

The Blazing Star



NEWSLETTER OF THE NORTH AMERICAN NATIVE PLANT SOCIETY

Native Plant to Know

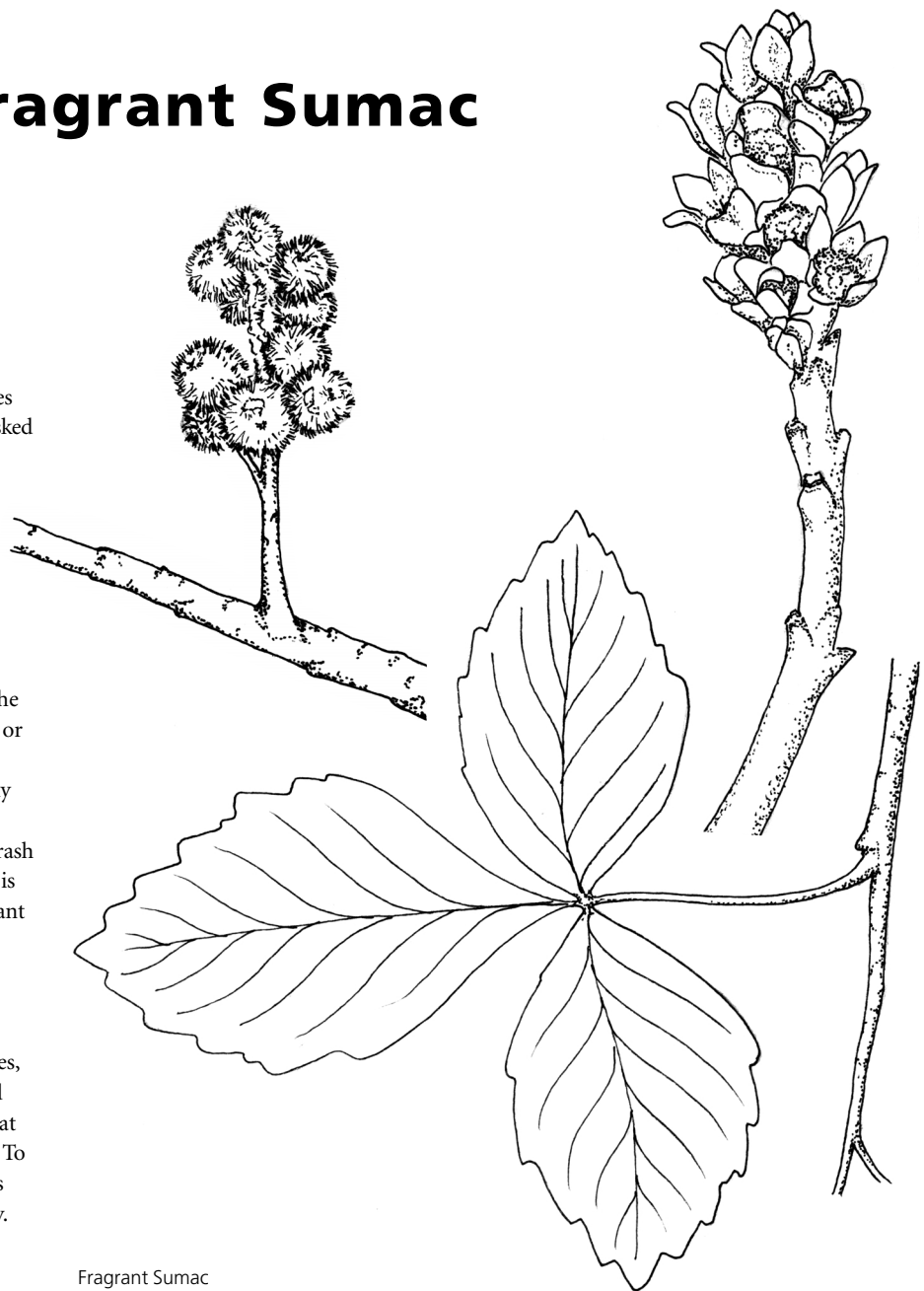
Fragrant Sumac

by Catherine Siddall

My earliest encounter with fragrant sumac (*Rhus aromatica*) taught me that fragrant does not necessarily mean sweet-smelling. I was asked to prune some unruly specimens that were encroaching on a stairway and I left smelling pungent with the shrub's peculiar earthy, resinous odour. A few of fragrant sumac's other names – polecatbush and skunkbush, for instance – make reference to what some have called its "malodorous" qualities. I wouldn't go that far, but neither would I recommend sticking your nose in the blooming flowers to sample their fragrance or rubbing the leaves for pleasure.

In fact, some people come away with itchy skin after contact with this plant and my exposed forearms did develop a temporary rash after my pruning efforts. This characteristic is not unexpected when you realize that fragrant sumac is a close relative of poison ivy (*Rhus radicans*, synonymous with *Toxicodendron radicans*). The list of North American tree species in the same family includes several plants with "poison" in their common names, although these have been helpfully grouped under the genus *Toxicodendron* – a name that should warn of the plants' nasty properties. To help with identification, fragrant sumac has three-part compound leaves, like poison ivy.

Continued on page 12



Fragrant Sumac

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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From the Editor...

NANPS will be participating in the **Success with Gardening** show at the International Centre in Mississauga from March 18-21 and we're looking for volunteers to spread the word about native plant preservation. Contact Donna McGlone at volunteer@nanps.org or 905-891-7803. We're also starting to gear up for our annual plant sale (see below for details). Another opportunity to volunteer, learn lots about native plant gardening and meet some great people.

A great big thank you to Darcie McKelvey who spearheaded the Seed Exchange – a huge job well-done! For the final seed list and behind-the-scenes story go to page 10.

Nominations for the **Paul McGaw Memorial Conservation Award** are now being accepted. Deadline: April 1st, 2004. The award will be presented at NANPS annual general meeting in the fall. See www.nanps.org for details.

Trees are an important feature in this issue of the *Blazing Star* (when are they not?). This

is fitting since we recently (with the fall 2003 issue) switched to a **tree-free rice paper**, one more step towards protection of our natural resources and preservation of our native tree species. The company that is printing this newsletter, Foster Printing, has already exceeded the sewage emission standards set to go into effect in the city of Toronto in 2008. Although the newsletter is now more costly to print, the board decided the environmental benefits were well worth the added expense.

One further note for Torontonians: a proposed tree bylaw is intended to harmonize the old city of Toronto's private tree protection legislation throughout the amalgamated city. For further info visit <http://www.city.toronto.on.ca/trees/pdfs/municipalcodechapter331.pdf>. To comment on the proposed bylaw contact Bruce Sudds at 416-392-4010 or bsudds@toronto.ca.

Irene Fedun

NANPS Excursions

Last October NANPS sponsored its first-ever field trip – to Clear Creek Forest, a 320-hectare (800-acre) old-growth woodland where the microtopography has never been disturbed by humans, resulting in a rich diversity of plant life. Gigantic oaks (*Quercus* spp.), American beeches (*Fagus grandifolia*), white elms (*Ulmus americana*) and shagbark hickories (*Carya ovata*), not to mention the much-loved tulip trees (*Liriodendron tulipifera*), tower over emerging seedlings and trees in every stage of life. A high density of Carolinian wildflowers can be found in this forest due to its varied topography. Even species at risk such as green dragon (*Arisaema dracontium*), which likes wet hollows and pits, and tall bellflower (*Campanula americana*), which grows on the north side of mounds protected from the scorching winter sun, find a home here.

