

CHINQUAPIN

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Restoring Prairies in the North Georgia Foothills

By Linda Chafin

For the past year, I've devoted this column to "poster child" species of southeastern Piedmont Prairies: open, grassy, species-rich habitats that have largely disappeared from the Piedmont landscape since they were first described by Bartram and other early explorers. In this column, I'll report on a promising, long-term effort to restore prairie habitat in the foothills of the northeast Georgia mountains. Here, a confluence of mafic bedrock, steeply dissected topography, and wild and anthropogenic fire created a mosaic of open-canopied woodlands and grassy openings that were, by the early 1990s, on the brink of disappearing, threatening to take with them Georgia's few populations of the federally listed smooth coneflower (*Echinacea laevigata*).



Smooth coneflower (*Echinacea laevigata*)

Twenty years ago, smooth coneflower was known in Georgia only on a few stretches of roadside – their naturally open woodland habitat lost to fire suppression and pine plantations. Although hypothetically protected by their presence on the Chattahoochee-Oconee National Forest, the roadside plants were threatened by road maintenance, erosion, poaching, and low levels of reproduction.

About that time, Georgia Forest Watch, a volunteer group of conservationists and environmental watchdogs, noticed a high level of plant species diversity on the hillsides above the smooth coneflower road bank sites. Ben Sanders, then a Forest Service wildlife biologist, pointed out that the species diversity at these sites rivaled that of the famed cove forests in Georgia's Blue Ridge. And the diversity included prairie species – big and little bluestem grasses, Indian grass, white prairie-goldenrod, and curly-heads – suggesting that saving smooth coneflower was part of a larger picture of

protecting natural community diversity.

At the prompting of Forest Watch, the Georgia Plant Conservation Alliance (GPCA), an affiliation of conservation organizations and public and private conservation land managers coordinated by the State Botanical Garden of Georgia, added smooth coneflower to its first priority list. Heather Alley, now a Conservation Horticulturist at the Garden, but an eager graduate student at the time, collected seeds from the largest populations of smooth coneflower and grew them at the Garden's greenhouses. For two years, she transplanted seedling and adult plants into prairie restoration sites, noting which planting methods favored establishment.

As it turned out, survivorship was high for all of Alley's transplant methods: clearly bringing smooth coneflower back from the brink was possible. Her positive results encouraged horticulturalists, ecologists, and botanists with the Botanical Garden, U.S. Forest Service, U.S. Fish and Wildlife Service, and Georgia Department of Natural Resources to focus on restoring smooth coneflower's prairie habitat by re-introducing prairie species and, most importantly, fire.

Today, thanks to prescribed fire, Georgia's smooth coneflower habitats are easily recognized by the sparse canopy of blackjack oak and shortleaf pine that opens out into grassy, herb-rich patches. A fifteen-year collaboration between conservationists and land managers has resulted in what Alley calls a "crown jewel" of Georgia's plant conservation projects. It illustrates that the use of prescribed fire coupled with re-introduction of a suite of locally collected associates, both rare and common – such as, Georgia aster (*Symphytotrichum georgianum*), white prairie-goldenrod (*Solidago ptarmicoides*), and rattlesnake-master (*Eryngium yuccifolium*) – can restore plant communities to their natural structure and species composition. By first focusing on an emblematic endangered species and then widening the scope to include the restoration of a natural community, this project evolved into a model of Piedmont prairie restoration. The project also highlights the importance of collaboration among government, research, and private organizations to environmental success stories.

I'd long been skeptical about the translocation of rare plants into wild sites – worried by the possible lack of genetic variation in introduced plants, by gaps in our knowledge of individual species biology, by the pitfalls of single-species management, and by the potential of such projects to deflect money and energy from land conservation. The smooth coneflower–prairie restoration project and other GPCA efforts have made me an optimist. When the emphasis is on restoring both species diversity and essential ecological

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From The Editor's Desk:

J. Dan Pittillo, Newsletter Interim Editor

What a year for mild winter! Unless you are living outside the East, you have definitely not had as much expenses for your heating bills. In my solar home I'd been burning supplemental wood heat more frequently than others may have with their conventional heating systems. But this did not mean the weather has been calm. We've probably had more tornados than any year for winter. Certainly some folks have been convinced that tornados are extensively destructive as their homes and businesses have received the blunt of these and other severe storms.

