CHINQUAPIN

Downy False Foxglove, *Aureolaria virginica*

By Lytton Musselman,
Old Dominion University

Parasitic plants are a small but fascinating component of our flora. Most of ours are in the family Orobanchaceae which now includes the parasitic members of the Scrophulariaceae. This family has gone the way of the Santa Fe Chief and rational political discourse. Its status is what botanists have unfeelingly called "disintegration". While this may be viewed as progress, it does take some getting used to. I feel like the victim of botanical devaluation having obtained a degree from a department that no longer exists (botany at UNC-Chapel Hill) working on a family that no longer exists (Scrophulariaceae).

Parasitic species that were once placed in the Snapdragon Family, Scrophulariaceae, are now included in the Orobanchaceae, the Broomrape Family. They are parasitic because they form a connection with the roots of host plants through a specialized organ called a haustorium (plural haustoria). This includes species of the genus Aureolaria sometimes known as false foxgloves because their flower shape resembles that of true foxglove (*Digitalis purpurea*). In downy false foxglove, these small nodule-like structures are evident when carefully excavating a plant and tracing the white roots of the parasite to the brown roots of the oak host. Haustoria look like nodules and may be as wide as ¼ inch. All species of *Aureolaria* parasitize oaks. The perennial species, like downy false foxglove, are restricted to white oaks. However, this is not a narrow host selection but rather a strong host preference.

A word of caution—proximity does not determine a host. I have often been told, "I found an false foxglove parasitizing okra" (or something similarly improbable) just because the plant was growing near the okra. Host verification mandates excavation of the parasite and surrounding plants to determine which are bearing haustoria.

Aureolaria virginica flowers in Spring, early to mid June on the coastal plain of Virginia, and produces bright yellow flowers reflecting the meaning of the Latin name of the genus, appropriately, golden-yellow. All species in the genus have similar, brightly colored flowers but downy false foxglove is the first to flower. Bumblebees and other bees are the most frequent floral visitors. As they approach the flower, the insects turn upside down apparently in response to markings on the corolla. This approach ensures that the insect body catches on the small projections on the anthers. As the insect withdraws, these projections force open the anther, causing the powdery pollen to fall on the back of the insect.

Corollas usually last only a day. By late afternoon on a sunny day, the corolla is blotched where the insects handled it; the corolla usually falls by the end of the day. Fruits develop in the summer containing numerous seeds with a honeycombed surface.

Seeds are easy to germinate after a cold treatment. Unlike many related parasitic plants, species of *Aureolaria* do not need a host stimulant to germinate. But a host is needed for healthy development. I have grown species in pots with host plants by allowing the host plant, in this case a white oak, to become root bound. This provides ample opportunity for the seedlings to find the host roots and form haustoria.

Downy false foxglove is also one of the most widely distributed *Aureolaria* species, found throughout much of the Appalachian mountains, piedmont, and coastal plain. Favored habitats are margins of dry oak woods, roadsides, and other open sunny areas. Like many other parasitic plants, this species likely has a very high rate of transpiration, necessary to ensure movement of water and foodstuffs from the host to the parasite, so favors full sun to drive the process.

Two other species of *Aureolaria* may be found with downy false foxglove. These are *Aureolaria flava*, a widespread species, and *A. laevigata* which is most frequent in the mountains. Only *A. virginica* has short dense hairs on the leaves providing the basis of the common name. It is indeed downy and the only one of its congeners with unlobed stem leaves.

Ed. Note: Would it be accurate to refer to these plants as "semi-parasitic" in that they do have chlorophyll and would produce some of their sugars? And if they do produce sugars, would they pass some of it on to the host plant? And might these combinations have any other value to the host plant, such as providing some sort of antibiotic? I would assume that other non-chlorophyllus plants like beech drops (*Epifagus virginiana*) would be true parasites.