NANPS members who participated in the trip picked up fascinating bits of forest

ecology from Mathis Natvik, a local ecological consultant and the driving force (with the Nature Conservancy of Canada) behind the preservation of Clear Creek.

Based on the phenomenal success of last year's trip, NANPS is planning two excursions for members this year. On May 30th, Canadian Wildflower Society (now NANPS) founder Jim French is opening his Peterborough-area cottage to our members. Packed into his one-acre property are diverse ecosystems in miniature - prairie, moss, woodland and bog gardens. Participants are encouraged to join our chartered bus from Toronto, which will be stopping at a couple of other natural areas of interest en route, or car-pool. Maps will be provided when you sign up.

A fall trip to Shining Tree Woods is also in the offing. Details for both trips will be made available in the spring issue of the *Blazing Star*, or keep an eye out on the website at www.nanps.org.

NANPS Plant Sale

SATURDAY, MAY 8, 2004 – 10AM - 3PM
Toronto Botanical Garden (formerly the Civic Garden Centre)
777 Lawrence Avenue East (at Leslie)
Toronto, Ontario

- ✿ purchase perennials, grasses, shrubs and trees native to your area
- ✿ talk with experienced native plant enthusiasts
- ✿ browse through an incredible selection of books and magazines devoted to native plant gardening
- ✿ explore the many benefits of membership in NANPS
- ✿ attend a seminar on starting your own pesticide-free native plant garden

Germinating Seeds

by Jane Murphy

I think we needlessly complicate the process of germinating wildflower seeds.

Look to nature. Squirrels bury acorns (and forget what they have done with them) and the seeds sprout with the spring rains. Winged seeds such as those of *Asclepias* (milkweeds) float on the wind only to fall to the ground and germinate in the spring after the cold winter has passed. Small seeds fall at the feet of the mother plant and gain their foothold in the disturbed earth. Fruits are eaten by birds and, after passing through the digestive system, the seeds are deposited far and wide, complete with fertilizer.

The success rate of the natural process is probably nearly as good as that of the most careful plantsman. I have read more than a few books on germination and have come to these conclusions: if seed ripens in late spring/early summer, it needs a warm period followed by cold and will germinate in the next warm season; if it ripens in the fall, it needs a cold period followed by warm to have success. Amazing! That's what happens naturally. We humans seem to think we have to make a big production out of it.

be washed again, then dried and planted as soon as possible.

Some seeds have very particular requirements for germination and growth. *Panax quinquefolius* (ginseng), for instance, has a fleshy coat that is removed either by passing through the digestive tract of a bird or mammal or rotting over the winter. It needs humus-rich soil, which contains beneficial fungi, and a site in shade or dappled shade. Hepatica seed, if sown fresh-collected, will produce a single leaf in the first or second spring and a recognizable colony in the third year. *Caulophyllum thalictroides* (blue cohosh) is challenging to grow. The seed covers must be removed by soaking or abrading. I sow them outside in a "Do Not Dig" zone, since they may take two or three years to send up the first leaves. Some gardeners have had good results with this plant by whirring the seed in a blender to abrade the coat, followed by soaking overnight.

Seeds can be planted indoors or out, as long as they are given their appropriate warm and cold periods. I use moistened soil-less mix in pots or flats, and cover them with plastic bags - not freezer bags - for indoor planting. For outdoor

Naturally, there are exceptions to the rule, and the New England Wildflower Society's *Guide to Growing and Propagating Wildflowers* by William Cullina is an excellent resource book. It not only provides propagation information but also ripening times for all seeds listed (important information to know). If you are one or two climate zones north of New England, add a week or two to the times given. Above all, give the seeds plenty of time to germinate; some will surprise you by showing growth long after the expected time-frame has elapsed.

Sharing seeds - by participating in the NANPS Seed Exchange or giving seeds to a friend - is great fun. It's rewarding to know that someone else will enjoy the beauty of wildflowers. When sharing, it's important to be able to correctly identify the plants whose seeds you collect, and *Newcomb's Wildflower Guide* is a good reference. Some seeds must be fresh-sown, such as trilliums, *Sanguinaria canadensis* (bloodroot), hepaticas, *Hydrastis canadensis* (goldenseal) and *Panax quinquefolius*. Process these quickly and urge the lucky recipient to plant them immediately. Most other seeds can be cleaned and stored in paper packets in a clean glass jar in the refrigerator or other cool place for planting at a convenient time. When packaging the seed, mark the plant name on the packet at once or you may have a great many "mystery plants" on your hands. The botanical name, common name, year and place of collection, and germination information should be provided. It's helpful to indicate whether the plant needs sun or shade and its mature height. This may seem very basic to the experienced gardener but novices will appreciate the information. Don't be quick to discard "old" seeds. Some can survive very nicely for many years under less-than-ideal conditions.

Growing wildflowers should be an enjoyable experience. Let's not tie ourselves down to rigid rules and practices so that we no longer have time to smell the (native) roses.



PHOTOGRAPH COURTESY JANE MURPHY

A flowerbed in Jane Murphy's garden features great blue lobelia (*Lobelia syphilitica*), blue vervain (*Verbena hastata*) and false dragonhead (*Physostegia virginiana*).

That is not to say that we cannot use our knowledge to improve our success rate. If seed is normally spread by birds, it may benefit from a detergent wash to remove surface inhibitors. Hard-coated seeds can be encouraged to sprout by sandpapering their exterior and soaking in warm water for 24 hours. Those with fleshy coats should be soaked in water overnight, have the pulp cleaned off and

planting I substitute row-cover for the plastic.

For early-ripeners: give them warm for 90 days, cold for 120 days, then warm for germination. For fall-ripeners, give cold for 120 days and then warm until they germinate. Put them in the crisper drawer in the refrigerator, or you can do as I usually do: put the flats outside in a sheltered spot and leave them until you see growth.

Jane Murphy was a nurse for 40 years but has since traded people for plants. ("Plants are quieter!") She started growing natives in her Kingston, Ontario garden 20 years ago when she realized that some species were threatened and disappearing at an alarming rate all over the world. She believes that home gardeners have a role to play in ensuring that the next generation gets to see hepaticas and other native beauties.

Shining Tree Woods: How Best to Manage

by Irene Fedun

Shining Tree Woods, a parcel of old-growth forest acquired in 1994 by the North American Native Plant Society (then the Canadian Wildflower Society), has survived, some may even say thrived, on our benign neglect.

Shining Tree Woods (STW) is named for the cucumber trees (*Magnolia acuminata*) that occur in this magnificent forest in Norfolk County, Ontario. Indigenous tribes referred to this, Canada's only magnolia, as the "shining tree" due to the sheen on its leaves.

At the northern limit of its range in the southernmost parts of Ontario, the nationally and provincially endangered cucumber tree, or cucumber magnolia, grows in rich soils on moist sites. At STW it shares the undulating topography with red maple (*Acer rubrum*), white ash (*Fraxinus americana*), yellow birch (*Betula alleghaniensis*), sugar maple (*Acer saccharum*), eastern hemlock (*Tsuga canadensis*) and tulip tree (*Liriodendron tulipifera*). The rich diversity of tree species, complemented by a flourishing understorey of spring ephemerals and almost no invasion of exotics, ensures a healthy forest ecosystem.

