

# CHINQUAPIN

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## The Puzzling Piratebush

By Lytton Musselman,  
Old Dominion University

Few shrubs of the Southern Appalachians have captured the imagination of botanists like the Piratebush, *Buckleya distichophylla*. The source of the so-called common name, Piratebush, is a mystery to me—perhaps it refers to the predatory nature of the plant which depends on parasitic attachments to hosts. Like all parasitic angiosperms, *Buckleya* produces a haustorium, a root modified for invasion of a neighboring root and withdrawal of water and nutrients.

The haustorium of *Buckleya* has distinct flaps (see image) which enfold the host root while from the center of the haustorium an invasive peg develops providing vascular continuity between host and parasite.

It is this parasitism which has stimulated so much interest in this Southern Appalachian endemic. For some time it was assumed and often repeated in the literature that *Buckleya*, the common name I prefer to use, was restricted in its parasitism to hemlocks. This is not surprising as *Buckleya* is associated with hemlocks at most sites and does parasitize the roots of both Eastern and Carolina hemlocks (*Tsuga canadensis* and *T. caroliniana*). But *Buckleya* is not restricted to these trees as hosts.

One of the largest populations of *Buckleya* is at the Poor Mountain Natural Area Preserve near Roanoke, Virginia where the shrub is abundant even when hemlocks are not nearby. The shaley slopes are similar to other sites where I have seen *Buckleya*. Like many

parasitic plants, *Buckleya* is adapted to areas with natural disturbance. I wonder if there is a role for fire in the plant's biology.

The shrub has many stems and a scraggly appearance. Leaves are small and arranged opposite one another (see illus.), hence the species name, *distichophylla*.

In such sites pines are often common, including Table Mountain Pine, *Pinus pungens*, and Virginia Pine, *Pinus virginiana*. This is interesting as *Buckleya* is the alternate host of the Eastern Gall Rust, *Cronartium cerebrum* which attacks Virginia Pine (see image). Since *Buckleya* is so limited in its distribution the rust is of little economic importance.

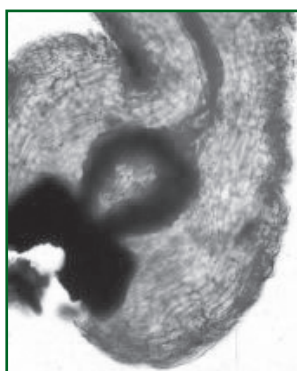
The species is dioecious and it is easy to find flowering shrubs of both species in April. Since the pistillate flower has a conspicuous nectary I assumed that insects were involved in pollination. Patient observation showed numerous soldier beetles visiting flowers of both sexes. Fruits are produced in the early autumn.

These fruits are one seeded and readily germinate without any host influence. Despite their size and apparent stored food, I have never seen animals moving them. Living on steep, talus slopes, these fruits may enable the establishment of the seedling while searching for a host. I have grown seedlings on a variety of hosts, both gymnosperms and angiosperms, where they thrived for a year in pots. *Buckleya* is frequently grown in botanical gardens. In fact, the oldest plant in the Arnold Arboretum of Harvard University is a large, prospering *Buckleya* shrub.

Recent studies in the Santalalean complex of families has led to re-alignment of the four genera of our region once placed in the Santalaceae (*Buckleya*, *Comandra*, *Nestronia*, and *Pyrularia*). Under this strongly supported system, *Buckleya* would be placed in the Thesiaceae.



A nearly mature fruit of *Buckleya* infected with Eastern Gall Rust.



Haustorium of *Buckleya* removed from the host root (bottom left), the darkened area (L) is the remains of the host root bark. The horseshoe shaped structure is the vascular core of the haustorium.



*Buckleya* shrub. Accuminate, opposite (= distichous) leaves.

(Lytton Musselman photos [L,C]; Dan Pittillo [R])

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## From The Editor's Desk:

J. Dan Pittillo, Newsletter Interim Editor

We continue with Alan Weakley's thought provoking thinking in taxonomy as well as the other three columns by George Ellison, Linda Chafin and Lytton Musselman. Alan's question of whether there is any more species names to be applied, in many cases for more careful observations are something that I'd like to see some responses to Alan and us members. George Ellison's continuation of a review of authors is something you might like to save for references. Rare plants that Linda Chafin describes will be another look for potential conservation efforts that will be of value to those working in the E&T studies. And Lytton Musselman gives us some deeper insights into the interconnectedness of the parasitic or semiparasitic species. I think you will agree this is a very valuable labor by our fine thinkers.