With warmer weather, February has been more like March: winds and frequent rains. This is expected with climate warming and those sticking their "heads in the sand" and denying any warming taking place will have to live through the warming effects for the next few decades. Too many facts are pointing toward the warming to be directly related to increased greenhouse effect from elevated carbon dioxide and perhaps other atmospheric gas changes.

I do not recall in my seven decades a warmer winter, though in Hendersonville, N.C. it was warmer in the 1950's for some of the time. Has anyone living above 2,000 feet elevation seen red maple blooming in late February before? Interestingly, I'm observing the imported plantings such as Japanese cherries (*Prunus serrata*) and Bradford pears (*Pyrus calleryana*) already blooming here in early March, probably responding to air temperatures (and maybe warmer soils). Many of our native species, such as spicebush (*Lindera benzoin*) holding off until early March. Although some spring herbs

have appeared here in late February, such as leaves of trout lily (*Erythronium umbilicatum*), most others were holding a bit longer. I recall that last year the spring temperatures began abruptly in mid March and the flora appeared here some two weeks earlier than usual. We now have early spring warm weather and unless the freeze comes late, we will have a spring as dramatic as last year.

In this issue Linda Chafin and Alan Weakley get together to address rare plant habitats. As we all know, the habitat of a rare plant is the very important way that the species can survive, our seed saving and replanting notwithstanding. They begin with the question of what is also associated with smooth coneflower and how this habitat involves those species associated with the rare species.

George Ellison is the long-time contributor to this newsletter, beginning in day one 20 years ago. We certainly owe him a big 'thank you' for all the diverse bits of literature he has brought out of the archived sources for us. George has been a voluminous producer of writings for our region as he reigns from the shadows of Horace Kephart, that significant contributor in the establishment of the Great Smoky Mountains National Park. George has written widely about Kephart and now has introduced another Kephart book, *Smoky Mountain Magic*. It was my reading of Kephart's *Our Southern Highlanders*, introduced by George, that I came to realize I was of the valley culture instead of the more remote mountain culture that makes up those of us settling these southern Appalachian highlands. Certainly if you wish to understand the southern Appalachian settlers and their cultures, you need to read Ellison and Kephart.

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processes and when care is taken to protect local genotypes, entire plant communities can be brought back from the brink.

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Taxonomic Advisory!

A case study in Piedmont prairies and mafic barrens of how what we do and don't know about taxonomy affects conservation decision-making.

By Alan Weakley

Over the last several decades, there has been a growing appreciation of the biodiversity interest and importance of Piedmont communities which historically had an open, sparse, or absent canopy, presumably because of a complicated combination of one or more of the following factors: 1) shallow soils, 2) soils with shrink-swell-clays precluding vigorous tree growth, 3) lightning-set and human-set fires during the pre-European and post-European periods, and 4) other edaphic factors, such as periodic severe droughts, south- or southwest-facing steep slopes. These communities support unique vegetational assemblages, with many endemic and disjunct sun-loving taxa. With centuries of land-use changes affecting fire regimes, these communities have declined, almost to the point of invisibility, but careful studies in recent decades has brought a new focus on these communities, their dynamics, and rare plant taxa associated with them.

The degree to which taxonomic decisions impact real-life conservation is often underappreciated. Taxonomy is *important*; it fundamentally affects the decisions that government and private landowners make about the management of their lands, or even what lands to buy, “protect”, and manage for conservation. The following examples illustrate the kinds of information conservation practitioners would ideally have to make as optimal decisions in a world of limited conservation resources.

Acmispon helleri (Britton) Small, Carolina Prairie-trefoil

This name may be unfamiliar to many, but it is the best current judgment of the best name to apply to an annual bean that occurs in Piedmont prairies, glades, barrens, and nearby disturbed areas, from south-central Virginia south to northern Georgia. The consensus that has developed over the last 15 years is that North American species that have been placed in *Lotus* are not closely related to Eurasian *Lotus*, and thus North American segregate genera, such as Rafinesque's characteristically odd name *Acmispon*, have come