So the question arises: should anything be done at Shining Tree Woods? Grif Cunningham, who leads the NANPS Land Management Committee, visited the property twice in fall 2003 with fern/tree propagator Richard Woolger to collect cucumber magnolia seeds and determine a plan of action (or inaction) for STW. They found that Nature was "functioning in a wonderfully reproductive way without our help". Their recommendations: erect a sign signifying NANPS ownership of the property and the rationale behind it, develop a system for demarcating the property's boundaries, establish excellent relations with the neighbours and appoint a local botanist to help manage the land. They also suggested planting some cucumber magnolias in appropriate places such as the former to bacco/corn field, which comprises about half of the 50-acre property owned by NANPS.

Magnolia acuminata is at the source of the debate about STW. At last count there were 23 mature cucumber trees six to 51 centimetres (2.5 to 20 inches) diameter at breast height. One tree has its top broken off, one was struck by lightning and two have interior decay at ground level, according to biologist Mark Bacro who lives within walking distance of the



Identifying cucumber trees at Shining Tree Woods.

PHOTOGRAPH COURTESY DARCIE MCKEVEY

woods. Two young trees were knocked over by another falling tree and several saplings are covered in grape vines.

Although the majority of the mature cucumber magnolias are healthy, Mark has seen little regeneration of that species over the past five years. He has found a few young trees but no seedlings and only two saplings approximately 30 centimetres (one foot) high. Mark's recommended strategy is to free up two or three small clearings by taking down a couple of large trees, pulling the strangling grape vines off the emerging cucumber trees and removing some brush, before planting out a few *Magnolia acuminata* saplings.

Dr. John Ambrose, the former curator of the University of Guelph Arboretum, who has worked with Carolinian species for almost 30 years, sees no need to kick-start the growing of cucumber trees. John notes that there is already a higher concentration of *Magnolia acuminata* in this forest than in most of its habitats. He believes that natural regeneration will work just fine as birds and mammals eat the fruit, then defecate the seeds, enabling the old fields to transition into forest with healthy new cucumber magnolias popping up among other species.

"Rather than be in a rush to plant cucumber tree seeds/seedlings or cut openings in the forest, we should encourage the establishment of

new and expanding habitat in the old fields such as a matrix of pioneer forest species and meadow openings into which the cucumber magnolias and other special species of this forest will colonize when the conditions are right," says John.

"Processes are a bigger concern here — ensuring sufficient habitat for the seed dispersers and a functioning watershed. We too often think of just planting trees without knowing if that is the right solution to the unexplored problems that exist on a site," he adds. John suggests working with adjacent landowners to create wilderness corridors by planting windbreaks on farmland and helping regenerate native vegetation on stream banks, thereby improving water quality.

Mark has had discussions with the previous landowner who says the field was never leveled out for farming, although Grif points out that any activity using a tractor would result in some loss of microtopography i.e. the holes and hillocks created by natural processes such as falling trees. In the 11 years since the land was farmed, exciting new growth has appeared in the old field. Sugar maple, white ash, red cedar (*Juniperus virginiana*) and sumacs (*Rhus* spp.) are among the woody plants that have taken hold. Wet pockets around the perimeter of the field harbour young black

gums (*Nyssa sylvatica*), poplars (*Populus* spp.), dogwoods (*Cornus* spp.) and – to everyone's amazement – tulip trees. Should the field then be left to regenerate on its own? Should we plant cucumber magnolias in appropriate locations or artificially create pits and mounds?

Although Mark is in favour of minimal management of the woodland to accelerate the growth of cucumber trees and other native tree species (he is fearful that a great wind-storm or other natural calamity could take out several prime trees) he believes that bringing a bulldozer into the field to dig pits would be counterproductive. Many of the young trees would be damaged in the process.

Mathis Natvik, the author of "Pits and Mounds" (*Blazing Star*, spring 2003), believes the bulldozer technique (employed at Clear Creek Forest in Chatham-Kent, Ontario to create the craters and resultant hills that are the hallmark of an old-growth woodland) could be used to good effect at STW. He suggests using a smaller backhoe and working in the lower areas of the fields to minimize damage to newly sprouted trees and other vegetation. Although the soil is sandy and, therefore, less likely to hold water into the summer the way clay would, the artificially created pits will become pockets of organic mulch as leaves and other debris settle in them. These pockets will retain rain and meltwater longer than the fast-draining sand of the field, and will host future ferns and other moisture-lovers. They may even nurture young cucumber trees.

Mathis adds that digging pits is critical in sandy soils which typically lose most of their organic material through farming. "A lot of earth work has occurred on farm fields to get them smooth and I feel one of the most important issues in restoring fields is to rough them up again, getting them back to their natural state," says Mathis.

A major part of this process is the removal

or blocking of drainage tiles used for farming. Spring meltwater, which would otherwise soak into the soil, slowly being absorbed by the native vegetation over the spring and summer, is drawn off through the tiles and sent coursing down ditches into a local lake or large water-course. This allows the farmer to get in earlier to plough and seed his fields, which would otherwise be too wet to work. But the practice has serious environmental consequences, changing both the ecology of major bodies of water and the soil conditions for local plant life.

From conversations with a neighbouring farmer, Mark has learned that there is at least one row of tiles in the STW field (possibly extending into the forest). This information will also be on record with the municipality as stipulated by the Ontario Drainage Act. Mathis notes that it would be worthwhile to consult the drainage map, determine the location of the tile runs and sever the ends. The field would then revert to its natural drainage patterns and ephemeral ponds would form providing habitat for wildlife and plants.

After the field has been returned to a semblance of its natural state, Mathis recommends planting a few *Magnolia acuminata* (grown from nursery stock with seed gathered at STW) across the lower areas close to constructed pits. Red osier dogwoods (*Cornus stolonifera*) have taken residence in those areas, an indication that the water table is close to the surface there.

Mathis believes it is necessary to plant a young stand of cucumber trees in the field since "the greater landscape around STW does not have a large enough matrix of young and old forest to be able to depend solely on natural regeneration of *Magnolia acuminata*", something the pre-settlement woods had in great abundance. He predicts that succession will push STW into a beech/maple stand as old cucumber magnolia trees die out, until a

disturbance in the canopy creates the sunny opening that magnolias need as seedlings.

Former NANPS president Tom Atkinson agrees. The unpredictability of natural disasters – lightning strikes or violent storms that rip trees out by the roots and open up the forest floor – argues in favour of human intervention. As Mathis says, Shining Tree Woods is much too small to host the greater landscape processes – in a landscape dominated by corn, soybeans and tobacco – that would give *M. acuminata* the necessary opportunities to regenerate successfully.

Although John agrees that the site conditions need to be restored, he is less convinced that planting is necessary. John concludes: "If we restore the altered physical conditions to their previous diversity we will set in motion the natural regeneration of a diverse forest – sometimes amazingly quickly – and perhaps including cucumber trees. Watching the species and structural diversity of the new forest develop over the next 10 years will be very instructive. If no cucumber magnolia seedlings appear, and decline is noted in the mature populations, planting should be considered."

