

The Blazing Star



NEWSLETTER OF THE NORTH AMERICAN NATIVE PLANT SOCIETY

Native Plant to Know

Rosebay rhododendron

Rhododendron maximum

by Kevin Kavanagh

Joyce Kilmer Memorial Forest, tucked away inside the Nantahala National Forest of North Carolina's Appalachian Mountains, is one of those North American pilgrimages that all botanists should make at least once in their lives. As a graduate student in forest ecology, I had read about it in the scientific literature, one of the best examples of an old-growth 'cove' forest on the continent: massive tulip trees (*Liriodendron tulipifera*) more than 500 years old, eastern hemlocks (*Tsuga canadensis*) rivalling their west-coast rainforest cousins in size and age, and, along the streams, dense understorey stands of rosebay rhododendrons (*Rhododendron maximum*) forming a dark canopy overhead.

To call it a canopy is not embellishment. I set up my tent under - not beside - a tangled grove of rosebay rhododendrons that rose close to seven metres (about 20 feet) high,

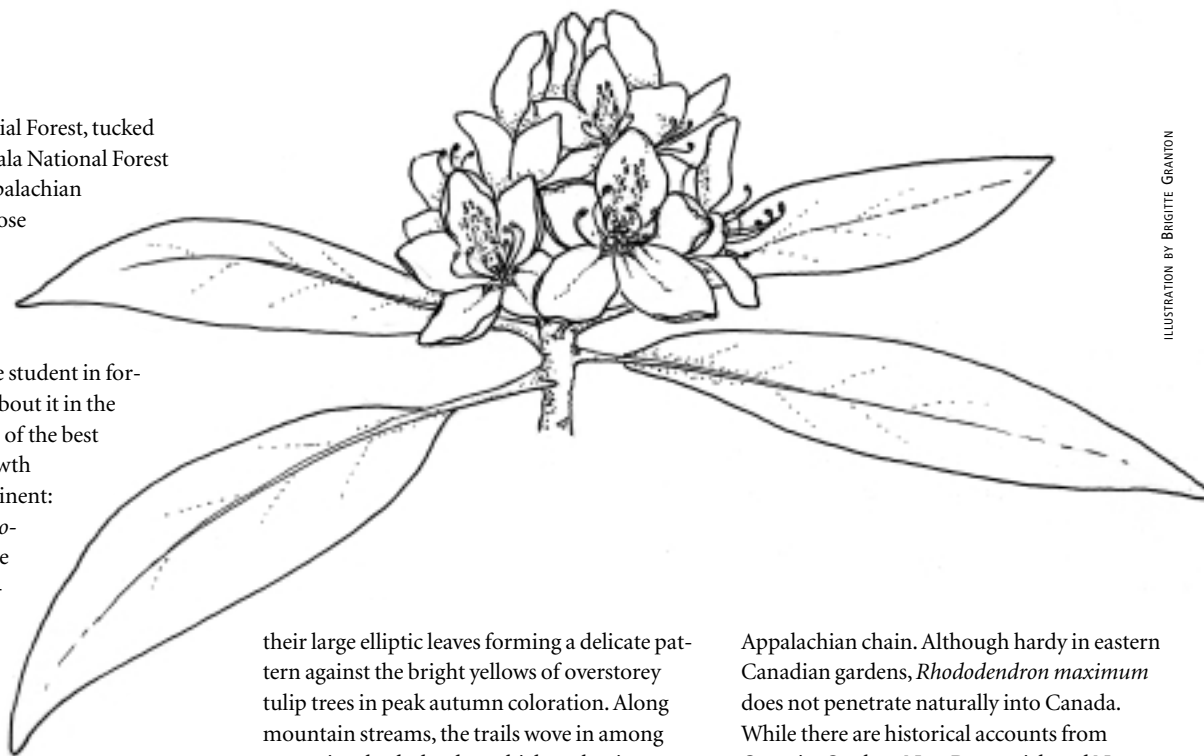


ILLUSTRATION BY BRIGITTE GRANTON

their large elliptic leaves forming a delicate pattern against the bright yellows of overstorey tulip trees in peak autumn coloration. Along mountain streams, the trails wove in among expansive rhododendron thickets that in places rose more than 10 metres (30 feet) overhead on gnarled stems (trunks!), the largest of which were close to 30 centimetres (one foot) in diameter.

The species range extends from New York State and New England southward to northern Georgia and Alabama, principally in the mountain systems that comprise the

Appalachian chain. Although hardy in eastern Canadian gardens, *Rhododendron maximum* does not penetrate naturally into Canada. While there are historical accounts from Ontario, Quebec, New Brunswick and Nova Scotia, none of them, to my knowledge, have been authenticated.

In its native range, rosebay rhododendron (also known as great-laurel or great rhododendron) thrives along cool, moist streams in the shade of hemlocks and a rich myriad of hardwoods. More rarely, it will mix with other rhododendron species on moist, exposed, high

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The *Blazing Star* is . . .

The *Blazing Star* is published quarterly (April, August, November, February) by the North American Native Plant Society (NANPS). Contact editor@nanps.org for editorial deadlines and for advertising rates. The views expressed herein are those of the authors and not necessarily those of NANPS.

The North American Native Plant Society is dedicated to the study, conservation, cultivation and restoration of North America's native flora.

Spring 2004
Volume 5, Issue 3

Editor: Irene Fedun
Production: Bea Paterson

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North American Native Plant Society, formerly Canadian Wildflower Society, is a registered charitable society, no. 130720824. Donations to the society are tax-creditable in Canada.

NANPS Membership: CAN\$10/year within Canada, US\$10 year outside Canada

Please make cheques and money orders payable to North American Native Plant Society and mail to P.O. Box 84, Station D, Etobicoke, Ontario M9A 4X1.
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From the Editor...

The North American Native Plant Society would like to welcome a new board member, Jenn Reader, an ecologist specializing in flora identification (that could come in handy during field trips!) and native plant community assessment. Her impressive list of credentials includes volunteering as an ecological consultant in a protected dry tropical forest in Ecuador.

Of course we still need more board members. Anyone is welcome to stand for election at the upcoming annual general meeting. All you need is enthusiasm about native plants. Please consider making your contribution to

NANPS and the preservation of our native flora by joining the Board of Directors.

Our annual plant sale was the usual great success despite cool damp weather. We appreciate the contribution of all volunteers – thank you to everyone who participated and everyone who came out to shop. A special note of gratitude to Constance Gardner who generously contributed a carload of native plants to our sale.

Monica Dennis, with the help of Donna McGlone and many other board members, organized the spring tour to the Kawarthas. Many thanks for a job well-done.



