

# ***Rhododendron vaseyi* in the Southern Appalachians**

## **by Donald W. Hyatt and George Keen McLellan**

**Abstract:** *Rhododendron vaseyi* is discussed including variations in flower color, form, plant habit, and distribution in the wild. The authors make several suggestions for observing wild populations, but question why a native azalea so adaptable in the landscape has such a limited natural range.

### **1.0 Introduction**

*Rhododendron vaseyi*, the pinkshell azalea, is one of our most charming native azalea species. Its delicate pastel pink flowers are exceptionally clear in color, and have a distinctive shape unlike any other native azalea in the United States. The visual effect of *R. vaseyi* blooming in the wild can be captivating, like watching myriads of dancing pink butterflies animated by the cool mountain breezes.

The contrasting pink blossoms with deeper pink buds are incredibly beautiful in their own right, but the plants bloom with such profusion along exposed ridges, as well as under the still leafless canopies of deciduous forests, that the mountains take on a soft pink haze as the azaleas come into flower. How fortunate we are to have the scenic Blue Ridge Parkway [10], a national treasure that traverses some excellent wild populations of *R. vaseyi*. It allows us to admire the species up close with relative ease.

It is awe inspiring to gaze upon acres of *R. vaseyi* in bloom in the mountains of western North Carolina. It is puzzling, though, trying to understand its relationship to the natural environment. *R. vaseyi* is a very adaptable garden plant, so why is its range restricted to such a small mountainous region in the wild?

In this article, we present our thoughts and impressions of *R. vaseyi* as seen in the wild. We will discuss some variations we have observed, and will also describe a few favorite populations. This species is surely one of our finest native azaleas.

### **2.0 The Pinkshell Azalea, *Rhododendron vaseyi* A. Gray**

First discovered in western North Carolina by George Vasey in 1878, the lovely pinkshell azalea was determined to be a new species by Asa Gray at Harvard University. He published the name *Rhododendron vaseyi* in 1879. Two other synonyms were published later: *Azalea vaseyi*, by Alfred Rehder in 1903, and *Biltia vaseyi*, by John Kunkel Small in 1903. [8] The plant has many unique qualities, and Small created the genus name *Biltia* to honor George W. Vanderbilt and Biltmore, his vast estate near Asheville, NC. At one time, Biltmore covered 125,000 acres (50,584 hectares) and extended all the way to Mount Pisgah where the species grows naturally. Today, Biltmore is only 8000 acres (3249 hectares).

Currently, *R. vaseyi* is grouped in the subgenus *Pentanthera* under section *Rhodora*, along with one other American species, *R. canadense*. However, many experts in the field are still in disagreement as to where *R. vaseyi* fits within the genus *Rhododendron* [1][2][6][7] but this will be resolved eventually.

### **3.0 Observations on Species Variation**

#### **3.1 Flower Color**

We have observed significant color variation in wild populations of *R. vaseyi*. Most plants have flowers of pale pastel pink to medium rose pink, some with lighter centers, but colors are always very clear with no undertones of blue or lavender. Blotch configurations are variable: the upper three petals carrying varying degrees of spotting of brown, rust, or crimson, and occasionally green. Some varieties have almost no markings.

The RSF has a number of excellent accessions [6], but we have observed many outstanding wild forms that should be propagated. We have found plants with white flowers, but invariably the buds have some pale pink pigmentation so we do not consider them true album forms comparable to *R. vaseyi* 'White Find.' We have identified many superior forms in various shades of pink, and we have found some with very deep colors approaching rose-red. These are very rare, but quite desirable.

Since *R. vaseyi* does not generally hybridize with other species, most plants in the trade are raised from seed. For the 2006 American Rhododendron Society Convention, we raised 500 seedlings of the deepest colored form we had ever observed in the wild, and distributed them as table favors. Through careful breeding and selection, we feel that good red forms of this species are possible.

