CHINQUAPIN

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Beechdrops

By Lytton Musselman,
Old Dominion University

Mature flower showing exserted stigma of chasmogamous flower.

"See those beech trees," said the instructor. "Those things under it are sons-of-beeches." This is one line that helps my students remember the easily overlooked parasite, *Epifagus virginiana*, beechdrops. As the specific epithet indicates, it grows on the roots of beech, *Fagus grandifolia*. It is the only annual root parasite that I know of that is strictly host specific, never found on any host other than beech. Most annual root parasites, like the widespread purple gerardia, *Agalinis purpurea*, will parasitize a wide range of woody and herbaceous host plants.

Beechdrops does not emerge until mid-summer when the stiff, narrow stems with their dark purple color are barely discernible in the leaf litter. Like related members of the Orobanchaceae, it lacks chlorophyll and is dependent on its host for water and nutrition.

Chasmogamous flower, upper left; cleistogamous flowers below.

Or is it? Hundreds if not thousands of research hours have been expended trying to germinate this common plant. I have tried exudates of beech roots as well as synthetic germination stimulants developed to control witchweed and other parasites in this family. All to no avail.

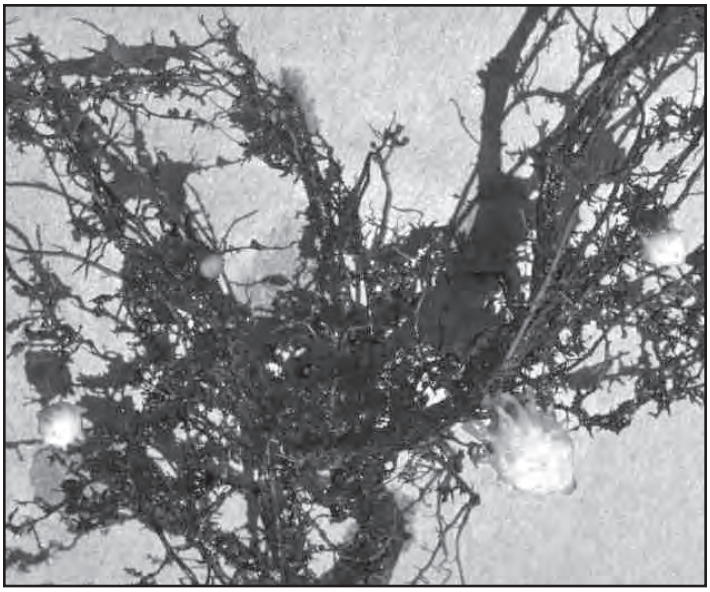
Perhaps this is because beechdrops is somehow involved with the mycorrhizal fungi in the fine roots of the beech. Perhaps the right combination of exudates from the fungus or fungi and the tree root is needed. The proverbial "further research" is needed.

But it is not only the host-parasite relationship that is fascinating. Beechdrops has a very distinct floral syndrome. On most flower stems there is a mixture of both chasmogamous and cleistogamous flowers. Chasmogamous flowers open (think chasm) and could be visited by insects. Cleistogamous flowers (think closed), on the other hand, do not open but still produce abundant seeds without undergoing normal sexual reproduction (Figure One). Like so may aspects of this plant we know nothing about any difference in the behavior of seeds from the two different kinds of flowers.

Seeds of beechdrop are dust-like. Raindrops play an important role in the distribution of the seeds. The capsule with its thousands of seeds opens in such a way as to catch a drop of rain which then splashes the seeds to their new home.

Seeds apparently germinate in the spring and form knob-like structures, called tubercles, on the fine roots of the beech (Figure Three). Rummaging through the litter under a beech tree in May will reveal tiny tubercles. Doing the same in June will yield larger tubercles and eventually emerging stems. After flowering, the plants senesce but the stiff stems often persist until the next growing season.

I find it amazing that so little is known about the most frequent parasitic angiosperm in North America (a close second would be bastard toadflax, *Comandra umbellata* of the Thesiaceae, formerly in the Santalaceae). Here close at hand throughout the Southern Appalachian region is a common plant with uncommon nutrition and floral biology inviting further research.



Young plants of beechdrops on fine roots of beech. The white tubercles are most evident at lower left and lower right.