Lytton Musselman, President
Department of Biological Sciences
Old Dominion University
Norfolk, VA 23529
(757) 643-3610
lmusselm@odu.edu

Conley K. McMullen, Past President
Department of Biology, MCS 7801
James Madison University
Harrisonburg, VA 22807
(540) 568-3805, fax (540) 568-3333
mcmullck@jmu.edu

Charles N. Horn, Treasurer
Biology Department2100 College Street
Newberry College
Newberry, SC 28108
(803) 321-5257, fax (803) 321-5636
charles.horn@newberry.edu

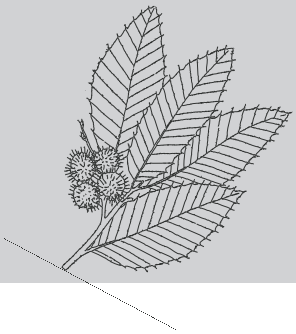
Michael Held, Membership Secretary
Department of Biology
St. Peter's College
Jersey City, NJ 07306
(201) 761-6439
mheld@spe.edu

Ruth Douglas, Recording Secretary
101 Wildflower Drive
Charlottesville, VA 22911
(434) 293-6538
cvilleruth@cmbarqmail.com

George Johnson, Editor-in-Chief of Castanea
Department of Biological Sciences
Arkansas Tech University
Russellville, AR 72801
(479) 968-0312
george.johnson@atu.edu

Audrey Mellichamp, Managing Editor of Castanea
3036 Ventosa Drive
Charlotte, NC 28205
lmellichampk@kcarolina.rr.com

J. Dan Pittillo, Newsletter Interim Editor
675 Cane Creek Road
Sylva, NC 28779
(828) 293-9661
dpittillo@gmail.com



From The Editor's Desk:

J. Dan Pittillo, Newsletter Interim Editor

With Scott's resignation, I agreed to pick up the ball with editing the Chinquapin until someone is moved to take on the task. Admittedly it was a big challenge when I first took the step in 1993 but once I made it past Chechinquamin for a newsletter title—Herb Wagner said he couldn't pronounce it—it was smooth sailing for most of the next 15 years. If some of you fine botanists will take on the task, I'll help you along.

One does not know when life changes will enter into the public realm. I recently commented to my doctor, "Old bodies are like old cars, they need continual repairs." As with many of our readers, I needed a couple of heart stents last year but the heart beats just fine now. So I can still climb the local hills and take on a good-sized mountain at 72.

Lytton Musselman starts a new column on parasitic plants with this issue. There has been taxonomic reorganization of these recently and that makes some sense. Some of the plants produce chlorophyll and provide nutrition to the plant or maybe both parasite and host. Perhaps Lytton will address this question in some future issue.

We will also continue to receive from George and Elizabeth Ellison some of the interesting avenues they explore with their observation in their "Botanical Excursions" both in the field and as George turns up his findings in the stories he finds in the literature.

Linda Chafin continues her search of information in the rare plant world. Should we ask her what might be the criteria that would define "Southern Appalachian rare plants"? Some of us would have more plants in our rare list because we simply have not experienced them in our lifetime.

Alan Weakley, overwhelmed with managing the UNC herbarium and upgrading his on-line "Flora of the ….?" into a production of a printed manual, will contribute some of his thinking in the taxonomic revisions from time to time.

For you book lovers, the UNC Press has a couple of books just published that will be great library additions. Mike Schafale and David Blevins have teamed up to produce a wonderfully illustrated book with a depth of insights that cannot be ignored. And Bruce Sorrie has given us a view of his botanical experience in the Sandhills region, often overlooked when physiographers describe the state's three provinces.

Book Corner

Front cover of Blevins and Schafale's book (courtesy UNC Press, Chapel Hill)

Mike Schafale has taken the logical step with the UNC Press and described the beautiful color photos that David Blevins provided in **Wild North Carolina: Discovering the Wonders of Our State's Natural Communities. Blevins, David and Michael P. Schafale. 2011.** UNC Press, Chapel Hill. 176 p. ISBN978-0-8078-3467-1 (cloth: alk. paper). Mike's broad-stroke describes 28 communities from mountains, through piedmont, and coastal plain and David does the beautiful images that anyone would appreciate to have on the coffee table. Probably no pair of authors could be found to produce a better book with the depth of description and beauty of illustration for remnant natural areas in North Carolina than these two.

"Homo sapiens putters no more under his own vine and fig tree; he has poured into his gas tank the stored motility of countless creatures aspiring through the ages to wiggle their way to pastures new. Ant-like he swarms the continents."

Leopold, Aldo. 1949. A Sand County Almanac. New York, Oxford University Press, p. 166.