### 3.2 Flower Size and Shape

In the wild, flowers of *R. vaseyi* usually measure 1.25 to 2 inches across (3 to 5 cm) and appear in clusters of 6 to 8 blossoms. We have counted as many as 10 flowers in a single terminal bud, although counts as high as 15 flowers are reported [7].

The flower shape of *R. vaseyi* is very distinctive. Rather than the tubular shaped flowers found in our other native azaleas, *R. vaseyi* has widely funnel-shaped blossoms with very short floral tubes. The corolla is called "two-lipped" since the bottom two petals are separate and widely flaring and the top three petals are held more closely together. This petal arrangement is similar to *R. canadense*.

Some *R. vaseyi* forms can have uniformly rounded petals but others may have narrow, pointed petals. We have never seen any double flowers, although we have found flowers with six petals and some with only three.

### 3.3 Stamens

One unique aspect of *R. vaseyi* is its stamen count. Most native azaleas have reliably 5 or 10 stamens, but *R. vaseyi* can have anywhere from 5 to 7 stamens. Its stamens are called "dimorphic" since they come in two different forms. Some stamens are much larger than others, a trait in common with several Japanese species including *R. schlippenbachii*, *R. albrechtii*, and *R. reticulatum*. [2][5]

In 2007, we found the number of stamens per flower more commonly 5 in the wild rather than 6 or 7. It is not as though some plants regularly produce flowers with 5 stamens and other plants produce 6 or 7. Individual flowers within the same truss can have different configurations. Vigorous plants tend to have higher stamen counts, so perhaps the previous hot, dry summer which encouraged heavy bud set on *R. vaseyi* in the wild also affected stamen counts.

In a typical *R. vaseyi* flower, there are three, gracefully curving large stamens exiting from the bottom of the corolla tube. They can be up to 1.5 inches in length (3.6 cm), about as long as the pistil. In a flower with 5 stamens, in addition to the three large stamens, there are two smaller stamens emerging from the top of the corolla tube. Those smaller stamens are usually straight to lightly curving, and sometimes only half the length of the larger ones and only half the diameter. Flowers that have 6 or 7 stamens usually have extra stamens of the smaller type.

### **3.4 Flower Buds**

The flower buds of *R. vaseyi* are larger than most other native azalea species. Buds are globe shaped, measuring nearly 0.5 inches across (1.2 cm). *R. vaseyi* can develop multiple buds, but typically only on vigorous shoots in strong light conditions. Surprisingly, this species blooms rather well in shade, unlike so many other native azaleas that demand ample sun before they set flower buds.

### **3.5 Leaves**

The leaves of *R. vaseyi* emerge after the flowers open, although strong vegetative shoots often expand with the flowers. The leaf color is usually light to medium green in our experience rather than dark green. In the autumn, the leaves can take on wonderful hues of bright red to deep burgundy in sun, but typically more yellow in the shade.

The leaf shape is quite variable, sometimes broadly oval or elliptic to 2.5 inches wide (6 cm) and 4.5 inches long (12 cm). They can be quite narrow, too, less than 0.6 inches wide (1.5 cm). Leaves taper to a point at both ends and margins can be flat to undulating.

### **3.6 Seeds and Seedpods**

The seeds of *R. vaseyi* are very small, less than 1 mm in length, and somewhat rod shaped. Seedpods are very distinctive, frequently curling down below the level of the original truss. The seedpods measure approximately 0.5 inches long by 0.25 inches wide (1.3 cm by 0.6 cm). Sample counts indicate there are often more than 200 seeds in a single capsule.

The capsules of *R. vaseyi* are unique in that they remain fused at both ends instead of splitting open widely as most other native azaleas do when releasing their seeds. Seeds of *R. vaseyi* exit through narrow slits in the sides of the capsules, presumably rather slowly over time. Capsules can hang on plants for several years, so we suspect the dispersal mechanism is similar to a salt shaker, where seeds gradually escape as strong winds shake the branches and tiny seeds find their way out through those slits. Some capsules remain so tight that slits do not seem to open, thus delaying the release of seeds until capsules eventually fall to the ground or else are otherwise broken apart. We have successfully germinated seed from year old capsules collected in the wild and wonder how long seed remains viable from prior years.