PHOTOGRAPH COURTESY DARCIE MCKELVEY

Shining Tree Woods and Environs Trip

SATURDAY, SEPTEMBER 25, 2004
(NANPS Members only)

After a wildly successful spring trip to visit a native plant cottage garden and prairie restoration in the Kawarthas, NANPS is offering a fall trip to celebrate our 20th Anniversary.

Join us for the first-ever public tour of your society's remarkable and fragile nature reserve in Norfolk County. Through the generosity of an anonymous donor, the society purchased the land in 1994, to preserve its rare Carolinian species including Canada's only indigenous magnolia - the "Cucumber Tree", (*Magnolia acuminata*).

The tour leader will be Mark Bacro who

lives, botanizes, birds and gardens in the vicinity. Our tour will also include a visit to other areas of interest in Norfolk County, in the heart of Ontario's Carolinian Zone. Due to the environmental sensitivity of the woods, numbers will be limited. Book early to reserve your spot!

We will be leaving by chartered bus (large, with water closet) from the parking lot of the Toronto Botanical Garden, at the southwest corner of Leslie Street and Lawrence Avenue East in Toronto. The bus leaves at 8 AM sharp.

For further information, e-mail excursions@nanps.org. Tom Atkinson will answer your inquiries. Please be brief and specific.

NANPS 20th Anniversary AGM

SATURDAY, OCTOBER 2, 2004 – 10AM – 4PM
Markham Civic Centre
Highway 7 and Warden
Markham, Ontario

The North American Native Plant Society (formerly the Canadian Wildflower Society) will be celebrating its 20th Anniversary starting this fall. Join us for a special event to be held in Markham where it all began. Highlights include presentation of the Paul McGaw

Memorial Conservation Awards, our fall plant sale, seminars and speakers, including former president Larry Lamb. A limited number of \$40 tickets for a *special luncheon in honour of the society's founders* are now available. Reserve your seat by contacting nanps@nanps.org. And please bring your extra native plants to sell.

Join us to celebrate two decades of commitment to native plant conservation.

Sowing the Seed

by Irene Fedun

Although developers are continually seeking new ways to carve up the wilderness around him, Howard Meadd quietly goes about the work of preserving his own wild haven in Scarborough, Ontario.

On 1/10 of a hectare (1/4 acre) just minutes from Highway 401, Howard grows over 250 native plant species, many of them started from seed. Though he deplores the development – the kind of short-sighted thinking that decimated nearby Collins Woods to build Collins Woods Homes – Howard rescues as many plants as he can before the bulldozers move in.

He takes pleasure in the wild areas that seem secure for now, like the woodlot across the street where toothworts (*Dentaria* spp.), red baneberries (*Actaea rubra*) and purple trilliums (*Trillium erectum*) grow. In his neighbourhood he carefully collects seeds to give away (the NANPS Seed Exchange is one lucky recipient) or start in pots for future outplanting into his garden. He readily

bricks around the outside shelf, added clay as a low-nutrient substrate and finally, dumped sand along the sides and bottom as a growing medium for marginal and aquatic plants. Apart from the few ornamental grasses Howard put in early on and now wants to remove, his pond is home to a constantly changing palette of native flowering plants: bright yellow marsh marigold (*Caltha palustris*), blue flag iris (*Iris versicolor*), great blue lobelia (*Lobelia siphilitica*), hairy willow-herb (*Epilobium hirsutum*), Joe-pye-weed (*Eupatorium maculatum*), the low-growing shrub sweet gale (*Myrica gale*) and white water lily (*Nymphaea odorata*). The only disappointment so far has been cardinal flower (*Lobelia cardinalis*) which did not survive the winter.

Howard will continue to add plants and make modifications to the pond. The original waterfall is no longer functioning because he had to lower the water level. He'd love to reinstate the little falls since song-birds (even the migrants) liked to shower in the splashing water. But now that he has

a sharp-shinned hawk bathing in the pond, a fox drinking from it and fireflies hovering around it at night.

A bird-watcher and butterfly-gazer since childhood, Howard's reasons for growing native plants are two-fold. He loves the plants and the whole process of watching them grow from seed. But he also loves the wildlife native vegetation attracts. He reports having observed 30 different species of butterflies in his yard and 80 species of birds. Not to mention the dragonflies and other insects.

The animals recognize Howard's efforts to make his property as friendly as possible and they reciprocate. In his early days there, Howard would watch birds alight upon a dead elm tree (*Ulmus* sp.) left standing in his backyard and deposit their droppings full of seeds into the bed below. Thanks to the birds he now has American mountain ash (*Sorbus americana*), hobblebush (*Viburnum lantanoides*), alternate-leaved dogwood (*Cornus alternifolia*), choke cherries (*Prunus virginiana*) and serviceberries (*Amelanchier* spp.). Squirrels bring in butternuts (*Juglans cinerea*) and other nuts and plant them too.

His parcel of land is large enough that Howard can indulge his affection for trees and shrubs as well as his passion for perennials (feelings happily shared by his wife). He recently obtained a hackberry (*Celtis occidentalis*) from the NANPS sale, a good choice for the city since it is tolerant of pollution. Many other native trees dot his backyard including a black cherry (*Prunus serotina*) that has seen better days but still produces enough fruit to feed local birds and eastern tiger swallowtail butterflies. The basswood (*Tilia americana*) produces lots of nectar so the bees love it, and squirrels strip the bark to make their nests. The old white spruce (*Picea glauca*) finally fell down last year during a wind storm. Howard plans to use the branches to make a teepee for his kids.

Not that Howard is a purist. He leaves the full-grown Siberian crabapple (*Malus baccata*) in his front yard well enough alone, knowing that birds appreciate it as a perch and nesting location, and animals eat the fruit. But, he has started a planting on the east side of the crabapple, on the edge of his property, that includes a redbud (*Cercis canadensis*) started from seed from Edwards Gardens in Toronto, a mapleleaf viburnum (*Viburnum acerifolium*) with Rouge River



Bur Reed and Yellow Pond Lily

PHOTOGRAPH COURTESY HOWARD MEADD

admits that he wants to have anything native that grows in his bioregion.

Upon moving into his home nine years ago (when he and his wife Elaine were only contemplating starting a family), Howard immediately created a small pond in his peripherally-wooded backyard. He dug a hole less than a metre (two feet) deep, in an approximate two-by-five metre oval (seven feet by 16 feet), put in a rubber liner, put

young children running around (Ethan is 4, Ian is 2 and the youngest, Erin, is three months) Howard has added sand to the pond to make it more of a marsh and less of a potential hazard for his kids. His children are fortunate (although too young to know it) that this little wetland forms part of their universe. When the pond was installed, garter snakes moved into Howard's backyard. Over the years his family has observed

Valley seed, a pawpaw (*Asimina triloba*) from the NANPS Plant Sale and a small witch-hazel (*Hamamelis virginiana*). With this odd tree/shrub combination, Howard plans to create a hedge.