back into use. While the generic placement does not affect the conservation significance of this Piedmont endemic, its taxonomic rank might. It is clearly related to a group of taxa distributed in the Great Plains and on the western side of the Rocky Mountains; but taxonomists have differed as to whether our Piedmont plants represent a species, variety, or merely a form in relation to the more western plants. A separate, endemic species?; that catches the eye of conservation planners and the programmed circuitry of computer algorithms for conservation planning! A mere disjunct “race” or “form”?; not as impressive. A variety?; somewhere in-between. What is the reality?; we really don't know. Other names (and taxonomic interpretations) recently applied to this taxon: = *Lotus helleri* Britton; < *L. americanus* (Nuttall) Bischoff; < *L. purshianus* F.E. & E.G. Clements = *L. unifoliolatus* (Hooker) Benth var. *helleri* (Britton) Kartesz & Gandhi; = *L. purshianus* F.E. & E.G. Clements var. *helleri* (Britton) Isely; = *Acmispon americanus* (Nuttall) Rydberg var. *helleri* (Britton) Brouillet

Ruellia humilis Nuttall, Fringed Wild-petunia

Ruellia humilis occurs as a very rare disjunct east of the Blue Ridge; west of the Blue Ridge Mountains, it is widespread in the sedimentary rock landscapes from central Ohio to Alabama, Mississippi, and Louisiana, and even more abundant west of the Mississippi River in the eastern Great Plains. A curious thing about eastern populations though is that they are uniformly white-flowered, while in its main range, *R. humilis* is generally blue-

flowered, with occasional white “sports”. What should we make of this difference? A trivial fixation of white flower color in genetically depauperate eastern populations? A long-separate genetic lineage warranting taxonomic recognition as a semi-cryptic species,



Photograph by Julie P. Tuttle.

Solidago jacksonii × *ptarmicoides*, Granville Co. NC, with parents on either side.

but unstudied and unrecognized? We have the tools to assess the genetic differentiation, the likely time of separation, whether there are any correlated other morphological differences, etc., but no-one has yet done so.

Solidago jacksonii (Kuntze) Fernald, Southeastern Bold Goldenrod

This taxon is widely scattered across the southeastern United States in glade and barren habitats, but seems to be rare to uncommon throughout its limited distribution. It has been variously treated as a species, a subspecies, a variety, or as not taxonomically distinct from its more widespread and abundant relatives, *S. rigida* var. *rigida* and *S. rigida* var. *humilis* T.C. Porter. Because of its uncertain taxonomic status, this has not been a high profile conservation target, but recent studies by goldenrod expert and specialist John Semple (University of Waterloo) suggest returning it to specific rank, as treated by J.K. Small: *S. jacksonii* (Kuntze) Fernald. At specific rank, the Southeastern Bold Goldenrod

Weakley continued on Page 7

BOTANICAL EXCURSIONS

Describing Botanical Architecture

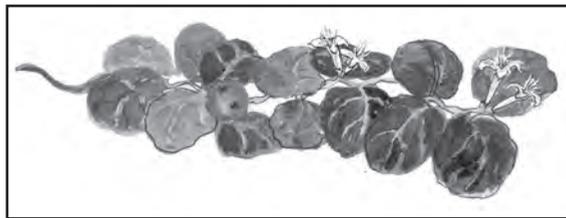
By George Ellison

In addition to this Botanical Excursions column, which I started writing at Dan's request in 1991, I have enjoyed writing a Nature Journal column for the Asheville Citizen-Times (since 1988) as well as a Back Then column for Smoky Mountain News (since 2000), a regional newsmagazine published in Waynesville NC. In not a few of the columns I have attempted to describe the flora of the Smokies region where I live.

I have learned that describing the "botanical architecture" of trees, flowers, fruits, etc., can be tricky business. Drafting a "sketch" in words that the common reader can "visualize" isn't always as easy as falling off a log. And I have also learned that when describing wildflowers the temptation is to employ too many superlatives (wonderful, exquisite, beguiling, etc.) while at the same time doing justice to the matter at hand. Through the years many of my attempts have fallen flat. Here are some I think are okay. I hope they will remind you of your own encounters with these plants and be a reminder to always take "a close look."

What we watch for in winter are the less obvious evergreens that brighten the leaf-litter on a slushy winter day: rattlesnake plantain and crane-fly orchid (orchid species that display their leaves only in winter); pipsissewa and wintergreen (two upright partially-woody plants sometimes described as "sub-shrubs" because of their diminutive stature); and trailing arbutus and partridgeberry (two prostrate plants sometimes described as "creepers" because they don't climb like true vines).