We suspect that this seed dispersal mechanism may be one reason why *R. vaseyi* has such limited natural distribution. Tiny seeds could travel long distances by air or water, but not if they cannot escape their heavy seed capsules.

### 3.7 Plant Habit

*R. vaseyi* is a shrub to small tree usually less than 12 feet in height (3.6 m). In shady locations, the branching structure becomes more open and arching, often quite graceful in appearance. When growing in full sun, the habit is more dense and compact, and plants become broad and spreading with many strong basal stems. The species is a precocious bloomer, frequently flowering the second year from seed. Seedlings that germinate along grassy edges of the Blue Ridge Parkway are sometimes mowed off one season, and amazingly manage to flower the following spring while only a few inches high.

### 4.0 Cultural Requirements

In its natural environment, *R. vaseyi* is an adaptable woody shrub found in open areas, exposed rocky ridges, and steep slopes under deciduous trees. The species seems to prefer moist locations, since plants often colonize areas with thin soils on exposed rock near underground seeps and springs.

Having such a limited range in the wild, one would expect the cultural requirements of *R. vaseyi* to be extremely demanding. Unlike the Mountain Fetterbush, *Pieris floribunda*, and some other high altitude plants from the same region, *R. vaseyi* seems quite adaptable in the garden. Galle reported hardiness ratings from Zone 5a to 9a [4], although others report difficulties in some southern locations [9]. The species grows reliably from the Mid Atlantic area northward into New England and Nova Scotia, and is equally at home in the Pacific Northwest, the UK, and Western Europe including parts of Scandinavia. [1][6]

*R. vaseyi* seems able to survive summer heat, winter cold, and modest drought conditions although it objects to heavy fertilization, at least in our garden experience. The species is clearly an adaptable plant, but tiny seedlings may require constant moisture during their early phases in order to establish. That could explain the preference for moist locations, and could affect its distribution in the wild.

### 5.0 Season of Bloom

The season of bloom for *R. vaseyi* is listed from late April to June [7] but the difference is not due to species variation, but more related to spring temperatures and elevation. In any given population, all plants seem to flower very close to the same time period, perhaps no more than a week apart from earliest to latest forms. Many native azalea species like *R. calendulaceum*, *R. prunifolium*, and *R. arborescens* have genetic forms that vary widely with respect to blooming times, sometimes a month or more apart. The bloom time for *R. vaseyi* is quite narrow and predictable.

In a typical year, *R. vaseyi* at 4000 feet (1220 m) will be in peak bloom around the last week in April to first of May. Plants along the Blue Ridge Parkway at elevations of 5000 to 5500 feet (1525 to 1670 m) flower a week to 10 days later, and plants at higher elevations open even later. Planning a trip to see *R. vaseyi* in the wild during the first to second week in May is rarely disappointing, since one merely adjusts altitude to find an appropriate population in peak condition.

Interestingly, *R. vaseyi* seems to be quite frost resistant. [1] In early spring when *R. vaseyi* begins to bloom, temperatures in the mountains can be unpredictable, with frosts or light freezes quite common. Temperatures below 23° F (-5° C) will surely damage open flowers, but the buds of *R. vaseyi*, even when showing color, seem to be able to survive significant cold. We do not have data to specify those extremes, but in the spring of 2007 when western North Carolina was hit by record cold, temperatures in the valley at nearby Brevard and Hendersonville, NC, were well below freezing for five nights in a row in mid April. Many plants in the valley as well as on the mountainsides were seriously hurt by that freeze, but *R. vaseyi* seemed to come through unscathed. Frosty nights in May of 2007 that browned the flowers of many species including *R. minus* var. *carolinianum* did not seem to bother either open blossoms or flower buds of *R. vaseyi*.

