

Rhododendron catawbiense and *Rhododendron maximum*: The Elepidote Species of Eastern North America

by Donald W. Hyatt

Abstract: The elepidote species *Rhododendron catawbiense* and *Rhododendron maximum* are widespread in the Southeastern Appalachian Mountains of North America. Several scenic wild populations including locations in North Carolina, Tennessee, and Virginia are described. Variations in flower color and form are discussed, including an update on a rare red form of *R. maximum* originally discovered near Mount Mitchell.

1.0 Introduction

Rhododendron catawbiense and *R. maximum* are the only elepidote species native to the eastern North America. Taxonomically, they are placed in the subsection *Pontica* of the subgenus *Hymenanthes*. This group contains an odd assortment of species from around the world, including *R. ponticum* from the Mediterranean, *R. caucasicum* and *R. smirnowii* from Turkey and the Caucasus, *R. aureum* from Siberia and northern China, *R. brachycarpum* from Korea, *R. degronianum* and *R. makinoi* from Japan, *R. hyperythrum* from Taiwan, and *R. macrophyllum* from



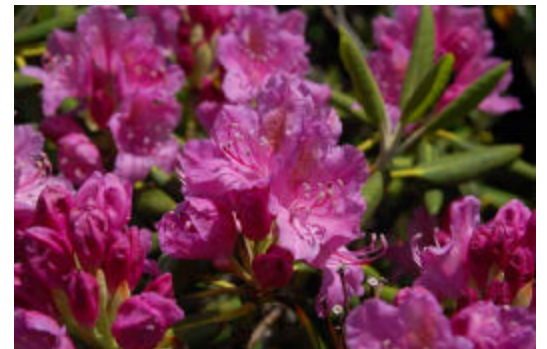
R. catawbiense on a Mountain Ridge



R. maximum along a Stream

the west coast of North America. [1][2][3] These are some of the hardest rhododendrons in the genus, many of which have been popular parents in hybridizing.

R. catawbiense clearly prefers exposed mountain ridges in the wild whereas *R. maximum* is most at home on moist shady hillsides and along streams. Both species are relatively adaptable, though, so it is not uncommon to find *R. maximum* on a mountaintop and *R. catawbiense* growing beside a woodland stream.



R. catawbiense flower



R. maximum flower

The two species are easy to tell apart, especially when in bloom. *R. catawbiense* flowers are of average size and usually lavender pink to purple, whereas *R. maximum* has smaller trusses of white to blush pink. *R. catawbiense* blooms in midseason, but *R. maximum* opens quite late, often 6 to 8 weeks after *R. catawbiense* if plants were growing side by side. Actual bloom date does depend upon many factors including genetic variation, latitude, and especially elevation. In the wild, *R. maximum*

can often be in flower in the valley, while at the same time *R. catawbiense* is blooming on a nearby mountain.

Out of bloom, the plants are quite distinctive, too. The foliage of *R. catawbiense* is, on average, about 5 inches long (13 cm), slightly convex (more so in exposed locations), and medium green. *R. maximum* foliage tends to be significantly larger, 9 inches long (23 cm), flat, and dark green, often retaining a thin indumentum under the leaves. A very easy way to distinguish between the two species is that *R. maximum* has elongated bracts that look like small leaves surrounding its buds. Those are lacking in *R. catawbiense*.

2.0 The Catawba Rhododendron, *Rhododendron catawbiense* Michaux

André Michaux first described the Catawba rhododendron in his 1803 *Flora Boreali-Americana*. However, some feel the first discovery probably belongs to Scotsman George Fraser who introduced the plant in 1809. [3][4][5] Fraser's son wrote in 1799 of their discovery:

"I shall never forget so long as I live the day we discovered this plant. [He offers no date.] We had been traveling among the mountains, and one morning we were ascending to the summit of Great Roan [Bald Mt.], N. C. in the midst of a fog so dense that we could not see farther than a yard before us. As we reached the top the fog began to clear away, and the sun to shine out brightly. The first object that attracted our eye, growing among the long grass, was . . . *Rhododendron catawbiense* in full bloom. There was no other plant there but itself and the grass, and the scene was beautiful!" [4]