At the road's edge is one of Howard's early endeavours, a native prairie planted because, Howard claims, he didn't want to be mowing the ditch. It's a perfect place for a prairie, sunny and sandy (the region was originally a barrens much like High Park in Toronto). The seed source of many of the plants here is the Ojibway Prairie in Windsor, Ontario: tall sunflowers (*Helianthus giganteus*), tall coreopsis (*Coreopsis tripteris*), culver's root (*Veronicastrum virginicum*), Virginia mountain mint (*Pycnanthemum virginianum*) and others. To those he added purchases from the NANPS Plant Sale and rescues from the neighbourhood: the incredibly tall cup plant (*Silphium perfoliatum*) whose leaves cup around the stout stalk and collect rainwater for small birds and insects to drink, sky blue, New England and heath asters (*Aster laevis*, *A. novae-angliae* and *A. ericoides*), and clasping-leaved dogbane (*Apocynum sibiricum*) which sends out runners everywhere like common milkweed (*Asclepias syriaca*) and is similarly difficult to control. Other plants come from up north like the wavy-leaved aster (*Aster undulatus*), uncommon in Ontario. Many of the over 100 plants here were started from seed.

Of course, when he first started growing native plants Howard knew nothing about stratifying seeds. After some less-than-satisfactory results, he got advice from Martin Galloway, host of HGTV's Secret Life of Gardens and read Lorraine Johnson's book on propagation entitled *100 Easy-to-Grow Native Plants for Canadian Gardens* (Random House, 1999). Now he has germination success with most of the plants he sows. One difficult-to-germinate plant, black snakeroot (*Cimicifuga racemosa*), has never grown for him despite repeated efforts.

Howard keeps most of his seeded pots on his back deck even through the winter. The only problem he's encountered is that squirrels will spread the seeds around by running over the pots. And they do find the nuts – but they often bury them somewhere in the garden and forget about them. Moisture-loving plants such as spicebush (*Lindera benzoin*) are the ones that require a bit more care. Howard places the seeds in a plastic bag with moist soil and leaves them in the fridge



Howard Meadd's prairie garden by roadside

PHOTOGRAPH COURTESY HOWARD MEADD

over the winter.

He continues to experiment, establishing all manner of native plant communities. A woodland garden incorporates trees and shrubs as well as familiar spring ephemerals such as bloodroot (*Sanguinaria canadensis*), spring beauty (*Claytonia virginica*) and mitrewort (*Mitella diphylla*). In a boggy section near the house Howard grows enormous ostrich ferns (*Matteuccia struthiopteris*), Virginia waterleaf (*Hydrophyllum virginianum*) and Elliott's goldenrod (*Solidago elliotii*) which was "growing just up the block". Beneath the downspout, the rich blue bottle gentian (*Gentiana andrewsii*) has settled in happily.

Although none of his neighbours have followed his example, no one has complained about Howard's wild yard. And the city crews have learned not to mow the ditch in front of his property.

His established gardens need little care – after the first season Howard does not water them, although weeding is necessary. Alien plants like garlic mustard (*Alliaria officinalis*), must be controlled, if not eradicated. This year, he's going to try and smother it with branches from the white spruce.

Watchful of the changes in the wilderness community around his home, Howard knows when natural systems are being disrupted and does what he can to correct abuses. Centennial Creek, which once flowed on the opposite side of the street, is now only an intermittent stream due to construction of subdivisions. The Toronto Region Conservation Authority has built a small wetland (with dams included) as a storm control measure at one end and planted a few natives. Howard has started adding to the planting and will continue to do

so as his own native plants multiply.

Despite the tree-felling and earth-flattening development around him, Howard maintains his own little wilderness, modestly contributing to the preservation of our native flora.

Irene Fedun is the editor of the Blazing Star.

Calendar of Events

October 1-3, 2004
GARDENS OF DIVERSITY,
GROWING ACROSS CULTURES
American Community Gardening
Association Conference
Toronto, Ontario
Visit www.communitygarden.org for details.

October 2, 2004
NANPS 20TH ANNIVERSARY AGM
Markham Civic Garden Centre,
Markham, Ontario
For further information see ad
on page two of this newsletter.

October 5-7, 2004
1ST FLORIDA DRY PRAIRIE CONFERENCE
Sebring, Florida
Sponsored by the Florida Center
for Environmental Studies –
<http://www.ces.fau.edu/fdpc/>.

October 13-16, 2004
31ST NATURAL AREAS CONFERENCE
Emerging Issues: Possibilities and Perils
Chicago, Illinois
For more info:
<http://64.92.126.53/03conference/2004conf.htm>.

Georgia Acid Lovers

by Kay E. Stephenson

In the Piedmont Plateau of north and central Georgia, between one-third and one-half of the soils are clayey, with the balance consisting of gray sand. More importantly, the underlying rock causes the soil to be acidic. A test of the acidity of lawns in Georgia conducted in 1984 found that 30% had a pH of 5.4 or below (strongly acidic), 28% were between 5.5 and 5.9 (moderately acidic) and only 42% fell in the range of 6.0 and above (slightly acidic). Natural soil acidification has been accelerated by acid rain. It is clear why learning about acid-loving plants is a smart investment here.

SOURWOOD *OXYDENDRUM ARBOREUM*

In 2004, the membership of the Georgia Native Plant Society (GNPS) chose sourwood as the plant of the year. A small to medium-sized tree, sourwood provides multi-season interest.

After the usual spring show of flowering trees and shrubs, sourwood offers its pretty summer blooms – cascades of white bell-shaped flowers. These flowers give *Oxydendrum arboreum* one of its many common names, the lily-of-the-valley tree. One of the first trees to begin the fall colour show, it continues to offer interest well into the winter. Attractive

fruit, which matures during September and October, remain on the tree to disperse seed from the open capsule throughout the winter. Sourwood possesses a distinctive bark that is gray, tinged with red, deeply fissured, with narrow, scaly ridges especially at the base. Though the tree has been known to reach 60 feet (18 metres), and one rare specimen found in 1982 in Vinton County, Ohio was measured at 75 feet (23 metres), generally it is much



Sourwood

smaller. Also known as sorrel-tree, sour gum, or elk tree, its flowers are an important source of honey in some areas. A slow grower, sourwood is native throughout the south, south-east, mid-Atlantic and eastern mid-west states.

