

# ROCK GARDEN *Quarterly*



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Cover: *Sanguinaria canadensis*, the bloodroot, widely distributed in eastern North America, including North Carolina, this issue's featured area. Painting by Diane Crane.

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# ROCK GARDEN *Quarterly*

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BULLETIN OF THE NORTH AMERICAN ROCK GARDEN SOCIETY

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### *Special Annual Meeting Issue:* **Plants and Gardens of North Carolina**

This winter issue is dedicated largely to the venue of the 2004 annual meeting of the North American Rock Garden Society, which will be held in Raleigh, North Carolina (see “Coming Events” in this issue for details). Linked to the meeting thematically is the 2004 NARGS Expedition, described on page XX.

The state of North Carolina comprises many different landforms, including plains, swamps, rolling hills, and low mountains. It is thus home to an extremely varied flora, including some of the interesting genera known for having disjunct occurrences in eastern Asia and eastern North America. In this issue, Paul Jones and Bobby Ward describe some of the little-known plants of the state and their habitats.

Anyone who visits North Carolina in the spring is likely to be amazed by the variety seen in the genus *Viola*. I remember photographing three different species in a single shot in the North Carolina woods when I visited there some years ago. We are fortunate to present in this issue an overview of the state’s many *Viola* species, written and photographed by botanist Kim Blaxland, a leading expert on this genus worldwide.

Garden tours are a popular activity at NARGS annual meetings, and this issue features two that will be open to the public in May 2004. (For another, see the winter 2003 issue’s feature on the Whittemore garden.)

Other articles describe plants, both native and exotic, that have proven well suited to North Carolina’s climate. Mild winters encourage the region’s gardeners and nursery growers to experiment with a vast range of plant introductions, but hot, humid, sometimes rainy summers can stress many plants, especially those typically found in rock gardens elsewhere.

# The Green Swamp of Eastern North Carolina

Paul D. Jones

The Green Swamp Preserve lies in Brunswick County, North Carolina, about 10 miles (16 km) inland from the Atlantic Ocean. Largely because of proximity to the coast, the average annual rainfall is around 60 inches (150 cm), in some years exceeding 70 inches (175 cm), and the temperature pattern is warm temperate (USDA Zone 8). This Nature Conservancy preserve consists of a slightly elevated peat dome and sands complex which divides the drainage basins of the Cape Fear River to the east and the Waccamaw River to the west. The hydrology and geology is complex and features a high water table with underlying peat in a relatively flat landscape.

The Green Swamp is a mélange of natural ecological communities, including savanna, pocosin (see below), bay (broadleaf evergreen) forest, and flatwoods. These communities are rare today, and therefore those in the Green Swamp are recognized by the National Park Service as a Natural Landmark. Historically, the swamp once claimed more than 200,000 acres (80,000 hectares) of southeastern North Carolina. However, since 1770, when a small portion of the swamp was deeded by King George II of England to John Green (for whom the swamp is named), most of that acreage has fallen to the ownership of timber companies. Among the changes to the original landscape has been the construction of myriad drainage canals, resulting in more arable, less waterlogged land, better access to timber, and the opportunity for more timber and agriculture production. Beginning in 1977, Federal Paper Board, Inc., donated nearly 14,000 acres (5600 hectares) to the North Carolina chapter of the Nature Conservancy, which manages the gift as a preserve to reestablish and protect the natural habitats and indigenous flora and fauna. Later enlarged, the preserve now encompasses nearly 16,000 acres (6400 hectares). These lands are home to numerous animals, including the federally endangered red-cockaded woodpecker, the rare American alligator, and Henslow's and Bachman's sparrows.

The predominant plant community in the preserve is pocosin, a term derived from an Algonquin word describing the lowlands of the outer coastal plain, which become temporarily marshy or swampy from seasonal rains or spring

runoff. Pocosins are also referred to as “bays” or “bayheads” because of the prevalence in that community of broadleaf evergreen trees known colloquially as “bays”; these include sweet bay (*Magnolia virginiana*), loblolly bay (*Gordonia lasianthus*), and swamp red bay (*Persea palustris* and *P. borbonia*). In wet, peaty, nutrient-poor sites, these species are often stunted, while in better-drained mineral soils, they become dominant and form a full canopy. Shrubs such as bayberry (*Morella caroliniensis*, formerly *Myrica heterophylla*), wax myrtle (*Morella cerifera*, formerly *Myrica cerifera*), and dahoon (*Ilex cassine* and *I. myrtifolia*) are also common in pocosins.

I find the best vantage point from which to appreciate the pocosin is not within its thick, impenetrable heart, but outside, at the ecotone, the transition area between two differing plant communities. Such transitions can be abrupt, or gradual and several meters wide. In the Green Swamp, the ecotone separating long-leaf pine (*Pinus palustris*) savanna from the pocosin or any other adjacent community offers easy access and is an excellent place for viewing and photographing wild flowers. Around this edge of the savanna, one can find attractive isolated specimens or even colonies of pocosin species, flowering and fruiting vigorously because of the increased light and reduced competition. Depending on the hydrology and soil type, the array of interesting shrubs may include fetterbush (*Lyonia lucida*), staggerbush (*L. mariana*), inkberry (*Ilex glabra*), titi (*Cyrilla racemiflora*), and honeycups (*Zenobia pulverulenta*). There are also Atlantic and swamp azaleas, (*Rhododendron atlanticum* and *R. viscosum*), leatherleaf (*Chamaedaphne calyculata*, formerly *Cassandra calyculata*), summer-sweet (*Clethra alnifolia*), Carolina sheepl laurel (*Kalmia carolina*), *Viburnum nudum*, blueberry (*Vaccinium* spp.), huckleberry (*Gaylussacia* sp.), and other members of the Ericaceae.

The diversity of deciduous trees is fairly limited in the preserve: red maple (*Acer rubrum*), persimmon (*Diospyros virginiana*), swamp tupelo (*Nyssa sylvatica* and *N. biflora*), sassafras (*Sassafras albidum*), and an occasional oak (*Quercus* spp.). These trees are found primarily in disturbed sites, at streamsides, and in pocosins and pine woodlands that are infrequently burned.

The coniferous tree flora is even less diverse than the deciduous, but it is much more integral to the swamp community as a whole. The once dense stands of Atlantic white cedar (*Chamaecyparis thyoides*) have largely been destroyed by logging and by inappropriate fire management or suppression in the past. Though a few areas with young trees exist, the prognosis for healthy regeneration remains doubtful because the population may be susceptible to inbreeding depression.

Other than pines, pond cypress (*Taxodium ascendens*) is the only other coniferous species. Naturalists as early as the eighteenth century referred to the huge “ciprus” trees in the coastal swamps and rivers, which were favored for making dugout canoes, a practice that today lingers among only a handful of craftsmen. The giant cypresses are mostly gone, but small specimens remain common.

The savannas of the Green Swamp Preserve are among the few remaining examples of the long-leaf pine community, which is estimated once to have

occupied 55 million acres from Virginia south to Texas. Less than 1 percent of it remains. About 300 acres (120 hectares) of savanna exists as scattered "islands" on slightly elevated ridges throughout the preserve. These features are referred to by such names as Cow, Moon, Shoestring, and Bean Patch islands. Several of the best islands are easily accessible in Brunswick County from Highway 211.

Standing on the edge of a savanna, you have a view across a sea of wire grass (*Aristida stricta*), the fuel for the frequent fires started by lightning or human activity. Towering above the wire grass is a canopy of long-leaf pines on well-spaced, limbless trunks. In the distance you can see an occasional shrub or pond pine (*P. serotina*). This is the quintessential savanna. When you peel back the wire grass, you will reveal a diverse collage of plant life, with as many as 40 different vascular plants packed in a square yard!

The herbaceous flora of the savanna is extensive. If you're a lover of wildflowers, including carnivorous plants, then the wet savannas of the long-leaf pine (*Pinus palustris*) communities are worth seeing. Four pitcher plants grow here: *Sarracenia rubra*, *S. flava*, *S. minor*, and *S. purpurea* (photos, p. 17). As interesting as they are, I get even more excited sorting through their numerous hybrids. *Sarracenia*  $\times$  *catesbaei* is the name given to the many obvious hybrids between *S. flava* and *S. purpurea*. Search for a while, and you can find just about every variation conceivable between the four species. More than a dozen other carnivorous plants are present, including the much-loved Venus flytrap (*Dionaea muscipula*), three species of sundew (*Drosera*), two butterworts (*Pinguicula*; photo, p. 18), and five bladderworts (*Utricularia*).

There are many orchids in the Green Swamp. With little effort I have stumbled on grass pink (*Calopogon tuberosus* var. *tuberosus*, formerly *Calopogon pulchellus*), rose-crested orchid (*Pogonia ophioglossoides*), and the lovely rosebud orchid (*Cleistes divaricata*; photo, p. 17). Five species of fringed orchids (*Habenaria*) grow in the preserve, as do ladies' tresses (*Spiranthes*), but I've always visited too early in the season to make their acquaintance. Other plants to see in the savanna-pocosin ecotone are *Chaptalia*, *Xyris*, *Iris*, *Lilium*, *Zigadenus*, *Aletris*, *Pleea*, *Tofieldia*, *Pyxidantha*, and *Parnassia*.

Fire is extremely important to the maintenance of this community. The Nature Conservancy has developed a detailed fire management plan for the Green Swamp that is designed to restore the natural balancing effect of fire acting upon these swamp communities. For instance, the pine savanna, which depends on frequent (every 2 to 5 years or so) burns in order to retain its integrity, would, in the absence of fire, quickly become dominated and destroyed by deciduous trees and shrubs.

The Green Swamp Preserve is indeed a treasure. It is open to the public without special permission; for information, contact the Nature Conservancy's Southeast Coastal Plain office (telephone 910-762-6277). Hunting is permitted on some of the land, so it is well to find out whether hunters may be present on a given date. The best access is from a parking area on Highway 211, 5.5 miles north of the town of Supply. For a visit, I recommend a morning in May (though

March to November is all good, especially mid-September, when there are asters and grasses). Bring insect repellent and some old tennis shoes with a tolerance for squishiness.

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Paul Jones is a horticulturist at Sarah P. Duke Gardens, Duke University, Durham, North Carolina. He is in charge of the Culberson Asiatic Arboretum, devoted to plants of eastern Asia.

### About the Artist

The covers for the 2004 volume are the work of the botanical artist Diane Crane. A lifelong midwesterner, Diane currently lives and works in the rugged, unglaciated terrain of southeastern Minnesota's Mississippi River valley. Her paintings, mainly of plant forms from the nearby woods, fields and swamps, are represented in many private, public, and corporate collections. She can be contacted at <[www.bramble@acegroup.cc](mailto:www.bramble@acegroup.cc)>.



# Violets of North Carolina

Kim Blaxland

Nearly all of the *Viola* species native to eastern North America grow in the state of North Carolina, and most are easy to find. Because the Appalachian Mountains run in a north-south direction, plant species were able to move north or south during periods of climatic change. Northern species, having been pushed south by glaciers, later spread higher on southern mountains to find cooler conditions. Therefore, North Carolina is an area of great plant diversity.

Taxonomists divide violas into stemmed violas, those with the flower peduncles (the “stems” immediately below the flower) arising from the axils of the leaves on a stem, and stemless, those with both flower peduncles and leaf petioles (similarly, the “stems” of the individual leaves) arising from the top of the rhizome. The next obvious characteristic for separation is flower color: there are blue stemmed violas and blue stemless violas; white stemmed, white stemless; yellow stemmed and yellow stemless. Leaf shape and color, plant size, and pubescence (the presence or absence of fine hairlike structures on the surfaces) can also separate species.

Using these criteria should make it simple to identify species, but if two similar *Viola* species are growing in the same area, they may hybridize to produce intermediate forms. Some of the hybrids were named by botanists, particularly where they have formed stable populations, but many of these names have now been discarded. Taxonomy evolves as new research techniques shed more light on plant relationships. Therefore, some names have been changed, and more will probably change in the future. As botanists examine early publications and herbarium specimens, they sometimes find an old name that predates a newer name now in common usage, so under the rules of botanical nomenclature, the name must be changed back to the first one used. Many of these name changes have been published years ago, in technical journals or floras which are not widely read, and so the currently valid names have not always made their way into common usage, nor into many of the popular field guides.

In our area of interest, there are two large and three small species of stemless blue violas with undivided leaves. *Viola sororia* and *Viola cucullata* are quite common but are often confused. They are large, vigorous plants, especially later in

the season. *Viola sororia* (photo, p. 19) grows in well-drained woodlands and has leaves about as wide as they are long. The flowers of *Viola sororia* are usually purple, but color variants occur; one variant with white flowers heavily striped purple in the center is sometimes referred to as the Confederate violet. The flowers are held at about the same level as the top of the leaves; the lowest petal is narrow and longer than the laterals (the petals that extend to the sides); and there are straight hairs on the inside of the two lateral petals. *Viola cucullata* (photo, p. 19) grows in wetter places; it has bluer flowers on very long peduncles; its leaves are longer than wide, and taper to a point more gradually. The lowest petal is shorter than the laterals, and the hairs on the lateral petals are club-shaped.

The stemless blue violets *Viola affinis*, *Viola hirsutula*, and *Viola villosa* are smaller plants that have leaves longer than wide, and hairs on the inside of the three bottom petals. *Viola affinis* (photo, p. 19) has straight hairs, while those of *Viola hirsutula* are clubbed. The flower of *Viola affinis* is a paler lilac, and its leaves are only slightly pubescent. The tops of the leaves of *Viola hirsutula* (photo, p. 20) are densely covered with short, stiff hairs, and the purple flowers do not open as fully as those of the other species. Closely related to *Viola hirsutula* is *Viola villosa*, which differs only in having pubescence on both upper and lower leaf surfaces. The latter two species grow very close to the ground in open dry or sandy places. Their leaves sometimes are variegated with paler silver-green in between the dark veins on the top, and are purple underneath.

Three species of the blue stemless violets have divided leaves: *Viola sagittata*, *Viola palmata*, and *Viola pedata*. The first two have flowers closely resembling those of the species with undivided leaves, but *Viola pedata* has distinctly different flowers. *Viola sagittata* is a pubescent plant, with long, narrowly ovate leaves gradually tapered to the tip, and short side divisions at the base. There is a smaller subspecies, *Viola sagittata* subsp. *ovata* (photo, p. 20), which used to be called *Viola fimbriatula*. It differs from the typical species in having a shorter, wider, ovate leaf, shortly narrowed to the tip, and shorter or no lobes at the base. It grows in drier locations. The leaves of *Viola palmata* (photo, p. 20) are more evenly and deeply divided into three to many lobes. Actually, this “species” is a taxonomic can of worms, enveloping entities that have been named *V. brittoniana*, *V. egglestonii*, *V. esculenta*, *V. lovelliana*, *V. septemloba*, *V. stoneana*, *V. triloba*, and *V. viarum*, so for the time being it probably should be called “the *Viola palmata* complex”—but don’t hold your breath, for it will take years of DNA analysis to disentangle this mélange. The degree of pubescence is quite variable in different populations. *Viola palmata*, *V. sagittata*, and *V. sagittata* subsp. *ovata* all have violet-purple flowers with a white center, obvious fine, straight hairs on the inside of the lateral petals, and a few, less obvious hairs on the lowest petal.

*Viola pedata*, which comes in two color forms, is one of the loveliest North American violets (photo, p. 20). Its flowers are large, and its leaves, small at flowering time, have lobes divided to the base of the leaf. One color form has entirely lilac petals, but the original description of the species was of the bicolored form. In the latter, the two top petals are dark velvety purple, often reflexed or sometimes twisted back to back. The three lower petals are lilac, or rarely white. Both

color forms exhibit a lot of diversity in the markings on the petals, the presence or absence of a white central eye, and the amount of dark purple on the four top petals. The flower face is flat, without a deep throat, and there are never any hairs on the petals. All variations are included under the species name, with no varieties or forms. *Viola pedata* will grow only where it gets plenty of sun and is not crowded out by other plants, so it can often be found on roadside cuts and serpentine or shale barrens.

