

## Russian Thistle Research in Jasper National Park

By *Tim Antill*

For the past year I have been studying Russian thistle (*Salsola kali* L.) in Jasper National Park as a Master of Science project at the University of Alberta under the supervision of Dr. Anne Naeth. Russian thistle is a non-native plant that has been invading native montane grassland communities used for winter grazing by bighorn sheep (*Ovis canadensis* Shaw) in Jasper National Park. Parks Canada has identified a concern that these areas of invasion may be increasing in size.

Areas invaded by Russian thistle appear to coincide with areas subject to sustained use by sheep, elk (*Cervus elaphus* Linnaeus) and possibly deer (*Odocoileus* spp.). Areas of critical winter sheep habitat are believed to be overgrazed, reducing range condition and permitting Russian thistle to



Montane grassland in Jasper National Park.  
Photo T. Antill

become established and compete with, or replace, already stressed native plant species and reduce wildlife forage.

assess management options to control this invasive plant.

Russian thistle, commonly referred to as tumbleweed, is almost synonymous with iconic images of the American old west. It is not too difficult to picture the dried blonde skeleton of this plant slowly rolling down some empty dusty street in a ghost town straight out of an old Hollywood western movie. However, Russian thistle is not native to North

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The research project objectives are to gain a better understanding of the biology of the plant in the park, to determine the influence of ungulate grazing on Russian thistle establishment, and to



**Bighorn sheep on heavily grazed winter range.**  
Photo T. Antill

America. The plant originates from southeastern Russia. Russian thistle first appeared on the continent in South Dakota in 1873 brought by Russian immigrants in contaminated flax seed. After its introduction, Russian thistle spread quickly across the continent by contaminated seed, threshing crews, railroad cars and by its natural wind blown dispersal mechanism. By 1894 Russian thistle had arrived in Canada, first being reported in Ontario. Russian thistle has been in Jasper National Park since as early as 1946.



**Russian thistle skeleton blowing along the edge of Jasper Lake in November.**  
Photo T. Antill

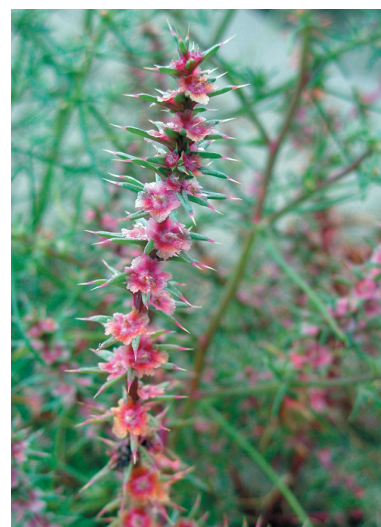
Although Russian thistle is common throughout the southern and central portion of the Prairie Provinces, it is absent in northern Alberta. Russian thistle in the Jasper area is near the northern

limit of the plant's range in the province. Current climate change models predict the warming of Alberta's climate. This winter experiments will be conducted in growth chambers to investigate Russian thistle's response to future climate forecasts. It is expected that this arid C4 plant will benefit from global warming and will become more problematic for park management in the future.

A number of field studies were established in summer 2008 and will continue until September 2009. Study sites have been established in the Jasper Lake area to examine effectiveness of seven treatment methods for the control of Russian thistle. The seven

treatments included a control (reference); exclusion of grazing by grazing cages; manual pulling of Russian thistle; spraying with the herbicide metsulfuron methyl (Escort); seeding with

a native seed mix; seeding with a native seed mix with 25% perennial ryegrass (*Lolium perenne* L.); and a combination of a grazing cage, herbicide application and seeding with a native seed mix. Control plots did not receive any modification or specific treatment and will be used as a baseline from which to compare the effectiveness of all other treatments. The effectiveness of the treatments were monitored during summer 2008 and monitoring will continue throughout summer 2009. A number of other studies investigating animal use, grazing and litter thickness, and Russian thistle movement are also currently underway.



**Seeds develop at each leaf axil on Russian thistle.** Photo T. Antill

This research is attempting to address the extent and character of Russian thistle infestations in the Athabasca River valley, mechanisms of Russian thistle invasion, the role of wildlife grazing on Russian thistle establishment, and strategies that may aid in managing this species. It is anticipated that the research results will benefit land managers within the park, and other land managers throughout the province who are involved with ungulate grazing and invasive species.



