

# The Blazing Star



NEWSLETTER OF THE NORTH AMERICAN NATIVE PLANT SOCIETY

## Native Plant to Know

# Sweetgrass (*Hierochloa odorata*)

by Linda and Ken Parker

This Ontario native perennial grass has significant ties to Native North American or First Nation culture. Natives of the Great Plains believe it was the first plant to cover Mother Earth. The Anishinabe Natives believe it is a purifier, and burn sweetgrass before all ceremonies. It is a reminder to respect the earth and all things it provides.

### NEED-TO-KNOWS:

- Spreads by rhizomes and consequently can be aggressive once established. Sweetgrass likes year-round moisture, moist to wet sandy loam and full sun. Produces seed in early spring.
- The wide-bladed grass reaches about ten inches in height before extending back to Mother Earth. Sweetgrass averages three feet long (as opposed to high).
- Western Natives use sweetgrass to “smudge” – it is burned much like incense and is believed to bring about a spiritual cleansing.
- Natives usually braid sweetgrass for two reasons: to increase its strength and



- because each piece of the braid is said to signify the Mind, the Body and the Spirit.
- In its dried form, sweetgrass is very aromatic. Iroquois people use sweetgrass in basketry and crafts.

- Harvesting sweetgrass is a simple process. Cut your grass in early to late summer at the desired length (do not pull it out by the roots). Hang out of the sun to dry for at least three days.
- To make braids, simply place the dried sweetgrass in warm water for a few minutes, braid and hang out of the sun to dry.
- Sweetgrass seeds do not need stratification. To start your seeds indoors, keep soil evenly moist and place pots near a sunny window. Cover the precious seed with no more than one quarter of an inch of soil. Be patient! Sweetgrass takes four to six weeks for germination to occur, with only 10-30% germination success. Store surplus seeds in a cool, dry place.

Linda and Ken Parker own North America's first Native-run native plant nursery, Sweet Grass Gardens, on the Six Nations Indian Reserve near Brantford, Ontario. They sell *Hierochloa odorata* seeds and plants. For more information, contact Sweet Grass Gardens at R.R.6, Hagersville, Ontario NOA 1H0; (519) 445-4828; [www.sweetgrassgardens.com](http://www.sweetgrassgardens.com); [info@sweetgrassgardens.com](mailto:info@sweetgrassgardens.com).

## THE BLAZING STAR IS...

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## NANPS News

We would like to thank all the volunteers who staffed the NANPS booth at Canada Blooms, in Toronto, March 14–18, 2001. Our volunteers' enthusiasm and knowledge helped make this a very successful event for NANPS. So, thanks to: Sarah Augustine, Dagmar Baur, Catherine Crockett, Griff Cunningham, Deborah Dale, Joan Forman, Eugene Furgiuele, Evelyne Gharibian, Cathy Hayes, Carole Howlett, Jean Johnson, Lorraine Johnson, Shirley Joy, Bill Kilburn, Olga Lesnenko, Suzanne Lew, Betty Lloyd, Heather Matthews, Donna McGlone, John McGlone, Trish Murphy, Barb O'Malley, Sean Stuckless, Erika Thimm, Cora Thompson and Judy Zinni.

Many visitors to the show raved about the

wonderful display garden in our booth.

Designed by Trish Murphy, with assistance from Catherine Crockett and Erika Thimm, the garden featured a two-level pond surrounded by native woodland plants such as Virginia bluebells, hepatica, bellwort, common wood sedge, white bear sedge, sensitive fern, cedars and red-twig dogwoods. Wetland plants included cardinal flower, tussuck sedge and blue flag iris. All the plants were grown by volunteers from seed, cuttings or divisions. For their contributions to the NANPS display garden, we thank Tom Thompson, Richard Woolger, Deborah Dale, Colin Hinz, Mike and Alex Fortais, Catherine Crockett, Erika Thimm and Trish Murphy.



The NANPS display garden at Canada Blooms showed visitors that it's possible to create a landscape of beauty and diversity in a small space using native plants.

NANPS would like to thank Toronto Councillor Irene Jones (Etobicoke-Lakeshore), who sponsored our application for meeting-room space at the North York Civic Centre for our monthly Board meetings.



Thanks to the numerous generous members who sent donations to assist with the increased postal rates and allowed us to hold membership fees at the low rate of \$10.

## Toronto Native Plant Garden Under Attack

The City of Toronto is threatening to destroy an important part of an environmentally significant meditation garden created by Toronto, Ontario, gardener Douglas Counter in memory of his late mother. The garden contains more than 40 native plant species, including six rare species. The reason for the city's threat? The infiltration garden, which Counter created in the ditch to reduce stormwater runoff, is on city-owned property.

The city ordered Counter to obtain a costly encroachment permit and pay an exorbitant annual fee to keep his ditch garden. Failure to do so will result in the *destruction of more than 300 native plants* that filter stormwater

runoff and provide habitat for numerous butterfly species. In the past, homeowners could grow flowers on their portion of the road allowance without a permit.

The Canadian Environmental Defence Fund (CEDF), a national charitable organization dedicated to helping citizens gain access to environmental justice, is providing Counter with legal assistance in his fight against the City of Toronto.

Douglas Counter is hosting a "Garage Sale for Home and Garden" as a fundraiser for the CEDF in Toronto on Saturday, June 23, 2001 from 10:00 am–4:00 pm (see Classified Ad on page 9 for details).

# Another Yard for the Don

Our gardens have a direct impact on the health of the environment—and, in particular, on the rivers and streams that flow through our communities. In the spring of 2000, the North American Native Plant Society joined forces with a Toronto-based group, Friends of the Don East, to support their program Another Yard for the Don. This innovative project offers awards to gardeners in the Don River watershed who landscape their yards using ecological principles. Examples of key principles recognized through the award include: water conservation, recycling and composting, habitat restoration and wildlife attraction, organic maintenance practices and use of native plants.