The most common white-flowered stemless violet in North Carolina is *Viola blanda*, which grows in damp woodlands at lower altitudes, sometimes spreading by stolons to form large clumps (photo, p. 21). The pointed ovate leaves have long bases which often overlap. In colder, usually wetter, boggy places, *Viola macloskeyi* subsp. *pallens* (p. 21) also spreads by stolons. It flowers earlier than *V. blanda* and has smaller flowers, but it can be very difficult to distinguish from *V. blanda* if it is found growing in woodlands near the bogs. *Viola lanceolata* (p. 22) is usually a coastal species but can occasionally be seen in higher woodlands. Long lanceshaped leaves with red petioles make this easy to identify; however, it can hybridize with *V. macloskeyi* subsp. *pallens* to form an intermediate known as *Viola* × *primulifolia*.

*Viola rotundifolia* (p. 22) is the only yellow-flowered *Viola* species here that appears to be stemless. It is also the earliest to flower and may be finished by the time the others bloom. Its ovate spring leaves appear dark green and fleshy, with wavy, obviously toothed margins; the summer leaves are round.

The three stemmed blue-flowered violas can easily be distinguished. The several stems of both *Viola rostrata* and *Viola conspersa* stand upright, while those of *Viola walteri* are horizontal. The very pretty lilac flowers of *Viola rostrata* (p. 22) have a long spur, up to 1 inch (2.5 cm) long, extending up into the air at the back of the flower. Dark purple markings near the flower center vary in intensity. *Viola conspersa* (p. 23) flowers have a short spur, and no markings on the petals apart from the usual dark purple pollinator guidelines. Colorful foliage makes *Viola walteri* (p. 23) a very attractive groundcover. The tops of the leaves are variegated and the undersurfaces are purple, while the tips of new shoots are pink. The horizontal stems root at the tips at the end of summer, producing new plants the following spring.

*Viola canadensis* and *Viola striata* have white flowers on vertical stems. The strong stems of *Viola canadensis* (p. 23) are taller, bearing white to pale pink flowers in the upper axils. The flowers have yellow centers, and the backs of the petals, especially the upper two, are pink. Because it is stoloniferous, *V. canadensis* forms spreading clumps. *Viola striata* (p. 23) has creamy-white flowers, often with wavy margins on the petals. On the lower petal are the purple guidelines, or striations, for which it is named. It is a very promiscuous viola, readily crossing with *V. rostrata*, *V. conspersa*, and *V. walteri*.

*Viola hastata* and *Viola pubescens* are the two species with yellow flowers produced on stems. *Viola hastata* (p. 24) has large sagittate (arrowhead-shaped) leaves crowded at the top of straight stems. Where it grows in very shaded areas of moist woodlands, the leaves are variegated with striking silver markings, but in

the sun, they are usually less marked or plain green. *Viola pubescens* is another taxonomic trap. As the name states, *Viola pubescens* is pubescent all over—stem, leaves, petioles, and seed pods. A glabrous form of this species has been called *Viola pennsylvanica*, then *Viola eriocarpa*, but it has now returned to the earliest given name, *Viola pubescens* var. *scabriuscula* (photo, p. 24).

There is one native annual *Viola* that is closely related to European pansies, with flowers of blue-lilac to almost white. It is often found growing in large stands on cleared roadsides, but it can also occur in open dry woodlands. Initially, this small, single-stemmed *Viola* was thought to be introduced, which caused many problems of naming. When this was sorted out, and it was recognized as an endemic species, it became *Viola rafinesquei*. However, recently a prior name has been found, so that the name has changed again, back to ***Viola bicolor***.

The flowering times of all these violas varies depending on the location. At lower elevations, flowering will start in March, but in the Appalachian Mountains in the west of the state, the higher the elevation, the later is the flowering season. Visitors to the NARGS national meeting in June should be able to enjoy at least some of these treasures. There is also a Wildflower Pilgrimage held every year in the Great Smoky Mountains at the end of April.

Seeds of North American *Viola* species are sometimes available through the NARGS and Alpine Garden Society (England) seed exchanges, but most of the best species are difficult to cultivate and so their seeds are infrequently found on these lists. My detailed article on germinating *Viola* seeds appeared in the September 1996 issue of the *Bulletin of the Alpine Garden Society* (vol. 64, no. 3, pp. 322–325). One problem is that *Viola* seed from exchanges often arrives at its final destination squashed and thus will not germinate under any treatment. I have had the most success with the following method.

I sprinkle the seeds with gibberellic acid-3 powder (GA-3) on a numbered square of damp paper towel. I fold the towels and place them in a plastic bag (as many as will fit in the same bag), seal it, and store it in the refrigerator. Every two weeks I open the packet and check the seeds with a magnifying glass for germination. Germination starts about four to six weeks after treatment and continues for more than six months. I pick out any germinating seeds with tweezers and pot them up, replacing the packets of ungerminated seed in the refrigerator.

Most of the species discussed in this article are woodland plants and thus not suitable for the typical sunny, well-drained rock garden. One exception is *Viola pedata*, a lover of sun and gravelly soils, which is often available from nurseries. Barry Glick's Sunshine Farm & Gardens in West Virginia, <<http://www.sunfarm.com>> or <[barry@sunfarm.com](mailto:barry@sunfarm.com)>, has offered some of the woodland species. *Viola sororia* and *V. striata* should probably be excluded from most gardens because of their invasive tendency.

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Kim Blaxland is an Australian botanist, now living and gardening in a suburb of Philadelphia, Pennsylvania. She has been studying violets worldwide for the past fourteen years.

# Some Rare Native Plants of North Carolina

Bobby J. Ward

Several of North Carolina's rare native plant species have found new homes along power line rights-of-way in the Coastal Plain and Piedmont. We know these plants are recent colonizers because the rights-of-way are less than 50 years old. These plants have gravitated to such areas because here, where trees are kept cut and agriculture and grazing are uncommon, they find conditions similar to those in their former natural habitats.

When Europeans arrived in the mid-1600s to the land that would become North Carolina, they found great stands of pines: long-leaf pine (*Pinus palustris*) in the upland coastal plain, pond pine (*P. serotina*) in the bogs, and loblolly pine (*P. taeda*) in the stream floodplains. For at least 10,000 years, the forests of long-leaf and pond pine had been perpetuated by fires that often burned thousands of acres at a time. These natural fires set by summertime lightning strikes are believed to have occurred at any given site once every three to seven years, maintaining open habitat and bare ground for certain native seeds to germinate and plants to thrive. When fire suppression became feasible in the twentieth century and the landscape became increasingly fragmented by agriculture, forestry, urbanization, and commerce, oaks and other hardwoods took over, eliminating the prime growing conditions for certain species. (Europeans observed that Native Americans also set fires, probably to increase habitat for game animals, and as they had little means to control them, some would burn for months at the time.)

In the Piedmont—the part of the state that lies between the Atlantic plain to the east and the Blue Ridge and Appalachian mountains to the west—settlers found hardwood forests including giant American chestnuts, beeches, and oaks in hilly areas, and bottomland hardwood forests along the rivers. Grazing by native herbivores such as elk and bison kept open a few areas with thin soils, thereby providing optimal conditions for native species with specialized habitat requirements. As these virgin natural areas disappeared from the Piedmont as a result of logging and agriculture, and the grazing herbivores were hunted to local extinction, herbaceous vegetation either tolerated the change, retreated to unaffected areas, or adapted.

A few species with highly specific habitat requirements have found modern artificial niches that mimic the conditions formerly shaped by recurring fires and wildlife grazing. These artificial niches—rural dirt roads, railroad and gas pipeline corridors, telephone and electrical power line rights-of-way—are constantly cleared, usually by mowing or “bush-hogging” (employing a large cutting attachment on a movable arm), to keep out intrusive woody vegetation. If an area is benignly mowed once every two to four years during the herbaceous plants’ dormant, below-ground season, the result is an open, sunny habitat offering the right conditions for some of North Carolina’s rarest plants to maintain their populations.

### *Echinacea laevigata*, Smooth Coneflower (Asteraceae)

The smooth coneflower is a denizen of open woods, barrens, roadsides, and glades, usually growing where the soil is rich in magnesium and calcium or is derived from eroded basic igneous rock (the latter is called a “diabase barren”). It grows where there is little competition from shrubby vegetation. The species historically ranged from Pennsylvania south to Georgia. It is a rhizomatous, perennial herb that grows to about 3 feet (90 cm) tall. The stems are smooth, with few leaves (the specific epithet *laevigata* means ‘smooth’). The ray flowers, 2–3 inches (5–8 cm) long, are light pink to purple, usually drooping, and are produced during June and July. The largest known population is at one site in North Carolina. When I last visited it and rounded the bend under the tall transmission power lines, the horizon was a pink haze, so plentiful were the flower heads. Some of the plants growing with it are *Baptisia australis*, *Senecio pauperculus*, *Lithospermum canescens*, and the tall *Silphium terebinthinaceum*.

### *Helianthus schweinitzii*, Schweinitz’s Sunflower (Asteraceae)

Schweinitz’s sunflower (photo, p. 25) grows in glade and prairie remnants as well as upland forest margins, often on clay soils with a high gravel content. These areas are called “Piedmont prairies” or “post oak-blackjack oak savannas.” In North Carolina, this sunflower is found in populations of a few dozen plants each, in the central and southern Piedmont in about ten counties, at locales with thin, poor soils and in plant communities with affinities to the Midwest prairie. Schweinitz’s sunflower tends to be associated with members of the aster, pea, and grass families. It is a rhizomatous perennial with multiple carrot-like roots and grows to 6 feet (1.8 m) tall, producing yellow ray flowers from September until frost. The specific epithet honors Lewis David von Schweinitz, a Moravian clergyman and renowned mycologist, who discovered the sunflower in the early 1800s. At one site, from a single vantage point, I have seen it growing on the

shaded south side of a dirt road, under a power line, and in a pasture with cattle grazing around it. Some of its companion plants are two or more species of *Eupatorium* and *Lespedeza*, *Clematis ochroleuca*, and other *Helianthus* species.

### *Lilium pyrophilum*, Sandhills Bog Lily (Liliaceae)

The Sandhills bog lily (photo, p. 25) has been newly named as a species in 2003, although it had been designated as probable new species (*sp. nov.*) for a number of years and at times listed as a disjunct sub-population of *L. iridollae*, a Gulf Coast species. It grows in open areas on the upslope sides of shrubby seeps, generally in peaty-sandy soils that slope downward from north to south. *Lilium pyrophilum* grows to about 3 feet (0.9 m) tall and has “Turk’s-cap” flowers (the term applied to lilies whose tepals curl back strongly), brilliant yellow-orange to orange and up to 3 inches (7.5 cm) across. The Sandhills bog lily is at its peak of bloom in the first week in August. The specific epithet means ‘fire-loving’, a reference to the occurrence of the species in the long-leaf pine ecosystem historically maintained by lightning fires. Only about 250 individual plants are known. At one site, the largest known population, I counted 52 flowers on one visit. Its companion plants include *Vaccinium corymbosum*, *Magnolia virginiana*, *Clethra alnifolia*, *Gaylussacia frondosa*, and saplings of *Acer rubrum*.

### *Lindera subcoriacea*, Bog Spicebush (Lauraceae)

The bog spicebush is found in streamhead pocosins (for a description of this habitat, see Paul Jones’s article in this issue), cedar swamps, and bogs in southern North Carolina. Its range is sporadic, with small populations occurring from Virginia to Florida and west to Louisiana. It is almost always found along the fall line (the elevational drop between the Piedmont and the Atlantic coastal plain), in permanently wet areas. The bog spicebush is a multistemmed deciduous shrub that grows to about 6 feet (1.8 m) tall. The specific epithet means ‘somewhat leather-like’, a reference to the texture of the leaves. *Lindera subcoriacea* produces small yellow-green flowers in March before the leaves have budded out. I have failed to catch its flowers because each time I have visited the population, I was either too early or too late. When the leaves are crushed, they are slightly aromatic with a fragrance of lemon and pine. Plants that you find associated with the bog spicebush are *Rhus* species, *Myrica heterophylla*, *Clethra alnifolia*, *Magnolia virginiana*, sedges (*Carex* spp.), *Sphagnum* mosses, and several species of *Smilax*.

## *Lysimachia asperulifolia* (= *L. asperulaefolia*), Rough-leaf Loosestrife (Primulaceae)

The rough-leaf loosestrife is endemic to the Atlantic coastal plain and sandhills of North Carolina and South Carolina, currently known at about 35 locations. It typically occupies the edges between longleaf pine uplands and wet pocosins, areas of dense shrubs and poorly drained soils. This loosestrife grows to a height of about 18 inches (45 cm) and produces a terminal spike of showy yellow flowers for a month beginning in mid-May. Three or four whorls of leaves encircle the stem below the flowers. At one location, I have seen it growing among Venus' fly-trap (*Dionaea muscipula*), milkwort (*Polygala lutea*), *Cyrilla racemiflora*, and *Sarracenia flava*. At another location, under light shade, army tanks trundle by mere feet from a thriving population; military bases where farming and grazing do not occur often harbor interesting plant populations.

## *Rhus michauxii*, Michaux's sumac (Anacardiaceae)

Michaux's sumac (photo, p. 25) is a rhizomatous deciduous shrub that grows to 18 inches (40 cm) tall. The leaves are compound, usually consisting of 9 to 13 leaflets that are evenly serrate. It grows on sandy, rocky soils, often basic, along roadsides and in bright, open woods. Michaux's sumac blooms for about two months beginning in May, producing small greenish-white flowers. It is dioecious, with male and female flowers on separate plants. The specific epithet honors André Michaux, a French botanist who explored in the late 1700s in the Carolinas, including the mountains and Piedmont. *Rhus michauxii* is known from 26 locations in North Carolina, South Carolina, and Georgia. At one site that I know, it grows with three other species of sumacs (often hybridizing with them), including poison ivy (*Rhus radicans* = *Toxicodendron radicans*), but it is distinguished by its short stature and overall dense grayish pubescence. It also grows with *Aristida lanosa*, *Helianthus divaricatus*, and *Tridens carolinianus*.

## *Thalictrum cooleyi*, Cooley's Meadow Rue (Ranunculaceae)

Cooley's meadow rue grows from 3 to 6 feet (0.9–1.8 m) tall. It occurs in moist to wet bogs, savannas, and roadside ditches, always in full sun. Plants are dioecious, and at most sites the ratio of male to female plants is 3:1. The flowers have no petals; the sepals are pale yellow to white and are prominent in mid-June. This is a thin, wiry, almost airy plant with a few short leaves, and it's difficult to pick out among background vegetation. At one location, I walked by plants several times before I could discern a population that had not yet begun to flower. Its companion plants are fly-poison (*Amianthium muscaetoxicum*), milkwort (*Polygala*



*lutea*), pitcher plants (*Sarracenia*), *Iris tridentata*, and *Dichromena colorata*. The specific epithet honors George R. Cooley, a Harvard University research fellow at the Gray Herbarium and Colgate University benefactor.

## *Trillium pusillum* var. *pusillum*, Carolina Least Trillium (Trilliaceae)

The Carolina least trillium (*pusillum* means 'small') is confined to the Atlantic coastal plain, primarily in non-riverine, wet hardwood forests, often growing over clay-marl soils, and sometimes at the ecotone (edge) of forests and savannas (photo, p. 24). Isolated populations, some of which botanists have designated as different varieties, occur from Alabama to Virginia. I have seen it growing in a seasonally flooded area, perched a few inches up on dinner-plate-sized hummocks above standing water. The plant blooms in March before the overhead canopy leafs out. It then becomes dormant, disappearing by early summer. The Carolina least trillium grows 2 to 3 inches (5–7.5 cm) tall and has small white petals about 0.75 inches (2 cm) long and half as wide. Some blossoms in the population fade to dull rose-pink. Among the plants that grow with it are *Zephyranthes atamasca*, *Arundinaria*, *Carex*, and *Isotria*.