Mark would prefer to act sooner. He reminds us that *Magnolia acuminata* is an endangered species and this woodland is one of the few remaining places in southern Ontario where it continues to grow in a viable forest community. Why not take this opportunity to jump-start the regeneration of these trees and ensure that a good number survive and thrive?

It remains for the NANPS board to decide what's to be done. In the meantime, NANPS members eagerly await the fall excursion to this beautiful woodland, while Grif and Richard keep busy, lovingly tending their "shining tree" seedlings.

Irene Fedun is the editor of the *Blazing Star*.

Calendar of Events

March 3-5, 2004

SEVENTH NATIONAL MITIGATION AND CONSERVATION BANKING CONFERENCE
New Orleans, Louisiana
Visit www.mitigationbankingconference.com or call Carlene at 703-837-9763.

March 22-25, 2004

FOURTH SOUTHWESTERN RARE AND ENDANGERED PLANT CONFERENCE
Las Cruces, New Mexico
Information: nmrareplants.unm.edu.

April 1-30, 2004

NATIVE PLANT CONSERVATION WORKSHOPS
Carlsbad Caverns National Park, New Mexico
Sponsored by the Carlsbad Caverns/Guadalupe Mountains Association.
For schedule and information visit <http://www.ccgma.org/wildfl.htm>.

April 23-25, 2004

SOUTH CAROLINA NATIVE PLANT SOCIETY'S 7TH ANNUAL NATIVE PLACE SYMPOSIUM
Greenville, South Carolina
Jocassee Gorges will be the focus.

April 28–May 2, 2004

NATURAL BRIDGE WILDFLOWER WEEKEND
Slade, Kentucky
Field trips throughout Natural Bridge State Resort Park and the Red River Gorge National Geologic Area as well as evening programs.
Call 1-800-325-1710 or 1-606-663-2214.

May 8, 2004

NORTH AMERICAN NATIVE PLANT SOCIETY ANNUAL PLANT SALE
Toronto, Ontario
Contact nanps@nanps.org for more information or call 416-631-4438.

The Loess Prairie

by David Zahrt

I live on a century farm in Iowa in a house built by my great grandfather. The farm is on the west slope of a string of wind-blown hills that stretch for 140 miles (225 kilometres) along the Missouri River. To the west is the river delta; to the east the Loess Hills rise from the floodplain. A photograph of the house taken in 1895 shows the tree-less hills covered in a mixed-grass prairie, the original Loess (wind-blown in German) Prairie.

Some 30,000 years ago the centre of the North American continent was covered with a glacier. As it moved south, the glacier ground rock to flour. Twenty thousand years ago it began to melt and recede along what we now call the Missouri River, leaving a rockpile (moraine) in my front yard! Over the next 10,000 years heavy winds lifted the rock flour and deposited it in a dirt drift over the moraine, leaving behind a thin layer of Grade A topsoil.

The vegetation that took root in these hills had to withstand harsh conditions: strong winds, minimal rainfall and blazing sun on the south and west slopes. Fire played a role in managing the prairie, keeping woody plants at bay. The native grasses and forbs have developed deep root systems from five feet to 15 feet (1 1/2 metres to 4 1/2 metres). Not only do these roots hold water in the soil, they allow rainfall and snow melt to percolate slowly into the hills. Legumes, which contribute nitrogen to the soil, number among the plants that make up this community of diversity.

Over the past half-century intensive grazing of cattle has damaged this fragile ecosystem. When cows or sheep over-graze the prairie, the grasses no longer have enough leaf area for photosynthesis to occur, preventing them from adequately replenishing their root systems. Exotics with shallow roots such as bluegrass (*Poa pratensis*), cockleburs (*Xanthium strumarium*), bull thistles (*Cirsium vulgare*), jimsonweed (*Datura stramonium*) and hemp (*Cannabis* sp.), to name a few, quickly take hold. Many of them regenerate from seed.

Before European settlement the buffalo grazed the prairie but in a controlled fashion: they kept moving. The decimation of the gigantic buffalo herds and the suppression of the fires that had historically maintained the prairie ecology radically changed the landscape. Woody species began moving in. In the 1950s, when I left home for university, there were oak savannah, dogwood and sumac



PHOTOGRAPH COURTESY DAVID ZAHRT

A peek at the west slope of Loess Hills.

thickets with scattered walnut trees on the north slopes. I was gone for over 30 years, returning to the old homestead in 1989. By then the hills were 75% covered in trees with eastern red cedars (which confusedly bear the botanical name of *Juniperus virginiana* and are more commonly known as junipers) blanketing the south and west slopes. Nothing grew under the juniper groves. On the other slopes black walnut (*Juglans nigra*), burr oak (*Quercus macrocarpa*), red oak (*Quercus rubra*), elm (*Ulmus rubra*), hackberry (*Celtis occidentalis*), ash (*Fraxinus pensylvanica*), white mulberry (*Morus alba*), ironwood (*Ostrya virginiana*) and a dense understorey succeeded the prairie flora.

I launched a managed grazing program. I cut 3 1/2 miles (5.6 kilometres) of electric fence line through the juniper infestation. Then I laid 2,500 feet (762 metres) of water line through the pasture. I pumped the water from an existing cistern 140 feet (43 metres) of rise to a 1,500-gallon (5,677-litre) tank that gravity-fed the water to the far end of the pasture. Then I began rotating the cattle through the pastures. After three years the paddocks, which had been dominated by thistles (*Cirsium vulgare* - classified as noxious weeds in Iowa), were covered in native grasses.

Since I was out on the pasture daily from early April to late September I had the opportunity to observe the prairie in all its growth stages: vegetative, flowering, seeding and final disappearance. I began to identify the native species as coming in a procession. First comes the pasque flower (*Anemone patens*) around Easter, before anything green is up. Next come the ground plum (*Astragalus crassicaarpus*), prairie dandelion

(*Agoseris cuspidata*), prairie violet (*Viola perdatitfida*), prairie ragwort (*Senecio plattensis*) and both puccoons: hoary (*Lithospermum canescens*) and fringed (*L. incisum*). Throughout May I see dainty blue-eyed grass (*Sisyrinchium campestre*) and locoweed (*Oxytropis lambertii*) which causes neurological damage in animals who eat it. A host of other prairie forbs emerge at this time. In early June prairie willow (*Salix humilis*) and New Jersey tea (*Ceanothus americanus*) are blooming and some of the early grasses such as porcupine grass (*Tipa spartea*) have begun to emerge.

I was surprised to discover that many native species had survived. I decided to liquidate the cattle herd and begin the process of reconstructing tired pasture into prairie.

I scheduled Vernal and Autumnal Equinox celebrations. I invited all who would join me to help clearcut the junipers with weed-whips, snippers, chainsaws and bandsaws. Then we would stir up the bed of needles and overseed with locally collected seed. We would always conclude the day with a potluck and reflective conversation.

If I had the funds I would hire a skid loader with hydraulic shears to cut and stack the junipers. There is a limit to the extent he can climb the hillside and the remainder would have to be cleared by hand. An alternative would be to bring the bulldozer in when the ground is frozen but then the job becomes very costly in a hurry.

I have been fortunate to enlist the help of college students hired by The Nature Conservancy each summer to recover prairie. The two days of work I obtain from 10 to 12 students saves a month of work for me.

New & Noted

I see myself involved in three different types of prairie nurture.

