



Provincial Status Designation for Hare-footed Locoweed

by Cheryl Bradley, MSc PBIol



An unusually robust individual of hare-footed locoweed. In the 2011 survey, the number of flowering stalks per plant ranged from 1 to 112, with 5 to 15 stalks being most common; 5 to 8 flowers grow on each stalk. Flowers fade quickly within a few days of opening.

Photo C. Bradley

the search for hare-footed locoweed is more pleasurable than that for many other plant species. This tufted, low-growing plant has showy pink blossoms and silky-hairy leaves that are soft to the touch. It grows in one of my favourite plant communities—native rough fescue grasslands. And it is found on the stunningly scenic headlands and buttes of the Milk River Ridge and Del Bonita Plateau, offering vistas east to the Sweetgrass Hills of Montana and west to the Rocky Mountains. Furthermore, hare-footed locoweed blooms in May when the air is fresh, and I am eager for a foray in the field.

Late breaking news—hare-footed locoweed (*Oxytropis lagopus* var. *conjugens*) was designated a species of special concern on January 28, 2014, by the Minister of Alberta Environment and Sustainable Resource Development. Hare-footed locoweed is the most recent to join a small group of vascular plant species, nine in total, receiving detailed status assessment in Alberta. A detailed status report for hare-footed locoweed was completed in September 2012 and is now available through the Alberta government's species-at-risk webpage. Recommendations on the most appropriate status

designation were made by the Scientific Subcommittee and the Endangered Species Conservation Committee to the Minister of Environment and Sustainable Resource Development in fall 2013.

I had the pleasure of conducting a survey for hare-footed locoweed in spring 2011 prior to preparing the provincial status report. Although in my experience all rare plant survey is fun,

In Canada, hare-footed locoweed only occurs in Alberta. The closest

See *Locoweed*, page 3

In this Issue . . .

Potent Pollen Propulsion!	3
Species Lists and the Internet	4
Petrichor – The Smell of Rain.....	6
Native Plant Portrait: Gaillardia	7
Herbarium: Medicine Hat College.....	8
Book Review: Montana Vascular Plants.....	9
News and Events.....	10
Botany AB 2013 – Banff National Park.....	12



Photo C. Bradley



Photo C. Bradley

Hare-footed locoweed occurs on headlands along the edges of plateaus near Del Bonita where erosion by wind and water and frost action have exposed Tertiary gravels. It is associated with the foothills rough fescue-Idaho fescue herbaceous community, and specifically with open patches that have less than 50% grass and forb cover.

occurrence outside of Alberta is 120 km south in the headwaters of the Missouri River in Montana. Thomas Nuttall first collected and described the species in 1834 during his travels with the Wyeth expedition to the sources of the Missouri River. Three varieties of hare-footed locoweed are recognized in the *Flora of North America*.

Eleven populations of hare-footed locoweed occur in Alberta, encompassed within a 230 km² area. One population, now the site of a gravel pit, is considered historical (see above photo on left). Eight populations are along the edge of unglaciated plateaus, capped with gravels deposited during uplift of the Rocky Mountains, and where erosion by wind and water has carried away fine silts and reduced vegetation cover. Three populations are on post-glacial gravel terraces of the North Milk River and its tributaries.

The size of the provincial population of hare-footed locoweed is estimated to be greater than 36,400 mature individuals. Individual populations

vary in size from 1 to 19,400 mature individuals. Although populations of hare-footed locoweed are naturally isolated one from another, connectivity is further reduced by cultivation and other human activities including gravel extraction, oil and gas development, residential development, construction of roads and trails, and invasion of non-native plant species including crested wheat grass (*Agropyron cristatum*). On a brighter note, five populations lie within areas designated for protection by government or private interests.

As hare-footed locoweed has been designated a species of special concern, a conservation management plan will be developed. Should it later receive an endangered or threatened designation, a recovery plan will be produced. There may be opportunities for the Alberta Native Plant Council to play a role in advising on these plans and perhaps participating in further survey and monitoring of populations. ♦

Foothills Restoration Forum

www.foothillrestoration.ca

Hands-On Range Health Assessment Training

Monday, June 16, 2014
Agricultural and Ag-Food
Substation, Stavely, AB
Foothills Fescue Natural Subregion
or
Tuesday, June 24, 2014
Cypress Hills and Manyberries
areas
Mixedgrass Natural Subregion

\$125 per day—includes course materials and tailgate lunch.
Contact Donna Watt at corpirate@shaw.ca for early bird registration and student rates.

Potent Pollen Propulsion!

by Kimberly Gould

In 2005, Whitaker and others documented an interesting characteristic of Canada bunchberry (*Cornus canadensis*). Upon examining the stamens of this subshrub, before and after pollen release, they found the potential to launch pollen similar to seed dispersal in touch-me-nots, or *Impatiens*. Slow motion video captured the results of the first millisecond after the flower was touched with very fine wire. The bent filaments, fused at the anthers, store elastic energy that is released as they spring to full length, their pollen flying with them.

For those less familiar with bunchberry, it is found throughout the boreal forest and is a common understorey species in aspen parkland. Like other *Cornus* species, the leaves have deep parallel venation with a network of finer veins between. The flowers are inconspicuous,

about the size of a pinhead, with many in a cluster. As flowers mature, you will often find one or two 'black' points among the 'white'. (Note: In the picture below, approximately 5 flowers remain untriggered.) The black flowers are actually the dark purple style, previously hidden behind the fused white anthers. Each one develops a single seed and swells nearly a centimetre in diameter to form a fleshy, bright orange-red berry.