## Rare plants in cultivation

The North Carolina Natural Heritage Program, which oversees management and protection of rare, endangered, and threatened plants in the state, granted me information on the sites where I observed these species. This information is not available to the general public. However, these plants can be seen at the North Carolina Botanical Garden in Chapel Hill, which maintains small populations of them. A large colony of Schweinitz's sunflower can also be seen at the North Carolina Zoological Park in Asheboro, where horticulturists are growing it and also monitoring nearby native populations.

The smooth coneflower, Michaux's sumac, and the bog spicebush are potentially garden-worthy, but their specific habitat requirements make them poorly adapted to general garden use, and little work has been done to propagate or maintain them outside their native niches. Their listing by one or more state or federal regulatory protections agencies creates additional barriers to their introduction into gardens. One species, Michaux's sumac, has been successful transplanted from an area affected by highway construction, and the transplanted populations are flourishing. The Sandhills bog lily is currently being propagated in one nursery and will likely be available as soon as stock is built up. Cooley's meadow rue and rough-leaf loosestrife have little garden merit except as collector's specimens. The least trillium is in cultivation in a few collections.

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Bobby J. Ward, the current president of NARGS, worked for 25 years for a North Carolina electric power company as an environmental scientist. Recently retired, he lives and gardens in Raleigh.

### ERRATA in the book *Rock Garden Design and Construction*

The following errors in photo captions have been pointed out in the new NARGS/Timber Press publication:

p. 113: The tufa construction illustrated is in Calgary, Alberta, not Ontario; the photograph is by Cliff Paulson, not Harvey Wrightman, and Wrightman was not involved in the construction. Apologies are due to Sheila Paulson, who offers the following description of the photo: "Josef Halda constructs a tufa garden in Sheila Paulson's garden in Calgary, Alberta, Canada using tufa from Brisco, B.C. Note the sloping layered placement of the tufa to replicate a natural outcrop in the mountains. Photo by Cliff Paulson"

p. 198: The plant illustrated is *Campanula raineri*, not *Platycodon grandiflorum*. Apologies are due to Lawrence Thomas, who grew the illustrated plant from wild-collected seed.



Plants of the Green Swamp (p. 3): above left, *Sarracenia flava*; above right, *Sarracenia purpurea*; below left, *Cleistes divaricata*; below right, *Sarracenia rubra*. (photos, Paul Jones)





A variety of habitats in the Green Swamp (p. 3) support a varied flora. Above left, *Zigadenus densus*; above right, *Zenobia pulverulenta*; below left, *Pinguicula caerulea*; below right, the white-bracted sedge *Dicromena latifolia*. (photos, Paul Jones)





The genus *Viola* is present in North Carolina in great variety. Above left, *Viola sororia* (p. 8); above right, *Viola affinis* (p. 8); below, *Viola cucullata* (p. 8). (photos, Kim Blaxland)





Above left, *Viola hirsutula*, a form with non-variegated leaves (p. 8); above right, *Viola sagittata* subsp. *ovata* (p. 8) on a serpentine barren; below left, *Viola palmata* (p. 8); below right, *Viola pedata* (p. 8), the bicolored typical form, in LeFlore County, Arkansas. (K. Blaxland)





Above, the all-lavender form of *V. pedata* in New Jersey; below left, *Viola blanda* (p. 9) in Dunbar Valley, southwestern Pennsylvania; below right, *Viola macloskeyi* subsp. *pallens* (p. 9) in Promised Land, Pennsylvania. (K. Blaxland)





Above left, *Viola lanceolata* (p. 9); above right, *Viola rotundifolia* (p. 9); below, *Viola rostrata* (p. 9) in Dunbar Valley, Pennsylvania. (K. Blaxland)







Above left, *Viola conspersa* (p. 9); above right, the summer foliage of *Viola walteri* (pp. 9, 33); below left, *Viola canadensis* (p. 9); below right, *Viola striata* (p. 9) in Pennsylvania. (K. Blaxland)





Left, *Viola hastata* (p. 9); right, *Viola pubescens* var. *scabriuscula* (p. 10). (K. Blaxland)

*Hypericum lloydii* (p. 34) is a southeastern U.S. native suitable for rock gardens. (photo, Julia Mackintosh)

*Trillium pusillum* (p. 15), the Carolina least trillium. (photo, Bobby J. Ward)





Three of North Carolina's rarest plants are *Lilium pyrophilum* (above left; p. 13), *Helianthus schweinitzii* (above right; p. 12), and *Rhus michauxii* (below left; p. 14). (photos, B. Ward)

Below right, the bulbous irid *Calydorea coelestina* (p. 19; photo, Tony Avent).





A planting of *Agave* and *Dasyliiron* species at Tony Avent's Plant Delights Nursery (p. 39).  
(photos, B. Ward)

*Cypella herbertii*, a bulbous irid, flourishes with *Opuntia* in the Avent garden.





A raised bed amended with drainage materials copes with North Carolina's high rainfall in the garden of Norman Beal (p. 41).

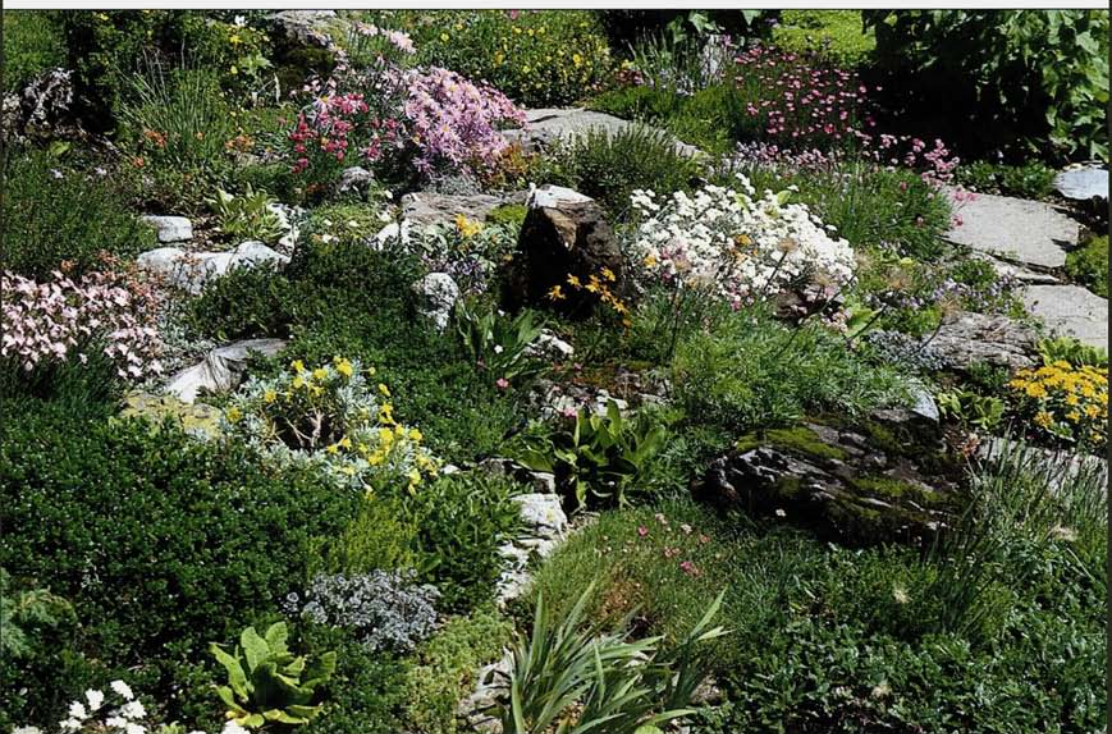
*Sedum nevii* (below left; p. 29) and *Sedum glaucophyllum* are closely related species native to the U.S. Southeast. (B. Ward)





Dick Redfield of Scotland, Connecticut won the Grand Prize and first place, class 3, in the 2003 photo contest (p. 48) with this image of *Jeffersonia dubia*, a hardy, early-flowering woodland beauty.

Margaret Taylor of Storrs, Connecticut, was awarded first prize in class 4 for this photo of a rock garden in Wengen, Switzerland.





Dianne Huling of East Greenwich, Rhode Island, captured a perfect memory of the 2003 NARGS Annual Meeting with this photo of *Aquilegia coerulea*, Colorado's state flower; it received first place in class 1.



The rock garden at "Rosehill," a one-acre garden developed by Wendy and David Sellars in South Surrey, British Columbia. David Sellars's photo took fourth place in class 4.

*Trollius laxus* subsp. *albiflorus* at Haney Meadows in the Wenatchee Mountains, Washington, photographed by Raymond Taggart, honorable mention, class 1.



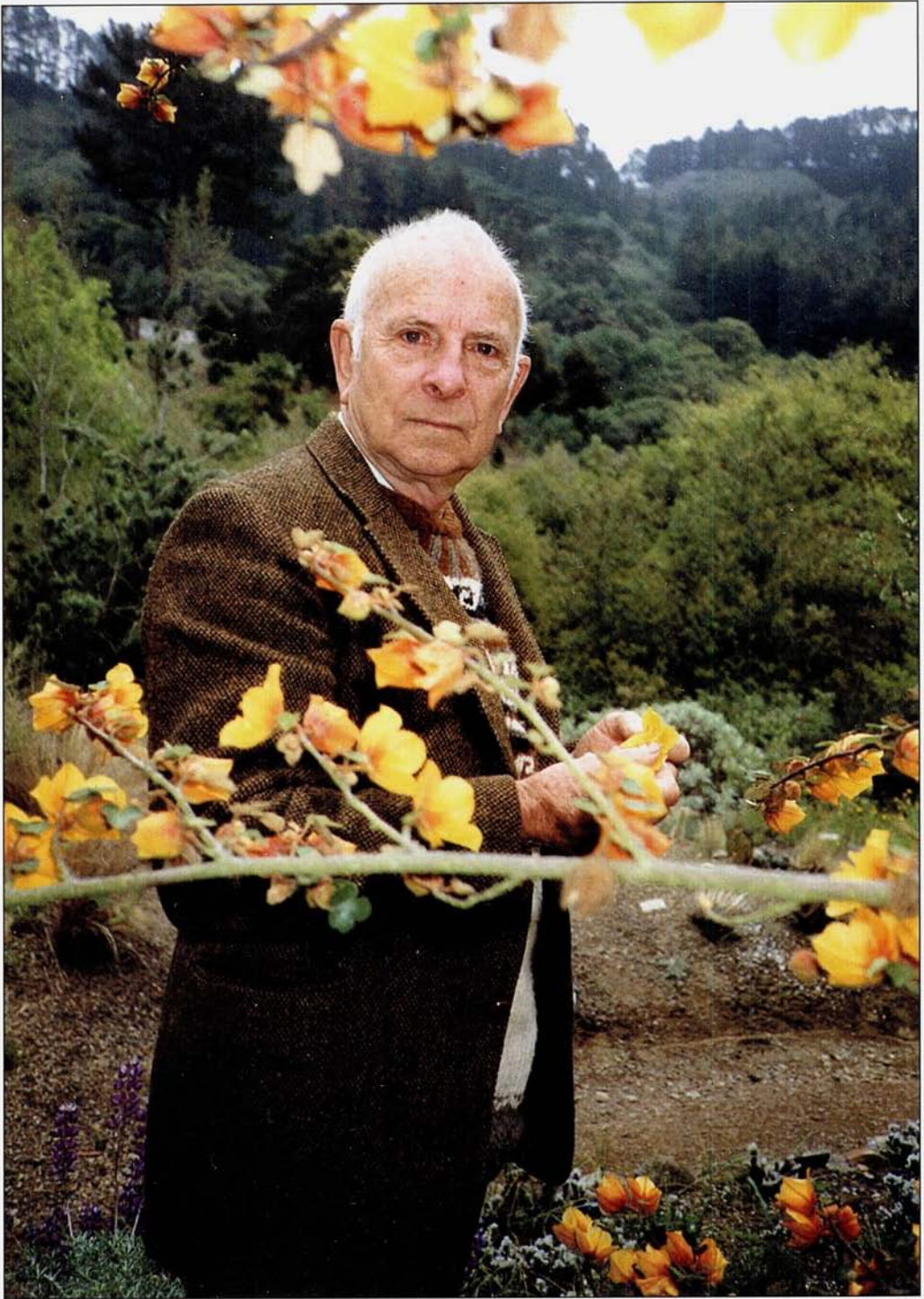




*Claytonia virginica* (p. 44), shown here in its yellow form. (photo by Jim McClements)

Hikers of the Western Chapter in July 2002, in the U.S. Sierra Nevada, photographing *Kalmia polifolia* var. *microphylla*, and photographed by Jack Muzatko. Left to right, Ted Kipping, Jean Louise Miller, and Walter Teague.





Wayne Roderick, a plantsman for the ages. A memorial to him appears on p. 61.  
(photo, Janet Smithson)

# Four Southern Native Rock Garden Plants

Robert Mackintosh

Caroline Dormon of Louisiana, in her book *Natives Preferred*, wrote of rock garden plants: “In every region—mountains east and west, the high prairies, the sand hills—there are attractive plants perfectly suited to growing in rock gardens. . . . It is regrettable that more nurserymen do not gather seeds of our many fascinating wild flowers and put them in the trade.” Dormon gardened at Briarwood, her home in Saline, and for decades she was the leading popular authority on that region’s native plants, which she promoted in the books she wrote and illustrated. Dormon would appreciate the continuing use of the four native plants I’ll discuss here: two violets and two hypericums.

## *Viola walteri* and *Viola striata*, Two Uncommon Violets

Two uncommon caulescent (stemmed) violets from the Coastal Plain and Piedmont of North Carolina are suited to the shaded rock garden. *Viola walteri* (photo, p. 23), a “running” or stoloniferous violet, Dormon says is a “good rock garden plant forming dense mats of rounded heart-shaped leaves, purplish on the underside.” It produces numerous lavender flowers in early spring. The partially evergreen leaves of *V. walteri* vary among individuals, from completely green to forms with muted silver and darker radial veins. This woodland violet usually occurs in rich, neutral to basic soil. Wide-ranging but sporadic in occurrence, it is uncommon in the Southeast from Florida and Texas, extending rarely to Ohio and Virginia; this indicates that it is probably hardy to USDA Zone 5 (winter minimum  $-20^{\circ}\text{F}/-29^{\circ}\text{C}$ ). It is self-sowing but not invasive and can be propagated from its self-rooting stems.

A second Southern stemmed violet suited to rock gardens is *Viola striata*. In contrast to *V. walteri*, *V. striata* is deciduous. It produces multiple upright stems up to about 8 inches (20 cm) tall, with a spread of 8 to 12 inches (20–30 cm). The specific epithet, *striata*, refers to the small dark purple lines on the lower spur petal, but the overall appearance of the flower is usually cream to white. More common than *V. walteri* in the wild, the cream violet is found in the moun-

tains and piedmont from Georgia to New York, ranging east to Massachusetts and west to Wisconsin, usually in alluvial woods or meadows and in disturbed areas. It is hardy and adaptable in gardens and easily propagated by seed, often self-sowing. The cream violet blooms from mid-March through June, and the foliage remains fresh through the summer.

## *Hypericum lloydii* and *Hypericum reductum*, Miniature St. John's worts

Two small hypericums (Clusiaceae, formerly Hypericaceae), representatives of a large cosmopolitan genus, are native in the Carolinas, Georgia, and Florida. Both are matted, decumbent shrubs, so they are good rock garden candidates. They are perfect small-leaved evergreens, heather-like and spreading.

*Hypericum lloydii* (photo, p. 24), in its shortest form, makes a prostrate mat or low, rounded clump that spreads to 12 inches (30 cm) in diameter. It has golden powder-puff flowers. Plants suitable for rock gardens often come from stressful sites, and *H. lloydii*, native to sunny, hot sandhill banks or light woodlands in the coastal plain and piedmont, is a good example. It is sometimes found at the edges of granitic flatrocks and is uncommon in its range from North Carolina south to central Georgia.