OAKLEAF HYDRANGEA *HYDRANGEA QUERCIFOLIA*

Oakleaf hydrangea's pale gray-green leaves emerge in early spring, and are soon followed by large, creamy, cone-shaped flower clusters. (Unlike with some hydrangeas such as *H. macrophylla*, the soil pH does not affect the colour of the flowers.) As the blossoms age, they shift from light pink through rosy tones to a final tan. These clusters hang onto the plant well into late fall and early winter. The leaves, large and, obviously, reminiscent of oak

edge of a wooded area. Expect properly sited plants to reach a height and spread of eight feet (2 1/2 metres) or more. Especially in warm climates, it is important to ensure the plants are shaded from afternoon sun.

Hydrangea quercifolia is native to only a small region of the southeast, but adapts well to gardens outside its range, even as far north as Ontario. However, Michael Dirr, a well-known horticultural author from the University of Georgia, tells us to expect some dieback and winter kill of flower buds with extended temperatures of minus 20 degrees F (-29C).

MOUNTAIN LAUREL *KALMIA LATIFOLIA*

This evergreen shrub can be difficult to transplant, but once established in a proper site with moist well-drained acid soil (4.5 to 5.5 pH) and part shade to full sun (consider a north or east-facing slope, which limits the afternoon sun for southern climates), mature plants can reach five to 12 feet 1 1/2 to 3 1/2 metres) tall with a similar spread.

One of the more picturesque names for this evergreen shrub is calico bush. It has pink-edged white blossoms produced in terminal clusters four to six inches (10 to 15 centimetres) across, creating an image reminiscent of calico fabrics.

Mountain laurel is extremely toxic in all its parts to humans and livestock and other animals. In fact, one study suggests that when eaten by pheasants the poison is communicated to those who feed on the birds.

PIEDMONT AZALEA *RHODODENDRON CANESCENS*

There are 13 species of deciduous azaleas native to Georgia. Additionally, due to overlap of distribution and blooming season, we see many interspecific hybrids along with introgression. (Introgression occurs when a hybrid back breeds with one parent species only resulting in plants that generally look like one species but have some genes of the other). This can make species identification a challenge.

One of our most stunning natives is piedmont azalea (*Rhododendron canescens*). The earliest-blooming of the native azaleas (March and April), this deciduous shrub is well-known for its vivid display of pink or white, fragrant, clustered blooms. It is sometimes misnamed as wild honeysuckle, but our piedmont azalea has little in common with the west-coast native. You may also find this plant listed as the Florida pinxter azalea, and though

leaves, turn to rich reds, purples and burgundies in late fall and often remain on the plant through November and early December. In winter, as the blossoms and foliage finally fall, the branch structure is accented by colourful exfoliating bark.

If planted in moist, well-drained, acid soil in part to full shade, these plants are drought-tolerant once established. They work well in a shrub border, as a specimen or massed at the

PHOTOGRAPH COURTESY MARIA CORDELL

typically considered a southern species, it is hardy enough to see wider landscape use. Commonly available from native plant nurseries, this showy plant is often rejected by other nurseries in the belief that gardeners will not purchase deciduous azaleas.

Rhododendron canescens makes a spectacular show in early spring. The leaves sprout but the blooms appear when the leaves are still a quarter of their mature size. A mature plant can be expected to grow to 10 feet (three metres) and more with an upright habit. Rich, moist, acid soil in light shade but with some direct sun, or high filtered shade (under tall trees, at the forest edge and on stream banks), offers the ideal environment.

When attempting to rescue these plants, it is important to know that the root system is not deep, but includes many far-reaching lateral runners. Saving as many of these runners as possible is critical to success. Also, local experts recommend soaking the plants overnight in a tub of water to counteract shock, and reducing the foliage by one-third prior to transplanting. This can be done by clipping every third leaf in the cluster or by removing the tips of all leaves – a daunting process with larger plants.

LOW-BUSH BLUEBERRY *VACCINIUM PALLIDUM*

Hillside or low-bush blueberry grows naturally throughout the eastern and north-central United States and Ontario, and the fruit is valuable food for many small birds and mammals. Though the berries are sweet and can be used in pies and jellies, they ripen over a long period of time, making collection in quantity a chore. Native Americans dried the berries and pounded them together with strips of venison to season their pemmican.

I recently rescued a number of these plants from a site under development in Snellville, Georgia. Like the piedmont azalea, this low-growing shrub sends out many longer runner roots. It is important to preserve as much of this root system as possible. Despite care in collection and the overnight soaking method mentioned above, by day two I was doubtful that any of the shrubs would survive. So, I pruned the plants hard and they have all resprouted. A tip for novices: do not give up easily. *Vaccinium pallidum* can be pruned severely, so that a few stems and no leaves are left and they will come back quickly. A few months later mine are shaping up as healthy specimens.

The site of this rescue included a dry sandy



Mountain Laurel (*Kalmia latifolia*)

PHOTOGRAPH COURTESY MARIA CORDELL

hill that was covered in the one- to two-foot (30-60-centimetre) tall plants under high dappled shade. For the home landscape, ensure well-drained acid soil – down to 4.5 pH – and at least partial sun.

Pretty, bell-shaped, green-cream to pinkish flowers appear in early spring. Around the same time, an important pollinator in our region, the southeastern blueberry bee, appears. A local botanist tells me that this bee "pollinates 100% of Carolina jessamine (*Gelsemium sempervirens*) and a wide variety of other native plants. Since the drastic decline of wild and domesticated honeybees, those plants in my yard that bloomed before the earliest blueberries don't get pollinated." (In some regions of the United States up to 90% of the honeybee population is gone due primarily to the introduction of a parasitic mite. The use of pesticides and, in the Southwest, invasion by African species have contributed to the decline.)

PINK LADY'S SLIPPER *CYPRIPEDIUM ACAULE*

A dramatic native orchid is the pink lady's slipper or moccasin flower, found in acid woods, often near pines. It prefers full shade to partial sun with moist, very acidic soil.

Blooms first appear in mid-spring and can continue for over a month. The common names given to *C. acaule* by the natives and white settlers offer clues to the unusual shape of the dark pink flower which has a deep cleft in the centre. The cleft is actually a one-way

entrance for insects. Inside the flower, small hairs "direct" the insects (usually bees) where to go, but some never make it out. If they manage to follow the hairs they are sent through a very narrow passage, where they are coated in pollen before exiting the plant.