The Witch-Alders: *Fothergilla major* and *Fothergilla gardenii*

By Linda Chafin, University of Georgia

As I write in late March, the flowers of witch-alder are shedding their honeyed scent across the University of Georgia's south campus. A walk there in early spring, through a landscaped alee of witch-alders, is a heady olfactory experience. Laden with brushy white spikes, these ornamental shrubs are a selection called 'Mt. Airy,' the offspring of *Fothergilla gardenii*, a Southeastern Coastal Plain endemic, crossed with *F. major*, a species of the Piedmont and Southern Appalachians. The hybrid plants are taller than the former and shorter than the latter, and thrive in sun and shade, and acid and circumneutral soils, making them a landscaper's dream plant.

Both parents involved in that hybrid are rare throughout their ranges. Mountain witch-alder (*Fothergilla major*), ranked as G3, is found in dry hardwood-pine forests (and occasionally mesic streamsides) in Georgia, South Carolina, North Carolina, Alabama, and Tennessee (with one disjunct population in Arkansas). Dwarf witch-alder (*F. gardenii*), ranked as G3G4, likes sunny, wet edges of shrub swamps, Carolina bays, and pitcher plant bogs in the Coastal Plain of Georgia, Florida, Alabama, South Carolina, and North Carolina.

Witch-alder's fragrant flowers are borne in densely packed spikes on more or less leafless stems. On a given plant, most of the flowers are unisexual with stamens only; a few others are bisexual. There are no petals or colorful sepals to attract pollinators, leading some researchers to conclude that these are wind-pollinated flowers. The large anthers and powdery pollen argue for wind pollination, as do the flowers being out and about before leaves emerge to impede the wind and before most insects emerge.

But unlike the wind-pollinated oaks, elms, and sweet gum, Fothergilla flowers are undeniably attractive, with as many as 30 bright white stamens per flower, not to mention that intoxicating scent. On sunny days, every spike is crawling with bees and wasps. Why produce such a delectable scent – to attract the wind? *Fothergilla* flowers provide their insect visitors no nectar but do produce large amounts of pollen. Apparently *Fothergilla* is having it all ways, offering bounteous pollen to both passing breezes and browsing insects.

When mature, *Fothergilla* fruits "go ballistic." The wall of the capsule consists of two layers of fibers oriented at right angles to each other. As the fruit dries, the layers separate; the outer layer curls open along four seams. The inner layer of the capsule wall bends inward and presses against the hard, smooth seeds, ejecting them up to 15 feet away.

With these double-barreled pollination and dispersal strategies, why are the witch-alders so scarce? Readers of this column will not be surprised to hear that the answer is not a lack of reproductive ability on the part of the plants, but a lack of ecological responsibility on the part of humans. Fire suppression and hydrological disruption of wetland ecotones undermine dwarf witch-alder's habitat. Logging and conversion of habitat threaten the mountain witch-alder. While a planted alee of 'Mt. Airy' is a wonderful sight and smell at campuses and gardens, it will be a sad day if the witch-alders disappear from our woods and wetlands.

Anderson, F.K. and D.E. Boufford. 1995. The Hamamelidae: reproduction and life cycle. Encyclopaedia Britannica. http://www.uv.es/EBRIT/macro/macro_5000_19_70.html

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

FNA. 1997. Flora of North America. Vol. 3, Magnoliophyta: Magnoliidae and Hamamelidae. Oxford University Press, New York.

Tiffney, B.H. 1986. Fruit and Seed Dispersal and the Evolution of the Hamamelidae. Annals of the Missouri Botanical Garden 73: 394-416.

Weakley, A.S. 2010. Flora of the southern and mid-Atlantic States. University of North Carolina Herbarium, Chapel Hill. http://www.herbarium.unc.edu/flora.htm

Weaver, R.E. 1969. Studies in the North American genus *Fothergilla*. Journal of the Arnold Arboretum 50:599-619.

Weaver, R.E. 1971. The *Fothergillas*. Arnoldia 31(3): 89-97.