By applying ecological principles in our yards, we can improve water quality, complement existing wild native plant communities and support wildlife populations—one yard at a time.

We congratulate the following Gold-category winners in the Another Yard for the Don project – and invite everyone in the Don River watershed in Toronto to consider nominating

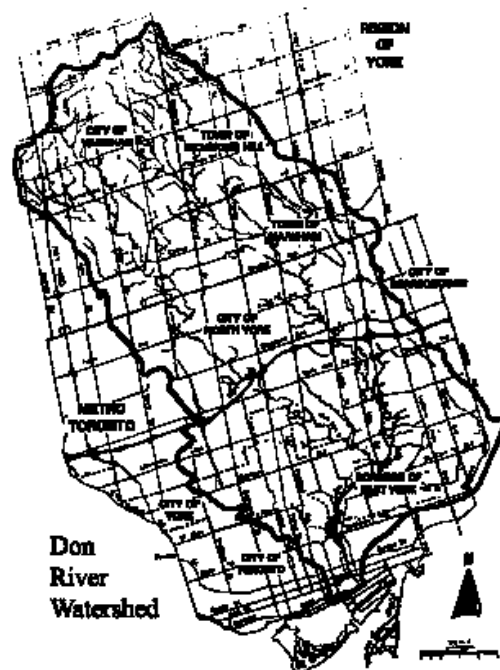
an ecological garden for the 2001 project. (You can nominate your own yard or someone else's.) For a nomination form, or more information about FODE and Another Yard for the Don, write FODE, Leaside Post Office, P.O. Box 43506, Toronto, Ontario M4G 4G8, or phone (416) 410-7153.

## **GOLD WINNERS IN THE 2000 ANOTHER YARD FOR THE DON PROJECT:**

Linda and Tom Atkinson; Marilyn Brebner; Kevin Kavanagh; Sandy and Anna Leggatt; Terra Martin; Sue McClelland; Teri Morrow; Gwyneth Norton-Wilks; Terrell Wong; Dagmar Baur, Bain Street Co-op.

Congratulations, too, to the Silver and First Yard winners.

The following two articles were written by Gold Award winners, and tell the stories of their gardens.



## **An Oasis in the City**

by *Suzanne Lew*

I have spent all winter looking out my window and dreaming of my garden. I cannot wait to spend every spare second out there, with the smells and sounds of nature all around me.

This will be my third summer in my house, yet I feel as if this garden has been part of me for much longer. When we moved in, there was about two feet of snow on the ground and I had no idea what spring would bring... Well, what a pleasant surprise!

I was excited to see that there would be no grass to maintain. I have always felt that gardening should be done *with* nature and not a

fight against it. So, I was happy to see that I would not need to be spraying, fertilizing and using a noisy lawnmower.

As the season moved along, I was greeted by a lot more garden treats. I soon found myself outdoors at every possible moment, consulting gardening books for names of perennials and shrubs. I was lucky that the previous owners had made a seating area at the back of the garden, so I could sit there undetected and watch the birds come to the feeder.

I soon realized that I wanted to add more plants to attract more birds, butterflies and "good" insects to the garden. I planted milkweed and a butterfly bush for the butterflies and was amazed at the results. Numerous

roses also bought with them large numbers of caterpillars, which very rapidly began eating the roses. I became a woman possessed and would be out for ages, handpicking and squashing them. I did not want to use any pesticide or chemicals as I was finally seeing ladybugs, which had taken up residence in the aphid-infested plants.

Even though the garden was equipped with a soaker hose, I decided not to waste water. I purchased a rain barrel and disconnected the downspout. I stopped buying annuals and plants that required large amounts of water, and was amazed at how little I needed to water the garden. I also added a composter,

*Continued on page 4*

### **Spring 2001 NANPS Plant Sale**

Saturday, May 12, 2001 10 am – 4 pm Civic Garden Centre, 777 Lawrence Avenue East (at Leslie Street), North York, Ontario  
Spring woodland flowers, summer meadow flowers, wetland plants, vines, sedges, ferns, shrubs and trees. Hundreds of species, thousands of plants.

For information or to donate plants, please call NANPS at (416) 680-6280.



Suzanne Lew's garden.

which to my delight was not nearly as much work as I thought it would be. Whenever I plant, I am able to help myself to some of nature's gold.

After all my reading, I decided that native plants would be perfect for my new plans. They don't require chemical fertilizing, spraying or huge amounts of care once established. I liked the idea that they would be hardy and would attract a lot of wildlife to the garden. After winning a gold award through the Another Yard for the Don contest, I was thrilled. The prize included a gift certificate for the North American Native Plant Society's spring plant sale, and I shopped like crazy, buying many new plants to begin the transformation.

I arrived home with my arms full of weird and wonderful plants. I planted ironweed, culver's root, bergamot and goldenrod (much

to my neighbours' surprise!).

I discovered that some of my existing plants were native, so added to them – more coreopsis, rudbeckia, columbine, obedient plants and native clematis. I don't think that you can ever have too many plants or that your garden is ever complete.

So, after a long winter, I look forward to the warm months spent outdoors in my own little oasis in the city. I consider this my cottage without the traveling. On the weekend, my husband and I relax in our "cottage garden" surrounded by the birds who come for a snack at the feeder and the butterflies who keep us amazed by their beauty. We watch this, happy with the thought that they use our garden as their own oasis, too.

*Suzanne Lew is a graduate of Humber College's Landscape Program. She enjoys spending her days*

## A Garden on the Move

by Kevin Kavanagh

It was in February and March eight years ago that my partner and I were house hunting – or, more accurately put, yard hunting. I think it was the first time our real-estate agent had been handed a list of desirable neighbourhoods based on soil type, let alone a set of other preferred conditions for the backyard – south facing, established trees, etc.

