our Herbarium. Not only is he our biggest proponent, on and off campus, but it was Dr. Herr who came up with the idea of an Endowment in the first place: he designed and implemented the Endowment, and we are surely benefiting from his interest. We look forward to continuing our long-term friendship and close botanical collaboration with him, for a very long time to come!

Tax deductible contributions can be made by check, written to the USC Educational Foundation, with a note indicating "For the Batson Endowment for the Moore Herbarium."

Student projects

Clinton Ford, who will be graduating in May 2010, is presently working with the Henry William Ravenel Collection of Converse College, as an Independent Study (BIOL 399) project through the Department of Biological Sciences. Clinton's focus is on data basing all the collections of the sunflower family (Asteraceae), comprising approximately 600 specimens, after they are annotated with their currently accepted scientific names. Clinton, who is from Tennessee, took the flora class at Carolina in spring semester 2009. He is interested in graduate studies involving database technology and bioinformatics.

Liz Cronin, who like Clinton got involved with the Herbarium while taking the Spring Flora course, will be graduating in May 2010. Liz has chosen a botanical research project for her senior thesis through the USC Honors College, and she has begun a study of the micromorphology of fruit wall surfaces in the hedge-nettle genus, *Stachys*. Her project will involve considerable analysis of pericarp ultrastructure, employing scanning electron microscopy. Pericarp ultrastructure has proven very useful in delimiting taxa in



Above: Clinton Ford
Right: Liz Cronin



Plantman shakes hands with Tucker Nelson, a budding botanist at the Forest Lake Elementary School.

Stachys species of western Asia, and we hope to apply this study as a way of delimiting a number of American species.

Plantman visits school

Everyone's favorite botanical superhero, Plantman, made another one of his rare appearances in the Columbia area! This past March, he showed up for a special student program at Forest Lake School. The students were amazed to see a real-life superhero striding down the halls of their school, before he ducked into a classroom to give a presentation and answer questions. It was an exciting time for all!

Although Plantman is a mysterious superhero, one who has a very busy schedule, he can at times make appearances at schools. If you are a teacher and would like to schedule an appearance, call the herbarium's main number (803-777-8196). Perhaps we can contact him, and set something up...!

Herbarium Happenings

Data Entry Sets Record Number of Records

With a phenomenal team of Data Entry Specialists, Andrew Holland and Robert Davis, the number of specimen records cataloged in the USC Herbarium database skyrocketed in early 2009. A record number of more than 2,000 new entries were entered in January 2009, which also marked the completion of data entry for all vascular plant specimens collected from South Carolina. You can search these records and more on the herbarium's homepage at www.herbarium.org. Current data entry, spearheaded by Collections Manager, Chanda Cooper, is focused on all new and incoming material from South Carolina as well as extralimital collections and cultivated plants.



Above: Jerry Long, Bert Pittman, Herrick Brown, Carol Ann McCormick, Julie Ellis and Charlie Horn under the banner of Carl Linnaeus.

Database Workshop Draws Regional Attendance

After presenting its successful implementation of the NSF funded software system Specify, the USC Herbarium gained considerable recognition at regional meetings in 2008. Interest in this accomplishment amongst herbarium curators throughout the Southeast was sufficient to warrant hosting a Specify 'How to' Workshop in Columbia. In cooperation with the SC Department of Natural Resources and SERNEC (Southeastern Regional Network of Expertise in Collections), the USC Herbarium welcomed more than a dozen curators and collections management staff from a variety of herbaria across the region. Additional participants at distant locations were included in discussions via the internet. Assistant Curator, Herrick Brown, designed the two day workshop (held on March 11 & 12 at USC) to illustrate how collections staff could begin using Specify to catalog their collections. A demonstration of data entry methods was provided by Data Manager, Robert Davis. Attendees also enjoyed a tour of the USC Herbarium led by its Curator, John Nelson. Institutions with representatives in attendance included Clemson University, Francis Marion University, Newberry College, SCDNR, University of Alabama, University of Georgia, University of North Carolina, University of South Carolina, University of Tennessee-Knoxville, Valdosta State University, and Western Carolina University.

A Fond Farewell...

Robert Davis graduated with his bachelor's degree in biology in May, 2008, and then worked in the Herbarium. He was in charge of the overall database operations of the herbarium, and was single-handedly responsible for data entry of nearly 5,000 specimens in the main collection. In addition, he served as our collections manager, annotating and filing newly



Robert Davis

accessioned sheets. He performed very well, exhibiting his own kind of quiet doggedness with this enormous operational job. He also provided technical assistance for the regional data basing workshop hosted by the Herbarium. Robert's salary, while working with us, came entirely from the Batson Endowment for the Herbarium; he has moved on to a job in the Charlotte area. We wish him the best of luck there.

