



Iris

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The Alberta Native Plant Council Newsletter

Gardening for a Greener Future: Creating a Garden of Native Prairie Plants

By June Flanagan



Prairie coneflower (*Ratibida columnifera*).

Photo Y. Bruinsma

A new garden is taking root in Lethbridge with the aim to know, grow, and show our native plants. The Garden of Native Prairie Plants was created by members of the Lethbridge and District Horticultural Society, as a gift to the city of Lethbridge, and to celebrate their 2009 centennial. It was achieved in partnership with the Galt Museum & Archives and the Alberta Native Plant Council's Small Grant Program. The garden surrounds the entrance of the Galt Museum in a dramatic, windswept setting, perched at the city's edge,

overlooking the Oldman River and the High Level Bridge.

The idea was conceived several years ago, when the horticultural society decided that a public garden would be an appropriate centennial project. The Galt Museum became a partner early on, as landscaping

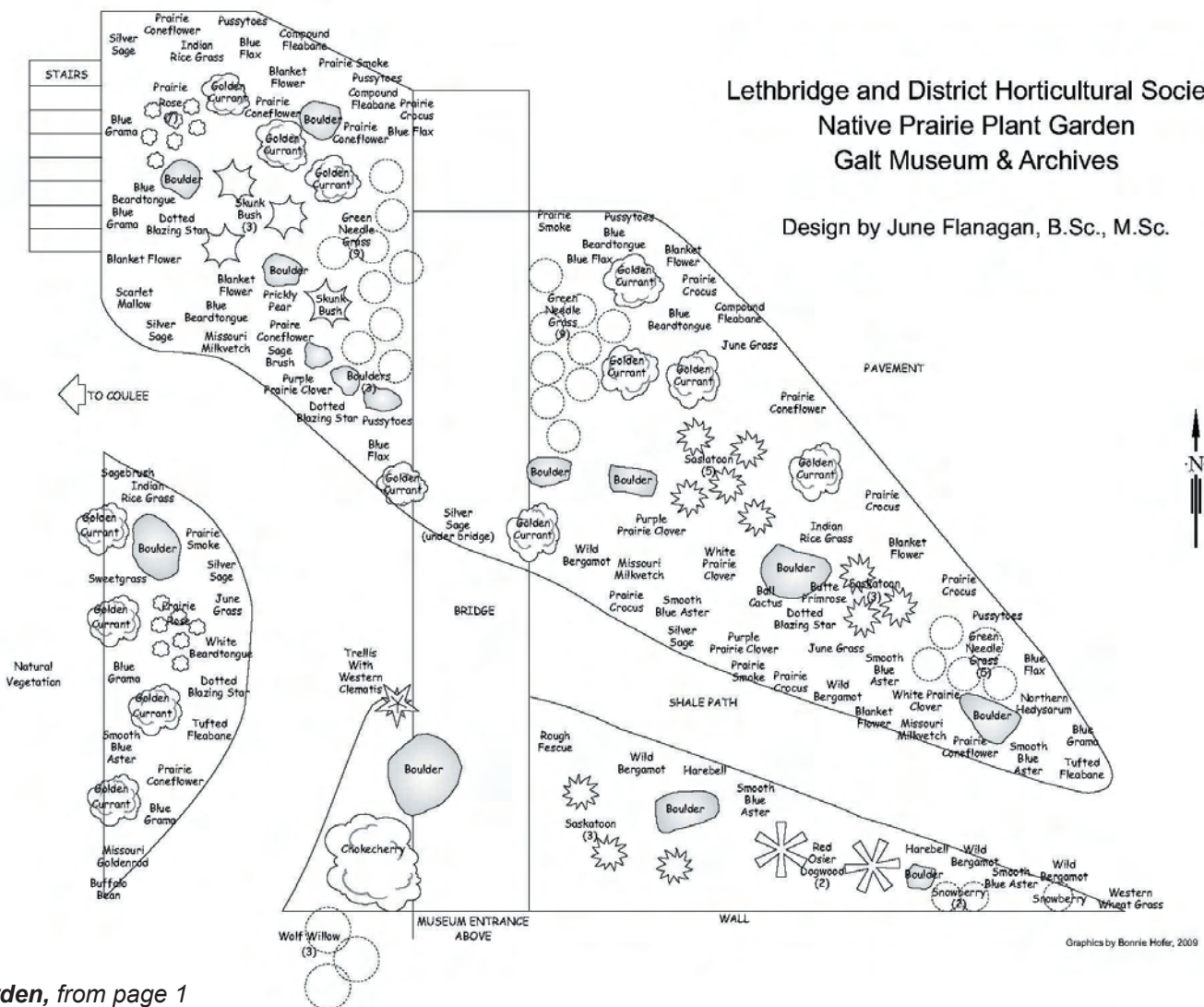
was needed around a new addition to their building. Yvonne Bruinsma, secretary-treasurer of the Society, coordinated the project, and invited me to participate in the design. From the start, the group wanted a contemporary plan that demonstrated water-wise and environment-friendly practices. "Gardening for a Greener Future" became their centennial motto. In addition, the garden was to include places to stroll or relax, and to be an educational extension of the museum programs.

It seemed fitting to surround the museum showcasing our region's history with plants that demonstrate our natural history, so we chose to display only native species that are abundant in the Lethbridge area. Two grass species that occur in nearby regions were also included for educational purposes: rough fescue (*Festuca scabrella*),

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Garden, from page 1

Alberta's provincial grass, and sweet grass (*Hierochloa odorata*), an important ceremonial grass to First Nations people of this area.

The goal was not to recreate a prairie, but to plant a garden composed of prairie species. Before considering any species, we made sure it was commercially available, by consulting the *Native Plant Source List* on the Alberta Native Plant Council website. Then we followed common design principles, and chose and combined plants based on size, colour, and texture. Plants of the same species were grouped in clusters to make a greater visual impact. The plan features a continuous progression of flowers, followed by autumn leaf colour and attractive seed heads, fruit, or bark, so

the landscape will look appealing in all four seasons.

We used nature to guide the design, arranging plants in the garden so they experienced similar conditions to those in the wild. Shade tolerant species were chosen for the north-facing bed, against the wall of the museum, while the most drought tolerant plants were selected for the steep hill, with a southwest aspect. Deep-rooted shrubs and large grasses were strategically positioned across the centre of the slope, to prevent erosion and to serve as a background for the smaller wildflowers and grasses when viewing the garden from different angles.

