



Rosebay rhododendron flowers dot the rich green foliage of the sturdy plant. Often entire hillsides are a mass of white, pink or pale red.

ROSEBAY rhododendron poses an interesting paradox for land and resource managers in the Southern Appalachians. On the one hand, it is an attractive shrub prized for its aesthetic appeal and for the protection it offers wildlife and watersheds. On the other hand, it is a forest weed that prevents the regeneration and growth of valuable timber species on many thousands of forest acres. In this age of forest management for multiple-use, with intensive timber management, widespread recreational use of forest land, and with much concern being given to watershed and soil protection, rosebay rhododendron is both a boon and a bane to the resource manager.

Also called great rhododendron or even great laurel, rosebay rhododendron (*Rhododendron maximum* L.) may reach 40 feet in height and can possess a trunk 12 inches in diameter. It ranges from Nova Scotia southward to Georgia and Alabama. While it thrives best in the coves and along the streams of the Southern Appalachians, it can survive on drier, poorer, and higher sites, and is even found in raised areas in bogs and swamps.

Rosebay rhododendron tends to grow in dense thickets that exclude almost all sunlight from the forest floor, creating a perennial gloom in the maze of twisted, tangled stems. Mountaineers have labeled these all but impenetrable snarls of vegetation "hells" or "slicks." This dense growth habit is the reason many foresters want to limit rosebay rhododendron to areas where high value is placed on aesthetics.

Estimates vary, but there are at least 3 million acres of forest land in the Southern Appalachians that are covered by dense thickets of rhododendron and the related mountain-laurel. Landowners, foresters, and most land managers agree that this is too much productive land to devote to rhododendron.

But rhododendron can be aggressive when it

Rosebay Rhododendron— Boon or Bane to Resource Managers

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comes to seizing and keeping control of land. This plant is exceedingly fruitful—each of the insect-pollinated flowers turns into a capsule containing 300 or 400 or more seeds, usually with high germinative capacities. The seeds are small and light (5,000,000 to the pound) and can be carried by the wind for considerable distances. When mature plants are damaged, they frequently layer or sprout in profusion, often replacing a single stem by a colony of 15 or 20 stems.

It is in winter that one of rosebay rhododendron's unusual habits may be seen. At below-freezing temperatures the leaves droop and curl up. The lower the temperature, the tighter the curl and more acute the droop, providing the viewer with a sort of "phyto-thermometer." This phenomenon may be a natural mechanism to retard water loss or to shed snow.

Rosebay rhododendron is unquestionably a scenic asset to any mountain road or overlook. The dense clusters of blooms, coming after the flowering time of many neighboring plants are large and appealing. The evergreen leaves, which generally live about 3 years, also add aesthetic appeal.

The evergreen appearance and the general ruggedness of the plant make rhododendron well suited for utility purposes, such as screening campsites. It would also make an excellent plant for highway median strips, where an added benefit would be the cushioning effect of the dense growth. A driver would be hard put to crash an automobile through a rhododendron stand even a few yards wide. It

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Single stems disturbed by cutting, fires, or chemicals frequently sprout. This excavated 11-inch root burl (left, below) developed 91 sprouts a few months after a spring fire. Mid-July is the Southern Appalachian blooming peak. At right is the interior of a rhododendron thicket or "hell." Shade is often so dense, desirable tree species can't regenerate.



could also be used to screen refuse dumps, junkyards, and other unsightly areas. Fully mature plants, in combination with taller trees, could be used to create sound barriers around airports and other noise centers.

Rosebay rhododendron is also valuable for the protection it affords to rugged watersheds and for the shelter it provides many kinds of wildlife. The dense thickets that so effectively hamper man's movements provide protection to grouse, to turkey, and especially to white-tailed deer, which yard in the thickets to escape from winter's snow and chill winds.

The leaves and young stems of the rhododendron are also an important food staple for deer in the winter, when few other foods are available. Browse lines in rhododendron thickets are common, indicating the height to which deer can stretch to bite off the leaves. Usual heights are $4\frac{1}{2}$ to $5\frac{1}{2}$ feet above ground; one plant has been found stripped of its foliage to a height of 7 feet!

Paradoxically, the leaves are highly toxic to domesticated animals; such as cattle, horses, pigs, goats, and sheep, as well as to rabbits and hares. To further demonstrate the contrary habits of this plant, honey made from the beautiful flowers is said to be poisonous.

Yet for many years the leaves were used for the treatment of rheumatism or arthritis both by American Indians and by the early settlers. In Europe and Asia, teas prepared from the local rhododendron species were credited with curing or reducing the pains associated with arthritis, rheumatism, gout, venereal diseases, toothache, and the plague. Smoking rolled dry leaves was said to relieve asthma victims. The dried leaves have been sold in Chinese drug stores for centuries for the treatment of circulatory disorders.

Depending on the dosage, the rhododendron preparations can be intoxicants, pain killers, or deadly poisons. The active agent for these effects, an-

dromedotoxin, was isolated at the end of the 19th century. However, in cataloging its harmful effects, scientists noted that even small doses caused a profound depression of blood pressure. Andromedotoxin is now being studied for the relief of high blood pressure and may become a valuable medical aid to mankind.

The wood, too, has had its uses. Rhododendron is in the same botanical family as mountain-laurel, sourwood, madrone, manzanita, huckleberry, blueberry, cranberry, and briar. The traditional material for tobacco pipes is briar (*Erica arborea*), a plant of southern Europe. During World War II, when briar was unavailable, huge root burls of rosebay rhododendron were dug up and used by pipe makers as a substitute. The hard, close-grained wood has also been used for tool handles.

In broad terms, all the rhododendrons require acid, well-drained soils in organic matter. They abhor dry conditions. Rosebay rhododendron is primarily a mountain species. It can resist extreme cold, but it prefers shaded locations and protection from winds. Under these conditions, trees thrive for 100 years or more. Moss carpets or bare mineral soils are preferred seed beds; few or no seedlings are found in the litter under mature plants.

This general knowledge is not enough, however. Foresters, recreation specialists, watershed managers, wildlife biologists, and landscape architects must gain a better understanding of the rosebay rhododendron's tolerances and needs before they can intelligently set out to restrict or to favor the plant in any given place.

Here then is a plant valued in some places and undesirable in others. Until much more is known of the particular requirements of rosebay rhododendron, students, researchers, and resource managers will find the species an appealing yet troublesome plant that will provide both challenge and potential.