1. **Protection:** designed to preserve that which has survived. This work covers about 15 acres (six hectares) of ridges where species of concern such as Missouri milkvetch (*Astragalus missouriensis*) and prairie moonwort (*Botrychium campestre*) grow.

2. **Restoration:** coaxing remnants back into full standing. This is done by collecting seed from the native prairie and overseeding areas that are in danger of being crowded out. Prescribed burns and mowing the unwanted annuals before they can drop seeds are part of the strategy.

3. **Reconstruction:** an attempt to convert juniper thickets or over-grazed, weed-infested cool-season grass (bluegrass) pastures by seeding them down and waiting for the prairie to succeed against the annual weeds that invariably ensue.

This last strategy can be frustrating. I am attempting to reconstruct what I label "tired pasture", land that has been managed for cool-season grasses. The result of agricultural management is that the soil is compacted - so there is no soil tilth - and was likely overfertilized both with chemical fertilizers and manure. Anecdotal evidence points to the presence of a seed bank of annuals that are not native to this region. Once the ground is disturbed, or laid fallow, and the use of herbicides is suspended, the seeds germinate.

I like to point out to visitors that Cole Porter wrote a song about the Loess Hills: "Don't Fence Me In". A line in the chorus goes: "I want to ride the ridge where the West commences" and the Loess Hills are the ridge where the West commences! The evidence? Soapweed yucca or *Yucca glauca* (whose common name derives from the fact that its roots and palm-like leaves were used as soapmaking materials by natives of the Southwest), the purple-flowered skeleton weed (*Lygodesmia juncea*) and nine-anther dalea (*Dalea emeandrea*) are among the species that grow on the west slope of our hills. They are also at home in western Nebraska, Oklahoma, Arizona and New Mexico - but not in central Iowa.

This leads me to conclude that even though I am frustrated by how long it is taking me to reconstruct my prairie (it took 45 years to degrade it but I want it to recover in two to three years), it is well worth the effort.

David Zahrt maintains stewardship over his fragment of the Loess Hills.

Native Plants for High-Elevation Western Gardens by Janice Busco and Nancy R. Morin (Golden, Colorado: Fulcrum Publishing, 2003. 352 pages, p.b., \$29.95 U.S., ISBN 1-55591-475-6)

You may think that conditions are tough in your garden, but consider this: wildly fluctuating temperature extremes, not just seasonally but *daily*; intense deluges then drought; blazing sun and drying winds...These are the hallmarks of the western mountains and high plains, and the unique challenges of gardening at 4,000 to 12,000 feet (1,200 - 1,600 metres). Gardeners in high-elevation regions in the West now have an essential guide to gardening with plants that thrive in such conditions. All of the 150 species covered in *Native Plants for High-Elevation Western Gardens* have been grown at The Arboretum at Flagstaff, Arizona, where co-author Nancy Morin is executive director. (Co-author Janice Busco has 20 years of experience with native plants and is an active member of the Arizona Native Plant Society.)

Each plant is featured on a double-page spread that includes a colour photograph and extensive cultivation information. The native range section for each plant is particularly detailed, including not just state and habitat but also elevation. Also useful are the plant combination suggestions.



Wily Violets and Underground Orchids: Revelations of a Botanist by Peter Bernhardt (Chicago: University of Chicago Press, 2003. 256 pages, p.b., \$17 U.S., ISBN 0-226-04366-5)

Orchids are lucky plants--they seem to attract great writers who engage in passionate missions to share arcane lore and outright bizarre botanical facts, all in an effort to get the reader enthused about the natural world. Drawing on decades of experience in places as diverse as El Salvador, Australia and the U.S., Peter Bernhardt has written a collection of essays united by wonder--the wonder of evolutionary adaptation, the wonder of pollination and interaction, quite simply, the wonder of life in the

plant world. Orchids are represented in five chapters, but Bernhardt also explores Amazonian giant water lilies, the common violet, prairie grasses, mistletoe and - in a delightful chapter called "Pollinating Possums" - climbing rodents.



Ferns for American Gardens by John T. Mickel (Portland: Timber Press, 2003. 370 pages, p.b., \$24.95 U.S., \$34.95 CDN, ISBN 0-88192-598-5)

I confess to fern fanaticism. It's as close to snobbery as I get in the garden: while others are drawn to bold flowers, I swoon for spores, a more specialized obsession. Ferns are, quite simply, fascinating at all stages in their lives--from their first perky unfurling through to their winter drooping (or, for the evergreen ferns, their tidy green poking through snow).

Ferns for American Gardens was unavailable for many years, but it's now back in print in an updated edition that will delight fellow fern fanatics. (While the bulk of the book contains the original edition's text, the resource material has been updated.) Liberally illustrated with striking colour photos and line drawings, this book will banish the novice's fear of ferns; indeed, Mickel's approach to fern cultivation is based on the principle of benign neglect, perfect, as he says, for a procrastinator's schedule. If Mickel makes fern propagation sound almost too easy (why, he makes me wonder, have I killed so many maidenheads?), he provides plenty of examples of ferns that are more difficult to grow--and more difficult to find in the nursery trade. (A nice touch, he includes a commercial availability rating for each species.)

The book includes 530 kinds of ferns in 50 genera, with an emphasis on natives. Along with cultivation and propagation information, Mickel also provides excellent design ideas, suggestions for plant combinations, and--unusual for fern books--excellent information on the natural hybridization that occurs among ferns. Highly recommended.

Reviewed by Lorraine Johnson

Native Plant Info Network Expands

The Lady Bird Johnson Wildflower Center has expanded its commitment to promoting plant-related organizations and events to a North American audience by developing a fully automated National Organizations Directory and National Event Calendar as part of its Native Plant Information Network (<http://www.wildflower2.org>).

These free services provide peer institutions with an opportunity to promote themselves, as well as upcoming conferences, workshops and educational programs. To add your organization to the directory or post events in the calendar contact Stephen Brueggerhoff, Native Plant Information Specialist, at wildflower@wildflower.org.

Asian Long-Horned Beetle:

Reflections on protecting our trees

by Henry Kock

In September, 2003 I met local foresters and representatives from the Canadian Food Inspection Agency at an Asian long-horned beetle (ALB) training session behind a factory warehouse at 4000 Steeles Avenue in Vaughan, Ontario. This zone of bleak spiritless industrial enterprise is replicated worldwide in global manufacturing, importing and shipping centres, where the few trees are planted in rows on poor soil. It was in one such industrial area that a worker noticed, on the roof of his car, a three-centimetre-long (1.2 inches) black beetle with white blotches and white bands on the antennae (called starry-sky beetle in its native China, Asian long-horned beetle here).

Our group was looking at a half dozen dead trees, 10 to 20 centimetres (four to eight inches) in diameter. The trees had been dead for a few years, the bark was off, the stems bleached and cracked. No one had noticed they were dying. Even the landscape company had not seen the dozens of one-centimetre-round (two-fifths of an inch) holes in the trunks.

For an infestation of ALB to occur in Ontario, at least two beetles, a male and a female, had to arrive at the same time to mate, and the female had to successfully lay eggs on an appropriate host tree. In this case it was a maple, one of the beetle's favorite-smelling trees. It took a few years for the tree to be tunneled enough to be killed. The adults would have emerged in mid-summer to early fall. Once fertilized, the female would have stayed fairly close to where she exited the tree and laid eggs in scratched-out patches on the smooth bark. The very young larvae would have overwintered, then fed heavily in spring and summer in the cambium area, eating both outer heartwood and inner bark at the same pass. Maple, horse chestnut, elm, poplar, willow, birch and alder are known host species.

