

The Blazing Star



NEWSLETTER OF THE NORTH AMERICAN NATIVE PLANT SOCIETY

Native Plant to Know

Smaller fringed gentian (*Gentianopsis procera*)

by *Kristl Walek*

Synonyms: *Gentianopsis virgata*; *Gentiana procera*; *Gentiana crinita* var. *browniana*; *Gentianella crinita* ssp. *procera*

Other Common Names: lesser fringed gentian; Great Plains fringed gentian

Native Range: Manitoba, Ontario, Illinois, Indiana, Iowa, Michigan, Minnesota, New York, North Dakota, Ohio, Pennsylvania, South Dakota, Wisconsin

The smaller fringed gentian is one of our most beautiful natives, found in northeastern and Midwestern North America. A self-perpetuating biennial, the plant grows to 18 inches (40 cm) with narrow, pointed foliage. The most striking feature is the plant's fringed blue flowers, which are upward facing, and open in the sun and close at night or on overcast days. The plant blooms in very late summer into fall. Although the smaller fringed gentian can be challenging to establish in the home garden, it is worth the effort!

NEED-TO-KNOWS

- Grows best in moist, fertile soil in full sun to dappled shade. In the wild, it flourishes in low, open parts of deciduous woods or along their fringes, in quasi-wet meadows, along stream banks and lake shores, old moist pastures or roadside ditches, usually in full sun. It is not a woodland species,

except where woods have been heavily thinned and the soil disturbed.

- This beautiful wildflower is somewhat demanding in its requirements. The soil type is immaterial – it grows in alkaline, neutral or acidic conditions. However, the soil should be high in humus, preferably sandy and decidedly moist.
- Produces rosettes the first growing season, then flowers the second. A biennial, the plant dies after the second year. If conditions are to their liking, they will self-sow and become established in the garden. It is advisable, nevertheless, to plant them the first two years in succession in order to produce bloom every year.
- Seeds of this late-flowering species are mature from September to November. Some seedheads harbour worms that destroy the seeds. Sow fresh seed as soon as it is ripe either directly where plants are to grow or in flats or pots. Keep these outdoors over winter or place in a cold frame. Germination is normally average to good after the cold conditioning, with 50–75 percent rates in late spring to early summer.
- The tiny first-year rosettes are intolerant of heavy competition. Transplant very carefully into moist soil when the small plants are no bigger than a quarter. Give them a space to themselves where they can get properly established without interference



from neighbours. Once settled into the garden, allow them to self-sow and mingle with the neighbours they are able to live with, rather than imposing companions upon them.

- Wet meadow conditions are often difficult to replicate in the garden. It may be advisable to do your initial planting of *Gentianopsis procera* at the sunny periphery of your shade or woodland garden, where consistent moisture may be more readily available to the plants as they become established.

Kristl Walek is the owner of Gardens North, a nursery 25 km south of Ottawa, Ontario, that specializes in perennial and woody seed hardy for cold-climate gardens. Gardens North sells seeds of Gentianopsis procera, collected in Rideau Township, Ontario. For more information, contact Gardens North, 5984 Third Line Road North, North Gower, Ontario K0A 2T0; (613) 489-0065; seed@gardensnorth.com. Catalogue is \$4.00.

THE BLAZING STAR IS...

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

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NANPS News

Many thanks to the volunteers who helped at the NANPS plant sale in May: Tom Atkinson, Sarah Augustine, Alexandrina Canto-Thaler, Barbara Clarke, Michael Cook, Douglas Counter, Catherine Crockett, Grif Cunningham, Deborah Dale, Monica Dennis, Terry Fahey, Victor Fedorov, Martin Field, Jim French, Connie Gardner, Carol Goodman, Scott Gunther, Scott Guthrie, Cathy Hayes, Colin Hinz, Carole Howlett, Jean Johnson, Lorraine Johnson, Shirley Joy, Bill Kilburn, Carolyn King, Anna Leggatt, Olga Lesnenko,

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Special thanks to the NANPS co-chairs of the sale: Catherine Crockett and Erika Thimm.

NANPS Annual General Meeting

This year's AGM promises to be a very special event, with a guest slide talk by Philip Fry, who has been restoring his 15-acre property, the Old Field Garden, near Ottawa, Ontario, for 17 years to enrich the biodiversity of the site. His habitat landscape restoration project includes five microhabitats, a number of rare plant species and involves research into propagation techniques and climate change effects on plants. This Toronto appearance offers a rare opportunity to be inspired and informed by Fry's wide-ranging experience.

Mark your calendar now to join us for a celebration of the restoration of the Old Field Garden at the NANPS AGM: Saturday, October

13, 2001, 10:30 a.m. to 2:30 p.m., at the Civic Garden Centre, 777 Lawrence Avenue East, Toronto, Ontario. Refreshments will be served. For more information, phone (416) 680-6280 or e-mail nanps@nanps.org.

We're also holding a native plant sale at the AGM, and we need your contributions. Please bring in a supply of your favourite vines, grasses, woody plants and forbs (natives only), and be prepared to take home unsold items. Call Richard Woolger at (905) 668-7171 or e-mail him at richard.woolger@sympati-co.ca to let him know what you'll be bringing. All proceeds from the sale support NANPS' work.

NANPS Seed Exchange

Please consider donating seeds of native plants to NANPS' thriving Seed Exchange. Last year, we had more than 200 species available to NANPS members – let's try for 300 in 2002!

To donate to the Seed Exchange, please collect ripe seeds and package them in a clearly labelled envelope identifying botanical and common name, and where collected (city, country; garden or wild source). Send to

NANPS Seed Exchange, P.O. Box 84, Station D, Etobicoke, Ontario M9A 4X1.

All native seeds (herbaceous, woody, grasses – even fern spores) are appreciated.

A list of Seed Exchange species available for ordering by members will be published in the Winter 2002 issue of *The Blazing Star* and posted on the NANPS Website (www.nanps.org) in the late autumn.

Letter to the Editor:

Concerning the article in Volume 2, Issue 2 of *The Blazing Star* re black walnut toxicity:

The Website <http://www.cobjon.com/ecsong/vol15no4.html#M> reprints an article from the Ontario government on plants that "thrive, strive or dive" under black walnut. Anyone in the Eastern Ontario region inter-

ested in nut trees would find the above site quite useful. It is provided by the Eastern Chapter, Society of Ontario Nut Growers (ECSONG).

