CHINQUAPIN
The Newsletter of the
Southern appalachian Botanical Society
Volume 20 (4)
Winter 2012

Which Weed is Witchweed?

By Lytton John Musselman, Old Dominion University

My introduction to the pernicious African parasitic weed, witchweed (*Striga asiatica*), was accidental and highly illegal. I was a doctoral student at the University of North Carolina doing a comparative study on haustoria, the organs that define parasitism in parasitic angiosperms. So when I read a journal article about witchweed in North Carolina, I went to the Whiteville, North Carolina area, located, and collected several plants with hosts and soil. And I wrote to the USDA laboratory in Whiteville for "further information." Within hours of receipt of my letter I was a marked man.

By this innocent act, I violated a federal plant quarantine and was soon visited by the head of the lab and a federal quarantine officer. With this inauspicious start began my productive and amicable relationship with the Witchweed Laboratory, with years of collaborative work on the biology of witchweed.

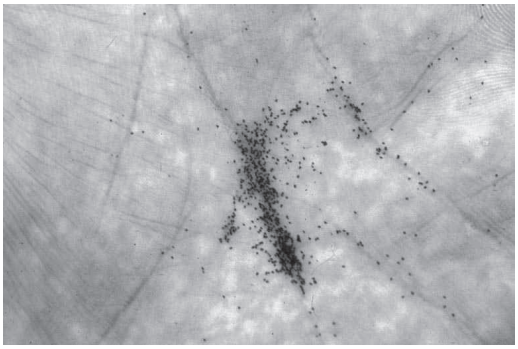
Witchweed is a small plant, seldom more than 2 feet tall with narrow opposite leaves and brilliant scarlet red (rarely yellow) flowers—in other words, a very attractive plant that stands out in monotonous rows of corn.

Witchweed in Botswana where it can be a major constraint on grain production.

Like its relatives in the Orobanchaceae (many were once placed in the Scrophulariaceae), witchweed attaches to the roots of its hosts through specialized structures called haustoria. Haustoria form the physiological and morphological bridge between parasite and host and are the salient feature of parasitic angiosperms. Though witchweed haustoria are small (seldom more than an inch wide) they exert a powerful pull on the host, diverting materials carried in the water stream to the parasite.

But haustoria do more than this—they also transport growth regulators from the parasite to the host. As a result there is an increase in the ratio of host roots to stems. In witchweed-infested corn in the sandy soils near Whiteville, it was possible to recognize a parasitized corn plant just by pulling on its stem—those infected were more difficult to pull because of the increased number of host roots.

The life cycle is complex. Germination of the "dust" seeds depends on the right combination of temperature, water, and distance from the host. Not only can this tiny organism measure these factors, it can also determine if the host is suitable. If suitable, the root hairs clasp the host root and the tip of the parasite seedling root is transformed into a haustorium that penetrates the host and connects with the xylem.



Witchweed seed in my palm. The longest dimension of a seed is shorter than width of a human hair.

It is at this stage that the witchweed "bewitches" its host because it is damaging the host without appearing above ground. When it does emerge to flower, the host could be debilitated.

After emergence, the parasite produces some of its own food through photosynthesis, but would die without attachment to its host. Shortly after emergence the flowers appear. In the populations I have examined both in the Carolinas and in Africa, all of the flowers are autogamous, that is, they pollinate themselves.

Thousands of seeds are produced by each plant. This prodigious harvest is exacerbated by the fact that the seeds can remain viable in the soil for as long as twenty years. Not surprisingly, control is a huge problem especially in less developed countries. An intensive quarantine and eradication program by the U S Department of Agriculture brought the parasite under control and witchweed is no longer a problem here.

How did this African plant arrive in the Southeast? No one is certain. One intriguing possibility is that seeds were carried on wool from Africa. Al Radford told me that one of the places to find previously unreported plants in the Carolinas was around a wool carding mill near the coast of South Carolina and suggested that was the origin of the infestation in the 1950's. Once it was

Witchweed continued on Page 29

From The Editor's Desk:

J. Dan Pittillo, Newsletter Interim Editor

Members will appreciate my interest in getting the newsletter available to membership, having finished the second year as interim editor. The Chinquapin, though not an peer-reviewed publication but certainly reviewed at least by an editor, has the advantage of getting information out in print more quickly. I believe it is an excellent way for students to get into the publishing mode and easier way for members to share their thoughts to all members. Certainly this was in the mind of Earl Core and those at University of West Virginia when they undertook this task with the publication of the Castanea journal. It was just that the less technical information had a good outlet for members, hence we started the newsletter as a way to broaden these topics. Professors, please encourage your students to take advantage of this opportunity.