## Botany Alberta 2009 – Waterton Area June 13 & 14



NCC volunteers at a Waterton property take a lunch break. Photo C. Cole

### Mark your calendars!

This year ANPC and Adopt-a-Plant Alberta are again collaborating with the Nature Conservancy of Canada (NCC) in order to plan Botany Alberta 2009. The trip will be held June 13 and 14 at an NCC property in the Waterton area. Stay tuned for more information about this event in the next issue of *Iris*. Also check the ANPC website at [www.anpc.ab.ca](http://www.anpc.ab.ca) or the NCC website at [http://www.natureconservancy.ca/site/PageServer?pagename=ab\\_ncc\\_work](http://www.natureconservancy.ca/site/PageServer?pagename=ab_ncc_work).



Research study site near Talbot Lake. Plots at this site have been established to compare different methods of Russian thistle control. Photo T. Antill

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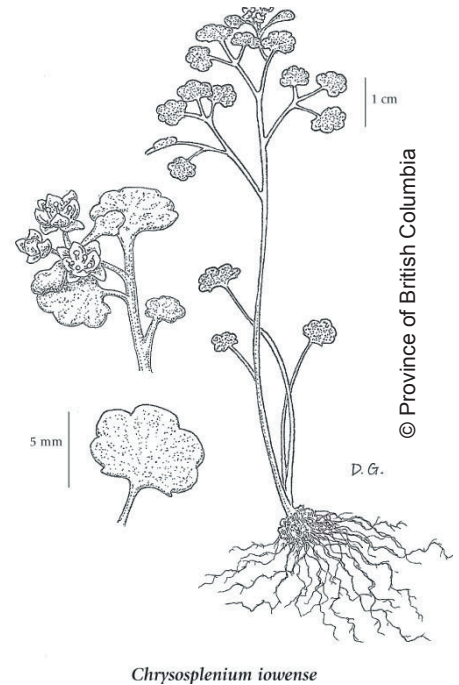
# Puzzling Rare Pairs: Golden and Green Saxifrage

By C. Dana Bush

Here is another puzzle for field biologists — do you have the rare golden saxifrage, or the common green saxifrage?

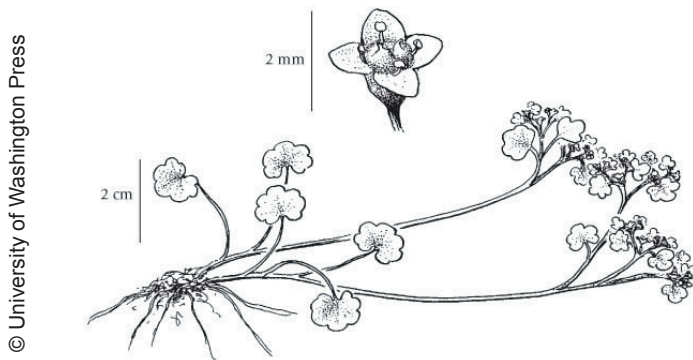
According to Todd Kemper, the senior botanist at the Alberta Natural Heritage Information Centre (ANHIC), golden saxifrage (*Chryso-splenium iowense*) is currently ranked as possibly globally rare (G3?). Alberta appears to be at the centre of the range for this species, though the complete distribution may not be fully understood. Unfortunately, golden saxifrage is often confused with green saxifrage (*Chryso-splenium tetrandrum*), a similar but more common species, as they share several overlapping characteristics. To confuse things even more, the two species grow in similar habitats and may grow together (Packer 1963). Until enough reliable data has been acquired to inform a status update, both species will likely remain ranked S3 in Alberta, and golden saxifrage will likely remain G3.

These species are best identified with fresh specimens in the field — it's nearly impossible to identify them from carelessly pressed specimens. You'll need to look for young flowers (before capsule formation) to count stamens, and be sure to look at both the centre flowers and the lateral flowers because they are different sizes, and have a different number of stamens. When you press them, make sure that the stamens and the sepals can be clearly seen, and note the sizes and numbers while your plant is still fresh. These data can go onto the herbarium specimen (in pencil) or on the label, as the stamens are fragile and may fall off.