Hank Jones, Chair
ECSONG

Growing Trilliums from Seed



by **Graham Buck and Wayne Buck**

Painted trillium (*Trillium undulatum*).

Red (*Trillium erectum*), white (*T. grandiflorum*) and nodding (*T. cernuum*) trilliums will grow readily in most gardens in the northeastern United States and central and eastern Canada. They require humus-rich, well-drained soil with open or deep shade. The bent trillium (*T. flexipes*) grows in warm climates (London, Ontario, is the farthest north this trillium occurs naturally in Ontario) along flood plains or seepage slopes with a calcareous component. Painted trillium (*T. undulatum*) grows in cool, moist, acidic soils with deep shade. Painted trillium is the most difficult to grow because it requires a consistently cool, moist (not wet), acidic soil – conditions that are very difficult to artificially reproduce. If the soil is not maintained at the correct moisture, pH and temperature, the painted trillium will die. We have never tried to propagate painted trillium for this reason, and if a nursery sells “nursery propagated” painted trilliums you can be 99 percent sure they are not.

TRILLIUM SEED DISPERSAL ECOLOGY

Whenever propagating and growing wildflowers from seed it is important to understand the ecology of the plant. Trillium fruits vary from species to species but generally the

fruit is succulent, fleshy, berry-like, often turning reddish or purple when ripe. The fruit appears eight to 12 weeks after the trillium finishes flowering. The fruit does not split; rather, the base of the fruit becomes pulpy or mushy, and the whole fruit falls to the ground. As the walls of the capsule further deteriorate, the seeds fall out in bunches.

Trillium seeds are myrmecochorous; that is, they are attractive to and dispersed by ants. Ants will go into feeding frenzies trying to obtain them, often opening the fruit before it is completely ripe in order to obtain its highly desirable food. The ants are after a fleshy appendage called the elaiosome. The elaiosome is creamy white and is fatty or oily. The seed coat is brown and firm. The whole seed is taken back to the ants’ tunnel, or sometimes the elaiosome is eaten by the ant on the way to the nest and the seed is discarded. If the seed is taken back to the nest, the elaiosome is consumed and the remaining seed is left in the tunnel as refuse.

TRILLIUM PROPAGATION

When the fruit has turned from green to a red/purple colour but is still attached to the plant, you may harvest it. After you have collected the ripe fruits and removed the seeds from inside, you must duplicate the conditioning process described above. To remove the elaiosome, soak the fresh trillium seed in 5 percent hydrogen peroxide (available at a drug store) for 15 minutes. You will see bubbling as the peroxide reacts with the chemicals in the elaiosome. Note: If the elaiosome is *not* removed by the peroxide, very poor germination results will be obtained. After 15 minutes, remove the seeds and place on moist paper towel, and place towel and seeds in a plastic bag. Leave the seeds in the bag for five days at room temperature. After five days, remove seeds from the bag and place them in a sieve; rub gently in the sieve under running water. Sterilize seeds again briefly in fresh hydrogen peroxide and plant.

In their book *Trilliums*, Fred and Roberta Case recommend planting the seed directly in the soil where they are to grow permanently. However, we have had good results planting into a clay pot sunken into the ground, sheltered and monitored. The form of shelter we have used successfully is a plywood cold frame. We place the pots right up against the

front edge of the structure so they are shaded from the sun. If you do not have access to a cold frame, the second option is to bury the pot in the ground where the trilliums will be grown. Whether you use a cold frame or not, it is important to cover the pots over with dead leaves for two winters since trillium seeds are double dormant. This means the seed requires two cold periods separated by a warm period to germinate. It is important not to remove the dead leaves from the pots too early – you want to keep the seeds moist while they are stratifying. Only remove the leaves from over the pots after the second winter before the growing season begins (in our area this is early April).

The second spring after planting, you will notice a curved, dark green single leaf, about ¼ inch in length, beginning April 15 to May 15 depending on the year and climate zone. Within a month, the single leaf will double in size and it may exist as a single leaf for two to four more growing seasons, increasing in size with each passing year. Crowding seems to play a role in the development of the trilliums, so thinning or planting only a few seeds per pot may decrease the development time. This is something we have very little experience with, however. Eventually, a one- or two-inch, three-leaved plant appears, which is an indication that a flowering plant is only a year or two away! In total it takes four to seven years to grow a mature plant from seed, because a large bulb must be produced, so patience is key.

ACKNOWLEDGMENTS

The book *Trilliums* (Portland, Oregon: Timber Press, 1997) by Fred and Roberta Case is an excellent source of information about growing trilliums from seed. We often consult *Growing Wildflowers* by Marie Sperka (New York: Scribners, 1973) whenever we are trying to fit new plants into our gardens.

Graham Buck is a land stewardship officer for the Nature Conservancy of Canada in Guelph, Ontario. Wayne Buck is a retired science teacher living in New Hamburg, Ontario. Both are avid wildflower gardeners and, to date, they maintain 15 different gardens and close to 300 species of wildflowers, shrubs and trees on a six-acre property in New Hamburg.

Cucumber Trees at NANPS' Shining Tree Woods

by John D. Ambrose

Cucumber tree (*Magnolia acuminata*) is Canada's only native magnolia; it's one of nine species of the genus magnolia native to North America. It is at its northern limits in Ontario's Carolinian Zone – that “banana belt” on the north shore of Lake Erie – where one can find other southern trees, such as Kentucky coffee tree, flowering dogwood, pin oak, big shellbark hickory and, yes, Michigan banana (otherwise known as pawpaw).

Cucumber tree is a minor forest tree with a natural range in eastern North America from Louisiana to Georgia in the south and New York to Ontario in the north. While widespread, the Nature Conservancy ranks it as imperiled (S1-S2) in four jurisdictions, including Ontario, and secure (S5) in only one state, North Carolina. The Committee on the Status of Endangered Wildlife in Canada (COSEWIC) ranked it as endangered in 1984, and this year the Ontario Ministry of Natural Resources has begun a recovery planning operation, after having completed the mapping of all known natural populations in Ontario.

It occurs in only two areas in its Ontario



PHOTOGRAPH BY LARRY LAMB

Cucumber tree flowers.

range, in the Niagara Region mostly west of Fonthill and in Norfolk County west of Simcoe. Together there are only 15 populations and only nine of these have sufficient numbers to be considered significant for recovery. In all the Ontario populations, only 226 cucumber trees and saplings are known.

