The Blazing Star

Winter 2007, Volume 8, Issue 1

Newsletter of the North American Native Plant Society

Native Plant to Know

Indian paintbrush

Castilleja coccinea

by Paul Heydon

A number of years ago, while hiking on the Carden Alvar north of Toronto, I stumbled across a stand of Indian paintbrush (*Castilleja coccinea*). It was a breathtaking scene: a sea of brilliant scarlet, orange and yellow. I now go back every year to see the show.

Indian paintbrush is a terrestrial herb found on alvars, moist meadows, prairies and open woods. At Carden it grows on thin, moist soils over limestone bedrock. Cattle graze the meadow, preventing shrubs from overtaking the flowering plants. Some of the species growing with it are balsam ragwort (*Packera paupercula*), little bluestem (*Schizachyrium scoparium*), wood lily (*Lilium philadelphicum*), hairy beardtongue (*Penstemon hirsutus*), prairie smoke (*Geum triflorum*) and blue-eyed grass (*Sisyrinchium montanum*). When combined with *Castilleja coccinea*, they offer a varied palette of scarlet, orange, blue, pink and yellow from spring through summer.

Indian paintbrush does not perform well in shade and is typically found on sub-acid to slightly alkaline soils. Its range extends from the Missouri River west into Kansas and Oklahoma, and north into portions of Saskatchewan, Manitoba and Ontario. In Ontario 50% of Indian paintbrush's elemental occurrences are found on alvars.

Castilleja coccinea reaches heights of 60 centimetres (two feet). The leaves on the flower stalk are shaped like birds' feet. The basal leaves are either three-lobed or entire. The flowers are perfect (they have both pistillate [female] and staminate [male] parts), inconspicuous, in a dense terminal spike, irregular, 2.5 centimetres (one inch) long, and borne in the axil of the bract. The three-lobed bracts with showy scarlet tips provide the spectacle. The species name *coccinea* means scarlet although sometimes the bracts are yellow and look like their ends have been dipped in paint, hence the common name paintbrush. It's the bracts, not the inconspicuous flowers, that attract pollinators such as hummingbirds. Flowering takes place from May to August. The fruit is a small capsule producing hundreds of small seeds. Botanists do not know how the seed is dispersed.

Most taxonomists place Indian paintbrush in the figwort (Scrophulariaceae) family. Others place this plant in the broom-rape (Orobanchaceae) family due to shared molecular features. Indian paintbrush is primarily a biennial, although sometimes it can be annual, producing a basal rosette the first year and flowering stalk the second year. The plants die shortly after seed set.

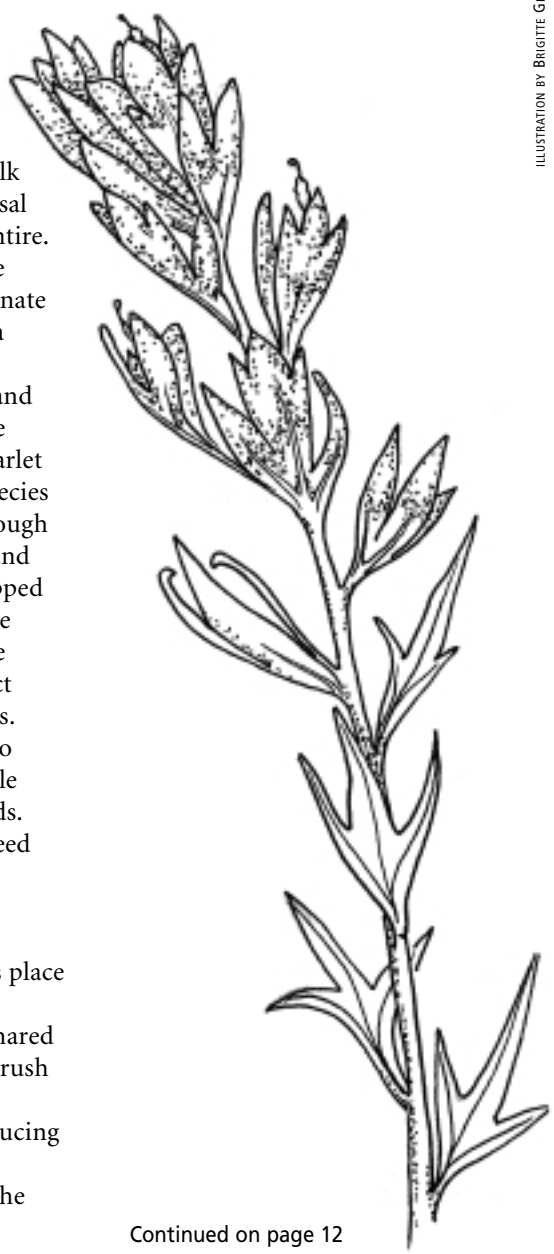

Illustration by Brigitte Granton

Continued on page 12

The *Blazing Star* is . . .

The *Blazing Star* is published quarterly (April, August, November, February) by the North American Native Plant Society (NANPS). Contact editor@nanps.org for editorial deadlines and for advertising rates. The views expressed herein are those of the authors and not necessarily those of NANPS.
The North American Native Plant Society is dedicated to the study, conservation, cultivation and restoration of North America's native flora.

Winter 2007
Volume 8, Issue 1

Editor: Irene Fedun
Production: Bea Paterson

North American Native Plant Society, formerly Canadian Wildflower Society, is a registered charitable society, no. 130720824 RR0001.
Donations to the society are tax-creditable in Canada.

NANPS Membership: CAN$20/YEAR WITHIN CANADA, US $20 YEAR OUTSIDE CANADA

Please make cheques and money orders payable to North American Native Plant Society and mail to P.O. Box 84, Station D, Etobicoke, Ontario M9A 4X1.
Telephone: (416) 631-4438. E-mail: nanps@nanps.org. Web: www.nanps.org.

Shining Tree Woods Planting

In fall 2006, a few NANPS members planted trees in the old tobacco field at Shining Tree Woods (STW) in Cultus, Ontario, owned by the North American Native Plant Society. NANPS had received permission to plant endangered cucumber magnolias (*Magnolia accuminata*) from the Cucumber Magnolia Recovery Team, a provincial government organization responsible for endangered species recovery.