And now we have the willing colleague, Dr. Joe Pollard, busy as he must be as a full-time professor at Furman University, to take on this added task without compensation. So, it would be great if you members would welcome him and at least drop an email note of thanks for his generous willingness to carry on the torch of good will and good botanical knowledge to be shared by all.

Witches' Broom

By Bob Gilbert

Have you ever looked up into a tree canopy and spotted what appears to be squirrel's nest, but on closer inspection you find it alive with atypical needles or leaves and abnormal growth patterns? These masses are called witches' brooms. There are various causative agents. The most commonly seen brooms are on hackberry (*Celtis*). In fact multi-brooms on a deciduous tree is a good clue it may be a hackberry. A mite and a mildew fungus cause these brooms[1]. Other brooms are caused by different sources. Cherry and blueberry brooms are caused by a fungus and pine brooms by a rust, while viruses on peaches and black locust can create abnormal growth[2]. The name evolved in ancient times when brooms were often found in old trees in very old cemeteries. It was believed they occurred where a witch had rested during her nightly travels3. Now that witches are almost extinct it is understood that stresses from both environmental factors and parasites can induce these curious growths. Also a broom that originates from one central bud on a pine can result from a genetic change[3].

Witches' brooms in Prunus sp.

Another feature about brooms is that pieces can be rooted or grafted and rarely revert back to normal growth patterns. Most stay small, becoming dwarf or miniature plants. They can produce seeds that m ay have further variations. When you find miniature plants, especially conifers, in a nursery almost always they were started from a broom. In fact a whole new industry has evolved of miniature, semi-dwarf or dwarf conifers that appeal to people with rock gardens and bonsai collections.

How do you collect a broom, as they are often high up in an old tree? The tree could be climbed and the broom cut down or a crane would enable the same collecting technique. But most often a shotgun is used. A shower of broken pieces rains to the ground. The entire broom mass would not survive left whole as there are no roots. So roots have to be created. Trees like pines do not produce roots easily. So the small portions (scions) are grated on rostocks of the same type. Most commonly pine brooms are grafted on Western White Pine rootstock because it is very vigorous in our climate. In fact there are seedlings grown by specialized nurseries for rootstock grafting.

Witch's Broom continued on Page 30

A Field Trip with Mark Catesby

By Amy Hackney Blackwell

Let's organize a field survey, starting 290 years ago! I know that's strange grammar, but bear with me. Think of the potential – we could get an idea of what was growing before widespread European settlement, before the construction of roads and cotton farming completely changed the topography of the area. All we need is a research partner born around 1680, someone who could make a careful plant collection in the 1720s and arrange to have it preserved until now.

Patrick McMillan and I have just such a research partner. His name is Mark Catesby. Most of you have probably heard of him.

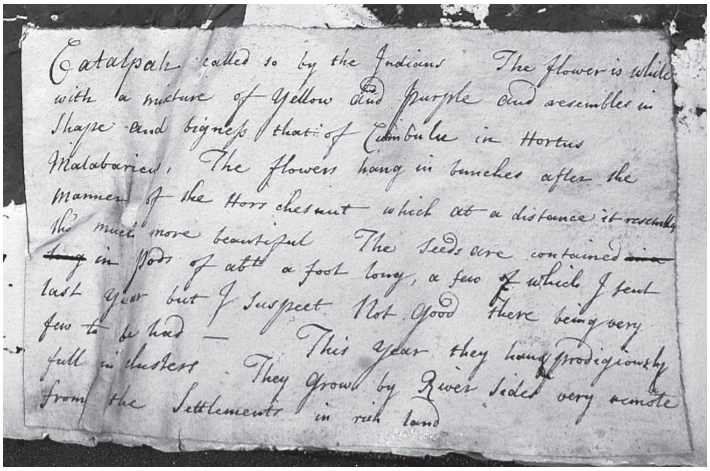
A little background – I'm a doctoral candidate in Plant and Environmental Science at Clemson. Patrick, the director of the SC Botanical Garden and host of the public television program "Expeditions with Patrick McMillan", is my dissertation director. My husband, Christopher Blackwell, is a professor of classics at Furman University, focusing his research on digital imaging and informatics, which basically means using computers to capture and analyze ancient texts and images of ancient artifacts in ways not possible with traditional paper-and-ink technologies. He says that adding computers to the humanities is like adding telescopes to astronomy: these technologies make our view a "million times" more powerful.