One of the significant populations occurs in the North American Native Plant Society's reserve, Shining Tree Woods, in Houghton Township, Norfolk County. I had the opportunity to see this population of magnificent

trees last fall while completing an endangered species mapping project for the Ministry of Natural Resources. Twenty-three cucumber trees and saplings, plus a few seedlings, were located and mapped.

As is typical habitat for the species, the cucumber trees in Shining Tree Woods occur in a moist forest of undulating topography, with swampy areas of red maple in the depressions, and a diverse mix of more upland trees immediately adjacent to the cucumber trees, including beech, yellow birch, sugar maple, eastern hemlock and tulip tree. No doubt the forest supports a rich flora of spring ephemerals, dormant at the time of our visit. We did notice one special member of the ground flora just emerging to take photosynthetic advantage of the falling tree leaves: putty root (*Aplectrum hyemale*), a rare orchid, but not yet listed by COSEWIC.

John Ambrose is a botanist with over 25 years of experience working with Carolinian trees, first as Curator of the University of Guelph Arboretum, then Curator of Botany at the Toronto Zoo. He now works independently from Guelph, Ontario.

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Losing a Link?

The Fight to Save the Red Hill Valley

by Don McLean

It is a natural area four times the size of Toronto's High Park, and 50 percent larger than Stanley Park in Vancouver. Indeed, it may be the largest urban greenspace in Canada. But for the past 40 years, the official description of the Red Hill Valley in Hamilton, Ontario, has been "future expressway right-of-way."

Municipal officials see this 1600-acre natural area as "empty land" waiting to become the Red Hill Creek Expressway and provide a faster route to the QEW highway for Hamilton commuters. Despite 40 years of vigorous community opposition, the politicians and local Chamber of Commerce remain committed to the project.

The valley is the last natural link between the Niagara Escarpment and the Lake Ontario shoreline, and is recognized as a significant wildlife corridor, especially for migrating birds. A 1995 inventory directed by the Hamilton Naturalists' Club recorded 78 breeding bird species and 177 using the valley for either the spring or fall migration.

In the same study, a floral survey by Anthony Goodban identified 578 plant taxa. Seventy-four percent were native species, together representing 22 percent of the native flora of the province of Ontario. They include the nationally rare slender satin grass (*Muhlenbergia tenuiflora*) and green violet (*Hybanthus concolor*) as well as a provincially rare sedge, six species considered rare in the south-central part of Ontario and 14 more designated as rare in Hamilton (formerly Hamilton-Wentworth). This floral richness provides habitat to at least 47 species of butterflies.

The valley is completely surrounded by urban development. It was carved out by Red Hill Creek, a stream that drains about half the urbanized area of Hamilton and crosses the escarpment in a spectacular 40-metre waterfall known as Albion Falls. The creek has 24 species of fish, including spawning northern pike, rainbow trout and chinook salmon. These fish have caused much grief to pro-expressway Hamilton City Council, forcing it to obtain a permit from the federal fisheries department before proceeding with road construction plans. (The expressway route will

cross the creek 14 times in the space of four kilometres. To reduce bridge and culvert costs, the city plans to re-locate and re-construct 6.5 kilometres of the creek so the road will only cross it eight times.)

The requirement for a federal permit launched a federal environmental assessment of the expressway in May 1998. The initial screening identified the likelihood of "significant adverse environmental effects" that could not be mitigated. This bumped up the assessment to a formal Panel Review, the most comprehensive type of environmental assessment required by the federal government. Hamilton officials responded by refusing to cooperate, instead launching a court challenge. After spending two years and more than \$4 million, the city recently succeeded in obtaining a Federal Court decision forbidding the federal government from assessing the project. That ruling is now under appeal.

Local officials readily admit the expressway will require the removal of over 41,000 trees and will further compromise air quality for hundreds of residences near the valley. A health study commissioned by Hamilton's government noted that provincial air pollution standards will be violated and warned that children and the elderly should "not frequent the Red Hill Valley once the expressway has been completed."

In 1999, another Hamilton expressway study found a substantial population in the valley of southern flying squirrel, a nationally vulnerable species. Sixty squirrels, including 28 different individuals, were caught in seven nights of trapping. They join coyotes, fox, beaver and mink among the 25 confirmed mammal inhabitants of Red Hill Valley. Although the summary of the squirrel study leaked out, the full report has never been released, even to members of Hamilton council. The city's lawyers have declared it subject to "client-solicitor privilege."

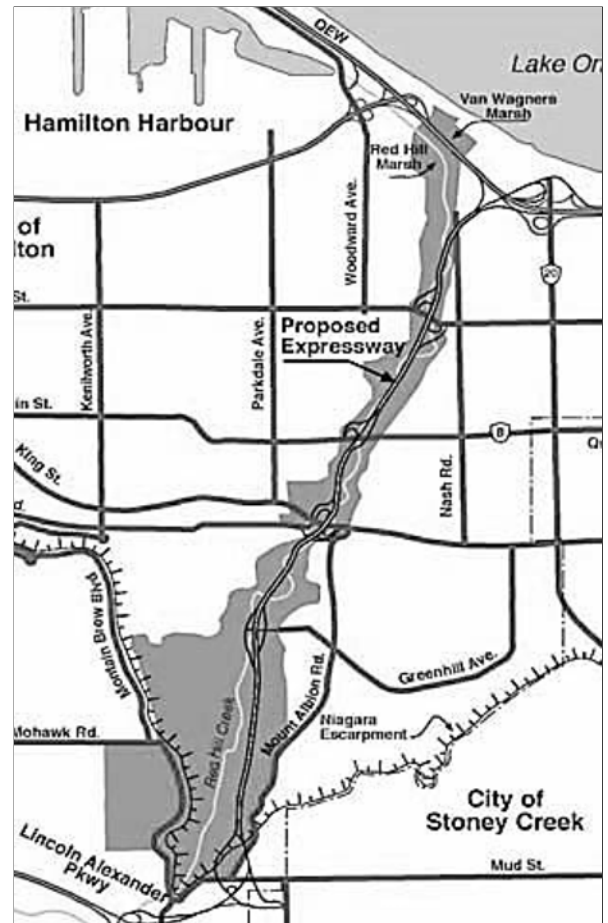
Despite the clear environmental



The rare flying squirrel, a species found in the Red Hill Valley in Hamilton, Ontario.

significance of this magnificent urban greenspace, the future of the threatened valley remains unclear. A 700-member citizens group called Friends of Red Hill Valley continues to fight the proposed expressway. For more information, visit their Website at www.hwcn.org/link/forhv/ or contact them by phone at (905) 381-0329.