## 6.0 Distribution in the Wild

*R. vaseyi* is not an endangered plant, or even rare within its realm, but it does have a very restricted domain. The plant is often reported in just seven North Carolina counties [7] and one county in northern Georgia [6][9]. We have found it elsewhere, too.

Rather than stressing the number of counties where *R. vaseyi* is found, we feel that it is more important to point out that there are essentially just two disjoint regions in the Southern Appalachians where this species grows naturally. Even so, it does not grow throughout those areas, but primarily on mountains at elevations of 4000 to 6000 feet (1220 to 1830 m).

One of those regions is in northwestern North Carolina near Grandfather Mountain, which includes Avery, Mitchell, and Watauga Counties. In addition, we have photographed the species on the Blue Ridge Parkway between mileposts 342 and 350 in Yancey County, NC. Yancey County is not often cited, but we suspect *R. vaseyi* grows in adjacent McDowell County, too.

The second location, the one many consider the “epicenter” of *R. vaseyi* in the United States, is located in southwestern North Carolina and includes Haywood, Jackson, Macon, and Transylvania counties, as well as Rabun County in northern Georgia.

We feel the reason these two regions are disjoint is caused by loss of habitat in the vicinity of Asheville, NC, due to low elevation. The Blue Ridge Parkway is about 2000 feet high (610 m) as it passes south of the city through the Biltmore estate. The Parkway reaches elevations over 5000 feet (1525 m) where *R. vaseyi* grows in the Pisgah National Forest on either side of town, but that is many miles away. Why the species does not inhabit the high mountains west of Asheville is puzzling, though, since many other native azalea and rhododendron species grow in all of those locations.

We have never seen *R. vaseyi* growing in swamps or bogs as often reported [1][2][7], since we usually find the species on steep mountain terrain. *R. vaseyi* was discovered in a bog near Halifax, Massachusetts and some considered it a native population, but plants had apparently escaped from an abandoned nursery [5]. We have no doubt that the species can grow in swamps. We just haven’t found such environments on the steep slopes where we find *R. vaseyi*.

## 6.1 Blue Ridge Parkway at Beech Gap

Admittedly, we have not explored every site where *R. vaseyi* grows in the wild, but spend our time where we find the best floral displays and greatest species variation. One favorite spot is

in the southern region of North Carolina near the intersection of Route 215 and the Blue Ridge Parkway at Beech Gap, milepost 423, where the counties of Haywood, Jackson, and Transylvania converge.

Surprisingly, the display of *R. vaseyi* along the 469-mile (756 km) Blue Ridge Parkway is of short duration. In this southern region, the species begins to appear north of Beech Gap about milepost 408 near the Mount Pisgah Inn, and continues south beyond milepost 425, a distance of just 17 miles (27 km). Plants are very easy to view up close, and since elevations range from 4700 to 5500 feet (1430 to 1670 m), the mountain vistas are superb.

South of Beech Gap, as Route 215 descends toward Balsam Grove, NC, there are excellent stands of *R. vaseyi* on both sides of the road for several miles. The elevation drops quickly from 5300 feet (1615 m) to about 4000 feet (1220 m) through the *R. vaseyi*, but these plants usually peak the week prior to those along the Parkway due to lower elevations. Interestingly, there is very little *R. vaseyi* in the other direction on Route 215, north of the Parkway. We are not sure why, but speculate that the high ridges may create a rain shadow, blocking moisture laden air masses from the south, making the environment on the north side drier and less suitable for the species.

## 6.2 Pilot Mountain

Another favorite spot for experiencing *R. vaseyi* is on Pilot Mountain, a 5000 foot peak (1525 m) just south of the Blue Ridge Parkway, east of Route 215 and west of Route 276. By following Forest Service roads, one can get fairly close to a number of hiking trails that intersect with the Art Loeb Trail, the one that crosses Pilot Mountain [3]. Approaching from the southeast side of the mountain, the trail is very steep at first, but becomes easier as it switches back and forth through the azaleas when approaching the summit.