Climate change or global warming, whatever you call it, seems to be pronounced in our recent weather reports. I suppose some of these weather extremes are not all considered record-breaking but certainly there are a lot of extremes cropping up in various places of Earth. Even here in the heart of the Southern Appalachians we have seen some recent storm impacts. A straight-line storm or perhaps "twister" passed near my home in Sylva and Cullowhee, breaking and even twisting down trees, smashing several automobiles and home roofs in the process. I got to experience this on the road returning from the grocery store just as the storm struck. Those of us lucky enough not to receive this devastation suffered through a few days of life without electricity. Some of us with small generators were able to keep our frozen food cold enough to prevent spoilage but there were a lot of folks going to the local restaurants, delis, or dragging out the camping equipment. In no way was this comparable to the devastation of the tornadoes that struck the South and Midwest this spring. Let's hope that those same families enduring that devastation will not have to face the same thing with hurricanes that may take place later this summer.

## Southern Appalachian Botanical Society New Members 2011

You joined one of the more diverse regional botanical organizations in the country and we hope we can share some interesting insights into the botanical world with each other. Let us hear from you in these pages!

Edward Alverson  
Joseph Moosbrugger  
Emily Blyveis  
Dustin Neufeld  
Conrad Blunck  
Michele Paladino  
Stephen Brewer  
Devin Rodgers  
Nathan Daniel  
Steven Rolfsmeier  
Danielle Floyd  
Scott Slankard  
Thomas Earl Hancock  
Barry Snow  
Megan Henderson  
Clint Springer  
Ethan Kauffman  
David Walker  
Lucy Lowe  
Margot Wallston  
Hal Massie  
Paige Waymer

## Book Corner

Bruce A. Sorrie contributes one of the first Southern Gateways Guides of UNC Press begun this spring with **A Field Guide to Wildflowers of the Sandhills Region**. Sorrie, Bruce A. 2011. UNC Press, Chapel Hill. 378 p. ISBN978-0-8078-3466-4 (cloth: alk. paper; also available pbk: ...8078-7186-7). The narrow strip of the Sandhills Region innermost of the Coastal Plain is very diverse with wildflowers as well as ferns, graminoids, shrubs and trees that are generally not included in the nine habitats ranging from Longleaf Pineland to Roadsides and Disturbed Ground. Flower color photographs and in some cases fruit photos range from white to yellow, pink or red, blue and brown or green in each of the habitats. Over 600 species are included.

## Carolina Prairietrefoil: Memento of Piedmont Prairies

By Linda Chafin

Once scattered widely across the region, southeastern Piedmont prairies – herb-dominated upland communities – persist into this millennium largely as human clearings. Where pastures, powerline rights-of-way, railroad embankments, and roadsides intersect with mafic bedrock-derived soils, remnant patches of prairie vegetation hang on. Long gone are the “large savannas” and “spacious plains” mentioned by early explorers of the Carolina Piedmont. So invisible has this plant community become that it is absent from most of the older treatments of Piedmont natural communities (Wharton 1978, Barry 1980, Godfrey 1980). In Schafale and Weakley’s 1990 North Carolina communities classification, prairies are subsumed under “xeric hardpan forest.” More recent books, e.g. *Guide to the Wildflowers of South Carolina* (Porcher and Rayner 2001) and the upcoming *Guide to the Natural Communities of Georgia* (Edwards et al. in press) treat prairies as a natural community in the Piedmont.

Any one of several rare plant species could serve as a poster child for this nearly extirpated natural community, including the federally listed Schweinitz’s sunflower (*Helianthus schweinitzii*), smooth coneflower (*Echinacea laevigata*), and Michaux’s sumac (*Rhus michauxii*), and the similarly rare Georgia aster (*Symphotrichum georgianum*) and Carolina prairietrefoil (*Lotus helleri*). Several of these species may occur together at some prairie sites. I’ll be addressing each species in turn in this column during the coming year.

Carolina prairietrefoil (*Lotus helleri*) goes by several different common names—bird’s-foot trefoil, Carolina trefoil, Carolina birdfoot-trefoil, Heller’s bird’s-foot-trefoil—and even a “new old” botanical name, *Acmispon helleri*. In every state where it has been documented, its numbers are low and getting lower. Georgia has only one extant population, hanging on by a thread in a churchyard. South Carolina has no currently tracked populations. About four populations are extant in Virginia. North Carolina wins the prize, with about 58 populations confirmed in the last 20 or so years, but nearly 40 others have disappeared.