Although cucumber trees are abundant in the U.S. they are rare in Ontario. STW has about 30 trees. The Recovery Team recommended establishing a population of 50 viable trees at the NANPS property. Trees donated for the project were grown using seed collected from STW over the last few years. The team met twice in late October. The first time we planted 40 three-year-old cucumber saplings. Some went in near the edge where the forest meets the field. Others were planted out in the centre of the field. A light snow came just as we completed our work.

The following week, among the planted cucumber magnolia saplings we interspersed other species: black gum from STW (*Nyssa sylvatica*), butternut from Port Stanley (*Juglans cinerea*), shagbark hickory from the same seed zone (*Carya ovata*), pawpaw from Tilsonburg (*Asimina triloba*) and American chestnut from the same seed zone (*Castanea dentata*). Already growing in the field through natural regeneration were tulip trees (*Liriodendron tulipifera*), white ash (*Fraxinus americana*), yellow birch (*Betula alleghaniensis*), red and sugar maples (*Acer rubrum* and *A. saccharum*), sassafras (*Sassafras albidum*) and staghorn sumacs (*Rhus typhina*). A little rain fell to celebrate the end of Phase One of our plan.

In Phase Two (spring 2007) we will mulch the plantings in preparation for the dry summer months. We will also smother non-native invasives such as garlic mustard (*Allaria petiolata*) in the woods and cut out non-native Scotch pines (*Pinus sylvestris*) and roses (*Rosa multiflora*) in the field. Working with the Recovery Team we intend to implement a co-operative plan to help propagate and restore cucumber magnolias to nearby sites and ensure that they remain protected.

Greg Hagan

NANPS PLANT SALE

SATURDAY, MAY 5, 2007 - 10AM – 3PM
MARKHAM CIVIC CENTRE
101 TOWN CENTRE BLVD., MARKHAM

Volunteers needed for Plant Sale. High school students wishing to fulfill their 40-hour community service requirements are also welcome to volunteer. Contact volunteer@nanps.org or leave a voicemail message at 416-631-4438.

NANPS Members can order their plants in advance at www.nanps.org until April 8, 2007. Not all species may be available and substitutions may be necessary if plants don't arrive on time.

Green Living Show

Volunteers are needed to help host NANPS booth at this huge environmental showcase at Exhibition Place. Extensive plant knowledge is not required, just enthusiasm and a friendly attitude. Includes free admission to the show and lots of time to view the exhibits. Friday, April 27- Sunday, April 29, 2007. Contact nanps@nanps.org.

Naturalizing with Trees: *A la recherche des arbres perdus*

by Tom Atkinson

The Garden of Eden conjures up lush, fruitful images. In our mind's eye, we gardeners choose the plants in this mythic garden – which we hope to translate into our own earthly parardise – as our needs, wants, and whims dictate. But let us agree on one thing: one type of plant must grow in each garden, and that is the tree. There may be flowers, reeds, grasses, shrubs, ferns, water, sun, shade – the whole range of environments if all of us are to be satisfied, but the tree is essential.

The first spring we were in our home, my wife Linda went to a local nursery and bought a few trees: paper birches (*Betula* sp.) and a camperdown elm (*Ulmus* sp.), for example. (Yes, we do have non-natives.) A year or two later, some of them had deteriorated, even died. Yet the two large silver maples (*Acer saccharinum*) we had inherited rained down keys in June and produced many little maples. These I transplanted around the yard. Some I moved to a public walkway that runs both behind, and on one side of, our property. Silver maples do well here, provided the city lawn-mowing crew does not carelessly rip large chunks of life-sustaining bark from the trees. One of the silver maples continues o tower over the house, providing nature's air conditioning in these hot summers. The other was struck by lightning and had to be cut down. Its stump is now trellis to a trumpet creeper vine (*Campsis radicans*), beloved of hummingbirds and, alas, wasps.

Three decades ago I was doing a lot of woodworking. That led me to thinking: "Where does the wood come from?" and "Shouldn't I plant trees so that in future others might have wood to use?". It was about the same time that I fell – hard – for black walnuts (*Juglans nigra*). Planting this species seemed like a good way to put my convictions into practice.

Using chicken wire to cover the bed and prevent squirrel predation of the nuts themselves, I managed to start quite a few trees. You must keep in mind that a walnut is to a squirrel what a baguette is to a Parisian. Plant a walnut and within an hour a squirrel will have dug it up and eaten it. Not necessarily a bad thing, since squirrels are nature's vectors in seed dispersal – half the nuts they bury are forgotten, allowing a tree to grow. In fact, another trick you could try, if your property is large, is to overwhelm the squirrels with largesse. Collect a bushel basket of walnuts. Leave the basket in your garden. After feasting on these treats, bushy-tail and his crew will bury the rest. Come spring you will be thrilled to observe small walnut seedlings growing in your garden. Leave them where you found them or move them in a month or even next year.

In my yard the walnuts now provide architectural beauty in winter, lovely light summer shade, a bountiful seed crop, and enchanting, soft yellow leaf colour in autumn. It is true that some plants will be adversely affected by a substance, known as juglone, secreted by the roots, but there are many others that are perfectly happy, especially woodland wildflowers such as mayapple (*Podophyllum peltatum*) and wild ginger (*Asarum canadense*).

Twenty-five years ago I discovered what we call our Carolinian species growing in Ontario. (A Carolinian species finds its most northerly range in southern Ontario. Tulip tree or *Liriodendron tulipifera* is my prime example. It is found in greater abundance through the eastern mountains of the USA. Midwestern species such as Ohio buckeye or *Aesculus glabra* are commonly lumped into the Carolinian taxon as well.) Off I went to local nurseries to find these gems. Some could be found; many could not. (Now native trees are more readily available. Visit www.nanps.org/sources/frame.shtml for a list of native plant nurseries.)