The entire trail to Pilot Mountain is like an exquisite natural garden with ferns and rare wildflowers along the path including Umbrella Leaf (*Diphylllea cymosa*), Painted and Red Trillium (*T. undulatum* and *T. erectum*), and scattered clumps of *Iris verna*. With *R. vaseyi* towering overhead framing the lovely mountain views, this trail in early spring is truly an unforgettable experience.

We have noticed on Pilot Mountain, as well as many other places where *R. vaseyi* grows, that populations are heavier on the southern and eastern sides of the high mountains rather than on the northern or western slopes. Careful mapping of the species with respect to topography might be very revealing.

## 6.3 Other Locations

There is very little *R. vaseyi* from about milepost 426 to well beyond milepost 431 at Richland Balsam Overlook where the Blue Ridge Parkway reaches its highest point, elevation 6047 feet (1844 m). We do not feel the reason is due to high altitude or exposure, but suggest that the formerly dense evergreen forests here may have provided too much shade and competition. Unfortunately, most of those stately trees have died from acid rain and spruce adelgid infestations.

*R. vaseyi* becomes prominent again along the Parkway well before milepost 450 at Waterrock Knob, elevation 6170 feet (1880 m). In this area, much of the Parkway is above 5500

feet (1670 m) and *R. vaseyi* continues up the slopes to at least 6000 ft (1830 m). Flowering time is about a week later than Beech Gap due to the higher altitude.

## 7.0 Native Plant Companions

Many wonderful ericaceous plants bloom at the same time as *R. vaseyi*, including beautiful pale pink to white forms of *Rhododendron minus* var. *carolinianum*. We have spied some forms of *R. minus* with pale yellow to light apricot flowers, but they were on cliffs and we could not get close enough to inspect them. The lovely *Pieris floribunda* with its upright ivory-white flower clusters and dark evergreen foliage makes another perfect companion for *R. vaseyi* in nature's landscape.

Other choice wildflowers and native trees are in full flower at that early spring season. Some slopes appear frosted with the delicate white flowers of the serviceberry (*Amelanchier laevis*). The soft yellow blossoms of *Magnolia fraseri* brighten many distant slopes, and native dogwoods (*Cornus florida*) are flowering at lower elevations. In protected coves, large colonies of the Great White Trillium (*T. grandiflorum*) carpet many slopes, and ephemerals like the Trout Lily (*Erythronium americanum*) form thick groundcovers studded with hundreds of dainty yellow blossoms.

This southern stretch of the Blue Ridge Parkway from Asheville (milepost 380) all the way to its terminus near the Great Smoky Mountain National Park at Cherokee (milepost 469) is one of the richest botanical regions in the United States, and one of the most scenic as well. There are large stands of other native azaleas here including *R. calendulaceum* and *R. arborescens*, as well as *Rhododendron catawbiense*, *R. maximum*, and *Kalmia latifolia*. However, these will not bloom until mid to late June. The autumn foliage display in early October is equally extravagant with brilliant red vaccinium species, native azaleas, sourwoods, and multi-colored maples contrasting against the evergreens.

There is another form of *R. minus* in the region that we find most intriguing. It has small flowers of deep lavender, purplish-pink, to reddish purple, and is found at high elevations on rocky crags, especially in the nearby Great Smoky Mountain National Park at Newfound Gap. This late purple form of *R. minus* grows at the same altitude as *R. minus* v. *carolinianum*, but blooms about 6 weeks later, about the same time as *Kalmia latifolia* and *R. maximum*. We feel *R. minus* in its many forms deserves much greater study.

## 8.0 Conclusion

*Rhododendron vaseyi* is indeed a unique and wonderful member of the genus. Although very limited in range in the Southern Appalachian Mountains, this plant with its delicate pink blossoms decorates the upper elevations and steep mountains in great profusion each May. We can only speculate as to why its natural range is so restricted.