Although the flowers are small and inconspicuous among their showy creamy white bracts, they can send pollen an impressive 2.5 cm into the air, far enough to stick to the insect that triggered the release or to be caught on the wind and carried more than a metre before landing. You can watch video of the explosive action on YouTube (<http://www.youtube.com/watch?v=aFR17bX0nol>).



**Bunchberry
(*Cornus
canadensis*)
in bloom.**

Photo B. Gratwicke

References

Whitaker, D. L., L. A. Webster, and J. Edwards. 2007. The biomechanics of *Cornus canadensis* stamens are ideal for catapulting pollen vertically. *Functional Ecology*. Vol 21: 219-225.

Photo: Brian Gratwicke, Wikimedia Commons, 2011. Canada bunchberry (*Cornus canadensis*) with some open and some unopened flowers. (Note: photo has been cropped to focus on flowers) http://commons.wikimedia.org/wiki/File:Cornus_canadensis_Rainy_River.jpg ♦

Alberta Native Plant Council

Garneau P.O. 52099
Edmonton, AB T6G 2T5

website: www.anpc.ab.ca
email: info@anpc.ab.ca

President

Laurie Hamilton
laurie@zanshinenvironmental.com

Vice-President

Leslie Monteleone
lesliemonteleone@hotmail.com

Secretary

Sandy McAndrews
s.mcandrews@shaw.ca

Treasurer

Amar Keshri
amerkeshri@yahoo.com

Directors

Marsha Hayward (Northern)

wildloonart@telus.net

Tony Blake (Central)

tonyblake@shaw.ca

Christina Metke (Southern)

christina.metke@gmail.com

Chrissie Smith (Nature Alberta)

dragonfly.neroli@gmail.com

Membership Secretary

Kelly Ostermann
kellyostermann19@gmail.com

Conservation Action

John Potter
jpotter@solsticecanada.com

Education and Information

Mari Decker
mdecker@teraenv.com

Rare Plants

Leslie Monteleone
lesliemonteleone@hotmail.com
Norma Calvo
Norma.Calvo@stantec.com

Reclamation and Horticulture

Kristyn Housman
kristynhousman@gmail.com

Webmaster

Mark Mayner
mark.wf.mayner@gmail.com

Newsletter Committee

Dana Bush
bush.eco@telus.net
Donna Fleury
donna@edutransfer.ca
Laurie Hamilton
laurie@zanshinenvironmental.com
Patricia McIsaac
pmcisaac@abnorth.com
Alfred Falk
falk@arc.ab.ca

Species Lists and the Internet: Can they help the amateur botanist and the botanical traveller?

by Patsy Cotterill

I am a big believer in species lists. I tend to create one wherever I go, except for very local places. My main rationale is that without a species list in my notebook I cannot remember what I've seen. I can usually recall where I have collected a plant (the act of collection serving to imprint it on my memory), but I find it hard to characterize a plant community adequately from memory. Yet, plant lists are not just an *aide-mémoire* and a record; possibly more importantly, they can be used as an aid to identification. In this respect, of course, their use requires some previous botanical knowledge; the closer they are geographically to the flora with which one is familiar, the more useful they are. The species list of a particular locality in Australia, for example, would be only marginally more useful to me on a first visit than to a member of the general public, and this only if it includes



***Tradescantia ohioensis*, Colfax WI**
Photo P. Cotterill

a few familiar northern hemisphere families along with some cosmopolitan weeds.

To the Albertan botanist, species lists for the rest of Canada and some of the U.S. can be helpful. Late in life, and especially in combination with the resources now available on the Internet, I have learned to use them in my travels. This past June I took a vacation in Toronto and points east and west of it, so I printed off from the Internet beforehand a list of species growing in southern Ontario. This I used for two purposes: to see if I could identify an unfamiliar species if I recognized the genus or family, and to determine whether a familiar-looking plant was likely to be the species I was familiar with, or rather some closely related one. Of course, a printed-out list is a clumsy thing to carry around in the field, and I did a lot of my checking retrospectively, usually regretting that I didn't have the plant in front of me.

Another challenge for the short-term botanical traveller is that "parachuting in" to a new vegetation zone exposes one to limited phenological stages of the plants encountered. If a completely unknown specimen doesn't happen to have flowers or fruits, then all one can do is take a picture and hope to match it up to one online or in a plant guide, which is often unsuccessful. Even here, however, consulting a plant list may provide some clues. A third use of a list is as an aid to identifying



Oak savanna along Cedar Trail, Pinery Provincial Park, Lake Huron, ON. Park staff have developed a species list for the park.
Photo P. Cotterill

your plant photographs—for which the highly portable digital camera is a great modern resource—later, online. Suppose, for example, you have a photo of an unknown *Galium* species. Your list tells you that there are several possible bedstraw species in the area you are botanizing. (Indeed, *Galium* is very diverse, with several species in eastern North America.) You rule out those on the list that you are familiar with, and then use websites to systematically browse pictures of the remaining species. This works some of the time.