Here in Georgia where the plant is protected, we need a special permit to rescue them when they are threatened by development. A good deal of debate has arisen around methods for digging them up. According to orchid expert and GNPS member David Mellard, "When rescuing *C. acaule*, the one thing you should do is leave your shovel at home. Like the spokes of a wheel, the roots of *C. acaule* grow horizontally in the decaying pine duff microclimate." Using your hands it is easy to locate the roots – up to 18 inches (45 centimetres) from the centre. Slide a three-pronged trowel under the roots and loosen them. Once they are loosened, you should again use your hands to move under the root system and gently lift. (*Editor's note: Never dig plants out of the wild unless they are threatened with destruction and always obtain permission from the property owners and the proper authorities.*)

As for creating the proper environment to receive these plants, David adds "probably the most important thing is to plant the roots horizontally on the surface, cover them with compost, and – this is critical - water them with vinegar (two ounces of vinegar per gallon of water or 6 millilitres to 3.8 litres) throughout the growing season." Failure to

transplant successfully is typically due to two factors: root damage and planting in a soil that is insufficiently acidic. In the past, many believed that lady's slippers needed to be dug with lots of soil to capture required micro-organisms not present elsewhere. However, more recent research has shown that the necessary micro-organisms bond to the roots, so bare root collection works fine.

The pink lady's slipper can be found in the foothills and mountains of Alabama, Georgia, South Carolina, adjacent Tennessee, and North Carolina, north and west to Alberta. The Conservation Status Rank for this stunning orchid varies from state to state or province to province. In Georgia it is classified as "uncommon but not rare" whereas in

Alberta it is "vulnerable". It is still quite numerous in New Hampshire where it has been adopted as the state wildflower. The myth that it is illegal to harvest or dig these flowers in that state persists – a good thing since this has most likely contributed to the security of the population.

This article just skims the surface of acid-loving plants in Georgia. A dip into the Okefenokee Swamp would yield roughly 600 species of plants thriving in an extraordinarily acid environment, with an average pH value of 3.7. This unique ecosystem has been designated a National Wilderness Area and remains one of the oldest and best-preserved freshwater wetland areas in America.

Kay E. Stephenson is a transplant to Georgia from the St. Lawrence River valley. She serves on the board of the Georgia Native Plant Society where she combined her passion for plants with her experience in high-tech marketing and a desire to learn about natives, and turned her hand to public relations for the society.

The Georgia Native Plant Society has active conservation, restoration and education programs, and only takes plants from the wild that are threatened with destruction. Some plants are sold and the proceeds sponsor scholarships and research targeted at native plant preservation. Many of the rescued plants are donated to public restoration projects.

New & Noted

Trees of the Carolinian Forest: A Guide to Species, Their Ecology and Uses

by Gerry Waldron (Erin, Ontario: Boston Mills Press, 2003, 275 pages, p.b., \$24.95 CDN, \$19.95 US, ISBN 1-55046-404-3)

Gerry Waldron has earned his star status in Ontario's botanical circles as the discoverer of three tree species previously unknown in Canada. (His most recent coup was finding, with Lindsay Rodger and John Ambrose, swamp cottonwood, *Populus heterophylla*, in Lambton County.)

In this extraordinary book Waldron shares his extensive knowledge of the Carolinian forest of southern Ontario—a region that extends from Windsor to Toronto. His writing achieves that elusive of qualities, managing to be both rigorously precise and poetically expansive. His enthusiasm for the subject comes through on every page, whether he's discussing a deep cultural veneration of trees ("Trees germinate in our subconscious, grow through our memories and emerge as charged symbols in dreams and art.") or the allelopathic effects of black walnut ("One odd thing is that walnut seedlings are susceptible to the juglone of their parent, which seems as counterproductive as eating your young.").

The book is divided into two sections. The first part provides a fascinating discussion of the history of the Carolinian Zone, going back thousands of years through glaciation and plant migrations, then through human impact on the region. Not surprisingly, the

history is sometimes heartbreaking to read: "During the nineteenth century it is probable that every accessible mature hemlock in the zone was destroyed solely for its bark" (from which tannin was extracted). Waldron then gives a useful synopsis of how the Carolinian Zone became known as such and discusses some of the confusion related to terminology, concluding, "if I were king, I would dictate the use of Deciduous Forest Region instead of Carolinian Zone.... I wouldn't be surprised if you disagreed." What follows in this first section of the book is a discussion of plant communities and some of the challenges of restoration in the Carolinian Zone.

Section II is set up like a field guide, devoting two pages each to 73 Carolinian tree species, from black ash to witch-hazel. Along with drawings (leaf, twig, flower, fruit and mature form) and a range map, the description for each species includes introductory text and sections on habitat; wildlife value; wood; propagation, culture and use; problems; description; quick check; and largest Ontario specimen. Peppered throughout are personal observations.

The colour photo insert is one of the most useful I've ever seen—how handy to have sample leaves from four *Populus* species together in one photo for comparison, and the samaras of five different ashes, and acorns of 10 different oaks, all in a row!

This book is a gem.



Biotic Forest Communities of Ontario

by Norman Duncan Martin and Norma M. Martin (Belleville, Ontario: Commonwealth Research, 2001, 195 pages, p.b., \$10 plus \$2 p&h, ISBN 0-9688513-0-4)

Not everyone will be captivated by a sentence such as, "Most of the down wood in this transect is white pine and red oak of the previous seral stage." But for those who have a keen interest in succession in Ontario, there's a lot of information in this compact book, which is based on the authors' life study of the province's forest dynamics. Basic communities are identified, divided into upland communities such as poplar-birch, jack pine, and sugar maple-beech, and bottomland communities such as black spruce-tamarack, black ash-silver maple, and white cedar. A basic description of these communities' biotic composition is provided, with an emphasis on tree species, breeding birds, and small mammals, and with reference to shrubs, herbs, insects, and fungi. Finally, there's an analysis of succession. Serious students of Ontario's forests will find much of interest in this book's charts, tables, graphs, photographs, and descriptions. (Available from Suite 1107, 2 South Front Street, Belleville, Ontario K8N 5K7.)



Reviews by Lorraine Johnson

Shoreline Restoration in the Kawarthas

by Kristie Virgoe

Only one and a half hours east of Toronto is a beautiful region known as the Kawartha Lakes. A chain of 15 lakes, they are part of the Trent Severn Waterway system and are navigable from east to west via a series of locks operated by Parks Canada. These lakes are a significant cog in the economic engine of the area since clean water, a healthy environment and good fishing are the main attractions for those who vacation or live here permanently. Due to proximity to heavily populated areas, the pressure from developers for increased urbanization is great. Lakeshore residents commonly approach landscaping with an urban perspective, so that natural shorelines become lawns with retaining walls.

A shoreline encompasses the area upland from the water's edge and out into the lake. This strip, referred to as the ribbon of life, is vital to the health of a lake ecosystem. Seventy percent of all animals depend on healthy shorelines for access to water, natural corridors and habitat. In addition, 90% of all aquatic life depends on a natural healthy shoreline for some part of their life cycle.