Carolina prairietrefoil is an annual with leaning or trailing stems up to 30 inches (75 cm) long. Most of its leaves have three narrow, pointed leaflets less than  $\frac{3}{4}$  inch (1.8 cm) long and  $\frac{1}{4}$  inch (0.5 cm) wide; the uppermost leaves have only one leaflet. The axillary flowers, held on long petioles, are also diminutive, less than  $\frac{3}{8}$  inch (0.8 cm) long, with a pink, erect banner petal and two pink wing petals enclosing a yellowish keel petal. The fruit is a narrow legume up to  $1\frac{3}{8}$  inches (2 – 3.5 cm) long. *Lotus helleri* is a close relative to the midwestern *Lotus unifoliolatus* and has been treated as a variety of that species.

As with most members of the pea family, *Lotus helleri* flowers are pollinated by bees, which are attracted by a showy banner petal that points to a nectar offering. However, the pollination mechanism in *Lotus* differs from most papilionaceous flowers, where bees typically force the wing and keel petals apart and are dusted with pollen while they search for nectar. In *Lotus*, pollen accumulates in the end of the keel petal; when the wing petals and keel petal are weighed

down by a bee, a sticky ribbon of pollen is forced out of a hole in the tip of the keel and onto the underside of the bee.

Researchers in the Plant Conservation and Research Program at the State Botanical Garden of Georgia have been monitoring Georgia’s single population of *Lotus helleri* for years. They’ve noticed that the seeds are rapidly eaten by animals and that the numbers of plants fluctuate widely from year to year. In an effort to

create a consistent seed source that can be tapped for prairie restoration projects, they have successfully propagated *Lotus helleri* ex situ. Potted plants seem to thrive best in part sun and high moisture soils and when offered a screen for support. Ex situ germination levels hover around 50%, and plants readily flower and set seed in an outdoor propagation facility.

Many Piedmont prairie species, including *Lotus helleri*, occur in Enon, Iredell, and other soil types that formed over diabase, diorite, gabbro, and other mafic rocks. These soils support post oak and blackjack oak woodlands which often retain a savanna-like aspect even in the absence of fire and probably represent the original habitat for this species. However, most *Lotus helleri* populations are found currently in clearings where mowing reduces woody competition but also poses a threat to seed production if not timed to the plants’ life cycle. As an annual, *Lotus helleri* is entirely dependent

on seed production for survival. For North Carolina populations growing in mowed areas, Masson and Stucky (2008) recommend mowing in May, when mower blades would pass over the immature plants, and again in mid- to late September to disperse seeds. Efforts to identify, restore, and ecologically manage Piedmont prairies are underway in Georgia and North Carolina; developing propagation and management protocols for *Lotus helleri* will contribute to the success of these projects.

Barden, L.S. 1997. Historic prairies in the Piedmont of North and South Carolina, USA. *Natural Areas Journal* 17: 149-152.

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Godfrey, M.A. 1980. *A Sierra Club naturalist’s guide to the Piedmont*. Sierra Club Books, San Francisco, California.

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Proctor, M., P. Yeo, and A. Lack. 1996. *Natural history of pollination*. Timber Press, Portland, Oregon.



# BOTANICAL EXCURSIONS

## HORACE KEPHART (1862-1931): OUTDOORSMAN & NATIONAL PARK ADVOCATE

By George Ellison

Horace Kephart was born in East Salem, Pennsylvania. His ancestors had been among the first settlers west of the Susquehanna. Their strenuous do-without but colorful pioneering experiences in central Pennsylvania were the core of the family's traditional lore and became an enormous influence in his life.

While attending Boston University, Kephart discovered "the blessed privilege of studying whatever I pleased in the Boston Public Library" and enrolled in the graduate school at Cornell University in Ithaca, New York. In 1886, he accepted a position at Yale College as an assistant librarian, and the following year married Laura Mack of Ithaca. Having developed an intense interest in American frontier history, he assumed, in 1890, directorship of the St. Louis Mercantile Association, "the oldest library west of the Mississippi." There he built one of the finest collections of Western Americana then in existence and became a frequently consulted authority in that field as well as upon topics such as book classification and cataloguing.

The Kepharts settled into a pattern of respectable nineteenth century domestic life. By the late 1890s, however, his aspirations underwent drastic revision. He became increasingly disillusioned with most facets of his life. A serious drinking problem emerged that became chronic. He drifted away from former friends and began to make extended solitary excursions into the Ozark Mountains and the Arkansas swamps.

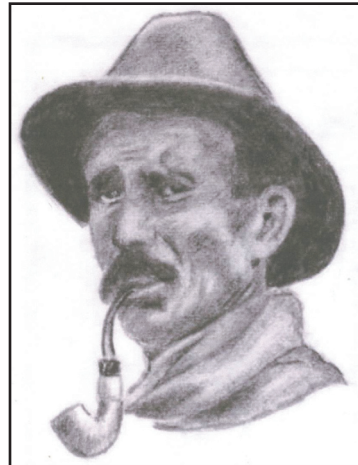
After Kephart was forced late in 1903 to resign from his position at the library, Laura took their six children back to her family home in Ithaca. In late March 1904, he was hospitalized after suffering what was described as "a complete nervous collapse." There were newspaper reports indicating that—prior to being hospitalized—Kephart wrote a note threatening to end his life. His father, Isaiah Kephart, came to St. Louis and accompanied his son to the family home in Dayton, Ohio.