BOTANICAL EXCURSIONS

ROSS E. HUTCHINS: ENTOMOLOGIST, NATURALIST & PHOTOGRAPHER

By George Ellison

Against the background sounds of the roaring stream in Hidden Valley is the music of the forest, the multitudinous voices of the trees as the wind blow through them. There is the soft but audible breath of the breeze in the pines and the hemlocks, and the sonorous tones of the broad-leafed trees. Never is there complete silence in the valley, and often, while along there, I imagine that each tree has its own special 'voice.'
-- Hidden Valley of the Smokies (1971)

Ross E. Hutchins (1912-1983) was born in Alder Gulch, a gold mining camp in Montana. He grew up on a cattle ranch in the high Rockies near Yellowstone National Park and never descended below 5,000 feet elevation until he was over twenty years of age. His experiences roaming the peaks and valleys on foot or horseback, studying animal tracks and watching the birds and alpine flora return each spring made an indelible impression. So much so that the entire first half of his autobiography, Trails to Nature's Mysteries: The Life of a Working Naturalist (1977), is devoted to those formative years. In the concluding chapter, he reflected: "Having grown up in a mountainous area, it was perhaps inevitable that I should become attracted by the Great Smoky Mountains, the nearest one to my adopted home in the South."

After World War II, during which he served i n the Medical Corps on Guam, magazine assignments took him to places such as the Garden of the Gods in Colorado, Pascagoula Swamp, Everglades, and Oak Ridge, Tennessee. National Geographic sent him to Oak Ridge to research and photograph mud dauber nests constructed on sensitive electronic instruments with clay containing radioactive waste.

Hutchins was the author of more than forty books—all illustrated by his photographs, which were exceptional in regard to magnification of minute details. In addition to books about seeds, dragonflies and damselflies, grasshoppers, galls and gall insects, ants and similar subjects, he wrote three general accounts of natural history: Island of Adventure: A Naturalist Explores a Gulf Coast Wilderness (1968); Hidden Valley of the Smokies: With a Naturalist in the Great Smoky Mountains (1971); and the autobiography. His photographs were published in many magazines, including Natural History, National Geographic and Life. A collection titled "Nature in Pictures" of more than 30,000 transparencies, prints, and negatives, was donated to the Mississippi Entomological Museum.

Exactly when Hutchins and his wife established seasonal residence in the Great Smokies is unclear. In his autobiography, Hutchins relates that, "Only at two locations in the park do people still live. One is Cades Cove, located near the park's southern end. The other is along Jakes Creek, the place known as Elkmont ... It has been our good fortune to have acquired one of the Jakes Creek cottages where we now live for a large portion of the year. Here we have reveled in the solitude and enjoyed the rare opportunity of dwelling close to wild nature in a sylvan setting."

In Hidden Valley of the Smokies, Hutchins advised the reader: "I call it Hidden Valley with good reason; to me, that name is most descriptive of its nature. Places I love I usually designate by my own special names . . . and thus named, a place becomes 'mine.'"

Never widely read and now mostly forgotten, Hidden Valley of the Smokies is one of more enjoyable books yet written about the natural history of the Great Smokies. Hutchins possessed a trained scientist's mindset and powers of observation. His long experience as a writer for popular magazines and books enabled him to describe the somewhat technical processes that interested him in an engaging manner. While exploring "Hidden Valley" he considered topics such as seed dispersal mechanisms, the pollination tactics of various plants, why many trees have twisted grains, and more.

A chapter titled "Leaves in the Sun" was devoted to leaf shapes, drip tips, flight patterns, leaf volume, and the special "voice" each tree possesses—a veritable tour de force of leaf lore. Here are some excerpts:

"As I walk through the valley forest I can almost see and feel the competition for light and energy. The leaves of the trees, in many cases, are arranged in mosaics, each one so placed as to fill as nearly as possible all the space, presenting to the sun an almost solid sheet of green ... Leaves, seemingly in infinite number, festoon the trees and herbaceous plants of the valley, and one afternoon I wondered how many there actually were. My first thought was that it would be impossible to make even a wild guess ... In any case, I decided to attempt an estimate of the number of leaves—on both trees and herbaceous plants—on an acre of ground in Hidden Valley. I imagined a column, one square foot in area, reaching upward from the earth to the tops of the trees and estimated the number of leaves within it. A month later, after the leaves had fallen from the trees, I made several counts of dead leaves on the ground and obtained an average. The conclusion was that on each square foot there had been an average of about two hundred living leaves. The conifers—hemlocks and pines—I ignored, since I could not decide how to classify their needles . . . From the above figure I determined that on each acre of ground there had been 8,712,000 leaves. Carrying my calculations even farther, assuming there to be about six square miles in the valley, I found that there had been about 33,454,080,000 leaves . . . Abundant as are the leaves of these forests, each one has its own individual form and structure; no two, even on the same tree or plant, are exactly alike . . . Why, you may ask, are there such variations in leaf shapes? The answer is not at all simple. Some leaves have pointed, downwardly directed tips that facilitate the runoff of rainwater, eliminating the water before it can injure the leaves by inducing the growth of fungi or by focusing the rays of sunlight upon the leaves' delicate tissues. In the forest there are many examples of leaves with drip tips. On the other hand, many leaves are ovate in