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From The Editor's Desk:

J. Dan Pittillo, Newsletter Interim Editor

We continue with Lytton's generous offer to include members of the parasitic Orobanchaceae primarily, a grouping of species that formerly were in other families, especially the Scrophulariaceae. This is a product of DNA research in which the evidence continues to accumulate that point toward this grouping of parasitic and semi-parasitic members. And as we move forward, it is also clear that there will continue to be taxonomist modifications of the system that does not do all species justice. As Alan Weakley pointed out in the last issue, there is still an increasing number of new species being named as data becomes more available, often through the internet, and botanists prod through the fields and forests in our diverse flora world wide, including the areas we once thought were fully analyzed. So it looks as if the freshman physical science class I took at Berea College in which the professor emphasized science is a new way of looking at things is becoming more pertinent in our botanical discipline as well as the other major advances in astronomy, subatomic exploration, and science in general.

Taxonomy Specialists in Short Supply

Not only are the rules of Botanical Nomenclature hindering the propagation of new plant names but perhaps more significant is the dearth of taxonomists that are able to name the species that have been collected and await naming. A study by Dr. Robert Scotland and colleagues at Oxford University suggests that it takes an average of 30-40 years from the time a specimen is collected to its recognizability as a new species. Supporting their contention they took a look at the genus Strobilanthes and discovered 60 new species from specimens that were found in herbaria.
Ref. <http://www.sciencedaily.com/releases/2010/12/101210111714.htm>

Welcome New SABS Members

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!

David Knepper
James A. Schrader
Nicky Staunton
Amanda Treher
Jimmy Triplett

New Organism Names Can Be Published On-Line

Many of us continually struggle to keep up with name changes; no one more so than Alan Weakley as he develops the manual in process. Part of this effort is a product of the continual expansion of knowledge and making it available to more taxonomists and others interested in naming of plants. Science Daily (14 Sept 2011) reprinted this issue from an article by Dr. Sandra Knapp *et al*. in the BMC Evolutionary Biology open access journal. They noted that perhaps only 10% of all species in the world have been named. This is further supported by work we have seen in the Great Smoky Mountains National Park All Taxa Biodiversity Inventory for the past decade in which 910 new species have been added for this 0.5 M acre area alone. Under current rules of the International Code of Nomenclature R ules this requires a hard copy of the published name be deposited in a library. At the recent IBC Conference held in Melbourne, Australia, names published under the rules could be published on-line officially after January 1, 2012, speeding up the process for naming of all organisms. The Melbourne Code, as it is described, will permitted in accepted on-line publications in either Latin or English. Ref. <http://www.sciencedaily.com/releases/2011/09/110914073201.htm>

"I sincerely believe the reason many people become highly emotional on the subject of 'Limits of Growth' is that they fear that if the physical growth of society stops it will then deteriorate and die."

Eugene P. Odum, 1998. Ecological Vignettes: Ecological Approaches to Dealing with Human Predicaments. Harwood Academic Pub., Amsterdam. P. 62-63.

Will Global Climate Change Affect Fall Foliage Colors?

By Howie Neufeld

In this essay I briefly address how could global climate change affect fall foliage color? To paraphrase the Bard, let me count the ways: (1) higher temperatures, (2) altered timing and/or amounts of precipitation, (3) higher levels of carbon dioxide, (4) changes in cloud cover, (5) higher levels of nitrogen inputs and acidic deposition to ecosystems, (6) higher levels of air pollutants such as ozone, and (7) changes in competition due to greater pest loads or invasive exotic species.

This reads a lot like a Letterman Top 10 list (well, 7) for how to screw up future fall foliage displays! I will briefly run through a variety of scenarios we might expect to see, especially in the next two decades.

First, let's group several of these factors together because they will have the same effects. Higher temperatures, precipitation, cloud cover, nitrogen deposition and pollution should all act together to mute fall colors. Trees cue in primarily on day-length and temperature to determine the timing of fall foliage color display. As the days get shorter in August and September, trees begin an orderly process of leaf senescence. This involves the loss of chlorophyll, which reveals the underlying carotenoid and xanthophyll pigments that are responsible for our orange and yellow colored leaves. The subsequent synthesis of anthocyanins in other trees is what gives those leaves their red color.