Groundbreaking began in September 2008, in order to have something to

show for the 2009 celebration. Before planting could take place, it was necessary to re-shape the steep slope at the site, and to replenish it with topsoil, because the original earth had been compacted and scraped away during construction at the museum. Stefan Sorgard, a local landscape contractor, worked with us on this aspect of the design. The planting beds were sculpted with soil berms, and beautiful, lichen-crusted rocks were incorporated into the mid-section of each bed to reduce erosion and add visual interest. For the final touch, he installed an immense, flat boulder to serve as a seating area.

Sourcing all the species in the plan was no small feat, and our design had to be flexible enough to accommodate

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Garden, from page 2

numerous changes. Even though planting conditions are ideal in September, many desirable species are sold out by this time in the season. We made a list of alternate species for each part of the site, and substituted from this list when our first choice was unavailable. Notes were also taken on which species would be available the following spring, since we planned to add more plants then. Pat Fedkenheur of ALCLA Native Plants, Ken and Pam Wright of Bow Point Nursery, and Karen Barby of Green Haven Garden Centre were especially helpful in filling plant orders. Pat Fedkenheur also furnished complimentary grass seedlings. Sylvia Budd, of Rangeland Seeds, contributed mature Indian rice grass (*Oryzopsis hymenoides*) plants, and Susan Conners donated dozens of native forbs from her Coyote Coulee Seeds nursery. In addition to these southern Alberta growers, many more plants were grown and donated by members and friends of the horticultural society.

The garden contains forty-four species of native prairie plants, including two types of cacti, and many shrubs, grasses, and wildflowers. Forty-five container-grown woody plants were installed, and over six hundred seedlings went in the ground during September 2008, with an additional three hundred seedlings planted the following spring.

We commissioned Joel Dorchak, an Enchant farmer, to craft a wrought iron trellis for western clematis (*Clematis ligusticifolia*), the sole vine in the garden. His artistic design perfectly suits the shape of the museum bridge support and evokes the well-known High Level Bridge across the valley.

The planting beds were mulched with wood chips, donated by the City of Lethbridge. The purpose of the mulch layer was to conserve soil moisture and reduce weeds, but many of the wood chips were blown around the site or

swept away by gusty autumn winds. The following spring, we redistributed the mulch evenly around the plants, and as spring rains arrived, the wood chips began to slowly decompose and adhere to the soil.

The garden has no irrigation system; the plants were watered individually, with a hand-held hose. Each plant was installed with a shallow basin around it, and irrigated by filling the basin, allowing the water to slowly penetrate the soil and encourage deep rooting. Regular precipitation and cool weather was advantageous in getting the plants off to a good start, but it also promoted fierce competition from weeds in places where bare soil was exposed. We marked the native seedlings with wooden Popsicle sticks to distinguish them from the weeds, and volunteers gathered every couple of weeks during the growing season to keep undesirable plants under control.

By the end of the growing season in September 2009, there was a remarkable size difference between plants that were installed the previous fall versus that spring. The fall-planted seedlings were blooming, while the spring planting still did not show much new growth above ground. Initially, native prairie plants channel energy towards establishing extensive roots, and because autumn soil temperatures remain warm enough for root growth to continue several weeks after frost kills the plant parts above ground, planting in the fall is like gaining an extra growing season. We expect the seedlings planted this spring will take off quickly next spring. A few unexpected challenges arose during the project. Since it is adjacent

to a parking lot, the site was used as a dumping ground during winter snow removal, and it looked depressingly sodden after the snow melted. Even after spring arrived, the tiny seedlings



View of path and planting beds with green needle grass (*Stipa viridula*).
Photo J. Flanagan

in the garden were barely noticeable, and they were run over by bicycles and vehicles, and trampled unknowingly by pedestrians. Now, vehicular traffic has been blocked from the path with the addition of another large boulder, and as the plants grew more visible, trampling ceased. Garbage and cigarette butts have been another problem that will likely continue, since it is a public space.

As the garden grows, the Society has an ongoing commitment to maintain it. Each spring, more wood chips will likely need to be added to retain the mulch layer as it decomposes. After the plants are established, they will be irrigated only during hot, dry periods in the growing season, and again in late fall after the leaves drop, but before the ground freezes to prevent desiccation during winter chinooks. Weeding will be the biggest chore, but if unwanted sprouts are yanked twice a month from May to September, the task won't become daunting. Errant

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Mountain pine beetles continue to threaten Alberta's forests

Government of Alberta Press Release, July 14, 2009

Edmonton, AB—Recent field surveys show that while last winter's cold temperatures did kill some mountain pine beetles, it was not enough to reduce the threat of additional infestations in many parts of the province. As a result, the Alberta government is continuing its action plan to minimize the spread.

"These results show we need more than cold winters to be successful in our fight against pine beetles in our forests," Sustainable Resource Development Minister Ted Morton said. "That's why we continue to manage the spread of infestations by a variety of methods, including single-tree removals, stand-level harvest and controlled fires."

Results of the June over-winter mortality surveys indicate:

- In areas north of Grande Prairie and northwest of Peace River overwintering beetle populations will cause a high risk of local beetle production. The local number of infested trees is expected to significantly increase this year. At a landscape level, however, the scattered distribution of pine will help slow the spread further east and north across the boreal forest.
- South of Grande Prairie and in parts of the Lesser Slave Forest Area, beetles had a high survival rate. The large volume of pine in the area means there is a high risk of spread further eastward across the boreal forest. This area is a high priority for beetle control this fall and winter.
- In the Willmore and Grande Cache area, there was higher

beetle mortality and there is a low probability of beetle spread from these areas this summer.

- In southern Alberta, last winter's cold temperatures reduced the risk of local beetle production compared to other parts of Alberta. Usually, this area experiences the highest beetle survival rate. The greatest risk to this area this summer is from beetles flying in from British Columbia and the national parks. Due to the risk for critical watersheds, this area will remain a high priority for control efforts this winter.

Alberta's attack against pine beetles is focused in southwest Alberta, and on the eastern edge of the infestation. Government's objectives are to minimize the spread of beetles north and south along the Eastern Slopes, and to prevent beetles from spreading east in the boreal forest.

Preventing the spread of infestations protects the health of forests and the values they provide to Albertans such as watershed hydrology, fish and wildlife habitat, recreational opportunities, and forest industry employment.

The surveys, conducted at 217 sites in the province's pine forests, involved taking several core samples from 1380 individual trees and counting the number of living and dead pine beetles under the bark.

