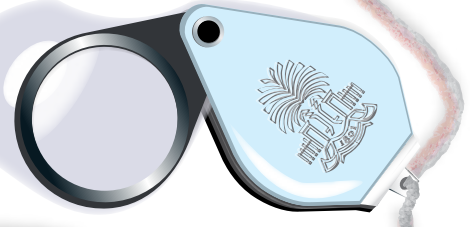


# Florascope



The Newsletter of the A. C. Moore Herbarium  
University of South Carolina



Botany: It's not for sissies.

## SC-DHEC and A.C. Moore Herbarium Work Together on EPA's Wetland Project

During one of the hottest summers in recent memory a group of biologists from South Carolina Department of Health and Environmental Control (SCDHEC) participated in the United States Environmental Protection Agency's (EPA) National Wetland Condition Assessment (NWCA), gathering data at 42 sites around the state. This nationwide project has been designed to assess the quality of wetlands throughout the United States, and to identify and rank wetland stressors that contribute to poor conditions. The data collected during this project will be used to gain a clearer picture of wetland health in South Carolina and throughout the nation.

SCDHEC began work on the NWCA in 2010, identifying and vis-

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## Managing the Modern Herbarium

*The Evolution of Natural History Collections Management from Cabinet of Curiosities to Terabytes of Data*

During the formative years of New World exploration, and following the establishment of the English Colonies in North America, the subject of Natural History (or Natural Philosophy) fueled the imaginations of many travelers.

The search for new and useful productions of nature was coupled with a search for rich and fertile lands on which those natural products already known to have use (from the Old World) might be cultivated. The race for discovery generated unprecedented amounts of information, and through importation, trading companies introduced European markets and society to numerous oddities from new-found

regions of the earth. Apothecaries were a chief consumer of these goods whereby herbs and minerals were ground, mixed, and prescribed as 'medicine' for a variety of ailments. From this practice arose the publication of *Materia Medica* and Herbals (like a catalog of 'home remedies' in contemporary

terms – but substantiated by 'empirical' research). Soon these collections grew in such size and scope that the daunting task of making sense of the eclectic Cabinet of Curiosities, and assigning an order to the chaos, was imperative. Enter, Carolus Linnaeus. Known as the father of modern taxonomy, Linnaeus provided an efficient means of naming the various productions of nature through his consistent use of binomial nomenclature and set a precedent with the publication of *Species Plantarum* in 1753. This method for classifying organisms is still used to this day and is one of the fundamental tools used by the curatorial staff of



Continued Page 2

## Managing The Modern Herbarium

the A. C. Moore Herbarium.

Founded in 1907 by Dr. Andrew Charles Moore, the A. C. Moore Herbarium (USCH) contains approximately 120,000 dried plant specimens. The Herbarium's primary function is to provide a taxonomic record focused on the flora of South Carolina. This record is improved upon through loans and outright exchanges of specimens with researchers at other institutions, researchers who are authorities of particular plant groups, and able to apply annotation labels as part of their review process, thus often correcting earlier determinations, and in general, improving the scientific value of a given specimen. Loan requests that we receive from other institutions are honored and fulfilled by carefully packaging specimens and shipping to the requesting institution. Historical evidence of specimen exchange programs (mid-19<sup>th</sup>-century) is clearly present in the Henry William Ravenel Collection of Converse College (now at USCH). Many of Ravenel's Civil War era specimens bear annotation labels from colleagues from around the world. While Ravenel spent most of his life in South Carolina, he received specimens from several botanists in New England states, Engelmann in Missouri, and Carmel in Italy! No doubt, these exchanges took a considerable amount of time to process back then with hand-written letters of introduction, and the absence of express package shipping via jumbo jet. Yet, this system of exchange was invaluable for preserving and perpetuating a consistent understanding of global floristics. Many taxonomic discoveries were achieved by these means. For instance, Ravenel collected a diminutive "bog button" near Moncks Corner, SC and sent samples of this collection under the name *Eriocaulon flavidulum* to Asa Gray, the esteemed botany professor at Harvard. A short while later, Alvan Wentworth Chapman, working in Florida, sent specimens of a similar looking plant to Gray as well. Gray

alerted Chapman to contact Ravenel as both the SC and FL specimens appeared to be the same, but neither appeared to be *Eriocaulon flavidulum*. Ultimately, Chapman named the new species *Eriocaulon ravenelii*, in honor of Ravenel, the plant's discoverer. Perhaps even more interesting is that "Ravenel's bog button" is now considered extirpated in SC, but the proof of the 150 year old South Carolina collection is still extant in the herbarium.