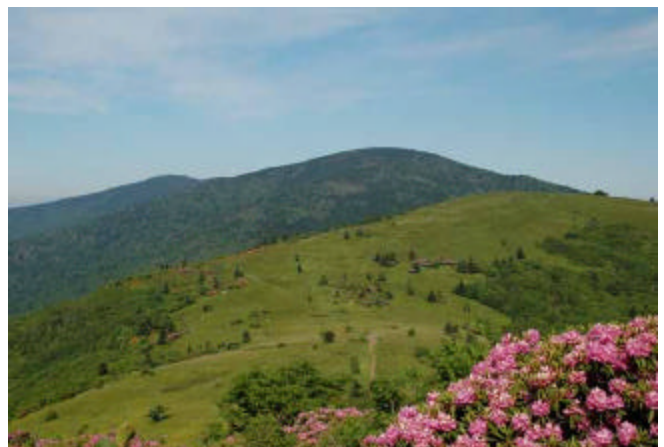
R. catawbiense in the Roan Highlands

The northernmost edge of the natural range for *R. catawbiense* begins in the Blue Ridge Mountains of Virginia near Charlottesville, extends into West Virginia and then south through the mountains of Tennessee, North Carolina, and northern Georgia. There are scattered colonies reported in eastern Kentucky and northern Alabama. [11]

There is a distinct population referred to as *R. catawbiense forma insularis* that grows at much lower elevations in the southern piedmont. Some insularis colonies are reported in Wilson County, NC, not far from Raleigh, and also in Cherokee County, GA, north of Atlanta. This form may have promise in developing heat tolerant hybrids. [13][14]

2.1 The Roan Highlands

There are many popular places to view *R. catawbiense* along the Blue Ridge Parkway, such as the Peaks of Otter in Virginia or Craggy Gardens in North Carolina. Undoubtedly, the most impressive display is on the border of North Carolina and Tennessee in an area known as the Roan Highlands. This is a region of high mountains and grassy balds near the highest peak in the region, Roan Mountain, elevation



Appalachian Trail in the Roan Highlands

6285 ft (1916 m). The Appalachian Trail traverses many of these balds, and with the 360 degree views of some of the highest mountains in the east, many consider this stretch the most scenic of the entire 2175 mile (3500 km) trail. [5][8][12][15] It is gorgeous any time of year, but surely one great show is in autumn when the *Vaccinium* and native azaleas turn brilliant red to contrast with the evergreens. In spring when the estimated 600 acres (243 hectares) of rhododendrons burst into bloom, the sight is absolutely breathtaking.



The Roan Highlands in Autumn

In June of 1957, many leaders in the American Rhododendron Society including David Leach and Joe Gable convened in North Carolina to admire the native azaleas and rhododendrons flowering in the wild. David Leach wrote of his visit to see the *R. catawbiense* on Roan:

“No advance description could equal the magnificent spectacle of lavender-pink flowers in a vast billowing sea reaching out to the misty violet horizon of the mountains. Surely this is one of the great floral scenes of the nation, a vista of immense drama in a majestic setting.” [9]



R. catawbiense in the Roan Highlands



R. catawbiense in the Roan Highlands

Peak rhododendron bloom on Roan is usually between the second and third weeks in June, although weather conditions can cause a two week shift to either side. The window for peak bloom is fleeting, too, perhaps only a week to ten days depending upon the weather. Since clouds and fog often grip those high ridges, we try to go on a day that promises clear skies so we can see the magnificent views.

A state highway crosses Roan Mountain at Carver’s Gap, elevation 5512 ft (1680 m), and a parking area there is a frequent gathering point for many hiking activities. There is a side road that heads up to a park in the Pisgah National Forest called Roan Mountain Gardens. It has public restrooms and easy access via paved walks and decks to scenic views and rhododendrons. There are various trails in the park including access to the

Appalachian Trail and a side trail to the mountain’s summit, Roan High Knob.

The most spectacular rhododendron vista, however, is in the opposite direction, northbound on the Appalachian Trail from Carver’s Gap. Round trip to the prime view is usually considered a daylong hike, but even a short 30 minute climb to the first vantage point, Round Bald, elevation of 5807 ft (1770 m), affords wonderful views. Originally, the trail went straight up a rather steep slope, but it has now been rerouted through rhododendrons and stands of red spruce

(*Picea rubens*) and Fraser fir (*Abies fraseri*) on its way to the summit. The new trail is easier to climb and more scenic but also solved some serious erosion problems.

