The Trillium

newsletter of
the **Piedmont Chapter** of the
North American Rock Garden Society

Vol. 14, No. 2 Chapel Hill-Durham-Raleigh, N.C. Mar. – Apr. 2004

Chapter Plant Sales at Annual Meeting

Planning for the NARGS annual meeting is on going as our chapter chair Marian Stephenson continues to skillfully orchestrate the activities of many chapter volunteers. All are working feverishly to make this a successful annual meeting. She is ably assisted by Marlyn Miller, Karen and Dave Duch, Kirt Cox, and others.

Among the numerous activities will be the Piedmont Chapter's plant sales table. The effort is being organized by Kirt Cox, Paul Jones, Mike Chelednik, and Todd Lasseigne. This should earn a few dollars for the Chapter as well as perform a worthy public service in helping to satisfy rampant plant lust. We don't need a lot of plants, but could certainly use a few very good ones. (You know how selective that gardeners like ... well ... us can be.) If you have nice specimen or two that you would like to contribute, please contact either Kirt, Mike, or Paul. Remember, we are interested in small, seedling-type plants--a quality selection. Even one plant is fine. Speak to them about it at our March meeting.

Top secret information: Renown gardener Ev Whittemore of Penrose, N.C., a member of the Southern Appalachian Chapter of NARGS, is growing rock garden plants for our chapter's sales table. Her special plants will add a great amount of excitement and tremendous sales interest. We are very appreciative of her assistance and her volunteering this service for us. (Thank you, Ev.)

The Bog Garden

by Frederick W. Case, Jr.

Wetlands—natural habitats characterized by a constant high level of moisture—are not all alike, although they may superficially look so. To grow wetland plants successfully, it helps to understand some of the differences among wetland types, and to learn which of their plants tolerate a wide variety of wetland habitats and which ones require more specific conditions to prosper. To build a successful artificial wetland garden requires even more attention to these details.

Common Wetland Types

A marsh is an essentially treeless area of shallow water on the margin of a lake or in a river's floodplain, which typically has slow drainage. It therefore contains clean, fresh water largely covered with emergent water plants such as cattails, rushes, sedges, arrowhead (Sagittaria), and pickerel weed (Pontederia cordata). Waterlilies may be present. Marshlike conditions can easily be reproduced in garden ponds with potted waterlilies, rushes, and other emergent plants. Any waterlily catalog or water garden book can supply enough information for you to develop a marsh planting in your pool. Growing marsh plants in a naturalistic manner is

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Our March Meeting of NARGS
Saturday, March 20, 2004
10:00 a.m., Totten Center
N.C. Botanical Garden, Chapel Hill, N.C.

Landscape Recollections through Photography"

Robert Lyons
Raleigh, N.C.

Last names "A" through "H," bring "goodies."

Our April Meeting of NARGS
Saturday, April 17, 2004
10:00 a.m., Totten Center
N.C. Botanical Garden, Chapel Hill, N.C.

"North American Woodland Flora"

Fred Case
Saginaw, Mich.

Last names "I" through "Q," bring "goodies."

easy, fairly permanent, and satisfying.

A swamp, by scientific definition, consists of a forested wetland in which water is present at or near the surface throughout the year, but with slow drainage which prevents its stagnation. Soils may or may not be heavily organic. The swamp is dominated by trees and shrubs, but many herbaceous species grow there too. There are many kinds of swamps in many parts of the world; it is a very general term. Because of the presence of trees, a swamp would not be very attractive or easy to create in a small garden.

Fens are wetlands into which water flows, but with weak, somewhat impeded drainage away from the area. The saturated soils are neutral to alkaline, often calcareous; they may be mineral-rich, or even consist of highly concentrated minerals such as marl (a chemically precipitated calcium carbonate muck mixed with peat). If peat is present, it is mineral-rich. Most fens are treeless, but scattered trees may be present. The typical northeastern American treed fen is sometimes called a "cedar swamp" for one of its tree species, Thuja occidentalis, locally known as "white cedar." Many fens evolve slowly into more acid, sphagnum-bearing bog conditions over a period of centuries. Sedges, grasses, and rushes dominate fens, but they also contain a wide variety of herb species, often including pitcherplants (Sarracenia spp.), orchids, and other showy plants. Many fen plants are worthy of cultivation, but creating fen soil conditions in a garden setting poses many difficulties; this is discussed below.