Partridgeberry (*Mitchella repens*) can spread over fairly large areas, carpeting roots, small rock outcrops, and stumps. In winter the opposite dark-green oval leaves with their yellowish-green veins make



Partridgeberry (*Mitchella repens*).

a pleasant sight. In May and June four-lobed lilac-scented white flowers appear. Closer observation reveals interiors clothed with velvety white hairs. Note that the ovaries of each pair are fused. These produce a red (rarely white) berry composed of two equal parts. In winter you can readily observe two sets of sepals on the end of each berry.

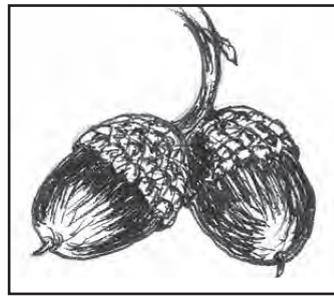
Trailing arbutus is an evergreen subshrub. The ovate leathery dull-green



Trailing arbutus (*Epigaea repens*)

leaves are blunt-tipped, displaying distinctive wavy edges. I often find it growing alongside galax, which has a papery shiny-green round leaf. Delve under the arbutus leaves and surrounding leaf litter so as to expose the clusters of from six to ten flowers. Each will be tubular shaped and up to a half-inch long before expanding into five waxy lobes. They are white to pale pink after first blooming—but the pink intensifies with age. In order to attract insects for pollination purposes, trailing arbutus is among the most fragrant of our flowering plants. I don't have a very keen sense of smell; nevertheless, I often detect the fragrance before I locate the plant.

In a mischievous mood, Thoreau hailed them as "plump fellows." But acorns are elegant, one of our most satisfying tactile and visual



Oak (*Quercus* sp.)

natural structures. They are sometimes produced in such numbers that we tend to take them for granted. I try each year to remind myself to gather a handful from each of our species. You can't help but admire the economy of form. The rough-textured cap is an enlarged and stiffened version of the small overlapping leaves that protected the female flower

before it blossomed. The smooth-textured nut is the flower's ovary, grown large and hardened into a protective shell around the single seed within.

Growing in the dappled shadows of rich woodland borders and openings, black cohosh seems to illuminate the forest when its long white-flowered candelabra-like stalks bloom in mid-summer. You probably know black cohosh when you see it, but you may not be aware there is a similar species here in the Smokies region. Both display leaves divided into numerous egg-shaped or oblong sharply-toothed leaflets. The flowers are mostly composed of fluffy stamens. The most common species (*Cimicifuga racemosa*) is the one known as black cohosh. It has ill-scented flowers that bloom from early June into August. These bear a single (female)



Black cohosh (*Actaea racemosa*)

pistil. The other species (*Cimicifuga americana*) is sometimes called false bugbane. Its flowers, displayed from August into September,

Bloodroot (*Sanguinaria canadensis*)

are not ill-scented. Each bears three or more pistils.

Bloodroot (*Sanguinaria canadensis*) is surely one of our most widely admired wildflowers. Notice how the lobes of the kidney-shaped leaf encircle the fragile stem even after the flower has blossomed. This is a structural mechanism that protects and stabilizes the stem and flower during times of high wind or even from falling branches.

The leaf also has the ability to tilt from a horizontal to a vertical position so as to most directly capture energy-giving sunlight. After the flower has withered and the canopy closes in overhead, bloodroot leaves expand and become much rounder and larger. Leaves as large as 12 inches across are sometimes encountered. This growth habit allows the plant to continue processing sun light in an effective manner even when growing in shaded conditions. To my eyes, bloodroot plants display combinations of color and symmetry that are aesthetically pleasing. The light green leaf perfectly accentuates the pearly-white petals and golden-yellow stamens. The number of stamens (16-24) is almost always exactly twice that of the petals (8-12).