There are many rich rhododendron centers in the world, such as China or the Himalayas, but many of us will never have the opportunity to explore those remote locations. Fortunately, we are able to see wild rhododendron species in the United States with relative ease. A simple day trip from one of several major metropolitan areas is sufficient to catch *R. vaseyi* in peak bloom along the Blue Ridge Parkway. There are many excellent trails in the region where one can admire rhododendron species and other native plants as they have existed, undisturbed, for thousands of years.

Seeing how native azaleas and rhododendrons adapt to their natural environment can give a real insight into cultural needs, but experiencing native species in the wild, often enhanced by spectacular mountain settings is aesthetically uplifting. We encourage all rhododendron enthusiasts to take similar journeys. Admire the botanical treasures close at hand, help document and protect the rarities that exist, and enjoy the beauty of the natural world.

## 9.0 Acknowledgements

We wish to thank Don Voss and Dr. Sandra McDonald for their editorial suggestions during the preparation this article. We also want to thank Ed Collins and Karel Bernady for their recommendations regarding *R. vaseyi* populations in the wild.

## 10.0 Bibliography

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**Images from George Keen McLellan:**

**Flower Variations of *R. vaseyi***



GKM-01-BRP342-YanceyCounty.jpg (Five and six-stamen flowers)



GKM-02-BRP419-PinkRoundFlowers.jpg (Good form)



GKM-03-BRP419-Pink.jpg (Pink with lighter center, greenish brown blotch)



GKM-04-BRP415-BallTruss.jpg (Multi-bud, ball shaped truss and flower with 7 stamens)



GKM-05-BRP417-Blush-RoundedFlowers.jpg (Blush near Milepost 417)



GKM-06-BRP419-White.jpg (White with pale pink buds)



GKM-07-BlushPink.jpg (Pale color contrasting against rock cliff)



GKM-08-RedVaseyi.jpg (Deepest color R. vaseyi we have seen)

### Plants in the Wild



GKM-10-DevilsCourthouse.jpg (Plant at Devils Courthouse Overlook)



GKM-11-GraveyardFields.jpg (Plant near Graveyard Field Overlook)



GKM-12-BRP419.jpg (Rock and plants at milepost 419)



GKM-13-BRP425-Habitat-Seeps.jpg (Milepost 425 – Notice underground seeps)



GKM-20-JohnRock.jpg (Variations at John Rock Overlook)



GKM-21-Rt215.jpg (Hillside on Route 215)



GKM-22-JohnRock.jpg (John Rock Overlook)



GKM-23-JohnRock.jpg (John Rock Overlook)



GKM-24-JohnRock.jpg (John Rock Overlook)



GKM-25-JohnRock.jpg (John Rock Overlook)



GKM-26-JohnRock-Fetterbush.jpg (John Rock Overlook with Mountain Fetterbush)

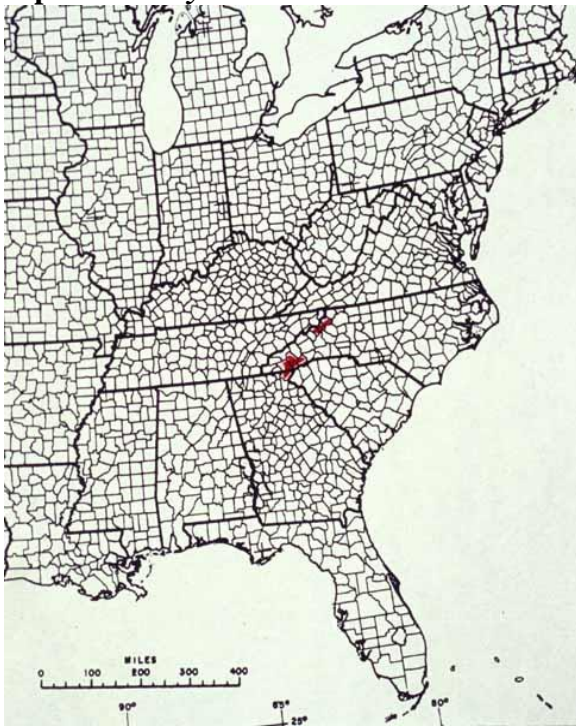


GKM-27-PilotMountain.jpg (Pilot Mountain Trail)