Those indigenous trees that I did find were less-than-reliable at times. Some trees languished, even died. I learned that native trees, especially those grown in your own garden (even if the seed is collected elsewhere) will do quite well. With that in mind, and wishing to have Ontario-sourced plants, I got into seed collection and plant propagation.

PHOTO COURTESY TOM ATKINSON

Cornus florida *and* Cercis canadensis *in bloom*

I now have a cucumber magnolia (*Magnolia acuminata*) that is 21 years old, grown from seed collected in extreme southwestern Ontario.

I'd like to take you on a whirlwind tour of the past 25 years as reflected in the successes – and failures – of trees I have grown. Failure is a painful learning tool, but a good one. As you start out, failure can be crushing. Later, it morphs into an opportunity to learn, or move on.

When I was a teenager, my mother would speak wistfully of sweet chestnut (*Castanea dentata*). It had become a known "fact" that the chestnut blight that swept through North America starting in 1904 had rendered these forest giants extinct. So, when I found out that perhaps one percent of the chestnut trees had survived, it was akin to finding out that dinosaurs still lived in a remote wilderness. A good friend showed me where a few trees grew, some on her father's farm. I collected nuts and germinated them. Alas, it was not meant to be where I live. *Castanea dentata* needs good drainage and a more acidic soil than I am able to provide. These beauties succumbed in my garden.

Another favourite is sassafras, *Sassafras albidum*. I collected seed from naturally occurring trees in High Park. If you hope to follow this route, check the trees for ripe seed on or very near August 21st or the birds and squirrels may beat you to it. Sassafras seed takes at least one winter to germinate, sometimes two or even three. Some of my seeds germinated and the trees grew nicely. That year of the high water table caused serious problems with one sassafras. It almost died. A couple of years later, and about a metre and a half (five feet) from the tree, it sent up a sucker from the root. In time, the original tree died. The sucker is now a tree two metres (6.6 feet) high and quite healthy. A male and a female tree are needed for berry production. I have studied the flowers on my trees and I believe I have one of each, but no berries so far!

Why do some species captivate us, while others, so beloved of many, leave us cold? If you know the answer, please write me. One tree which fascinates me is the ericad sourwood (*Oxydendrum arboretum*). In the southern U.S., it is almost a weed. Also called lily-of-the-valley tree, its flowers do look like those of the spring perennial. When the flowers go to seed, the look is still there.

Sourwood can easily be started from seed, as any ericad can: place the minute seed in a shallow bowl on moist sphagnum, mist the seed, and cover it with plastic wrap. In a few weeks, the seed will germinate. It takes care and time for it to reach a size where it can be outplanted. When you do so, you must ensure that your soil has an acidic pH – at least 6.0, preferably less. If you provide this condition, your sourwood has a good chance to thrive. In my garden, this species is both a failure and a success. The specimen that was well over two metres (six feet) tall - and flowered – died two autumns ago. I have no idea why. We have a few smaller specimens but I am not optimistic that they will succeed. It is indeed worth the anguish to hope they will.

Now let's talk oaks. In our city, we find black, red, white, and bur oaks (*Quercus velutina*, *rubra*, *alba* and *macrocarpa*, respectively). In Ontario, we also have Shumard (*Q. shumardii*), pin (*Q. palustris*), chinquapin (*Q. muhlenbergii*), dwarf chinquapin (*Q. prinoides*), swamp white (*Q. bicolor*), Hill's (aka northern pin or *Quercus ellipsoidalis*) and bear oaks (*Quercus ilicifolia*). I have tried all of these in my garden. Some are a reach, yet succeed: pin and Hill's oaks are good examples. Our garden conditions say these two should fail from the get-go, yet both do quite well. Black and bear oaks hang in but ultimately fail due to incorrect soil conditions.

Let me extol the virtues of the two chinquapins. (They do interbreed, by the way.) The ones we have do well anywhere in the garden. They are neither troubled by periods of drought nor periods of wet. The leaves are always a dark, glossy green. The

Photo courtesy David Wells

A walnut planted by Tom Atkinson in fall 1976 produced this beautifull specimen of Juglans nigra *in his backyard*

male flowers hang down in golden chains in spring before the leaves are far advanced. Acorns are produced in one year to feed blue jays and squirrels. The very best red in autumn leaves comes from the Shumard oak. The colour will dazzle you, but places that sell these oaks are few and far between. Another tree I treasure is swamp white oak. It has a soft down, or indumentum, on the undersides of the leaves. In nature it is found in moist conditions but in the garden it can tolerate drier soil.

A superb tree, especially for its summer shade, is the Kentucky coffee tree (*Gymnocladus dioica*). When young, it is the ugly duckling: thick, angular, bare branches. In time, the tree grows more graceful, with a stately winter form, and exfoliating grey-brown bark with hints of rufous where the bark peels back. It's tolerant of many soils and easy to grow.

If you have moist-to-wet, acidic soil please try black gum (*Nyssa sylvatica*). It will grow straight up, with limbs held horizontally. Leaf colour in fall is anything from burnt orange to fiery red. Site this tree carefully. If your soil is not acidic (my rich clay loam has a pH of about 6.8), it must be amended.

My favourite fruit tree is pawpaw. In fact, I have chosen the first part of its Latin binomial, *Asimina triloba*, as my e-mail ID. So long as the soil is not too wet or too dry, pawpaw will do well most places. The leaves look tropical and the fruit is delicious. *Asimina* is happy as an understorey tree, so if you have high shade, try this one.

Sweet crabapple (*Malus coronaria*) and cockspur hawthorn (*Crataegus crusgalli*) are underappreciated, small and floriferous native trees. Be warned: both have thorns. Simply trim them off as they grow 'til the tree is tall enough that you can walk under it without striking the branches. The flowers on both trees are lovely. The sweet crab blossoms in alternate years, produces yellow-green, waxy fruit, with excellent burnt-orange fall leaf colour. The cockspur thorn has pear-like flowers, red berries, and shiny, dark green, coriaceous (leathery) leaves.