Kephart became increasingly preoccupied with the notion of forging a literary career while living in a setting similar to the one experienced by his pioneer ancestors. He anticipated that residing in and writing about such a place and its people might become part of a healing process. In an autobiographical essay published in 1922, he recalled that he came "to western North Carolina looking for a big primitive forest . . . Knowing nobody who had ever been here, I took a topographic map and picked out on it . . . what seemed to be the wildest part of this region; and there I went. It was in Swain County, amid the Great Smoky Mountains, near the Tennessee line."

Kephart arrived by train in Asheville in early August 1904. Shortly thereafter, he established a base camp near Dillsboro, a village adjacent to Sylva, North Carolina, about fifty miles west of Asheville. In October, he ventured up Hazel Creek—the largest stream on the North Carolina side of the Great Smokies—and discovered the remote "Back of Beyond" settlement for which he had been searching. A copper mining company that had gone into litigation gave him permission to

use one of its abandoned cabins. That site on "the Little Fork of the Sugar Fork of Hazel Creek" became the vantage point from which he studied the land and its people for three years.

Kephart became preoccupied with living efficiently in this remote setting. His reports regarding these experiences were published in outdoor magazines. By 1906, he had compiled enough material to put together the first edition of *The Book of Camping and Woodcraft; A Guidebook for Those Who Travel in the Wilderness*, published by the



Drawing of Horace Kephart by Rodney Ramsey

Outing Publishing Company in New York. An expanded two-volume edition appeared in 1917, and in 1921 it came out in a hefty "two volumes in one" format as *Camping and Woodcraft: A Handbook for Vacation Campers and for Travelers in the Wilderness*. In the process of expansion and revision, it became a compendium of anecdotes, recipes, adventures and practical advice that remains remarkably useful and readable.

In time, Kephart also entered into the lives of the two hundred or so residents of the

Hazel Creek watershed. Journal entries he made under countless subject headings recorded details about almost every aspect of their lives.

Kephart left the Great Smokies in 1907. When he returned in 1910, he chose not to settle on Hazel Creek, where logging operations had commenced. From late 1910 until his death in an automobile accident in 1931, he made his home in Bryson City, North Carolina.

The Outing Publishing Company issued the first edition of *Our Southern Highlanders* in 1913. The Macmillan Company reprinted that text in 1921, then published a true second edition in 1922 that added three new chapters. Based to a great extent on firsthand observations recorded in his journals, it has had enduring popularity as a lively portrayal of the lives, places and adventures it described.

The Great Smoky Mountains National Park wasn't officially founded until 1934, three years after Kephart's death. But he died knowing it was going to be a reality. Since the early 1920s he had devoted much of his time and energy to the national park movement, joining forces with the Japanese photographer George Masa. Kephart wrote magazine and newspaper articles articulating the national park concept that were illustrated by Masa's powerful images.

Two months before his death in an automobile accident, the U.S. Geographic Board designated a 6,217-foot peak traversed by the Appalachian Trail several miles northeast of Newfound Gap in the Smokies as Mount Kephart—an unprecedented honor previously reserved for individuals only after their deaths.

His public explanation for the long years devoted to the park movement was to the point: "I owe my life to these mountains and I want them preserved that others may profit by them as I have."

Kephart is the writer most closely associated in the national consciousness with the Great Smoky Mountains National Park. His

Camping and Woodcraft is established as one of the cornerstones of American outdoor writing. The place of Our Southern Highlanders as one of the classics of both southern Appalachian and American regional literature is secure. His posthumously published novel, Smoky Mountain Magic (2009), evokes the life, lore, and landscapes of the pre-park Great Smoky Mountains circa 1926. These selections from Kephart's three major works demonstrate his characteristic prose—vigorous, sharply honed and anecdotal—as well as his attachment to the intricate landscapes of his adopted homeland.