As shorelines become more populated by humans, much of the native vegetation is lost. Unfortunately this exposes the soil to erosion, as the root systems of turf grass do not extend as deep as the root systems of native shrubs, wildflowers, grasses and trees. The pesticides and fertilizers used on these lawns eventually work their way into our lakes. Pesticides often kill off valuable aquatic insects, the food source for many fish. The nutrients in fertilizers, especially phosphorous and nitrogen, increase the growth of aquatic weeds such as Eurasian water milfoil (*Mirophyllum spicatum*) and tape grass (*Vallisneria americana*). One pound of phosphorous in the water can produce over 200 kilograms (500 pounds) of aquatic vegetation. These plants can choke a waterway, degrade habitat, diminish water quality and decrease property values very quickly.

The Kawartha Region Conservation Authority is responsible for over 350 kilometres (200 miles) of shoreline along the Trent Severn Waterway. We educate landowners through on-site consultations, information workshops and the creation of demonstration sites. These sites display different shoreline naturalization techniques and promote the reintroduction or addition of native plants along fragile shore-

lines. Although re-vegetation using native plants is the primary focus in shoreline restoration work, some areas may require additional support from environmentally friendly structures.

Early in 2003, the City of Kawartha Lakes presented a challenge to Kawartha Conservation's Shoreline Naturalization Program: recreate a healthy shoreline in the village of Coboconk. In this small community the beaches had been closed for several years running due to high e-coli readings in the water. It was easy enough to determine the cause. A large population of Canada geese, sometimes over 100 birds, stayed in the area for the entire summer defecating on the shore and in the water. The geese were attracted to the manicured lawns because they provide an easy food source. What's more, geese feel secure in open areas with low vegetation where there is no place for predators to hide. The area in question offered these birds a buffet that stretched 180-metre (200 yards) long and spanned the entire depth of the park (up to 20 metres or 22 yards in some places).

Our Shoreline Naturalization team devised a site plan that incorporated native wildflowers and shrubs within a five-metre (16-foot) buffer strip stretching along the shoreline. Buffer strips along lakeshores and wetlands enhance wildlife habitat and protect water quality by reducing soil erosion, filtering out sediments in runoff water and absorbing excess nutrients before they reach the water. In addition, a natural vegetation buffer creates a less desirable habitat for the geese. Over 750 plants were installed for the buffer strip in

Coboconk's Lion's Park and native grass species were seeded as well. Shrubs and forbs used included red osier dogwood (*Cornus stolonifera*), staghorn sumac (*Rhus typhina*), ninebark (*Physocarpus opulifolius*), flowering raspberry (*Rubus odoratus*), pussy willow (*Salix caprea*), pearly everlasting (*Anaphalis margaritacea*), black-eyed Susan (*Rudbeckia hirta*), and wild bergamot (*Monarda fistulosa*). When compiling the species list, we considered the merits of each plant. Willows were



PHOTOGRAPH COURTESY NATALIE MANDIC

A community planting day at Coboconk Lion's Park Beach in June, 2003.

chosen for their strong root systems that stabilize soil. Dogwoods and other berry-producing plants provide food for songbirds and other wildlife. Wildflowers such as black-eyed Susans create an aesthetically pleasing display of colour for area residents to enjoy.

The project progressed during the spring and early summer with the assistance of volunteers from local schools, the community and interest groups such as the Norland Horticultural Society, the Coboconk Girl Guides and the Victoria Land and Water Stewardship Council. Within weeks, residents were expressing their satisfaction with the project.

Fewer geese were observed in the area. E-coli readings of the water were consistently within the guidelines set by the health unit. Residents and visitors to Coboconk were once again able to enjoy the beach area without risk of illness due to poor water quality.

Delighted with our success in Coboconk, in fall 2003 we identified a potential demonstration site in the community of Bobcaygeon, at the western point of the lock station. The site consisted of mowed lawn with a few scattered trees. This gave fishermen and boaters easy access to the shoreline. Without deep root systems in place to support the partially exposed soils, the heavy traffic along the shoreline only increased the erosion that was already taking place. Concerns about the effects of this erosion on water quality and wildlife habitat were high. Since many fish spawn within the ribbon of life, eroding soils can be a death sentence to the next generation of aquatic life. As loosened soils fall away from the shoreline they can cover the vulnerable eggs and suffocate them before they have a chance to hatch.

To limit erosion, more than 600 shrubs and wildflowers were planted with the help of volunteers from Sir Sandford Fleming College Ecosystem Management program. The planting was completed last October and overwintered with minimal losses. Many of the shrubs and flowers are already in bloom, and a number of baby snapping turtles have been seen in the area, indicating that wildlife is using the site. We hope the plantings around the lakeshore will decrease the compaction of soil (caused by people walking or mooring their boats along the shoreline) as well as improving water quality and wildlife habitat. Tourists and fishermen are still visiting the area but they no longer trample the banks to gain access to the water. This is important to improving the condition of the shoreline. As the roots of the native plants become established over the next few years, the soils will become more stable.

Our latest demonstration site is Lindsay's Riverview Lion's Park along the Scugog River. Here the usual problems exist: drastic erosion and loss of habitat. But this site also poses a safety hazard. The removal of native vegetation that was replaced by a mowed lawn promoted erosion. Historic attempts to halt the erosion included the construction of a log wall. Unfortunately, time has shown us that hardened shorelines (shorelines with impervious edges) will eventually fail because precipi-

tation is blocked by the structure. The wall eventually collects enough water that it starts to erode. At Riverview Lion's Park the erosion is extensive and poses a threat to spawning fish.

This project involved the establishment of a five-metre (five-yard) wide buffer strip that stretches 200 metres (220 yards) along the shore. Students from Lindsay Collegiate Vocational Institute, Sir Sandford Fleming College and area residents have planted over 800 native shrubs and wildflowers. Involving the youth fosters community pride and a sense of



Coboconk Lion's Park Beach in early July, 2004.

PHOTOGRAPH COURTESY KRISTIE VIRGOE

ownership as well as providing them with a unique learning environment.

I opted for fruiting plants or plants that will attract butterflies. While the park does not offer swimming facilities, many residents spend time there watching birds and other wildlife. The fruiting shrubs such as service-berry (*Amelanchier alnifolia*), American elderberry (*Sambucus nigra*) and highbush cranberry (*Viburnum trilobum*) will provide food for songbirds and small mammals, while butterfly-weed (*Asclepias tuberosa*), grey-headed coneflower (*Ratibida pinnata*) and wild bergamot (*Monarda fistulosa*) will provide habitat for butterflies and other insects.