Some trees such as Norway spruce use day-length as their main cue because it is a good proxy for the coming cold weather. Others, like beech and oaks, rely on day-length but use temperature as a secondary cue; a cool fall will hasten development of fall leaf color, while a warm fall will delay it. Early successional trees, like birch and poplars, rely solely on temperature, so if it warms up, they will delay turning color and vice-versa if it turns cool. Some recent studies suggest that elevated night temperatures might accelerate growth cessation in the fall, and climate models show daily minimum temperatures rising faster than daily maximum ones. This could hasten rather than delay the onset of fall foliage color.

Warming might also extend the growing season into parts of the year when light levels are low because of the low zenith angle of the sun and because shorter days allow less time for trees to photosynthesize. This would lower their sugar reserves, and since sugars are necessary for the synthesis of anthocyanins, we might see more muted red foliage.

Higher precipitation would lower the intensity of fall color, not because it washes out the colors (a wives' tale) but rather, because photosynthesis is reduced during cloudy/rain. Higher pollution levels cause premature leaf senescence which would lower seasonal carbon gain, thereby contributing to reduced fall color quality.

Surprisingly, increased nitrogen might reduce fall colors. Paul Schaberg and his associates in the U.S. Forest Service in Vermont have shown that nitrogen deficient sugar maples have enhanced red fall color. They reason that when trees are stressed by low nitrogen sugars accumulate in their leaves which in turn triggers anthocyanin production. But in a future high nitrogen world, trees would be less stressed and perhaps less red too. Conversely, if acidic deposition leaches nitrogen from soils, then this might counteract the effects of elevated nitrogen with the result that a stand-off could occur between leaching and deposition, leading perhaps to no change in fall red coloration.

A recent study by Taylor and her associates has shown that high CO_2 in the absence of warming can delay the onset of fall color in *Populus* seedlings. Leaves of trees exposed to elevated CO_2 in free-air exposure systems also had delayed senescence. Rising CO_2 might result in a compression of the length of the fall color season even without concomitant increases in air temperatures.

The biggest unknown will be how global change will affect tree distributions. Hardwood trees in Vermont, where mean temperatures have risen 1.5°C in just the past 40 years, have been documented migrating upslope approximately 100 m. Trees on flatter terrain will have to migrate north. How far north is still an active area of investigation. Louis Iverson and his colleagues at the U.S. Forest Service in Pennsylvania have generated maps of the present and predicted future distributions of our major tree species. Sugar maple is predicted to migrate north into Canada, leaving fewer individuals in the U.S., and possibly decimating the maple syrup industry in Vermont, New Hampshire and Maine. If this species leaves the U.S. for our northern neighbor, what will give us our brilliant red colors in the fall in New England? Migrations such as this will forever alter the composition of our forests, and a new color balance will have to emerge.

A more dramatic change could occur if global warming allows exotic pest species to invade our forests. Right now, we are seeing the deleterious impacts of the exotic hemlock woolly adelgid, which is killing off our beloved hemlocks, including our own native Carolina hemlock. Large blotches of dead, gray hemlock trunks dot the Smokies and surrounding hillsides, showing the destructive power of an insect only slightly larger than the period on this page. In the upper mid-west, the Asian longhorn beetle is killing hardwoods and causing great concern as it spreads ominously east and south.

To sum up, I predict that global climate change will generally exert more deleterious effects than beneficial ones. Although less brilliant fall foliage displays may not rank high on the list of concerns about global change, those muted colors could be the canary in the mine shaft; a warning of potentially consequential changes to come in our world.

Here is a short list of relevant literature if you want to delve further into this subject:

Beckage, B., B. Osborne, DG Gavin, C Pucko, T Siccama and T Perkins. 2008. A rapid upward shift of a forest ecotone during 40 years of warming in the Green Mountains of Vermont. Proceedings of the National Academy of Sciences (USA) 105:4197-4202.
[This is an important paper. It shows how far and rapidly hardwood trees have migrated upslope in Vermont in just the past 40 years due to global warming. More importantly, it portends what may yet happen in the southern Appalachians, where warming has not yet been detected.]