Sustainable Resource Development (SRD) is doing further analysis of the population trend surveys. Mortality data will be combined with aerial surveys of dead and dying pine trees later

this summer and the distribution of susceptible pine to determine control work priorities for the upcoming winter.

"Public awareness is an important component of our mountain pine beetle program," said Morton. "We've developed a new website so Albertans can easily find what they want to know about pine beetles and how government is working to protect Alberta's forest resources from attack."

The website, www.mpb.alberta.ca, was developed by SRD to consolidate and simplify information about mountain pine beetles in Alberta. The site houses data previously found at a variety of Internet locations and adds new material about infestations in the province and the control work underway to manage the spread of the insects. It includes links to Alberta's partners in the fight against mountain pine beetle, including Parks Canada, British Columbia's Ministry of Forests and Range, the Foothills Research Institute, and the Canadian Forest Service.

Mountain pine beetles threaten the health of six million hectares of pine forest in Alberta. Infestations began in southwest Alberta in 2002 and in west-central Alberta in 2006, following a wind-assisted inflight of insects from British Columbia. ♦

Source:

<http://alberta.ca/home/NewsFrame.cfm?ReleaseID=/acn/200907/2646179CD1159-061D-769B-C8E95953B07AA34D.html>

Letter to the Editor

Response to Government of Alberta mountain pine beetle press release

The pine beetle is a native insect that affects lodgepole pines, mostly at 80 to 120 years of age. Lodgepole pine stands grow after fires, and more often than not provide shelter for seedlings of spruce (or spruce and fir). In time, the spruce and fir grow large enough that they could do better with less shelter and more light. The pine beetle removes pines and provides just what they need. The resulting spruce or spruce-fir forest may live for many years before a fire comes along and starts the cycle over again.

Logging, reforestation, accidental fires, and other human influences change the picture. Many of our pine forests are larger, and more uniform in age, than would have been the case before European settlement entered the picture. We can hardly blame a native beetle for this. As Pogo said, "we have met the enemy, and he is us."

The Alberta Native Plant Council's last conference in Calgary hosted speakers who addressed this issue from several different perspectives. While the

forestry industry and provincial government regard the beetle as a serious threat, academic ecologists and biologists are not so alarmed. The threat from the first perspective is that pines may be killed before they can be harvested.

Standing beetle-killed pine are brittle, difficult to fell without splitting, and hard to mill. Those that fall before they can be harvested soon rot. The wood also has different moisture-related properties and colour that present a marketing challenge.

So, from an industry perspective, beetle infestation represents a significant immediate loss (assuming that trees would have been harvested, had they not been attacked). In the short term, we stand to lose large areas of pine forest. But, in the longer term, by removing pine pre-emptively and replanting, we are likely to disrupt the natural process of replacement of pine with spruce and fir, as well as the development of plant communities in the understory that define the difference between a forest and a tree plantation.

We are a greater threat to the forests of Kananaskis than the pine beetle, although much of the damage we can do has already been done.

Jim, Redwood Meadows, Alberta ♦



Jack pine (*Pinus banksiana*).

Photo L. Hamilton

NEW ANPC Publications Now Available!

The Alberta Native Plant Council has been busy this past year. We have published two important documents:

- ***Recommendations for Botanical Surveys in Areas of Proposed Developments*** is designed to assist land managers, planners, industry representatives, regulators, and consultants in properly identifying the scope of work required to assess sensitive botanical resources in an area of proposed development.
- ***Guidelines on Plant Rescues*** identifies considerations when planning plant rescues, such as adverse effects and ethical decisions.

Please visit our website at www.anpc.ab.ca.

Go to the Publications webpage and look under the Guidelines heading.

No Fall Colour: The Mystery of Edmonton's Trees

By Janice Cooke

A question that has been on many people's minds this year is why have the leaves on trees in and around Edmonton not really changed colour and will this affect the health of these trees. This is a very unusual circumstance resulting from a combination of weather events this year that will almost certainly have an adverse effect on the growth and vigour of these trees next year. Here is my interpretation for why we see a lack of fall colour this year.



The colours we see in the leaves in the fall are due to pigments called anthocyanins and carotenoids. These pigments are present in the leaves all through the growing season, but their visual presence is masked by the intense green colour imparted by chlorophyll. Chlorophyll is an essential molecule for trapping light energy for photosynthesis (the process by which plants make sugars), and thus is present at high levels in leaves. Chlorophyll gets degraded during the early part of the autumn when the intensity of the sun is not so conducive to photosynthesis and the plant begins its preparations for overwintering. Anthocyanins and carotenoids are thought to act as protective molecules, shielding other molecular components of the leaves from damage that can occur from UV-B radiation, etc. So when chlorophyll is degraded fairly early in the autumn, the anthocyanins and carotenoids remain intact and continue to protect cellular components of the leaf while

senescence (the process that ends in leaves falling) takes place.

There are several environmental factors that are involved in fall colouring and falling of leaves. The most important factors are day length (also called photoperiod) and temperature, temperature being the most important determinant that promotes the change in leaf colour. Other factors such as drought can also affect fall colour. It turns out that we had a combination of weather events this year that caused the leaves to exhibit minimal colour change this fall.

Although day length is the main trigger for dormancy in many tree species, temperature, particularly overnight temperature, is the main trigger for senescence, which includes changing leaf colour. We had a particularly warm September right up to about September 27. The warm days, but especially the warm overnight temperatures of mid-September, caused a delay in senescence and leaf colour change. Mainly, trees were continuing to photosynthesize, and so needed their chlorophyll. As such, the chlorophyll was not degraded and the colours of other pigments not revealed.

Unfortunately for the deciduous trees, we had a wild swing in temperatures in a short time span: from daytime temperatures in the +30°Cs and

relatively warm overnight temperatures up until September 24, to -10°C overnight on October 1. This rapid change in conditions did not allow plants much time to begin the process of autumn senescence or to correctly begin the cold acclimation process. As a result, the overnight lows of -10°C and colder that we experienced in the first couple of weeks of October, actually froze many of the leaves before they had assumed their fall colours.

Some trees, like ash (*Fraxinus*), simply shed their green leaves because the cold acted as a trigger to break the connection between leaf and plant (abscise). Other trees, like elms (*Ulmus*), are holding on to their green but dead or damaged leaves. If the leaves are dead or damaged, they may fade before they fall, but they will not turn nice colours because the cellular machinery needed to properly degrade the chlorophyll and reveal the anthocyanins and carotenoids is no longer available. The dead leaves may even turn brown on the trees before they are shed. For other trees though, the leaves are sitting in a state of suspended animation, and if temperatures go above freezing for a few days, they may proceed through senescence. However, even in these cases, the fall colours will be greatly muted since the leaves have sustained a lot of damage and the senescence process will be much abbreviated.