#### Quoted from *Camping and Woodcraft*

*From the autumn of 1904 . . . I lived, most of the time, alone in a little cabin on the Carolina side of the Great Smoky Mountains, surrounded by one of the finest primeval forests in the world. My few neighbors were born backwoodsmen. Most of them dwelt in log cabins of one or two rooms, roofed with clapboards riven with a froe, and heated by hardwood logs in wide stone fireplaces. Many had no cooking-stoves, but baked on the hearth and fried their meat over the embers.*

*Nearly every man in the settlement was a skilled axeman and a crack shot. Some of them still used homemade muzzle-loading rifles with barrels over four feet long. Some of the women still worked at homemade spinning wheels and looms. Coonskins and ginseng passed as currency at the little wayside stores. Our manner of life was not essentially changed from that of the old colonial frontier . . .*

*To one coming from cities, it was a strange environment, almost as though he had been carried back, asleep, upon the wings of time, and had awakened in the eighteenth century, to meet Daniel Boone in flesh and blood . . .*

*Seldom during those three years as a forest exile did I feel lonesome in daytime; but when supper would be over, and black night closed in on my hermitage, and the owls began calling all the blue devils of the woods, one needed some indoor occupation to keep him in good cheer: and that is how I came to write my first little book on camping and woodcraft.*

#### Quoted from *Our Southern Highlanders*

*For a long time my chief interest was not in human neighbors, but in the mountains themselves—in that mysterious beckoning hinterland which rose right back of my chimney and spread upward, outward, almost to three cardinal points of the compass, mile after mile, hour after hour of lusty climbing—an Eden still unpeopled and unspoiled. I loved of a morning to slip on my haversack, pick up my rifle, or maybe a mere staff, and stride forth alone over haphazard routes, to enjoy in my own untutored way the infinite variety of form and color and shade, of plant and tree and animal life, in that superb wilderness that towered there far above all homes of men . . .*

*The Carolina mountains have a character all their own. Rising abruptly from a low base, and then rounding more gradually upward for 2,000 to 5,000 feet above their valleys, their apparent height is more impressive than that of many a loftier summit in the West which forms only a protuberance on an elevated plateau. Nearly all of them are clad to their tops in dense forest and thick undergrowth. Here and there is a grassy "bald": a natural meadow curiously perched on the very top of a mountain. There are no bare, rocky summits rising above timberline, few jutting crags, no ribs and vertebrae of the earth exposed. Seldom does one see even a naked ledge of rock. The very cliffs are sheathed with trees and shrubs, so that one treading their edges has no fear of falling into an abyss.*

*Pinnacles or serrated ridges are rare. There are few commanding peaks. From almost any summit in Carolina one looks out upon a sea of flowing curves and dome-shaped eminences undulating, with no great disparity of*

*height, unto the horizon. Almost everywhere the contours are similar: steep sides gradually rounding to the tops, smooth-surfaced to the eye because of the endless verdure. Every ridge is separated from its sisters by deep and narrow ravines. Not one of the thousand water courses shows a glint of its dashing stream, save where some far off river may reveal, through a gap in the mountain, one single shimmering curve. In all this vast prospect, a keen eye, knowing where to look, may detect an occasional farmer's clearing, but to the stranger there is only mountain and forest, mountain and forest, as far as the eye can reach.*

*Characteristic, too, is the dreamy blue haze, like that of Indian summer intensified, that ever hovers over the mountains, unless they be swathed in cloud, or, for a few minutes, after a sharp rain-storm has cleared the atmosphere. Both the Blue Ridge and the Smoky Mountains owe their names to this tenuous mist. It softens all outlines, and lends a mirage-like effect of great distance to objects that are but a few miles off, while those farther removed grow more and more intangible until finally the sky-line blends with the sky itself.*

*The foreground of such a landscape, in summer, is warm, soft, dreamy, caressing, habitable; beyond it are gentle and luring solitudes; the remote ranges are inexpressibly lonesome, isolated and mysterious; but everywhere the green forest mantle bespeaks a vital present; nowhere does cold, bare granite stand as the sepulcher of an immemorial past.*

#### Quoted from *Smoky Mountain Magic*

*It was too cool and breezy on the peak for him to linger there. He took up his pack and started down the southern face of the ridge toward the sound of hurrying water that knew must be Nick's Run. The brow of the ridge here was overgrown with small pines. Under their deep evergreen canopy there was no impediment of bushes. But the slope was so steep, and the carpet of pine needles so slippery, that he descended warily, using his staff as an alpenstock to test the footing and maintain his balance. There was no telling when he might come of a sudden to the verge of a precipice.*

*As it turned out, good fortune now attended him. He came down out of the pines into a thick forest of deciduous trees interspersed with mighty hemlocks. Nearing the bottom of the ravine, he had to push through ferns shoulder-high. Then he came out in a wild garden of shade-loving herbs, such as are never seen in perfection elsewhere than in primeval forest that has suffered no interference by man.*