Database Web Usage Statistics

Since its debut in May 2008 the internet-based search feature of the USC Herbarium Collections Database has been accessed more than 5,000 times. Averaging approximately 325 searches per month, this service provides data on more than 65,000 specimens which represent more than 6,000 species from 67 different countries. Visitors accessing this service include educational institutions, government agencies, consulting firms and individuals like you.

The Dean Made a Visit to the Herbarium

We had a very special guest this summer! The Dean of USC's College of Arts & Sciences, Dr. Mary Anne Fitzpatrick, took a break from her very busy schedule and came over for a visit.

Dr. Fitzpatrick is the Dean of 22 Departments at USC, along with 14 academic Programs, as well as 16 different research and service Centers.

While at the Herbarium, we gave her a tour of the facilities, squeezing around the rows of cases, and showed her the process of how a specimen comes into being.

Dean Mary Anne Fitzpatrick gets a close look at the Herbarium, helped here by Chanda Cooper.



It's been a busy year.

The USC Herbarium continues to maintain active relationships with other University and institutional herbarium collections. During 2009, we have been able to arrange a number of formal loans of our specimens for study by specialists. We are especially pleased to be able to supply specimens for loans as requested. Their study and annotation by researchers insures a vibrant scientific usefulness of the material, and, of course, improves the value of the sheets themselves, having been studied by an authority in that group. Our loans include shipments of specimens of

Solidago (goldenrods) to the University of Waterloo, *Aristida* (“three-awn grass”) to the University of New Mexico State University, *Kosteletzkya* (“seaside mallow”) to George Mason University, members of the Cistaceae (“golden heather family”) to Duke University, and *Ipomoea* (“morning glories”) to the University of Arizona.

We have also borrowed specimens ourselves. For continuing studies, by John Nelson, of North American species of *Stachys* (“hedge nettles”) and *Ballota* (“horehounds”), both members of the mint family, USC has borrowed specimens from Harvard, Washington State University, the University of Washington, Oregon State University, the NY Botanical Garden, and the University of Saskatchewan. Dr. Bert Pittman of SCDNR has been able to study specimens of *Lobelia* from Valdosta State University, on loan to our herbarium on his behalf. We have also returned a loan of *Lobelia* that Dr. Pittman borrowed from Clemson University. Finally, Dr. Mihaly Czako of our own Biological Sciences Department has completed a study of the bean genus *Dalbergia*, and we have returned his loans to the University of Michigan, and to the Missouri Botanical Garden.

Exchange arrangements are developed between given institutions as a way of expanding geographic holdings. For instance, this year we have provided exchange specimens to a number of other herbaria, including Austin Peay State University, Botanical Research Institute of Texas, the University of Arizona, University of Minnesota, University of British Columbia, Field Museum of Natural History (Chicago), University of Georgia, Francis Marion University, and the University of North Carolina. We have received exchange shipments, as well: University of British Columbia, Florida State University, and UNC.

Lastly, we have made various “gifts” of specimens. We frequently send gifts of unidentified material to the US National Herbarium and to the New York Botanical Garden, whose researchers supply us with identifications or corrections/confirmations on our determinations. We have sent the fledgling herbarium at Columbus (GA) State University a gift of 100 specimens this year, and otherwise have provided gifts to the University of Florida, Appalachian State, University of California-Riverside, University of Wisconsin, Duke, University of Oklahoma, Oklahoma State University, Arkansas Tech University, Newberry College, University of Arkansas, University of Alabama, and to the Academy of Natural Sciences (Philadelphia). A number of institutions have provided us with much appreciated gifts as well, including UC-Riverside, University of Florida, Oregon State University, Eastern Illinois University, St. Johns University, Valdosta State, and the University of Georgia.

USC Herbarium Participates in Nature-Based Inquiry Project

What better way to get students interested in science than by arousing their natural curiosity about the world around them? Through the Nature-Based Inquiry Project, funded by a grant from the Commission on Higher Education, the USC Herbarium is helping teachers do just that.

During the first week of August, the Herbarium teamed up with the USC Center for Science Education, the Georgetown County School District, and the Longleaf Environmental Learning Center to show early childhood educators the many benefits nature-based instruction can provide for their students.

Throughout the next three years, the Herbarium will provide botanical expertise and support for Georgetown County elementary schools by identifying plants on their school grounds, assisting in the creation of outdoor classrooms and nature trails, and providing professional development sessions to help teachers feel comfortable leading their young students into the natural world.

Right: Teachers learning to press plants and prepare herbarium specimens at the Nature-Based Inquiry Summer Institute.



The Flora of Richland County School District One

A research project spearheaded by Collections Manager, Chanda Cooper, involved floristic surveys at

four Richland County School District One elementary schools. She discovered that, contrary to the beliefs of many teachers, schoolyard plantlife isn't sparse, uniform, or monotonous at all!