We had been renting a house and filling up its backyard with botanical treasures. In January 1994, we got the hint from our landlord that we would soon be receiving notice to move out. Our landlord also requested that before we leave, we put the backyard back into grass. So in addition to ourselves, we had to find a suitable home for about 250 plants ranging in size from delicate ferns and trilliums to small trees.

We succeeded in finding a home with a south-facing backyard and a few small trees, but despite being in the right soil "neighbourhood," our house just happened to be in a slightly lower spot (a former wetland), and the two feet of snow on the ground the day we purchased the property in March hid that condition from view. Instead of sandy loam, we landed on a small patch of silty clay – an anomaly too small for the soil maps to have

detected. So when we toured the backyard after the snow had melted, we were rather dismayed, but not too surprised, to find it kind of soggy. Not the best conditions for my growing collection of rhododendrons (which require well-drained, loose soils) and acid loving bog plants!

Recognizing that the yard was going to take a lot of conditioning to prepare it for our botanical arrivals, we decided to take possession of the house on June 1<sup>st</sup>, which would give us a month's overlap with the other house before we had to leave. With vacation time booked, friends lined up to help and a pick-up truck loaned to us, the most challenging month of our gardening lives began.

For starters, June is not the ideal month to transplant (unless you are buying container stock from a nursery). Plants are growing quickly and don't like being interrupted, and with the first heat of the summer settling in, watering becomes critical for re-establishment.

Our first task was to confirm an overall design (which we had begun ahead of time), then begin organizing the garden into different "beds." This was particularly important because we needed to build up some well-drained, organic-rich beds for the acid-loving plants, a lower spot for the bog plants and confirm the best places to put the shady woodland species. We spent about 10 days implementing our new design for the backyard – a yard that was 90% grass and 10% old construction debris.

By mid-June we were ready to start moving the garden. We tried to use the cooler evenings to dig up material, give plants water, then truck them off to the new garden for an early morning transplant. We would then water everything in and return to start digging up more plants. We moved furniture late at night. Needless to say, our new neighbours were not quite sure what to make of this. Our new neighbour's four-year-old son (who was

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PHOTOGRAPH COURTESY KEVIN KAVANAGH

Kevin Kavanagh's garden contains more than 250 species of native plants, including an amazing collection of trees and shrubs such as sweet bay, fringe tree, bald cypress, umbrella magnolia, pawpaw, Carolina silverbell, Labrador tea, redbud, inkberry holly, sourwood, dwarf hackberry, shingle oak, American holly, shining sumac, rosebay rhododendron and flame azalea.

always in bed by the time the furniture arrived) finally got up the courage to ask us one day if all we owned were plants – and what were we going to do about living in the house?

As the last week arrived, we could see that we were falling behind schedule. A heat wave had forced us to spend more time watering the transplants just to keep them alive. An unexpected hailstorm had tattered much of the foliage that had survived thus far, and a groundhog from the neighbouring cemetery decided the perennials were delicious. With the extreme 35° C heat, larger plants such as a tulip tree, redbud and umbrella magnolia were withering before our eyes in their new home. And exhaustion was setting in on our part. But with the help of friends and family, we pulled the project off.

As I write today, I am staring out at the tulip tree, which ultimately pulled through and is now more than 3 metres (15 feet) high. The redbud flowered for the first time in 1998 and the umbrella magnolia last year put out 15 huge flowers. The original transplants have been joined by hundreds more, and by 1999 the last of the grass in both the front

and back yards disappeared, completely replaced by a woodland garden and stone paths. It is still remarkable to me how quickly plants will transform a backyard space. Wildlife, too, seems to be benefiting: we have now counted 122 species of birds either in or flying over the yard and we've had both fox and coyote drinking water from our small pond.

In retrospect, our yard project, although a lot of work, has also brought us a lot of pleasure in our urban setting. Grouping the plants into beds really worked well, and with ongoing additions of leaves and compost, the soil has improved and is beginning to be naturally rich in organic matter. Every spring it is a joy to take a walk through the yard before work to see trilliums, bloodroot and other wildflowers coming into bloom. There is often something new to discover every day.

My memory may be blocking out the worst moments, but eight years later I can truly say that it was worth all the effort.

*When not watering, feeding, weeding or otherwise tending his garden, Kevin Kavanagh finds time to be the Director of World Wildlife Fund's National*

*Conservation Program. He also moonlights doing gardening tips for the television show Backyard Pleasures on HGTV.*

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## Members' Questions

"I have a Norway maple street tree in my front yard, and it creates very dry, shady conditions. I've had trouble growing native woodland species such as trilliums and Jack-in-the-pulpits under the tree. Could you give me some suggestions of natives that will do well in dry shade?"

– a Toronto, Ontario, member (actually, many members have asked this question!)

LORRAINE JOHNSON RESPONDS:

I, too, have a Norway maple out front and I've got a love-hate relationship with the old gal: love the shade, hate the dry. (And I can't help thinking, every time I look at the tree, that Norway maples are causing havoc in Toronto's ravines, crowding out native species...) Native plants that do well in these dry, shady conditions include: bottlebrush grass (*Hystrix patula*), foamflower (*Tiarella cordifolia*), prickly pear cactus (*Opuntia humifusa*), white wood aster (*Aster divaricatus*), barren strawberry (*Waldsteinia fragarioides*), columbine (*Aquilegia canadensis*) and bellwort (*Uvularia grandiflora*).

We'd love to hear from other NANPS members who are gardening under Norway maples – send your comments to [editor@nanps.org](mailto:editor@nanps.org) and we will publish your suggestions in upcoming issues of *The Blazing Star*.

❖

"What can I plant under a black walnut tree? I understand that the tree's roots release juglone, a chemical that inhibits the growth of other plants."

– a Toronto, Ontario, member (again, many members!)