Don McLean is a past chair of Friends of Red Hill Valley. He is a university lecturer in environmental studies and the Executive Director of Friends of the Don East, a Toronto-based organization.



Members' Questions

"I have a property with a septic system and I'm wondering what native species I can plant over the septic bed."

– a Bolton, Ontario, member

We asked Dan Kraus, a professional botanist for an ecological consulting firm in Guelph, Ontario, and the owner of Limestone Creek Wildflower Nursery (limestonecreek.ca) in Campbellville, Ontario, to respond:

The septic (or weeping) bed is a vital component of your septic system, allowing water treated in the septic tank to enter the soil where it evaporates or is transpired by vegetation. A septic bed is a series of relatively shallow (usually a minimum of 6 inches below the surface) underground perforated pipes set in gravel trenches that allows septic tank effluent to drain over a large area. Plants help your septic bed to function by removing moisture and nutrients from the soil and preventing erosion. While septic beds are typically planted in turf grass, wildflower beds and meadows can also be installed over the weeping tiles without impairing its function.



Wild bergamot.

The challenge of septic bed gardening is to find plants that will meet your landscape needs but not clog the drain pipes. Any roots that block or disrupt the pipes can seriously damage the septic bed. Native wildflowers offer a viable alternative to turf grass. The key to maintaining a properly functioning septic bed is to use shallow-rooted upland herbaceous species. If your septic bed is moist enough to support wetland species you've got problems. Wetland species can also have the ability to send roots into perforated pipes and clog up the system.

Many native meadow species do well on septic beds. Some good choices for septic plantings include the following: Canada anemone (*Anemone canadensis*); pussy-toes (*Antennaria neglecta*); New England aster (*Aster novae-angliae*) and other upland aster species; white snakeroot (*Eupatorium rugosum*); wild bergamot (*Monarda fistulosa*); Virginia mountain mint (*Pycnanthemum virginianum*); grey-headed coneflower (*Ratibida pinnata*); black-eyed Susan (*Rudbeckia hirta*); goldenrod (*Solidago*), upland species including Canada (*S. canadensis*), tall (*S. altissima*) and grey (*S. nemoralis*).

These species all tend to have shallow roots and are able to obtain all the moisture and nutrients they need in the top few inches of the soil. They also can develop large colonies and form a good ground cover, or can be planted in associations. Many other upland wildflowers and grasses can also be used, provided they typically have shallow roots. Some long-lived prairie species, such as prairie dock (*Silphium terebinthinaceum*), should probably be avoided as they have the ability to develop massive root systems.

As a rule, trees and shrubs should be kept out. Many species have roots systems that can invade septic tiles. While there are techniques for reducing root invasion (barriers, species selection, planting small shrubs between the pipes), the health of your septic system is too important to take the risk. The exception to this rule are low, creeping woody species that have shallow roots, such as running strawberry bush (*Euonymus obovata*), Virginia creeper (*Parthenocissus quinquefolia*), bunchberry (*Cornus canadensis*), bear-berry (*Arctostaphylos uva-ursi*) and partridge berry (*Mitchella repens*).

When planting on your septic bed be careful not to cultivate the soil too deeply and always wear gardening gloves when planting, weeding or doing other gardening activities that involve contact with the soil. This will protect you from direct contact with any harmful organisms that may be present in the soil. Maintenance of wildflower meadows on septic beds



Grey-headed coneflower, a native plant that grows well on septic beds.

is important to remove any woody plants that could invade the side. Once established, mowing every 1–2 years is usually sufficient.

As Erma Bombeck said "The grass is always greener over the septic tank" – for some obvious reasons wildflowers too can thrive when planted over the bed. There is something deeply satisfying in knowing that what is going into the system can end its journey as a diverse and beautiful wildflower meadow.

Please send your questions to editor@nanps.org, and we will try to answer them in future issues of *The Blazing Star*.

Did You Know?

The larvae of every species of butterfly in North America, except one, feed on plants. What is the exception?

Harvester (*Feniseca tarquinius*), whose caterpillars feed on woolly aphids.

Source: *Wetland Journal*, Vol. 12, No. 2, "Wetland-Dependent Butterflies of the Northeast" by Wade Wander and Sharon Ann Wander. For information about *Wetland Journal*, see www.wetland.org.



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New & Noted

The New England Wild Flower Society Guide to Growing and Propagating Wildflowers of the United States and Canada, by William Cullina, published by Houghton Mifflin, Boston, Massachusetts, 2000, hardcover, 322 pages, \$40 US (ISBN 0-395-96609-4)

William Cullina, nursery manager and propagator for the New England Wild Flower Society (NEWFS), is someone you can trust, wholeheartedly and without reservation. Not only because of his position with NEWFS (though the 100-year-old organization is a very trustworthy source), but also because he begins his book with a startlingly honest and disarming admission: “the more I learn, the less I know.” As a professional horticulturist, Cullina confesses to having killed more plants than most people will ever grow – in other words, this fellow knows what *doesn't* work, and this kind of knowledge through failure is as invaluable in a guide as a raft of triumphant successes.

Written for the novice and expert alike, this book is both a wonderful general introduction to native plant gardening and an encyclopedic treasure-trove of information about specific native plants. Cullina covers all the basics – from light and soil through to the floristic provinces of North America – in an easy-to-understand narrative style, anticipating the reader's questions and answering them with dispatch. The heart of the book is the alphabetic listing of native North American species – from *Aconitum* (monkshood) to *Zizia* (golden Alexanders) – which details zones, soil preferences, native range, size, colour, garden uses, period of bloom, wildlife value, propagation methods, and much more. Following the plant list is an excellent chapter on propagation, which will demystify this subject for even the most timid of gardeners, and appendixes of wildflowers for various conditions, sources of plants and seeds, a glossary, and list of North American native plant societies. Highly recommended.