Woody plants grown in shade will grow more slowly than in sun. In heavier shade, the lower branches will get less sun, will not leaf out as the tree grows, and will drop off. That's why forest trees have long, branchless trunks, while open-grown ones spread wide. Place your tree where it will thrive. But do plant it. If you don't, and in a few years' time wish you had, you have just lost those years.

Don't be afraid of crowding trees, shrubs, vines, even herbaceous plants. Some will do well for you, and others won't. In someone else's garden just the opposite pattern may prevail. It's simply nature telling us what she wants and needs.

So, what's keeping you? Start planting your own little paradise.

Tom Atkinson is a retired IBMer with an avid interest in native plants, especially woody ones, and terrestrial orchids. He, his wife and three cats plus itinerant wildlife (raccoons, skunks, birds, butterflies, invertebrates) dwell within a self-created, naturalized garden in mid-town Toronto. He may be reached at asimina@sympatico.ca – do not hesitate to send e-mail.

Calendar of Events

March 4-5, 2007
Wildflower Association Of Michigan Conference
Lansing, Michigan
For program info and registration visit www.wildflowersmich.org/conf.htm or e-mail jean@gaiagrass.com.

March 8-10, 2007
12th Water Conservation / Xeriscape Conference
Albuquerque, New Mexico
Contact scott@xeriscapemn.com at the Xeriscape Council of New Mexico.

March 17, 2007
Seedy Saturday
Scadding Court Community Centre
Toronto, Ontario
Suggested donation: $2. More info posted in TCGN Enews and at www.foodshare.net.

April 10-12, 2007
Manomin Watershed Conference
International Falls, Minnesota
Exploring ways to protect and enhance the health of the Manitoba, Ontario and Minnesota basins.
Visit www.manominconference.ca.

April 14, 2007
Backyard Naturalization Workshop
North York Civic Center
North York, Ontario
See page 10 of this issue of the *Blazing Star* for details.

May 5, 2007
NANPS Annual Plant Sale
Markham Civic Centre,
Markham, Ontario
Look for advance sale information on the website at www.nanps.org

Paul McGaw Memorial Conservation Award

The Paul McGaw Memorial Conservation Award recognizes the extraordinary contribution of an individual or group to the conservation, protection or restoration of the natural heritage/native flora of North America at the community, regional, provincial, national or continental level. Visit www.nanps.org/awards/frame.shtml. Submit your nomination by April 1st to nanps@nanps.org or call our voicemail 416-631-4438.

Truth or Consequences

by Sally Wasowski

A friend of mine, Neil Diboll of Prairie Nursery in Wisconsin, recently said: "In nature there is no right or wrong; there are only consequences." I think this is true. Even a casual observation of our landscapes shows that Mother Nature has no prejudice against alien and invasive plants. Nature abhors a vacuum, and she doesn't care which species of plants hold the soil as long as something – anything – does. Most of our efforts at restoring and reconstructing native landscapes are based on our earliest data when North American vegetation was least influenced by European imports and land management. This, necessarily, means that our concepts of what is truly native reflect which plants were recorded by botanists in the early days of settlement and exploration. The bulk of our information comes from the work of Asa Gray, professor of botany at Harvard University, who received pressed plants from explorers all over what is now the United States and published his first manual in 1848.

The first scientific observations made west of the Mississippi River were in 1803 by the Lewis and Clark Expedition. When they explored the sources of the Missouri River, crossed the Rockies, and wintered near the mouth of the Columbia River in the Pacific Northwest, the land they were traversing was uncharacteristically lush and overgrown. This was so for two reasons. The impact of Native American populations on the land had recently been reduced by more than half because of widespread and devastating epidemics of European diseases. And the climate had been unusually cool and moist since 1600. Known as the Little Ice Age, this cooling trend ended in 1850, just as Americans of European descent populated western North America and plowed up the prairies.

Since then, the climate has been, on the average, warming. So, although we are basing our knowledge of native plants on where they were about 1850, we are dealing with warmer and drier conditions. Warmer temperatures mean less moisture because of evaporation. If rainfall doesn't increase with rising temperatures, drought occurs.

Droughts are serious because we don't have the technology to remedy them. In Taos, New Mexico, where [my husband] Andy and I now live, wells are going dry, and rivers and lakes are half full. Forest fires have become frequent, and they are not the beneficial ground or surface fires that occurred every decade in prehistoric times. The trees contain less moisture than ordinary lumber and they are jammed close together. The result is that any lightning strike or carelessly managed campfire can cause a devastating crown fire.

If the drought continues, there will be a permanent shift in vegetation here. Big sagebrush, the cornerstone of an ecosystem called Basin and Range that extends up into Canada, is beginning to die here in its southernmost toe, and if it does, the soft blue-green vistas Taos is famous for will be replaced by brown, blowing topsoil.

I think that what we are talking about here are visible signs of global warming. This is a controversial topic, fraught with politics, but it cannot be denied that our world is getting warmer. Glacier Park in Montana had 150 glaciers when it was mapped in the late 1800s, and now it has only 35. The famous "snows" of Kilimanjaro in Africa lost more than 80 percent of their area in the 1900s. The Qori Kalis glacier in the Andes is shrinking at a rate of nearly two feet (1/2 metre) a day. The sea ice that covers the North Pole is thinning, and in Antarctica huge sections of the Larsen B ice shelf collapsed in 1995 and 2002, letting at least five glaciers loose to starting slipping toward the ocean. When they arrive, sea levels will rise.

Climates all over the globe are changing before our eyes. In the past, there has been sufficient time for

forests to retreat northward or to higher elevations where temperatures are cooler and evaporation less fierce. There has been sufficient time for new species to evolve as the deserts expanded. In this century, the plants will need our help. What I've observed is that southwestern grasslands established before 1850 can hang on in severe drought, going dormant when conditions are especially tough and coming to life whenever rains allow. But once those grasslands are destroyed, they do not regenerate on their own. They are gone forever unless we replant them, and in the Southwest they need to be irrigated to germinate and irrigated again to grow enough to form a soil-holding cover. The result? Non-natives adapted to harsh climates, disturbed soil, and human intervention are taking over.