Species lists are useful not only in proportion to their proximity to the user's knowledge but also in inverse proportion to the size of the area they cover. I spent a few days in Pinery Provincial Park on Lake Huron in Ontario and managed to coax a print-out of their vascular species list from the Park's staff at the Visitor Centre. Although I saw only a fraction of

See **Species Lists**, page 5

Species Lists, from page 4

the plants listed, it did indeed prove a helpful guide, and also alerted me to be on the lookout for certain iconic species. I realize I was extremely lucky to get such a list, as few such resources exist for provincial parks. Pinery happens to be high-profile and of considerable conservation interest, since it preserves rare oak-savanna and sand dune ecosystems.

Lists, of course, have their limitations for the botanical tourist. Where there are several similar species in a genus, a key is the most efficient way of distinguishing them, and lists are not usually accompanied by keys. To use a key you need a specimen, especially for difficult genera with many species or varieties. And here again the parachutist faces another challenge. These days most native plants grow in protected areas, where collecting is forbidden without a permit (and how can a fly-by-night, recreational botanist not doing research justify getting a permit?). From scraps of specimens stolen in various places, I managed to make identifications that would have been impossible from photographs, underlining the importance of collecting. On holiday in September, I admit to plucking a little annual weed that was growing in profusion in disturbed ground at a picnic site in Grand Teton National Park, Wyoming. I'd seen it before on the trip and been intrigued; I had no clue as to its identity. When I looked at it more carefully I could see that it belonged to the Evening Primrose family, Onagraceae, but was not in a genus I recognized. At home I looked online for the unfamiliar genera in this family, and lit on *Gayophytum*. Using online resources I finally tracked it down to variety level: *Gayophytum diffusum* ssp. *parviflorum*. This bit of botanical detection could not have happened without a specimen. And I'm sure the Park wouldn't miss that one little annual!

In June also I spent a few days in Dunn County, western Wisconsin. I had found a relevant website before I left, that of the University of Wisconsin's Robert W. Freckmann Herbarium, but I didn't at the time check it carefully enough to realize that I could print off a checklist for the state from it. I was fortunate in being able to borrow a copy of John Curtis' definitive ecological treatise, *The Vegetation of Wisconsin*, from a local library while I was there. This work provides, amidst a wealth of ecological information, both a total species list and lists of the characteristic species of the plant communities in which they occur, and it allowed me to make some correct guesses at identities. Of course, time-honoured field guides in book form are useful if they are portable, including in airline luggage. In Wisconsin, I continued the struggle with oaks, ashes, elms and walnuts that I had begun in southern Ontario. Linda Kershaw's Lone Pine guide, *Trees of Ontario*, proved helpful, especially as it includes mini-keys to all those darn confusing oaks. Even so, phenology was a problem: I was handicapped by the lack of acorns, or indeed of reproductive material of most trees, with the exception of some pines.

Back to species lists and collecting again. I suggest that it is not possible to develop an accurate species list for a site or a locality without collecting specimens in order to examine the taxa carefully. Parks' staff and stewards have this capacity (though rarely the resources), with the result that such "official" lists can and should be reasonably accurate. Given that collecting is not going to become politically correct anytime soon for the amateur or non-institutionalized botanist, the question arises: can we



***Euphorbia corollata*, Colfax, WI**

Photo P. Cotterill

make any appreciable contribution to the construction of good species lists? And a corollary: can our efforts make a meaningful contribution to the general body of taxonomic botany?

As I've indicated, online resources are now a significant tool for plant identification and information. (When I returned home I re-visited the Freckmann Herbarium website and used its list and excellent resources to make or revise several identifications from photographs.) But, in general, without a specimen in hand, what percentage of such online identifications are reliable? In an ideal world there would be many applications on portable, hand-held media that include lists, keys and pictures of plants for given sites and localities. The plant in question could then be examined in the field for the distinguishing characters as per the site-specific or local/regional key. Even for non-botanists, such apps could add great value to their walks in the park or the wild. Perhaps organizations such as the Alberta Native Plant Council could muster funding and provide volunteer resources for the development of such applications, that is, lists and keys, and their digitization for public accessibility.

Even when correct plant identities have been obtained, there are other

See Species Lists, page 8

Petrichor . . . The Smell of Rain

by Elena Farries



Prairie rain storm builds on the horizon.
Photo E. Farries

It's a hot summer day and the bright evening sky is slowly filling with dark and luminous thunder clouds. A swift breeze blows by a nostalgic scent, the smell of rain. There is something so reminiscent about the scent; it reminds us of spring, life and warmth—simply wondrous. But, have you ever stopped to wonder what the smell of rain is called—and what actually causes it?

The smell of rain is known as petrichor, a term created in 1964 by two curious geologists, R. G. Thomas and I. J. Bear, who were trying to determine the true cause of the scent. The name is derived from the Greek words “petros-” meaning stone and “-ichor,” the fluid that flows in the veins of gods. It is the name given to that characteristic smell of dry earth at the beginning of a rainstorm or the smell of moist soil after the rain has passed.

Like me, you may have thought that the smell of rain was caused by the rain itself. However, petrichor is actually caused by two unlikely organisms: plants and bacteria. The initial smell of rain is said to be derived from a specific oil that certain plants can produce during

dry periods in order to slow their growth and prevent seed desiccation. This oily substance is released during long dry spells and is adsorbed onto the surface of rocks, cement, and soil particles, until it is rinsed away and released into the air by rainfall.