Last November, Chris, Patrick, and I went to the Natural History Museum in London, to photograph some plants. This project was part of Chris' ongoing process of research in longitudinal alignment of image collections, supported by National Science Foundation Grants No. 0916148 & No. 0916421. Working with Mark Spencer, curator of the Sloane Herbarium, we photographed all the Carolina materials we could find in the collection – Mark Catesby, John and William Bartram, John Lawson, the so-called Walter Herbarium, and some specimens collected by Robert Ellis and James Oglethorpe.

A Catesby specimen including Catalpa bignonioides*, in the Sloane Herbarium, London*

All of these photographs are held under a Creative Commons license, which means they are freely available for all non-commercial uses. We've already posted Catesby and some of the Bartram online on our site: Botanica Caroliniana. (http://folio.furman.edu/projects/botanicacaroliniana/index.html). The rest will appear soon. We can also send copies of any or all images to anyone who sends us a disk drive (500 gigabytes could hold them all).

Last winter Patrick and I worked our way through the images from the two Catesby volumes, H.S. 212 and H.S. 232, identifying all the vascular plants from the Carolinas. We could access the entire Sloane collection at once and revisit specimens as often as we liked, zooming in on small details as necessary. Using the Internet in conjunction with a searchable PDF of Alan Weakley's Flora of the Southern and Mid-Atlantic States (2011) facilitated the process of identification. We've written an article on these plants and the project that will appear in a forthcoming edition of Castanea.



Mark Catesby's handwritten notes from the Catalpa specimen above.

What are some of the things we discovered? Some specimens provided clues to Catesby's likely route from Charleston to the Upstate. Others suggested that certain species were growing in South Carolina before European settlement. For example, Catesby collected several specimens of *Catalpa bignonioides* Walter, a species with a native range thought to be well south of the Carolinas. Likewise *Acer saccharinum* L., which Weakley describes as "rare and mostly introduced east of the Appalachians and south of Virginia" – yet a specimen appears in Catesby's Sloane collections. We learned that Catesby had an eye for rare and distinctive plants, that he must have sought out a range of diverse habitats, and that he was interested in economic and medical uses of plants by both Europeans and Native Americans.

Catesby is best known, of course, for his Natural History of Carolina, Florida, and the Bahama Islands, for which he created both text and images. Many of the species that he illustrated in the Natural History are represented as herbarium specimens in the Sloane collections. We have collected these particular images on their own webpage, placing them alongside the corresponding images from the Natural History; it is very interesting to see how Catesby translated his living and dried specimens into hand-drawn illustrations. (http://folio.furman.edu/projects/botanicacaroliniana/Parallels.html)

Biological collections, including herbaria, have huge potential for research in systematics, ecology, and evolution (Pyke and

Field Trip continued on Page 31

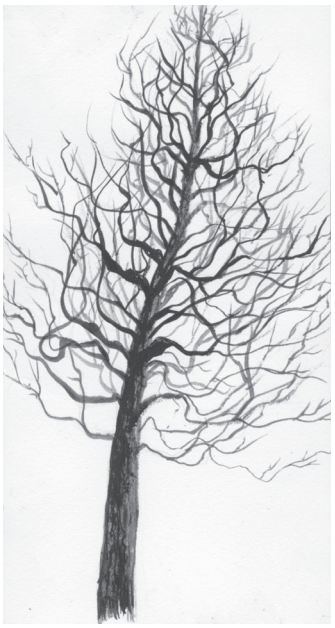
Botanical Excursions

By George Ellison

Paintings by Elizabeth Ellison (http://www.elizabethellisonwatercolors.com/)

Anyone who leads plant identification field trips, inevitably accumulates a set of i-dees fixes … favorite topics which evoke favorite words and memories. These are to be brought up come hell or high water. Here are several of mine. They're sort of quirky ... but if you find something you like, feel free by all means to pass it along.