Just over the crest of the hill at Engine Gap is an impressive stand of flame azaleas, *R. calendulaceum*. The azaleas continue along the Appalachian Trail for several miles, and the masses of orange, yellow, and red blossoms will light up the landscape for at least three weeks in mid to late June.



R. calendulaceum at Engine Gap

The next peak is Jane Bald, elevation 5781 ft (1762 m). The trail is more challenging here since it narrows and becomes rocky as it ascends through thickets of *R. catawbiense*, alder, and azaleas on both sides. Beyond Jane Bald, the trail



Trail at Grassy Ridge Bald

descends briefly to another grassy meadow before heading up to the next crest, Grassy Ridge Bald, elevation 6050 ft (1844 m). At the first hump, the northbound Appalachian Trail bears to the left and descends the mountain, but we take the side trail to the right that continues up the bald for a grand panoramic view.

The trail narrows again through dense *R. catawbiense* but opens near the crest to a broad expanse of grass covering the top of Grassy Ridge Bald. A rock outcropping at the summit makes a convenient stop to survey the scene, and it is easy to become mesmerized by the long grasses waving in the cool breeze with lavender pink rhododendrons, gray granite outcroppings, and mountain views in all directions.

This is not the end of the trail, though, since the best vista is yet to come. At the edge of the Grassy Ridge Bald, just beyond a line of evergreen trees and rhododendrons, one can get a first glimpse of the last peak in the chain, Grassy Ridge Point, elevation 6189 ft (1886 m). When the rhododendrons are in bloom, that entire mountaintop turns lavender pink from the *R. catawbiense* that clothes the summit. The dramatic sight defies description.

The trail ends at Grassy Ridge Point, so hikers must turn around and head back down the mountain. From the other direction, the vistas are different but equally beautiful. It is a good time to focus on the floral details, too, the tiny-leaved sand myrtle (*Leiophyllum buxifolium*) creeping over the rocks, delicate wildflowers in the grass like bluets (*Houstonia caerulea*) and Michaux's saxifrage (*Saxifraga michauxii*), and scattered Gray's lilies (*Lilium grayi*) just beginning to open their bold flowers of orange or red.



Vista of Grassy Ridge Point



Unusual Flower Forms

Perhaps we have been overwhelmed by the sheer majesty of Roan but rhododendron variation there does not seem as diverse in comparison with other populations. Flower color ranges from light to medium lavender pink with occasional deeper tones, but we have not noticed white forms or dark purples. There are extremely fine selections, though, as fine as any ironclad. We have noticed some unusual flower forms, too, where corollas are irregular or even missing. The oddity is not uniform, so we suspect it is caused by the environment or perhaps a pathogen.

R. catawbiense is very winter hardy, but we see variations there, too. Temperatures at the upper ridges of the Southern Appalachians can fall as low as -30° F (-34° C) in some winters which can make relative hardiness of individual plants more apparent. We have observed occasional rhododendrons that suffered complete bud loss in some years whereas adjacent specimens carried full trusses.

2.2 Mount Rogers and Rhododendron Gap

There is another impressive *R. catawbiense* display near Mount Rogers, Virginia's highest mountain, elevation 5729 ft (1746 m). The population is along the Appalachian Trail at a high meadow called Rhododendron Gap. Easiest access is from Grayson Highlands State Park via a number of scenic hiking trails. Due to the lower elevation, peak bloom arrives earlier, about the second week in June.

The population may not be as large as Roan but it is quite extensive and very lovely. *R. catawbiense* shows excellent diversity here including standard lavender pinks to purples, but also excellent light pinks, pale lavenders, clear rose pinks, and some that are almost picottee. We have not seen any white forms, though. We always look for a herd of wild horses that graze in highlands; they are relatively tame and quite photogenic.



R. catawbiense at Rhododendron Gap

2.3 Otter Creek and the Peaks of Otter

The *R. catawbiense* populations along the Blue Ridge Parkway in Virginia are clearly the most diverse we have found. There are excellent color variations found at low elevations along Otter Creek starting near milepost 56 that continue to the higher altitudes beyond the Peaks of Otter at milepost 84. We have seen flowers of lavender pink, deep rose pink, strong purple, pale lavender, blush pink, and some that almost look apricot due to a contrasting blotch against a pale pink corolla. Of particular interest are the white forms that we have found here.