But even in eastern forests, and midwestern prairies, where rainfall is sufficient for germination of native species without supplemental irrigation, alien invasive plants are taking over. Our native plants support a complex web of mammals, birds, and insects, and because plant roots prevent soil erosion, they are also vital to clean water, fish, and amphibians. If our continent becomes populated only by non-native invasive species, our lives will be greatly impoverished. So, we're facing two problems if we wish to maintain our rich botanical heritage here in North America - a warming climate and invasive species.

Where we can create wildlife corridors, wild species will be able to move around as the climate changes. Where we can't, we may have to start replanting our native lands.

This sounds daunting, but we have been subsidizing ranchers and farmers to do this for decades. The focus has been on the health of cattle and other livestock, and the seed has been alfalfa and non-native grasses. But we could change that. We could grow, harvest, market, and plant native seeds.

Where the land is essentially undisturbed, this would not be necessary, because the more drought-tolerant species are already built into the native diversity. But we have little intact land left. American Indians maintained rich and healthy ecosystems, and we of European heritage have almost completely destroyed our native landed wealth.

Ecologists are developing techniques for restoring and recreating prairies, savannas, and forests, but the efforts I've seen are to restore the ecosytems that existed in 1850 or 1700 or whenever American Indians were last in charge. We need these skills, and these are definitely the best guidelines we have.

But maybe we need to change the focus to figure out which new configurations of American plants are most likely to succeed in our changing climate. In Taos, for example, I would choose to plant those grasses native to us that are also native to hotter drier places nearby like Albuquerque and Farmington. Those grasses should have the best chance of being able to germinate with our new heat and reduced rainfall. And I don't mean choose one grass to plant. I mean choose 10 grasses and 20 flowers to plant so that each ecological niche can be filled.

As to the alien invasive species, I don't think we can just pour poisons on those we don't like, either because they are not native to the Americas or because cattle don't like to eat them. Poisons hurt far more organisms than the plants we target. Plus, it is not likely that we will completely remove these plants from our continent. They are here to stay, whether we like it or not.

Without our interference, most of these invasives would probably be quickly absorbed into the existing landscapes. Russian olive and tamarisk or privet and Japanese honeysuckle would be coexisting with, not crowding out, our native cottonwood bottomlands if we hadn't built dams to stop annual flooding on our rivers. Invasives would not be overrunning our eastern forests if we installed power lines without bulldozing the ground underneath them with bulldozer blades contaminated with weed seeds. Our roadsides could as easily be revegetated with natives as alien invasives, and many highway departments are working hard on this.

Maybe it's because I'm more of a positive person than a negative one, but I think that the answer is not to poison what we don't want but to plant what we do want - not to destroy, but to maintain for what we want. If we mow regularly, we get some semblance of a lawn. If we mow once a year, we get a prairie. If we burn once a decade, we get a savanna. If we burn once a century, we get a forest.

We humans live all over the world. All landscapes are shaped by us. Native Americans managed the landscapes of North America for maximum health, and they did a good job. I bet modern Americans are smart enough to do it too. We just need to make it a priority. We need to think long term instead of short term. We need to be generous instead of greedy. Then we all benefit.

This article is the final chapter of a book entitled Requiem for a Lawnmower *by Andy and Sally Wasowski from Taylor Trade Publishing, reprinted in 2004. It is reproduced here with the permission of the authors.*

Sally Wasowski is a landscape designer, educator and past president of the Native Plant Society of Texas. Andy Wasowski is a freelance writer and photographer specializing in environmental issues. Together they have written nine books on native plants including Native Landscaping from El Paso to LA *and* Gardening with Native Plants of the South.

Floral Emblems Update

by Irene Fedun

"*Tunngasugitti*!" – A long-overdue "Welcome!" (in Inuktitut) to Canada's newest floral emblems: the purple saxifrage (*Saxifraga oppositifolia*) adopted by Nunavut in 2000, and the blue flag iris (*Iris versicolor*) adopted by Quebec in 1999.

Purple saxifrage

Like the resilient Inuit who have made Nunavut their homeland for millennia, the purple saxifrage flourishes in a harsh but breathtakingly beautiful environment. The genus name *Saxifraga* means stone-breaker, due to the old fanciful notion that these charming plants caused the cracks and crevices they now occupy on rock outcroppings.

Purple saxifrage grows like a bright purple cushion on exposed rock, in damp crevices in cliffs, and in moist, calcium-rich gravel. Commonly found in the Arctic, it also grows in mountainous areas further south, including the Rockies, the Adirondacks, northern Britain and the European Alps. Scientists believe that glaciers carried the seeds to these far-flung locales.

When the snow melts and the ground warms, usually in April, purple saxifrage starts to bloom (although some flowers may not appear until July). The Inuit were attentive to the start of its flowering time knowing that it coincided with calving among the caribou herds. Pretty *Saxifraga oppositifolia* flowers, which generally last 10-14 days, may not be present at all where the snow is deep and the ground does not thaw until late summer. The abundance of flowers is strongly linked to the intensity of the sun from July to September the year before. Floral bud development happens in the fall while the ground is free of snow, making overall solar radiation a critical factor in flowering.

While purple saxifrage may appear delicate, it has to be tough – and inventive – to survive in its harsh surroundings. By growing close to the ground it is protected from transpiration and the abrasion caused by wind-driven sand or snow. Another adaption to the conditions is the crowding of the tiny grey-green leaves. These are normally so close together they overlap. Only the part of a leaf that is covered with other leaves has stomata (minute orifices in the epidermis of the leaf) offering some protection from the elements. The light-exposed leaf surfaces are almost devoid of stomata. At least one biologist believes that this prevents against excessive transpiration.

Purple saxifrage can be grown in cooler climates as a rock garden plant. Create conditions that imitate its native arctic or alpine environments. Provide fast-draining, gravelly soil. Plant on a sunny, northeast-facing slope to minimize exposure to direct sunlight. Consult your local rock garden society or native plant grower for seeds. Be sure to ascertain that plants have not been dug from the wild. ** Do not fertilize purple saxifrage; it is adapted to nitrogen-poor soils. Fertilized plants will sacrifice flowers to produce lots of leaves.

