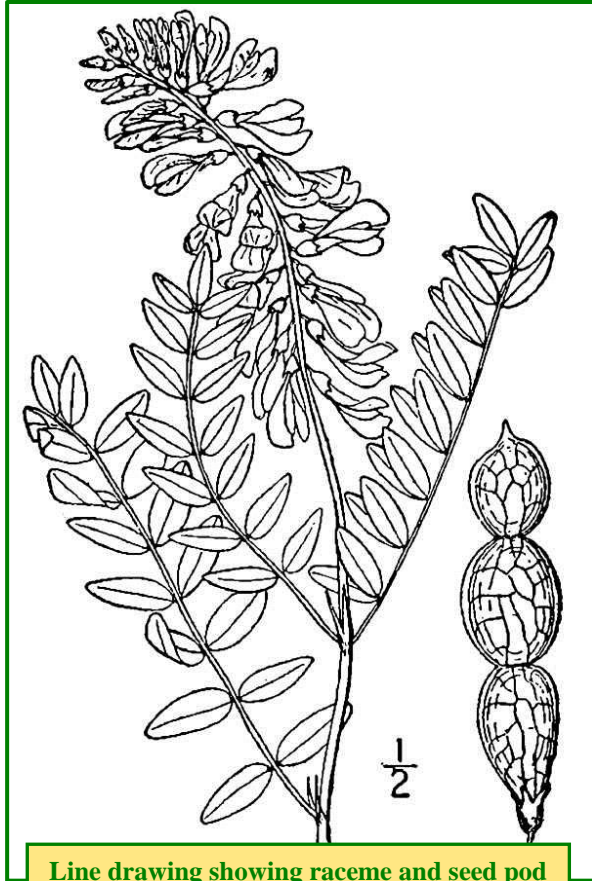


**Scientific Name:** *Hedysarum boreale* Nutt.

**Family:** *Fabaceae*

**Common Names:** boreal sweet-vetch, boreal sweetvetch, northern sweetvetch, sweetvetch.



Line drawing showing raceme and seed pod of *H. boreale*

#### Plant Description

Perennial, stems ascending; leaves with 9 to 13 leaflets; leaflets with obscure veins, hairy (at least below); flower wings standard and keel similar in length; flowers in a dense, compact raceme, erect, red-purple to bright pink (Pahl and Smreciu 1999).

**Fruit:** Pubescent loment, segments not wing-margined (Pahl and Smreciu 1999).

**Seed:** 3 mm long, dark brown, kidney shaped, smooth (Pahl and Smreciu 1999).

#### Habitat and Distribution

Primarily a montane or alpine species in Alberta (to at least 2,100 m), but also scattered in the mixed grass

prairie and occasionally in northern areas (Pahl and Smreciu 1999).

**Seral Stage:** Found in both early and late stages of succession (Pahl and Smreciu 1999).

**Soil:** Adapted to a wide range of soil textures and can tolerate a pH range of 5.2 to 8. Low tolerance to saline soils (USDA NRCS n.d.).

**Distribution:** Alaska, Yukon, Bank Island, Victoria Island, to Hudson Bay, Newfoundland south to northeastern Oregon, Arizona, New Mexico, northern Texas, western Oklahoma, North Dakota, Manitoba, northern Ontario (Moss 1983).

#### Phenology

Cool season perennials; flowering is indeterminate; flower from late May to late September; seeds mature in the wild from mid-August to mid-September. In cultivation, seeds begin to mature in late June; plant stands live 5 to 6 years (Pahl and Smreciu 1999).



*Hedysarum boreale* plant in bloom



*Hedysarum boreale* seed pods (loments)

### Pollination

Insects – mainly bumblebees. Seeds are often empty due to lack of pollinators (Pahl and Smreciu 1999).

### Seed Dispersal

Limited scattering when loment dehisce.

### Genetics

2n=16 (Moss 1983).

### Symbiosis

Associated with nitrogen-fixing rhizobial bacteria (Pahl and Smreciu 1999).

### Seed Processing

**Collection:** In cultivation, expect the first significant seed crops when the plants are three years old. Large crops can be combined or swathed. Small crops should be cut, bagged, hung or spread to dry and threshed (Pahl and Smreciu 1999).

**Seed Weight:** 4.35 to 5.8 g/1,000 seeds (Royal Botanic Gardens Kew 2008). 70 PLS/g (Hammermeister 1998).

**Fruit/Seed by Weight:** 260,000 seeds/kg.

**Harvest Dates:** Late July to early September (Pahl and Smreciu 1999).

**Cleaning:** Run seed through a coarse screen to remove vegetation bits and other unwanted objects. Sift using a top screen (7 to 7.5/64" round) and a bottom screen (1/15" round) (Pahl and Smreciu 1999).