Wild Horses at Grayson Highlands

In the late 1930's, Powell Glass of nearby Lynchburg collected seed from a white *R. catawbiense* found in this area and sent it to Joe Gable. Gable raised multiple generations and finally selected a plant he called *R. catawbiense* var. *album* (Glass), the plant he named 'Catalgla.' We often wonder if one of the white *R. catawbiense* plants we have admired in the wild might be the very one Powell Glass used as his seed source.



R. catawbiense variations at Otter Creek

There is significant elevation change in this area within a relatively short distance. The lowest elevation of the Blue Ridge Parkway is 649 ft (198 m) at milepost 64 where the Parkway crosses the James River. *R. catawbiense* blooms at that elevation in early May. The highest point on the Parkway in Virginia is 3950 ft (1200 m), barely 10 miles (16 km) away where the *R. catawbiense* flowers in early June. Whether the diversity we see in this area has been influenced by the elevation extremes is not clear, but it does invite speculation. Could hybridization with *R. maximum* in the distant past have been responsible for the wide color variations we see today?



R. catawbiense, Blush Pink Form

3.0 The Rosebay, *Rhododendron maximum* Linnaeus



R. maximum, White Flowered Form

Rhododendron maximum, the Rosebay or Great Laurel, is clearly the most widespread of our eastern species. Its range includes most of the same areas in the Southern Appalachians inhabited by *R. catawbiense* but then extends far to the north through West Virginia, Pennsylvania, and into New York. There are scattered populations in most other New England states, Ohio, and even in Canada. [11]

R. maximum was introduced in Europe by 1736, seventy years before *R. catawbiense* made its debut there. However, it was never considered as valuable, partly because of the

small truss size and very late season of bloom. Perhaps even a greater factor was the fact that *R. maximum* tends to self pollinate, so it was difficult to use as a seed parent. [4][10]

Even though the natural range for *R. maximum* is more northerly, the species is not considered as winter hardy as *R. catawbiense*. [10] Perhaps one reason is that *R. maximum* does

not typically inhabit the high ridges where it would be exposed to the most extreme weather conditions.

We have noticed significant variations in bloom time for *R. maximum*. In many populations, some plants can be in tight bud when neighboring plants are in full bloom. Also, trusses on an individual plant tend to open gradually rather than all at once. It is quite common to see trusses at various stages on the same plant: some completely through, others fully open, and yet buds still to come.

We do see occasional hybrids of *R. catawbiense* and *R. maximum* in the wild. They are definitely rare, and all of them were found at upper elevations near a *R. catawbiense* population. The likely cross was made by an insect pollinator bringing *R. maximum* pollen from lower elevations. Flowers, foliage, and bloom time are intermediate between the two species and flower color is light lavender pink.



Natural Hybrid of R. catawbiense and R. maximum

3.1 The Great Smoky Mountain National Park

R. maximum is a dominant plant along many streams in the Great Smoky Mountain National Park. We have observed one population near Forge Creek for many years, since we often hike the Gregory Ridge Trail through that area on our way to a spectacular native azalea hybrid swarm on Gregory Bald. The trail begins in Cades Cove at an elevation of approximately 1800 ft. (550 m), and the rhododendrons are very dense along the first third of that trail. They are usually starting to bloom around the summer solstice when we make that hike.



Forge Creek Trail to Gregory Bald



Pink R. maximum along Forge Creek

The area near Forge Creek was originally a virgin hemlock forest (*Tsuga canadensis*) with magnificent trees that were hundreds of years old. Sadly, the entire hemlock forest has been devastated in just a few years due to an alien pest, the hemlock wooly adelgid. Most of those huge trees are now dead. With more light, the rhododendrons are now blooming with abandon. We see not only whites, but also light to medium pink forms, too. An interesting thing about the dense shade provided by *R. maximum* is that it not only reduces diversity at the woodland floor but surely must inhibit forest regeneration. It is not clear what tree will eventually replace the hemlocks in the centuries to come.