Occurring along the banks of most streams, shrub yellowroot (*Xanthorhiza simplicissima*) is quite common here in the Smokies region. Look for a plant about eight to twenty-four inches high that resembles a miniature palm tree in that all the leafy green growth

is at the top of stem. The flowers emerge as graceful drooping racemes about three inches in length. Each flower consists of five purplish-brown sepals (no petals) about a half-inch in diameter. The most distinctive feature of the flower is the bright yellow dot in its center. This is the pollen used to attract insects. Wherever you find one yellowroot plant, look around for others. They almost always form colonies with extensive intergraded root systems. These help the plant maintain a foothold when flooded. Another flood-disaster prevention feature is a bare flexible stem that offers little resistance to raging water. And the yellowish follicles or fruits produced in summer disperse seeds that float away on inflated capsules. Scrape some bark off the stem at ground level with your fingernail and you'll see that that genus designation is perfect ("*Xanthorhiza*" translates to "yellowroot").



The tissue under the bark is a bright yellow hue that rivals the color of fine butter. Cherokee women have for ages used pulp rendered from the plant to obtain the yellow dye used to tint the wooden splints they weave into traditional baskets.

Ed. Note: *Cimicifuga* has now been combined within the genus *Actaea*. George Ellison can be contacted via www.georgeellison.com.]

What's New in Botany

UNC Asheville connection with Guyana

With this Google request term, one of the early listing was a connection of one of our instructors at UNC-Asheville, H. David Clarke, who has been spending over a decade in Guyana in eastern South America and he and colleagues have made their report in a Smithsonian contribution that is available as a PDF file on the internet (see below). They have turned up many new species, not just to the area but to science. Trees were sampled from the canopy by climbing with leg spikes to obtain samples. David took students from UNC-A on some of the collecting trips, giving them botanical experience far different than one might have in our East. I'm sure this is a fascinating experience for all, as we don't have any likely new species to be found in our region.

Gilboa Ancient Forest in New York

A recent *Nature* report, by Herbert Stein and team members, report a significant find of recent investigations of the Devonian limestone deposit in Schoharie County, NY (see below). The inves-

tigative team has added new knowledge to ancient forest composition and some probable effects of climate by the ancient species making up this forest. Not only are the dominant ancient seed ferns (*Eospermateris* sp.) present but also members of clubmosses (Class Lycopsida). "The complexity of the Gilboa site can teach us a lot about the original assembly of our modern day ecosystems," said Stein. "As we continue to understand the role of forests in modern global systems, and face potential climate change and deforestation on a global scale, these clues from the past may offer valuable lessons for managing our planet's future."

Source:

ScienceDaily (Mar. 1, 2012) <http://www.sciencedaily.com/releases/2012/03/120301102716.htm>

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William E. Stein, Christopher M. Berry, Linda VanAller Hernick, Frank Mannolini. Surprisingly complex community discovered in the mid-Devonian fossil forest at Gilboa. *Nature* 2012; 483 (7387): 78 DOI: <http://dx.doi.org/10.1038/nature10819>

One Flowered Broomrape

Lytton John Musselman, Old Dominion University

The genus *Orobanche* (and its segregates) consists of perhaps 150 species reaching its greatest diversity in Mediterranean climates. The translation of the Latin name is approximately “bean strangler” because of the severe damage done to various legume crops, a pathology long known and recorded by the ancient Greeks. Broomrape, the common name given to the genus as a whole, is based on the host preference of several European species for Broom, *Genista* species. All Broomrapes lack chlorophyll and are therefore entirely dependent upon their host for all their water and photosynthates. For this reason a heavy infestation causes great losses to crops.

The most serious species are *Orobanche ramosa*, *O. crenata* and *O. cumana* all of which produce large numbers of flowers on the leafless stems. Like so many serious weeds, they have been widely spread. *Orobanche ramosa*, for example, is now found on five continents and much to my surprise even turned up in urban Norfolk, Virginia. *Orobanche minor*, an Old World native that can be a problem on tobacco and seed clover, has also been introduced and I have studied populations in the mountains of Virginia and North Carolina. I plan to cover introduced species in a future article. All foreign Broomrapes are federally quarantined weeds and for good reason. I have seen fields of tobacco, tomato, broadbean, eggplant, sunflowers, and other crops destroyed by broomrapes in the Middle East and Eastern Europe.

However, our single native species in the Southern Appalachians is much different—more charming than threatening. *Orobanche uniflora*, also known as *Aphyllon uniflorum*, is a widespread but furtive spring flowering plant of moist woods, flowering in the early spring. Often the flowers are covered by

leaf litter and difficult to see. As the name implies, this attractive parasite has a single flower that arises from a tubercle-like structure that includes the haustoria attached to the host plant. A single tubercle apparently can produce numerous flowers.