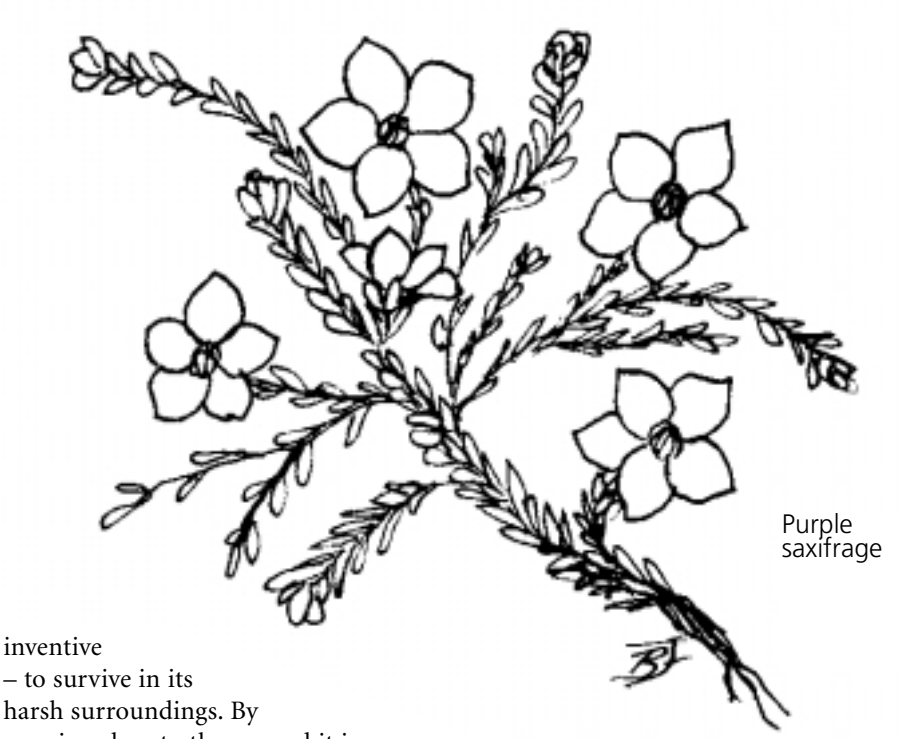

Illustration by Bonnie Fournier

Also known as French-knot moss or *aupilaktunnguat* in Inuktitut, purple saxifrage is one of the earliest-flowering plants in the Arctic. As such it is most welcome, both for its bright flowers and its nutritional value. The Inuit would eat the sweet blossoms. *Saxifraga oppositifolia* is also the source of gold, green and cream-coloured dyes.

Blue flag iris

After 36 years as the floral emblem of Quebec, the European madonna lily (*Lilium candidum*) was retired in favour of the native *Iris versicolor*. In Quebec the blue flag iris is known as fleur-de-lis or clajeux. The Ojibway

**It goes without saying (but I feel compelled to do so nonetheless) that native plants – emblems or not – should not be dug from the wild. The only time this is justified is when a natural area is about to be ploughed under (despite all attempts to stop development). In this case, you must get permission from the landowner to enter the property and remove plants.

name is *Weekaehn* (that which extracts). Common names include harlequin blueflag, snake lily and dagger flower. The first name appears to be a compliment to the flower's colourful markings while the other two may well refer to the sword-like leaves.

The genus name refers to the classical goddess whose visible sign was the rainbow. As the Latin species name implies, *Iris versicolor* flowers vary widely in colour. They could be light to deep blue or mauve, or even white, with yellowish and whitish markings.

A water-side and shallow-water plant of central and eastern North America, different sources quote widely varying ranges for this plant. Most sources for Canada agree that it grows as far east as Newfoundland but only as far west as Manitoba; others say Saskatchewan. The U.S. Department of Agriculture lists *Iris versicolor* as native as far south as Virginia, west to Minnesota but with isolated pockets way out in Idaho. Another source claims it can be found in Florida. In Quebec the iris grows naturally from the St. Lawrence Valley to the shores of James Bay.

The habitat requirements are moisture, sun and loamy or peaty soil. Abundant in swamps or low grounds, *Iris versicolor* can be found in forested wetlands, wet meadows and sedge meadows, on marsh and bog fringes, and on lake, pond and river shorelines. Associated species include other irises, cattails (*Typha* spp.), tamaracks (*Larix laricina*), sweet gale (*Myrica gale*), bog birch (*Betula pumila*), black spruce (*Picea mariana*) and leatherleaf (*Chamaedaphne calyculata*).

A heliophyte, *Iris versicolor* requires direct sunlight to flower well. It blooms in May and June with two to three blossoms on each stem. The down-curved sepals are prominently veined. The long, narrow, olive to grayish-green leaves grow out of the creeping rhizome.

Photo courtesy Ron Hepworth

Blue flag iris

The rhizome is poisonous as many people have discovered who mistook the plant for sweetflag (*Acorus calamus*) whose roots were chewed by Native Americans. However, the root of *Iris versicolor* is the source of Iridin, an official drug of the U.S. Pharmacopoeia, which has diuretic and laxative properties. North American Indians are said to have used the plant as a cathartic and an emetic. A fine blue infusion used as a test for acids and alkalies is derived from the flowers.

The Western Red Lily of Saskatchewan

During the last half of the 20th century, the habitat of the western red lily (*Lilium philadelphicum*), Saskatchewan's floral emblem since 1941, was being overrun by urban sprawl, farming and industrial development. Suppression of fires that had historically rejuvenated prairie grasslands exacerbated the problem. What's more, the western red lily is slow to germinate and a fickle bloomer. Saskatoon botanist Anna Leighton says, "It may come up gangbusters one year and disappear the next". She collaborated with biologist Bonnie Lawrence on a 10-year field study of *Lilium philadelphicum* and discovered that the plant, already a protected species, is "dwindling".