Henry William Ravenel

Curating such treasures presents some extreme challenges as the paper on which 19<sup>th</sup> century specimens are mounted may often contain residual acid which can degrade the plant material over time. Older sheets are often not of standard dimension and may not fit in a modern herbarium cabinet. These circumstances call for extreme measures such as carefully trimming sheets or transferring specimens to new, acid-free sheets. The entire process is extremely time consuming and meticulous. However, preservation of such records is an invaluable resource to a variety of researchers attempting to document the past and predict the future.

While the primary function of the Herbarium continues to provide a taxonomic record for many researchers, the nature of specimen based research has expanded to include

not only comparative morphological studies, but also examination of phenological characters (i.e. blooming, fruiting, senescence) for climate change studies, geographic species' distributions based on collection localities, tracking of both rare and invasive species' populations, and DNA studies, along with many others. The demand for the information contained in the herbarium collections is immense and growing. Increasingly, the requests from researchers appear to be more focused on the data than the actual specimens from which the data are derived! The pressure to curate the physical collection and provide data has landed curators and traditionally trained botanical experts in a dichotomous situation. By far the most efficient means of handling the growing number of information specific requests is through the use of digital technologies (collections databases, specimen images, etc.). However, operation of such systems requires an entirely different skill set and management of the data, and the associated digital repository requires entirely different hardware. While traditional herbarium curation involves maintaining physical floor space, pest-proof cabinets, work areas, and expendable materials such as mounting paper, rubber stamps and glue, in a parallel universe, curation of the virtual herbarium involves hard drive space, virus detection software, digital cameras and metadata. This predicament has taxonomists scrambling to become IT-savvy computer geeks as well as curators scraping for funds (out of shoe-string budgets) to purchase the computer equipment necessary to maintain a digital collection. Essentially, the oldest and first science has been turned upside down.

Though it is a good sign that information demands will probably never abate, the pressure to make botanists become early adopters of new technology is pervasive and perhaps short sighted. Ironically, the National Science Foundation sponsors award programs that provide funds to Natural History collections to 'digitize' their collections, but while the

proposed act of digitizing a collection is often funded, it is much more difficult to secure funds to conserve the resultant digital collection. This is the end result of the dichotomy. The Herbarium, whose collections are managed by well-trained botanists and museum personnel who practice an art that has been refined through centuries of application, is being morphed into a digital representation of itself – a ‘virtual herbarium’. The challenges for managers of the Modern Herbarium chiefly concern how this duality will be addressed when there is minimal expertise, equipment, space and funding to maintain an entirely separate collection that has been born out of the physical objects they curate.

The demand for digital specimen images and increased access to associated meta data is a driving force facing a variety of Natural History collections today. While web-appropriate image resolution may only occupy a few megabytes of space each, this alone multiplied by the number of specimens at USCH becomes enough data to fill a standard hard drive of approximately 500 gigabytes. Considering that archival quality, high resolution images (used for ‘virtual loans’) may be captured at 600dpi. The resultant amount of space required to house the entire collection at USCH would be on the order of 20 terabytes (or 20,000 gigabytes – this would fill roughly 40 standard hard drives!). Other considerations pertain to the stability of digital information. While carefully curated herbarium specimens can endure threats from improper humidity and flooding, insect pests, and fire over hundreds of years, hardware failures, software corruption, and attacks from viruses and hackers can erase entire datasets in the blink of an eye. While the costs of data storage may be arguably ‘cheap’, the hardware needed to run large data storage operations of this nature in a secure, climate-controlled environment with regular backup procedures is perhaps unfathomable for anything outside of corporate or in-

stitutional expenditures. Fortunately, as part of USC’s College of Arts and Sciences, the A. C. Moore Herbarium can secure these services from the Research Computing Center at a relatively reasonable cost. While USCH will attempt to meet these costs as part of collaboration with the Clemson Herbarium in a proposal to NSF, these funds would not extend beyond the initial digitization process. In fact, there is no guarantee for contin-