One Flowered Broomrape is usually described as an annual though monocarpic may better describe its life history if it is like some of its relatives that flower once than die. It is not unlikely that this species can also perennate for some time without flowering.

The floral biology of *O. uniflora* deserves further study. The flower structure is quite different from the pathogens discussed

above and is one of the reasons that it is put into a separate section of the genus. *Orobanche uniflora* has spreading petals, not as narrow and tubular like many other species. I wonder if it is autogamous as several other broomrapes. Likewise, we know nothing about germination. I have not been able to germinate it but have not tried some of the powerful parasitic plant germination stimulants including strigolactones which have had efficacy on many members of the Orobanchaceae. And little is known about host range. One Flowered Broomrape is not fastidious regarding host selection though in the mountains of Virginia and North Carolina I associate it with Heart Leaf Aster, *Aster cordifolius* (also known as *Symphotrichum cordifolium*).

In the 1990's I was asked by the Plant Protection and Quarantine of the United States department of Agriculture to investigate populations of a “new” broomrape in southern Georgia. It turned out to be *O. uniflora*. The parasite was appearing over a large area

where it had not previously occurred. The host was Brazilian Cat's Ear, *Hypochaeris brasiliensis*, an introduced member of the Aster Family. The Georgia populations were an interesting twist on what I had usually observed in many years of studying parasitic plants: a parasite is brought to a new area and becomes a pest. Witchweed, *Striga asiatica*, introduced to the Carolinas is a good example. But in the case of the One Flowered Broomrape, it was the host that was introduced and the indigenous parasite was expanding.

It is always a treat to see the delicate, light blue flowers of this native broomrape because it is so easily overlooked and because of its parasitic nature. While it has obnoxious kin, it is an attractive addition to the otherwise sparse understory left after the passing of the spring ephemerals.

Flowering shortly after One Flowered Broomrape is Squawroot, *Conopholis americana*, which I will discuss in the next issue of Chinquapin.



One Flowered Broomrape (*Orobanche uniflora*) flower.



One Flowered Broomrape (*Orobanche uniflora*) plant with several stems.

Mystery Plants

By Dan Pittillo

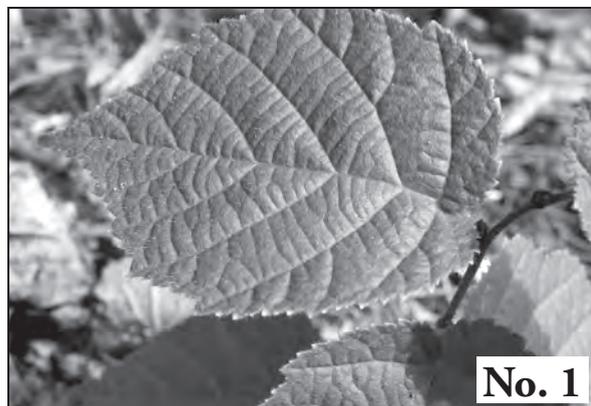
The correct identifications for 19(3) were *Liriodendron tulipifera* and *Quercus falcata* and for 19(4) *Lindera benzoin* and *Carya alba*. Actually I decided to disregard *Lindera benzoin* from the virtual project because it was not among the list given. During the past year, 14 individuals sent in identifications: Michael Breiner, Judy Dumke, Richard Figlar, Katherine Gregg, Georgia Hall, Mark Johns, Chris Lea, Eva Pratt, Sam Pratt, Paul Rothrock, Elizabeth Scherrer, Greg Schmidt, Scott Slankard, David Taylor, Jil Templeton, and Richard Ware. The winner of the most was David Taylor with Greg Schmidt close behind. Congratulations to David this year.

For the next series of plant identifications, let's continue the little virtual project for an actual site. Suppose, you are asked to do an identification of virtual images for a client that wants to see what might be the future dominant species of an area after a storm. Many of our members are qualified to do this, even from distant locations, as has been demonstrated by many that have been able to identify rather cryptic photos in these pages over the years. But to make this little project easier for some others that have not tried to do this, let's see what you can do

with this effort over the next few issues. I would like to award the best virtual identifier with the "Mystery Plant Award," a copy of the beautifully illustrated and detailed guide, Timothy Spira's *Wildflowers & Plant Communities*. The identifications should get somewhat easier as the list of species narrows for the project. 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. This summer I had the final standing log cut and removed along with the second branch of that I'm sawing up for firewood (actually I'm mixing it with hardwood for better burning in our stove). 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 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*.