*There was lush growth of cohosh, snakeroot, Solomon's seal, trilliums, orchids, Clintonia, angelico or nondo, wild spikenard, Indian cucumber, and scores of other interesting plants. He saw old and thrifty specimens of ginseng—proof positive that no mountaineer had been in this glen for several years; because the dried "sang" root, as the natives call it, brought fourteen dollars a pound in any of the country stores. There were mushrooms of many varieties, some edible, some poisonous, and a surprising ghostly multitude of that weird parasitic plant—the Indian pipe. Cabarus had seldom seen such mosses as covered the decaying tree trunks that littered the ground, nor such galax as carpeted the banks.*

*Nick's Nest was literally choked with vegetation. There were dark arbors of wild grapes, bowers of moonseed and other vines, spreading over the smaller trees. The rope-like stems of the wild sarsaparilla, or Dutchman's pipe, twined round the greater trunks and festooned the high limbs like tropical lianas. Along the banks of the brook the superb leucothoe grew so thickly that he could hardly force his way through it.*

Note: Bryson City writer-naturalist George Ellison and Cornell University librarian Janet McCue are currently working on a biography of Horace Kephart that will be published by the Great Smoky Mountains Association.

# Taxonomic Advisory! - Novelties galore!

By Alan Weakley

It is a conventional belief that the effort to catalog the plant diversity of the Earth is abating. Several very different, but not incompatible, themes might be grouped under this statement.

1. The task is nearly done, most species having been found, named, cataloged, their distributions documented. After a quarter millennium of steady work on this (taking Linnaeus's 1753 publication as the rather arbitrary starting date, though of course there was a lot of taxonomy and naming before that time), and specifically in eastern North America, all that remains to be done is some fussy picking around the corners.

2. What work remains to be done in plant taxonomy is in remote jungles.

3. Unfortunately, taxonomy is nearly dead, killed by molecular biologists; no-one bothers with doing alpha taxonomy anymore.

If these assumptions are true, a survey of taxonomic literature for the southeastern United States should show a small and declining number of taxonomic novelties being published. Instead, there appears to be a steady increase in numbers of new taxa named over the past 50 years. Approximate numbers (it is difficult to determine an absolutely correct number) are:

1960s: 25 > 1970s: 45 > 1980s: 54 > 1990s: 56 > 2000s: 86 > 2010s: 64++

Such numbers bely a simple interpretation that the description of new species is at an end in the southeastern United States, that we are asymptotically approaching an end point in the vascular plant biodiversity of the Southeast.

Many of the new taxa named in the past 5 years are listed here:

*Eutrochium purpureum* var. *carolinianum* Sorrie  
*Polymnia johnbeckii* D. Estes  
*Carex austrodeflexa* P.D. McMillan, Sorrie, & van Eerden  
*Hypericum radfordiorum* Weakley ex J.R. Allison  
*Conradina cygniflora* C.E. Edwards, Judd, Ionta, & Herring  
*Morus murrayana* Saar & Galla  
*Cleistesiosis oricamporum* P.M. Brown  
*Orobanche riparia* L.T. Collins  
*Dirca decipiens* Floden  
*Trillium oostingii* L.L. Gaddy  
*Xyris spathifolia* Kral & Moffett  
*Packera pauperula* var. *appalachiana* Mahoney  
*Rhododendron colemanii* R. Miller  
*Galactia watsoniana* W.C. Holmes & Singhurst  
*Juncus paludosus* Bridges & Orzell  
*Stachys iltisii* J.B. Nelson  
*Platanthera shriveri* P.M. Brown  
*Asplenium tutwilerae* B.R. Keener & L.J. Davenport  
*Eupatorium paludicola* E.E. Schill. & LeBlond  
*Phaseolus texensis* Delgado-Salinas & Carr  
*Gratiola graniticola* D. Estes  
*Gratiola quartermaniae* D. Estes  
*Boltonia montana* J.F. Townsend & V. Karaman-Castro  
*Carex reznicekii* Werier  
*Pediomelum pedemontanum* J. Allison  
*Hamamelis ovalis* S.W. Leonard

*Isoetes melanopoda* ssp. *sylvatica* Brunton & Britton  
*Stenanthium diffusum* Wofford

*Claytonia ozarkensis* J.M. Miller & K.L. Chambers  
*Arundinaria appalachiana* Triplett, Weakley, & Clark  
*Elymus churchii* J.J.N. Campb.  
*Clematis carrizoensis* D. Estes

If one analyzes these new taxa by geographic distribution within the Southeast by state, physiographic province, and habitat, one does see that that new species are coming from all over the region, but especially from those states already rich in biodiversity and endemism (notably Florida, Alabama, Georgia, and North Carolina), and also particularly concentrated in specialized habitats (rock outcrops, seepage wetlands, etc.). Geographically, the Coastal Plain is generated by far the most new taxa, but significant numbers are also endemics of the Piedmont, Blue Ridge, sedimentary Appalachians, interior low plateaus, and the Ozark-Ouachita interior highlands.