In the year 2000, the Shand Greenhouse, a facility powered by waste heat from a coal-fired generating plant operated by SaskPower, agreed to take on the ambitious project of bringing the lily back to some semblance of its former glory. Some 350,000 seeds collected from private properties were sown by hand. Shand staff were pleased to discover that over 200,000 sprouted. Research trials into methods for the mass propagation of *Lilium philadelphicum* under greenhouse conditions began in 2001. The lilies were outplanted into five different test beds around the province. In the summer of 2004, the first lily bloomed.

To celebrate Saskatchewan's 100-year anniversary in 2005, SaskPower held a Centennial Draw giving away some 24,000 plants. Last summer, e-mails and phone calls from winners of the draw came pouring in confirming that their lilies had overwintered (in some cases the survival rate was as high as 100%) and were growing happily. A few even sent photos of lilies that were about to bloom.

Continued on page 10

Continued from page 9

The western red lily project has been hugely successful. It's a great way to increase awareness of the province's natural history, celebrate the centennial and bring back these brilliant blossoms.

Illustration by Aldrich Alegrid

Western red lily

In 1988, the Canadian Wildflower Society (which later became the North American Native Plant Society) published a booklet written by Lawrence Sherk entitled Growing Canada's Floral Emblems. *NANPS is in the process of updating this booklet with the addition of* Saxifraga oppositifolia *for Nunavut and the change to* Iris versicolor *for Quebec. More detailed information on how to cultivate these two plants is provided. The booklet, complete with updates that include a colour p hoto of each plant, can be purchased for $5. Please mail your cheque to NANPS, Box 84, Station D, Etobicoke, Ontario M9A 4X1.*

Gardening Notes

"Gillian Boyd's observation (from the fall 2006 issue of the *Blazing Star*) that seedlings are especially prolific amongst the gravel bears out my own experience of seedlings amongst my brick patio." Jim Hodgins

The *Blazing Star* welcomes all comments on gardening with native plants. E-mail to editor@nanps.org or write to Editor, NANPS, Box 84, Station D, Etobicoke, Ontario, M9A 4X1.

New & Noted

Food Not Lawns:
How to Turn Your Yard into a Garden and Your Neighborhood into a Community
By H.C. Flores
White River Junction, Vermont: Chelsea Green, 2006.
334 pages, paperback, $25US
ISBN 1-933392-07-X

"Food not lawns," and who wouldn't agree? This cheeky book title (also the name of a grassroots gardening group) provides a big clue as to the tone and approach of this, at times, irreverent and always politically-engaged handbook. Subtitled "How to Turn Your Yard into a Garden and Your Neighborhood into a Community," this is an activist toolkit masquerading as a gardening book (and I mean this in a good way). Author Heather Flores is concerned with the role gardens play in a "complex community ecosystem," and thus, her approach is holistic, highlighting the many connections between the plots of land we tend and the larger environment in which we live.

While there is little specifically devoted to the subject of native plants, native plant gardeners will find much useful information in the book. Chapters such as "The Water Cycle," "The Living Soil," "Plants and Polycultures," "Seed Stewardship" and "Ecological Design" are all focussed on ecological principles, and these principles are brought down to earth with detailed how-to advice. It is in the final chapters, with titles such as "Beyond the Garden" and "Into the Community," that Heather Flores's social and community goals come to the forefront of the text: "Our gardens must not only produce food for ourselves and other living beings, but also create a backdrop for whole communities of people working together to reduce their personal and collective impact on the natural world."

Food Not Lawns provides a good primer on incorporating ecological ethics into all aspects of our lives, starting with the garden and growing out to the world.

Review by Lorraine Johnson, author of 100 Easy-to-Grow Native Plants *and* The New Ontario Naturalized Garden.

Backyard Naturalization Workshop

This one-day workshop hosted by NANPS 2006 Conservation Award winner Dan Bissonette blends the best of traditional garden concepts with proven approaches to naturalization.

- Landscape concepts such as planning, design and construction.
- Native plants and attracting wildlife.
- Natural heritage, composting, soil health, water conservation and lawn care.
- Discussion on key definitions and terms associated with naturalized landscaping.
- Specialized landscape projects, such as butterfly gardening and backyard ponds.
- Informative handouts.
- An overhead presentation featuring over 100 beautiful images of native trees, shrubs, wild flowers and wetland plants.
- An interactive exercise on planning and design.

When? Saturday, April 14, 2007
9AM – 3PM
Where? North York Civic Centre, Committee Rooms 1 & 2

Space is limited! Only $20 for NANPS members, $30 for non-members.
To reserve your space send a cheque to NANPS, PO Box 84, Station D, Etobicoke, ON M9A 4X1. Voicemail (416) 631-4438 or e-mail at nanps@nanps.org.

Impacts of De-icing on Native Plants

Every winter municipalities and homeowners across North America pour hundreds of thousands of tons of salt and other de-icing materials on roads and sidewalks. Commonly, sodium chloride (NaCl), an inexpensive and readily available de-icing agent, is used. The salt and de-icing chemicals are carried by melting snow and ice onto vegetation along the roadsides and eventually into bodies of water. This can have significant impacts on trees and other plants.

Elevated salt levels in soils inhibit plants' ability to absorb water and nutrients, and impede long-term plant growth. As roadside vegetation is degraded, its effectiveness as a buffer (slowing runoff of contaminants into the watershed) diminishes. On the other hand, in some areas, salt-tolerant, aggressive native plants such as cattails (*Typha latifolia*) and the common reed (*Phragmites communis*) have pushed out other roadside plants.

Use common sense to minimize environmental damage. Clear walkways of snow before it turns to ice. Be aware that salt and de-icers are not effective with accumulations of 7.5 centimetres (three inches) or more. Focus on high-use and graded areas where traction is critical. Apply the least amount necessary to get the job done. If the expected winter storm does not occur, sweep up any unused de-icing chemicals and reuse for the next snowfall.

To protect your garden, learn which plants are sensitive to salt. If you have salt-sensitive trees, shrubs or grasses, avoid using de-icing products that contain chlorides (rock salt and calcium chloride) or use very small quantities. Sand may be a better choice. The recommended application for rock salt is a handful per square metre (square yard). If you have a choice, pick calcium chloride over sodium chloride. Calcium chloride works at much lower temperatures and is applied at a much lower rate.