Both these seedlings were found growing in the site. See if you can identify No. 1 and No. 2.

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would probably warrant a "G3" conservation rank, rangewide, attracting greater conservation attention in many states. Irrespective of taxonomic rank and conservation attention, we have rather been "there and back again", or "there and back again, and then again, there and back yet again" regarding generic status of this taxon and its relatives. They were early treated as *Solidago*, Small treated them in *Oligoneuron*, they were then shifted into *Solidago*, morphological and molecular evidence suggested their re-segregation into *Oligoneuron*, but then the documentation of hybridization between *Oligoneuron* (or section *Ptarmicoides*) and other taxa in *Solidago* (*sensu stricto*) shifted the consensus again to treatment as *Solidago* (albeit the most basal subclade within *Solidago*). *Solidago rigida* does hybridize with co-occurring *Solidago ptarmicoides* (previously often treated in ei-

ther *Aster*, *Oligoneuron*, or *Solidago*), cementing the correct understanding of that taxon as a *Solidago* and close relative of the *Solidago rigida* complex (see Figure 1.)

Phemeranthus piedmontanus S. Ware, Piedmont Rock-pink

Following Harry LeGrand, Jr.'s, discovery of an odd fameflower or rock-pink at the Butner (NC) Diabase Glade, it took a while to determine if this was an odd northern extension of *Phemeranthus mengesii*, or a new species. The discovery in Virginia of extensive populations of the same plant clarified the matter, and it was recently named *Phemeranthus piedmontanus* S. Ware. Now that it is formally named, conservation ranks can be assigned, and *P. piedmontanus* becomes one of the rarest and most imperiled species of plants (Heritage ranked as G1) with only a

few populations, some of which (including its original discovery location) are imperiled.

Marshallia species novum, Tall Barbara's-buttons

Another novelty from Piedmont mafic rock barrens of north-central North Carolina and south-central Virginia is a puzzling *Marshallia*, showing some affinities to *M. obovata* var. *obovata*, *M. grandiflora*, and *M. mohrii*, yet differing significantly from each of these taxa. Once named (in the next two months), this will become another G1 (critically imperiled) species, known from only a few sites, the Picture Creek Diabase Barren in Granville County, North Carolina, and the Difficult Creek Natural Area Preserve in Halifax County, Virginia. As a G1 species, this *Marshallia* will become the conservation

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Student Awards Reminder

The Southern Appalachian Botanical Society is pleased to announce two awards for students: the SABS Outstanding Student Poster Award and the SABS Outstanding Student Contributed Paper Award. These will be presented at the Association of Southeastern Biologists annual meeting in Athens GA, in April 2012. SABS convenes as one of the affiliate organizations at this meeting. Anonymous judges will assess the posters and talks. Each award includes an honorarium of \$150.00, and the winners will be announced at the ASB banquet.

Questions may be directed to Dr. Ed Lickey at elickey@bridgewater.edu.

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Photograph by David Blevins.

Marshallia species novum, Granville County, North Carolina.

potential to spread and occupy changed, more general habitats?

References cited

- Ware, S. 2011. A new *Phemeranthus* (*Portulacaceae*) from the Piedmont of Virginia and North Carolina. *J. Bot. Res. Inst. Texas* 5: 1-7.
- Figure 1 caption: Figure 1. *Solidago jacksonii* × *ptarmicoides*, Granville Co. NC, with parents on either side. Photograph by Julie P. Tuttle.
- Figure 2. *Marshallia species novum*, Granville County, North Carolina. Photograph by David Blevins.

“rank-carrier” for the sites in which it occurs, and a major focus for management and monitoring activities.

While the scientific community has made significant progress in understanding the dynamics of these communities, and the unique species associated with them, much remains to be learned. How many additional endemic taxa await discovery? How old are these taxa; are they recent offsprings from more widespread taxa or older relicts? How and when did the many disjuncts from drier, prairie habitats to the west arrive in these sites? Were they once widespread? How much genetic differentiation do they show from their more western relatives? If conditions in the southeastern United States become once again hotter and drier, do these now restricted species have the

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