*Chryso-splenium iowense*

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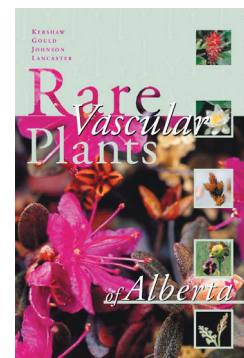
*Chryso-splenium tetrandrum*

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## Source

Douglas, G.W., D. Meidinger, and J. Pojar. 1998. Illustrated Flora of British Columbia, Vol. 5. Dicotyledons (Salicaceae through Zygophyllaceae) and Pteridophytes. B.C. Ministry of Environment, Lands and Parks, and Ministry of Forests, Victoria, BC.



**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](http://www.anpc.ab.ca) under Publications. This is an ongoing project with plant species added as the pages are completed.



	<b><i>Chrysosplenium tetrandrum</i></b> (Lund) T. Fries	<b><i>Chrysosplenium iowense</i></b> Rydb.
<b>Common Name</b>	Green saxifrage (Northern golden-carpet)	Golden saxifrage (Iowa golden-saxifrage)
<b>Rank</b>	S3, G5	S3, G3?
<b>Sepals</b>	mostly green, often purple dotted; erect; of about equal size; 1 mm long and about as broad	golden-yellow and spreading (markedly recurved); the outer pair wider than the inner pair; the outer pair in the centre flowers 1.5–2.0 mm across, usually somewhat wider than broad
<b>Stamens</b>	(3)4, opposite the sepals	2–8, varying in flowers of the same inflorescence; 5–8 in the centre flowers, 2–4 in the lateral flowers
<b>Flower size</b>	2–3 mm broad	2.5–5 mm broad; centre flowers 3.5–5.0 mm, lateral flowers 1.5–2.0 mm across, usually somewhat broader than long
<b>Flower shape</b>	turbinate before the capsule matures	short campanulate
<b>Leaves</b>	stolon and radical leaves mostly glabrous, occasionally sparsely pubescent above and around the sinus or with upper surface with scattered hairs	young leaves often pubescent above and below with coarse, erect, white hairs; some leaves are pubescent on both surfaces
<b>Phenology</b>	usually flowers in second year, occasionally the first	flowers in its first year
<b>Chromosome numbers</b>	2n=24	2n=c.120
<b>Range</b>	Circumpolar. Occurs all across Canada in the boreal forest and arctic, and in the mountains of WA, MT and ID.	Primarily a Canadian species, from NT (SNR), BC (S2S3), AB (S3), SK (S1?) and MB (S1?). Disjunct populations occur in the US (in Iowa and Minnesota); these are believed to be relics of Pleistocene vegetation.
<b>Sources:</b> Packer 1963; Packer in prep; Moss 1983; NatureServe 2008		

### Orchid, from page 6

(*P. obtusata*) has similar leaves (although it usually has only 1 rather than 2). The petals are also more oblong than those of Loesel's twayblade.

With only two known populations in the province, Loesel's twayblade is considered rare, and ranked S1.

Thanks to Patsy Cotterill, Eileen Ford and Derek Johnson for their help in pulling together this write-up.

### References

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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:  
**March 15, 2009**

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# Loesel's twayblade — A new orchid for Alberta

by Lorna Allen

The first Alberta population of Loesel's twayblade (*Liparis loeselii*) was located north of Fort McMurray on June 17, 2006. Twenty plants were counted (seven in bloom) in a graminoid fen with water at or near the surface and dominated by sedges (*Carex* spp.) and grasses. Other species reported from the general area include buck-bean (*Menyanthes trifoliata*), dwarf birch (*Betula pumila*), tamarack (*Larix laricina*), pitcher-plant (*Sarracenia purpurea*) common cattail (*Typha latifolia*), northern grass-of-parnassus (*Parnassia palustris*) and mosses (Hall and Elser 2006).



**Loesel's twayblade flowers**  
Photo D. Johnson

Photographs were reviewed and it was confirmed to be a new orchid for Alberta.

Then on July 3, 2008, a second location for Loesel's twayblade was discovered during a trip led by Derek Johnson and organized by a contingent of naturalists from the Red Deer River Naturalists Society. The site of this second find is the proposed Clyde Fen Natural Area, one of the Alberta Native Plant Council's stewardship sites.

Cheryl Thorpe spotted the first one, and Derek immediately identified it.