DeLucia, E.H., C.L. Casteel, P.D. Nabity and B.F. O'Neill. 2008. Insects take a bigger bite out of plants in a warmer, higher carbon dioxide world. Proceedings of the National Academy of Sciences 105:1781-1782.
[Although this report focuses on soybeans (think of them as just shorter trees!) it does show how warming can alter plant-insect interactions]

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BOTANICAL EXCURSIONS

Bill Hart's *3000 MILES IN THE GREAT SMOKIES:* SEEING THE SMOKIES WITH FRESH EYES

By George Ellison

William A. Hart, Jr., is familiar to many who read this as the primary biographer of George Masa, the Japanese photographer who assisted Horace Kephart in helping to found the Great Smoky Mountains National Park (1934). His longtime volunteer affiliation with the Great Smoky Mountains Association has brought Bill into contact with numerous park enthusiasts, many of whom (like me) have become his friend. Friendship aside, Hart's 3000 Miles in the Great Smokies (History Press, 2009) is in its unassuming manner one of the very best natural history books on the Smokies, in particular, and the Southern Appalachians, in general, to appear in recent years. If you read it, you will like it ... and you will see the Smokies with fresh eyes.

3000 Miles features trip notes and photos selectively arranged under thirteen subject headings so as to compose a mosaic that recreates in a compelling manner one man's experiences in and ongoing love for the Smokies. No writer—not excluding Kephart, Roger Tory Peterson, Edward Abbey, Edwin Way Teale, D.C. Peattie, Arthur Stupka, and other more renowned naturalists who have written about the Smokies—has displayed a greater sense of the varieties and intensities of color displayed by Smokies landscapes and skies from season to season. When asked how he developed this sense of color, Hart paused before replying, scratched his head, and said: "I didn't know I had one." When asked about the origins of his book and the perspectives displayed therein, he replied:

"I stood in the dust under the magnificent Alum Cave Bluff with my father and gazed at the spellbinding Smoky Mountain grandeur about me. While there, I noticed a sign that indicated the distance to Mount Le Conte and Mount Guyot, points that seemed distant and mysterious, and I felt a mixture of curiosity and yearning to personally visit these landmarks. I was eleven and the year was 1951. In later life, this memory remained and I felt a restless need to satisfy the curiosity that developed when I was eleven. Unknown to me then as I surveyed Alum Cave Bluff, the seed was sown that ultimately led to writing 3000 Miles in the Great Smokies.

"This experience occurred against the backdrop of many other outdoor experiences in the mountains of western North Carolina. I grew up near Asheville in Weaverville, making it convenient for our family to take occasional camping trips in the Great Smoky Mountains National Park. Most outings were near Weaverville, however. When I was quite young, our family visited Lake Louise to picnic and fish. We climbed Hamburg Mountain and enjoyed the views of our small town or followed the Blue Ridge Parkway to Craggy for picnics. When I was older, I squirrel-hunted with my father in the mountains above Beech. By the time I was twelve or thirteen, I was given the freedom to explore on my own. In the evenings after school and after my chores were done, I was free to pick up a fishing rod or my shotgun and wander the fields, woods and streams as I pleased, often with a friend who shared similar interests. As I grew older, trout fishing enticed me and I focused more time on this pursuit. Perhaps I should add that I began working when I was thirteen or fourteen. I worked during the summers and one or two afternoons a week when school was in session, and my devotion to my outdoor interests was secondary to earning sufficient money so that I could take responsibility for many of my expenses. Looking back on my life after six decades, I realize that my love of the outdoors was created by my parents and especially by my father, who introduced me to and gave me the freedom to enjoy the pleasures of the outdoors.

I met my wife, Alice Huff, while we were students at Western Carolina Teachers College, now Western Carolina University. She grew up in Sylva and came from a family in which her father and uncles were hunters and fishermen. Alice's family made frequent trips to the Great Smoky Mountains National Park to picnic and enjoy the park and she grew up with a love for the Smokies. While we were dating, we journeyed to the park for a fall trip along the waters of Deep Creek and later paid a winter visit to Mingus Mill, outings that fondly stand out in our memory. Unknown to us at the time, this was foreshadowing of our future life together.

The Smokies became an integral part of our lives. Likewise, I visited the Smokies with my Boy Scout Troop, with many friends, and with our son and daughter as adults. Following each of these trips, I created a file and included my trip notes and photos, thinking that perhaps one day I would write a book about my experiences; however, I didn't expend the effort to make this dream a reality.

Alice and I celebrated our twenty-fifth wedding anniversary in 1985 by taking a trip to the Great Smokies. On a bright late September afternoon while we sat in the sun at the Newfound Gap Overlook and admired the valley of the Oconaluftee River, Alice told me she had an anniversary gift and handed me a manila folder. I can still visualize the puzzlement of the moment and the surprise when I opened it to find that she had had fifty pages of my Smoky Mountains trip accounts typed into finished form. Her gift was the true beginning of 3000 Miles in the Great Smokies—although it required almost twenty-five years before the dream was realized.