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Gardening for the Future of the Earth, by Howard-Yana Shapiro and John Harrison, published by Bantam Books, New York, New York, 2000, paperback, 230 pages, \$19.95 US, \$29.95 CDN (ISBN 0-553-37533-4)

Rarely does a gardening book declare such an expansive vision: “The key to the future of the world lies in gardening . . . Gardening is a primary activity that connects us to the earth, upon which we depend for our survival. It is incumbent upon us to garden, and to do it to the best of our ability.” Amen. This is a book about gardening for change, about “creating gardens of the future based on preservation of biodiversity, establishing perennial sources of food, and strengthening the healing bond between humans and the earth.” Although not specifically about native plant gardening (focusing instead on food production), this book is grounded in a philosophy that offers much guidance and wisdom to native plant gardeners: observing and interpreting natural patterns; learning from nature's cycles; working in harmony with nature. This very practical book covers all the basics of sustainable gardening (soil, water, seed saving, design, etc.) with flair, vision and an infectious sense of urgency: “One individual with a digging fork and a small garden *can* make a difference.”

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Nature Out of Place: Biological Invasions in the Global Age, by Jason Van Driesche and Roy Van Driesche, published by Island Press, Washington, D.C., 2001, hardcover, 363 pages, \$29.95 US (ISBN 1-55963-757-9)

This book is a fine addition to the growing literature on the ecology and politics of invasive exotic species. The father and son writing team of Roy and Jason Van Driesche bring a blend of personal anecdote and scientific inquiry to their study of biological invasions, exploring the history and consequences of careless species introductions and offering a blueprint for action. Of particular interest to native plant enthusiasts is the chapter “Going Local: Personal Actions for a Native Planet,” which highlights the importance of native plants in the home landscape.

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Building Inside Nature's Envelope: How New Construction and Land Preservation Can Work Together, by Andy Wasowski with Sally Wasowski, published by Oxford University Press, New York, 2000, hardcover, 152 pages, \$44 CDN, \$27.50 US (ISBN 0-19-513176-2)

While on a visit to the Lady Bird Johnson Wildflower Center in Austin, Texas, I was intrigued to see pricetags on trees near the main building. One was marked \$25,000. This represented the fee the contractor would be charged if the tree were damaged during construction.

Placing an economic value on native vegetation is one way to ensure that builders are alert to ecological considerations during construction, as Andy Wasowski argues, effectively and convincingly, in his visionary book *Building Inside Nature's Envelope*. Of interest to anyone in the fields of architecture, landscaping, urban planning or construction, this book should be required reading for people planning a new building project. While its message is simple – we should build new structures in a way that minimizes impact on natural features of the land – the book's practical advice and inspiring examples could in fact transform the face of North America if more people followed its tenets.

Of particular interest and value are the numerous photographs and case studies that show new buildings looking as if they had always been where they are, so effectively do they nestle into the mature landscapes that were protected by the “nature's envelope” concept. Addressing concerns head-on, Wasowski shows that limiting construction activities to a 5- to 15-foot “zone” around the house, transplanting native vegetation and preserving as much of the natural habitat as possible do not have to be more expensive and more difficult than traditional construction methods: “Obviously, you can't build a house without altering the landscape significantly. The idea here is simply to save as much of the prime vegetation – and topography – as possible, while still getting the house you have in mind.”

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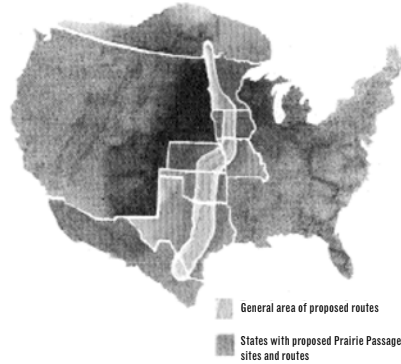
Reviews by Lorraine Johnson

In the News

Although the excellent newsletter *Butterfly Gardeners' Quarterly* has ceased publication, there are many back issues available for \$2.50 us each (prepaid) from the publisher. Articles cover a broad range of topics, from regional native plants (#14, Fall 1997) to night gardens for moths (#17, Summer 1998) to native bees (#27, Winter 2000–2001). For more information, write P.O. Box 30931, Seattle, WA 98103; skipper@scn.org; www.butterflygardeners.com.



The creation of a national (us) prairie wildflower route between the North Star State (Minnesota) and the Lone Star State (Texas) was first proposed in the early 1980s, inspired by Mrs. Lyndon Johnson's highway beautification efforts and the interest in the Midwest in protecting remnant prairies along highways and railroad rights-of-way. The project, called Prairie Passage, is gaining momentum and spreading like prairie wildfire. The vision is to create a network of signed routes and to



Prairie Passage: a route to rediscovering the North American prairie

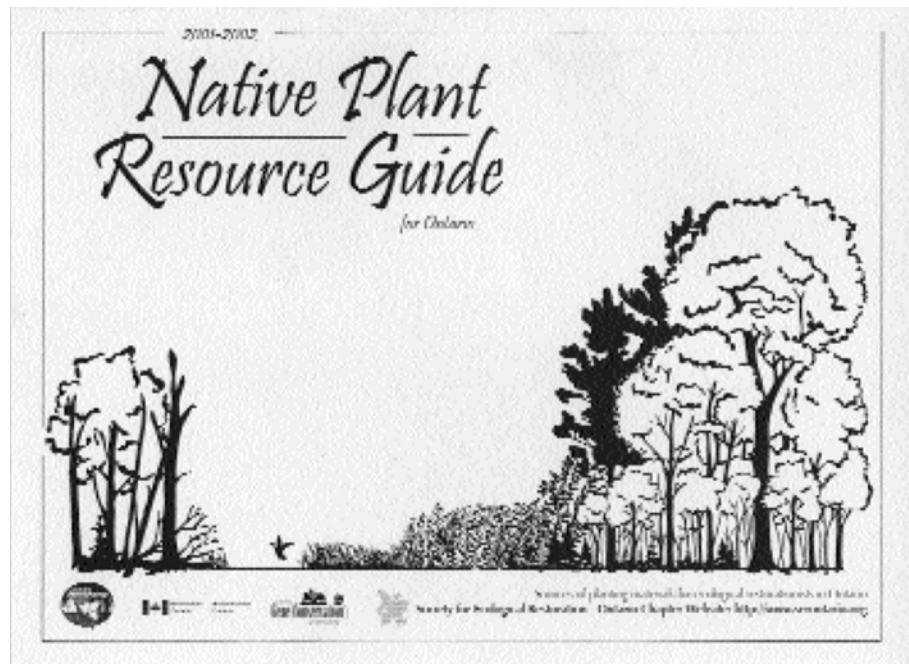
designate protected prairie-related natural areas and cultural and historic sites across the North American prairie – from Canada to Mexico. Protection, restoration and education are the three guiding principles of the project, with the ultimate goal of promoting increased appreciation and understanding of the prairie landscape. At present, the following states and provinces are partners in Prairie Passage: Iowa, Kansas, Manitoba, Minnesota, Missouri, Oklahoma and Texas. For more information, contact Kathy Bolin, Prairie Passage Coordinator/Minnesota, (651) 284-3765; kathy.bolin@dot.state.mn.us.