~ According to the theory of "foliar fruit flagging" species like poison ivy, Virginia creeper, black gum, sasafrass, spicebush, dogwood, the sumacs, and the wild grapes produce an early flush of foliage color from late August into mid-September … while most of the forest is still green … so as to attract migrating birds to early-ripened high-energy fruit and thereby assure distribution of seed. Color is the language of leaves.



Sourwood painting.

~ The scarlet seeds exuded from pocket-like "receptacles" in magnolia cones don't fall immediately to the ground to be shaded out beneath parent trees. Suspended for days on rubbery high-tension attachments, the seeds can be distributed far and wide by migrating birds fueled by high-test lipid fats. Vascular floras describe the attachments as "extensible threads" or "funicular strands." A citation in the OED likens them to "the 'funis' or umbilical cord."

~ Why do sourwoods snake upward into the canopy … veering here and there … with bending trunks and curving branches? Remember that even though they are the only species in the Ericaceae that aspire to be trees, sourwoods have not as yet forgotten their shrubby origins.

~ Are the tip-tops of hemlocks naturally bent in the same direction?

Are the tip-tops of hemlocks naturally bent to make bird perches?

Are the tip-tops of hemlocks unnaturally bent by birds seeking perches?

Are the tip-tops of hemlocks favored by a certain bird?

(Answers: no; probably not; probably yes; great crested flycatchers.)

Great crested flycatcher painting.

~ The scientific names of not a few plants are absolutely wonderful … paired words with resonances that could be sung by Pavarotti in opera seria: Tiarella cordifolia! … *Xanthorhiza simplicissima!* … *Passiflora incarnata!* … *Cimicifuga racemosa!* …*Antennaria solitaria!* … *Boehmeria cylindrica!* … *Hydrophyllum canadense!* … *Dendrolycopodium obscurum!* … *Polystichum acrostichoides!*

~ Preceding Bartram by about a thousand years the Cherokees were our original botanists.

Basic dispositions evolve in particular landscapes. Nothing gaudy like the western tribes prefer in color, dance or dress will do for the Cherokees ... and today is not always a good day to die. White oak and river cane splints come in four colors: yellow (shrub yellowroot); reddish orange (bloodroot); black (butternut walnut); and brown (black walnut). But watch out … butternut is now uncommon … if the black in your new basket is too shiny it's shoe polish … and the joke is on you!

~ What is a vine? Have you thought about that lately? A vine represents a growth strategy that enables certain plants to use other plants or objects as support. The term "structural parasite" sometimes appears in the literature. Vines are all about gaining a competitive advantage come hook or crook … as it were. You perhaps recall that tragic ballad about the woodbine that fell in love with a morning glory ("but she twines to the left and he to the right") whose offspring grew straight up and fell over? And you will no doubt be familiar with the old argument as to whether vines twist to the right north of the equator and to the left down under? I'm told there is a secret list of at least 20 species that twine in either.

Shrub yellow-root and bloodroot paintings.

~ The inside of a hummingbird's nest is always lined with the Lilliputian tufts of rusty hairs they somehow know can be found at the base of each pinna on sterile blades of Osmunda cinnamomea.

~ Sometimes it's the simplest stuff that helps most: (a) everything about a flower … color, form, fragrance or whatever … has to do with attracting or assisting pollinators; (b) everything about a fruiting structure that helps it fly, float, be eaten or whatever has to do with seed distribution; (c) form always follows function; and (d) beauty is sometimes a by-product of utility.

George and Elizabeth Ellison may be contacted at P.O. Box 1262, Bryson City, NC 28713 or email "George Ellison"< info@georgeellison.com>

Ed note: Unfortunately for the operatic cadence, *Cimicifuga racemosa* has now been reclassified as *Actaea racemosa*, losing a couple of syllables. Sometimes art has to suffer for science.