After walking 3000 miles in the Great Smokies, including all the designated trails in the park, the yearnings of an eleven year old were finally satisfied. All that remained was to leave a record of my experiences in the hope that others with an interest in the Smokies would find some benefit and pleasure in them, just as I have in the books by Horace Kephart, Paul Fink and Harvey Broome and the photographs of George Masa."

The prose images presented here have been pieced together from Hart's introductory note and six entries in the "Scenes and Reflections" section.

Scenes and Reflections

I have often felt a sense of deep reverence while in the Smokies and given thanks for the moment as I marveled at a grand vista, paused to enjoy a small setting of exquisite beauty, witnessed a sunrise or sunset, absorbed the sounds of nature or appreciated the vast variety of flora and fauna found in the national park … I will attempt … to describe particular scenes and reflections as a means of recalling special moments.

Boulderfield, by Elizabeth Ellison, www.elizabethellisonwatercolors.com

A Geometric Pattern - Bradley Fork Trail – January 16, 2006

One after the other, Ron, Marilyn, Jerry and I descended the snow-covered Bradley Fork Trail along Taywa Creek as the setting sun cast long shadows in this narrow valley. While we trudged along, I gazed at the passing landscape and was attracted by a jumble of chair-sized boulders that seemed frozen in a static cascade on the steep slope across the creek. The tops of these boulders were blanketed with snow; however, their sides were exposed to the sun, which had caused the snow to melt, exposing the dark rich, green covering of moss on each boulder.

As I focused on this scene, the whole appeared like a geometric pattern of irregular green and white shapes, all set against a backdrop of stark winter woods. This artistic structure of stone, moss and earth was compelling in its simplicity …

Sun on Ice - Greenbrier Pinnacle - November 29, 1980

I climbed snow-covered Greenbrier Pinnacle on a cold, windy morning. When I ascended to the slopes below the crest, I reached a vantage point from which I could view the main Smoky Mountain divide. Particularly notable was the distant Sawteeth section, so named because its irregular profile reminded early hikers of the teeth of a saw.

The clouds above the Sawteeth were dark and threatening, yet the sun's slanting rays glowed beneath them, creating radiant, almost translucent, silver and gold cloud borders. These bright rays also reflected on the rime that coated the distant crest with an effect that was quite beautiful. Darker hues of blue on lower slopes mixed with the brilliant white rime above …

Unsurpassed Views - Hughes Ridge Trail - January 16, 2006

Ron, Marilyn, Jerry and I climbed along Hughes Ridge in ever-deepening snow. The world through which we walked was a pallet of muted colors—grays, browns and blacks—displayed against a backdrop of white. In shaded coves the shadows gave a cold, blue cast to the bleak forest, while the slopes of Mine Ridge well above us reflected the sun with a white intensity.

As we ascended, the skies became overcast, and dark clouds replaced the blue that we had enjoyed earlier. From high vistas we looked back on Thomas Divide, which lay across the valley, and found that the Divide had taken on shades of purest purple under the prevailing charcoal-gray skies.

Moon Shadows - Little Dudley Creek - January 25, 1981

I began walking an old road along Little Dudley Creek in the predawn darkness. The temperature was 25-degrees and a heavy frost covered the ground. A three-quarter moon cast a silver glow on the forest, creating subtle patterns of light and delicate shadows. Where the moon's full light fell on frost-coated grass, the delicate ice crystals on the grass glinted with diamond-like sparkles.

With only the moonlight to guide me, I carefully picked my way along in the shadowy road trace as the darkness began to fade imperceptibly. I found it necessary to light a match to read the graying trail sign that provided directions at my first junction.

My new route climbed away from Dudley Creek at this point and ascended through open woods, affording a fine view of the eastern mountains. I stopped and admired the silhouetted outlines of these dark forms, forms that were enhanced by the silver and gold rays of the rising sun. These rays gradually increased, brightening the sky with fresh color that spilled over the mountains and flowed into the forest about me. The intensity grew, and it was day.