The second source of petrichor is a soil-based, bacterial by-product known as geosmin. This chemical is produced by a genus of Actinobacteria and is released into the soil when these microorganisms die. When the soil is moistened or turned, the particles whisk into the air giving off a rich, earthy scent.

Currently, the exact explanation for why these bacteria release geosmin is unknown; however, scientists have described it as an important chemical for several aquatic animals and invertebrates. As seasonal rains increase the discharge of geosmin into fresh water systems, the increased levels of geosmin indicate an abundance of water sufficient to support breeding. This compound is also responsible for that earthy and musty flavor of freshwater fish; if there is too much geosmin in the water, fish will have an overpowering musty flavor, but if there is too little of the compound, the fish will be flavourless.

Petrichor can sometimes be a complicated mixture of at least fifty different compounds produced by plants and microorganisms—almost like a perfume. In fact, this scent is so delightful to some people that it is now mixed with several natural scents including sandalwood oil and sold as an

essential oil known generically as *matti ka attar* or “earth perfume.”

So the next time you smell a rainstorm approaching, take a moment to appreciate that you are literally smelling the perfume of the earth.

References

- Bear, I. J. and R. G. Thomas. 1964. “Nature of Argillaceous Odour.” *Nature* 201(4923): 993-995.
- Bear, I. J. and R. G. Thomas. 1966. “Genesis of petrichor.” *Geochimica et Cosmochimica Acta* 30(9): 869-879.
- Gerber N. N. and H. A. Lechevalier. 1965. “Geosmin, an earthy-smelling substance isolated from actinomycetes.” *Applied Microbiology* 13: 935-938. ♦

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.

Copyright remains with the authors except where noted. Permission to reprint is generally granted, but please contact the editors for details.

Submission deadline for the next issue:

October 1, 2014

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

Native Plant Portrait: Gaillardia

by Dr. Al Fedkenheuer

This article is reprinted with permission.

Gaillardia aristata (gaillardia, blanket flower, brown-eyed Susan)

This attractive native prairie perennial is a favourite of mine and apparently for many others, as it has many horticultural varieties that have been developed from it. A quick check on the Internet produced over 30 pages of *Gaillardia aristata* that are available in North America! My preference is the native plant for our Chinook environment that we have in Calgary and southern Alberta. It is adapted to the hot, dry summers and cold winters and grows well when used in home landscaping and gardening.

Gaillardia's showy yellow ray florets are approximately 2.5 cm long with reddish to purplish brown central disk flowers. The flower head ranges from 4 to 6.5 cm across, and plants bloom in July and August. Leaves look somewhat like

clasping dandelion leaves, and along with the stem, are covered with fuzzy hairs (pubescence). These little hairs can cause skin irritation, and wearing garden gloves when removing deadheads or stems is suggested. Plant height ranges from 25 to 60 cm, with the shorter plants found on hot, dry sites. When used in home landscaping and gardens, it usually grows at the upper heights as the soils are more fertile and moist than on the prairie. Gaillardia will grow in full to moderate sun on a wide variety of soil types and moisture conditions, but it will not survive in wet locations.

The plant has a slender taproot that makes plant division difficult; however, some sources indicate plant division is possible if done in early spring. My experience has been that it is difficult to divide plants and much easier to use started plants that either you have started from seed or that you have purchased from one of the local native plant growers. Another possibility is to move new germinants that have started from seeds dropped by an established plant.

Starting your own plants is not difficult. Collect the seeds when they are mature, store them in a paper bag to dry, and then keep them in your garage or basement until spring or February-March if you are starting them indoors in pots. No seed pre-treatment is required if starting them indoors or seeding them directly outdoors. However, seeding outdoors always



Gaillardia aristata flowers—easy to see why they are called brown-eyed Susans.

Photos A. Fedkenheuer



brings the question of which new little plants are wildflowers and which are weeds!

If you are hoping to collect the seeds, you may be in competition with some bird friends. The American goldfinch loves these wildflowers and is a hungry visitor soon after the plant finishes flowering. A variety of bees frequents the showy flowers.

Dr. Al and Pat are owners of ALCLA Native Plant Restoration Inc. of Calgary and have been growing and out-planting Alberta native plants for over 30 years. Email: fedkenhp@telus.net ♦



Clump of Gaillardia aristata flowers.
Photo A. Fedkenheuer

The Medicine Hat College Herbarium

by Cathy Linowski

The southeast corner of Alberta contains some of the warmest and driest, geographically unique regions of the province, complete with everything from sand dunes to hoodoos. Then add to the mix an outcrop of the Rocky Mountain foothills that was not glaciated during the ice age, and you have the perfect situation for plants that are found nowhere else in Alberta.

The Medicine Hat College (MHC) Herbarium is a collection of some 3,000 plants including both teaching and reference specimens. Major contributors to the collection include past and current instructors at the college, and the City of Medicine Hat Parks department; generous donations have also come from botanists such as Ian Macdonald. Of special note in the reference collection are specimens of some of the endangered and threatened species that are found within southeast Alberta including tiny crypanthe (*Cryptantha minima*), smooth goosefoot (*Chenopodium subglabrum*), sand verberna (*Tripterocalyx micranthus* Synonym *Abronia micrantha*) and common clammyweed (*Polanisia dodecandra*). Recently, a reference collection of mosses found within Cypress Hills has been added.