3.2 Mount Mitchell and the “Red Max” at Curtis Creek

The widest variation in *R. maximum* we have seen so far is near Mount Mitchell. With an elevation of 6684 ft (2037 m), it is the highest mountain in the eastern United States. The Blue Ridge Parkway from milepost 330, beyond the entrance to Mount Mitchell State Park, to about milepost 360 seems exceptionally rich. There are typical white to blush pink forms as seen in other locations but also stronger pinks and some that are picottee. The elevation in this area is from 3000 to 5000 ft (920 to 1520 m), so *R. maximum* can be in bloom from late June through much of July.



R. maximum with Picottee Blossoms

During the 1930s when construction started on the scenic Blue Ridge Parkway, Mr. Clayton who was involved with that project discovered a rare population of about 20 plants of *R. maximum* that had crimson red flowers. [6] The remote site is near Curtis Creek, not far from Mount Mitchell. David Leach described being led through a dense thicket to the site of the “Red Max” in 1957. Access today is just as difficult as it was then.

“As we slowly made our way toward the site Dr. Ernest Yelton, one of our guides, exhibited his fantastic ability to pass through the all but impenetrable underbrush at a fast gallop, an exhibition of split-second writhing that would



The Red R. maximum at Curtis Creek

blench the cheek of either an All-American fullback or a fan dancer.” [9]

Joe Gable made several trips to the “Red Max” including the one described by David Leach. He returned again in 1960 with Dr. Skinner, Director of the U.S. National Arboretum, and several people brought back cuttings or layers that time. Gable was given a larger plant dug at the site that he planted at his nursery in Stewartstown, PA. It was still alive in 2007. Gable’s daughter Carolyn sent cuttings of that plant to the Rhododendron Species Foundation and gave it the name ‘Mount Mitchell.’ Plants from that accession were distributed by the RSF as *R. maximum* ‘Mount Mitchell’ 75/137. [6]

The RSF received a second accession from David Leach that also carried the same name, *R. maximum* ‘Mount Mitchell.’ The RSF gave it a



The “Red Max” Shows Red Color in the Foliage

different accession number, 77/646, since the two forms are genetically different. Accession 77/646 was the best red flowered form selected from many plants Warren Baldsiefen raised from seed he got from Gable. There was yet another red *R. maximum* registered by Weldon Delp. His plant was a fourth generation selection from seed originally from the Gable plant, and he called his 'Delp's Red Max.'



Irregular Coloration in R. maximum 'Mt. Mitchell'

The original "Red Max" is very distinctive, in or out of flower. It has red sap that looks like cranberry juice and the coloration is evident in both stems and leaves. The sap does not always reach the foliage edge so the center of a leaf is often red, but the margins can still be green. In a garden situation, clones of the "Red Max" do not always behave like the original plant in the wild. Sometimes the red color does not show up in all parts of the plant, so some branches will have normal green leaves and white flowers. Individual trusses can also have a mixture of red and white blossoms, or flowers that are bi-colored or blotched.

The late Dr. August Kehr ("Augie") was fascinated by the "Mysterious Red Maximum" and wrote several articles about the plant. [6][7] He proposed a number of theories, none of which ever seemed satisfactory. At first he favored the one suggesting the plant was a chimera composed of both red and white cell layers. In later years, he tended toward a theory of "moveable genes" that could cause the plant to sport differently depending upon where the genes were located. He admitted that more research was needed to understand what really caused the strange coloration.



George McLellan and Anita Burke Beside the 'Curtis Creek' Red R. maximum

By 1992, the original "Red Max" in the wild had apparently died. It was a sad loss since that plant was estimated to be at least 100 years old. There was still at least one remaining plant on site that had red flowers. It had been in heavy shade and had a solitary trunk that leaned at a significant angle. It could be a layer or more likely a seedling, but is now called the 'Curtis Creek' form. Fortunately, some dedicated stewards in the area have been watching over the plant for a number of years, trying to make sure that it does not suffer a similar demise. After nearby trees were trimmed, the plant has been getting more light and has become more robust.

I have made the pilgrimage to the site at least five times. On my first trip in the fall of 2003, I was grateful to have been escorted by Ed Collins and Bob Stelloh of the Southeastern Chapter of the ARS. I would never have found it on my own, and I still find it amazing that the plant was even found in the first place. I did collect

some seeds that we raised to give away plants at the 2006 joint convention of the American Rhododendron Society and Azalea Society of America. My most recent trip was in late June of 2010 in preparation for this article.