Bogs are undrained, peat-filled, mineral-poor, and saturated with strongly acid, slightly stagnant water. The partially decayed acid peat contains so much tannin and other plant decay products that the water is as dark as strong tea or coffee and has a characteristic odor, not entirely unpleasant. In most bogs, mosses and sedges cover the surface. If you walk on that surface, it shakes and quivers like jelly, and even trees some distance away may shake with your steps.

In nature, bogs may occupy glacial potholes or develop along a lake's shoreline; in the far north, they occur over vast expanses over permafrost, a flat, permanently frozen subsoil which impedes drainage. The intense acidity of the substrate and the highly organic nature of the soil combine with wetness to limit the range of species that can grow in the bog. In most northern bogs, the soil surface is dominated by species of sphagnum moss, which in turn is topped by specialized herb and shrub growth. Like fens, bogs may or may not be treed, although in the strictest botanical definition, they are treeless.

A Bog Garden

Many types of wetland gardens, collectively called "bog gardens," have been proposed by various authors. If your property is large and you have some existing wetland, my advice is to "go with the flow"and develop the natural feature into a garden, and to plant or encourage the kinds of plants native to its conditions. This situation is easiest to deal with and offers the greatest chance of success over the long term.

Unfortunately, rock gardeners want it all: plants of rock ledges, screes, sand beds, waterfalls, pond, and bog. And because rock gardeners rise to meet a challenge, they set about to create many kinds of habitats. Most so-called "bog" gardens, however, fail dismally. What types have been proposed, and what problems do they present?

Probably the most common approach is to dig a pondlike hole, line it with a strong plastic sheet or a child's wading pool, fill it with muck, peat, or heavy soil, and keep it almost saturated. Some writers suggest making holes in the liner fairly near the top, so that the surface layers, at least, will gradually drain to just below the plants' root level. There are many variations on this method, and many of them will grow certain bog plants for a while. However, weeds quickly invade and run rampant. More serious, in this artificially prepared and saturated soil decay sets in: the soil oxidizes and changes chemically if oxygen is present; or if it is saturated and stagnant, it putrefies (another chemical change), stinks, harbors potent decay organisms, and slowly kills the plants from below. If there are openings in the liner, earthworms invade and gradually digest all the organic matter or carry it away and replace it with their castings or mineral soils from below. In both artificial fen and bog, then, what works at first slowly changes to the detriment of the plants. It is nearly impossible to recreate the underground conditions that maintain proper soil condition. Fortunately, however, many fen and bog plants will grow well in artificially prepared soils that are kept drier than those in the wild.

Often a feature called "the bog garden" is filled to the brim with tolerant marsh or fen plants but contains few true or typical bog plants. Of course, youa re free to plant what suits you: it is your garden. But if you want to grow some truly unusual, interesting, beautiful plants, a true sphagnum bog garden can be wonderful—and I have not seen any other type of bog garden that has been truly successful.

That is not to say that a sphagnum bog garden will be easy for everyone to construct. It requires maintenance, as does any artificial habitat. But it is certainly well worth the try. My late wife, Roberta Case, and I tried all the usual approaches to making "bogs" and found them unsatisfactory—including hauling 90 bales of peat 250 miles from a northern bog and installing them in a hole in the garden. Finally, she developed the concept of the live sphagnum moss bog. Although live sphagnum may be difficult to obtain, once established it can be reasonably self-maintaining, extremely attractive, and a wonderful substrate for growing many rare and choice bog plants. Because sphagnum moss creates its own acids which act as a preservative, rot is seldom a problem. Once the garden is constructed, the main labor is to weed and prune.