Continued Page 7

Bog Gardening with Carnivorous Plants

By Larry Mellichamp, UNC Charlotte Botanical Gardens

(Ed. Note: modified from local garden club newsletter)

When school kids, and their parents, visit our UNC Charlotte Botanical Gardens, they are invariably drawn to our unusual displays of colorful carnivorous plants. We always get the same questions: "Will it hurt if I stick my finger in the jaws of the Venus'-flytrap?" No, the traps are only 1 inch long, and they catch only small insects. But when they close, they squeeze the bugs and secrete digestive juice that you can see ooze out of the corners of its mouth. "Does the lid of the tall pitcher-plant close when a fly falls in." No, the pitcher plants have no moving parts; the long tubular leaves are pitfall traps and work like your falling in a well. The bugs can't get out and they die and are digested. "How do sundews catch big insects?" Well, they don't. The tiny sticky hairs on the leaves–see how the glue-like droplets stick to my fingers–trap really tiny bugs and gnats and then thy fold over and digest them. "Do the flowers catch insects?" No, all carnivorous plants use only their leaves as traps. The flowers attract insects for cross-pollination, and you don't want to eat those all-important pollen-carriers. After knowing a few facts about them, people of all ages can look at these fascinating insectivorous plants for hours, and marvel at their special abilities to attract, catch and digest various small animals. The horticultural interest of these plants allows us to fulfill our educational mission and tell how the plants work and where they come from. People also want to know how to grow them; and we always try to have a few for sale. What kid has not grown–and killed–a Venus'-flytrap at some point in their lives.

Venus'-flytraps (*Dionaea muscipula*–a single species of the genus) can grow to 6 inches across with one-inch traps on the ends of their leaves. Pitcher plants (*Sarracenia species*) range from 6 inches to about 3 feet tall. Sundews (*Drosera species*) rarely exceed 8 inches tall. They all grow in open, sunny meadows in low-nutrient, acidic soils. The Venus'-flytrap lives in the wild only in extreme southeastern North Carolina and adjacent South Carolina, while the pitcher plants and range from the Carolinas down to Florida, then west to east Texas. It is hot and humid in the summer, with 60 inches or more of rainfall. Their habitats–variously called bogs, pitcher plant meadows, savannas, or long leaf pine flatwoods–depend on frequent fires to keep various species of tree, shrub or grass from taking over and choking out other species. These wetlands contain the most diverse array of species of wildflowers, carnivorous plants, and shrubs in the temperate zone, but have decreased in abundance by more than half in the past one hundred years due to draining, development, and fire suppression.

Charlie Moore pitcher plant (*Sarracenia* x *charlesmoorei*) Mellichamp*. Larry Mellichamp photo. Ed note: When two closely related species occur in the same location, cross-pollination can occur. In this case the Southern Appalachian purple pitcher plant (*S. purpurea* var. *montana)* has crossed with mountain sweet pitcher plant (*S. jonesii*). In this case both taxa are rather rare.
*http://www.carnivorousplants.org/cpn/Species/v37n4p112_117.html

So, you can grow these carnivorous species (and the less aggressive associated wildflowers that grow in the same habitats) in a plastic 12-14 inch-wide plastic dish garden with a soil mix of half peat moss and half white sand (like sandbox sand). Keep them constantly moist. They are hardy perennials and can survive our freezing winters, but we bring our dish gardens inside in winter to avoid the freeze-thaw action on the plastic pots. In winter, the plants are dormant; in spring, they send up new leaves and attractive flowers. Pitcher plants are especially attractive with their robust and colorful pitcher leaves. All carnivorous plants benefit from feeding them small insects (do not feed them "people-food."). Anyone can have a bog dish garden–just keep it outdoors in sun and keep it wet–and you can sit for hours watching the insects come and visit the traps. Some of them get caught, and some get away. But it is part of the interplay of plants and animals that makes nature so fascinating.