The Highlight of My Day - Somewhere in the Smokies - September 2, 1989

I was engaged in an off-trail walk and had followed an old logging rail grade to its end. After completing this portion of my outing, I planned to ascend 1400 feet to an abandoned trail and incorporate it in my return to my starting point … This led me to the base of an unnamed cascade with a film of frothy water that seemed to glide for an estimated 100-150 feet over solid stone that sloped upward at a 45-degree angle, although I could not view it in its entirety from the base … The ascent around the cascade required considerable time … I was completely unaware as I climbed that the highlight of my day awaited me above the cascade.

Once I reached the bluff-like crest, I beheld an almost level glade that was formed like an imperfect circle with a diameter of perhaps 50 or 60 feet in a forest of hemlock trees interspersed by a few tall hardwoods. A thick growth of rhododendron bordered the clearing. Although the surface appeared smooth, this was an illusion. Lush grass covered small stones on the floor of this glade, and water flowed everywhere through it with unseen whispers. The sun's rays, filtered by the forest cover, reflected silver on the shiny rhododendron leaves along the border and brightened

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Forests Also Get Nitrogen From Rocks

Recently scientists have determined trees in California obtain some of their nitrogen, heretofore assumed to be obtained from the atmosphere, had come from rocks in areas where rock nitrogen is high. The researchers at the University of California, Davis compared the isotopic forms found in rocks with that in the forest trees and found the same in soils derived from the rocks, making the link with rocks instead of atmospheric forms. Higher nitrogen is found in sedimentary rocks so this may mean that plants living on limestone have an additional source of nitrogen compared to those living on granite. The implication for our Blue Ridge Province igneous and presumably metamorphic rocks do not provide the quantiles of nitrogen as those of sedimentary origin in the Valley and Ridge Province. This is a study that will be of interest as we relate to the level of carbon dioxide as the question on global warming progresses in the future. Ref. <http://www.sciencedaily.com/releases/2011/08/110831155347.htm

A Forest-Saving Virus Stops Gypsy Moths

Gypsy moth nucleopolyhedrosis virus (NPV), as it has been dubbed, offers one of the bright spots for reducing the devastating loss of hardwood forests in the East. Development of this virus is one of the successful research efforts in recent years. The virus is a combination of the viral DNA surrounded by a matrix of polyhydral proteins and can be applied to gypsy moth outbreaks as Gypchek sprayed from airplanes. The NPV can survive in soil or the environment but will not kill all low-population insects. What is interesting is the change in the moth's behavior leads to large population destruction. Gypsy moth larvae typically ascend the trees nightly to feed but if they ingested the NPV, they do not return but die in the upper levels. As their bodies break down, the NPV particles fall on leaves or more moth larvae below, also infecting them.

Now if some of the other devastating pests, such as beech bark disease or hemlock woolly adelgid could be found to respond to a similar damping the forest destruction of these pests.--JDP

Global Change continued from Page 19

Hanninen, H. and K. Tanino. 2011. Tree seasonality in a warming climate. Trends in Plant Science 16:412-416.
[A short summary of the physiological constraints on phenology in trees, including an emphasis on carry-over effects from one season to another]

Iverson, L. and A. Prasad. 2009. Map of tree migrations. Go to this website: http://www.nrs.fs.fed.us/atlas/
[This is the most detailed descriptions of how global warming could cause trees to migrate to new habitats. Note that these authors also have a map of potential changes in bird species distributions too.]

McMullen, C.P. and J. Jabbour. 2009. Climate Change Science Compendium 2009. United Nations Environmental Programme, Nairobi, EarthPrint.
[This is the report mentioned at the beginning of this column and is available on the web for free download at: http://www.unep.org/compendium2009/. I highly recommend reading it!]

Polgar, C.A. and R.B. Primack. 2011 Tansley Review - Leaf-out phenology of temperate woody plants: from trees to ecosystems. New Phytologist 191:926-941.
[Excellent review of the environmental cues for leaf-out in trees, and how to measure this at various scales from the individual tree to the landscape.]

Schaberg, PG, AK Van den Berg, PF Murakami, JB Shane and JR Donelly. 2003. Factors influencing red expression in autumn foliage of sugar maple trees. Tree Physiology 23:325-333.
[This is the paper that shows that sugar maple trees with less nitrogen have more red coloration.]

Taylor, G., and many (13!) other authors. 2008. Future atmospheric CO2 leads to delayed autumnal senescence. Global Change Biology 14:264-275.
[This paper shows how elevated CO2 can delay the onset of fall color in the absence of a rise in air temperatures.]