The Roberta Case Sphagnum Bog Garden

An artificial sphagnum bog begins with a pond with a plastic or, better, butyl rubber liner. Concrete is detrimental to sphagnum and some other bog plants in several ways. Deer hooves and heron's beaks easily puncture plastic linings in pond and bog gardens, but they cannot pierce 42 mil rubber roofing material.

The bog is constructed at the margin of the pond, which provides the uniform and continuous water supply necessary to the bog's success. The first step is to create a shelf about 24-30 inches (60-75 cm) wide, no wider than you can easily reach across to plant and weed; if you don't mind weeding from within the pond (not bad on hot summer days!). the bog shelf can be wider. On the pond side, leave an opening 10-12 inches (25-30 cm) wide down to the sand layer (Fig. 1A) in which to set emergent plants. The shelf below the liner must have a lip (Fig. 1B) which rises almost to the water surface level between the bog and the open water. This lip prevents bog material from falling into the pond itself.

In an article in the ARGS Bulletin (Summer 1992), we suggested using a siphon system to maintain a constant water level in the bog. Further experience showed us that the siphon system is unnecessary and sometimes troublesome. Instead, simply leave gaps in the rim at intervals where you push the liner down flat to form openings (Fig. 1C) through which water from the open pond can flow into the sphagnum area. The sphagnum must never dry out, leaving dry surface tufts. If it does, birds, especially robins and starlings, will tear up the bog garden, utterly destroying it.

At the conclusion of construction, all moss in the bog must be completely level at the surface and tightly packed. To keep it constantly wet, its level above the pond surface is critical. You must experiment to set the overall depth of the moss. Our method is as follows:
Site the sphagnum bog in full sun or where it will get the longest period of sunlight. Construct the bog shelf with a retaining lip. Make it deeper by several inches than you think you will need so you can add or remove sand to obtain proper moss surface height. Extend a continuous pond liner across the pond, over the shelf, and over the outer limit of the pond rim, pushing the lip down to form gaps so water will easily diffuse into all parts of the bog. Cover the bog shelf with clean yellow dune or beach sand, or obtain silica sand (sandblasting sand) from a building supply company. The sand should be at least 4 inches (10 cm) deep. Do not use mason's sand, which often contains limestone fatal to some bog plants. Pack the sand down above the liner and add live sphagnum moss.

It is essential that the moss used be a true Sphagnum species. Other mosses will not do. Sphagnum moss "leaves" contain tiny pores connected to small chambers, which allows the moss to soak up great amounts of water by capillarity and store it. The moss also produces its own sterilizing acids, which condition the soil, inhibit the growth of certain weeds, and create the low-pH environment necessary for many bog plants.

Living sphagnum moss is rarely available from commercial sources (the dried product sold for potting tropical orchids is usually dead) and must be obtained from the wild. Sphagnum occurs most abundantly in the northern parts of North America, in bogs, patterned fens, and tundra. In the Great Lakes region and New England, it is a component of the bogs that form on the margins of lakes and ponds, in hillside seeps, and other wet places. Sphagnum species also occur in wet parts of the Southeast—in "pitcher-plant savannas," swamps, wet ditches, and moist forests. Diligent exploration may reveal a local source of clean sphagnum. In the West, occurrence is more limited, especially at low elevations, but sphagnum is present. It is abundant in the wild areas of northern Europe, South America, and New Zealand.

In collecting any wild plants, including mosses, one must follow local regulations and be personally responsible not to cause irreparable damage to the environment. Each state has its own regulations, and National Forest rules also vary somewhat by regino. Most state and national forests require a permit for any kind of collecting and usually charge a fee; inquire at the appropriate ranger station for information or through the state department of natural resources.