In the trees I cut into, there is a tunnel going deeper into the trunk either for feeding or for refuge. There is also a palm-sized patch of adjoining tunnels right under the beetle's still-visible egg-laying patch. The larvae would spend a significant amount of time feeding just underneath the thin bark – exactly where insect-loving hairy and pileated woodpeckers would search for food - if there were local habitat for them.

In its native China, ALB is considered

destructive as well, but only because Nature is compromised due to deforestation, extensive settlement and monoculture forests that lack diverse habitat for predators. At 4000 Steeles there is no habitat at all. It is nearly a biological desert.

All trees have associates and defences. Predators and parasites keep insect pests in check (like gleaner fish on a dolphin) and the defence mechanisms of a tree's immune system protect it from diseases. Biodiversity is necessary for these systems to work well. When a new insect species, like gypsy moth, forest tent caterpillar or fall cankerworm, migrates into an area, it takes a few years before predators and parasites such as birds, mammals and other insects, discover and develop a "taste" for the new organism, and learn to find it frequently. It may take a while, but it always happens. Insects, like animals, are subject to a whole range of viral and bacterial diseases as well and it takes time for these disease organisms to adapt to a new host.

In 1870 the gypsy moth escaped confinement near Boston and by 1890 the U.S. government was convinced that it would wipe out

habitat – the compromised individuals – that succumbed. Gypsy moth has now covered extensive parts of eastern North America and the forests are still relatively healthy other than stresses associated with climate change and industrial activities. Dozens of predators, parasites, bacterial and viral diseases are responsible for gypsy moth decline.

Foresters suggest that, if not eradicated, ALB will devastate the maples of eastern North America. We have heard the story before and it simply won't happen. No organism is completely destructive. I believe that predators and parasites will really get into this meal-sized bug. Squirrels will eat the adults, woodpeckers will find the huge grubs just under the bark and numerous parasites will ultimately diminish the threat of ALB in the wild, in habitat-rich areas where biodiversity rules the day. Individual trees along roads, suburbs, tidy yards of the older parts of the city, parks where dead trees and branches are removed, and over-managed forests - the ones that are "cleaned up" - provide little habitat and little food for the diverse predators required to respond to an invading insect such as ALB or Emerald Ash Borer. Import



Backyard understorey and woodland path in Henry Kock's yard.

the forests of eastern North America. They sprayed pesticides to no end, gypsy moth continued to spread, trees were defoliated and leafed out again. The following year, defoliated again and again, the trees leafed out a little weakened. Ultimately trees died but it was only the weakest or those located on less ideal

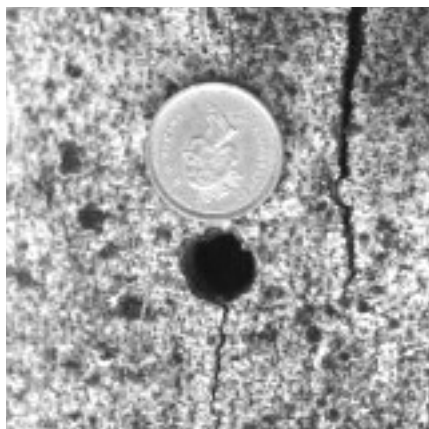
warehouse zones like Vaughan and major ports such as Halifax or New York City are the worst - any organism that can eat a tree, pizza crust or cigarette butt will thrive there.

ALB search-and-destroy efforts in Chicago have taken out 1,547 infested trees (and thousands of host trees*) since 1998. They appear

PHOTOGRAPH COURTESY HENRY KOCK

to be very close to exterminating ALB. In New York City over 6,000 trees have been removed since 1996. New import rules for wooden crates will likely prevent another release of the beetles. Search-&-destroy has started in Toronto and the invasion zone is small enough that the beetle may be eradicated. That would be quite amazing. But, if the ALB breeches the present zone and keeps spreading, how many thousands of trees must be cut before we decide to give predation a chance? We might find that eradication campaigns fail because they do not allow predator populations to build up in response to invasions.

It is an extreme measure to cut down every host tree within 700 metres or 765 yards (the distance a female beetle can travel) of a tree known to be infected. In fact, some host tree removal could be avoided if funds were made available to inspect all trees that could possibly be attacked by Asian long-horned beetles that are in the vicinity. I think a little discretion and improved inspection is needed. There are trees that are on their way out anyway (and the invasive alien Norway maples (*Acer platanoides*) don't even need to be inspected) but healthy trees, sugar maples (*Acer saccharum*) and silver maples (*Acer saccharinum*) in particular, are too valuable to cut just for caution's sake. Instead, send a climber in to inspect each tree, develop a tree



PHOTOGRAPH COURTESY HENRY KOCK

Holes made by Asian long-horned beetles are about the size of a man's baby finger nail.

stethoscope to listen for the munching sounds and apply a systemic insecticide to the very best trees that are at risk. Cutting down uninfected trees as a protective measure doesn't make sense.

If the beetle escapes containment, should we raise our arms in despair? I don't think so. We need to be observant, watching for and encouraging predators. As a last resort, I would consider releasing ALB predators from China, after evaluation of potential harm they may do to our environment.

We all need to plant a greater diversity of trees in our own yards and parks. We should also protect places

where a dead tree can be left standing or be felled for secondary wood-boring insects that will sustain predators and parasites such as ichneumonid wasps. Create dead trees by girdling some Norway maples every few years in the woodlands where this species threatens native plants.

To report sightings of Asian long-horned beetles or evidence of their presence contact USDA Forest Service at <http://www.na.fs.fed.us/spfo/alb/> or the Canadian Food Inspection Agency at <http://www.inspection.gc.ca/english/toce.shtml>.

Humans have always posed the greatest threat to forests, why else would we have the old expression "Forests precede civilization and deserts follow"? Nature is amazingly resilient but it requires both genetic and biological (species) diversity, and a human hand (and budget) to restore the structural (habitat) diversity in these highly fragmented landscapes.

Henry Kock is an Interpretive Horticulturist at the University of Guelph. He transformed his own urban backyard into a woodland with over 100 tree, shrub and herbaceous species along with stumps, logs, a marshy hollow and a brush pile. There is abundant life and food with no feeders. The daily foraging of predators prevents an outbreak of pests. Henry is having an "open garden" on June 12th from 1-5pm at 286 Kathleen Street, Guelph, Ontario. All are welcome.

* Host tree refers to a tree such as a maple, elm or poplar that female beetles will use (because it smells right to them) but have not reached yet.

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Correction

In the "Indian Grass" article, *Blazing Star* fall 2003, the spelling of the term for the central axis of the flower of *Sorghastrum nutans* should be rachis.

Toronto house with native plants

Moore Park house for sale. Idiosyncratic: partly original 1920's, but three bedrooms, three baths, French doors onto garden. 30'x120' lot with some aliens, but young oaks, cedars, serviceberries, dogwoods, spring ephemerals, summer meadow, fall seedheads, summer-fall-winter berries. Call 416-485-3522.

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NANPS Seed Exchange Update

The following species are available to members. (You can order seeds without having donated to the Exchange.) See ordering instructions and key to donors following this list. An asterisk (*) before a species names indicates that quantities are limited.