*Stachys matthewsii*

## A new hedge-nettle!

*Stachys matthewsii* was formally described this year! John Nelson teamed up with Gary Fleming and Johnny Townsend (Johnny was a grad student at Clemson, working with John E. Fairey, then the Curator of the Clemson Herbarium) who are staff members within the Virginia Natural Heritage Program. The new species is a distinctive member of the genus in the Southeast, sharing some characteristics with *S. latidens*, a similar, though less-pubescent plant, which grows in higher elevations along the Blue Ridge. “Matthew’s hedge-nettle” is a plant of forests in the piedmont, mostly of stream terraces, and is known only from a total of nine counties in North Carolina and Virginia. While in bloom, this is a beautiful plant, and deserving of recognition as an attractive wildflower, with bright green, wrinkled foliage, and prominent pink corollas. Applying a new Latin name to a plant that really deserves one can be a long, arduous process. The botanist(s) involved with such a new name must carefully compare their new plant with related species, and they must consider the

ued funding to maintain any virtual collection. Thanks in large part to the continued growth of the Wade T. Batson Endowment for the A. C. Moore Herbarium, made possible through generous donations from readers like you, operations at USCH continue to improve.

—Herrick Brown



rather intricate rules involved in designating a new name. The botanical world abhors superfluous and unwarranted “new” species! Our new plant was first noticed from populations in eastern Virginia in the early 1940’s, but not recognized as a new entity at that time. In the late 1970s, Professor James Matthews, a botanist at UNC-Charlotte, alerted John Nelson (then a grad student at FSU) to a population of unusual hedge-nettles along the Yadkin River in Montgomery County, NC. Comparisons with other members of the genus began, but it wasn’t until several years later that additional plants were found (or recognized) from Virginia. Subsequent study showed that this plant is distinctive and rare. It is an honor to name this new species after Professor Matthews, who has proven to be a long-term champion of botany of the Southeastern flora.



Longleaf pines in Aiken County, SC.

# Our Herbarium Is a Busy Place!

The A. C. Moore Herbarium was originally set up as a purely scientific resource, primarily involved in research. Since its founding in 1907, the herbarium has become increasingly more active in the arenas of teaching and public outreach. Much of this teaching and public outreach involves visits by Herbarium staff to other places, and by individuals and groups to the herbarium itself. If you have ever visited our facility, you know that we are quite strapped for space, and that we are unable to offer its services within the role of a real museum: we just don't have the room for lectures and public exhibits within our existing space. Nevertheless, we regularly have tours and visits, as long as the visitors understand that there isn't too much room for jumping around once you're inside! Here are a few of the activities we have been involved with over the year:

- January 19: John Nelson spoke to the Columbia Kiwanis Club.
- February 15: Palmetto garden Club came for a visit and tour of the collection.
- February 19: SC Native Plant Society's "Twigarama" at the herbarium.
- March 3: John Nelson was the invited speaker for a program by the Florida Native Plant Society, in Tallahassee.
- March 16: USC Biological Science "Plant Group" came to the herbarium for a tour.
- March 17: Midland Master Gardeners Symposium. We manned a table on identifying unknown plants.
- March 29: Lecture ("Plant Diversity in South Carolina") provided for Johannes Stratmann's BIOL 420 class.



John Nelson discusses many of the diverse wildflowers of Lexington County.

- April 21: Invited lecture ("Spring Wildflower Extravaganza in Lexington County") for Lexington County Master Gardeners.
- April 30: Plant identification table provided at Sparkleberry Fair.
- May 14: Plant identifications and neighborhood walk for Saturday plant exchange at Rosewood Market.
- May 19: Spring Garden Open House at Darla Moore's garden and residence, Lake City.
- May 27: Aquatic plant identifications provided for SCDNR (Bonneau Ferry, Berkeley County).
- June 16: "Your Day!" interview at the herbarium, with Bob Polomski.
- June 23: Herbarium tour for 40 "GEAR UP" students from Richland School District 2.
- June 28: Plantman makes a special appearance at the live broadcast of *Making It Grow!* at the Sumter Opera House.
- August 13: Opening of McKissick Museum's "Imaging the Invisible", featuring materials from the Herbarium.
- October 31: Autumn Garden Open House at Darla Moore's garden and residence, Lake City.



## Marine Science students use the Herbarium

In USC's Marine Science program, the research team in Dr. Ronald Benner's lab works on novel molecular approaches to study mechanisms controlling carbon sequestration and its release (as carbon dioxide) in northern peatlands. These ecosystems have been major players in soil and atmospheric carbon cycling during the Holocene, and this study will provide a clearer picture of how climate shapes these processes. By looking at chemical compounds such as amino acids, carbohydrates and lignin phenols, we can learn about the factors controlling peat decomposition. Analysis of plant vegetation gives us a baseline for comparing the composition of soils to their plant sources. With the help of the A. C. Moore Herbarium, we obtained plant vegetation samples representative of vegetation found in northern peat-



Marine Science students Mike Philben and Karl Kaiser

lands. Small amounts (about 200 milligrams) of plant tissue are taken directly from a specimen. This process is called “destructive” sampling, and is used only in special instances, and then very judiciously. Species sampled for this project include include a northern horsetail (*Equisetum scirpoides*) and Midway Peat-moss (*Sphagnum magellanicum*).