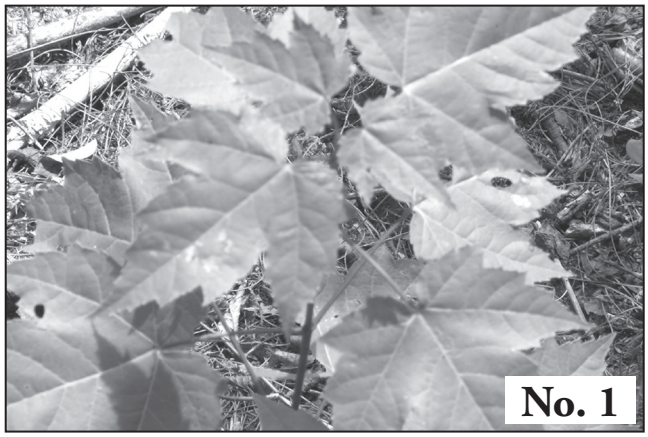
Mystery Plants

By Dan Pittillo

The correct identifications for the last issue (vol. 20, no. 3) was *Prunus serotina* (no. 1) and *Tilia americana* var. *heterophylla* (no. 2). Getting both these correctly identified were Judy Dumke, Jammie Thompson and Tom Wentworth. Three others correctly identified the *Prunus* but not *Tilia*.

Continuing with 11 and 12 in this series of plant identifications, see if you recognize these two for an actual site to see what might be the future dominant species for the area after a storm. The final pair and the person with the greatest correct identifications receives the Mystery Plant Award a copy of the beautifully illustrated and detailed guide, Timothy Spira's Wildflowers & Plant Communities. So, get your submissions in soon as you get your newsletter!

For this project, I had a large forked, white pine's top split and broken out in two storms. I had planted this pine in an old pasture ridge about 20 feet above our creek when I first moved to Cane Creek valley in the early 1970's. I live in an area of rich cove hardwoods so this will be the primary seed source for this site. To help you out, here are the species, among others, I have living nearby: Canopy trees include *Acer rubrum, Aesculus flava, Betula lenta, Carya alba, Fagus grandifolia, Fraxinus americana, Liriodendron tulipifera, Prunus serotina, Quercus alba, Q. falcata, Tilia americana* var. *heterophylla.* Understory trees include *Carpinus caroliniana, Cornus alternifolia, C. florida.* Shrubs and vines include *Calycanthus floridus, Celastrus orbiculatus (invasive), Corylus cornuta, Parthenocissus quinquefolia, Toxicodendron radicans,* and *Vitis aestivalis*.



Witchweed continued from Page 25

Striga gesnerioides *in Florida.*

introduced, it was years before it was identified, and that happened in a surprising way. I was told that the weed was displayed at a weed clinic in Raleigh when a graduate student from Africa said, "There's witchweed. I haven't seen it since I left home." Fortunately, it never spread beyond coastal counties of North and South Carolina.

The genus *Striga* is largely African though a few species extend into Asia. The most serious is *S. hermonthica*. Unlike *S. asiatica* this species is tall, up to 3 feet, with masses of pink flowers. In the African Sahel *S. hermonthica* attacks the subsistence grains sorghum and millet and is widely recognized as one of the most important constraints on food production. Fortunately, it has not been introduced in other continents.

Striga hermonthica *parasitizing sorghum in Ethiopia.*

In the late 1970's I was asked to verify a witchweed collected on a phosphate mine mitigation site in Florida. It was *Striga gesnerioides* which parasitizes legumes. Extensive studies indicate it does not pose a threat to any American crops. It is still extant in Florida.

All of the native parasitic plants in the Southeast are remarkably benign. Yes, there are occasional infestations of our native mistletoe on pecan or some other commercial tree. *Senna seymeria* (*Seymeria cassioides*) was a problem in slash pine (*Pinus elliottii*) in Georgia but these are episodic problems, minor compared to the incalculable potential of witchweed, which attacks a mainstay of the American diet.