We collected our sphagnum in a large northern cedar swamp, cutting sheets of moss that was growing in deep shade. We rolled up the sheets, keeping them as intact as possible, and transported them in lagre plastic bags. If possible, avoid taking sphagnum from open, sunny bogs, which is likely to contain cranberry vines and sedge and grass stolons; these quickly become overwhelming weeds in the garden. Surprisingly, the sphagnum from deep shade is quite tolerant of full sun in the garden. It is important to use only the upper 4-5 inches (10-12 cm) of living green sphagnum. The lower, older portion is dead and will only decay once moved.

Pack the trimmed living sphagnum very tightly into place; it grows better if tightly packed. If the tips of the planted moss dry out, either raise the water level in the pond permanently, or remove moss and adjust the sand level below, waiting to see if the moss remains evenly wet. Let the bog garden stand for a few days to a month until the sphagnum is established before you add other bog plants. When you do, set their roots deep in the moss; some may even rest on the sand below.

Do not water the sphagnum bed directly with chlorinated water; chlorine is slowly fatal to sphagnum. Instead, let water diffuse from the pond into the moss bed. Chlorinated water used to fill the pond will not hurt the moss if you introduce the water from the end of the pond opposite the bog. The chlorine will diffuse into the atmosphere from the water before it reaches the bog in a fatal dose.

Do not use fertilizer on sphagnum moss or bog plants. It, too, tends to kill these plants. Fertilizing waterlily tubs

in the pond has little effect except that, just at the point where pond water enters over the retainer lip, some moss may suffer slight dieback.

Once established, the sphagnum moss grows to its own level, occasionally forming a natural-looking hummock, and takes on a mosaic of highly attractive greens and red tints. Dotted with suitable bog plants, it can be spectacular. All the American Sarracenia species (pitcherplants) have been hardy in my central Michigan garden, where temperatures can drop to –17 degrees F (-27 C) in winter, but only if they are planted in the bog soil; they cannot survive in above-ground containers outdoors. Even Venus flytrap (Dionaea muscipula) survives and even self-sows there. Many native orchids thrive in the sphagnum garden. Currently, the most active "weed" is a selected dark clone of rose pogonia (Pogonia ophioglossoides), with more than 500 blooms in a good year. This orchid spreads by runners and can be easily propagated by root cuttings. Grass Pink (Calopogon tuberosus) even seeds about. We grew sand pixie (Pyxidanthera barbulata) in the sphagnum as well, until a large clump was savaged by meadow voles; it, too, had seeded and flowered profusely most seasons. Also appropriate in the sphagnum garden are sundews (Drosera spp.). Bog shrubs can be used if their spread is restrained. I believe that a sphagnum bog, constructed as described here, ought to work satisfactorily in any temperate climate.

Of course, you might need to use a different selection of plants; northern species cannot be expected to flourish in the deep South (but try them if you wish—you may be surprised). However, many bog species, including some of the choicest orchids, sundews, and Venus flytrap, are indifferent to soil temperature and occur in both South and North, or are capable of growing well north of their range in gardens.

Properly placed, a sphagnum bog garden can be blended into pond and marshlike plantings to form a scene of great beauty. Without the presence beneath the moss of decaying peat or various soil mixes, the sphagnum bog garden is almost self-maintaining. Happy plants seed about, and the effect can be stunning.

Further reading:

Frederick W. Case, Jr., "Growing Native Orchids of the Great Lakes Region," "Bog Gardens and Bog Plants," "Plants for the Bog Garden," "Carnivorous Plants for the Bog Garden"; Roberta B. Case, "A Sphagnum Bog Garden"; T. L. Mellichamp, "Hybrid Pitcher Plants."