GKM-28-ParkwayView.jpg (Parkway View near Milepost 423 –Pilot Mt. is centered in distance)

### Map of *R. vaseyi* Distribution



GKM-40-DistributionMap.jpg (The two general regions where *R. vaseyi* grows)

**Images from Donald W. Hyatt:  
Flower Variations of *R. vaseyi***



DWH-01-Pink-BRP417.jpg (Strong pink near Milepost 417)



DWH-02-Pink-RedBlotch.jpg (Pink with Red Blotch)



DWH-03-BlushPink.jpg (Brown Blotch)





DWH-04-StamenTypes.jpg (Pale pink - good example of dimorphic stamen types)



DWH-05-Seedpods.jpg (Flowers but showing previous year's seedpods)



DWH-06-RedVaseyi.jpg (George McLellan inspecting rosy-red form)



DWH-07-RedVaseyi.jpg (Deepest color form we have seen in the wild)



DWH-08-SixPetals.jpg (Bright pink with six petals)



DWH-09-SixPetals.jpg (Blush with six petals)



DWH-10-ThreePetal.jpg (Flowers with three petals)

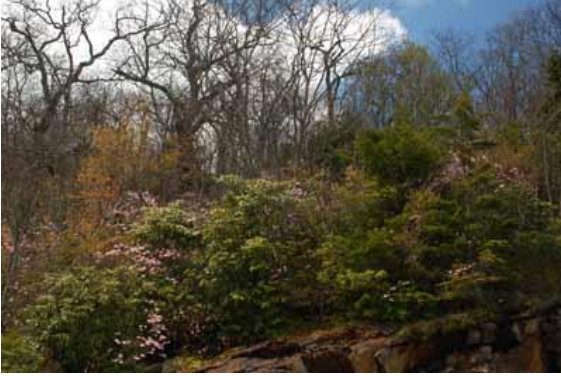
### **Plants in the Wild**



DWH-21-DevilsCourthouse.jpg (Devil's Courthouse Overlook)



DWH-22-DevilsCourthouse.jpg (Devil's Courthouse Overlook)



DWH-23-HeathSwarm.jpg (R. vaseyi and other members of the heath family – Milepost 425)



DWH-24-PilotMountain.jpg (George McLellan and William Constable Jr. - Pilot Mountain)



DWH-25-PilotMountain.jpg (View of Looking Glass Rock from Pilot Mountain)



DWH-26-PilotMountain.jpg (George McLellan amid *R. vaseyi* on Pilot Mountain Trail)



DWH-27-ParkwayView.jpg (Parkway view near Milepost 423)



DWH-28-Rt215.jpg (Hillside and cut off of Route 215)



DWH-29-BRP425.jpg (*R. vaseyi* at Milepost 425)



DWH-30-BRP-425.jpg (Easy Parkway access at Milepost 425)

### Miscellaneous Images – Companion Plants



DWH-31-BRP425-Autumn.jpg (Milepost 425 in October)



DWH-32-FallFoliage.jpg (Fall Foliage of *R. vaseyi*)



DWH-33-MultipleBud.jpg (*R. vaseyi* with multiple buds on terminal shoots)



DWH-34-TrilliumUndulatum.jpg (Painted Trillium on Pilot Mountain)



DWH-35-MinusCarolinianum.jpg (Early White *R. minus* v. *carolinianum*)



DWH-36-LateMinus.jpg (Late Purple *R. minus*)

### Map of the Southern Region



DWH-41-BlueRidgeParkway-Map.jpg (Map of southern regions – DeLorme Topo USA 4.0)