Surprising Silene

By Linda Chafin

One of the many things I love about being a botanist is the never ending stream of surprises and discoveries. Something is always coming along to explode my preconceptions and challenge some long-held belief: prairies in Georgia! *Parnassia grandifolia* in the Blue Ridge!

Orate catchfly in flower in early June.

The most recent surprise occurred last week, in early November, when Liese Der Vartanian, a long-time volunteer with the Georgia Plant Conservation Alliance, brought a plant specimen to me for identification. It was a "top-snatched" specimen as we learned to say disdainfully when no one was giving much thought to the conservation implications of digging up every last plant that caught our eye. Liese had collected an upper stem with dried capsules from plants growing in sandy floodplain soils along the Middle Oconee River, a few miles from downtown Athens, Georgia. The tiny urn-shaped capsules, topped with a ring of six teeth, were easily narrowed down to the genus *Silene*. Liese promised to return with a leafy stem. What she bore into my lab the next day could not have surprised me more: *Silene ovata*! A very rare plant in Georgia, never seen by me outside the Blue Ridge.

Silene ovata, or ovate catchfly, in the Caryophyllaceae, occurs sporadically from Georgia north to Virginia and west to Arkansas and Mississippi. NatureServe ranks it as a G3, meaning it is rare or vulnerable throughout its range. In Georgia, we have documented 12 populations over the years, but only five of these are known to be extant on conservation or managed lands. None are recorded from the Piedmont. In every case in Georgia, the populations are associated with limestone bedrock (in the Coastal Plain) or rocky, amphibolite-derived soils (in the Blue Ridge). Elsewhere in its range, *Silene ovata* is associated with rich woods, usually in circumneutral soils over mafic or calcareous bedrock, on slopes or in ravines. Only in Tennessee has it been found in floodplains. Now, here is Liese's find – a Piedmont population growing in deep, sandy-loamy, floodplain soil over granite gneiss. Never a dull moment!

Ovate catchfly is a lovely plant, deserving of a more appealing common name. Plus it lacks the glandular hairs that earn the other catchfly species their common names. But the more fitting common name – fringed campion – is already taken by *Silene polypetala*. Plants are usually 3 - 4 feet tall, with a showy, many flowered inflorescence at the top of a hairy (but non-glandular) stem. The flowers are about 1 inch wide with tubular calyces and five white petals, each petal deeply dissected into eight narrow, linear segments. Ten exserted stamens and three long style branches contribute to the overall fringed appearance of the flower. The flowers open in the evening and are pollinated by moths, and remain open through the following day, when bees and butterflies also visit the flowers. The flower is not very different from that of the common starry campion (*Silene stellata*) but the leaves are distinctive: ovate catchfly's oval, sessile leaves are opposite; starry campion's lanceolate leaves are whorled at midstem.

Ovate catchfly blooms somewhat later than starry campion, with which it sometimes occurs. Typically it starts flowering in early September in the mountains and blooms till mid-November further south. Liese's Piedmont population was largely in fruit when I visited it on November 4 although one plant that had branched out after deer browsing was still blooming. Deer browsing is a problem everywhere for this species, as is feral hog digging. But as with most of the species I write about in this column, the main threat to ovate catchfly is human activity – habitat conversion, logging, and road construction. This new Georgia population is hopefully secure in its county park setting, but many more populations of *Silene ovata* throughout its range are under threat.

Chafin, L.G. 2007. Field guide to the rare plants of Georgia. State Botanical Garden of Georgia and University of Georgia Press, Athens.

FNA. 2005. Flora of North America, Vol. 5, Magnoliophyta: Caryophyllidae, part 2: Caryophyllaceae, Plumbaginaceae, and Polygonaceae. Oxford University Press, New York.

NatureServe. 2012. NatureServe Explorer. Arlington, Virginia. http://www.natureserve.org/explorer

Witch's Broom continued from Page 26

Deciduous trees and shrubs can be rooted in a greenhouse. Just about any evergreen or deciduous plant can produce a broom. Just recently I found several in a deciduous tree whose identity is not clear, likely a hackberry.