The group then scouted around and eventually about 15 plants in flower were counted. They appeared to be growing in a particularly wet east-west oriented swale or channel with more graminoid vegetation than the surrounding shrubby, wet calcareous fen. For one plant, Patsy Cotterill reports that she recorded the following associated plants: golden moss (*Tomenthypnum nitens*), dwarf birch, tufted bulrush (*Scirpus cespitosus*), mud sedge (*Carex limosa*) and swamp horsetail (*Equisetum fluviatile*). Pitcher-plants were in the vicinity, and not far away.

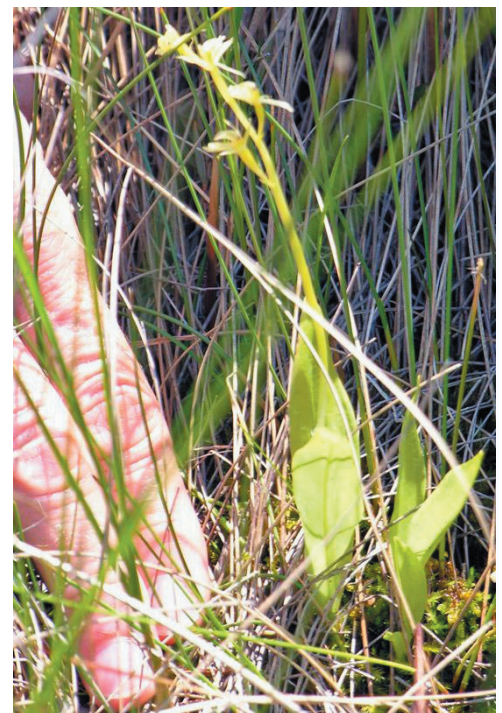
Sometimes this plant is also called fen orchid, yellow twayblade, or yellow widelip orchid. Loesel's twayblade seems to be a relatively common species in eastern North America, but it is rare in the west, including Saskatchewan, Alberta, British Columbia, and south into Montana and Washington (NatureServe 2008). It also occurs in Europe, the British Isles, Scandinavia and Russia (McMaster 2001).

The species prefers calcareous sedge fens and does not tolerate much in the way of tree cover. It is an inconspicuous orchid that can be hard to spot in amongst the graminoids. It is a perennial herb, growing from bulb-like bases (corms), with stems 7–20 cm tall. It has two glossy basal leaves, 5–15 cm long, that are elliptic and somewhat succulent. The leaves are keeled on the back and have narrow to winged stalks. The small, yellowish green flowers are few on the stem (2 to 15) and arranged along the stem in a raceme. The flower stalk is relatively

long and upward-pointing so the blooms stand well away from the stem. The lip is unlobed, not inflated, and quite small (4–5.5 mm long). The petals are 4–5 mm long, narrower and shorter than the sepals (4.5–6 mm long).

There are other orchids in Alberta called twayblades, but they belong to the genus *Listera*. The *Listera* orchids also have two leaves, but their leaves are set part-way up the stem, not like the basal leaves of *Liparis*. Superficially, Loesel's twayblade probably looks most like one of the bog orchids (genus *Habenaria*, now *Platanthera*) or perhaps a bog adder's-mouth (*Malaxis paludosa*). Although the flowers of Loesel's twayblade are small, those of the bog adder's-mouth are smaller (lip only up to 2.5 mm long). Of the *Platanthera*, only the blunt-leaved bog orchid

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**Loesel's twayblade at Clyde Fen.**  
Photo D. Johnson



**Alberta Native Plant Council (ANPC)**  
22<sup>nd</sup> Workshop and Annual General Meeting

## Fragments of the Parklands

**Saturday, April 25, 2009**

Radisson Hotel, Edmonton South  
Jubilee Ballroom, Edmonton, Alberta

**Adopt-a-Plant Alberta's Northern Workshop to be held in  
Edmonton on Sunday, April 26, 2009** (under separate  
registration)



After the workshop, the ANPC will hold its Annual General Meeting. Everyone is invited to attend. Learn about ANPC activities, consider a position on the Executive and/or volunteer for committee work.

What's the current state of Alberta's Parklands? Please join us in Edmonton to explore this amazing and botanically diverse portion of the Alberta landscape. Potential topics include:

- Parkland Natural Region overview
- Overview of provincial impacts with examples that relate to the parkland ecology
- Pipeline reclamation research in the Central Parkland NSR
- Rumsey Natural Area ecology, environmental significance, history of conservation and current issues
- Aspen Parkland plant communities
- Range plant community guide for the Central Parkland NSR
- Minimum disturbance development techniques / mitigation measures in the parkland
- The new *Weed Act*

The daytime workshop and annual general meeting will take place at the Radisson Hotel, Edmonton South.