LORRAINE JOHNSON RESPONDS:

We would very much appreciate hearing from NANPS members who have had experience gardening under black walnut trees. Please e-mail information about what native plants do well (and what ones don't) to [editor@nanps.org](mailto:editor@nanps.org), and we will publish your comments in *The Blazing Star*.

In the meantime, the following natives are listed as doing well under black walnut trees in a variety of Web sources ([www.johanns.com/gardentips/walnuttoxicity.html](http://www.johanns.com/gardentips/walnuttoxicity.html) and [www.agcom.purdue.edu/AgCom/Pubs/HO/HO-193.pdf](http://www.agcom.purdue.edu/AgCom/Pubs/HO/HO-193.pdf)): foamflower (*Tiarella cordifolia*), bee balm (*Monarda didyma*), Virginia bluebells (*Mertensia virginica*), Dutchman's

breeches (*Dicentra cucullaria*), wild ginger (*Asarum canadense*), Jack-in-the-pulpit (*Arisaema triphyllum*), mayapple (*Podophyllum peltatum*), wild leek (*Allium tricoccum*) Solomon's seal (*Polygonatum biflorum*), false Solomon's seal (*Smilacina racemosa*) spring beauty (*Claytonia virginica*), trillium (*Trillium grandiflorum*), toothwort (*Dentaria* spp.), Joe-pye weed (*Eupatorium purpureum*) and Virginia waterleaf (*Hydrophyllum virginiana*).

As well, there's a wonderful public garden, Montgomery's Meadow, at Montgomery's Inn in Etobicoke, Ontario, that is planted in a black walnut grove. NANPS Board member Trish Murphy worked as part of a team that planted native species at Montgomery's Meadow and reports that the following native species are thriving under the black walnuts: big-leaved aster (*Aster macrophyllus*), white snakeroot (*Eupatorium rugosum*) and various sedges such as *Carex plantaginifolia* and *Carex blanda*.

❖

"I've got an 8-acre Carolinian woodlot in southwestern Ontario, and it is a gem – full of rare Carolinian species. How can I ensure that it will always be protected?"

– an Ontario member

STEWART HILTS, DIRECTOR OF THE CENTRE FOR LAND AND WATER STEWARDSHIP AT THE UNIVERSITY OF GUELPH, ANSWERS:

When landowners wish to see a natural area on their land protected in perpetuity, there are a number of things they can do. A conservation easement (a legal document registered on the title of a property – and thus remaining with the land regardless of who owns it – that stipulates what can and cannot be done on or to the land) is perhaps the easiest arrangement, because it lets the landowner continue to own the land, sell it or leave it to heirs, but still protects the natural features. The exact details of protection are decided by the landowner and must be written into the easement; although these details may not be easy to sort out, conservation organizations are gaining increasing experience with easements as an innovative protection tool.

The other most common option is an outright donation of land. This costs the landowner more of course, but also serves to protect the land in perpetuity.

In either case, you need to find a government agency or a non-profit organization that will accept your donation of a conservation easement or the land itself. Accepting such responsibilities is a major commitment, since the land will have to be managed and cared for (if donated) or monitored (in the case of easements) in perpetuity.

For larger, significant land parcels, the Nature Conservancy of Canada (NCC) is probably the most appropriate starting point. They are one of the largest conservation organizations in Canada, with land holdings from coast to coast. Locally, there may be a land trust (a non-profit organization devoted to land conservation) that could be interested. Such groups should be willing to meet with a landowner and assess the property carefully. Active land trusts in Ontario are usually members of the Ontario Nature Trust Alliance (currently evolving into the Ontario Land Trust Alliance), which sets standards for operating procedures.

Other conservation groups, such as the Carolinian Canada organization, do not hold land themselves, but serve as a partner, bringing others together. The Carolinian Canada Website ([www.carolinian.org](http://www.carolinian.org)) is a good starting point for information on all these organizations. It has links both to the NCC and to local land trusts.

A surprising number of landowners are now donating both easements and land itself for conservation purposes. In Canada, local land trusts now own over 200,000 acres (80,940 ha) of natural habitats, while the national Nature Conservancy of Canada owns many thousands more. Donations of cash are equally if not more important, helping these groups purchase larger tracts of threatened landscapes – the Nature Conservancy is now raising money to help purchase a large area of forest at Clear Creek in Carolinian Canada.

There can be a number of complications in donating land or a conservation easement, including Canada's tax laws, which have only recently been modified to encourage such donations, through the Ecological Gifts Program. However, any landowner interested in a donation of land or an easement should certainly explore these options – perhaps deciding to leave a legacy for posterity.

## More NANPS News

Do you have a native plant garden that you would be willing to showcase as part of a NANPS garden tour? Or would you be interested in listing your native plant garden on the NANPS Website, with days you would be willing to open the garden to NANPS members? Please let us know! Call (416) 680-6280.



The NANPS Website is up and running ([www.nanps.org](http://www.nanps.org)), and we're happy to report that our Message Board is receiving lots of queries from across North America. Examples include: where can I buy *Euonymus obovata*? Where can I find out what plants are native to New York State? What edible fruits are native to North America? (Check out the answers at [www.nanps.org](http://www.nanps.org)!)

Along with encouraging NANPS members to submit questions to the Message Board, we'd also appreciate it if you'd make our site a regular feature of your cyber-surfing, and share your knowledge by answering the questions posted on the site. Simply click on the topics listed on the Message Board to share information with a huge community of native plant enthusiasts in North America. If you have a query that doesn't fit within the existing topics, please click on the word "e-mail" at the bottom of the Message Board to send us a note. Your assistance in promoting native plant awareness and knowledge by helping NANPS answer the Message Board queries is much appreciated!



In the Winter 2001 issue of *The Blazing Star*, we invited members to let us know of favourite native plant Websites. Vi Bain suggests the following: "The Internet Directory for Botany ([www.botany.net/IDB](http://www.botany.net/IDB)) is an excellent site that lists herbaria, wild-


flower societies and many other things too numerous to list here. It will lead you to botany courses, taxonomy, pictures, germination information and so on. I also like the native plants forum on Garden Web ([www.gardenweb.com](http://www.gardenweb.com))."