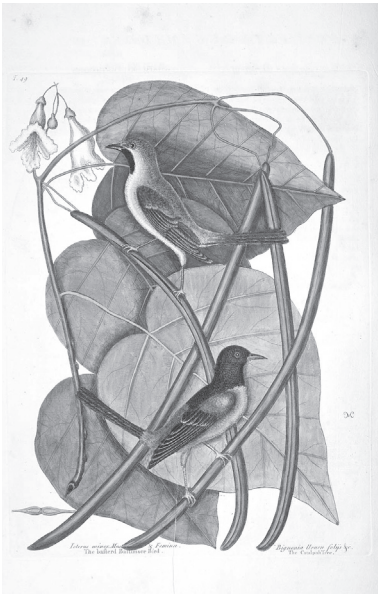
When a broom has been rooted and grown it can produce seeds. Most of the resultant seedlings maintain the parental growth patterns. Does this mean that the seeds have under gone a genetic change or has the causative agent attached itself to the seed? In fact has the broom growth undergone genetic changes as well? Perhaps a reader can unravel this mystery?

Another source of miniature plants is seeds. Growers will set out thousands of seeds to germinate. A very small percentage of the

Witch's Broom continued on Page 31

Field Trip continued from Page 27

Ehrlich, 2010, Donaldson, 2009). Researchers have used herbaria to track the spread of species and for phenological changes that could indicate a changing climate (Primack and Miller-Rushing, 2009); to monitor the movement of invasive species (Aikio et al., 2010); to study phylogenetic variation and past geographic distribution of crop landraces (Lister et al., 2010); and to reconstruct the population structure and extinction risk of plant species (Rivers et al., 2010).



Catesby's illustration of Catalpa bignonioides *in* Natural History

But lack of information and lack of access hampers research in natural history collections. Herbaria are typically not well documented (Bebber et al., 2010). The best information on the Sloane Herbarium to date has been Dandy's The Sloane Herbarium, published in 1958. Information sharing through databases is essential if biological collections are to reach their true potential and to become relevant to the general public (Pyke and Ehrlich, 2010).

With traditional methods of herbarium and library storage, only a user who can visit an herbarium or borrow specimens can examine them. Everyone else must trust that that scholar's interpretation of what he saw was correct. This has long been the case with Catesby's materials, which have been periodically examined by eminent scholars but never published. The "Botanica Caroliniana" project aims to address this deficiency by making collections available to any user, anywhere, at any time.

We are of course grateful that Catesby sent his specimens to London, where they have survived in good condition for nearly three centuries. The actual objects will always be valuable, and we are certainly not suggesting that photographs can replace the dried plants themselves. But doesn't it make sense for South Carolina botanists to have access to South Carolina plants? Putting these specimens in the hands of Patrick McMillan, an excellent taxonomist, and then opening up the data up to the entire community of Carolina botanists will produce much more scientific discovery than would be possible if scholars had to visit London to work with these materials.

As we see it, our work with Catesby isn't "historic botany." It's just botany. We are continuing Catesby's work with plant specimens, using his primary source material to do taxonomic work he could not do himself. (Catesby predated Linnaeus – he couldn't attach binomials to his specimens because they didn't exist yet.) It would almost be appropriate to include him as an author on our paper, if not for the fact that he is not in a position to voluntarily take responsibility for our work as well as his own.

But we like to think Catesby would approve.

Aiko, S., R. Duncan, and P. Hulme. 2010. Herbarium records identify the role of long-distance spread in the spatial distribution of alien plants in New Zealand. Journal of Biogeography 37: p.1740–1751.

Bebber, D.P. et al. 2010. Herbaria are a major frontier for species discovery. Proceedings of the National Academy of Sciences. Available at: http://www.pnas.org/content/early/2010/12/01/1011841108 [Accessed December 8, 2010].

Donaldson, J.S. 2009. Botanic gardens science for conservation and global change. Trends in Plant Science 14: p.608–613.

Lister, D., M. Bower, and M. Jons. 2010. Herbarium specimens expand the geographical and temporal range of germplasm data in phylogeographic studies. Taxon 59: p.1321–1323.

Primack, R.B., and A.J. Miller-Rushing. 2009. The role of botanical gardens in climate change research. New Phytologist 182: p.303–313.

Pyke, G., and P. Ehrlich. 2010. Biological collections and ecological/environmental research: a review, some observations and a look to the future. Biological Reviews 85: p.247–266.