Pending taxa include a further rich assemblage of species:

Amaryllidaceae: *Allium*  
Aristolochiaceae: *Hexastylis*  
Asteraceae: *Ambrosia*, *Coreopsis*, *Eupatorium*, *Helianthus*,  
*Liatris*, *Marshallia*, *Packera*, *Symphyotrichum*  
Campanulaceae: *Lobelia*  
Cyperaceae: *Carex*, *Rhynchospora*, *Scleria*  
Iridaceae: *Sisyrinchium*  
Isoetaceae: *Isoetes*  
Lamiaceae: *Clinopodium*, *Monarda*, *Stachys*, *Trichostema*  
Magnoliaceae: *Liriodendron*  
Montiaceae: *Phemeranthus*  
Plantaginaceae: *Penstemon*  
Poaceae: *Andropogon*, *Coleataenia*, *Dichanthelium*, *Leptochloa*  
Primulaceae: *Lysimachia*  
Ranunculaceae: *Clematis*, *Trautvetteria*  
Saxifragaceae: *Hydatia*  
Solanaceae: *Physalis*  
Trilliaceae: *Trillium*  
Xyridaceae: *Xyris*

What is generating this apparently accelerating naming of novelties? While most new taxa are being named based on old-fashioned analyses of morphology, ecology, and distribution, newer molecular techniques are in some cases clarifying taxonomic decision-making in cases where morphological differences are subtle. But perhaps more importantly, a new set of intelligent and experienced eyes are looking at the southeastern Flora and finding new things. It is perhaps notable that most of the new species are habitat specialists (glades, Coastal Plain scrub, seeps and fens, etc.), and most are narrowly distributed endemics. While most are Coastal Plain species, they are also distributed in the Piedmont, Blue Ridge, sedimentary Appalachians, Interior Low Plateau, Interior Highlands (Ozarks and Ouachitas), and Edwards Plateau. Relative to political units, some of the states that are already the most diverse are the most likely to add species, with Alabama, Georgia, Florida, and North Carolina leading the additions.

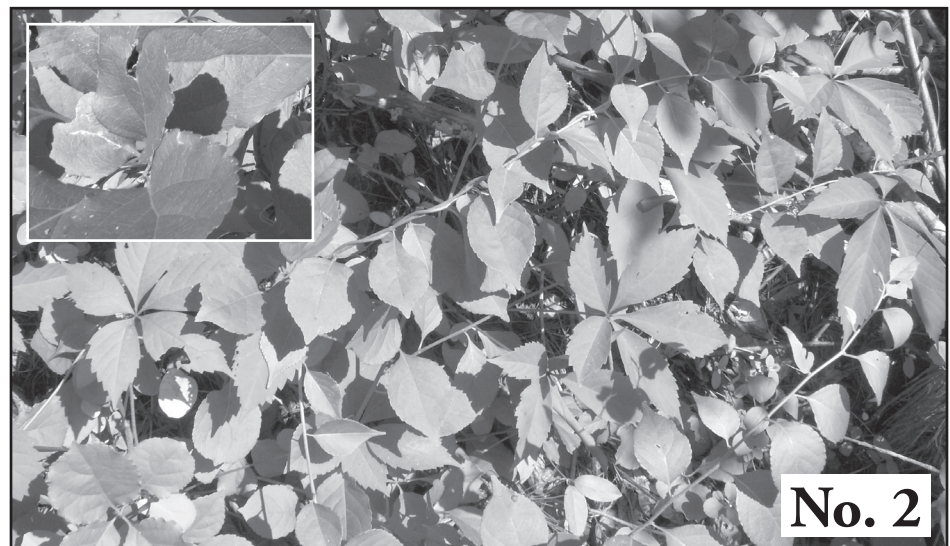
**With all this action, these are exciting times in southeastern botany!**

# Mystery Plants

By Dan Pittillo

Volume 19 (1) with young spring shoots of fairly common species, widespread spiderwort (*Tradescantia subaspera*) and sweet cicely (*Osmorhiza claytonii*) was either a challenge or folks didn't have time to puzzle them out. Long time challenger David Taylor got both an Jil Templeton was sidetracked by the opposite leaved Commelinaceae. Thanks to both for your responses!

Climate changes may bring our Southern Appalachians to a return of their past tropical conditions. One feature of tropical floras is vines. Here are a couple of vines that are spreading invasively regionally, both from Oriental floras. Herbaceous No. 1 (shown here overtaking native Virginia creeper) is listed from New England south to Florida and Texas in USDA map and woody No. 2 (shown here with creosote power pole) is spreading north in Canada south to Georgia and west beyond Arkansas and Iowa. Likely both these are found in disturbed borders, maybe even climbing in pine forests in your local area. Unless something parasitizes these two, they are likely to become a part of our flora on into the future as this climate change progresses.