*Hypericum reductum* has similar flowers and foliage but is a bit taller at 6 to 8 inches (15–20 cm) and is somewhat stoloniferous. Native to wet pine flatwoods with sandy soils, it is found in the Coastal Plain south to the Florida Panhandle. It is more common in its range than *H. lloydii* and is more tolerant of moisture. Perhaps because of this, it is better suited to nursery propagation, surviving well in containers.

In the garden, both these hypericums require well-drained soil or sand, presumably acidic like their native soils. Propagation, as with most of this genus, is easy by cuttings or by the small black seeds. Both species flower in late June to early July, when color is especially welcome in the Southern rock garden.

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Julia and Robert Mackintosh live and garden in Raleigh, North Carolina. They are founders and co-owners of Woodlanders Nursery in Aiken, South Carolina.

# More Bulbous Irids for the Southern Garden: The “Lesser” Irids

Michael E. Chelednik

In a previous article (*Rock Garden Quarterly* 60(3):205–207), I wrote of some larger, more vigorous irids (members of the Iridaceae, or iris family, that are not in the genus *Iris*) that are valuable additions to our southern U.S. garden beds and borders. In this article, I continue the exploration with what I term the “lesser” irids—species that are smaller, less vigorous, or both. The subjects of my previous article (such as *Tigridia pavonia* and *Cypella coelestis*) can hold their own in the herbaceous or mixed border, but the irids I’ll discuss here require special siting to be viewed clearly and to avoid being overrun by neighboring plants. All the plants mentioned in this article are ideal for the rock garden or rock wall. In general, they benefit from good drainage. Finally, careful placement on an elevated site helps us see their intricate blooms.

The plants I describe here have been hardy in both winter cold and summer heat in my eastern North Carolina garden for the last several years. (Winter lows are typically around 15°F/–10°C; summer highs around 90°F/32°C, with very high humidity.) Unless specified otherwise, they like full sun and a well-drained—but *not* dry—soil. All are easily propagated by seed.

## Bartram’s *Ixia* and other *Calydorea* species

A small genus of which I have recently become enamored is *Calydorea*. The best known of these admittedly little-known plants is *Calydorea coelestina* (photo, p. 25), the fabled “Bartram’s *ixia*” that grows in savannas and open pine woods at just a few sites in northeastern Florida. It was formerly known as *Sphenostigma coelestinum*. The lavender-violet blooms at first glance show classical simplicity, but closer study reveals their intricacy. The large (2–2.5 inches/5–6 cm diameter) flowers are composed of six spatulate, cupped petals of equal size. The tiny yellow stamens are held perpendicular to the base of the flower, and the curious alpenhorn-shaped style is held below them, presumably to catch the pollen when it is dispersed by visiting insects. The individual flowers last but a few hours, opening around 8:00 a.m. and shriveling by 10:00 a.m. or so. There are multiple

buds on each scape (flowering stem), however, and the bloom cycle normally continues over a week in late spring, usually May. I have recently discovered that a second round of bloom can be encouraged later in summer if I allow the plants to dry off after their initial cycle and resume watering in early summer. The plants are 12 to 18 inches (30–45 cm) tall in bloom, and the foliage, like that of most of these irids, is linear and plicate (pleated). Seed germinates readily, and the seedlings grow fast, usually blooming in their second year.

Another *Calydorea* that I have grown and admire—if only for its toughness and free flowering—is *Calydorea pallens* from Salta province in northwestern Argentina. The individual blooms are not terribly exciting: water-blue affairs composed of three longer, wider petals alternating with three shorter, narrower ones. What the plant lacks in glamour, however, it makes up in sheer flower power. Plants bloom almost continually from mid-spring through early September. All the more impressive is that, like those of *C. coelestina*, the individual flowers last but a few hours; this is one free-blooming bulb. Propagation is easy with the freely set seed. *Calydorea pallens* is about 12 inches (30 cm) tall and tends to sprawl toward the end of its growth cycle, probably owing to the weight of the numerous seed capsules.

I am also growing *Calydorea amabilis*. I have had it for only a year, but since it comes from Argentina, I expect it to perform well.

### *Ennealophus euryandrus*

Probably my favorite irid in terms of individual blossom (after the incomparable *Calydorea coelestina*) is the odd *Ennealophus euryandrus*. The intriguing blossoms are small (less than an inch/2.5 cm in diameter) but very attractive. They face upward and are composed of three widely spaced, downward-pointing spatulate segments, and three tiny upward-facing segments that form a kind of cup. The larger segments are bright, true blue with a clear zone of white near the base that highlights the central cup. Its beauty is difficult to describe, but to me it looks somehow “oriental.” The plants themselves are about 12 inches (30 cm) tall and very leafy (most irids have rather scant foliage). *Ennealophus* seems to prefer a little shade, or the leaves tend to blanch. It comes from inland Argentina and blooms the first year from seed.

### The Prairie Nymph, *Herbertia lahue*

*Herbertia lahue* is a bulb that should be in every mild-climate garden. The low (less than 6 inches/15 cm) plants are almost unnoticeable when not in bloom. They love heavy soils and are tough enough to be grown in the lawn. The prairie nymph, as it is known in its native region—the U.S. states around the Gulf of Mexico—blooms in late spring. Its three large violet petals and three much smaller white ones are all spotted and blotched with violet-purple near the bases.

The individual flowers last only a few hours in the morning before being shriveled by the sun's rays, but the bloom period extends over about two weeks. After blooming and setting seed, the plants go dormant, with nothing above ground until the foliage (a basal whorl of lax plicate leaves) reappears in autumn. Propagation is easy from seed.

## Celestials or Pleatleafs

Species of the genus *Nemastylis* inhabit Mexico and the southern tier of the United States. All have deep-growing tunicated bulbs and the upright, linear, plicate foliage reflected in one of their many common names, pleatleaf. The flowers, again, are short-lived, and are composed of six tepals of more or less equal size which open flat. The generic name refers to the slender, erect styles (Greek *nema* 'thread' and *stylos* 'column'). They are easily grown in our area but are not very vigorous, at least in my experience. Their seed germinates more slowly than that of most of these irids.

*Nemastylis geminiflora* (often listed under its former name, *N. acuta*) is the most commonly encountered species, arguably the prettiest, and almost certainly the most cold-hardy. Its native range extends into the Great Plains, as far north as Kansas and Missouri. Though I'm not generally fond of common names, this has one that is both charming and appropriate. Celestials, as they are known in the more southerly portion of their range, are remarkable for the ethereal quality of their ephemeral blossoms. These, of a particularly rich blue or lavender-blue, are borne atop scapes 12 to 18 inches (30–45 cm) tall in late spring and early summer. The flowers open in the morning and close by noon. These are grassland plants and really do look best among grasses. Unfortunately, it is difficult to grow them among grasses in the garden because most cultivated grasses are too vigorous. The so-called meadow garden is not really feasible in our region. Nevertheless, *Nemastylis* will grow in borders or rock gardens in sun or very light shade. In good friable soil, this species' bulbs can go amazingly deep. I once found plants in a Kansas meadow growing almost 18 inches (45 cm) below the soil surface.

I grew *Nemastylis floridana* for a number of years before it disappeared from the garden. A garden-worthy plant, it differs in being taller, blooming in the afternoon rather than morning, and having flowers of a darker blue.

### Sources

Seed is the best source and is often available from the seed exchanges of rock garden societies. In addition, the following nurseries regularly offer some of the plants described:

Brent & Becky's Bulbs, Brent and Becky Heath, 7463 Heath Trail, Gloucester, VA 23061. Catalog free.

Plant Delights Nursery, Inc., Tony Avent, 9241 Sauls Road, Raleigh, N.C.  
Catalog 10 stamps or a box of chocolates.

Southwestern Native Seeds, Sally Walker, Box 50503, Tucson, AZ 85703.

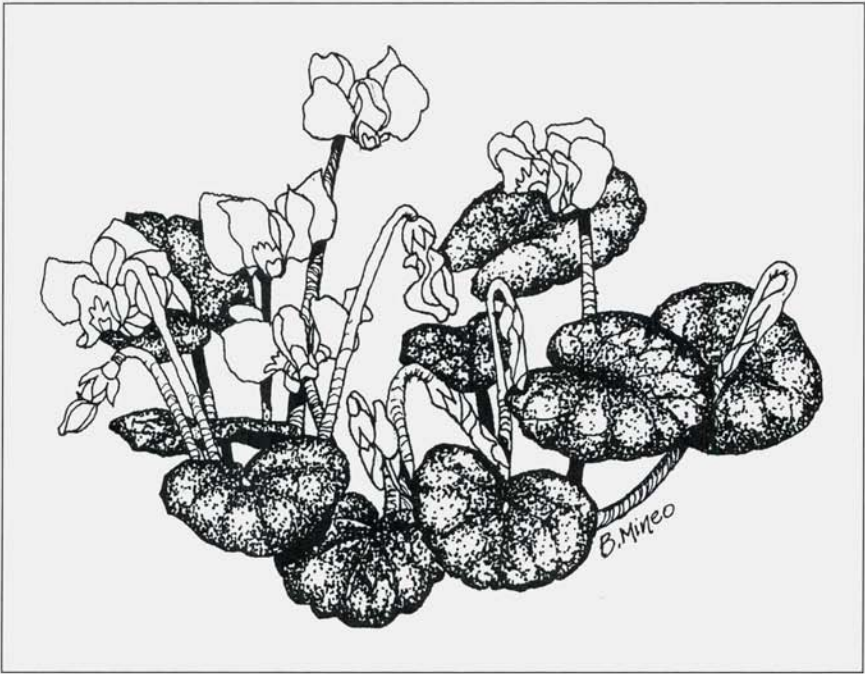
Seeds only. Catalog \$2.

Woodlanders, Inc., 1128 Colleton Avenue, Aiken, S.C. 29801. Catalog \$3.

Yucca Do Nursery, Inc., Carl Schoenfeld, Route 3, Box 104, Hempstead, TX 77445. Catalog \$4.

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Mike Chelednik lives and gardens in Greenville, North Carolina His interest in gardening includes most bulbous plants; he contributed a chapter to the NARGS/Timber Press publication *Bulbs of North America*. He is currently a member of the NARGS Board of Directors.



*Cyclamen coum*, a hardy winter-flowering species. Drawing by Baldassare Mineo.



# Plant Delights Nursery at Juniper Level Botanic Garden

by Petra Schmidt

Just off Ten-Ten Road in rural southern Wake County, North Carolina, is Sauls Road, which runs past farms and through the tiny old community of Juniper Level. The shoulders of the road ahead disappear completely under the plants that spill over from the garden you are about to enter: Plant Delights Nursery, owned and operated by Tony and Michelle Avent. (Photos, p. 26.)

The garden at the nursery is known as Juniper Level Botanical Garden. In 2003, it holds about 12,000 perennials in 150 plant families from around the world. It serves as a display garden and a laboratory for testing the plants that Tony promotes and sells. In 1988, when the Avents purchased the property, this was a tobacco field. Development of the site began with installation of an underground irrigation system, a well, a grotto, and waterfall. The woodland garden was designed around the gazebo built to camouflage the well house.

In the woodland garden, the signs of spring appear first, with the blue of *Phlox divaricata*, the yellow of *Saruma henryi*, and the white of *Isopyrum biternatum*. If you are an aroid aficionado, you will find here at least 26 species of *Arisaema* as well as numerous other aroids, including “the plants that only a mother would love,” such as voodoo lily (*Sauromatum guttatum*), the dead horse arum (*Helicodiceros muscivorus*), and *Amorphophallus*. At least two dozen species of *Trillium* are tucked into the woodland beds.

The grotto bed features a small cave hidden behind a waterfall. Between this bed and the woodland garden is the rock garden, where *Eucalyptus neglecta* stands tall, and the green-and-blue patchwork of *Picea glauca* ‘Conica’ makes an unusual focal point. Nearby, the highway border bed features the formidable *Agave americana* subsp. *protoamericana*, *Rosmarinus officinalis* ‘Gold Tip’, *Cylindropuntia echinocarpa*, and the lovely *Yucca rostrata*. The front garden also comprises scree, patio, and bog features. In spring and summer, you will also see rain lilies (*Zephyranthes* and *Habranthus*) dotting this area of the garden.

In 1996, the Avents expanded the property by purchasing an adjacent house and its land. Bed preparation began with an army of dump trucks as soil from one side of the newly acquired property was removed to make way for new nursery-stock houses, which now lie about 8 feet (2.4 meters) lower than the natural

grade and blend into the surroundings. Extra soil was used to create a 4-foot-high (1.2 m) raised alpine bed, and a “mini-mountain” was formed nearby. The alpine bed is home to about 880 rock garden perennials representing 80 families. Sun-tolerant ferns (*Cheilanthes wrightii*, *Notholaena sinuata*, and *Pellaea atropurpurea*) and 20 species of *Echinocereus* cacti grow throughout this 60-foot-long (18-meter) scree bed. South of the house is a grove of pines standing at the base of Mt. Michelle; here springtime shade-lovers thrive. These include the native trilliums *T. ludovicianum*, *T. erectum*, *T. lancifolium*, and *T. pusillum*, and the hepaticas *H. maxima*, *H. insularis*, *H. americana*, and *H. acutiloba*.

The “hardy” tropical garden is a lush, dense feature filled with 35 cultivars of *Hedychium*, three species and five cultivars of *Musa*, five species of *Colocasia* (including 23 cultivars of *C. esculenta*), and 13 species and 15 cultivars of *Hibiscus*. Behind the Avents’ home is the recently installed Southwest garden of agaves, yuccas, nolinias, and dasyliirions. Other areas to see on a spring visit are the clematis corner; the swing set bed, where an old children’s play structure is enveloped in plants; the pagoda bed, where large stones are stacked in a pyramid reminiscent of a pagoda; and a spectacular 200-foot-long (60-meter) perennial border that lines the driveway to the exit from the property.

Tony has not stopped expanding the garden. In the past year he has acquired 11 more acres (4.4 hectares) for future nursery production, trial beds, and parking. The nursery is open to the public six weekends each year. Plant Delights Nursery strives to educate gardeners by offering classroom instruction and hands-on training with perennials. Research is an integral part of the education program, with ongoing trials of plant hardiness, evaluation of ornamentals, and new introductions.

The garden contains several specialty collections. They include members of the Amaryllidaceae (*Crinum*, *Habranthus*, *Zephyranthes*); Araceae (*Amorphophallus*, *Arisaema*, *Colocasia*, *Alocasia*); Berberidaceae (*Epimedium*); Hostaceae (*Hosta*); and Convallariaceae (*Disporopsis*, *Disporum*, *Polygonatum*, *Smilacina*, *Uvularia*). There are also collections of ferns (*Athyrium*, *Cheilanthes*, *Dryopteris*, *Notholaena*, *Poly-stichum*, *Woodwardia*). The specialty collections facilitate identification. Tony’s hosta breeding program has resulted in 20 new introductions since 1993, and his plant exploration trips to Argentina, China, Korea, Mexico, and the U.S. Southeast have brought a wealth of new potential to the horticultural world and have contributed to the botanical world as well.

What began in 1988 as a site of 2.25 acres (1 hectare) on a tobacco farm has now grown to 18 acres (7.2 hectares) containing a commercial nursery, botanical garden, display beds, and plant trial plots—the wonderland called Plant Delights Nursery. Those three words say it all.

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Petra Schmidt lives in Raleigh, North Carolina. She is research manager at Plant Delights Nursery and is particularly interested in aroids, which she has hunted on trips to Southeast Asia and Latin America.

