

Gulf Coast Appalachia—a new frontier: exploring the trees and shrubs of the Red Hills of Alabama[©]

B. Green^a

Green Nurseries, 415 North Greeno Road, Fairhope, Alabama 36532, USA.

INTRODUCTION

What imagery springs to mind when meditating south Alabama? Sun-bleached white beaches, deck chairs beneath the scant shade of swaying palms, azaleas blossoming between the low lying limbs of moss strewn live oaks? Maybe a “cheeseburger in paradise” along our self-described “Redneck Riviera?”

That is all a pleasant reality, and yet, in the midst of the Coastal Plain, only some 85 airline miles from the Gulf of Mexico, a vastly different and magical landscape unfolds. A narrow belt stretching across the state contains piney hills, bisected by steep ravines carved since the Eocene by fast-flowing creeks and streams. All lead to what has been called “America’s Amazon”—the biologically rich Mobile River Delta. This geological and botanical treasure is known as the Red Hills, receiving the name from the iron-rich soils that once sprouted massive tracts of longleaf pine (*Pinus palustris*) forests. In the mesic soils between the ridgetops, one finds the richest woody tree diversity in North America.

William Bartram explored the upper Mobile Delta, including the Red Hills in 1775-1776. Combining his botanical knowledge with love of poetry when he wrote in *Travels*: “We encamped on the banks of a rivulet amidst a spicy grove of the *Illicium Floridanum*.” Bartram described vast unbroken plains of dogwood forests and some of the largest hardwood trees he encountered in all his journeys (Sanders, 2002). Much of the majesty, most of the pine character, but little of the plant diversity, was removed by the time botanist, Roland Harper, wrote in the 1943 monograph, *Forests of Alabama*: “The red hills are an area occupied by the various Eocene formations, a belt about 50 miles wide extending all across the state. This region comprises several different geological belts, some of which would show significant differences in vegetation if studied closely enough” (Harper, 1943). That turned out to be an understatement—as today the *Biota of North America Project* lists the area as the center for small tree diversity in North America (above Mexico.)

Here, one can find six species of magnolia growing on a single hillside. In the spoken words of internationally-acclaimed biologist, E.O. Wilson: “... it was Bill (Finch) that pointed out that whereas the southern Appalachians had been considered the headquarters of oak diversity, with 14 kinds of oak species known just in the southern Appalachians—places like the Great Smoky Mountains National Park, Bill discovered that here in the Red Hills alone there are 24. That's probably the world record. The largest number of oak species in a concentrated area” (Raines, 2016).

The Red Hills lies in some of the most southerly latitudes in the USA (hardiness zones 8a and 8). It is native to such woody shrubs such as *Rhododendron minus* var. *minus*, *Hydrangea quercifolia*, and *H. arborescens*. Montane herbaceous plants include *Tiarella cordifolia* var. *austrina*, *Heuchera americana*, and *Panax quinquefolius*. Two of America’s most recent and distinctive new species were discovered in the Red Hills: *Rhododendron colemanii* and *Hamamelis ovalis*. The incredible diversity may be partly explained by the geology. In brief, a narrow band of limestone hills extends across the lower belt of the Red Hills, sometimes producing outcrops with abundant lime-loving vegetation. Above the limestone belt is a mix of Burhstone hills and iron rich strata. One can witness typically high pH-dependent plants adapted to neutral to acid soils, and acid-loving plants extending into higher pH soils.

Some 15,000 years ago, during the height of the last ice age, the high Appalachians were mainly snow covered peaks punctuated in spruce forest (Adams, 2016). The Red Hills

^aE-mail: Bobby.Green@GreenNurseries.com

served as a refugium for such species as *Kalmia latifolia*, *H. quercifolia*, and countless oaks, maples, and Ericaceous flora. Some 12,000 years ago, the ice receding, the Red Hills began to repopulate the southern Appalachians, which descend into north-central Alabama.

The potential to exploit this area's botanical treasures for use both in gardens and in hybridizing for superior traits has barely been touched. Those of us "Zone 8'ers" who grew up reading the garden books of Sargent and Taylor can attest to the frustration of reading cold hardiness ratings with no mention of heat tolerance. Strong, but still anecdotal evidence from the Piedmont and coastal Carolinas, as well as Southeastern Texas, suggest amazing heat tolerance of some Red Hills species—thought to be high-altitude only. The sweltering Alabama summers, with high rainfall, have perhaps induced a level of disease tolerance that has not been thoroughly examined. Further, there is a vigor trait inherent in many populations. For instance, on the dry pine-beech slopes, *R. alabamense*, described as low-growing of 1.5-1.8 m (1.5-6 ft), will grow to more than 4.6 m (15 ft). Along the creeks below, *Illicium floridanum* will produce large flowers [8 cm (3 in.)] and bloom during the spring and fall. Among the rhododendrons, taxonomists' worst fears are realized—as speciation becomes less a concept and more a coin toss. Intergradation appears to take place among the ancient groves of several native azalea species.