Access to the herbarium can be arranged by contacting Jon Horsman, Ron Linowski or Cathy Linowski, who are all instructors at Medicine Hat College. Donations of additional specimens, especially from the dry mixed-grass regions of Alberta and Saskatchewan are always welcome.

Individuals wishing to obtain information about which plant specimens are contained within the

collection can do so by contacting any of the above mentioned individuals and requesting a copy of the spreadsheet for the collection. There are no plans at present to digitally record specimens in the MHC Herbarium.



Common clammyweed
(*Polanisia dodecandra*)
Photo C. Linowski

During the winter and early spring months, a group of plant enthusiasts from the area meet at the MHC Herbarium on a monthly basis for the Medicine Hat Rare Plant Study Group—one of three similar groups throughout the province that are part of the Alberta Native Plant Council.

The herbarium is a classroom and is used for other programs and classes during the semester. There are open times during the semester, especially evenings and during the spring/summer when classes are not going on. There are no specific times when the herbarium is open—people will need to contact one of us (listed below) to make arrangements.

Jonathan Horsman: jhorsman@mhc.ab.ca
403-529-3937

Ron Linowski: Linowski@mhc.ab.ca
403-502-8440

Cathy Linowski: clinowski@mhc.ab.ca
403-502-8484

Peter Wallis, Dean of Science at MHC:
pwallis@mhc.ab.ca 403-529-3938 ♦

Species Lists, from page 5

challenges to creating a good species list. What names should be chosen for use, for example, when several are possible? Should one adhere to one authority or troll the nomenclatural websites for the commonly “accepted names”? In what arrangement should the plants be listed: alphabetically, or in families alphabetically or taxonomically? And if the latter, should the families be arranged according to old systems or that of the new Angiosperm Phylogeny Group? Good questions to ask and answer as academic taxonomy becomes ever more finicky and precise, and plant distributions better defined. Are we practitioners keeping up?

References:

Bradley, David J. 2013. Southern Ontario Vascular Plant Species List. Ontario Ministry of Natural Resources, Science & Information Branch, Southern Science and Information Section. SIB SSI SR-03, 78 pp. http://www.forestry.utoronto.ca/Settledlandscapes/VSP/documents/SouthOntPlantList_Scientific.pdf

Curtis, John T. 1959. The Vegetation of Wisconsin. An Ordination of Plant Communities. Madison, WI. The University of Wisconsin Press.

Kershaw, Linda. 2001. Trees of Ontario including tall shrubs. Edmonton, AB. Lone Pine Publishing.

Pinery Provincial Park Vascular Species List. 21 pp.

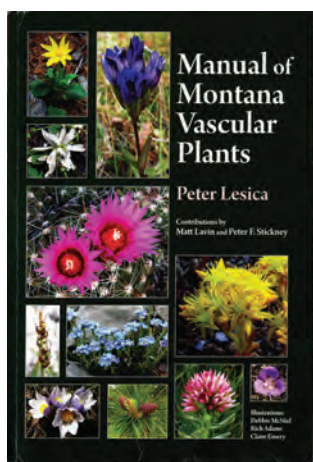
University of Wisconsin Stevens Point Robert W. Freckmann Herbarium. <http://wisplants.uwsp.edu/>

(This is an absolutely amazing, comprehensive website with all kinds of links to all kinds of botanical and botany-related information. It could well serve as a model for a similar project in Alberta, requiring the cooperation of all academic institutions and museums concerned with botany. It could serve as a venue for sharing information about plants from in-the-field botanists, including rare plant records.) ♦

Manual of Montana Vascular Plants

by Peter Lesica

Review by C. Dana Bush



I collect floras and field guides. Wherever I travel, I pick up the local books, read them and use them. I have sagging shelves filled with the *Flora of North America*, *The Jepson Manual*, *The Flora of the Great Plains* (my next to latest acquisition) and many field guides. (My husband says, “She likes books w-a-a-y too much.”) It was with great delight, therefore, that I received a review copy of *Manual of Montana Vascular Plants*. It is now my favourite field guide (well, perhaps hotel guide—it is a bit big for my pack).

This is a comprehensive manual with keys, descriptions, maps and illustrations—everything that one would want in a flora. The illustrators, Debbie McNeil, Rich Adams and Claire Emery, have provided clear, graceful and useful illustrations. Several genera, such as *Veronica*, have close-ups of the fruits to help distinguish the species. The illustrations for *Cirsium* show the floral bracts in detail—I may be able to distinguish them in bud with this key. The *Juncus* illustrations show the fruits and bracts—a defining characteristic that is so much easier to understand when illustrated. Regretfully but not surprisingly, only the common species are illustrated. The illustrations were funded by the Bureau of Land Management and the U.S. Forest Service through the Montana Native Plant Society. Kudos to the MNPS folks for supporting this work.

The maps are only for Montana, but they show the locations by county, so it is easy to extrapolate to southern Alberta. The keys use standard taxonomic terms (inflorescence, umbellate, strigose) while avoiding the more obscure terms that frustrate so many of us. The glossary is good, but unfortunately not illustrated. The keys I tried (given that it is in the dead of winter) seemed well thought out and clear.