In addition to the effect of high then low temperatures, the drought definitely affected the intensity of red and yellow leaf colours. Drought often results in lesser amounts of anthocyanins and carotenoids in the leaves, so even when chlorophyll is broken down, there is

See *Fall Colour*, page 7

Fall Colour, from page 6

not much pigment left to give red and yellow colours. For example, you may have noticed that pin cherries, choke cherries, and high bush cranberries changed colour (since they are some of the first trees to turn), but the colours were not nearly as brilliant as they usually are. This was very likely a consequence of the drought. For those species that have not yet changed colour, if they do in fact continue through senescence, we won't see many leaves with bright colours because the carotenoid and anthocyanin content simply isn't there.

It is interesting to note that coincident with the change in leaf colour, there is a translocation of carbon and nitrogen resources from the leaves into other parts of the tree that will survive the winter. This is called nutrient recycling, and is very important for the overall nutritional status of the tree. If the leaves fall from the tree when they are still green, it poses a problem for the tree because a high proportion of the resources that the tree has invested in the leaves is lost. As such, the tree cannot synthesize its storage reserves normally, and it will have fewer reserves to draw from in the early spring to support new growth before photosynthesis is fully functioning.

This loss of nutrients that normally are translocated from these leaves is compounded by the fact that during drought years trees do not photosynthesize as much, and thus aren't able to synthesize as many sugars to fuel metabolism. So next year, trees will really be suffering for lack of nutrient resources as a result of lower than normal photosynthesis and the shedding of green leaves.

If you are concerned about how your trees will fare next year, take the time to water the trees intensively while the temperatures are still above freezing. You can also help your trees by providing a light dose of fertilizer or other nutrient source (such as manure) next spring. ♦



Garden, from page 3

suckers will be removed to control aggressive species, and dead, damaged or diseased branches will be pruned whenever necessary. Aside from these tasks, the garden requires relatively little maintenance.

The Society produced a map and plant list of the garden, and is working with staff at the Galt Museum to develop a series of educational brochures about our native flora. Next spring, in 2010, labels will be installed, so visitors can identify the plants in all seasons.

The garden was officially opened September 28, 2009, with a stroke of serendipity, on the final frost-free day of the growing season. It was a calm, warm evening, infused with golden light as the sun slipped below the western horizon. Surrounded by members of the community, Barbara Boulton-Gunn, President of the Lethbridge and District Horticultural Society, Susan Burrows-Johnson, Executive Director and Lucelle Prindle, President and Chair of the Board of Directors of the Galt Museum & Archives, unveiled the bronze plaque "commemorating 100 years of citizens working together to beautify the city and share the joy of gardening."

After a heart-felt thanks to the Lethbridge and District Horticultural Society from Susan Burrows-Johnson, everyone gathered in the Galt Museum's Viewing Gallery, a spacious reception area, overlooking a magnificent panorama of the Oldman River valley. Volunteers were recognized and refreshments served. I presented an illustrated program reviewing the joys and challenges we experienced while planning, planting, and maintaining the garden, along with some native plant growing tips for interested gardeners. Yvonne Bruinsma's images of the hard-working volunteers and the site at various stages gave us all an appreciation and a sense of satisfaction for what had been accomplished.

A centennial is a special milestone, and I was impressed that members of the Lethbridge and District Horticultural

Want to be an ANPC Rep?

ANPC needs volunteer representatives for new regulatory committees and teams being formed in Alberta. We need a viable list of volunteers before we can approach each committee, requesting membership. Time commitments for these positions will probably be about five hours per month.

ANPC wants to participate in

- o **Watershed Planning Advisory Committees**
- o **Rare Plant Recovery Teams**
- o **Land Use Framework Regional Advisory Committees**

If you are interested in being a representative for ANPC, please contact us at info@anpc.ab.ca for more information.

Garden, continued

Society chose to celebrate theirs by partnering with the Galt Museum & Archives and the Alberta Native Plant Council to create this garden of native prairie plants. It was an ambitious undertaking, as well as a permanent commitment from a relatively small group of volunteers. In just one year, they transformed a barren slope into a setting that invites you to linger and smell the flowers, lounge on a flat boulder in the sunshine, or wander down the path into the river valley parks. On the edge of the coulees, the garden is the perfect place to have a glimpse into our natural environment. When plants are blooming here, you know they are also blooming throughout the valley. Prairie plants define our landscape, and by gathering them in this garden, the horticultural society has captured the beauty and identity of our region. ♦

Update: Endangered Species Conservation Committee

by Laurie Hamilton

The following provides a backgrounder and an update on the activities of Alberta's Endangered Species Conservation Committee (ESCC), on which ANPC has a voting seat. The ESCC makes recommendations to the Minister of Environment to list "at risk" species in the province. Before the ESCC can make a recommendation, a rigorous process is carried out. It includes

- conducting a status report by a biologist;
- reviewing the status report by a scientific sub-committee; and
- discussing the report and making recommendation to the Minister by the ESCC.

If the report is deemed to be complete, the status recommended by the scientific sub-committee is put to a vote by the ESCC. If the species is voted "at risk," the designation for this species is recommended to the Minister for inclusion in the *Wildlife Act Regulations*.

But the story doesn't end there: plants are not listed under the *Wildlife Act*. The Government of Alberta, Sustainable Resource Development is working on solving this by either updating the *Wildlife Act* to include plants or creating a provincial species at risk act.

Status reports, legal designation summaries, recovery programs, species summaries, and more can be found on the Alberta Sustainable Resource Development's Species at Risk website at: <http://srd.alberta.ca/BioDiversityStewardship/SpeciesAtRisk/Default.aspx>. The following table summarizes existing, new, and proposed plant species that have been reviewed by the ESCC.