## Federally Endangered Carrot Relative is the Focus of Much Hullabaloo

(searching for a needle in a haystack)

Officials from a variety of conservation agencies recently converged on several Carolina Bays in search of the Federally Endangered Canby’s Dropwort (*Oxypolis canbyi*). Spurred by a research project involving the Georgia Department of Natural Resources, members of the GADNR, SCDNR – Heritage Trust, US Fish and Wildlife Service, SC Native Plant Society and others met at sites where populations of this inconspicuous species were known to occur. GADNR officials were interested in collecting samples for a population genetics study. The species ranges from central Georgia along the Atlantic seaboard to southern Maryland but its occurrence across this range is extremely spotty and it is unclear how these disjunct populations remain genetically viable. South Carolina is perhaps the richest state in terms of known populations and therefore was a natural choice for sampling efforts.

Most of the known SC populations are associated with vouchers at the A. C. Moore Herbarium. These specimens are extremely valuable as they document the occurrence of Canby’s Dropwort before restoration efforts began on these now-protected habitats. Through time, these populations will be monitored and

current population numbers can be compared to those estimated at the time of initial discovery to determine if restoration efforts have a positive effect.

Canby’s Dropwort is most easily observed when blooming as its characteristic umbels of white-petaled flowers contrast easily amongst the tall marsh grasses in which it grows. The plant itself is almost a grass-mimic: a tall green stalk with attenuated, stiff quill-like leaves blends in seamlessly with long slender grass blades just like a needle in a haystack. Thus, outside of blooming season (June-July), it is almost invisible. During surveys for new populations, Heritage Trust staff (like good field botanists in general) tends to look for readily visible associated species that typically occur in the vicinity such rare plants. By these means, survey efforts can be intensified once known associates are spotted. However, just because the habitat might look right with all the associated species, Canby’s Dropwort might not always be there. This is effectively what makes it a rare plant; it is where it is and it’s not where it’s not.

—Herrick Brown



## From Jen Fill

As a second-year graduate student in Integrative Biology at USC, I am continuing my research on ecological integrity in the longleaf pine (*Pinus palustris*) ecosystem. Fire is an important process that maintains the structural and functional integrity of longleaf pine savannas, yet there is considerable debate surrounding the season in which prescribed fire should be applied for restoration and management activities. Managers therefore require reference information on the historical fire regime. In the fall of 2010, I conducted a study at the Webb Wildlife Center (Hampton Co.) with Drs. Shane Welch and Jayme Waldron. Wiregrass (*Aristida beyrichiana*) is a long-lived, keystone perennial bunchgrass that historically dominated the groundcover of longleaf pine savannas. Although it reproduces vegetatively, it is also



Jen Fill

known to reproduce sexually, but only after a fire. Because of this reproductive strategy, we hypothesized that wiregrass would flower most prolifically in response to the historical natural (i.e., lightning) fire season. We measured the proportion of reproductive effort allocated to sexual reproduction in wiregrass plants burned in early spring, early summer, and late summer. Our results suggest that lightning-ignited fires historically occurred in late May-early June. We are currently analyzing and writing up the results for publication.

I am also conducting vegetation sampling in longleaf pine savannas to quantify structural integrity through measures of species composition. Not only did I find the A.C. Moore Herbarium extremely useful in obtaining information about wiregrass biology, but I also will continue to use it extensively as I attempt to identify species of grasses, wildflowers, and woody plants of the pine savannas and flatwoods.



The flower of a cultivated *Clematis*, revealing its many stamens and pistils.

## A message from the Curator

# Bushmint and More

When I was in graduate school in Florida, I became acquainted with “Tropical bushmint”, a member of the mint family, scientific name *Hyptis mutabilis*. This plant is native of South America, but had been earlier introduced into Florida. Bushmint is an impressive herb, potentially up to about 6 feet tall, with bold, sawtooth leaves with a kind of angular egg shape, and it sports small flowers, in the fall, in verticils, these flowers with prominent (albeit small), purple corollas. Perhaps most noticeable is bushmint’s smell: whew! It has a stinky, oily smell (it also has a number of interesting volatile organic compounds in its foliage and tissues) which is quite unpleasant. In Florida, this species was widely distributed as a weed of roadsides, ditches, and vacant lots as early as the 1950s, and was quite common in Gainesville and Tallahassee in the early 70s and early 80s when I was down there.