The taxonomy is based on a concept of species “more amenable to field biologists.” Species must have “at least two covarying morphological characters consistent among them and unique from other groups.” Lesica uses the current taxonomy accepted by other recent regional manuals unless there is convincing taxonomic evidence to change. *Aster* has been separated into seven genera, *Scirpus* into five, but *Agropyron* and *Elymus* have retained their old names. The index gives the page numbers for the old species names, but like *Flora of Alberta*, one must then scan the species descriptions to find the synonyms.

This book is a must-have for southern Alberta, although at 771 pages and a hefty 1,190 g, I am tempted to leave it in the truck. I will still look to the *Illustrated Flora of British Columbia* volumes for their excellent illustrations of the whole plants, and *Flora of Alberta* for the species that occur here, but this will become my favourite volume in the prairies and in the Waterton area.

Lesica, Peter. 2012. *Manual of Montana Vascular Plants*. Brit Press, Fort Worth, Texas.

Available from Botanical Research Institute of Texas.
<http://www.brit.org/brit-press/books/montana> ♦

NEWS

The Silence of the Labs

On January 10, 2014, CBC's Fifth Estate aired a program on the status of science in Canada's federal government.

In the past few years, the federal government has cut funding to more than 76 world renowned research institutes and hundreds of programs. The Harper government has dismissed more than 2,000 scientists and researchers. It has cut programs that monitored smoke emissions, food inspections, oil spills, water quality and climate change. Now scientists have become unlikely radicals, denouncing what they call a politically-driven war on knowledge. In “Silence of the Labs,” Linden MacIntyre tells the story of scientists—and what is at stake for Canadians—from Nova Scotia to the B.C. Pacific Coast to the far Arctic Circle.

If you missed the program, you can still see it at <http://www.cbc.ca/fifth/episodes/2013-2014/the-silence-of-the-labs>

It's information worth having. ♦

Field Guide to the Plants of the Wildhorse Wildland Park and Cadomin Area

Volunteers are needed to take photographs this summer independently, to lead/join a field trip to the area, or to donate photos you have already taken in the area. If interested, contact adinwoodie@shaw.ca or bluestems@hotmail.com.

News and Events

Mark your calendar!

ANPC 2014 Workshop & AGM

April 26, 2014, in Drumheller, AB
***Native Plants, Ecosystem Webs,
and Conservation Areas***

Botany Alberta 2014

June 13–15, 2014, in Athabasca, AB.
Local history talks and lots of botany
walks. Camping at Island Lake. A list
of hotels is being compiled.
Contact Sandy Davis at sandradavis@
shaw.ca or check www.anpc.ab.ca.

Central Alberta Rare Plant Study Group

Location: University of
Alberta Herbarium, B-613 (botany
wing), Biological Sciences Building
(east end), Saskatchewan Drive,
Edmonton. Date: Last Monday
of the month; October to April
inclusive. Time: 6:30 to 8:30 p.m.
Facilitator: Varina Crisfield (vcrisfield@
gmail.com).

Southern Alberta Rare Plant Study Group

Location: University of Calgary
Herbarium, Biological Sciences
Basement. Date: First Saturday
of the month; November to April
inclusive. Time: noon to 4:00 p.m.
Facilitator: Heide Blakely (enzian44@
shaw.ca).

Medicine Hat Rare Plant Study

Group Location: Medicine Hat
College Herbarium (L155). Date: Third
Saturday of the month from noon to
3:00 p.m. Facilitator: Cathy Linowski
(clinowski@memlane.com).

Northern Plant and Ecology Study Group (NPESG)

This is a field-based
study group, active through the
growing season and into early autumn.
Contact Marsha Hayward for more
information (wildloonart@telus.net).

Alberta Invasive Species Council *First annual conference and AGM*

www.abinvasives.ca
Wednesday, March 12, 2014
Lacombe Memorial Centre
(Centennial North Room)
5214 - 50 Avenue, Lacombe, AB
Topics include: feral pigs, aquatic
invasive species, stopping the spread
of invasive species, wildflower seed
packets, biocontrol.

Waterton Wild Flower Festival

watertonwildflowers.com
Friday, June 20 to Saturday, June 28.
Photography, art workshops, flower
and birding walks, lunchtime and
evening slide shows, and family
programmes.

- Margaret Best is offering a
three-day workshop on creating
botanical illustrations.
 - Lyndon Penner will enthusiastically
share his knowledge about
wildflower families and species.
 - Brenda Holder will share her
extensive knowledge about the
medicinal uses of native species.
 - Wilson and Jacinthe Lavoie will
be launching their new book
Wildflowers of Waterton.
-

Red Deer River Naturalists

Flower Focus Group meets on the
third Wednesday from January to April
and September to November.
10:00 a.m. at the Kerry Wood Nature
Centre.

Alberta Mycological Society

www.wildmushrooms.ws
**Annual General Meeting and
President's Dinner**
March 29, 2014, in Edmonton, AB.