What makes the Lindsay site particularly exciting is that it will link up with another demonstration site further upriver. Nayoro Park is scheduled for restoration this fall, allowing us to return some 400 metres (440 yards) of continuous Scugog River shoreline

to a natural state.

One of the goals of the Shoreline Naturalization Program is to encourage landowners to use native plants by showing them how beautiful and functional they can be. Waterways provide an effective corridor for the spread of seeds, so the more we replace our native flora with non-native plants, the more likely those plants will out-compete our native stock. While the flowers of our native beauties may not be as large or colourful as many introduced or hybridized flora, native plants are experts at dealing with the weather and

growing conditions that the Canadian climate throws at them. They don't require fertilizers to grow or special sprays to keep the bugs away. In addition, homegrown plants are exactly what local wildlife need. The colours, berries, and scents are perfect for attracting our birds, insects, and other wildlife. Some plants, such as cattails (*Typha* spp.), even improve water quality by absorbing pollutants from the water. Overall, native plants improve the health of our environment.

Kristie Virgoe is the Shoreline Naturalization Co-ordinator for the Kawartha Region Conservation Authority. She is excited about the community education opportunities of the shoreline restoration program and can be reached at 705-328-2271 or kmccabe@kawarthaconservation.com.

The Ethics of Plant Rescue

by *Moralea Milne*

The Victoria Native Plant Study Group (VNPSG) has been at the forefront of the plant rescue movement in British Columbia. By negotiating with developers we save native plants, even some quite rare ones, from sure eradication under the blades and tracks of land-clearing machinery. You must be a member of our organization to participate in the rescues. As more people hear about the rather new concept of harvesting native plants from sites that are earmarked for immediate development, they join our group and we benefit

pal grounds) with often expensive and hard-to-find native plant material. The participants all carefully followed the rules laid out by the developers and stayed well out of covenanted areas, glad to know some of the site's natural beauty and plant community were protected. I did give a moment's pause to wonder where the many birds displaying territorial behaviour throughout the site would be nesting that year. However, there was a beautiful intact site across the road they could migrate to and I ignored the obvious - that site would already have its full complement of birds asserting their territories.



Harvest brodiaea (*Brodiaea coronaria*) in its native habitat.

PHOTOGRAPH COURTESY MORALEA MILNE

from increased membership and the attendant annual fees. The rescued plants are used in our gardens or donated to restoration projects throughout the Victoria area. Sometimes the seeds and cuttings are used to propagate more plants in nurseries and further the native plant gardening movement. These all seem to be activities that we can and should support.

BUT I WONDER...

Spring 2002 and 2003 saw a huge plant rescue operation at what came to be known as the Langvista sites in Langford, British Columbia. Early spring 2002 found me an eager participant. I was delighted to save native plants from certain obliteration and provide my own property (and a native plant garden I was attempting to create on municipi-

pal grounds) with often expensive and hard-to-find native plant material. The participants all carefully followed the rules laid out by the developers and stayed well out of covenanted areas on the now-developed site. Through this work we learned that the area across the road, the back side of Mill Hill Capital Regional District Park, was also about to be developed. I consulted with the developers and found they were amenable to plant rescue operations at the new site. VNPSG membership grew as word of the wealth of plant material at this site filtered through the native plant enthusiast community.

This site was so amazing; everyone commented on the abundance and diversity of plant material. There were a few blue-listed** *Isoetes nuttallii* (Nuttall's quillwort) and literally thousands of *Allium amplexans* (slimleaf onion), only recently declassified as a blue-

listed species. Both species are indicative of an uncommon vernal wetland ecosystem. A few of the plants collected were: broad-leaved or Pacific stonewort (*Sedum spathulifolium*), Menzies' larkspur (*Delphinium menziesii*), satin-flower (*Sisyrinchium douglasii* - now *Olsynium*), Hooker's and nodding onion (*Allium acuminatum* and *A. cernuum*), hooded ladies' tresses (*Spiranthes romanzoffiana*), fairy-slipper (*Calypso bulbosa*), white fawn-lily (*Erythronium oregonum*), camas (*Camassia* spp.), western buttercup (*Ranunculus occidentalis*), harvest brodiaea (*Brodiaea coronaria*), chocolate lily (*Fritillaria affinis*), rusty-haired and tufted saxifrage (*Saxifraga rufidula* and *S. cespitosa*), small-flowered fringe-cup (*Lithophragma parviflorum*), two-coloured lupine (*Lupinus bicolor*), broad-leaved and pretty shootingstar (*Dodecatheon hendersonii* and *D. pulchellum*), tomcat clover (*Trifolium willdenowii*), monkey flower (*Mimulus* spp.), Puget Sound gumweed (*Grindelia intergrifolia*), various native grasses such as California wild-oat grass (*Danthonia californica*) and Roemer's fescue (*Festuca roemerii*), ferns such as Indian's dream pod fern (*Aspidotis densa*) and goldenback fern (*Pentagramma triangularis*) and many unidentified mosses, lichens and fungi. There were large numbers of virtually all of these plants. Some sharp-eyed members harvested white-top aster (*Aster curtus*), designated red-listed*** in British Columbia.

All those species... it begs the question, what did we miss? What rare jewels were not apparent to our non-expert eyes? Mill Hill Park was recently inventoried by Hans Roemer, a provincially renowned botanist, and he found many more species and occurrences of rare plants than were previously thought to exist there. It is logical to assume the same would be true at the adjacent site.

This past year brought a shift in my perceptions. I felt increasingly sickened by the destruction and plunder of this hugely productive, rich, rare association of ecosystems. When someone declared they felt like "a kid in a candy store", I really started to wonder at the appropriateness of what we were doing. This was no candy store that could be restocked with old favourites. It took many thousands of years to produce the assemblage of plants and animals at this site. Nothing we attempt in our lifetimes could replace the astonishing environment that was lost.

When I consider the number of people who made repeated trips to the Langvista/Mill Hill site to rescue plants, I wonder what could have been accomplished had that same time and energy been directed towards saving the site. I have heard the developers were willing to sell the land to Capital Regional District Parks. What if we had worked with all three levels of government, non-governmental organizations and CRD Parks? Could we have preserved this immensely rich and biodiverse community for future generations?

Garry oak or Oregon white oak (*Quercus garryana*) ecosystems are considered one of the three most endangered in Canada. Only a tiny fraction remains, and through our ignorance and inactivity we let an irreplaceable remnant be destroyed. Perhaps if we had not been so focused on "rescuing" individual plants we could have rescued an entire ecosystem. What good are the plants that we saved really? They have become mere gardening material rather than part of a dynamic ecosystem. Is that a worthwhile trade?