[Fred Case lives and gardens in Saginaw, Mich. He is the co-author with Roberta Case of Trilliums *(Timber Press 1997). Fred is the winner of many honors and awards, the most recent of which is the 2004 Scott Arboretum Award, a recognition given to those who have made outstanding, national contributions to the science and art of gardening. The award will be presented March 28, 2004, at Swarthmore, Penna.]*

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Fall Plant Sale Chair: Kirtley Cox, 2539 Sevier St., Durham, NC 27705; telephone (919) 489-7892; email <kirtandcarolyn@mindspring.com>

Plant Portrait: *Sedum nevii*

by Bobby J. Ward

Sedum nevii (Crasssulaceae), or Nevius stonecrop, 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 Rev. Reuben Denton Nevius from a bluff above the Black Warrior River near Tuscaloosa, Alabama. Asa Gray named the plant to honor its collector in 1859. *S. nevii* is restricted to shallow soils over granitic gneiss in Georgia, limestone and shale in Alabama and North Carolina, and quarzitic slate in Tennessee, frequently growing near riparian habitats on steep bluffs. It probably grows in the shale barrens of Virginia as one of the reported North Carolina locations is nearby. In the counties in which Nevius stonecrop is found its distribution is widely scattered in relatively undisturbed habitat, often growing in light shade.

In North Carolina, *S. 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 & Garden*, calling it the cliff stonecrop, a common name that also applies to an allied species, *S. glaucophyllum*, and with which it is often confused.

Sedum nevii is a low sedum that forms a gray-green evergreen mat with slightly ascendant stems formed from rosettes of small linear leaves. The stonecrop 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 in. (15 cm) tall, but my experience is that it rises no more that 2 or 3 in. (5 to 7.5 cm) high. It will spread to about 12 in. (30 cm).

I initially attempted to grow *Sedum nevii* on a clay bank with *Sedum palmeri* that I had collected in Mexico. It was soon crowded by *S. palmeri* and did not increase even before being nearly strangled. I moved a few rosettes in the fall to a raised bed containing Permatill, turkey manure, and sand, and it expanded rapidly to about 1 ft. (0.3 m) 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 conditions there than those on the clay bank.

S. nevii is described by some botanists as a synonym for *S. glaucophyllum*, a complex species with several ploidies and sub-populations, suggesting a close relationship to *S. nevii*. The width and thickness of leaves on the flowering stems of *S. glaucophyllym* are larger than *S. nevii*, and they have a glaucous coating.

Sedum nevii is widely listed by mail order nurseries, including, at times, 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 by the US&FWS.

References

Weakley, Alan S. 2003. *Flora of the Carolinas and Virginia* [working draft]. http://www.ncsparks.net/nhp/alansflora/flora.html. Retrieved 25 September. Chapel Hill, N.C.: The Nature Conservancy.

_____ 1995. *Protected Plants of Georgia [Sedum nevii]*. Atlanta, Ga.: Georgia Department of Natural Resources.

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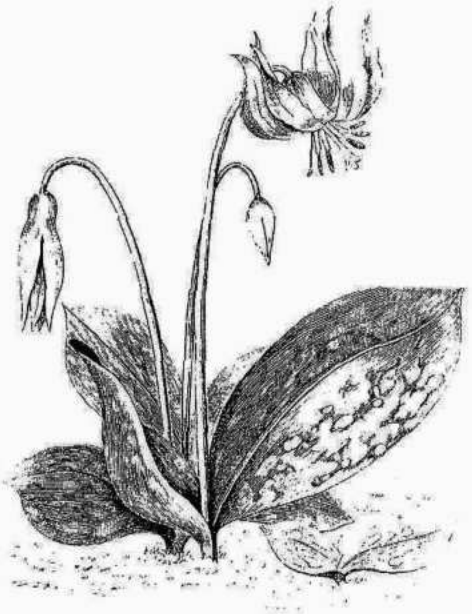

Join NARGS, the National Organization

Join the **North American Rock Garden Society**. Benefits include a subscription to the *Rock Garden Quarterly*, seed exchange, garden book purchases at a discount, study weekends, and annual meetings, as well as other benefits. Membership in the Piedmont Chapter is separate from NARGS, the national organization. Membership is $25/year.

As a new member you will receive a free copy of the NARGS publication, *A Rock Garden Handbook for Beginners*.

Send payment to Jacques Mommens, Exec. Secretary of NARGS, P.O. Box 67, Millwood, NY 10546. Or on the Internet <www.nargs.org>.

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

Mailed __ March, 2004

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