There are, on average, over 100 plant species in each schoolyard, and each site has its own unique collection of flora and microhabitats. In fact, plenty of opportunities exist to enhance elementary education, especially science education, by incorporating the study of these schoolyard environments into the curriculum.

These findings hold promise for K-12 teachers who often are expected to teach their students about the natural world without either the time or the funding for off-site field studies. Rather than despair of offering children authentic experiences with plants, animals, soils, and habitats, it has been proposed that teachers look for nature a little closer to home.

With their parking lots, landscaped borders and small, grassy playgrounds, many urban schoolyards at first appear to be unlikely candidates for nature study. Upon closer inspection, however, schoolyards are often surprisingly diverse and can provide much-needed educational opportunities for students.

In order for this model to be a success, teachers must themselves become familiar with local plantlife. To this end, Cooper is now developing resources and planning professional development opportunities to help teachers become acquainted with their schoolyards and make the connections between nature study and the academic standards.



Picturing Plants Art Contest

Hey, kids! Enter the Herbarium's Art Contest for a chance to win cool prizes and have your work exhibited at the University of South Carolina. The theme is "Picturing Plants," and your assignment is to find a real plant (something growing in your yard, in the woods, in a nearby park, at your school, in your house...), observe

it closely, and then create a picture of it using your favorite art supplies. All entrants will receive a Herbarium bumper sticker; the winning entry will also receive a special Herbarium Prize Pack and will be featured in the next edition of The Florascope.

Rules and Directions

- ☀ Pictures should be representations of real plants that the child observes
- 🌱 The contest is open to those aged 14 and under
- ✂ Entries must be between 8.5" x 11" and 12" x 18" on any type of paper
- 🌸 Pencils, pens, crayons, paints, and markers are acceptable media
- ☀ Entries must be received by January 15, 2010 to be eligible for prizes
- 🌸 Send the child's entry, along with the entry form below, to

The University of South Carolina Herbarium
Attn: Picturing Plants Art Contest
Department of Biological Sciences
University of South Carolina
Columbia, SC 29208



✂-----

Picturing Plants Entry Form

Please detach and complete this form and send it, with your child's entry, to us at the address given above. For multiple entries from the same household, you may make copies of this entry form or print duplicates from our website at www.herbarium.org/contest.html

Child's Name _____ Child's Age _____ Phone Number _____

Address _____

By signing below, I give permission for my/my child's artwork to be exhibited in a display at the University of South Carolina Herbarium and/or to be featured in the next edition of The Florascope.

Child's Signature _____ Date _____

Parent's/Guardian's Signature _____ Date _____

Just for fun... or not much fun...

The Herbarium's presentation at the annual SC Lawn and Turfgrass Association meeting provided a breakdown of the "top ten" weeds of the state. Of course, there are various ways of developing such a list, but probably no truly scientific rationale for it. Nevertheless, with apologies to David Letterman, the Herbarium's list is as follows:

10. *Wisteria sinensis*, "Wisteria". It commonly occurs at old home sites and in urban settings. It can kill tall trees. This is a species that should never be cultivated!

9. *Eichornia crassipes*, "Water hyacinth". It is beautiful indeed, with a very tropical look ... but it can clog waterways and restrict boating. Unfortunately, many new sightings are being reported.

8. *Stachys floridana*, "Florida betony". The bane of the urban gardener: its white crisp tubers make it nearly unstoppable. Frequently seen in gardens and cultivated beds all over the state.

7. *Microstegium vimineum* "Nastygrass". This is a rapidly spreading annual grass species that is choking out the natural occurring vegetation in many wetland sites, all across the state.

6. *Pueraria montana*, "Kudzu". Common, abundant, and now with an unfortunately positive kind of local and regional acceptance, as supposedly a real part of the American South. It's introduced from Asia!

5. *Hydrilla verticillata*, "Waterweed". The common name says it all! Easily capable of invading any of South Carolina's counties, and extremely difficult to control.

4. *Ligustrum sinense*, "Chinese privet". One of the best shrubs there is for topiary, but also one of the most invasive species along the east coast.

3. *Triadeca sebifera*, "Popcorn tree". Despite its use in ornamental baskets and arrangements, this is a very invasive species that has seriously altered a wide variety of coastal landscapes.

2. *Phragmites australis*, "Giant reed", the plague of the coastal counties' wetlands. Evidence suggest that this destructive species may be capable of moving inland.

1. *Lonicera japonica*, "Japanese honeysuckle". Occurring in every county of the state, this species is truly naturalized, and without new technologies (natural predators, pesticide application, etc.) will probably never be eradicated.

Bottom line? Nearly all of the problems that people experience with weedy, introduced plant species are completely our fault, in bringing them into our yards, gardens, and fields, either intentionally or accidentally.



Florascope Volume 4
Issue 1

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ARTS & SCIENCES