The Ontario Invasive Plants Working Group, whose aim is to develop and support the implementation of a strategic plan for managing invasive plants in southern Ontario, recently released a comprehensive document called *Sustaining Biodiversity*. The report is a call to action, complete with background information, a summary of goals and objectives, detailed strategies and actions to prevent the broad-scale loss of native biodiversity resulting from the spread of invasive plants and to aid in the restoration of ecosystem health. A diverse group of ecologists, restorationists and land managers developed the plan with the support of City of Toronto Forestry Services. The Society for Ecological Restoration (SER) Ontario will oversee and coordinate implementation and monitoring. *Sustaining Biodiversity: A Strategic Plan for Managing Invasive Plants in Southern Ontario* is available from The City Forester's Office, City of Toronto, Parks & Recreation, 21st Floor, East Tower, City Hall, Toronto, Ontario M5H 2N2; or visit the SER Ontario Website at <http://www.trentu.ca/ser>.

Looking For Sources of Native Plants?

The Ontario Chapter of the Society for Ecological Restoration (SER) and the Forest Gene Conservation Association (FGCA) has compiled a comprehensive directory that lists over 60 native plant materials suppliers for Ontario. The 40 page "2001–2002 Native Plant Resource Guide for Ontario" will help you to find appropriate sources of seeds or plants for your ecological restoration or natural landscaping projects. Also included in the directory is information on the important steps to successful planning, establishment, and maintenance of native plantings, as well as questions you should ask suppliers to ensure you buy only source identified planting materials that are suited to your local climate and from sites as similar to your planting site as possible.



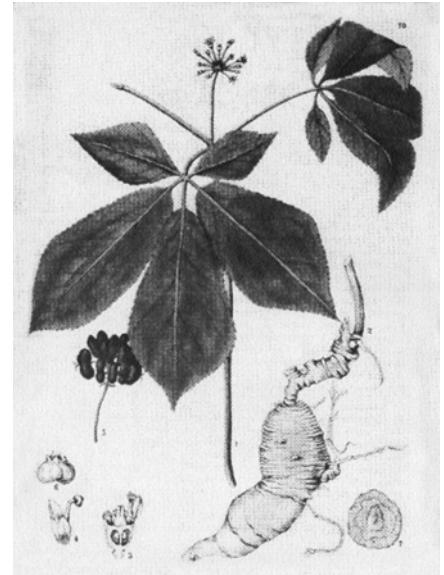
To order your copy of the directory, call the Ontario Ministry of Natural Resources Information Centre at 1-800-667-1940. Copies are available for \$5.00 a copy including Priority Post shipping and handling. Please have your Mastercard or Visa card ready when ordering. SER-Ontario plans to update the directory again in the year 2003.

Wild Collection: A Harmful Practice

Ethical Gardener's Guidelines

Regardless of where you live and garden, you can ensure that your activities do not harm native plant communities in the wild by following NANPS' Ethical Gardener's Guidelines:

1. Do not disrupt native plant communities.
2. Obtain native plants from seed, garden or nursery.
3. Buy only wildflowers and ferns certified by the vendors as "Nursery Propagated."
4. Use plants and seeds that have originated in your immediate bioregion. Such plants and seeds are best adapted to the local climate, soil, predators, pollinators and disease.
5. Give preference to bioregionally native plant species in your garden, rather than naturalized or exotic species. The latter group may escape to wild habitats and interfere with the growth and spread of native flora and fauna.
6. Promote the cultivation and propagation of bioregionally native plants as an educational and conservation measure to supplement the preservation of natural habitat.
7. Keep accurate records of any bioregionally rare flora which you are growing to increase our understanding of the biology of the species.
8. Transplant wild native flora only when the plants of a given area are officially slated for destruction (e.g., road construction, subdivisions, pipelines, golf courses, etc.). Obtain permission before transplanting.
9. Collect no more than 10% of a seed crop from the wild. Leave the rest for natural dispersal and as food for dependent organisms.
10. Use natural means of fertilizing, weed and predator control rather than synthetic chemical means.
11. Consider planting native species attractive to native fauna, especially birds, butterflies and moths uncommon to your bioregion.
12. Exercise extreme caution when studying and photographing wildflowers in order not to damage the surrounding flora and fauna.
13. Co-operate with institutions like: arboreta, botanical gardens, museums and universities in the propagation and study of rare species.
14. Openly share your botanical knowledge with the public but ensure that native plant species or communities will not be damaged in the process.



Populations of American ginseng (*Panax quinquefolium*) have been severely depleted by wild collection. Its roots are highly prized in herbal medicine.



Over-harvesting of goldenseal (*Hydrastis canadensis*) from the wild has contributed to its current rarity. The roots are used in herbal medications.

The co-owner of a native plant nursery in southwestern Ontario wrote to NANPS about finding shrubs in local wild areas marked with small pieces of red flagging tape. He suspects that the markers are there to identify the shrubs for wild collection. In a brilliant manoeuvre meant to foil such unethical behaviour, he simply moves the flagging tape to poison ivy.

Ontario consumers who want to give their plant-purchasing dollars to native plant nurseries that follow ethical practices now have a great resource: the 2001–2002 *Native Plant Resource Guide for Ontario* (available for \$2.50 a copy, plus \$2.50 for shipping, by calling 1-800-667-1940). The guide highlights native plant nurseries that indicated to the Society for Ecological Restoration – Ontario Chapter that they follow SER's Native Plant Material Suppliers Guidelines, which ensure that information about a plant's source is available to consumers and that plants are produced from seed or cuttings whose collection did not disrupt natural plant communities. (See advertisement on page 8.)