# Norman Beal's City Garden in Raleigh

Michael E. Chelednik

In a region known for its outstanding private and public gardens, Norman Beal's Raleigh garden ranks among the best. It is situated on a busy thoroughfare in the city's southeastern quadrant, where passersby are unlikely to notice this work of art concealed behind hedges of crape myrtle (*Lagerstroemia indica*) and the holly (*Ilex*) 'Nellie R. Stevens'. Here Norman has created the garden he calls "Greystone."

A native North Carolinian, Norman returned to the area in the late 1980s after retiring from his career as a horticultural extension agent in Virginia's Tidewater region. Since then, he has transformed a traditional suburban Southern "yard" dotted with azaleas and tightly clipped hollies into an informal garden of mixed borders, raised beds, and specimen trees.

The garden lies on approximately three acres (a little over 1 hectare), sloping gently down toward a small lake adjoining a golf course. The soil is heavy clay, as it is in most of the Piedmont of North Carolina, but Norman has provided drainage by creating a series of berms, or slightly raised beds, especially in the upper part of the garden. In the lower garden, where the drainage is even poorer, he made a pond and a bog garden.

Raleigh has a warm, temperate climate and enjoys four distinct seasons. However, summers are long and hot, with high humidity and high nighttime temperatures. As a consolation, winters are generally mild. Raleigh is considered to be in USDA zone 7/8 (lows from 5°F to 15°F, but these extreme lows are rare and usually brief). This has encouraged Norman to experiment with a wide range of plants from both more northern and more southern regions.

Norman's property seems atypically wide for the neighborhood because his garden extends well beyond his property lines. With the happy consent of his neighbors, he has extended his borders into the properties on both sides. As we walk down the meandering drive from the road toward the house, we pass between a series of slightly raised berms lining both sides. The berms meander through the garden, separated by paths of manicured lawn. The plantings are mixed borders, a graceful combination of small trees, shrubs, dwarf conifers,

perennials, and even annuals. In many beds Norman has placed large rocks as part of the design—hence the garden’s name (photo, p. 27).

Norman strives to have the garden look good 365 days a year, with some plants always in bloom or at least looking attractive in some feature, such as outstanding foliage or bark. Thus, he is constantly testing new plants, and a visitor always sees something new. On my last visit, I finally saw the semidouble *Echinacea purpurea* ‘Razzmatazz’, and I was wowed by the white-variegated form of *Dianella tasmanica* he has used in many spots. I had seen the plant before but hadn’t realized it was winter-hardy in our area. There are also numerous large cut-leaf Japanese maples and some mature dwarf conifers.

As we move past the house, we notice some experimental sand beds. Here Norman is trying many rock plants that are prone to root rot in hot summers, and also some perennials that appreciate summer dryness, including some remontant (reblooming) bearded irises. Near the edge of the carport are large containers that formerly housed a massive white-variegated agave (*Agave americana* ‘Medio-albopicta’). On my most recent visit, a large specimen of *Osmanthus heterophyllus* ‘Goshiki’ graced one container, and a collection of hybrid pitcher plants (*Sarracenia*) the other.

Much of the upper portion of the back garden is lawn, along with the propagation facilities. Dotting the lawn are numerous rare specimen trees, including a beautiful weeping hackberry (*Celtis sinensis* ‘Green Cascade’) and the luscious purple-leaved *Albizia julibrissin* ‘Summer Chocolate’. Walking down the slight incline toward the back, we pass a rock garden and a dry-stacked stone wall containing many of the tougher rock plants suited to a Southeastern summer. Varieties of *Phlox subulata* brighten the area in spring and early summer.

The lower portion of the garden is both shadier and wetter. There is a pond of Norman’s construction, with a gazebo in the center and many plantings surrounding it. On one side, the pond is bordered by the evergreen dogwood *Cornus kousa* subsp. *angustata*, purchased locally as seedlings. Many of them have a decidedly upright habit and are extremely attractive even when not in bloom in late spring. Also near the lake are specimens of the native pond cypress, *Taxodium ascendens*, with narrow, upright needles.

A large berm bed in the back garden hosts a collection of rare trees and shrubs, notably the area’s largest specimen of *Cercis reniformis*, a redbud with hanging, wisteria-like clusters of bloom, and a brightly variegated form of *Zelkova serrata*. Camellias, azaleas, daphnes, hydrangeas, and more compete in the understory.

Bordering the property at the rear is a water hazard in the golf course. The spoil from its excavation forms a large mound that Norman has planted and termed “Mt. Mitchell *nana*,” a tongue-in-cheek salute to North Carolina’s highest mountain. Again, the planting scheme is an informal mixed border, with small trees and shrubs above and a mixture of woodland plants below. Hellebores, asarums, trilliums, and primulas abound. In one alcove of the mound stands a bench; above it, growing from the face of the mound, are a staghorn fern and *Pyrrosia lingua* ‘Cristata’, a selection of the evergreen tongue fern. In the

moist area between the mound and the lake are more specimen trees, such as *Poliiothyrsis sinensis*, with white flowers in spring, and large fruits later, and *Cornus florida* 'Daybreak', a vigorous yellow-margined form of the native dogwood.

Central North Carolina is blessed with many rare plant nurseries, such as Tony Avent's Plant Delights and Camellia Forest Nursery in Chapel Hill. Norman takes full advantage of these to stock his garden, and he also patronizes mail-order nurseries farther afield, such as Heronswood and Yucca-Do.

Like most good gardens, Norman Beal's garden is an ever-changing work in progress. Since its start, it has constantly expanded in both spatial area and plant palette, a testament to his skills as a plantsman and a designer.

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Mike Chelednik lives and gardens in Greenville, North Carolina, in the state's Coastal Plain. He is a frequent contributor to the *Rock Garden Quarterly* and serves on the NARGS Board of Directors.



Tulips. Drawing by Baldassare Mineo.

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# Plant Portraits

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## *Claytonia virginica*

PAM BAGGETT, Cedar Grove, North Carolina

They sprinkle the forest floor like small ghosts, appearing and disappearing with the sun. I discovered them when I was new to my farm in central North Carolina eighteen Aprils ago, finding them once but not again that entire spring.

*Claytonia virginica*, or spring beauty, is a small cormous ephemeral, absent from high, dry woods but tracking the low-lying, intermittent creeks of my land. In the southeastern United States, it can be found primarily in piedmont and mountains, in rich woodland. Its range extends from Canada to Mississippi.

In late February here where I live, spring beauties send up their leaves—lax plum-brown straps 4–8 inches (10–20 cm) long and 0.5 inch (1.25 cm) wide, usually as a single pair, barely discernible against the carpet of fallen oak, hickory, and maple leaves. It's the flowers you'll find instead, once they appear, and then only on sunny days, unless you know exactly where to look. I start to watch for them in mid to late March, when I can spot the loose clusters of slim, pointed white buds hanging from arched 4-inch (10-cm) stems. The flowers keep office hours, opening around 9:00 a.m. and closing by late afternoon. While they are open, you can see in their cupped, simple faces their relationship to other members of the Portulacaceae. The delicate half-inch blossoms, six to twenty per stem, consist of five white petals with a central cluster of pink-tipped stamens. One colony on my farm produces plants with an obvious pink tint, and a close-up view shows fine baby-pink stripes penciled along their petals. In other parts of the plant's range there is also a yellow form with pink details, shown in Jim McClements's photo in this issue (p. 31).

Flourishing colonies of spring beauties can become extensive; the largest colony on my farm extends 40 feet (13 m) before leaping the creek to populate the opposite bank. Flowering continues from late March through most of April. As the season progresses, the flower stems elongate, eventually reaching 6 to 12 inches (15–30 cm) in height. The petite, dangling seed capsules hold minute,

dark red seeds. The floral show ends by late April, and by late May the plants have collapsed entirely, completing their three-month aboveground phase. But below ground, the small, edible tubers await another season.

## *Sedum nevii*

BOBBY J. WARD, Raleigh, North Carolina

*Sedum nevii* (Crassulaceae), or Nevius stonecrop (photo, p. 27), is a rare plant with limited distribution in a few counties in Tennessee, Georgia, Alabama, and North Carolina. The plant was first collected in 1857 by the Reverend Reuben Denton Nevius from a bluff above the Black Warrior River near Tuscaloosa, Alabama. The famed botanist Asa Gray named the plant to honor its collector in 1859. *Sedum nevii* is restricted to shallow soils over granitic gneiss in Georgia, limestone and shale in Alabama and North Carolina, and quartzitic slate in Tennessee, frequently growing in light shade near riparian (streamside) habitats on steep bluffs. It probably grows in the shale barrens of Virginia, since one reported North Carolina location is near the Virginia border. In the counties in which Nevius stonecrop is found, its distribution is widely scattered in relatively undisturbed habitat.

In North Carolina, *Sedum nevii* is one of the four native stonecrops. Elizabeth Lawrence recommended it as a choice rock garden plant for the Middle South in an article she wrote in 1937 for *House and Garden*, calling it the cliff stonecrop, a common name also applied to an allied species, *S. glaucophyllum* (photo, p. 27), with which *S. nevii* is easily confused.

*Sedum nevii* grows as a low, gray-green mat on slightly ascending stems formed from rosettes of small, linear, evergreen leaves. It produces small white flowers on short pedicels in early summer. Leaves on the flowering stems are loosely arranged in a spiral. I have seen it described as growing up to 6 inches (15 cm) tall, but in my experience it rises no more than 2 or 3 inches (5–7.5 cm) high. It will spread to about 12 inches (30 cm).

I initially attempted to grow *Sedum nevii* on a clay bank with *Sedum palmeri*, which I had collected in Mexico. Our native plant was soon crowded by *S. palmeri* and did not increase before being nearly strangled. I moved a few rosettes in the fall to a raised bed containing Permatill (porous, heat-expanded slate in pea-sized granules), turkey manure, and sand, where it expanded rapidly to about a foot wide (30 cm) in a few months. In the summer it now receives full sun a couple of hours a day, and bright indirect light the remainder. It seems to respond to the better drainage in this raised bed.

Some botanists regard *S. nevii* as a synonym for *S. glaucophyllum*, a complex species with several ploidies (chromosome counts) and sub-populations, and certainly the two entities are closely related. The width and thickness of leaves on the flowering stems of *S. glaucophyllum* are greater than in *S. nevii*, and those of the former have a glaucous coating.

*Sedum nevii* is listed by a number of mail-order nurseries and sometimes appears in the NARGS Seed Exchange. However, much of what is distributed as *S. nevii* is actually *S. glaucophyllum*. It is considered endangered in some of the states in which it is native, but it is not listed as “federally” endangered by the U.S. Forest Service.

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## *Magnolia virginiana*: A Backdrop to the Rock Garden

MIKE CHELEDNIK, Greenville, North Carolina

If asked to name my favorite native woody ornamental for use as a backdrop in the rock garden, I would be hard pressed to decide, because within five miles of my home in eastern Pitt County, in North Carolina’s coastal plain, grow some of the South’s most enchanting trees and shrubs. *Stewartia malacodendron* opens its exquisite white, purple-stamened flowers in late May along the shores of Chicod Creek. Later, in the surrounding pocosins (see the article on the Green Swamp for definition), the closely related evergreen loblolly bay, *Gordonia lasianthus*, unfurls similar but yellow-stamened white blossoms from pearl-like buds. In the same pocosins grows the “honey cup,” *Zenobia pulverulenta* (photo, p. 18) in both green and “blue” foliage forms. In early June it bears delicate-looking yet substantial racemes of sweetly scented, cream-colored flowers. Northward, along the banks of the Tar River, is the pond cypress (*Taxodium ascendens*), often interspersed with the much commoner bald cypress (*Taxodium distichum*); the pond cypress is distinguished by its more slender growth habit and its needles, which are appressed and held upright. They impart a distinctive, elegant texture. Finally, in the cypress bottomlands farther downstream, where the Tar River becomes the Pamlico, grows *Sabal minor*, the dwarf palmetto. Forming a lush mass of bold, fan-shaped leaves to 8 feet (2.4 m) high, it keeps company with one of the most northerly remaining populations of the American alligator (*Alligator mississippiensis*). However, to my mind one plant just outranks them all. For sheer good looks and ease of culture (a quality that many of the aforementioned species lack), *Magnolia virginiana*, the sweetbay magnolia, tops my list.

In North Carolina, *Magnolia virginiana* is a medium-sized, tardily deciduous tree of forest edges and bottomlands. It grows to approximately 40 feet (12 m) and may have two or three main stems, though it could rarely be called “shrubby” in this region. The trunk is an attractive gray-green, sometimes mottled with white. The foliage is the most distinctive characteristic. The leaves are



simple, elongated ovals, dark green above but strikingly silver-white below, a feature revealed every time a breeze stirs the foliage. This always brings to mind the coolness after a summer storm. The flowers, simple and cream-colored, are both elegant and showy. Their appearance is eclipsed by their fragrance, in my opinion the finest in the floral kingdom. In late spring the evening air is perfumed by a fresh lemony aroma, pervasive yet never cloying, the hallmark of high spring.

The sweetbay magnolia has a wide distribution, growing at low elevations near the coast all the way from Massachusetts to parts of Texas. In the north, trees are generally multistemmed large shrubs and completely deciduous. Southward, however, it can grow to 50 or 60 feet (15–18 m) and is completely evergreen. These two races are sometimes accorded subspecific status, the northern forms being termed var. *virginiana* and the southern ones var. *australis*; however, this designation is not universally accepted because there is much intergradation of characters throughout its range.

There has been little work on selecting cultivars of *Magnolia virginiana*. Hardier evergreen forms, such as 'Milton', and 'Henry Hicks', have been selected for northerly regions. Other evergreen selections include 'Satellite', from the National Arboretum, and 'Santa Rosa', a large-leaved form from Florida. The latter has remained evergreen at low temperatures at the J.C. Raulston Arboretum near Raleigh, North Carolina. I tend to prefer the smaller-leaved forms, however. There is a pleasing unnamed specimen at the entrance of the Sarah P. Duke Gardens (Durham, N.C.). Tom Dodd, Jr. of Mobile, Alabama, selected five unique clones with extremely small foliage (about 2 inches/5 cm) and flowers and a fastigiate habit. Named for five Deep South rivers—'Perdido', 'Cahaba', 'Appalachi', 'Tensaw', and 'Coosa'—these make good patio or large container subjects.

Variiegated forms exist, though rarer than hen's teeth. I have a reliably evergreen form with leaves lavishly splashed with cream and white, and I saw an amazing seedling in Alabama a few years ago whose leaves have bold golden centers. I was told that it can be propagated easily from cuttings, so perhaps it will one day become available.

Deciduous cultivars are decidedly less common. Don Shadow of Tennessee selected a semidwarf form usually called simply 'Dwarf', which grows into a beautifully rounded, upright shrub of 10 feet (3 m). This cultivar is further distinguished by the leaves, which are notched at the apex. Other deciduous forms have been named, such as 'Havener' with semidouble blooms, but these are seldom seen.

Generally speaking, *Magnolia virginiana* is amenable to cultivation. Although native to moist areas, it succeeds equally well in soils of average moisture and can even succeed in dryish ones if irrigated occasionally. It performs best in full sun but will grow well in shaded areas, although it will be leggy and less floriferous. In the landscape, it can be used as a specimen or patio tree. The evergreen forms could make an acceptable screen for naturalistic plantings. Sweetbays are generally available at the retail level in the eastern United States, albeit with a little

searching. Those desiring evergreen forms or selected cultivars will likely have to resort to mail-order sources, particularly magnolia specialists.

## *Teucrium*

PANAYOTI KELAIDIS, Denver, Colorado

[*Editor's note:* A mention of the genus *Teucrium* on the Internet forum Alpine-L prompted me to inquire about small species in this genus suitable for the rock garden. This genus in the Lamiaceae (mint family) is mostly Mediterranean in distribution, and mostly small shrubs and subshrubs (plants with woody bases and annually renewed leafy stems above). They are favored for their compact form, often silvery foliage, and long period of bloom in summer. The English common name is "germander." The responses included the following essay by Panayoti Kelaidis of the Denver Botanic Garden, and remarks from other forum members.]