Manual of Montana Vascular Plants

by Peter Lescia. 2012. Available from
Botanical Research Institute of Texas.
[http://www.brit.org/brit-press/books/
montana](http://www.brit.org/brit-press/books/montana)

Montana Native Plant Society *Fire and Ice—the 2014 Annual Meeting*

June 27–29, 2014, at Luccock Park
Camp in the Paradise Valley (13 miles
south of Livingston, MT).
www.mtnativeplants.org

Edmonton Plant Study Group

J. Percy Page Centre, 11759 Groat
Road, Edmonton, AB
Meetings are free and open to all.
Monday, March 17; Monday, April 28.
Coordinator: Patsy Cotterill, 780-481-
1525; nutmeg@planet.eon.net

Red Deer River Naturalists

rdnr.fanweb.ca
Speaker: Peter and Linda Kershaw
Topic: Alberta Plant Life
Thursday, February 27, 2014
7:30–10:00 p.m.
Kerry Wood Nature Centre
Red Deer, AB
Everyone welcome. No admission
charge.

LinkedIn ANPC Group Link

After logging in to LinkedIn, enter
Alberta Native Plant Council in the
search box in the top right corner of
the screen.
You should be directed to the
“Discussions” tab on the ANPC page
and the “Join Group” button is on the
left side.
The “Join Group” button also appears
at the bottom of our “Group Profile”
page (under the More tab).

If all else fails, try this link:
[http://www.linkedin.com/groups/
Directory?itemaction=join&aneti
d=4416741&impid=&pgkey=gro
up_most_popular&actpref=leena-
anet-home&csrfToken=ajax%3A8
381199944088986224&trk=leena_
join&goback=%2Egmp_4416741](http://www.linkedin.com/groups/Directory?itemaction=join&anetid=4416741&impid=&pgkey=group_most_popular&actpref=leena-anet-home&csrfToken=ajax%3A8381199944088986224&trk=leena_join&goback=%2Egmp_4416741)

Project Outreach

Volunteers are working on handouts to accompany the new display being made for ANPC. We need photos for both the large scale display banner and to illustrate the handouts.

Photo submission guidelines

- High resolution photos are needed to represent ANPC's activities and objectives or any of the topics in the handouts (see below).
- If you have a favourite photo that represents ANPC and what it stands for, consider donating your photo, as we would love to use it in the new display.

Handout Topics

Overview of ANPC; Rare Plants; Weeds; Invasive Plants; Botanical Emblems of Alberta; Gardening with Native Plants; Wildflower Mixes; Xeriscaping; Germinating Seed of Native Grasses and Wildflowers; Native Plants and Pollinators

Contact Pat for more details:
pmcisaac@abnorth.com

Can you attend events for ANPC?

We are developing a list of volunteers who are interested in representing ANPC by taking our display to a special event. If you would like to provide this service for ANPC, please send your name and location to info@anpc.ab.ca.

Requests for Contract Botanists

From time to time, ANPC receives requests for names from prospective employers who need to hire contract botanists. ANPC maintains an email list of members who want to be notified about these requests. All botanists on the list are notified each time. This service is available to ANPC members only. If you are a member and would like to be on this list, please contact Sandy: s.mcandrews@shaw.ca

ANPC Board — Can you help?

ANPC has been the meeting place for amateur plant enthusiasts and plant professionals in Alberta for more than 20 years. Sadly, many of the stalwart volunteers who have made ANPC such a credible council are moving on. Consequently, ANPC is in dire need of volunteers.

Volunteering with ANPC is a wonderful opportunity to be involved in native plant conservation in a constructive, positive way and in a supportive environment. You don't have to be a plant professional. All you need is enthusiasm for Alberta's native plants, a bit of free time and the desire to work with some awesome, like-thinking individuals. Check out our website to learn about ANPC: <http://www.anpc.ab.ca/content/index.php>

Volunteer Positions on the ANPC Board

Join the ANPC board. We meet four times per year, occasionally in Red Deer, and more often in regional centres connected by conference call. Enjoy lunch, make friends with other plant folks, and do good things for the environment. Everyone is welcome to attend the meetings. Next meeting dates—March 15 and April 26.

Elected Positions Open at the 2014 AGM

- Vice-President
- Treasurer
- Central Director
- Nature Alberta Director

Contact Sandy McAndrews at s.mcandrews@shaw.ca or Laurie Hamilton at laurie@zanshinenvironmental.com for more information.

Non-Elected Positions

ANPC is currently looking for volunteers for the following non-elected positions:

- Volunteer Co-ordinator
- Education and Information Co-ordinator
- Conservation Committee Members
- Reclamation/Horticulture Members
- Rare Plant Committee Members
- Project Outreach Team Members (contact Pat McIsaac pmcisaac@abnorth.com)
- Display Booth Volunteers: represent ANPC at events around the province in one of our new display booths (contact Pat McIsaac pmcisaac@abnorth.com)
- Conservation area stewards. ANPC is steward at these sites:
 - Whitehorse Wildland Park (Cardinal Divide Natural Area)
 - Big Sagebrush Candidate Natural Area
 - Clyde Fen Candidate Natural Area
 - Nisku Native Prairie Park Reserve
 - See <http://www.anpc.ab.ca/content/stewardship.php> for details about conservation areas
- Rogue's Gallery Weed Wiki—we need someone who is willing to maintain the site that Jim Posey began.