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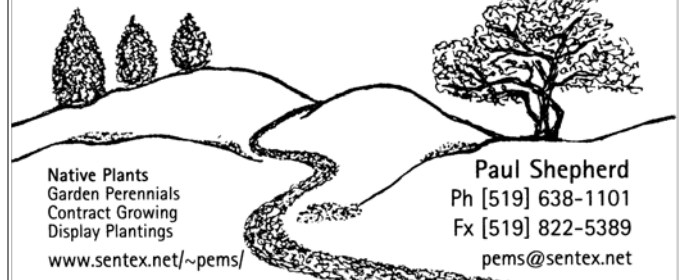
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Green Links

by *Valentin Schaefer*

The red-winged blackbirds (*Agelaius phoeniceus*) scolded as I took pictures of shrubs along a swale between two playing fields at a park in Coquitlam, B.C. They and their young were feeding. I was taking photographs after we had planted the swale, which, just three years previously, had been only grass and low rushes. Now, the swale is a thriving plant community supporting birds and wildlife. And it's an example of what the Green Links project is all about.

As a city establishes itself, it destroys large areas of native vegetation. Some fragments remain, however, in parks and other green spaces, and these can be connected to function as larger units that will support larger numbers of species. The benefits of this "connectivity" increase proportionally with the numbers and sizes of the fragments connected, and with the degree to which the biodiversity in the corridors approximates the biodiversity in the green spaces. Linked fragments create larger species population sizes, larger foodwebs and reduce inbreeding of species lacking mobility between fragments, preventing local extinctions of native plants and animals.

THE GREEN LINKS PROJECT

Greater Vancouver is located at the mouth of the Fraser River on the Strait of Georgia in British Columbia. It is a major stopover point on the Pacific Flyway for migrating birds along the coasts of North and South America. It is also on the gateway of the world's largest salmon run.

The Douglas College Centre for Environmental Studies and Urban Ecology, based in New Westminster, B.C., undertook its Green Links Project in 1996 to counteract habitat fragmentation. The project establishes links between greenspaces, enabling the islands of natural vegetation within the urban matrix to function as larger wildlife reserves.

PLANTING NATIVE VEGETATION

A major activity of Green Links is to plant native vegetation in strategic areas to strengthen connectivity. We developed a list of about 30 suitable species chosen for their growing requirements and their value to birds



PHOTOGRAPH COURTESY VALENTIN SCHAEFER

and butterflies. The species include: Nootka rose (*Rosa nutkana*), red osier dogwood (*Cornus stolonifera*), salmonberry (*Rubus spectabilis*), salal (*Gaultheria shallon*), lady fern (*Athyrium filix-femina*), highbush blueberry (*Vaccinium corymbosum*), beaked hazelnut (*Corylus cornuta*), kinnikinnick (*Arctostaphylos uva-ursi*), spurred lupine (*Lupinus laxiflorus*), red columbine (*Aquilegia formosa*), yarrow (*Achillea millefolium*), western trumpet honeysuckle (*Lonicera ciliosa*) and nodding onion (*Allium cernuum*).

We plant perennials and shrubs in utility rights-of-way that weave high-voltage transmission lines and high-pressure gas pipelines through the city. They are ideal locations because they have soil (not to be taken for granted in a city), they will not be developed and they invariably connect several large green spaces. Although the corridors are usually already green, their biodiversity is low and often needs improvement.

We also help create backyard habitat strategically located between green spaces. Backyards represent significant amounts of habitat when each small contribution is considered as a collective whole (100 square metres/yard x 1,000 yards = 1 hectare of habitat). In addition to offering workshops on backyard habitat, we conduct an annual contest, the Backyard Habitat Enhancement Challenge, which includes a balcony category for people in apartments. We initially judge from photographs but then we visit the yards or balconies of winners to verify their work.

Finally, we plant riparian areas. We have numerous salmon streams in Greater Vancouver and the riparian zones are protected by the Fisheries Act. Our planting activities along

The Green Links project helps heal fragmented habitats and nurtures an environmental ethic in community participants.

streambanks have many environmental benefits, such as helping to prevent erosion.

NATIVE PLANT PROPAGATION PROGRAM

Getting affordable native plant stock in large quantities is a problem. We buy a lot of stock from local suppliers, some we salvage and some is donated to us. Four years ago we started to grow our own plants from seeds and cuttings with local high schools through their Environmental Science curriculum or as a project of their Environment Club. Six schools have participated so far.

REMOVING INVASIVES

Along with planting native vegetation, we try to protect existing native vegetation from alien species. The problem is immense but we work in some small areas to control Himalayan blackberry (*Rubus discolor*), Scotch broom (*Cytisus scoparius*) and purple loosestrife (*Lythrum salicaria*).

PUBLIC WORKSHOPS

When restoring habitat in an urban area we sometimes use a "prop" to recreate natural features. A bird box replaces a snag (a dead standing tree) that would be used by a hole-nesting bird; a bat box replaces loose bark. Other examples are butterfly boxes and bee blocks. We offer workshops to the community on the value of urban biodiversity and tie it into the building of one of these "props." We also do presentations on lifestyle changes that support urban biodiversity (composting, recycling) and we lead nature walks.

MURALS AND CONTESTS

Murals and contests are the artistic part of our work to influence values. Some schools we work with do not have the space or funding to dig up asphalt for native vegetation. They do, however, have large exterior walls that can be used as a "canvas." In these situations we have worked with the students, parents and teachers to develop a mural – representing endangered species, water, west coast ecosystems, etc. – with the whole school getting involved, 400 to 500 children for one project.

We also sponsor contests, including photography, posters or writing, with themes

such as "Wild City" or "Earth Connections." The winners have their work displayed at an annual exhibit for Green Links at the Amelia Douglas Gallery in Vancouver, some is reprinted in our quarterly newsletter and some is put on our Website.

Green Links takes a holistic approach. Since 1996, we have planted 28,000 native plants with 4,500 community participants, made presentations to 8,800 students in schools and 2,800 people at events, had 3,200 people build bird and bat boxes, had 4,700 plants salvaged or donated, successfully raised about 2,000 plants through our native plant propagation program, created 14 nature murals and had about 1,000 contest participants. With native plants as a focal point, Green Links has done much to establish connectivity and increase urban biodiversity in the Vancouver area.