There is a host of tiny *Teucriums*. The smallest I have ever grown was *Teucrium cyprium*, barely a half-inch (13 mm) tall and just a few inches wide after a year from cuttings, with minuscule flowers in perfect scale. I eventually lost it, and miss it.

The one miniature *Teucrium* that's fairly commonly grown is *T. pyrenaicum*, which forms mats of scalloped leaves about the size of a quarter (c. 2.5 cm in diameter), attractively veined and slightly hairy. It blooms steadily through the summer months, bearing attractive pastel rosettes of color over the dark blue-green mat—delightful. In rich scree, it can spread several feet across after a decade or so, but it is not unmanageable. I consider this a "bread-and-butter" plant, one everyone should have.

*Teucrium subspinosum* is a shrub, but one that only grows 5 inches (7.5 cm) tall. My oldest plants are perhaps a foot (30 cm) across. This is an enchanting, twiggy, dense mat of blue-green foliage with tiny lavender flowers produced through much of the summer along the "spines," which are actually the leafless ends of the woody stems. It is reputedly tender, and I admit that I have only succeeded in growing it in one spot—where, however, it has been very happy for many years. It must possess the same allomone as the larger species *Teucrium marum* and catnip (*Nepeta cataria*), because our cat gets quite excited every summer when I harvest seed from it. I think its spiny form protects it from cats otherwise.

There are numerous compact forms of *Teucrium polium*, found throughout the Mediterranean region, and I have grown many in my day. A plant cultivated under the name "*T. aureum*" is usually considered just a yellow-leaved variant, and is by far the largest form I grow. Each island in the Mediterranean, each peninsula for that matter, seems to have its own special form, some white-flowered, some lavender, and all delightful. The best is undoubtedly *Teucrium cossonii*, the terrific mat-forming dwarf from the Balearic Islands, which has been sold as a

ground cover in California for many years. This has linear leaves (gray-blue on top and white underneath), and its verbena-like clusters of deep purple-blue flowers last from May to autumn frost. This is very hardy in Colorado despite its origin.

I found a particularly compact *teucrium* growing quite commonly at middle and higher elevations on the Spanish Sierra Nevada above Granada a few years ago. I initially identified it tentatively as *Teucrium granatense* but now know it as *T. polium* var. *montanum*. This is the second-smallest species I have grown thus far: a huddled, furry cushion just an inch tall and a few inches across. I have grown its neighbor *T. webbianum*, a tallish, lax mat that isn't very garden-worthy, although quite rare in nature. I've grown *T. compactum*, a fine little mat-former, for many years, and my plants are quite yellow. It has a pungent, pervasive aroma that smells exactly like the incense used in Orthodox churches, no doubt deriving from the same chemicals.

Siskiyou Rare Plant Nursery and others have offered *Teucrium aroanium* for years. This species has incomprehensibly been confused with *T. cossonii* by some nurseries in recent years; two more distinctive plants have never existed. *T. aroanium* originates in the Peloponnese of southern Greece, where it is quite local. Its oval, white-rimmed gray leaves form prostrate, slow-spreading mats. The improbable, gaping lavender flowers with eyelash-like stamens are produced over much of summer.

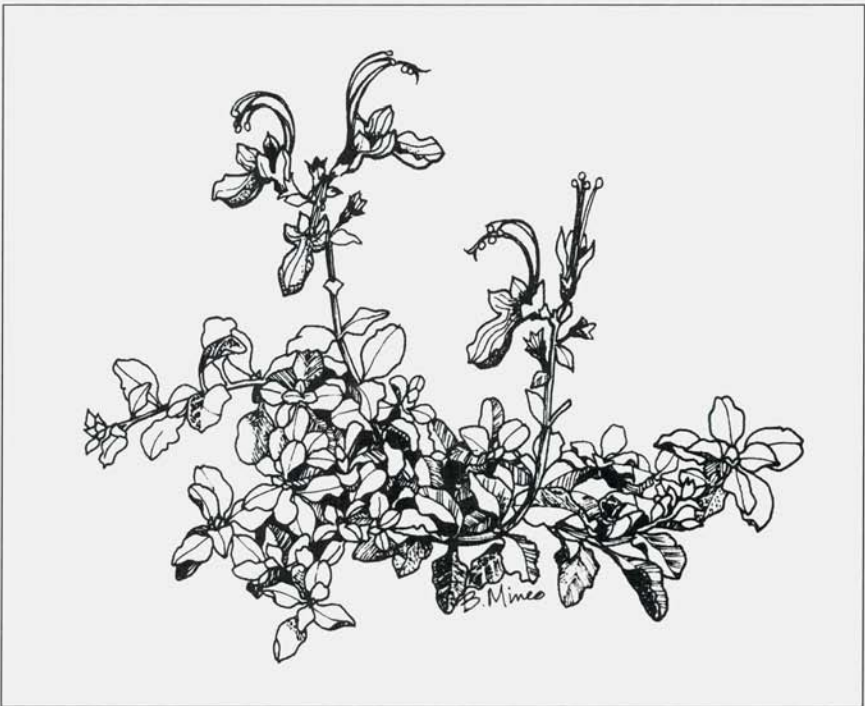
Most of the other germanders are larger, in my experience. *Teucrium chamaedrys*, the common box germander of herb gardens, has shiny, nearly evergreen, ovate leaves with scalloped margins. A dwarf form often cultivated has leaves not much more than an inch long and forms a dense mound.

Other than the Mediterraneans, there are some native North American germanders. *Teucrium canadense*, the most widespread, is a plant of wet pastures in the Great Plains and eastward that has dentate leaves usually more than 2 inches (5 cm) long, with acute tips and a tall, deciduous spike reaching several feet in height. One of the showiest *teucriums* is common throughout the Chihuahuan desert and uplands north to southern Colorado. *Teucrium laciniatum* forms prostrate mats of deeply cut, dark blue-green foliage, smothered throughout summer and autumn with stemless, pure white flowers that are deeply slashed as well. In wet years, this forms continuous carpets of bloom along highways all over New Mexico and northern Chihuahua. An associate of mine found a huddled microform of this in southern Colorado, with much smaller, bright yellow flowers; it's probably a distinct, as yet undescribed species. Gotta get it!

Daniela Goll, who gardens near Paris, also praises species of the Spanish mountains: "I brought from there seed of another small *teucrium*—*T. compactum*, which is especially beautiful when not in flower. The cushion is quite low, only about 2 cm, and the individual rosettes are silvery, very soft to touch; in a word, delightful. It blooms profusely throughout summer, and the flowers are yellow. *Teucrium eriocephalum*, *T. lerrouxii*, and *T. webbianum* also grow in the same region. I also grow *T. montanum*, *T. pyrenaicum*, *T. polium*, *T. aroanium*, and love them all. They're no-problem plants. For several years, I had *T. ackermannii*, another

delightful subshrublet with green leaves and dark red flowers, but unfortunately I lost it, and I've been on the lookout for it since."

As attractive as *teucriums* are, the foliage of most has a strong aroma that is unpleasant to most people. It usually takes pressure to release the smell, though, so these shrubs can safely be planted as long as passers-by won't brush against them. Cats, however, are driven crazy by germanders, as several correspondents remarked. Richard Dufresne, who specializes in plants of the Lamiaceae (especially *Salvia*), writes: "The chemical in *T. marum* which excites cats is dolichodial. It is chemically related to actinidine and nepetalactone, both of which excite cats. Dolichodial is extremely reactive, acting like a tear gas. In fact, it is part of the defensive mechanism of Devil's walking stick and Myrmecine ants. A tiny piece of *T. marum* foliage is enough to get most cats loopy. *Teucrium asiaticum* is quite pungent, even obnoxious; I've called it 'outhouse germander,' which got some laughs from my herb nursery friends." Daniela Goll adds, "Concerning *Teucrium subspinosum*, Panayoti's cat must be a very well-behaved one. I tried it twice, and both times the shrublet just disappeared under cat fur; my Abyssinians were crazy about scratching themselves on it, rolling on it, and eventually destroying it completely."



*Teucrium aroanium*. Drawing by Baldassare Mineo.

## *Gypsophila aretioides*

DAVE SIERER, Westby, Wisconsin

Who could not love a plant that resembles a lichen-encrusted rock? *Gypsophila aretioides* soon forms a hard, crust-like dome; some garden visitors don't even realize it is a plant until it is pointed out to them. This most unusual relative of the common "baby's breath" has been one of my favorites in the garden over the past ten years.

*Gypsophila aretioides* is native to Iran and is also found on rocky slopes at sub-alpine and alpine elevations in Asia Minor. It belongs to the Caryophyllaceae Family. The Rock Garden Plant Data Base <<http://web.kadel.cz/flora/>> describes it as "a rosette of small, thick, glaucous, hirsute leaves, flower solitary, sessile, to 10mm across." It may be propagated from seed in the spring or cuttings taken in late summer.

Here in southwestern Wisconsin (USDA Zone 4), it takes in its stride our temperature extremes (from -40°F in winter to +108°F in rare summers), heavy snow cover, and summer rain, with no special care. Only one of my plants has flowered, and writers report that in general, this species rarely blooms in cultivation. The tiny white blooms, about 1/8 inch (3 mm) in diameter, sit directly on top of the foliage.

I grow my plants in a mixture of one-third loam, one-third coarse sand, and one-third pea gravel or crushed granite. They appear to be doing equally well in a mixture that contains limestone and one that contains granite, even though the genus name means "lime-loving." The plants can take full sun, but they seem to appreciate a bit of shade in the hottest part of the day. Locating them by a strategically placed rock will help.

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# Books

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## Books on North Carolina's Native Plants

ANN ARMSTRONG, Charlotte, North Carolina

[Editor's note: Some of the books mentioned in this article are available from the NARGS Book Service at reduced prices. See the Book Service advertisement later in this issue.]

I spent many delightful hours in the wildflower-filled ravines that surrounded my childhood home in upstate New York. When I moved to North Carolina, I bought C. Ritchie Bell and William S. Justice's *Wild Flowers of North Carolina* (University of North Carolina Press, 1987; paperback, \$16.95) to take on our hiking and camping ventures to the mountains and coast. Its well-photographed plants are organized by family; it includes both common and botanical names, bloom times, brief descriptions, and general comments. The index number at the end of each plant description refers to the *Manual of the Vascular Flora of the Carolinas*, which provides more detailed information. The authors provide an extensive glossary.

For 70 years, *The Natural Gardens of North Carolina* by B. W. Wells (University of North Carolina Press, \$34.95), has been a must-read volume for anyone interested in wildflowers, native plants, ecology, or conservation in the state. The 2002 revised edition features new line drawings and color photographs, an appendix that updates the botanical nomenclature, an introduction that focuses on Wells and his passion for the state's landscape, and an afterword that discusses the continuing relevance of Wells's ideas. Back in 1935, Wells, one of the first scientists to write and lecture about ecology, introduced North Carolinians to the extraordinary tapestry of "natural gardens," or plant communities, within the state's borders. His purposes were to help readers understand a plant within its community—a pioneering concept at the time—and to promote conservation. Moving from the Atlantic coast westward, this book identifies eleven major natural gardens: sand dune community, salt marsh, freshwater marsh, swamp forest, aquatic vegetation, evergreen shrub bog (or pocosin), grass-sedge

bog (or savanna), sandhill, old-field community, upland forest, and high mountain spruce-fir forest. Wells devotes the first part of his book to a general account of the vegetation and habitats of each community and then describes the wildflowers that are found there. The second part is devoted to plant species in these communities.

J. Anthony Alderman's *Wildflowers of the Blue Ridge Parkway* (University of North Carolina Press, 1997, paperback, \$9.95) is an excellent book for the beginning wildflower enthusiast as well as for those less interested in botanical jargon. It is organized by flower color, with good photographs grouped at the back of the book. The color photographs are augmented with bloom time and cross-references to text descriptions that include botanical names and the places along the Blue Ridge where the flowers were photographed. The second part of the book is devoted to 75 of the best wildflower sites along the Parkway (a scenic highway), with descriptions of wildflowers at each site during the three flowering seasons: spring, summer, and fall. All the species inventoried in the 75 sites are described in this section of the guide.

The small, pocket-sized *Wildflowers of the Smokies* by Peter White (Great Smoky Mountains Natural History Association, 1996, paperback, \$11.50) is an excellent introduction to the Southern mountain flora. White, director of the North Carolina Botanical Garden, has arranged the plants by flower color rather than taxonomically.

*Native Shrubs and Woody Vines of the Southeast* (Timber Press, 1989; out of print) by Leonard Foote and Samuel Jones, Jr., lists 550 species from 79 families. It includes keys, photographs, and detailed descriptions. It covers the coastal plain, piedmont, and mountain areas roughly from Virginia south to Florida and west to Texas.

We can add two worthy little paperback books, both published by the University of North Carolina Press. The first, *Wildflowers of the Outer Banks: Kitty Hawk to Hatteras* (1980, \$4.95), is illustrated by Jane Sutton and subdivided by flower color. The black-and-white line drawings are exquisite, and the descriptions adequate. The second, *A Guide to Ocean Dune Plants Common to North Carolina* (1988, \$9.95), written and illustrated by E. Jean Wilson Draus and edited by Sarah Friday, includes excellent keys and covers trees, shrubs, grasses, and herbs. There are extensive illustrations of botanical terms such as leaf arrangements, margin types, stem and structural types, as well as fruit and flower types and arrangements.

For NARGS members interested in Nature Conservancy areas in North Carolina, there are two excellent paperbacks. *A Field Guide to Conservancy Projects in North Carolina* (2000) and *North Carolina Afield* (2002) cover the "wild" places from the maritime forests of the coast, the remnant prairies of the Southern Piedmont, the ancient dunes of the Sandhills, and the grassy balds of the southern Appalachians—and much more. Both are published by the North Carolina chapter of the Nature Conservancy.

The following are Internet sites related to North Carolina flora:

- <<http://ils.unc.edu/parkproject/nhp/index.html>> A website on rare and endangered flora and animals in North Carolina, with an on-line searchable database.
- < <http://www.agr.state.nc.us/plantind/plant/conserv/plproact.htm>>. The North Carolina Department of Agriculture's site relating to plant protection in the state.
- < <http://www.ncgov.com/>> Official website for the state of North Carolina.

***The Natural Gardens of North Carolina***, by B. W. Wells. Revised edition, Chapel Hill: University of North Carolina Press, 2002. 235 pp., line drawings, color photos. Paperback, \$34.95. ISBN 0-8078-4993-6. Available from NARGS Book Service.

*Reviewed by* BOBBY J. WARD, Raleigh, North Carolina

In 1932, B. W. Wells described for the first time North Carolina's natural plant communities, which extend 500 miles (800 km) from the sand dunes of the Outer Banks through the Atlantic coastal plain, the southern sandhills (an ancient coastline, now inland), the Piedmont, and the high-elevation spruce-fir forests in the Blue Ridge Mountains. In the 1935 first edition of the book under review, Wells identified eleven ecosystems, defined primarily by their vegetation, soils, and moisture regimes. I consider this work a classic; it sits on my book shelf next to John Lawson's *A New Voyage to Carolina* (1709), William Byrd's *Histories of the Dividing Line betwixt Virginia and North Carolina* (1728), and William Bartram's *Travels* (1791). It has now been reissued as a sturdy paperback revised edition with the addition of color photographs and updated plant nomenclature.

Much of what Wells saw has now been modified by human activity, drained for agricultural development, timber harvesting, and commercial pine plantations—the Great Dismal Swamp is a ghost of the former great wilderness—covered by urban encroachment, and subject to natural alterations (for instance, Hurricane Isabel cut a new coastal inlet in September 2003). A great part of the wetlands has been radically reduced, including Wells's favorite, Big Savannah, a huge treeless plain in Pender County. Nevertheless, his book is still the most serviceable account of the state's natural vegetation.