The winter of 2009-2010 was very rough in much of the eastern United States. With relentless heavy snows and serious ice storms, many mountainous regions, especially those near Mt. Pisgah and Mt. Mitchell, seemed to be particularly hard hit. Most deciduous trees lost large branches, and many were completely broken off. Interestingly, very few rhododendrons showed any snow or ice damage. Since ice storms are relatively frequent in the mountains, the loss of the canopy in this manner must be one mechanism by which rhododendrons that had stopped blooming due to excessive shade suddenly become exposed to higher light intensities. With more light, they will likely bloom more heavily for the next several years.



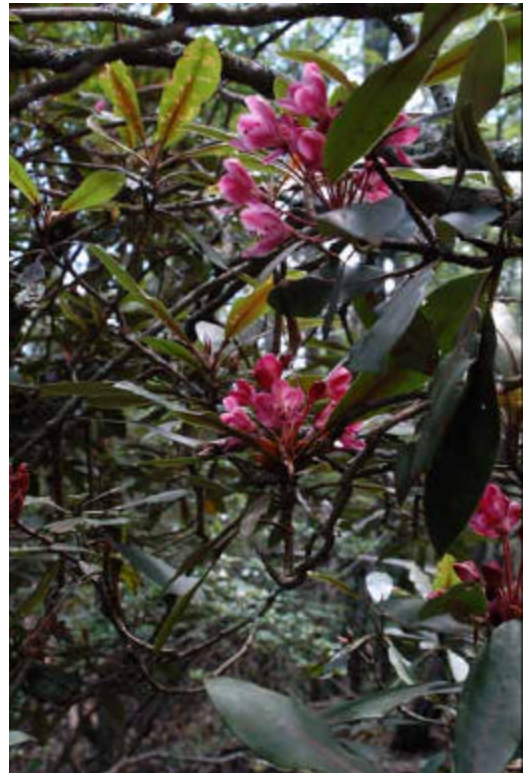
Fire Damage in the Thicket Near the “Red Max”

I was concerned that the “Red Max” might have had trouble over the winter since it only had that one trunk leaning at an angle. As I set out on a trail to the site, I became concerned for a different reason since I saw evidence of fire. Many rhododendrons along the trail were burned, but many seemed to be regenerating from the base. When I cut into the dense “rhododendron hell” to work my way up a slope to ‘Curtis Creek’ plant, I could see that the fire had been more intense in that area. Huge old *R. maximum* plants were completely charred and many showed no signs

of regeneration. I was certain that the sole surviving red *R. maximum* had met a similar fate. It was upsetting to think that such a rare specimen might join ranks of other plants like the *Franklinia* that are no longer found in the wild.

As I neared the small clearing around the “Red Max,” I suddenly spied some red color through the dense snarl of branches. I actually had chills. Not only was the plant alive and well, but it was in full bloom! I inspected it carefully and could see where flames had been within feet (decimeters) of its base. I could see no sign of damage!

How that fire managed to miss the “Red Max” is a complete mystery. All I could think of is that the spirits of great rhododendron leaders like Joe Gable, David Leach, Augie Kehr, and so many others who had visited and admired the plant over the last half century must have gathered round to deflect the flames. Later, I learned that the Forest Service had actually conducted a



*R. maximum ‘Curtis Creek’
Survives the Fire*

controlled burn in that area on Easter weekend. The “Red Max” is safe . . . at least for now!

4.0 Conclusion

The majesty of our eastern rhododendron species *R. catawbiense* and *R. maximum* blooming in wild really defies description. The beauty of natural stands of these rhododendrons in some of the most scenic locations in the United States can only be fully appreciated first hand.

The red *R. maximum* is indeed a rare and unusual form, perhaps more interesting as a novelty than valuable as a parent in hybridizing. On the other hand, Joe Gable’s white *R. catawbiense* selection ‘Catalgla’ has been often used as a parent. For modern plant explorers, the question is what other superior selections of our native species still exist in the wild? We should continue to observe and evaluate native populations, protecting the places where they grow, and finding ways to preserve the genetic diversity and distribute the very best forms.

5.0 Acknowledgements

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