COMING UP IN THE NEXT ISSUE OF  
*THE BLAZING STAR*:

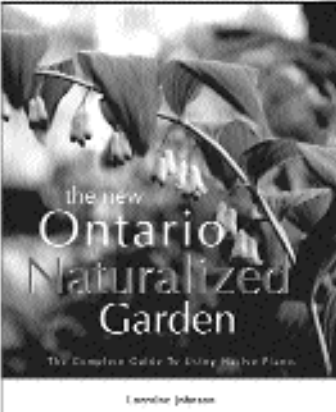
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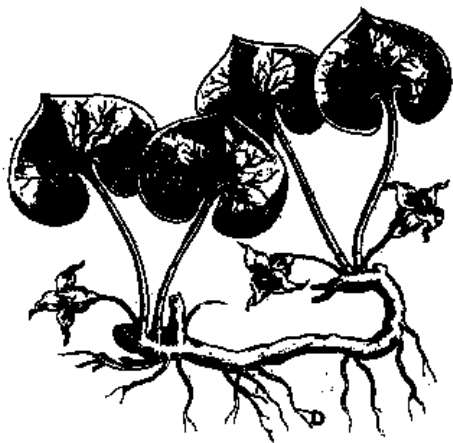


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## New & Noted

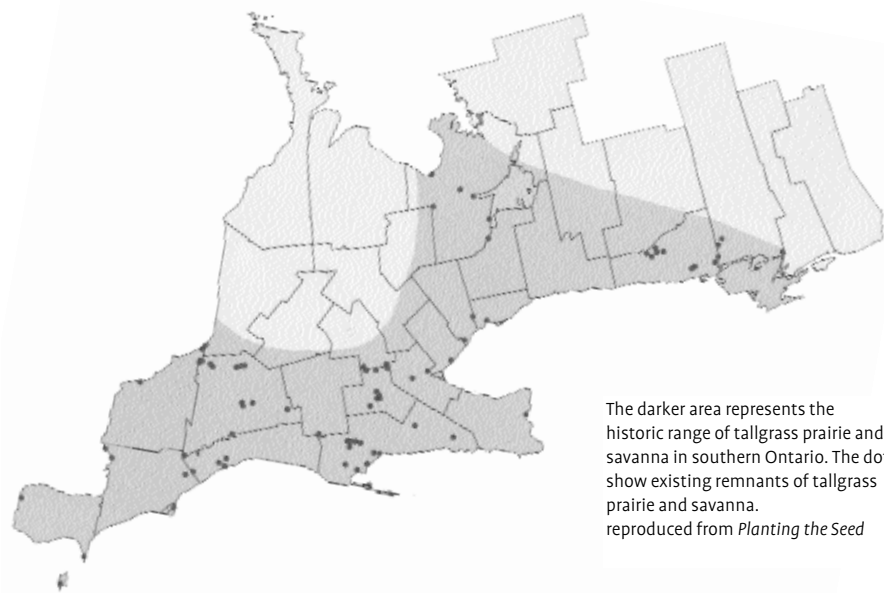
*A History of Canadian Gardening*, by Carol Martin, published by McArthur & Company, Toronto, Ontario, 2000, paperback, 192 pages, \$29.95 CDN (ISBN 1-55278-167-4)

Anyone lucky enough to have seen Carol Martin's 1998 exhibition on the history of Canadian gardening at the National Library of Canada in Ottawa will greet news of this publication with delight. Like the exhibition that was its inspiration, *A History of Canadian Gardening* is a well-researched, beautifully illustrated narration of Canada's gardening heritage. Beginning with the original inhabitants of North America – "Canada's first gardeners" – Martin provides a useful introduction to Native uses of various plants, including such fascinating details as the extensive corn fields tended by the Huron (an estimated 3,000 hectares under cultivation by the early 17<sup>th</sup> century). Canada's early botanists, many of them priests in New France, are profiled in a chapter that celebrates the era of plant discovery. Martin then moves through pioneer gardens, the growth of a privileged gardening class in the 19<sup>th</sup> century, the development of the nursery industry, the ways gardening has always connected with various social agendas, such as the City Beautiful Movement of the early 20<sup>th</sup> century,



This illustration of wild ginger (*Asarum canadense*) is one of 38 illustrations in Jacques-Philippe Cornut's *Canadensium Plantarum Historia*, published in 1635. reproduced from *A History of Canadian Gardening*

and much, much more. The final chapter, "Gardens, Gardens, Everywhere," notes an astonishing diversity of projects – from naturalized schoolgrounds to healing grounds at hospitals, from community gardens to wildlife gardens – that are indeed taking



The darker area represents the historic range of tallgrass prairie and savanna in southern Ontario. The dots show existing remnants of tallgrass prairie and savanna. reproduced from *Planting the Seed*

Canada's rich gardening heritage into the new millennium.



*Planting the Seed: A Guide to Establishing Prairie and Meadow Communities in Southern Ontario*, by Kim Delaney, Lindsay Roger, P. Allen Woodliffe, Gail Rhynard and Paul Morris, published by Environment Canada, Downsview, Ontario, 2000, paperback, 56 pages, free (ISBN 0-662-28836-X)

At last – a comprehensive (but not daunting), easy-to-understand, clearly organized and information-packed resource for people interested in planting prairies and meadows in Ontario. All this and it's free! *Planting the Seed* begins by defining the differences and similarities between prairie and meadow communities, explaining the ecology and history of both ecosystems, then moves into the nuts and bolts of how to get started on a planting project. The planning section is thorough, and applies to large-scale community naturalization or restoration projects as well as to backyard gardening projects. The sections on developing a species list, preparing the site, dealing with weeds, planting and seeding techniques, and management options are likewise packed with useful information for a broad range of applications. One of the most useful features of this guide, particularly for people just starting out with a prairie or meadow project, is that it includes an 8-page list of recommended species, with detailed native range information (grouped according to counties and municipalities) and extensive

cultivation details. A glossary, annotated bibliography and list of organizations round out this excellent guide. If you're thinking of planting a meadow or prairie in Ontario (or beyond – the information is relevant beyond the province's borders), order this book!