OUR AREAS OF INTEREST...THUS FAR

***Hamamelis ovalis* S.W. Leonard**

Hamamelis ovalis is encountered frequently in this region. It is surprising just how long this species remained "undiscovered". The large, felted leaves had been dismissed as a variation of *Hamamelis virginiana*. Since most populations bloom from December into January with yellow flowers, not unlike *H. virginiana*, the plant had been overlooked. The later blooming populations seem to have a higher percentage of orange and red flowers. We have begun growing some of the late blooming populations from seed. The long dormancy period for seed (up to 18-24 months) does not lend itself to a nurseryman's patience. This year we soaked our September-collected seed in sulfuric acid for 10 min., and planted directly thereafter.

***Rhododendron colemanii* R. Miller**

Rhododendron colemanii is another new species that was long dismissed as a late blooming *R. canescens* or color variation of *R. alabamense*. However, it is dissimilar in many physical attributes—and turned out to be a tetraploid (*R. canescens* and *R. alabamense* are diploid)—thereby bestowing its species status. The palette of flower color in the species rivals *R. calendulaceum*, the later bloom season, (late April to mid-May in the Red Hills), extends the season into warm temperatures. Some clones are highly perfumed, rivaling *R. alabamense* for heady fragrance (Zhou et al., 2008).

Growing *R. colemanii* clones from wild-collected cuttings has run the gamut from highly successful to extremely disappointing. We are hopeful nursery-grown plants may give us heavier cutting wood. For best results, soft cuttings with terminal leaves removed are taken in May, quick-dipped with 1000 ppm Dip N' Grow, and placed in 8.9 cm (3.5 in.)-deep cells containing coarse perlite and coarse vermiculite (Dirr and Heuser, 2006). It is important to snip any flower buds that form thereafter to help induce new growth. Root initiation takes place within 30 days, and at 60 days we top-dress with Osmocote Plus 15-9-12 as a slow-release liquid fertilizer. By September we usually see a stolon emerge and can bump the plants up into a slightly larger container—since it is vital to have continued growth before winter.

***Rhododendron minus* var. *minus* S.D. Coleman**

A Georgia nurseryman, Dan Coleman, suggested that in the southern Chattahoochee River basin of Georgia and Alabama—*R. minus* was distinct horticulturally, and more attractive in flower, than the ecotypes from North Carolina. Ecotypes of the species are found scattered in the Red Hills and can vary greatly in appearance and flower. The plant is smaller

and more compact than Appalachian forms, growing in association with *K. latifolia*, which it strongly resembles. The predominant bloom color is lavender, with less pink infusion than more northerly populations. In a recent discovery of it in Conecuh County, Alabama by Ron Miller, Tom Ranney, and Clarence Towe it had brilliant pink trusses of flowers. Their 'Southern Cerise' has been a star in the nursery—as it is easy to propagate and shows a bit more compact habit and forgivable nature. Rooting and production success approaches 85% with the same regimen as for *R. colemanii*. Crosses with a lavender form from Monroe County, Alabama produced progeny with a pleasing palette of lavenders and pinks with some strong contrasting yellow blotches. Cutting trials have begun on three selections from the cross.

What else is out there in them-thar hills?

Viburnum, *Vaccinium*, and deciduous *Ilex* from the region are candidates for more study. *Magnolia acuminata* var. *subcordata* has been used extensively in hybridizing with Asian species for deciduous yellow-flowered selections. Some Red Hills individuals with strong yellow pigment have been recently discovered and may be useful in hybridizing. Southerly forms of *K. latifolia* tend to have less flower diversity than those in the northeast, but a recent discovery of a shrub with a rich pink corolla shows promise as both a Zone 8b garden plant and breeding parent. Our botanical-minded friends who tend to explore with an eye to the ground level tell me the herbaceous plants are a rich tapestry, with perhaps new and endemic species yet to be discovered? The Red Hills indeed, may be one of America's last botanical frontiers!

Literature cited

Adams, J. (2016). North America during the last 150,000 Years. Environmental Sciences Division, Oak Ridge National Laboratory (Oak Ridge, Tennessee, USA) <http://www.esd.ornl.gov/projects/qen/nercNORTHAMERICA.html> (accessed December 19, 2016).

Dirr, M.A., and Heuser, C.W. (2006). The Reference Manual of Woody Plant Propagation, 2nd edn. (Timber Press, Portland Oregon).

Harper, R.M. (1943). Forests of Alabama (Wetumpka, Alabama: University of Alabama, Wetumpka Printing).

Raines, B. (2016). E.O. Wilson, on Alabama as the center of American biodiversity and becoming a scientific rock star. http://www.al.com/news/index.ssf/2016/05/eo_wilson_on_alabama_as_the_ce.html (accessed December 19, 2016).

Sanders, B. (2002). Guide to William Bartram's Travels: Following the Trail of America's First Great Naturalist (Athens, Georgia: Fevertree Press).

Zhou, W., Gibbons, T., Goetsch, L., Hall, B., Ranney, T.B., and Miller, R. (2008). *Rhododendron colemanii*: a new species of deciduous azalea (*Rhododendron* section *Pentanthera*; *Ericaceae*) from the Coastal Plain of Alabama and Georgia. *J. Am. Rhododendr. Soc.* 75, 72–78.

