

# The Tribbium



Piedmont Chapter  
North American Rock Garden Society  
Chapel Hill, Durham, Raleigh, NC

## Plants of the Shale Barrens

by Martha Oliver

Natural rock gardens are hard to find in eastern USA. The special combination of well-drained soils, high light levels and scant rainfall that favors small, jewel-like indigenous plants doesn't occur often there.

East of the Appalachian Mountains, however, a natural rock garden occupies the area known as the shale barrens. From the south-central portion of Pennsylvania, heading south-southwest along the eastern slope through Maryland, West Virginia, and Virginia, and even farther south, an area in the rain shadow of the mountains has produced a set of plants in a sort of island, cut off from others like them by surrounding areas of higher rainfall and less severely vertical rock bedding.

Phlox enthusiast Edgar Wherry explored this area in the 1930s and others, like Don Humphrey of Green Spring Gardens Park in northern Virginia, have followed, making notes on the charming plants of this region. Maurice Brooks' book *The Appalachians* (1965) remarks on the large number of endemic species and, with the old-time naturalist's eye, ties the flora and fauna and geology and climate into a unified whole.

The plants of the Alleghenies live on the very old bases of worn down mountains on loose, crumbly shale that may be more than 400 million years old. The bedding of the rock is vertical and very well drained. From the Gulf of Mexico the rain clouds sweep up the western side of the ridges, dropping their rain as they rise. By the time the clouds pass over this ridge they are dry. Brooks discusses two West Virginia towns 25 miles apart; the one on the western flank receives 65" annual rainfall; the one on the eastern slope between 9 and 21". Thus the eastern slope location and sun stress due to southwest orientation of the barrens are factors in creating these barrens conditions.

What water there is (small streams) tends to undercut the slopes above it, making even drier areas where plants cling for their very lives. The erosion of the shale results in small, flat stones called channery which form a mulch.

Heat rides up those eastern slopes from the Ridge and Valley Province, so the area just west of Washington DC runs 4-5 degrees warmer than the western slope. The combination of higher heat, lower humidity and dry conditions has created a niche for a special set of plants that can be grown successfully in the northeast (where the delicate plants of the Rockies fade away in cultivation).

Many of these plants are remnants from prairies of the Midwest, isolated by climate and soil from the surrounding areas. A western genus like *Eriogonum* is represented by a single species, *E. allenii*, a large, silver leaved buckwheat which thrives where the smaller western ones fall prey to the summer mugs. The cactus, *Opuntia compressa*, growing from the shale barrens to Florida, seems out of place here but is a successful competitor in these harsh conditions. *Aster oblongifolius* is a predominantly western species which nevertheless has established itself here. Western clovers resemble Kate's Mountain Clover (*Trifolium virginicum*), which is a local endemic.

At times in the past many of these Midwestern and Western species must have been more widely spread over the eastern US, but as the climate has changed they have become isolated in this small area, out-competed by more vigorous, taller plants which thrived with higher moisture levels.

Some of these plants are already well known to rock gardeners. *Antennaria virginica* var. *argillicola* is the shale barrens pussytoes, shorter (to 3") and tougher than other varieties.



Photo by Martha Oliver

**Antennaria virginica**

*Phlox subulata* var. *brittonii*, the tiny moss phlox, comes in white, blue-gray and pale pink (except where bees have brought pollen from nearby gardens, resulting in brighter colors).

*Penstemon hirsutus* is short-lived but reseeds freely; it is widely distributed in northeastern US. The paler *P. canescens* is found in the characteristic places: dry, rocky wooded slopes and shale outcrops from PA to northern Alabama.

*Cheilanthes lanosa* dries to crisp, brown fronds in its native habitat during the summer, but it responds to abundant rainfall with pleasure, remaining green and flexible in the full sun it enjoys. The easternmost member of the genus, *C. lanosa* is just one of the 125 species in a genus of mostly arid subtropical to tropical taxa. It is found on rocky outcrops in limestone or shale.

*Opuntia compressa* surprises the uninitiated with the elegant way it avoids damage from freezing and thawing during the winter. Draining its liquid into the stout root, it lies down, resembling a balloon from which the air has slowly escaped. In the spring it rehydrates, standing up again in a matter of days, then blooming with disproportionately large, poppy-like flowers of bright yellow or pink atop the green, spiny pancake pads.

*Paxistima canbyi* is an evergreen shrublet, never taller than a foot and slowly spreading.

These are easy, reliable plants that thrive with normal amounts of water, rather than turning gray and moldy and then disappearing. Resistant to the summer mugs, they have the ability to fight off molds and diseases which are lethal to western alpinists.

There are other plants, however, that deserve wider use, and even though they are difficult to find they can be grown from seed and will make lovely additions to the rock garden. Cultural conditions are simple to mimic: a well-drained, gritty soil and low levels of humus will suit them well.

*Clematis albicoma* is an endemic herbaceous perennial with typical leather flowers, about 10" tall, and it blooms in Virginia in early April with pale yellow, hanging bells. The even rarer *C. coactilis* and *C. viticaulis* have fuzzy, urn-shaped flowers on a plant covered with silver fuzz. They form neat and persistent clumps.

The endemic *C. viorna* is a herbaceous vine that will climb to 10', with the same leather bells, but these are pink to brick brown with paler edges. The plant will romp through a shrub or small tree.

*Celtis tenuifolia* is a good support for this, since it is open enough for light to penetrate among the branches. It is a small tree of the dry, rocky foothills of southeastern US, producing sweet, edible fruits in the early fall as well as good fall color.

*Rhus aromatica* begins the year with clouds of small, fragrant yellow flowers, continues with small red fruits, and finishes the year with scarlet fall color. A dwarf selection, 'Grow-low' gets no taller than two feet.

Other indigenous plants include *Amsonia ciliata* which Wherry describes as "well-behaved, lovely pale blue stars in late spring." *Antennaria plantaginifolia* with broad, silvery leaves on a spreading plant, hails from open woods and shaly banks. *Asclepias quadrifolia* holds stunning pink whorls of milkweed flowers on an 8" plant in dry, upland woods.

*Aster oblongifolius* has light blue flowers in October; Wherry writes "it is too little known but suitable for the rock garden." I especially like the shorter cultivar 'October Skies,' discovered by us in our back field. It is the foliage which is aromatic; the plant will slowly spread to a wide mat and is easily divided.

A plant with perhaps too many named cultivars, *Chrysogonum virginianum* has good, long-blooming yellow flowers on short running plants. In open woods, on limestone, it blooms from April to June, and often beyond, on 8" stems. It is a delightful lawn weed.

*Chrysopsis mariana* prefers the poor, dry soil and full sun of the barrens, producing 1" clusters of golden, single daisies on silvery foliage in September and October. In rich soils it is too tall, but it will stay below 12" in the hot sun and lean soil of the barrens.



Photo by Martha Oliver

*Draba ranossissima*