In North Carolina, William Bertram Wells was known as an enthusiastic teacher and lecturer to garden clubs and civic groups from his perch as professor and head of the Botany Department at North Carolina State College in Raleigh, a position he occupied from 1919 to 1949. In these travels and in *Natural Gardens*, he introduced the state's citizens to "plants within communities," a pioneering concept at the time. The book has two parts: the first describes the diverse plant life in the eleven ecosystems that Wells classified, and the second part describes 495 of the plant species that occupy these ecosystems.

Wells got embroiled in controversies, such as spirited public debates on evolution and his theories on the origin of the Carolina Bays, the numerous shallow,



oval lakes in the coastal plain. After retirement he lived another 30 years, enjoying not only plants but also painting at secluded Rock Cliff Farm overlooking Falls Lake in Wake County. He died at age 94. The remains of his farm and house are now managed by the B. W. Wells Association as a Nature Interpretive Center, a part of the state's parks system. His favorite native plant, the fire pink (*Silene virginica*), was growing at the gate to the now-abandoned farmhouse on my last visit there.

A recommended companion piece is the biography of B. W. Wells, *Nature's Champion: B. W. Wells, Tar Heel Ecologist*, by James R. Troyer (UNC Press, 1993). It's a thematic approach to Wells's life.

***Two Gardeners: A Friendship in Letters—Katharine S. White & Elizabeth Lawrence.*** Edited by Emily Herring Wilson. Boston: Beacon Press, 2002. 273 pp. Hardcover \$25.

*Reviewed by* BOBBY J. WARD, Raleigh, North Carolina

In the March 1, 1958 issue of the *New Yorker*, Katharine White's article "A Romp in the Catalogues" critiqued the catalogs she received from various nurseries and seed companies. This was the first of 14 gardening pieces White would contribute to the magazine in the next dozen years in a department called "Onward and Upward in the Garden," a phrase lifted from the Unitarian creed. The articles were significant because this was the first time that anyone had written about gardening for the readers of the *New Yorker*, or indeed of any American national magazine with a focus on literature and the arts. Readers were expecting fiction and nonfiction articles and reviews of new novels, the season's new plays, and operas, not of seed and plant catalogs. However, the articles proved immensely popular.

The garden writer Elizabeth Lawrence, who at that time was living in Charlotte, North Carolina, and writing a weekly garden column for the *Charlotte Observer*, read the first article and wrote White a fan letter, praising the article and recommending other catalogs. Thus began 20 years of correspondence between the two, which continued until White died in 1977 at age 84. Today, White's letters are archived at Bryn Mawr College, and Lawrence's at Northwestern State University of Louisiana.

*Two Gardeners* is a remarkable collection of letters between two erudite women well versed in literature. Reading it is like walking around a fine garden, conversing with an amiable companion. These engaging letters, exchanged over intervals of weeks or months, can be savored for their leisurely pace, a correspondence reflecting an earlier time before the immediacy of electronic communication.

Revealed in the correspondence for the first time, I believe, is the extent of the influence each had on the other's writing and gardening: Lawrence encourages White to produce more "Onward and Upward" columns for the *New Yorker*

and sends her “new” plants such as hellebores and cyclamens to try in her garden in Maine; and White prods the “redoubtable” Elizabeth to complete *Gardens in Winter* and her market bulletins book, the latter to be “a real contribution to the history of the culture of the South.” (See the article on Lawrence’s works in this issue.) The two women met only once, in New York City.

Emily Herring Wilson, the editor of this fine collection, has included ample but unobtrusive footnotes that greatly increase the value of the letters to readers of White and Lawrence, particularly when there is casual mention of personal names. Wilson, who lives in Winston-Salem, North Carolina, has wisely chosen not to update the plant names, allowing the gentle-hearted conversations to flow without bracketed interruptions. Because Lawrence rarely dated her letters, Wilson studied postmarks and the contents of the letters to meld the two sets of correspondence into a seamless dialogue.

One of the unexpected treasures in *Two Gardeners* is the brief but affectionate correspondence between Lawrence and E. B. “Andy” White, Katharine’s husband and a noted man of letters, following his wife’s death. E. B. White edited Katharine’s gardening articles and published them with his introduction in book form in 1979; Beacon Press reissued the collection, titled *Onward and Upward in the Garden*, in 2002, with an afterword by Jamaica Kincaid.

Elizabeth Lawrence frequently quoted Virgil’s *Georgics*, a work she admired immensely. *Two Gardeners* is a contemporary prose *Georgics*, a landscape of floral friendship.

## Elizabeth Lawrence’s Garden Writings

LINDIE WILSON

Elizabeth Lawrence (1904–1985), the South’s most noted garden writer, was held in high esteem both in this country and abroad. One of the first Southern garden writers, she was also the first woman to earn an advanced degree in landscape architecture from the North Carolina State University School of Design in Raleigh. Eight volumes of her work have been published, three during her lifetime and five compiled since her death. All are still in print. In addition, she published more than 50 articles in gardening magazines, newsletters, and plant society bulletins, as well as 720 weekly columns for the *Charlotte Observer*, a North Carolina newspaper.

Lawrence began her first column for the *Charlotte Observer* on August 11, 1957, by writing: “This is the gate of my garden. I invite you to enter in: not only into my garden, but into the world of gardens . . . a world as old as the history of man, and as new as the latest contribution of science; a world of mystery, adventure and romance; a world of poetry and philosophy; a world of beauty; and a world of work.” She opened the gate to all these worlds for her readers.

*A Southern Garden* (1942, reprinted three times) was written while Lawrence was living in Raleigh. Though the book was based on meticulous and extensive

garden records, it is far more than a “how-to” volume. It stands today as the quintessential book on Southern gardening. Edith Eddleman, in her foreword to the 1991 reprint edition, writes: “The classics of garden literature, botany, history, and poetry infused Elizabeth Lawrence’s consciousness and her writing.”

After moving to Charlotte, North Carolina, in 1949, Lawrence wrote *The Little Bulbs* (1957). Although this book focuses on both common and rare “minor” bulbs, it also includes correspondence with fellow gardeners such as Bernard Harkness and Caroline Dormon. In the preface, she writes: “Gardening, reading about gardening, and writing about gardening are all one; no one can garden alone.”

In *Gardens in Winter* (1961), Lawrence extends garden interest and bloom beyond the fall season. Although this is primarily about her Charlotte garden, there are ideas for gardens throughout the United States. Her knowledge of ancient customs and plant uses from past centuries, mingled with the observations of writers such as William Wordsworth and Henry David Thoreau, enrich this work.

In 1971, Lawrence wrote *Lob’s Wood* for the Cincinnati Nature Center. This paperback recalls her correspondence with Carl Krippendorf about plants, primarily bulbs, in her Charlotte garden and in his garden, an Ohio woodland farm that would become part of the Nature Center lands at his death.

*Gardening for Love* (1987), edited by Allen Lacy, was published after Lawrence’s death. Her friend Eudora Welty placed Lawrence’s name on the mailing list of *The Mississippi Market Bulletin* in 1944 and planted the seeds for this book. Lawrence wrote of the world of rural Southern women, “my garden ladies,” with whom she carried on lively correspondence for many years. These women shared her lifelong passion for plants, and from them she learned traditional plantlore, herbal remedies, and odd and poetic vernacular plant names peculiar to the South.

*A Rock Garden in the South*, edited by Nancy Goodwin with Allen Lacy, appeared in 1990. It is based on a manuscript that was found among unpublished papers that Lawrence gave to Duke University Press before her death. She writes: “Gardening is an art and the rock garden is its purest form. Here the plants are grown for themselves alone—nor for exhibition, not for cutting, and not primarily for display. The rock garden is the most personal of all forms of horticulture.” This book is encyclopedic in terms of rock garden plants suitable for the region and refers to the particular problems of cultivating rock gardens in the South.

*Through the Garden Gate* (1990), edited by Bill Neal, is a collection of weekly columns in the *Charlotte Observer*. These are arranged according to the calendar, following the seasons in Lawrence’s garden.

*A Garden of One’s Own*, edited by Barbara Scott and Bobby J. Ward, was published in 1997. After a seven-year search, the editors gathered a remarkable collection of letters and articles written for gardening magazines, newsletters, and plant society bulletins over 46 years. Lawrence’s practical tips and a wealth of horticultural information are here in her lively style. The articles are grouped by subjects, including trees and shrubs, bulbs, native plants, and others.

*Two Gardeners* (2002), edited by Emily Wilson, is a collection of letters between Katharine S. White (an editor at the *New Yorker*) and Elizabeth Lawrence. The letters reveal a great deal about the character of these women, the plants they loved, and the influence each had on the other's writing.

On May 27, 2004, we celebrate the 100th anniversary of Elizabeth Lawrence's birth. In preparation are a biography and additional collections of her writings.

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Lindie Wilson lives and gardens at the former home of Elizabeth Lawrence in Charlotte, North Carolina. She is an interior landscape designer and writes and lectures about Lawrence, and is working to preserve the garden.

## Books in Brief

*Reviewed by the editor*

***The Intuitive Gardener***, by Marilyn Raff. Golden, Colorado: Fulcrum, 2002. ISBN 1-55591-442-X. vii+184 pp., color photos throughout. Paperback, \$24.95. Available from NARGS Book Service.

Since beginning to garden 15 years ago in a Denver suburb, Marilyn Raff has made a career as a garden designer, teacher, and newspaper columnist. Her garden, which featured in the pre-conference tour for the 2003 NARGS annual meeting, exemplifies the style she explains in her book—"foliage and evergreen plants ... suitable hardscape elements" and bright perennial flowers, closely planted in island beds and borders. A Denver garden is a "rock garden" in the broad sense almost by default, given the elevation, often sloping terrain, harsh climate, and ready availability of landscape stone, and Raff's chapter "Everything under the sun" includes remarks on rock gardens in the narrower sense, troughs, berms, and other features familiar to readers of this journal. The remainder of the book is devoted primarily to creating "combinations" of shrubs and large perennials.

This book will be useful to beginning and intermediate gardeners in dry continental climates who want to incorporate rock into the garden but are more concerned with an attractive, long-lasting display of flowers and foliage than with the cultivation of rare and difficult plant species. The color photos, though not reproduced with adequate clarity, offer pleasing ideas for planting. The author's style is casually conversational. There is an index to plant names, helpful since the text is organized around design themes rather than plant groups.

***Water Features for Small Gardens***, by Keith Davitt. Portland: Timber Press, 2003. ISBN 0-88192-596-9. 174 pp., color photos throughout. Hardback, \$29.95. Available from NARGS Book Service.

The increasing availability and reasonable price of new materials useful in building ponds, streams, and fountains has helped establish these attractive features in even the most modest North American gardens. Davitt, a professional designer and garden writer, concentrates here on how to incorporate them in the small spaces typical of urban yards and condominium patios. These are perhaps the best places for the more formal sort of small water feature: strongly architectural, usually quite enclosed, and sheltered from wind, encroaching weeds, and predatory fauna.

Davitt's designs, however, are not all formal. Many of his ideas and practical instructions are applicable to the naturalistic rock garden. I was particularly interested by his chapter "Raised, informal pools," which shows a number of above-ground pools with mortared stone surrounds. These would fit in well in a rock garden designed as a series of raised beds, a good solution in a small space with strongly rectangular elements nearby. Another charming idea is a little fountain in a precast concrete basin set among river stones of different sizes and concrete pavers; although the planting shown is simple, most rock gardeners would soon make it more botanically appealing. The chapter on "Flora" is limited to aquatic plants and a few moisture-tolerant perennials, but other plants are mentioned occasionally in the text, and there is an index.

The regional orientation of the book is that of the northeastern United States, but the practical details would apply to most areas. This is a book that will remain on my shelf, and when I abandon my present oversized garden for a smaller one, I'm sure I'll find inspiration in its sensible text and excellent photos.

***Wildflowers of Unalaska Island***, by Suzi Golodoff. Fairbanks: University of Alaska Press, 2003. ISBN 1-889963-18-6. 217 pp., color photos and line drawings throughout. Paperback, \$19.95.

Not many tourists get to the Aleutian Islands, difficult of access and challenging of weather at most times of the year. Nonetheless, the rich bird life of this archipelago extending from Alaska toward Asia draws a number of hardy travelers, and some of them lower their sights from the skies occasionally to notice the equally interesting plant life that clings to these storm-battered, rocky bits of land. Unalaska is one of the larger, more accessible islands near the mainland. This field guide was written by a longtime island resident, ably assisted by Carolyn Parker of the University of Alaska (Fairbanks) Herbarium, Unangan (Aleut) elders, and various other specialists.

The resulting book will be a helpful guide to visitors to the Aleutians and adjacent Alaskan mainland. Especially interesting is the inclusion of native names for the plants, common English names, and ethnobotanical lore. Not

only are the indigenous words correctly spelled (a big selling point with me, since I worked for many years at the Alaska Native Language Center), there is a simple pronunciation guide to them in the back of the book. Those interested in growing the plants will benefit from the good habitat descriptions. The bibliography is exceptionally good for this type of publication. The plants are arranged by family, with an index to species for quick reference. The book's weak point is the photos, many of which are out of focus. The line drawings are generally good, and some include notes pointing out diagnostic features. Better photos of most of the species discussed can be found in Verna Pratt's self-published series of Alaskan plant field guides, which are available from the NARGS Book Service.

# In Memoriam: Wayne Roderick

Wayne Roderick, one of the great personalities associated with the plants of California and their cultivation, died in August 2003 at age 83, at his home in Orinda with friends beside him. His lifelong involvement with gardening, botany, and conservation began during his childhood in the northern California town of Sebastopol, where his mother, Martha Roderick, was a keen gardener. He worked for many years as horticulturist at the University of California Botanic Garden, Berkeley, and then became director of the East Bay Regional Parks Botanic Garden at Tilden Park in Oakland. A photograph appears on p. 32.

A longtime member of NARGS, Wayne received the Marcel LePiniec Award in 1981. He was active in the Western Chapter. He was also involved with the Alpine Garden Society, leading a number of botanical tours for its members and visiting England to lecture. Especially after his retirement, he also traveled with interested individuals, often conveying them at a pace that challenged the most skilled “high-speed botanizers.”

A skilled propagator, Wayne was renowned for his generosity to other gardeners. He had a particular interest in California native bulbs. Two widely grown fritillarias, *F. biflora* ‘Martha Roderick’ and *F. affinis* ‘Wayne Roderick’, are his discoveries in the wild and are now cultivated in many countries. He contributed numerous articles to plant journals over the years, though he never wrote the book his admirers hoped for.

Sean Hogan remembers Wayne as one who supported “people who might otherwise be overlooked,” identifying their potential and encouraging them. Energetic and gregarious, he could disconcert newcomers to his circle with his eccentric humor, but people soon realized that “I hate you” from Wayne was entirely affable, and “What an awful little thing!” was an accolade for a plant.

David Hale writes: “I first met Wayne in the Tilden Botanic Garden. While I coveted and photographed a well-grown *Fritillaria pluriflora*, he came up behind me to make sure that I didn’t covet it too much. We soon became great friends, and Donna and I traveled a great deal with him. We found that he was so popular that when we went to visit him he was constantly called away for some chore

or visit. So we arranged to go botanizing with him; we traveled the length and breadth of California over 20 years with him, camping at places he knew so well.

“His encyclopedic knowledge of the plants and the Indian lore kept us constantly entertained and informed. But what is rarely mentioned is his knowledge of the entire history of California, from the early pioneers to the present. There wasn’t a quarter-mile of highway in California about which he didn’t have some nugget of information.

“This wonderful guiding was extended to everyone who wished it. He led friends and individuals, organized groups from California, and members of the gardening elite from many countries of the world on trips throughout California, and always with his wonderful sense of humor and great knowledge of history and botany.

“We last camped and botanized with Wayne in June 2003. He forgot some of the plant names but could still guide us through the complicated network of back-country roads in the Sierra and foothills. And when he bade us goodbye with his friendly “I hate you” for the last time, we knew it was the fading of a great star.”