Rivers, M., S. Bachman, T. Meagher, E. Lughadha, and N. Brummitt. 2010. Subpopulations, locations and fragmentation: applying IUCN red list criteria to herbarium specimen data. Biodiversity and Conservation 19: p.2071–2085.

Pinus *with witches' broom.*

Witch's Broom continued from Page 30

seedlings will be different. I once visited a nursery in Tennessee that was interested in developing mildew resistant dogwoods. Thousands of native dogwood seeds were collected, germinated and planted in long double rows. When the seedlings grew big enough the owner would drive down row after row looking for mildew resistant plants and variations. He would tag the trees that looked promising and move them to a nursery bed for further evaluation. The remainders were plowed under making room to repeat the process. The Cherokee series of dogwoods came from Shadow Nursery by this method.

Years ago a broom was noticed high up in a white pine, *Pinus strobus*, at Biltmore Estate. With a shotgun, portions were collected. These were grafted onto the roots of a Mexican White Pine, *Pinus strobiformis*. This Witches' Broom has been named *Pinus strobes* 'Biltmore Blue.' Flo Chafin, owner of Specialty Ornamentals in Watkinsville Georgia, has recently donated this rare grafted selection to Smith Gilbert Gardens in Kennesaw, Georgia.

References

1. Purdue University Witches' Boom, Cherry Plant and Pest Digital and Digitally Assisted Diagnosis, West Lafayette, Indiana. www.ppdl.org/dd/id/witches_broom.html
2. Henderson State University, Witches Broom, www.hsu.edu/pictures.aspx?id=1833
3. Alfred J. Fordham, 1967. Dwarf Conifers from Witches'-Brooms, Arnoldia 27 (3, 4).

Dr. Bob Gilbert is co-founder of Smith Gilbert Gardens, Kennesaw, Georgia

Current Editors
Our Castanea chief editor, John B. Pascarella is now assisted by the following section editors:

Ecology
Alan Harvey (2012-2014)
Department of Biology
Statesboro, Georgia 30460
Phone: (912) 478-5784
aharvey@georgiasouthern.edu
Georgia Southern University

Mary Carrington (2012-2014)
Science Division
Governors State University
University Park, IL 60484
Phone: (708) 534-4532
mcarrington@govst.edu

Floristics
Roland P. Roberts (2011-2013)*
Department of Biological Sciences
Towson University
8000 York Road
Towson, Maryland 21252-0001
Phone: (410) 704-3034
rroberts@towson.edu

Robert Carter (2011-2013)
Department of Biology
Jacksonville State University
Jacksonville, Alabama 36265
Phone: (256) 782-5144
rcarter@jsu.edu

Physiology
Jonathan Horton (2011-2013)
306 Zeis Hall, CPO #2440
Biology Department
One University Heights
UNC-Asheville
Asheville, North Carolina 28804
Phone: (828) 232-5152
jhorton@unca.edu

Jennifer Boyd (2012-2014)
University of Tennesee-Chatanooga
Department of Biological and Environmental Sciences
615 McCallie Ave.
Chattanooga, Tennesee 37403
Phone: (423) 425-5638
Jennifer-Boyd@utc.edu

Systematics
Catherine Bush (2012-2014)
Elon University
Elon, North Carolina 27244
Phone: (336) 278-5516
cbush@elon.edu

Second systematics subject editor (2012-2014) to be announced

Book Review Editor, Castanea
Ronald L. Jones (2005-present)
Department of Biological Sciences
Eastern Kentucky University
Richmond, Kentucky 40475
Phone: (859) 622-6257
ron.jones@eku.edu

BEREAVEMENT

American lichenologist, Jonathan Paul Dey, died 19 November 2012, after a prolonged illness. He was born on 29 November 1943 in Ashton, Idaho. He spent most of his career at Illinois Wesleyan University. He is best known for his work on the macrolichens of the high elevations of the Southern Appalachian Mountains. Shortly before his death he transferred his personal herbarium of about 35,000 lichens to The New York Botanical Garden (NY). His lichenological library will also be sent to NY. An obituary and biography are being prepared for The Bryologist.