Since last spring I have not participated in further "plant rescue" opportunities. I feel ambivalent about the value and appropriateness of this activity. Should we focus our limited resources on plant rescue? Or would the enthusiastic members of the plant rescue corps harness the power of their combined energies to the preservation of endangered ecosystems? Does the immediate gratification of "owning" rescued plants outweigh the long and sometimes arduous struggle to protect and preserve our natural heritage? Does the diplomacy involved in securing plant rescue options on a site preclude the ability to fight for the preservation of that site? Is there even an organization that is working to prioritize the acquisition of the last relics of our Garry oak ecosystems?

Perhaps if I could be sure that we had explored all possible avenues to protect and preserve every remaining significant Garry oak and associated ecosystem site, then "plant rescue" operations would be worthwhile endeavours. At the moment I find myself sitting on the fence of indecision, staring at the crossroads of choice and asking myself this question: if there is only a limited time left, what do I want to leave as my legacy?

** *Blue List* – the provincial ranking system in British Columbia that designates species as sensitive or vulnerable and "at risk" but not yet endangered or threatened. Populations of these species may not be in decline, but their



PHOTOGRAPH COURTESY MOREALEA MILNE

Broad-leaved stonecrop or Sedum spathulifolium

habitat or other requirements are such that they are vulnerable to further disturbance. Species that are generally suspected of being vulnerable, but for which information is too limited to allow designation in another category, are included in this category.

*** *Red List* – the ranking system that designates species as endangered, threatened or being considered for such status because they run the risk of extirpation or extinction.

Morealea Milne is quietly working to restore Devonian Regional Park in Metchosin, British Columbia. She is a graduate of Restoration of Natural Systems Program at the University of Victoria.

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elevation sites where the resultant vegetation community is known as a 'heath bald'.

The smooth leaves (among the largest of eastern rhododendron species at 20-25 centimetres or eight inches long) are arranged in a whorl at the end of each branch. As a broadleaf evergreen, its leaves remain year round. Among rhododendron species its leaves are the first to droop and curl up tightly when the temperature drops below 0C (32F), a strategy to prevent moisture loss in the leaf tissue. As the temperature rises above freezing again, the leaves unfurl and look striking in the winter garden.

Another attractive feature of this species is its superior cold hardiness. Many authorities rate it hardy to -40C/F and it has easily survived a -30C (-22F) temperature in my Toronto garden with no visible foliar damage. Its preferred sheltered, streamside habitat suggests that high humidity is beneficial to this species so placing it out of windy and exposed locations is important. It is very shade-tolerant and can survive and even flower (lightly) under the canopies of many forest species. It looks its best in partial sun along the edge of a woodland garden, although exposures to strong sun at mid-day in summer and strong late-winter sun are best avoided, especially in northern climates where the ground can freeze for six or more weeks. Exposure to late winter sun will significantly warm the leaves, causing moisture loss, and when the roots are frozen, the plant is robbed of its ability to replenish moisture to its leaves. This explains why rhododendrons in northern gardens are more frequently killed by winter desiccation than the absolute low temperatures they experience. In cold climates, artificial shading in winter from southern exposures can make a big difference in rhododendron survival.

The flowers are subtle, ranging from faint pink (almost white) to, more rarely, a deep full pink. The colour is always darker in the buds just prior to opening. While most rhododendrons flower in spring or early summer in advance of stem and leaf development, the flowers of rosebay rhododendrons open in mid- to late July, with the result that they are somewhat hidden among the newly expanded vegetative growth.

Rhododendron maximum is a member of the diverse heath family, *Ericaceae*, and has similar cultural requirements to others in this group. Acidic soil rich in leafy organic matter (especially decayed oak and pine needles) is best. A layer of leaf litter in winter is important to minimize the number of freeze/thaw cycles

that can damage the fine shallow root mass. Rhododendrons hate having the soil worked around their base as this damages the fine rootlets. In the wild, rosebay rhododendrons prefer the slopes adjacent to mountain streams, but they do not appreciate getting soggy wet feet. Good drainage is important. That said, if planted under or among other trees and shrubs (especially maples), *R. maximum* will need supplemental watering during dry spells to successfully compete with the established and often aggressive root systems of the larger trees. Transplanting in spring is optimal. If the plant is container-grown, loosen up the soil ball slightly and soak it for a couple of hours before planting to ensure that the plant is fully hydrated.

Although at home in a woodland setting, rosebay rhododendron can also grace the shrub-border, adding texture year-round. And, despite its potential to achieve substantial sizes in the wild, it rarely exceeds two to three metres (six to 10 feet) in cultivation. This may make it the ideal choice for the gardener who has been too intimidated to try a broad-leaved evergreen rhododendron, especially in northern growing zones. The challenge is finding *R. maximum* in nurseries. It has never found favour with landscaping enthusiasts because it lacks the flower profusion of its cousins such as *R. catawbiense*. *R. maximum* can most reliably be found in specialty nurseries featuring native plants. Growing this species from seed is practically an art and should be attempted only if you have patience.

Whether or not you choose to grow rosebay rhododendron, a trip to a natural site to see its midsummer bloom or its evergreen foliage in the depth of winter is highly recommended. It will buoy the spirits of any plant enthusiast.

Kevin Kavanagh is the Director of the Canadian Biodiversity at Risk Program at World Wildlife Fund Canada. An avid gardener, Kevin has naturalized his backyard in Toronto and is designing a new garden at his cottage in the heart of Carolinian Canada. Rhododendrons and native plants, especially trees and shrubs of the south-eastern United States, fill much of the space in both gardens.

Propagating *Rhododendron maximum* from seed

by Tom Atkinson (asimina@sympatico.ca)

All ericads, such as rosebay rhododendron, have minute seeds, produced in great number. Germinate them thus:

- Moisten shredded peat moss
- Place it in a shallow tray
- Sprinkle the seed onto the surface of the moist peat
- Mist seed with a water sprayer
- Cover the tray with plastic wrap
- Place the tray in a room in the house where it will get light, but not direct sunlight (under a chair or a bench near a window works well)
- In two-three weeks, you will see minute green appear on the peat: each dot is a potential rosebay rhododendron!
- As the seedlings grow, loosen the plastic wrap and pull it higher
- When the seedlings are perhaps five millimetres (.2 inches) high, poke a few pin holes in the wrap: this is the start of hardening off the seedlings
- As seedlings get bigger and touch the cover lift it up and make holes bigger
- Keep the seedlings in this tray through the summer and the next winter
- Overwinter in a room that gets cold, down to 0C (32F) or -5C (23F)
- Next year, transfer some seedlings to a garden bed with acid soil
- Always hedge your bets: keep some seedlings in pots and in a cold room 'til they are 10-20 centimetres (four-eight inches) high before outplanting

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