*The Historical Ecology Handbook: A Restorationist's Guide to Reference Ecosystems*, edited by Dave Egan and Evelyn Howell, published by Island Press, Washington, D.C., 2001, paperback, 457 pages, \$30 US (ISBN 1-55963-746-3)

Truly a groundbreaking guide, this is the first work to bring together a discussion of the techniques used to determine the historic reference conditions of a landscape. Anyone working in the field of ecological restoration – indeed, anyone with an interest in how and why landscapes have evolved in response to human activity – will find this collection of essays indispensable. As Curt Meine writes in the Foreword, this volume "allows us to better understand how landscapes have changed, how we may investigate and interpret that change, and how our own conservation actions – and the ecosystems we inhabit – may benefit from that knowledge." Editors Dave Egan and Evelyn Howell have compiled a thorough, sophisticated and wide-ranging collection that helps restorationists uncover the narratives – natural *and* cultural – embedded in all landscapes, and thus to begin the necessary work of restoring ecosystems to health.



## Directory of Sources and Services

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Douglas Counter is hosting a  
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Canadian Environmental Defence

Fund (see NANPS News, page 2),  
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# 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.

2001-2002

## Native Plant Resource Guide

for Ontario



Source of planting materials for ecological restoration in Ontario  
Society for Ecological Restoration - Ontario Chapter Website: <http://www.serontario.org>

# A Dichotomous Key for Selecting Plant Material for Restoration Projects

by *Raymond Franson*

Population genetics is a complex and highly mathematical field, and the average restoration practitioner or restoration regulator is usually not trained in population genetics. Yet a practical understanding of some population genetic principles is important for selecting plant material for restoration projects.

This paper approaches the problem of giving restoration practitioners a practical understanding of population genetics in two ways. First, common mistakes based on misuse of terminology (specifically, misuse of the concept of ecotype) are explained. Second, a dichotomous key for selecting plant material by species for restoration projects is presented to give the restorationist a framework from which to make decisions and to define the term “local.”

### THE TWO COMMON MISTAKES

Two broad, opposing mistakes are often made when selecting plant material for restoration projects. First, the classic mistake is that the restorationist assumes that if the plant material is of the correct species, then the origin of the material does not matter. This first mistake is still common. Yet seed collected from a plant species in Texas may be very poorly adapted to growth in California despite being native to both places. The range of a native plant may extend for hundreds of miles or even across continents, and the plant may be highly adapted to various rainfall, altitude, temperature, soil and day length regimes across its range.

Second, in reaction to the first mistake, the regulator of a restoration project often won't allow any plant material to be used unless it is collected in the immediate vicinity of the restoration site. This second mistake, which limits the genetic diversity of the material collected, is becoming more frequent and has actually been used to stop restoration projects. In some instances invasion of the restoration site by exotics has been judged preferable to using native plant material that was not collected immediately adjacent to the restoration site.

### USE OF THE TERM LOCAL

It is common in restoration projects to refer to the use of “local” plant material. However, local is seldom clearly defined. The term local is defined here on the basis of the proper use of the term “ecotype.”

### THE CONCEPT OF ECOTYPE

An ecotype is a plant population that is genetically adapted to the specific environmental conditions in the habitat in which it grows (see Turesson 1922; Clausen, Keck and Hiesey 1939; and Gregor 1942 for the original references on the concept). Ecotypic differentiation is difficult to measure and has only been demonstrated for a few plant species. In the work of Clausen, Keck and Hiesey (1939), ecotypes were measured on a scale much larger than the scale of a plant population. For example, their demonstration of an alpine ecotype referred to all of the populations of plants of the given species growing in an entire alpine zone.

Recently, the term ecotype has moved into common usage in the restoration field, but it has come to be an assumption rather than something that is measured. Ecotype is commonly and incorrectly used in place of the word genotype. Genotype is defined as the genetic constitution of an organism. Genotype is often used to refer to a particular gene or genetic trait for an organism or a population. For example, all of the plants in a given population may have an albino genotype. But the fact that all of the plants in the population are the same for one genetic trait does not preclude them from having great variation for other traits. Any plant population studied closely will yield multiple genotypes on a scale of metres. Whether any of these genotypes are adaptations to the local environment (ecotypic) is a very different question and, in fact, very unlikely.

### PLANT EVOLUTION AND RESTORATION GOALS

Plant evolution occurs on the scale of the plant population, with plant breeding system being a major determinant of plant population structure in sexually reproducing plants.

Plant populations are made up of many genotypes. The concept of ecotype was developed on a much larger scale than the scale of the genotype. Plant evolution does not occur on the scale of the ecotype, and plant breeding system is irrelevant to the concept of ecotype.

One goal in restoration projects is to preserve genetic diversity of the plant species that originally grew on the restoration site. This means preserving genotypes within plant populations. Collecting material from too far away risks not collecting any of the plant genotypes originally found in the plant populations in the restoration site (mistake one). Collecting plant material on too restricted a scale risks collecting genotypes from only a small portion of the plant populations originally found in the restoration site (mistake two). Care should be taken to avoid both mistakes.