Scientific Name	Common Name	ESCC Designations (as of July 2009)	Recovery Plan
<i>Cryptantha minima</i>	Tiny cryptanthe	Endangered	Recovery team formed June 2008
<i>Halimolobos virgata</i>	Slender mouse-ear cress	Data Deficient	Second status report in progress
<i>Iris missouriensis</i>	Western blue flag	Special Concern	Approved by Minister April 2002; downlisted in 2005
<i>Pinus albicaulis</i>	Whitebark pine	Endangered	Recovery team formed; recovery plan in progress
<i>Pinus flexilis</i>	Limber pine	Endangered	Recovery team formed; recovery plan in progress
<i>Tradescantia occidentalis</i>	Western spiderwort	Endangered	Approved by Minister December 2005
<i>Tripterocalyx micranthus</i> (<i>Abronia micrantha</i>)	Small-flowered sand verbena	Threatened	Recovery team formed June 2008
<i>Yucca glauca</i>	Soapweed	Endangered	Approved by Minister May 2006
<i>Bryum porsildii</i> (<i>Mielichhoferia macrocarpa</i>)	Porsild's bryum	Endangered	Recovery team formation in progress

See *Endangered Update*, page 9

Other Species at Risk Initiatives

Other items that the Government of Alberta, Sustainable Resource Development (ASRD) has been working on, as they relate to species at risk, are as follows:

- The bilateral agreement with the federal government, regarding the *Species at Risk Act* (SARA), will be available on the SARA registry website under “permits and agreements.” This agreement will focus on ways to deal with issues/conflicts that arise from differences between federal and provincial legislation.
- Excavation of the population of small-flowered sand verbenas located on private property in Purple Springs, which was being excavated for access to the sand resources it grows upon, has been temporarily halted for safety reasons. ASRD is continuing to find stewardship solutions to conserve the remainder of the population.
- Discussion surrounding the process for status recommendations indicated that ASRD would take another look in order to identify ways to improve it.
- Investigations continue surrounding sources of funding for the process of legislating and protecting species at risk in Alberta.
- Species of “Special Concern” will have management plans created to provide guidance, outline goals and objectives and often specific targets for these species, as well as identify current policies and guidelines that might lead to declines and that might need to be considered for review and revision.
- The Multiple Species at Risk (MULTISAR) project, in southeast Alberta, involves developing habitat conservation strategies, species at risk plans, and general education strategies for multiple species at risk in a holistic approach. For more information, visit the website at: <http://www.multisar.ca/>. ♦



Limber pine (*Pinus flexilis*).
Photo L. Hamilton

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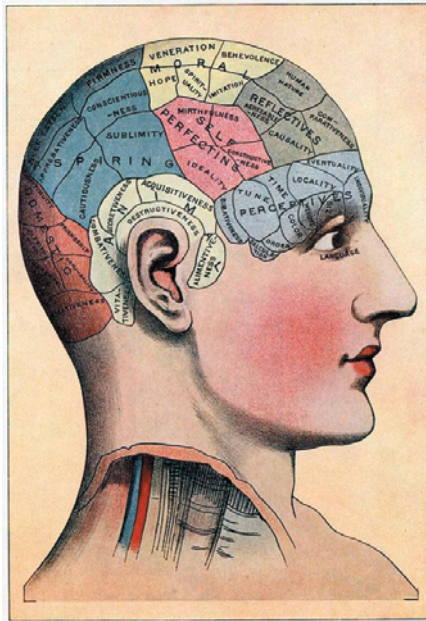
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Botanizing on the Right Side of the Brain

By Cheryl Hendrickson

I discovered how the left and right sides of the brain are responsible for different kinds of thinking through a book called *Drawing on the Right Side of the Brain* by Betty Edwards (1979). Edwards introduces would-be artists to the “split brain experiments” done by scientists on patients who had the connective tissue—the corpus collosum—severed that allows the two hemispheres of the brain to communicate with each other. They found that the dominant left hemisphere is responsible for linear, logical thinking, and is the place where our language skills are kept. The right brain holds information on spatial relations, shapes, and creative, intuitive thought.



As Paul Simon mentioned in his song *Think Too Much*—“They say the left side of the brain dominates the right”—most humans are ruled by their left brain, and the left brain is a crummy artist. It likes to name the parts you are drawing, but it has no sense of the distance between lines or where a nose is, say, in relation to lips or a forehead. Through exercises in her book, Edwards retrains her readers to be aware of and to allow the right brain to come out to do what it does best. The

bossy left brain will tell you that this is a stupid waste of time, but with practice and persistence, anyone can reproduce an image they see with accuracy.

Reading this, I realized that right brain function had a lot to do with how I identify plants, and perhaps is even one of the reasons I am attracted to field botany. As an amateur field botanist, I started out using the *Audubon* field guides, the ones with colour photographs. I enjoyed turning the pages and looking at the pictures over and over as a pastime. I found when I was botanizing I knew the name of

many flowering plants as soon as I saw them because the pictures stayed in my memory.

In the early days of my field botany career, I was introduced to Peterson's (1968) *Field Guide to Wildflowers: Northeastern and North-central North America*, again a reference that relies heavily on shape and colour to identify flowers. Its drawback, however, was that it left you hanging when confronted with a plant before or after flowering. *Newcomb's Wildflower Guide* (Newcomb 1977) fills this gap if you use the simple three-part key and skip the first part

that describes the flower. Then when you go to the next step where the key is expanded, you just examine every combination of the last two digits, flip to the illustration and see if it matches up. The keys provided in Newcomb's, and pretty much every other reference, are descriptive: they rely on the left side of the brain, the keeper of language and not of shape, to help with identification.

Most people find willows (*Salix* spp.) quite daunting. I find that looking at the leaf shape and overall growth form makes their identification effortless compared to internalizing the botanical terms necessary to accurately key them out. And I was heartened to read the words of the master willow taxonomist George Argus (1992):

We all identify objects we know, inanimate as well as animate, by instantaneously integrating a large number of characters. If you were asked how you know that it is such-and-such it may be difficult to say, and you may list a few of the obvious features, but in reality your brain has integrated many characters and allowed for variability in the process. A taxonomic key is just for someone who doesn't know the species. Keys cannot allow for all the variability that occurs in nature so even after arriving at identification it is necessary to compare it with correctly identified material.

I began asking the botanists around me whether they relied more on pictures or keys to identify flowers. I posed the

See **Brain**, page 13

Conserving the Golden Ranches

Press Release, October 8, 2009

Edmonton, AB—The Golden Ranches, located 27 km east of Edmonton represents an unprecedented conservation project within the province of Alberta. With seven partners involved, the conservation of the first 136.5-acre parcel of the 1500-acre property is the result of a team-oriented mindset for conservation in Alberta.

This section of land is the first portion of the ranch to be conserved, with the ultimate goal being all 1500 acres. The current owners (who purchased Golden Ranches in the early 1950s) are passionate about conservation and would like to see the entire ranch conserved over time. When the partners acquire the proper funding, the owners will allow the ranch to be purchased piece by piece.