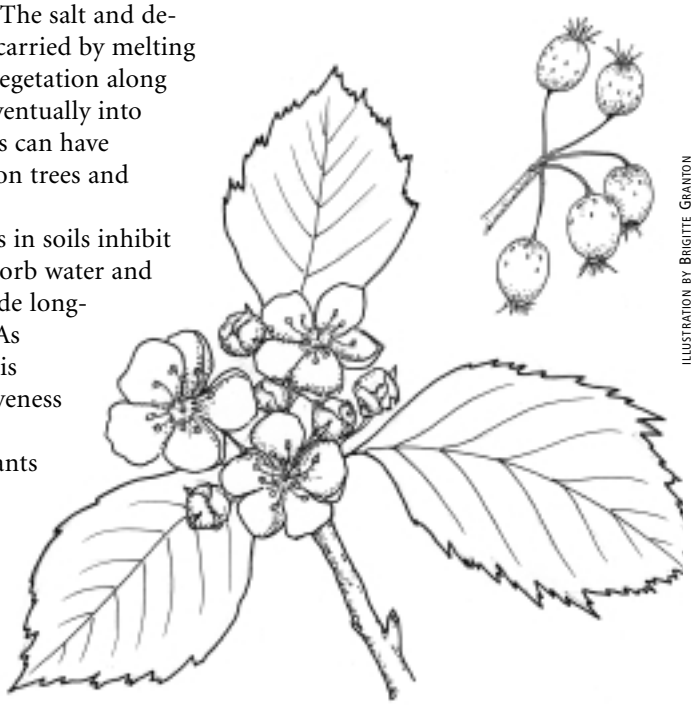

ILLUSTRATION BY BRIGITTE GRANTON

Hawthorn

Avoid products that contain urea. Urea is touted by some as a safer alternative because it does not contain chlorides but is a form of nitrogen that will help fertilize your yard. However, it performs poorly when temperatures drop below –6C (20F), and most of the nitrogen will wash off into the storm drain and contribute to the excessive nitrogen levels already in our environment.

SOME NATIVE SPECIES AT RISK FROM SALTING

Deciduous trees
Red maple *Acer rubra*
Sugar maple *Acer saccharum*
Hickory *Carya* spp.
Redbud *Cercis canadensis*
Green ash *Fraxinus pennsylvanica*
Tulip poplar *Liriodendron tulipifera*

Conifers
Balsam fir *Abies balsamea*
Hemlock *Tsuga* spp.
White pine *Pinus strobus*

Shrubs
Dogwood *Cornus* spp.
Hawthorn *Crataegus* spp.
Rose *Rosa* spp.
Spiraea *Spiraea* spp.

Adapted from an article that appeared in Wild Ones Journal*, January/February 2006 with information from the Environmental Literacy Council, StormCenter Communications, Elliott City, Maryland, and the Regional Municipality of Niagara.*

Speakers Wanted

Do you have a short presentation on a native-plant-related topic? NANPS is planning to host a series of seminars in northeast Toronto through the summer/fall of 2007. If you'd like to help, please contact nanps@nanps.org. Nominal remuneration available.

NANPS also receives requests for speakers around North America. If you'd like to be listed in our speakers' database, please send information concerning your talk topics/format/location/cost and other requirements to nanps@nanps.org.

NANPS Native Plant Quiz

The North American Native Plant Society is rejuvenating its website to make it more fascinating and member-friendly. We would love to have members visit more often to gather information, share gardening highs and lows, learn about upcoming events and salivate over glorious photographs of native plants. To entice NANPS members to the website we are launching a native plant quiz that will appear in every issue of the Blazing Star. You may know all the answers already and we salute you if you do. If you don't, check out the website at www.nanps.org.

Question #1:

Which of the following four plants is not native to Ontario: *Veronicastrum virginicum*, *Andropogon gerardii*, *Echinacea purpurea*, *Ratibida pinnata*?

Give the common name for each one. To find the answers and discover other interesting facts about the plants visit our website at www.nanps.org.

Question #2:

Is the tamarack (or larch) a deciduous or coniferous tree?

Question #3:

Which wood makes the best hockey sticks? White ash, lodgepole pine or red spruce?

Continued from page 1

Indian paintbrush is a root hemiparasite, which means it is partially parasitic, acquiring some of its water and nutrients from haustorial connections with a host plant. Haustoria are specialized absorptive organs that invade the roots of host plants. Haustoria are formed in the root system of Indian paintbrush and development is signalled by molecules exuded by the host plants, allowing the roots to become partially heterotrophic. The rest of the resources are produced from autonomous photosynthesis. Many hemiparasitic plants have much higher transpiration rates than their host which enables them to divert the flow of resources from their host. I have grown Indian paintbrush without a host but the plants were less vigorous. The host range includes balsam ragwort, prairie smoke, hairy beardtongue and little bluestem. Hosts differ in quality of resources such as nutrition and defensive secondary compounds that could be transferred to the parasite.

In the wild, Indian paintbrush usually germinates in early fall. In cultivation they germinate after two–three months of moist/cold stratification. I put seed in a labelled Ziploc bag with just enough moisture to prevent the seed from drying out and place it in the refrigerator at 2-5° C (35-41 F). The first year I did this the seed rotted. To remedy the problem I put sulphur, a natural fungicide, in with the seed. In the spring I sow the seed on any suitable germinating media. Usually more than 50% of the seed germinates. When seedlings form a rosette with five or more leaves I tease them out and plant them into the garden beside other plants or into 10-centimetre (four-inch) pots with a host. Do not let them dry out! In my limited experience *Castilleja coccinea* does not self-sow into gardens; I have to plant seedlings every year.

Indian paintbrush is wonderful to have in a garden since flowering continues throughout the growing season (if there is ample moisture) providing gorgeous colour.

Paul Heydon is a biologist/ecologist who owns Grow Wild Native Plant Nursery and Paul Heydon Biological Consulting. He loves exploring the natural world.