### PROJECT CONSTRAINTS

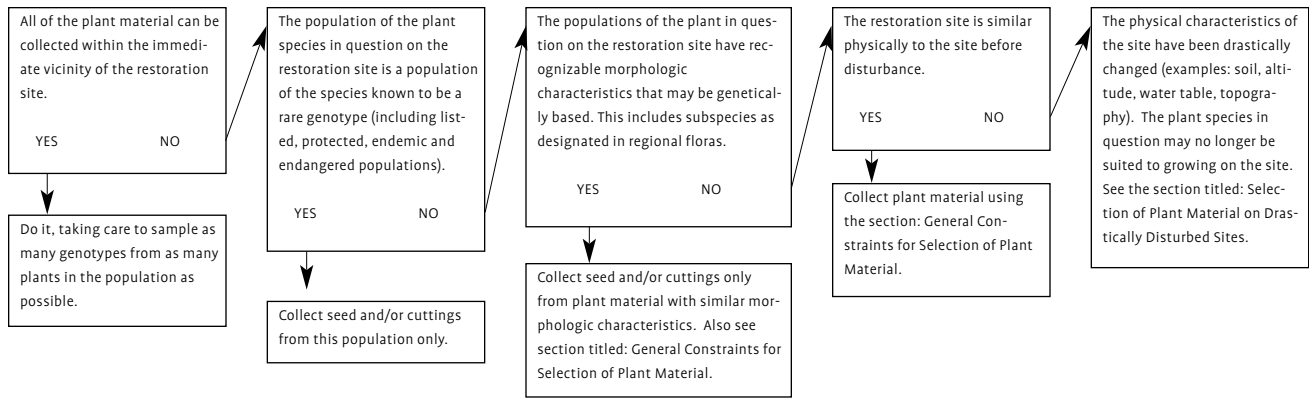
Various common project constraints impede our ability to sample multiple genotypes from multiple plant populations when selecting material for restoration projects. Even the very best projects will constrain the restorationist in the selection of plant material. Common project constraints include:

1. *Time*: Most projects do not include enough time before restoration begins for collecting local plant material.
2. *Timing*: Some projects are on such a short time scale that work on the project must be completed before local seed set occurs on species of interest.
3. *Money*: Seed collection and plant propagation can be expensive. Many projects simply are not budgeted to pay for local plant material.
4. *Manpower*: Manpower is often considered to be the most expensive part of a project.
5. *Regulations*: The same regulatory agencies that request the use of local seed may have regulations that impede the collection of local seed.

### THE DICHTOMOUS KEY

Despite having little knowledge of plant population genetics, the average restoration prac-

FIG. 1. Flow Chart of Dichotomous Key for Selecting Plant Material for Restoration Projects



tioner must make decisions on how to collect the best plant material within the constraints of the project. The following dichotomous key gives restorationists a common-sense framework from which to make decisions on genetic considerations in selection of plant materials (seeds or transplants) for each plant species used in a restoration project. Each plant species to be used is run through the key separately. Use of the key requires both field observations and literature searches for each species. The key is presented below and graphically in Fig. 1.

**1A.** All of the plant material for the species in question can be collected within the immediate vicinity of the restoration site. If so, stop here and do it, taking care to sample as many genotypes from as many populations of the plant species as possible. If not, go to 1b.

**1B.** All of the plant material for the species in question cannot be collected within the immediate vicinity of the restoration site. Go to 2.

**2A.** The population of the plant species in question on the restoration site is a population of the species known to be a rare genotype. This includes endemic, listed, protected and endangered populations. It also includes cases where populations are known to vary in ploidy. If so, collect seed and/or cuttings from this population only. If not, go to 2b.

**2B.** The populations of the plant species in question on the restoration site are not known to contain any rare genotypes. Go to 3.

**3A.** The populations of the plant species in question on the restoration site have recognizable morphologic characteristics that may be genetically based (this includes subspecies as designated in regional floras). If so, collect seed and/or cuttings only from plant material with similar morphologic characteristics (also see section titled: General Constraints for Selection of Plant Material). If not, go to 3b.

**3B.** The populations of the plant species in question on the restoration site have no obvious morphologic differences from populations of the species outside of the restoration site. Go to 4.

**4A.** The restoration site is similar physically to the site before disturbance. If so, see the section titled: General Constraints for the Selection of Plant Material. If not, go to 4b.

**4B.** The restoration site's physical characteristics have been changed drastically (examples: soil, altitude, water table, topography). The plant species in question may no longer be suited to the site. See the section titled: Selection of Plant Material on Drastically Disturbed Sites.

#### GENERAL CONSTRAINTS FOR THE SELECTION OF PLANT MATERIAL

1. If all of the plant material you need can be collected within a few miles of the restoration site, do it. Since this will seldom be the case, read on.
2. *Distance:* Whenever possible, collect plant material from within 100 miles (160 km) of the restoration site.
3. *Altitude:* Whenever possible, collect plant material from within 500 feet (152 m) of the altitude of the restoration site.
4. *Rainfall:* Whenever possible, collect plant material from areas where the average rainfall is within 2 inches (5 cm) per year of the annual rainfall of the restoration site.
5. *Soil:* Whenever possible, collect plant materials with the same general soil type. For example, avoid collecting plant material from a soil with a very different pH than the pH of the soil in your restoration site.
6. If the only plant material available (within the constraints of the restoration project) will violate one or more of these constraints, consider whether the available plant material is preferable to no plant material or to the invasion by exotic plants.

#### DEFINING LOCAL

The constraints on distance, altitude, rainfall and soil provide a definition of local based on the concept of ecotype. The numbers: 100 miles/160 km (distance), 500 feet/152 m (altitude), and 2 inches/5 cm (rainfall) are arbitrary, and are actually quite conservative. Notice that taken together, they can be very restrictive: going 100 miles (160 km) without changing altitude more than 500 feet (152 m), without changing rainfall more than 2 inches (5 cm), without changing soil type will generally be very tough to do.

#### SELECTION OF PLANT MATERIAL ON DRASTICALLY DISTURBED SITES

A restorationist may be asked to restore a community on a site where the disturbance is so drastic that the pre-disturbance community cannot be re-established. If the water table, altitude or soil composition of the site has been permanently altered, many of the native species may no longer be suited to the site. One example would be a riparian community where the water table has been permanently lowered and the flood regime permanently altered. Growing plants on this site will require local species that previously could not grow on the site, or nonnative species.