This first 136.5-acre parcel was conserved by the partnership consisting of the Nature Conservancy of Canada (NCC), Alberta Conservation Association (ACA), Alberta Fish and Game Association (AFGA), Ducks Unlimited Canada (DUC), Strathcona County, the Edmonton and Area Land Trust (EALT), and the Beaver Hills Initiative. By working together, these organizations are applying the art and science of conservation and environmental stewardship to care for the property into the future.

The Golden Ranches is located within the Cooking Lake Moraine Natural Area—a mosaic of dry mixedwood forest, grassland, and wetland habitats. The “knob and kettle” topography supports a high diversity of vegetation, waterfowl, mammals, and birds and also functions as an

extensive groundwater recharge area. The Cooking Lake Moraine Natural Area contains Cooking, Hastings, and Ministik Lakes that provide excellent staging areas for globally significant concentrations of migratory waterfowl and shorebirds in the spring. The area also provides habitat for the Piping Plover, a shorebird listed as endangered in Canada.

The entire Golden Ranches project provides more than eight kilometres of shoreline and important wetland habitat for waterfowl, shorebirds, raptors, and mammals. The diversified landscape favours an abundance of wildlife such as Mule Deer, Moose, Red-tailed Hawk, and numerous species of songbirds and small mammals.

Not only does Golden Ranches create habitat for plants and animals, but it is a key section of land to provide an ecological linkage to nearby Elk Island National Park, Blackfoot Grazing Reserve, and Ministik Lake Grazing Reserve.

Bob Demulder, Regional Vice-President, Nature Conservancy of Canada – Alberta Region said, “The Golden Ranches project is not only a celebration for NCC and our partners in this project, but for all Canadians. By partnering with landowners and other organizations we can truly make an

impact in conserving the ecologically significant areas of our province.”

The conservation efforts of all organizations in the Cooking Lake Moraine Natural Area will focus on achieving maximum benefit for wildlife movement and conserving the land that Alberta’s species depend on. The 136.5 acres within the Golden Ranches represents an important advancement towards broader conservation initiatives in the Cooking Lake Moraine Natural Area and in Alberta.

All of the partner organizations are continuing in their efforts to fundraise



Golden Ranches
Photo NCC

for the Golden Ranches project. The Alberta Conservation Association is holding a raffle of a 2010 Toyota Camry with all proceeds going towards the purchase of the Golden Ranches property. Tickets are on sale now and are available online at <https://secure.ab-conservation.com/getYourTicket.cfm>. ♦

Hunting the Rare Hare-Footed Locoweed

By C. Dana Bush

May long weekend—who wants to head for the cold-and-snow mountains, when you can head to the prairies where the flowers are in bloom! Seven of us travelled back roads and ranch trails, navigated township and range, and latitude and longitude, to search for *Oxytropis lagopus* var. *conjugans*, the rare hare-footed locoweed (HFLW).

Alas, the spring of 2009 was cold and late. It had recently snowed, and there were still patches of snow in sheltered spots. But spring was here. On a windy and cloud-shrouded ridge east of Del Bonita, we found 12 species in flower, including our target species. We found eight HFLW along an east-west ridge. However, in 1993 Bonnie Smith

estimated that she saw up to 1,000 plants, so we searched and searched and concluded that the weather was too cold and they stayed dormant.

We also checked a site south of Ross Lake that hadn't been re-surveyed in 1993 because the back roads were too wet. We found several hundred immature plants along the ridge that we thought were HFLW, but immature hare-footed locoweed look very similar to the common yellow locoweed (*Oxytropis sericeus*), so it was inconclusive. The flowers are critical: hare-footed locoweeds have dense clusters of brilliant pink-purple flowers.

Hare-footed locoweed is ranked S1 in Alberta (known from five or fewer occurrences or especially vulnerable to extirpation because of other factors) and was ranked as Special Concern by the Committee on the Status of Endangered Wildlife in Canada (COSEWIC) in 1995. Finding 8 plants out of 1,000 is an important observation that needs to be tracked so that we can determine if the population is declining or naturally fluctuating. Fluctuating populations may indicate that a species is more susceptible to extirpation, and is one of the criteria used to assess the level of threat to a species.

Concordance Table for Locoweeds Found with Hare-Footed Locoweed

Scientific Name	<i>Oxytropis lagopus</i>	<i>Oxytropis sericeus</i>	<i>Oxytropis viscida</i>
Common Name	Hare-footed locoweed	Early yellow locoweed	Viscid locoweed
Flowers	Pink-purple or blue-purple, 5–18 flowers	Pale yellow to ochroleucous (cream-coloured), 6–27 flowers, calyx pubescent with dark and pale hairs	Blue-purple, yellowish at base, with sticky yellowish glands on pods, calyx and bracts, 3–20 flowers
Leaves	3–11 cm long; leaflets 5–17, ovate to oblong-elliptic, involute (edges inrolled) or with elevated margins 3–15 mm long, silky-pilose with long silvery hairs	4–30 cm long; leaflets 11–17, opposite or subopposite, oval to oblong-lanceolate, grey or silvery pilose (long soft straight hairs)	3–23 cm long; leaflets 19–35, subopposite, lanceolate or narrowly elliptic-lanceolate, 8–15 mm long, glandular and sparsely hairy
Stipules	Membranous, densely silky-pilose (long soft straight hairs) dorsally, sometimes glabrate (hairless) in age	Pilose (long soft straight hairs) dorsally, the free blades hispid (bristle-like) to ciliate (marginal fringe of hairs)	Membranous, pale, densely pilose (long soft straight hairs) to glabrate (hairless) dorsally, the margins ciliate
Pods	Erect, silky-pilose, shortly stipitate (short stalked), exserted (projecting) from the calyx, 6–15 mm long, chartaceous (stiff writing paper or parchment) or submembranous	Oblong, beaked, short-hairy, the wall coriaceous (leathery) and rigid at maturity	Oblong-ellipsoid, hairy, beaked, 8–12 mm long, membrano-chartaceous (stiff writing paper or parchment)

See *Locoweed*, page 13



Hare-footed locoweed (*Oxytropis lagopus*).
Photo C.D. Bush

Flowering plants: May 17, 2009
Milk River Ridge, Alberta

moss phlox (*Phlox hoodii*)
leafy musineon (*Musineon divericatum*)
cushion milk vetch (*Astragalus gilviflorus*)
boreal locoweed (*Oxytropis viscida*)
Hooker's townsendia (*Townsendia hookeri*)
long-fruited wild parsley (*Lomatium macrocarpum*)
yellow prairie violet (*Viola nuttallii*)
northern fairy candelabra (*Androsace septentrionalis*)
annual whitlow-grass (*Draba nemorosa*)
spatulate bladderpod (*Lesquerella alpina*)
prairie crocus (*Anemone patens*)
hare-footed locoweed (*Oxytropis lagopus*) ♦

Brain, from page 10

question to Sarah Mainguy on our AGM field trip to Inglis Falls this year. "Oh, you mean GISS," she said. "General impression, size, and shape. I think it's an air force term they use to identify planes in flight." After discussion, I think Sarah figured she used both sides of her brain to botanize. But there are some things about keys, she points out, that are unequivocal: for example, species in the genus ash (*Fraxinus*) most certainly have opposite branchlets and could never be mistaken for, say a hickory (*Carya*), with alternate branching habits if that characteristic is used, even though both have compound leaves. But it is general impression, size, and shape, I realized, that allows us to do roadside botany at 100 km/hour.