John Grimshaw remembers: “The passing of Wayne Roderick is sad news for all interested in the flora of California, to which he devoted his life, but especially for those who knew him personally. I had the privilege of traveling round California with him in 1996, when he unerringly led the AGS tour party to the best sites for the best plants. He could tell you everything about them. He was very proud of having contributed to the production of the *Jepson Manual of the Higher Plants of California*, but I think his greatest contribution was his enthusiastic communication of his love of plants, and his unstinting efforts to help anyone who was interested.

“The other day I found his last Christmas letter and put it on my desk with the intention of sending the old boy a card. Alas, it is too late. It contained a very typical bit of Wayne’s advice, but for once the humor was overlaid with sadness: ‘Don’t get old, stay young and drive all the time.’ He continued, ‘This 83 I do not like. I cannot do all the things I want to do.’”

Another British visitor, John Good, describes botanizing with Wayne: “Every time I met him, at irregular intervals from 1981 onwards, he took great delight in having a go at ‘You danged English folk.’ Much of my time with him in the field involved testing one’s botanical knowledge (often suspect in my case), and ridiculing my ability to keep up with an old man (‘But then you’re only a danged Englishman, so what can I expect?’). But I also remember the coolbox full of goodies and the long picnics spent in the shade of whatever tree or bush could fend off the hot Californian sun. On one memorable early August day, he picked me up at 6:30 in the morning, drove me 475 miles, and dropped me off home at 10:30 in the evening! On that particular trip we traveled through the Sacramento Valley, and there were cherries to be bought at the roadside. ‘Do something useful for a change, you danged useless Englishman, and get us some cherries,’ said Wayne. I got them, and we spent the next hour or so driving along eating cherries and spitting the stones out the windows of his truck. I wonder if



any germinated and took root—as so much of his invaluable information on bulbous plants did in my receptive mind.”

Longer memorial articles on this remarkable man are scheduled to appear in *Pacific Horticulture* and *Fremontia*, the journal of the California Native Plant Society. A horticultural lecture series was established several years ago in Wayne Roderick’s honor in the East Bay where he made his home.

# 2003

## Photo Contest Results

We received a large and wonderful assortment of slides, prints, and digital images for the Photo Contest this year, and judging was very difficult. Photos were judged on the criteria of technical quality, aesthetic quality, appropriateness to the category entered, and illustrative or informational value. (Somewhat to the editor's disappointment, rarity of the subject didn't count.) Some of the winners appear in this issue, and others will appear in the future. Many thanks to the photographers who participated! We only wish we could print every single one of the winners and honorable mentions listed below, for each is beautiful and fascinating.

Class 1, as before, was the largest, followed by class 3, class 2, and class 4, respectively. A paucity of photos in class 4 is disappointing, since inspiring images of rock garden scenes are especially needed for publication. Information on entering next year's contest will appear in the spring 2004 issue.

This year digital images were not judged separately. Still a minority of the entries, digitals placed in the two "portrait" classes but did not fare so well in the "scene" classes, where lesser depth of field and lower-quality color were their downfall. When images are being examined directly, rather than through the leveling medium of low-cost printing, slides still seem to have the edge.

There were many images of the photogenic plants seen during the Annual Meeting hikes in the Colorado Rockies. Other places visited by entrants ranged the globe: the Himalayas, South America, New Zealand, the Canadian and Alaskan arctic regions, the mountains of Europe, and North America both east and west. To understand how hard these contributors worked, take a look at the names of the plants they photographed in the wild.

**Grand prize:** Dick Redfield, *Jeffersonia dubia* (from Class 3)

### **Class 1: Portrait of a plant in the wild**

First: Dianne Huling, *Aquilegia caerulea* (p. 29)

Second: Yoko Arakawa, *Puya raimondii*

Third: Ruth Happel, *Trifolium macrocephalum*

Fourth: Margaret Taylor, *Gentiana lutea*

Honorable mention:

Yoko Arakawa, 3 photos: *Castilleja miniata*, *Polemonium confertum*, *Saussurea gossypiphora*

Ruth Happel, 2 photos: *Pediocactus simpsonii*, *Campanula piperi*

Dianne Huling, 2 photos: *Hymenoxys acaulis*, *Erigeron pinnatisectus*

Anna Leggatt, 3 photos: *Gentiana acaulis*, *Ledum decumbens*, *Lupinus arcticus*

Jay Lunn, 2 photos: *Allium aaseae*, *Lewisia rediviva*

James McGee, 2 photos: *Sedum integrifolium*, *Viola pedata*

Charles Morrow, *Eritrichium splendens*

Jack Muzatko, 3 photos: *Lewisia disepala* (2), *Lewisia stebbinsii*

Dick Redfield, 3 photos: *Notothlaspi rosulatum*, *Celmisia verbascifolia*, *Ourisia caespitosa*

Roger Simpson, *Lewisia tweedyi* color forms

Doris Taggart, 3 photos: *Claytonia megarhiza*, *Anemone drummondii*, *Lewisia rediviva*

Raymond Taggart, 3 photos: *Trollius laxus* (p. 30), *Dicentra uniflora*, *Trillium ovatum*

Margaret Taylor, 3 photos: *Pulsatilla patens*, *Eritrichium nanum*, *Soldanella pusilla*

## **Class 2: Scene with wild plants**

First: Anna Leggatt, *Lupinus arcticus* at Bathurst Inlet

Second: Dick Redfield, *Xerophyllum tenax*, Reynolds Mountain

Third: Graham Nicholls, *Arnica*, Crested Butte

Fourth: Nicholas Klise, *Penstemon hallii*, Boreas Knob

Honorable mention:

Yoko Arakawa, 2 photos: *Hymenoxys grandiflora*, *Meconopsis horridula*

Denis Hardy, *Yucca whipplei*

Dianne Huling, 2 photos: Mt. Evans, Loveland Lake

Anna Leggatt, Sonora Pass

James McGee, *Hymenoxys* and *Castilleja*

Donald Privett, 2 photos: *Hymenocallis occidentalis*, *Rhododendron calendulaceum*

Dick Redfield, *Leiophyllum buxifolium*, Grandfather Mountain

Roger Simpson, *Claytonia megarhiza*

Margaret Taylor, *Petrophytum caespitosum*

Ev Whittemore, *Telesonix jamesii*

## **Class 3: Portrait of a plant in cultivation**

First: Dick Redfield, *Jeffersonia dubia* (p. 28)

Second: Jim McClements, *Cypripedium kentuckiense*

Third: Anna Leggatt, *Penstemon nitidus*

Fourth: Dick Redfield, *Primula abchasica*

Honorable mention (in alphabetical order):

Sally Boyson, 2 photos: *Campanula ramosissima*, *Sphaeralcea coccinea*

Thomas Clark, 2 photos: *Fritillaria meleagris*, *Fritillaria michailovskyi*

Jon Evans, 2 photos: *Primula* 'Henry Burrow', *Tulipa* 'Apricot Gem'  
Ruth Happel, *Lewisia cotyledon*  
Denis Hardy, *Lewisia* 'Little Plum'  
Virginia Kennedy, 2 photos: *Campanula portenschlagiana*, *Sempervivum arachnoideum*  
Jim McClements, 2 photos: *Sanguinaria canadensis*, *Podophyllum delavayi*  
Jack Muzatko, 2 photos: *Dudleya nesiotica*, *Eriogonum microthecum*  
Michael Peden, *Gentiana verna*  
Dick Redfield, 3 photos: *Haberlea rhodopensis*, *H. ferdinandi-coburgii*, *Ramonda myconi*  
Erica Schumacher, *Trillium erectum*  
David Sellars, *Lewisia cotyledon* 'Alba'

#### **Class 4: Rock garden scene**

First: Margaret Taylor, Rock garden in Wengen (p. 28)  
Second: Dianne Huling, Princess Abkhazi's garden, Victoria  
Third: Michael Peden, *Vitaliana* and *Sempervivum* in stone pavement  
Fourth: David Sellars, Rock garden with rhododendrons (p. 30)  
Honorable mention:  
Yoko Arakawa, Betty Ford garden, Vail  
Dianne Huling, 3 photos: Schafer garden, Kearns garden, Pollock garden  
Erica Schumacher, Japanese Tea Garden  
Margaret Taylor, Cacti in Allan Taylor's garden  
Ev Whittemore, Hypertufa mini-mountain  
Abbie Zabar, *Primula* on parapet

# NARGS Expeditions Tour

## Mountains of western North Carolina

### May 9–14, 2004

Within the southern Appalachian Mountains is found one of the richest and most diverse assemblages of plants in the temperate world. NARGS Expeditions has chosen as its next destination the mountains of western North Carolina for a six-day tour to explore and experience this fascinating flora, as well as to sample some of the cultural and unique horticultural attractions the area has to offer.

The tour will depart from Raleigh, North Carolina on Sunday, May 9th immediately following the NARGS Annual Meeting, also in Raleigh. On the first day the group will travel to Asheville where we will stay for the duration of the trip. This small city will serve as an excellent base for our daily excursions. During the course of the trip we will visit several natural areas in order to see as wide a range of native plants as possible, as well as the communities in which they grow. Areas we will visit include Craggy Gardens Recreational Area, the highest point in North Carolina—6,684 foot Mount Mitchell, Chimney Rock State Park, a high elevation grass/sedge community atop Black Spruce Knob along the Blue Ridge Parkway, and various other sites along the Parkway and in Pisgah National Forest.

To round out the tour the group will also visit some of the horticultural and cultural attractions near Asheville. Among these will be the garden of Ev and Bruce Whittemore in Penrose, the private garden of Tom and Bruce Shinn known for its wildflowers and particularly *Trillium*, and the Biltmore Estate gardens and arboretum where we will have a guided tour to see many rare and mature woody plants, and possibly an evening meal at the estate. The group will return to Raleigh on Friday May 14.

Consistent with NARGS policy and previous NARGS tours, plant collecting will not be permitted. Registration for this tour will be limited to approximately 18–22 people and to NARGS members only, although new members are more than welcome to join in order to take part in what promises to be an interesting, exciting and fun trip. For a complete prospectus and registration information please contact: Tom Clark, 253 Batchelor Street, Granby, MA 01033, by telephone at (413) 467-2714, or by electronic mail at [tclark@mtholyoke.edu](mailto:tclark@mtholyoke.edu)



## NARGS COMING EVENTS

**Eastern Winter Study Weekend:** "Special Gardens for Special Plants," January 30-February 1, 2004, at Raddison Hotel, Valley Forge, Pennsylvania. Host: Delaware Valley Chapter. Contact: Jim McClements, 50 South Prestwick Court, Dover, DE 19904-2334; tel. (302) 734-2836; <JimMcClem@aol.com>.

**Western Winter Study Weekend:** "Braving the Elements," March 5-7, 2004, at Valley River Inn, Eugene, Oregon. Host: Emerald Chapter. Contact: Melody Clarkson, 86083 Cherokee Dr., Eugene, OR 97402; tel. 541-334-6883; <jimmelody@mindspring.com>.

**Annual Meeting:** May 5-8, 2004, at Sheraton Imperial Hotel & Convention Center, Research Triangle Park (Raleigh-Durham), North Carolina. Host: Piedmont Chapter. Contact: Karen and Dave Duch, 1422 Lake Pine Dr., Cary, NC 27511; tel. (919) 467-0653; <dduch@bellsouth.net>.

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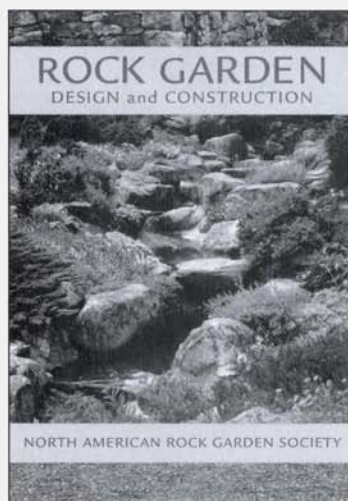
Optional events: 3-day tour of eastern ecosystems and their native plants. One day pre-convention tour of 3 splendid gardens not included during meeting. Register online at [nargs.org](http://nargs.org). Look for brochure in Jan. *Quarterly*.

For information, contact Karen Duch at [kmduch@bellsouth.net](mailto:kmduch@bellsouth.net) or 919-467-0653

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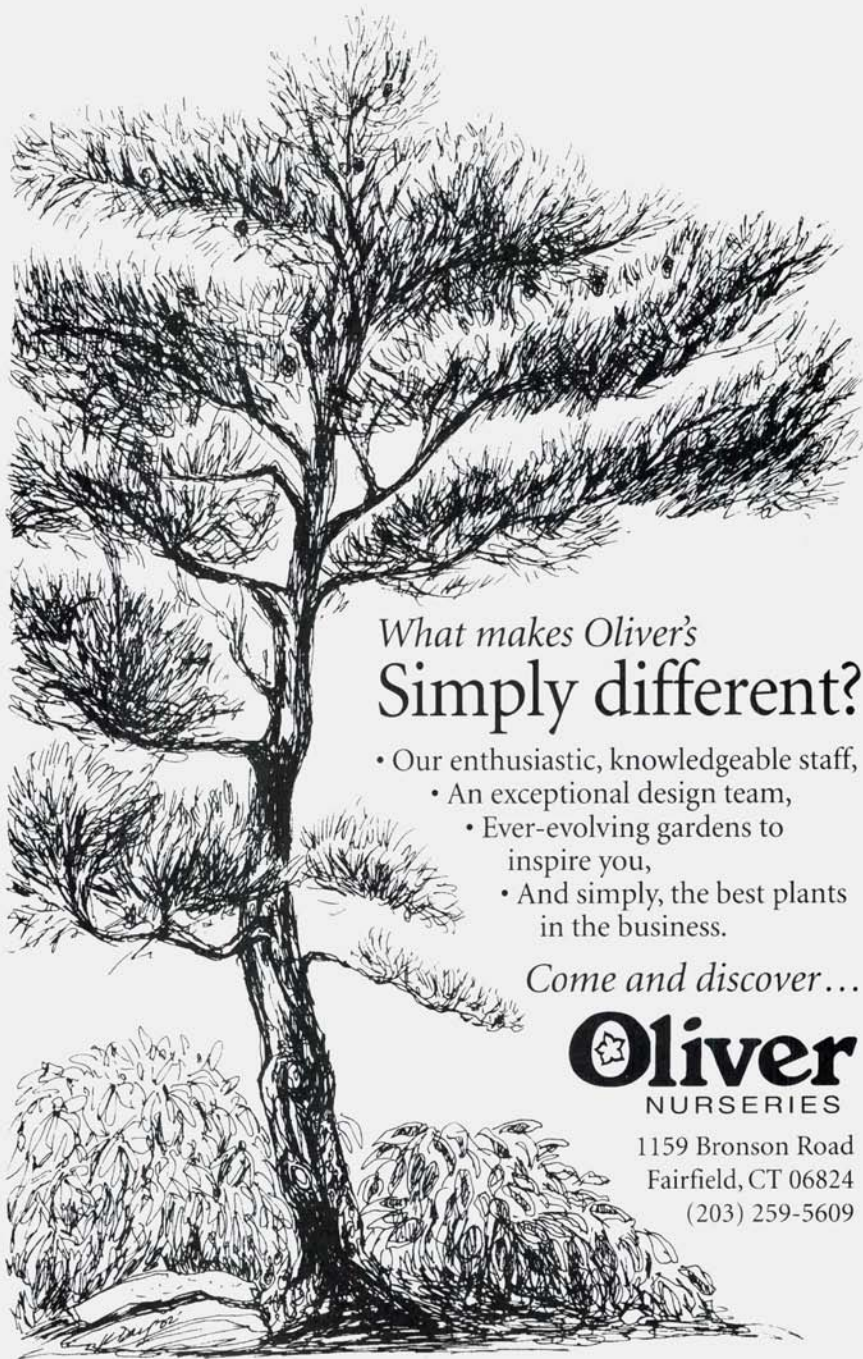
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