<i>species</i>	<i>common name</i>	<i>donor</i>	<i>location</i>
Ferns			
<i>Polystichum acrostichoides</i>	Christmas fern	jf	Stoney Lake, ON
Grasses & Sedges			
<i>Bouteloua curtipendula</i>	side-oats gramma	jb	Guelph garden
<i>Bouteloua gracilis</i>	blue gramma	jb	Guelph garden
<i>Carex bicknellii</i>	Bicknell's sedge	jb	Guelph garden
<i>Carex grayi</i>	Gray's sedge	jb	Guelph garden
<i>Deschampsia caespitosa</i>	tufted hairgrass	nc	southwest PA
<i>Eragrostis spectabilis</i>	purple love grass	wb	garden
* <i>Schizachyrium scoparium</i>	little bluestem	ke	Guelph garden
* <i>Schizachyrium scoparium</i>	little bluestem	jf	Stoney Lake, ON
Perennial Flowers			
* <i>Actaea pachypoda</i>	white baneberry	rh	garden
<i>Agastache foeniculum</i>	blue giant hyssop	jb	Guelph garden
<i>Agastache nepetoides</i>	yellow giant hyssop	gh	Whitby
* <i>Agastache scrophulariifolia</i>	purple giant hyssop	lr	Durham, ON
* <i>Allium tricoccum</i>	wild leek	rh	garden
<i>Agrimonia</i>	agrimony	jh	Luther Marsh, ON
<i>Alisma triviale</i>	northern water-plantain	lr	Durham, ON
<i>Anaphalis margaritacea</i>	western pearly everlasting	rh	garden
<i>Anemone canadensis</i>	Canadian anemone	rh	garden
<i>Aquilegia canadensis</i>	wild columbine	rh/si	garden
* <i>Arisaema triphyllum</i>	Jack-in-the-pulpit	rh	garden
<i>Asclepias incarnata</i>	swamp milkweed	dm/wb/dld/jm	garden
<i>Asclepias sullivantii</i>	Sullivant's milkweed	wb	garden
<i>Asclepias tuberosa</i>	butterfly milkweed	jb	Guelph garden
<i>Asclepias tuberosa</i>	butterfly milkweed	dmg	Mississauga, ON
<i>Aster macrophyllus</i>	big-leaf aster	jb	Guelph garden
(New name: <i>Eurybia macrophylla</i>)			
<i>Astragalus canadensis</i>	Canada milk vetch	hm	garden
<i>Campanula americana</i>	tall bellflower	jf	Stoney Lake, ON
<i>Chelone glabra</i>	white turtlehead	dm/dd	garden
<i>Chelone lyonii</i>	pink turtlehead	dm	garden
<i>Desmodium canadense</i>	showy tick-trefoil	wb	garden
<i>Desmodium canadense</i>	showy tick-trefoil	lj	Ojibway Prairie, Windsor, ON
* <i>Dodecatheon meadia</i>	shooting star	rh	garden
<i>Echinacea purpurea</i>	purple coneflower	nm/ed	garden
<i>Eupatorium maculatum</i>	spotted Joe-Pye weed	jf	Stoney Lake, ON
<i>Eupatorium perfoliatum</i>	boneset	jb	Guelph garden
<i>Eupatorium rugosum</i>	white snakeroot	nm	garden
<i>Glandularia canadensis</i>	rose vervain	nc	garden
<i>Helenium autumnale</i>	common sneezeweed	gh	garden
<i>Hypericum ascyron</i>	great St. John's-wort	gh	garden
<i>Liatris spicata</i>	dense blazing star	rh/jb	garden
<i>Monarda punctata</i>	dotted horsemint	gh	garden
<i>Parthenium integrifolium</i>	wild quinine	hs/jb	garden
<i>Penstemon canescens</i>	eastern gray beardtongue	rh	garden
<i>Penstemon digitalis</i>	foxglove beardtongue	jb/rh	garden
<i>Penstemon hirsutus</i>	hairy beardtongue	jb	Guelph garden
<i>Penstemon smallii</i>	Small's beardtongue	jf	Stoney Lake, ON
<i>Ratibida pinnata</i>	grey-headed coneflower	jf	Stoney Lake, ON
<i>Rudbeckia hirta</i>	black-eyed Susan	nm	garden
<i>Sarracenia purpurea</i>	pitcher plant	jh	Luther Marsh, ON
<i>Silphium integrifolium</i>	rosinweed	jf	Stoney Lake, ON
<i>Silphium terebinthinaceum</i>	prairie dock	jf	Stoney Lake, ON
<i>Solidago caesia</i>	blue-stemmed goldenrod	rh	garden
<i>Solidago elliotii</i>	Elliott's goldenrod	hm	Scarborough, ON
<i>Solidago flexicaulis</i>	zigzag goldenrod	nm	garden

<i>species</i>	<i>common name</i>	<i>donor</i>	<i>location</i>
Perennial Flowers, continued			
<i>Verbena hastata</i>	blue vervain	nc/nm/dld	garden
<i>Verbena stricta</i>	hoary vervain	wb	garden
<i>Vernonia altissima</i>	tall ironweed	jh	Alexandria, Virginia
(New name: <i>Vernonia gigantea</i> ssp. <i>gigantea</i>)			
<i>Vernonia noveboracensis</i>	New York ironweed	jb/gb	garden
<i>Veronicastrum virginicum</i>	Culver's root	jb	Guelph garden
* <i>Zizia aptera</i>	heart-leaf Alexanders	gb	garden
<i>Zizia aurea</i>	golden Alexanders	jf	Stoney Lake, ON

Shrubs

<i>Ilex opaca</i>	American holly	jh	Alexandria, Virginia
<i>Rubus odoratus</i>	flowering raspberry	rh	garden

Trees

<i>Carya tomentosa</i>	mockernut hickory	jh	Alexandria, Virginia
* <i>Liriodendron tulipifera</i>	tulip tree	jh	Alexandria, Virginia
<i>Ptelea trifoliata</i>	hoptree	hm	garden
* <i>Aesculus octandra</i>	yellow buckeye	ta	Toronto, ON

Seed Exchange Update Donors

dd	Dan Denby	gb	Gillian Boyd	jh	Jim Hodgins	lr	Libby Racansky	ta	Tom Atkinson
dld	Deborah L. Dale	gh	Greg Hagan	jf	James A. French	nc	Nancy Carr	wb	Wayne Buck
dm	Darcie McKelvey	hm	Howard Meadd	jm	Jane Murphy	nm	Nancy Mungall		
dmg	Donna McGlone	hs	Harold Smith	ke	Kathy Edgar	rh	Rolf Hertling		
ed	Eva D'Amico	jb	Judy Brisson	lj	Lorraine Johnson	si	Stan S. Imada		

Seed Exchange: First Round

The above list includes newly donated seed and seed left over from the December seed exchange. **Please do not order seed from the fall issue of *Blazing Star*.** The new deadline for seed requests is April 15th. We package seed according to the number of requests, and cannot accommodate any orders after that date.