I ran into John Semple one Saturday and we stopped to chat about things botanical. I wasn't canvassing for information on the left/right brain botanizing, but John offered up the information without prompting. He

used the word "gestalt" in reference to identifying plants. "What do you mean, gestalt?" I interrupted. Gestalt is one of those words I remember cropping up in the parlance of the hip 30 years ago, and the meaning I had eked out without actually asking was "essence." Gestalt is another, more elegant way of describing right brain botanizing—identifying by the image of a plant as opposed to the description. "It's fine if you're dealing with a flora of a few hundred plants," John said, "but when you're dealing with a flora of thousands of species, you have to use a key. Having said that, John Morton and I always agree that the fastest way to ID a plant is to look at illustrations first!"

The literal meaning of the German word *gestalt* is "shape." The left brain has elbowed its way once again into the domain of the shy right hemisphere through those who have produced a body of work describing and analyzing how this kind of thinking works. All of this can be found by googling the word. They use some images to illustrate the

different processes involved in shape and image recognition, but what is most impressive is how little information it takes for the right brain to make sense of the image so that the left brain can name it.

In the end, I think both sides of the brain share the task of naming plants. Certainly this is the case for genera that are split out on relatively tiny, even microscopic, differences. I have made my peace with learning and using keys for the reward of knowing the plant's name. But now that I know how it works, I enjoy observing how my right brain identifies not only plants, but other shapes and patterns on the landscape, passing on the information for my left brain to translate to others.

I picked up another book that I am about 30 years behind in reading, an early translation of quantum mechanics for the rest of us: *The Dancing Wu Li Masters: An Overview of the New Physics* by

See Brain, page 16

Conserving the Bow River — One Property at a Time

The Bow River is one of Alberta's most prominent treasures drawing both residents and international visitors with its natural features and recreational opportunities. It is also habitat for wildlife, a source of drinking water, and a resource for agricultural and industrial activity. By identifying the importance of land conservation and its link to the health of this watershed, Western Sky Land Trust has developed the Bow Initiative. The Bow Initiative is a collective of efforts to promote voluntary land conservation both on this stretch of the Bow River and elsewhere in the watersheds of our region.

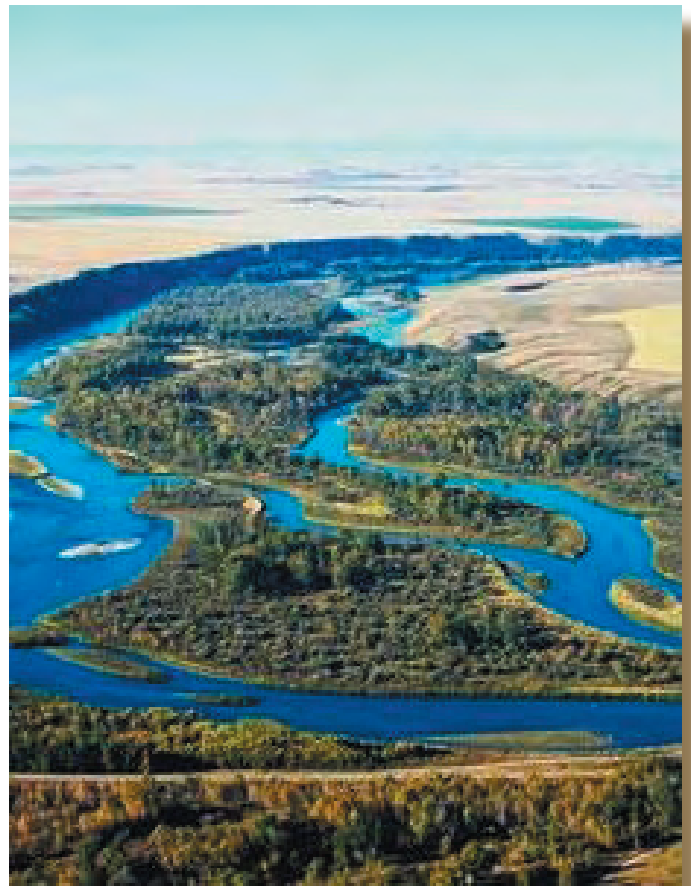
Western Sky Land Trust is well underway with their Bow Initiative

Western Sky Land Trust is a not-for-profit charitable land conservation organization interested in conserving open or natural areas in the Calgary region. Our focus is the conservation of watersheds associated with agricultural, natural, heritage, scenic, and recreational values.

With the successful completion of securing the Agrium-Nodwell Nature Preserve, Western Sky Land Trust is now focused on creating additional conservation opportunities along the stretch of the Bow River from Calgary to Siksika fitting the Alberta Tourism,

Aerial view of the Agrium-Nodwell Nature Preserve

Photo W. Hawkins



Parks and Recreation designation as an Environmentally Significant Area of National Significance.

If you value the Bow River as a precious resource, support Western Sky Land Trust now to facilitate these conservation efforts!

Western Sky Land Trust has the relationships and tools for land conservation. They are now pursuing partnerships to enter into additional projects focusing on the Bow River and other areas of our watershed. Your donation can be directed to projects or programs. Both are important for undertaking land conservation initiatives in our region. For more information, please visit our website at www.westernskylandtrust.ca.

Seeking Volunteers for Lands Committee

Currently Western Sky Land Trust is seeking volunteers for their Lands Committee. This position would involve helping to assess future conservation opportunities, evaluating land, and recommending securement and management processes. The time commitment for this position is approximately five to six hours per month. If you are committed to conservation, would like to assist in advancing our mandate, and have a background in biology, agriculture, environmental management, or real estate, we would be interested in hearing from you.