So...if we start looking northward about that time, bushmint was in fact being collected, sporadically, in southern Georgia, and west in Alabama. Its first collection South Carolina was 1987 (by Jeannine Angerman) from Barnwell County, followed in 1991 by an occurrence in Berkeley County on the north side of Lake Moultrie. This plant was “becoming a part” of the South Carolina flora; it is now known from collections as recently as 2005 in Beaufort and Jasper Counties as well as from a single patch of plants near the Congaree River in Richland County.

During this past summer, I spent a lot of time within South Carolina’s inner coastal plain. In June, I found a big patch of bushmint in Clarendon County, not far from Rimini. (It was too early for blooming plants, but they definitely had the smell!) In August, the plants were found along US 301 near Gable (also Clarendon County), and in early September, blooming plants were found in great abundance in two different places within the drainage of the Black River, near Sardinia. Herbarium specimens were made of all the Clarendon County populations.

Tropical bushmint is no longer totally “tropical.” It is naturalizing in South Carolina, and may prove to be yet another unwanted weed. The geographic trend seems clear: *Hyptis mutabilis* is moving north, and will probably establish itself in every coastal plain county of our state. It is not clear what biological impact these populations will have on our natural landscape.

Our friends within the state chapter of EPPC (Exotic and Pest Plant Council) will be interested in knowing of these reports. Because of the collections present in herbaria, we can keep an early eye on the spread of these interesting, but surely unwanted, new visitors.

### New cases

On Tuesday, September 6, a very large moving van showed up on Devine Street right behind our building. Inside the van were three brand new herbarium cases that we had to acquire more new ones, as well as a compactor system within our main room for storage. As you know, high-quality hardware of any sort is expensive: this includes herbarium cases, which cost individually about \$1000 (before shipping). We had ordered and purchased these with funds accrued from the Batson Endowment. John Nelson and Herrick Brown put on their “moving man” caps, and after a couple of hours of huffing and puffing, all three cases were safely inside the Herbarium. These cases have now been carefully positioned in what was just about the last space available for them. (There is actually floor space still available for two more, but before we can do

that, we will have to get one of the doors re-hung so that it will open the opposite way...it’s a long story.) Once they were in place, we wasted no time in transferring specimens from the adjacent cases into the new ones, immediately relieving some very tightly crowded conditions; this was especially important for our holly collection (*Ilex*), these specimens (about 350) tightly crowded together.

Herbarium cases aren’t very exciting pieces of hardware, generally. They typically look like big refrigerators. As you might expect, herbarium cases are manufactured with quite a range of quality and performance standards. Our Herbarium, with the newest three, now contains 95 full-sized cases, 45 of which are “state-of-the-art”, and in our view, the best that money can buy. They feature deeply recessed gasketing (forming an airtight seal around the door frame), doors that will open 180°, door handles that are recessed, or flush with the surface. Properly stored herbarium specimens are maintained in darkness, and in a stable (stationary) situation free

of any insect pests. Many of our old remaining cases are in fact deteriorating, however, and we anticipate replacing all these old, substandard ones in the future. (The old ones are all dark gray. All of our new ones are white, which brightens the interior of the Herbarium considerably.)

Our ultimate goal for the Herbarium, at least within its current building space, is to replace all the remaining old cases with new ones, and to acquire more new ones, as well as a compactor system within our main room for storage.



Filing new specimens is like shelving books in a library: it must be done correctly or the specimens may be lost.



Continued from page 1

## DHEC, Herbarium Working Together

iting each wetland designated for sampling once landowner permission was granted. During these visits we verified that the site was indeed a wetland, and could be accessed by the team. In April 2011 we began sampling two sites per week, often starting our days at 6:30am to travel to each location. Once on site, the real work began. We would establish the assessment area, describe the wetland type, describe the buffer areas outside of the assessment area, identify and rank all stressors (both anthropogenic and natural) in and around the assessment area, describe and collect soils (from pits dug throughout the assessment area), collect water chemistry samples, algae for taxonomic identification, describe the vegetative community and structure, identify plant species (from plots throughout the assessment area), and collect botanical specimens (vouchers and unknown species) from each site. Generally, we could accomplish all of this in 3-6 hours depending on the complexity of the site, leaving us very tired and dirty for the ride home.