8:00 am - Check-in and registration  
8:30 am – Workshop presentations begin  
4:30 pm – Annual General Meeting

The banquet will also be held at the Radisson Hotel, Edmonton South, with a cash bar opening at 5:30 pm.



Workshop registration includes the one-day workshop, a light breakfast, buffet lunch and coffee breaks. The banquet is optional.

For information on the workshop and registration please contact:

**Laurie Hamilton**  
**Phone: (403) 483-2476**  
**E-mail: [laurie@zanshinenvironmental.com](mailto:laurie@zanshinenvironmental.com)**

**Registration:**

Fill out the following registration form and mail it to:

**2009 ANPC Conference**  
c/o Laurie Hamilton  
509 8<sup>th</sup> St. NE  
Calgary, Alberta  
T2E 4H1

**Deadline:**

Early registration is up to and including **April 3, 2009**. After that a late registration fee will be charged.

Deadline for banquet tickets is **April 21<sup>st</sup>, 2009**.

**Registration Form**

Name \_\_\_\_\_  
Affiliation \_\_\_\_\_  
Address \_\_\_\_\_  
\_\_\_\_\_  
City \_\_\_\_\_ Province \_\_\_\_\_  
Postal Code \_\_\_\_\_  
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Early Registration (tick one as applicable, enter amount on line below)

- Member (new or current) ..... \$55.00  
(if you are already a member, or if a membership payment is enclosed)
- Non-Member ..... \$65.00
- Student ..... \$30.00

Late Registration **after April 3rd**

- Member (new or current) ..... \$65.00
- Non-Member ..... \$75.00
- Student ..... \$40.00

Workshop Registration Total ..... \$ \_\_\_\_\_

Banquet Ticket ..... @ \$40.00 ea ..... \$ \_\_\_\_\_

Banquet Guest(s): \_\_\_\_\_

**My diet is restricted** (please describe, so we may meet your needs during the workshop and banquet):  
\_\_\_\_\_

**New Membership or Membership Renewal enclosed:**

- Individual.... \$15.00       Family..... \$25.00
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where needed  conservation action  educational programs

**Total Enclosed** ..... \$ \_\_\_\_\_

Include a cheque or money order payable to:

**Alberta Native Plant Council**

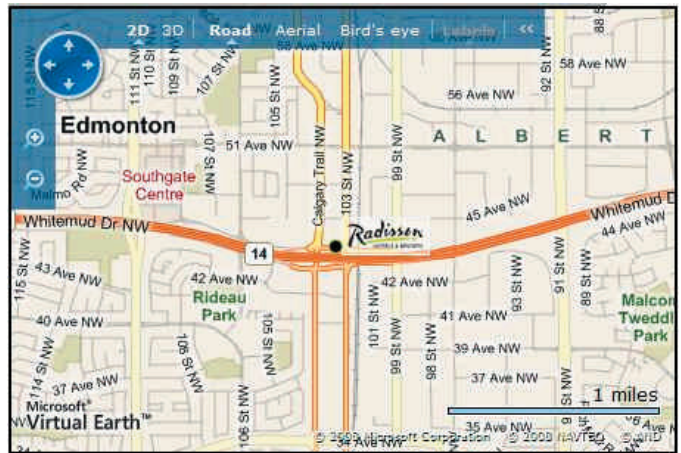
We cannot accept other forms of payment.

The development of the program is underway. Please visit [www.anpc.ab.ca](http://www.anpc.ab.ca) for regular updates.

**Accommodations:**

The Radisson Hotel has a block of rooms available at the workshop rate and offers a variety of non-smoking rooms (singles and doubles), which have been blocked for registrants for the nights of April 24 and 25, 2009. Please book by **March 25<sup>th</sup>** to take advantage of the special rates and mention **Alberta Native Plant Council**. Call direct at (780) 437-6010 for hotel reservations.

**Radisson Hotel, Edmonton South**  
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**Adopt-a-Plant Alberta** Northern Workshop is conveniently being held in Edmonton on April 26, 2009.

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