WCUH: Western Carolina University Herbarium

By Dan Pittillo

Did you know that the main repository for the North Carolina section of the Blue Ridge Parkway flora is in Cullowhee? Or that the best organized collection of the Southern Appalachian rock outcrop flora is housed here? Both collections are separated in blue folders (for all national and state parks) and green folders for the rock outcrop collections within the main collections. WCUH now contains over 27,000 pressed plant collections organized alphabetically by family, genus, and species. Regional collections of southwestern NC, northwestern SC and GA, and eastern TN represent the emphasized acquisitions. Some otherworld collections were obtained from Yunnan, China, Costa Rica, and Canada. Not yet organized is approximately 4,000 bryophyte and lichen specimens, many annotated by the late Drs. Lewis Anderson and William Culbertson at Duke University and by Dr. Jonathan Dey of Illinois Wesleyan University.

Established in 1953 with the construction of Stillwell Building, a major renovation of the herbarium facility was completed in 2008. Dr. Katherine Mathews assumed the directorship from retiring curator Dr. J. Dan Pittillo in 2005. Collections are maintained in oak cabinets with glass fronts, facilitating locating family folders. Cases are grouped in threes with adjacent table space for studies by visitors. An adjacent research room and a processing room provide support space for the collection. Student helpers are employed to assist with entering data into computers, mounting specimens, making repairs, freezing, packaging, etc.

Over the years exchanges have helped build the base collection. Student collections made up the bulk of the first few thousand and continued through the past decades. In the 1970-80's during the exchange with NCU at Chapel Hill, major additions were made from throughout the Carolinas and Florida. Dr. Jim Horton's research specimens for Polygonella added significantly to this group. Both Horton and Pittillo built the base collection of the rock outcrop collections in the late '60-70's. Pittillo and Tom Govus, then a graduate student, made collections for the Blue Ridge Parkway in a 1978 plant habitat project. In addition, the National Park Service discontinued their collections maintenance at Oteen and the plant and animal cases were moved to the Cooperative Parks Study Unit at WCU in 1975. Coweeta plant set collections by Pittillo and Martha Lee were deposited in duplicate at WCUH in 1983-84. Smaller additions were made from Dr. Tom Daggy's herbarium, Highlands Biological Station, and other universities. Natural Areas collections made by Pittillo added about half to the total holdings.

Contact Dr. Katherine Mathews, Director by email kmathews@email.wcu.edu or phone 828-227-3659 or 828-227, or write at Department of Biology, 132 Natural Science Building, Western Carolina University, Cullowhee, NC 28723.

Dr. Katherine Mathews (left to right) with students Catherine Kennedy and Theresa Sosby (Photo courtesy WCU Public Information Office).

WCUH Herbarium case with glass doors allows view of file folders. (Photo courtesy WCU Public Information Office).