If you are interested or have questions, please contact the person indicated or email info@anpc.ab.ca, with "volunteer opportunities" in the subject line. ♦

Botany Alberta 2013: Banff N.P.

by Tony Blake

Normally ANPC's annual outdoor gathering happens in early June, but 2013 was a little different. The target areas were high country plant communities in Banff National Park, the domain of the whitebark pine (*Pinus albicanlis*), an important species threatened by the combined effects of fire suppression, mountain pine beetle outbreaks, and a disease known as white pine blister rust. The pines are found near the Rocky Mountain treeline where deep snowbanks linger until July. To catch the late alpine spring, Botany Alberta 2013 participants had to wait until the August 2nd long weekend to gather at Lake Louise in Banff National Park.

Accommodation had been arranged at the Lake Louise Hostel, a surprisingly comfortable facility that attracts budget travellers from all over the world. It boasts a licensed restaurant, an upstairs lounge and a large meeting room. Not the spartan amenities we are used to, but we were happy to take advantage of them! The weather couldn't have been better, and many hours were spent visiting on the open veranda in the pleasant afternoon sun. The park was very busy with long weekend visitors, but the crowds had little effect on our plant-related activities.

The 25 attendees who drifted in and out over the weekend ranged from retirees to pre-schoolers and experts to amateurs. Mari Decker and Sandy Davis, our ever-so-capable organizers, planned a full range of activities to engage and entertain everyone.

Those arriving on Friday were able to make the evening trip north to Bow Summit where the highway climbs above the treeline. They had easy access to the alpine wildflowers along a paved trail to the Peyto Lake lookout.

Saturday featured two trips. The more adventurous participants hiked to the alpine meadows around Helen Lake. The 6 km trail into this tiny lake (or tarn) offers stunning views of Bow Lake and the Crowfoot Glacier to the west. These

hikers noted over one hundred plant species including pink false dandelion (*Agoseris lackschewitzii*), two-glumed rush (*Juncus biglumis*), graceful arnica (*Arnica gracilis*), thick-spike sedge (*Carex macloviana*), one-spike cotton grass (*Eriophorum scheuchzeri*), northern bog-laurel (*Kalmia polifolia*), alpine gentian (*Gentiana glauca*), running club-moss (*Lycopodium clavatum*), alpine willowherb (*Epilobium anagallidifolium*), tall white bog orchid (*Platanthera dilatata* Syn. *Habenaria dilatata*), creeping beardtongue (*Penstemon ellipticus*), mountain marsh-marigold (*Caltha leptosepala*), and dwarf false asphodel (*Tofieldia pusilla*). No whitebark pines were reported, but they did see several Clark's nutcrackers. In a classic example of mutualism, these birds depend on the pine's pea-sized seeds while the pine needs the birds to open its cones and disperse the seeds.

The second group started at the Moraine Lake parking lot and took a more leisurely walk to Consolation Lakes. Despite the exotic introductions along the roadways, the walking trails held many botanical delights including low braya (*Braya humilis*), slender-stemmed rush (*Juncus mertensianus*), bishop's-cap (*Mitella pentandra*), pink false dandelion (*Agoseris lackschewitzii*), heart-leaved twayblade (*Listera cordata*), bronzebells (*Stenanthium occidentale*), and spotted saxifrage (*Saxifraga bronchialis*). No whitebark pines or Clark's nutcrackers were seen, but we did encounter a few pikas that entertained us.

Due to unforeseen circumstances, our speakers were unable to attend the evening workshop; however, participant Graham Christensen rose to the occasion with a fascinating impromptu presentation (complete with specimens) on dinosaur fossils, meteorites and space rocks.

On Sunday, most people chose to hike past Bow Lake up to Bow Glacier, while a few took the Banff Hoodoos Trail combined with a gondola ride up Sulphur Mountain. It was another sunny and productive day and whitebark pines were relatively common as we approached the upper end of the valley

above historic Num-Ti-Jah Lodge. Some of the other uncommon species added to the overall list included seaside sedge (*Carex maritima*), Steller's rock brake (*Cryptogramma stelleri*), elk sedge (*Carex garberi*), Alaska willow (*Salix alaxensis*), white or Hooker's thistle (*Cirsium bookerianum*), white rush (*Juncus albens*), and slender lip fern (*Cheilanthes feei*). Golden-mantled ground squirrels and a pond full of juvenile toads were also seen.

On Monday, some of the participants had to leave for home, but several went to Banff and followed the Hoodoo Trail. The vegetation here is more montane and less alpine than the other destinations, but people still collected a respectable list of species, most notably alpine braya (*Braya purpurascens*), sticky alumroot (*Heuchera cylindrica*), water birch (*Betula occidentalis*), Douglas fir (*Pseudotsuga menziesii*) and sixweeks fescue (*Vulpia octoflora* Syn. *Festuca glauca*). At the very end, these folks were caught in a deluge, the only foul weather in a wonderful weekend of botanizing in the Rocky Mountains.

Some Botany Alberta photos can be found online:
<http://www.flickr.com/photos/78619631@N00/sets/72157637110934084>

Unfortunately, our photo collection is very incomplete. We have almost no photos of Helen Lake or the Hoodoo Trail and very few people pictures. We are dying to see more of the fine photos taken over the weekend, so please consider uploading some of them to the Flickr website.

Participants have prepared a list of the nearly 200 plant species found during Botany Alberta 2013. This list will soon be posted on the ANPC website. ♦