In cases where the disturbance is severe but the native species are still at least marginally capable of growing on the site, there still will be no reason to assume that adjacent populations of the plant species in question will be well suited to growth in the disturbed area. In such cases, limiting the genetic variability of the plant material to nearby genotypes is not necessarily advantageous. A variety of plant material collected within the general constraints or beyond will provide much more genetic diversity from which to find genotypes that are, by chance, better suited for growing on the restoration site. An example of this situation is overburden piles at mine sites.

The overburden is made up of crushed rock that bears no resemblance to the pre-mining soils and the piles may be 200 feet (60 m) deep. Soil, altitude, slope and aspect have been altered and there is no reason to assume that the plants growing next to the overburden pile will be suitable to grow on the unamended pile.

#### CONCLUSIONS

The valuable concept of ecotype has become confused with the concept of genotypes within a population. The first purpose here has been to clarify the important concepts of ecotype, genotype and local. The term local is defined here on the basis of the correct use of the term ecotype, and is based on ecologically significant genetic variation, rather than simply any genetic variation.

The main purpose here is to provide restorationists a framework in which to make decisions on selecting plant materials within a restoration project. The genetic goal in selection of plant material within a restoration project is to select well suited plant material while preserving genetic diversity of the plant material, all within the constraints of the restoration project. The key presented here gives the restorationist an aid in achieving this goal.

#### REFERENCES

- Clausen, J., Keck, D.d. and Hiesey, W.M. 1939. "The concept of species based on experiment." *American Journal of Botany* 26: 103–106.
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- Turesson, B. 1922. "The genotypical response of the plant species to the habitat." *Hereditas* 3: 211–250.

*Raymond Franson is a restoration ecologist who specializes in desert restoration. He currently works on reclamation implementation and reclamation success monitoring on the Yucca Mountain Project in southern Nevada for Bechtel-SAIC Co. LLC. From 1992 to 1997 he was the Revegetation Ecologist for Viceroy Gold Corporation at Castle Mountain Mine in the East Mojave Desert. He has also done consulting in Bermuda, British Columbia and Baja. He did his graduate work in the Committee on Evolutionary Biology at the University of Chicago and post-doctoral work on mycorrhizal fungi at the USDA Agricultural Research Service. Raymond can be reached at rover646@earthlink.net.*

## Calendar of Events

May 12, 2001

#### NANPS PLANT SALE

Civic Garden Centre, Toronto, Ontario  
Hundreds of native plants for sale, beginning at 10am, a fundraiser for NANPS. Call (416) 680-6280.

May 18–20, 2001

#### BEYOND PESTICIDES CONFERENCE

University of Colorado, Boulder, Colorado  
The 19<sup>th</sup> National Pesticide Forum, convened by the National Coalition against the Misuse of Pesticides. For more information, e-mail [info@beyondpesticides.org](mailto:info@beyondpesticides.org).

May 19, 2001

#### NATIVE PLANT SALE

Guelph Farmer's Market, Guelph, Ontario  
From 7am to noon, sponsored by the Dogtooth/Waterloo-Wellington Wildflower Society. For more information, call (519) 824-4120.

May 20, 2001

#### WILDFLOWER GARDEN TOUR

Toronto, Ontario  
A self-guided tour organized by the Toronto Wildflower Society. For tickets (\$10/\$15), call (416) 222-5736.

June 7–9, 2001

#### NATIVE PLANTS IN THE LANDSCAPE

Millersville University, Pennsylvania  
The 11<sup>th</sup> annual conference on native plant

garden design and habitat restoration features speakers such as Colston Burrell, Lorraine Johnson and Darrel Morrison. For more information, call (717) 872-3030.

June 14–17, 2001

#### WOODS TALK

York University, Toronto, Ontario  
Authoritative speakers and workshops provide a unique opportunity to gain practical information about woodland conservation issues in southern Ontario. Call the Federation of Ontario Naturalists, (416) 444-8419.

August 9–11, 2001

#### ONTARIO'S TALLGRASS CONSERVATION FORUM

Ridgetown College, University of Guelph, Guelph, Ontario  
Sessions on science (insects of tallgrass prairie, soil fauna) and practical issues (prescribed burns, planting seeds), along with field trips to Walpole Island and more. For information, contact the Ontario Tallgrass Prairie and Savanna Association at (519) 873-4631 or see [www.tallgrassontario.org](http://www.tallgrassontario.org).

August 12–16, 2001

#### BOTANY 2001: PLANTS AND PEOPLE

Albuquerque Convention Center, Albuquerque, New Mexico  
For more information, see <http://www.botany2001.org/>.

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## NANPS Seed Exchange

The Fall/Winter 2000 and the Winter 2001 issues of *The Blazing Star* contain full lists of the native plant species available from the NANPS Seed Exchange. The list can also be found on the NANPS Website: [www.nanps.org](http://www.nanps.org).

We have more than 200 species available to NANPS members, including fern spores and seeds of grasses, herbaceous plants and woody plants. Please send \$1 for the first packet of seeds and 50 cents for each additional packet. Members may request up to 20 packets (list plenty of substitutes). It is not necessary to donate seeds to the exchange in order to request seeds.

Send requests and/or donations of seeds to NANPS, Seed Exchange, P.O. Box 84, Station D, Etobicoke, Ontario M9A 4X1.

**SEED EXCHANGE DONORS:** We are chronically short of all seeds that ripen in spring and early summer. Prairie smoke, hepatica, wild ginger and Virginia bluebells would all be very welcome. Since the seeds are often perishable, please don't clean them: put the berries or capsules in a baggie with a little damp peat and store in the fridge until you can mail it to us, which should be as soon as possible.