Please include the following information with your request for seeds: name and mailing address, species you'd like (in alphabetical order by botanical name – this saves us time) and any substitutes (list them in order of preference). If you'd prefer seed from a specific source, please note that. We'll try to accommodate you. Mail your request to NANPS Seed Exchange, Box 84, Stn D, Etobicoke, ON M9A 4X1 or e-mail: seeds@nanps.org. Note that orders will not be processed until your money has been received. You may request up to 15 packets, 30 if you donated seed or spores to the Exchange this year. Include \$1 for the first packet and 50 cents for each additional packet – CDN funds in Canada, U.S. funds for U.S. requests.

A heartfelt thank you to all who donated to the NANPS Seed Exchange. I would personally thank Libby Racansky who donated some unusual treasures from her unusual "garden" and Rolf Hertling whose late donation of

woodland seeds proved extremely useful in filling the first-round orders. Special appreciation is due to the seed cleaners who were all fastidious in cleaning even the frustrating asters and goldenrods: Nancy Mungall, Feng Gao, Harold Smith, Donna McGlone, Barb O'Malley, Howard Meadd, Greg Hagan and Grif Cunningham. Kathy Edgar, who is actually an angel pretending to be a human being, kept meticulous track of the orders and printed our spiffy labels. She also inaugurated the germination guide that accompanied each order. Donna McGlone graciously hosted our seed-packaging event which was attended by virtually everyone mentioned above plus Judy Zinni, Nadia Edge and Sarah Augustine. Thank you to everyone.

Biggest mistake: We had enough *Helianthus divaricatus* to fill half an order. Why did I list it on the seed insert? Many people will be disappointed. We ran out of *Tiarella cordifolia*, *Celastrus scandens*, and *Caulophyllum thalictroides*. Howard Meadd saved the day by collecting *Sorghastrum nutans* seed from his garden in the January snow after we discovered we had so many requests for Indian grass.

What I would do differently next year: Donors of seed get their orders filled first.

To those of you who actually got *Caulophyllum thalictroides* seeds: You are fortunate! Please keep these seeds for at least five years before giving up. They have extended germination cycles. Don't ever let the pots dry out, even in the hottest August days. The blue skin inhibits germination and needs to be removed. A tip from *Growing at-Risk Medicinal Herbs* by Richo Cech: put the seeds in a mesh bag, hang it at the back of your kitchen sink, rinse twice daily for at least 30 days before planting. This leaches out the germination-inhibiting compounds, and, since the process is performed at room temperature, it fulfills the initial warm stratification requirement.

Warning: The intrepid James Hodgins, editor of *Wildflower*, recently visited Alexandria, Virginia where he collected seeds for this insert. Most are outside the Great Lakes climatic zone and are unlikely to withstand Canadian winters. I understand the northern range of *Carya tomentosa* to be south Michigan, while for *Ilex opaca* it's listed as Massachusetts. Please note this before you invest energy in germinating these darlings.

Darcie McKelvey, Seed Exchange Co-ordinator

Continued from page 1

Both differ from the innocuous taller sumacs whose large pinnately compound leaves can have as many as 27 leaflets.

Although the fragrance may be unappealing, and the allergenic properties a possible concern, I have developed a great admiration for the many useful and distinctive qualities of fragrant sumac. It shares with the other sumacs characteristics we easily identify with this group of plants: compound leaves that turn variable colours (orange through deep red) in fall, fuzzy red fruit, curving branches and a suckering habit. However, it is distinctly different in other respects. It matures to about 1.5 metres (five feet) in the more northern part of its range (from Manitoulin Island to the west and Ottawa Valley to the east in Ontario). By contrast, I have seen staghorn sumac specimens (*Rhus typhina*) over three metres or 10 feet high. (Some references say they can grow over 12 metres or 40 feet.)

While the larger sumacs tend to sucker prolifically, and rapidly form colonies in full sun, fragrant sumac is slower to develop suckering growth and will eventually form a dense shrub even in a fair bit of shade. It is not prone to any serious pests or diseases. I have never even seen a nibble on the leaves, a testament to the plant's tough nature. These characteristics alone make it an excellent choice for difficult shady spots in low-maintenance gardens or naturalized sites. What's more, like the other sumacs, fragrant sumac is tolerant of a wide range of soil conditions and is often found in infertile soils that receive little moisture. It has a great ability to cling to slopes, serving to stabilize the soil with its shallow fibrous root system. It is a relatively short-lived pioneer species that prepares the way for longer-lived trees and forest plants.

Like other members of the *Rhus* genus, the female *R. aromatica* bears a fuzzy red cluster of fruit, but it's smaller: the round terminal mass of fruit is only four centimetres (about 1 1/2 inches) in diameter. The yellow clusters of flowers appear early in spring. The tan-brown male catkins develop during the summer and persist through fall and winter. I have never found any plants identified as male or female when purchasing them from nurseries. To increase the odds of planting at least one female that will produce fruit, it is recommended that you purchase a minimum of two specimens. Although birds obviously don't relish the sumac's fruit as much as they do serviceberries (*Amelanchier* spp.) or other tastier types, both the stems and fruit are eaten by many species of wildlife. A manual for

environmental designers on North American native trees and shrubs, written by Gary Highshoe, rates fragrant sumac's wildlife value as very high, saying it provides "winter food for many upland game birds, songbirds, large and small mammals, hoofed browsers".

Humans have also found many uses for fragrant sumac over the centuries. First Nations Peoples took advantage of the astringent properties of the leaves and bark by making poultices. The root was made into a concoction to treat diarrhea. The bark and berries were used in medicines. Due to the high tannin content of the leaves and bark, fragrant sumac was used for dye and for tanning leather. The fruit can be made into a tea that tastes rather like lemonade.

Fragrant sumac has an extensive range that includes all of the United States east of the Rockies as far south as Kansas and Louisiana, and north into Ontario and southwestern Quebec. Although there is little concern about its rarity throughout most of its range, in Quebec the small population is listed as threatened. *Rhus aromatica* is cold-hardy to USDA Zones 3 or 4.

Virtually all the gardens and naturalization projects I have designed include fragrant sumac. I find there is always an area that will benefit from the addition of this tough plant with its fall colour interest. Often it is relegated to a "trouble spot" with low light levels, poor soil and dry conditions. I have used it successfully on a steep south-facing slope under oaks and maples where little else survived.

Fragrant sumac is growing well on a strip of inhospitable land sandwiched between a railway corridor and a busy Toronto street. My business partner, Michelle Cope, and I designed this particular naturalization project for local residents who had raised the money and enthusiasm to plant these public lands with native plants. In another of our projects, *Rhus aromatica* is expected to survive in an area in a small park that is exposed and dry, and has had trucks run over it several times. Fragrant sumac has a greater chance of taking the abuse than the other plants and may act as protection for them.

Michael Dirr, author of *Manual of Woody Plants*, says of fragrant sumac that although it is "somewhat of a second-class citizen", he "cannot remember any (of the hundreds he has seen over the years) that were offensive". He adds: "I suspect that when a planting becomes overgrown it can be easily rejuvenated with a large mower, bush hog or other instrument of destruction". I hope nothing like this happens to any specimens I've planted, but then again, I won't object or worry if deer decide to chow down on them over winter.

Catherine Siddall designs, builds and maintains gardens. She is a long-time member of the Toronto and Parkdale Horticultural Societies and NANPS. Catherine is a partner in Siddall and Cope which offers services to groups wanting to establish community gardens or naturalization projects. Call her at (416) 531-2253 or rc.siddall@sympatico.ca

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