## Scientific Names for Sale!

By Dan Pittillo

Perhaps you have heard that the All Taxa Biodiversity Inventory (ATBI) has been underway for the Great Smoky Mountains National Park (GRSM) or over a decade now. What you may not have heard is that scientific specialists usually need some financial support in the endeavor to sort collections to see if there are new ones discovered. To date at least **910 new species** have been found for a flora and fauna that is pretty well known in our country. And furthermore, the effort has resulted in at least **7,000 new additions** to the GRSM.

It might strike you as unusual to offer scientific names for sale. What is involved is that the funding agency, Discover Live in America (DLIA), has been charged with raising funds for the research to discover new species in the park and world wide in general. Like all non-profit organizations, DLIA has had a drastic reduction in fund raising: in 2008 \$244,000 was available to fund the projects but in 2009 it dropped to \$91,868 and even more in 2010. For the past few years the naming of species for donors has been available but

only a few have been named for new species discovered in GRSM.

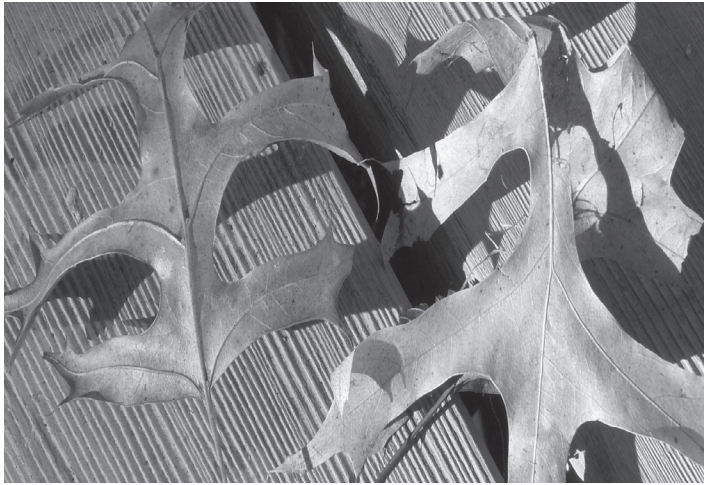
For botany the discovery of a new plant is definitely a rare occasion for an area the size of GRSM. Generally the more flashy animals have also been named. Most of the remaining species are for the large groups of nematodes, flies, or fungi. Flies discovered in GRSM are estimated to be only about 16% yet to be found while fungi, now known to be around 20,000 species are still considered about 14% complete. Even less is thought to be tallied for bacteria and archaea, though there are 449 bacteria and 44 archaea tallied for GRSM. **For plants, vascular species for GRSM are now tallied at 1,660 with estimate projected at 1,750 and non-vascular tallied at 491 (bryophytes) and estimated at 520.**

You might also wish to checkout the ATBI database for vascular plants: [www.dlia.org](http://www.dlia.org)

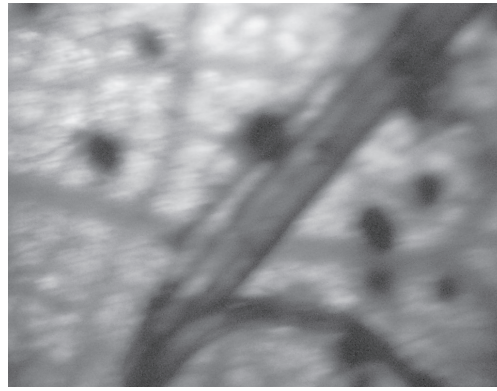
\*Reference to this article is from the [Asheville Citizen-Times](http://www.citizen-times.com/article/20110624/NEWS/306150052/Buy-right-name-new-species-Smokies?odyssey=tab|topnews|text|Frontpage):  
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## Orange Leaves Under Grass?

Mowing our lawn beneath a transplanted pin oak (*Quercus palustris*) I noticed a lot of bright orange leaves, apparently in the process of decomposition early this summer. I'm curious about the color. I've a 40X dissecting microscope and the leaf that is only brown has cells full of what appears to be dried cell material while the orange leaf has little of the cell contents. Both leaves have scattered spherical black objects about 0.14 mm in diameter I'd guess to be one of the basidiomycetes. Any thoughts on this? --J. Dan Pittillo



*Quercus palustris*. Brown leaf (L); orange (R).



*Q. palustris* (40x)  
with midvein and  
black spots.

Dan Pittillo  
photos.

Prairieclover continued from Page 11

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