For more information, contact Tracy Tarves, Executive Director at (403) 974-0756. ♦

International Congress for Conservation Biology Coming to Edmonton in 2010: Your Chance to Volunteer

The Society for Conservation Biology (SCB) is holding its 24th International Congress for Conservation Biology (ICCB) in Edmonton, Alberta, July 3–7, 2010. The theme for this congress is “Conservation for a Changing Planet.”

Dedicated to advancing the science and practice of conserving the earth’s biological diversity, the SCB is a global community of conservation professionals with more than 12,000 members world-wide and representatives from over 140 countries. The Society’s membership comprises a wide range of people interested in the conservation and study of biological diversity: resource managers, educators, government and private conservation workers, and students.

The SCB meetings are a forum for addressing conservation challenges. They are the global venue for presenting and discussing new research and developments in conservation science and practice. Most importantly, they connect our global community of conservation professionals and serve as the major networking outlet for anyone interested in conservation. Past symposia have included such diverse topics as these: the population biology of invasive species; global amphibian decline; how to integrate conservation research into policy; indigenous communities and conservation; comparing marine and terrestrial ecosystems—implications for conservation theory and practice; the application of top predator distribution to the design and efficacy of reserves; and real world social and economic solutions to preserve biodiversity.

To ensure that the ICCB 2010 runs smoothly and that a friendly, eager, professional, and well-coordinated impression is presented to all delegates and guests, the organizing committee is looking for approximately 100 volunteers to assist with various tasks. These tasks include the following:

- greet delegates (e.g., at airport or at events)
- check name tags or take tickets at events
- control traffic or direct delegates and guests at events
- set up and tear down signage at congress
- assist at registration/hospitality/information desks during congress; move delegate bags and other materials between storage room and registration desks
- provide security if required (e.g., at off-site events)
- assist with event setup and teardown
- act as runners for events
- assist exhibitors
- assist moderator at sessions
- provide technical support during sessions (i.e., ensure that laptops and LCD projectors are set up properly with presentations, that presentations run smoothly, that presentations are changed and ready for next presenter)
- stuff delegate bags several days prior to start of congress and assist to transport bags to Shaw Conference Centre
- oversee boxed lunch stations (i.e., hand out boxed lunches to individuals with tickets)
- act as IT volunteers (i.e., set up and remove all computer equipment in all venues; be available to sort out problems experienced in venues before, during, or after sessions)
- transport surplus conference materials from Shaw Conference Centre to University of Alberta campus

In addition to volunteers, a Volunteer Committee chair is required to oversee all volunteers, with the assistance of the Conference Management Coordinator.

If you are interested in assisting with this important, world class event, please email the Alberta Native Plant Council, with subject line “SCB volunteer.”

If you are interested in attending this congress, volunteers get 50% off their conference registration fees. Cost ranges from about \$200 to \$500, depending on student status, member or non-member status, and early or late registration.

For more information on the World Congress, please visit the following website: www.conbio.org/2010. ♦

Gary Zukav. The new physics, as started in motion by Einstein early in the last century, is a departure from the classical Newtonian physics that dominated science for 300 years and that is a linear, rational, left brain approach to describing natural phenomena. More recently this has taken form in fractal geometry, which is able to explain the non-linear patterns of growth in sunflower disc florets, for example, and in chaos theory that attempts to describe ecosystem-level phenomena and severe weather systems. Zukav (2001) states:

The subjective experience of wonder is a message to the rational mind that the object of wonder is being perceived and understood in ways other than the rational. The next time you are awed by something, let the feeling flow freely through you and do not try to “understand” it. You will find that you *do understand*, but in a way that you will not be able to put into words. You are perceiving intuitively through your right hemisphere. It has not atrophied from lack of use, but our skill in listening to it has been dulled by three centuries of neglect.

Botanizing allows us to use both or either side of our brain to name plants. But when we use our right hemisphere, when we can identify a plant through some component of its two- or three-dimensional manifestation, we become connected to that part of ourselves that makes intuitive leaps, that can do creative problem solving, and that thinks outside the box. As Einstein said, “I never came upon any of my discoveries through the process of rational thinking.” This is the part of ourselves that experiences awe and wonder. This is the process that drives quantum mechanics and chaos theory. It has rescued natural processes from the sterile mechanistic model, explaining what field botanists already see—the enchantment of nature.

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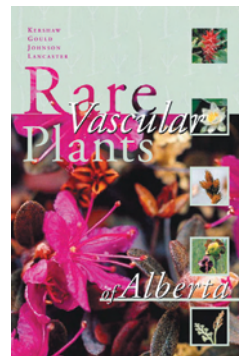
ANPC Objectives

The Alberta Native Plant Council strives to

- Promote knowledge of Alberta's native plants
- Conserve Alberta's native plant species and their habitats
- Preserve plant species and habitat for the enjoyment of present and future generations

The Council's specific objectives are these:

- To educate individuals, industry, and government about native plants
- To promote awareness of native plant issues through a newsletter, an annual workshop, and in the media
- To co-ordinate information and activities concerning Alberta's native plants
 - o To develop briefs or position papers for special projects
 - o To organize field trips, plant studies and May Species Counts
 - o To update lists of current research and conservation projects
- To preserve natural habitats and plant communities
 - o To support legislation that protects native plants
 - o To take action to establish, preserve and manage protected areas
 - o To undertake Alberta projects jointly with like-minded groups
- To encourage appropriate use of Alberta's native plants
 - o To produce information on the use of native plants in land reclamation
- To develop and distribute collection, salvage and management guidelines
 - o To update a list of native seed sources and suppliers for horticulture and reclamation



**Addenda
for the
Rare
Vascular
Plants of
Alberta
are now
available!**

For information, drawings, and range maps of rare vascular plant species of Alberta not found in the *Rare Vascular Plants of Alberta* (Kershaw et al. 2001) please visit the Alberta Native Plant Council's website at www.anpc.ab.ca under Publications. This is an ongoing project with plant species added as the pages are completed.

Iris is published three times a year by ANPC. The Council aims to increase knowledge of Alberta's wild flora and to preserve this diverse resource for the enjoyment of present and future generations.

If you have an announcement, article or other item, you are invited to submit it to the editor for publication. Items concerning native plants will be given highest priority.

The editors reserve the right to edit submissions, but will review changes with the authors whenever possible. Disputes will be resolved in favour of the audience.

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Submission deadline for the next issue:

January 2, 2010

A subscription to *Iris* is included with membership in the ANPC. To join, contact the secretary, or check our website, www.anpc.ab.ca.