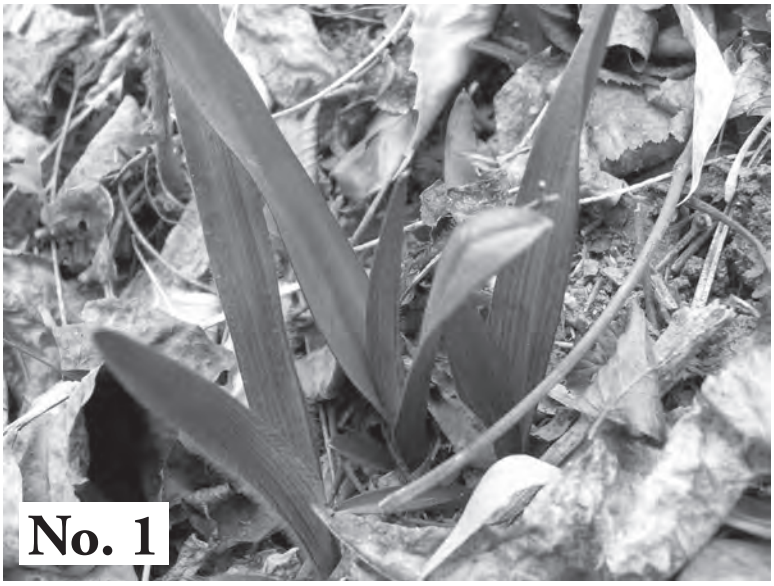
Mystery Plants

By Dan Pittillo

Volume 18 was a challenge to those that had seen the mystery combinations before or had kept their old newsletters because the images were for previously published ones. Pair 1: *Acer rubrum* and *Ambrosia artemisiifolia*, 2: *Arisaema triphyllum* and *Galax urceolata*, 3: *Laportea canadensis* and *Osmunda cinnamomea*, 4: *Packera aurea* and *Prenanthes* sp., and 5: *Toxicodendron radicans* and *Nyssa sylvatica*. The following got responded with Jill Templeton with 9 of 10 correct, David Taylor 8 of 10 correct, and Matthew Smith 2 correct. Thanks to you three. I wonder if the bot whizzes that didn't try to identify these could do any better? Or if there are "pack rats" out there that keep the old Chinquapin issues?

Wildflower gardeners learn to recognize their transplants lest they might pull them out as weeds. When the plants first emerge from beneath leaf litter, they usually don't have all the features of the older plants. The two here might be considered exceptions to those that differ as their rosettes. Number 1 often emerges with a purple tint, perhaps related to anthocyanins helping protect the cells from freeze damage. The species (sometimes given as two varieties) extends from NY southwest to Mo. and south to FL. Number 2 is wider spread into Canada and west to the Dakotas but north of Florida.

Rich Cove Forest. Herbaceous plants rush to complete life cycles under heat of full sun.



Hutchens, continued from Page 4

form, having no adaptations for the rapid elimina tion of water . . . The subject of drip tips is an illusive one and I hesitate to generalize too much. Drip tips must have value; otherwise not so many leaves would be equipped with such a mechanism. I recall that the buckskin jacket of the American Indians and early trappers were almost always fringed. These fringes, contrary to the usual assumption, were not merely decorative; in effect they were drip tips, aiding water to drip off quickly, without oaking the remainder of the clothing . . . Seated here on a boulder this mid-October afternoon, I watch the falling leaves sailing down like gayly colored confetti … Each gust of air brings down more leaves, and as I watch I see each kind sailing down in a characteristic manner. Usually I can identify a leaf by the way it falls, although the shape in which it dries before falling from the tree also influences the path it follows. In general, maple trees spiral downward, following a helical path; oak leaves zigzag in their descent, swinging from side to side in hurried movements; the leaves of the sycamores settle gracefully down, exhibiting but little lateral movement and do not spin … Each one by its shape is governed by the complexities of its aerodynamics."

Those wishing to contact George can do so at info@GeorgeEllison.com.

Joyce Kilmer Hemlocks Any More?

By Dan Pittillo

One of major casualties of the infestation of the hemlock woolly adelgid is the virgin trees of the Joyce Kilmer-Slickrock Wilderness Area in western North Carolina. The US Forest Service maintains the trails for the major visitor access in the lower portion of the Little Santeetlah Creek Basin. Other trails beyond are used by hikers and have yet to be treated as the lower basin area. In the lower basin because of the frequent visitor use that includes small children, the Forest Service decided to fell the trees near the main trail loops to protect the visitors from falling branches and trees during storms. The method used to fell the trees to mock a microburst or tornado pattern was use of dynamite charges tied to the lower tree trunks. The result was partially effective for felling the trees away from the trail but many had to be sawn by hand tools to clear the trail.

A few of us thought this might be an opportunity to follow vegetational succession of the larger openings along the trail and have set up a series of photo points. If we have enough interest and time, we may obtain quantitative records of the invading plants for the next several years.

While the huge trees are all killed and are in process of disintegration, a few scattered green leaves were observed recently on smaller trees. Will it be possible that a few trees manage to survive and continue to reproduce? Even more importantly, might the species have the ability to evolve with a resistance to the adelgids as has occurred in the past according to the paleoecological records? Only time will tell.

http://features.rr.com/article/0eZT2h1gQP32O?q=North+Carolina

Ragged tree stump (foreground) where dynamite charge was applied and trees cleared from trail in the distance. Photo by Dan Pittillo.

Return Service Requested

SOUTHERN APPALACHIAN BOTANICAL SOCIETY
DAN PITTILLO, INTERIM EDITOR
BIOLOGY DEPARTMENT, 132 NATURAL SCIENCE
WESTERN CAROLINA UNIVERSITY
CULLOWHEE, NC 28723

PRSTD. STD.
U.S. POSTAGE
PAID
ASHEVILLE, NC
PERMIT 575