RESOURCES

There are many books and brochures available through bookstores on creating wildlife habitat in gardens – bird gardens, hummingbird gardens, butterfly gardens, wildlife gardens, etc. Green Links uses *Naturescape BC: Caring for Wildlife Habitat at Home*, available as a free download from www.stewardship-centre.org (on menus select: Stewardship Series, Naturescape). The Naturescape BC program is sensitive to the species-specific water and shade requirements of native vegetation. The general approach is applicable everywhere, but the native plants Naturescape BC recommends are Pacific Northwest species. Other recommended resources are: Canadian Wildlife Federation. 1999. *Backyard Habitat for Canada's Wildlife*. Ottawa, Ontario: Canadian Wildlife Federation. Krukeberg, Arthur. 1996. *Gardening with Native Plants of the Pacific Northwest*. Seattle, Washington: University of Washington Press. Link, Russel. . *Landscaping for Wildlife in the Pacific Northwest*. Seattle, Washington: University of Washington Press. Merilees, Bill. 2000. *Attracting Backyard Wildlife*. Vancouver, British Columbia: Whitecap. Naturescape Alberta (www.naturescape.ab.ca)

Dr. Valentin Schaefer, R.P.Bio, is the Executive Director of the Douglas College Centre for Environmental Studies and Urban Ecology. A past president of the Vancouver Natural History Society, he has been studying and promoting nature in the city for 15 years.

Directory of Sources and Services

OTTER VALLEY NATIVE PLANTS

Native Plants for naturalizing, restoration, and home gardens; meadow, prairie and woodland species, a limited selection of vines and shrubs. Contract growing, consultation and design. Gail Rhynard, Box 31, R.R.#1, Eden, Ont. N0J 1H0. Ph. 519-866-5639, fax 519-866-5640; e-mail otterva@kanservu.ca

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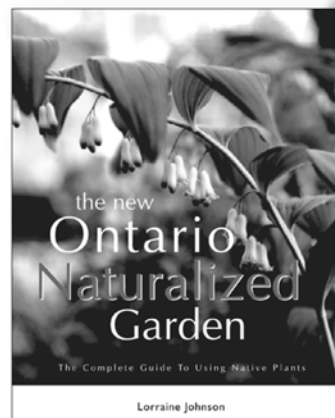
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Education Corner

The following information is presented by the NANPS Education Committee (Sarah Augustine, Donna McGlone, Daisy Moore and Cora Thomson). "Education Corner" will be a regular feature in *The Blazing Star*.

THE BLAZING QUESTION

There is an invasive, non-native weed in Southern Ontario that produces a silique. What is a silique and what invasive plant produces it?

(Answer at bottom of page)

DROUGHT-TOLERANT PLANTS

Many native prairie plants are drought tolerant. May we suggest:

For the smaller garden in the northeast:

Grey headed coneflower (*Ratibida pinnata*)

Sand bank sedge (*Carex siccata*)

Harebell (*Campanula rotundifolia*)

For the medium-sized garden:

Black-eyed Susan (*Rudbeckia hirta*)

Showy tick trefoil (*Desmodium canadense*)

Little Bluestem (*Schizachyrium scoparium*)

For the larger garden:

Compass plant (*Silphium laciniatum*)

Indian grass (*Sorghastrum nutans*)

Heath aster (*Aster ericoides*) or New

England aster (*Aster novae-angliae*)

PEST MONITORING

The Ontario Ministry of Agriculture and Rural Affairs (OMAFRA) sponsors a Hotline phone information service @ 1-888-290-4441. It provides a weekly update on pest problems in the region and the best control measures. For those outside of the Ontario region, check with your local agricultural office for your local services.

The flowering of trees and shrubs is used as an indicator for the stage and emergence of insects and diseases. This is called phenology.

Answer to The Blazing Question: A silique is a dry dehiscent fruit (seed capsule) that is longer than it is wide. It is characteristic of the cabbage or cruciferae family. Garlic mustard (*Alliaria petiolata*) is a highly invasive non-native weed that produces a silique. It spreads mostly by seed, indicating that it is a highly successful plant characteristic.

Calendar of Events

August 14–15, 2001

INVASIVE PLANT CONFERENCE

Swarthmore College, Swarthmore, PA

This third Mid-Atlantic conference on invasive exotic plants brings together experts from the research front, the green industry, policy, funding, and education. For more information, contact the Morris Arboretum, 215-247-5777, x 156.

August 21, 2001

MOTH NIGHT WALK

High Park, Toronto, Ontario

Meet at 8 p.m. at the benches just south of Grenadier Cafe. Call (416) 392-1748.

September 8, 2001

FERNS OF THE BRUCE ESCARPMENT

Owen Sound, Ontario

Join experts Nels and Jean Mahar to explore the dolomite cliffs of the Niagara Escarpment and find many species of ferns. Call (705) 526-7809; www.wyemarsh.com.

September 25, 2001

GROWING NATIVE PLANTS FROM SEEDS

Guelph Arboretum, Guelph, Ontario

Join popular workshop leader Henry Kock for a full day studying propagation. Call (519) 824-4120, x 4110.

October 4–6, 2001

SER CONFERENCE

Niagara Falls, Ontario

The 13th annual Society for Ecological Restoration conference includes excellent speakers, field trips, workshops and special events. Theme is "Restoration Across Borders." Contact SER2001@niagara.on.ca.

October 12, 2001

WILDLIFE PRESERVATION TRUST CANADA AUCTION

Toronto, Ontario

Wildlife Preservation Trust Canada, established by late author and naturalist Gerald Durrell, is holding a dinner and auction with featured speaker Heather Felskie, Director of the Saskatchewan Burrowing Owl Interpretive Centre. Bob McDonald, of CBC Radio's *Quirks and Quarks*, will be Master of Ceremonies, and a live burrowing owl will be in attendance. For tickets and information, contact 1-800-956-6608; www.wptc.org.

Native Plant Gardeners' Fight Continues



PHOTOGRAPH BY DOUGLAS COUNTER

In the Spring 2001 *Blazing Star*, we reported that the City of Toronto was threatening to destroy a native plant garden planted by Douglas Counter in his ditch to reduce stormwater runoff. Counter's infiltration garden (see photo), on city-owned property, contains more than 40 native plant species, including six rare species. The Canadian

Environmental Defence Fund (CEDF) is providing Counter (a NANPS Board member) with legal assistance in his fight against the city. To make a donation to the Georgi Counter Memorial Garden Fund, call Michelle Campbell of the CEDF at (416) 323-9521. To learn more about this story, see the NANPS Website (www.nanps.org).