Early in the project SCDHEC realized that there was an excellent opportunity to forge a partnership with the A.C. Moore Herbarium at the University of South Carolina due to the quality assurance policies and specimen curation required for compliance with the NWCA guidelines. This partnership would allow SCDHEC to utilize the Herbarium's knowledge and expertise, and provide valuable specimens to the Herbarium. SCDHEC has also agreed to provide 10 additional herbarium cases to house portions of the collection. Many of the sites selected for the NWCA are remote and in areas that are very difficult to access, consequently they may have escaped botanical scrutiny in the past. It is hoped that the specimens produced during this project will help contribute to the understanding of wetland plant distribu-

tions in our state, and help to fill in some of the gaps that exist.

Despite extreme heat, long hours, mosquitoes, yellow jackets, chiggers, pluff mud, and briars, this has been a very enjoyable project. We have been able to experience some of the most beautiful portions of the state, and walk in areas that are visited by very few people. This project will help give a better understanding of the health of wetlands in South Carolina and The United States, and allow threats to wetland health to be identified and addressed. The data collected during this project will be used as part of the EPA's final report on the National Wetland Condition Assessment due for release in 2013.

—Jim Glover, DHEC



## From a New Face Kendall Ackerman

Hi there! My name is Kendall Ackerman and I was born and raised on Hilton Head Island, South Carolina. I am a third-year Public Health undergraduate student with a minor in Communication Sciences and Disorders, and I plan to attend Audiology School upon receiving my Bachelor of Science degree from the University of South Carolina. I stay very busy as a saxophonist in the university's marching and jazz

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Kendall likes cones.

## A Message from Jenks Farmer

Tom Hall and I run Lushlife Crinum Nursery, located in Beech Island, SC; we ship fresh, cleaned bulbs all over the country. Recently, we donated five bulbs to scientists at the New Mexico Institute of Mining and Technology for biochemical analyses, particularly for compounds exhibiting cancer-fighting activity. In popular lore, especially that of Southeast Asia,



Crinums: a fascinating and beautiful group.

some crinum species are important medicinally, and used against certain cancers. An important part of doing research this way is to document the plants being analyzed, and so we brought one of these plants to the A. C. Moore

Herbarium to be pressed and dried as a scientific specimen. I have been preparing herbarium specimens of many of the plants from a number of gardens, and so the Herbarium is a useful resource for us. If anyone anywhere in the world needs to know if the plants I grow are what I say they are, the dried specimen makes it possible to find out.

If you would like to see a spectacular garden with lots of beautiful crinums, get on our email list. Our Aiken county home & farm is open by invitation only, information in our monthly newsletters, at [www.jenksfarmer.com](http://www.jenksfarmer.com). Or come down to Moore Farms in Lake City, SC. The garden is private, and we request that you make prior arrangements ([www.mooreplants.com](http://www.mooreplants.com)) for a visit.

Jenks Farmer is an enterprising local gardener who develops and grows different varieties of *Crinum*. Jenks has provided a valuable specimens for our collection, and he encourages young people to look into botany and horticulture as a career. —John Nelson



## From Kendall Ackerman

bands, but I am also sure to stop by the herbarium at least every other day. I have been working at the Andrew Charles Moore Herbarium since May 2011 and have loved every minute of it! Whether I am mounting specimens for display or entering information into our database system (or helping Dr. Nelson organize his office space), I can never find a dull moment with the Herbarium staff! This summer, we brainstormed and unveiled a new T-shirt design, complete with the herbarium's signature "gumball" logo. These shirts are available to the public in both Garnet and (Dr. Nelson's favorite) Hi-Visibility Yellow for only \$10! Be sure to stop by and get one before we run out!



**Below are photos of some SC pines.  
How many can you identify?**



*Florascope*

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# THANK YOU!

The A. C. Moore Herbarium has some of the nicest friends you can imagine. Hundreds of people have made donations to the Batson Herbarium, which fully supports our day-to-day operations. This year, funds from the Endowment have made it possible to hire part-time student helpers, specifically Keith Mearns and Kendall Ackerman. We have been able to purchase additional paper for labels, as well as glue, for the development of new specimens, which are coming in all of the time. And we recently were able to purchase three additional new cabinets for storing specimens, much alleviating our crowded situation here. If you have made a donation to our Endowment, THANKS FOR YOUR HELP! We take your generosity as a show of support for the activities taking place here. If you would like to make a tax-deductible contribution, please make out your check to "USC Educational Foundation", and -this is important!-- include a note reading "Batson Endowment-Moore Herbarium". THANKS!