Zhu, W., H. Tian, X. Xu, Y. Pan, G. Chen and W. Lin. 2011. Extension of the growing season due to delayed autumn over mid and high latitudes in North America during 1982-2006. Global Ecology and Biogeography DOI: 10.1111/j.1466-8238.2011.00675.x (in press).

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the center of the clearing. I was moved by the awe-inspiring perfection of this remote, wild place. The recollection of this scene has remained as a singular memory.

Reflections in the Sun - Scott Mountain Trail - October 19, 1980

My route entailed a climb of approximately 1700 feet along the Scott Mountain Trail. I walked the narrow footpath that wound along shaded slopes, crooked through the head of small coves and led across the crests of side ridges. It was a pleasant afternoon, one without the necessity of meeting any schedule but my own.

On one of these ridges, I chose a sunny place, reclined against a log in the warmth of the autumn sun and concentrated on the sounds of the forest. I listened as dry leaves rustled gently in the breeze and occasionally released their hold on delicate twigs to drift downward, making dry clicking sounds as they brushed against other leaves on their gliding path to the forest floor. The occasional bird scolded me from the tree tops. And at times gentle breezes stirred the air in patterns like random notes played on a scale. All was quiet save the natural sounds of the forest …

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"In the end, the best hope for continued existence of our natural communities is a population of North Carolinians who truly want this heritage of nature to be a part of their home."

David Blevins and Michael Schafale, 2011. Wild North Carolina. Univ. of NC Press, Chapel Hill. P. 168.

Mystery Plants

By Dan Pittillo

In the last issue No. 1 was *Dioscorea polystachya* (cinnamon vine) and No. 2 was *Celastris orbiculatus* (oriental bittersweet). Franz Sceischab, Greg Schmidt, Sonja Himes and David Taylor got both correct.

For the next series of plant identifications, let's consider a 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 (I'll tell you later what this will be, but for now let's see what you can do with this little project.

I actually had a large forked, white pine broken down in two storms. I 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 fire wood (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, Vitis aestivalis.*

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

SABS Student Awards

The Southern Appalachian Botanical Society will be presenting two awards for student members: the **SABS Outstanding Student Poster Award** and the **SABS Outstanding Student Contributed Paper Award**. These will be given for the second time at the Association of Southeastern Biologists meeting in Athens, GA, in April 2012. SABS convenes as one of the affiliate organizations at this meeting. The posters and talks will be assessed by anonymous judges. Each award includes an honorarium of $150.00, and the winners will be announced at the ASB banquet.

Qualifications: A nominee must be a current undergraduate or graduate student in good standing and must be a current member of SABS. A student will nominate his/her poster or oral presentation when registering for the ASB meeting and submitting the abstract. The instructions for nomination are on the ASB Website.

The papers (oral presentation) will be judged on the written communication (abstract); oral communication (presentation); technical approach (fieldwork, lab techniques, and statistical analyses); creativity and significance of research; and knowledge of area (e.g., response to audience questions). The posters will be evaluated based on written communication (abstract); design (organization of information and graphics on poster); oral communication (interactions with poster visitors and response to questions); technical approach (fieldwork, lab techniques, and statistical analyses); and creativity and significance of research.

Core Student Award: A student and faculty advisor are encouraged to apply for this award (up to $300) to support a research project. See the SABS website for details on this award, especially early in the project phase: <http://www.sabs.appstate.edu/Awards/Core-Main.htm>

Elizabeth Ann Bartholomew Award: Botanists that have contributed significantly to botanical knowledge are eligible for this prestigious award given annually. Nominate potential recipients early in the season to ensure the committee will have time to review the applications. See the SABS web site: <http://www.sabs.appstate.edu/Awards/Barth.htm>

Richard and Winnie Windler Research Award: Authors publishing taxonomic papers in Castanea are eligible for this monetary award. A committee reviews the current year papers and makes the presentation at the annual SABS meeting. See the SABS website for details <http://www.sabs.appstate.edu/Awards/Windler.htm>.

"…Few words describing the simple act of sharing food exemplify [André Michaux's] core…. But he entered camp when the people were away and left food so if their hunting failed they would not go hungry."

Gail Fishman, 2000. Journeys Through Paradise: Pioneering Naturalists in the Southeast. Univ. of FL Press, Gainesville. P. 75.

Return Service Requested

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