**Storage Behaviour:** Orthodox; seeds can be dried, without damage, to low moisture contents longevity increases with reductions in both moisture content and temperature (Royal Botanic Gardens Kew 2008).

**Longevity:** 16% germination after 15 years, open storage in a warehouse (Royal Botanic Gardens Kew 2008).

Seed was found to remain viable for 6 years when stored in a dry cool place (USDA NRCS n.d.).

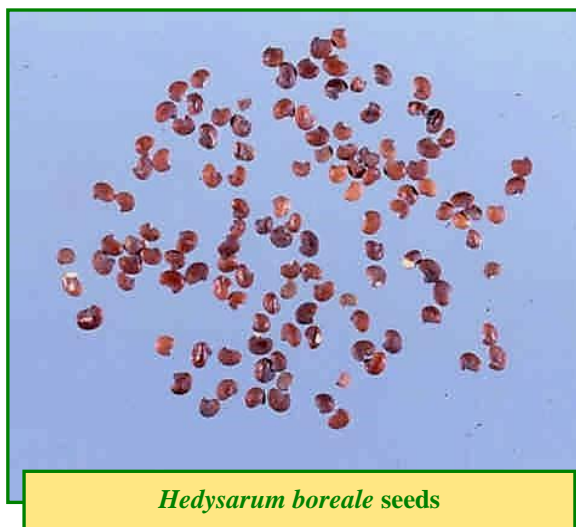
### Propagation

**Natural Regeneration:** Primarily by seed but also spreads rhizomatously (Hardy BBT 1989, USDA NRCS n.d.).

**Germination:** Pahl and Smreciu (1999) recommended germinating seed in the dark.

Germination occurs 6 to 30 days after planting (USDA NRCS n.d.).

100% germination was achieved when seed was germinated on a 1% agar media in temperatures of 15°C with 8 hours of light and 16 hours dark (Royal Botanic Gardens Kew 2008).



*Hedysarum boreale* seeds

**Pre-treatment:** For dormant seed lots scarification may be required. Mechanical scarification of large seed lots is difficult due to varying degrees of seed hardness – many seeds can be broken (Pahl and Smreciu 1999).

Seed were scarified with a scalpel (Royal Botanic Gardens Kew 2008).

**Direct Seeding:** In cultivation, row cropping is recommended; 60 to 90 cm row spacing; seed in spring or early September at a depth of 0.6 to 0.9 cm (Pahl and Smreciu 1999).

**Seed Rate:** 80 to 100 seeds/linear m of row.

**Vegetative Propagation:** No literature found.

**Micro-propagation:** No literature found.

### Aboriginal/Food Uses

**Food:** Important food for many tribes across Canada as well as trappers and settlers. Young roots have a sweet licorice taste and are eaten as a treat. They were boiled, baked, fried, dipped in grease, and added to soups and stews. Spring harvest was best for consumption because roots get woody over the growing season (MacKinnon et al. 2009).

**Medicinal:** Sun dried roots were burned and smoke was trapped with a blanket over the head as a treatment for sore eyes. A rich source of vitamin C as well as anti-inflammatory, liver protecting, anti-viral and central nervous system stimulating properties (MacKinnon et al. 2009) may also be exploited.

**Other:** Pieces of root softened at one end by chewing, were used to pacify babies (MacKinnon et al. 2009).

### Wildlife/Forage Usage

**Wildlife:** Fair to good forage for wildlife; used by rocky mountain big horned sheep as well as by mule deer (Pahl and Smreciu 1999). Favorite food of grizzly bears (Tannas 1997).

**Livestock:** Poor to fair forage for livestock (Pahl and Smreciu 1999).

Excellent food value (USDA NRCS n.d.).

**Grazing Response:** Increaser (Pahl and Smreciu 1999).

### Reclamation Potential

Sweetvetch has been reported to colonize disturbed sites in the mountains and foothills as well as providing niches for other colonizing plants (Pahl and

Smreciu 1999). Are important for improving soil nitrogen as well as reducing erosion.

### Commercial Resources

**Availability:** Is available for use in reclamation but recommended to use native seed collected using the Alberta Forest Genetic Management Guidelines.

**Cultivars:** 'Timp' (USDA NRCS n.d.).

**Uses:** *Hedysarum* sp. have all been used as ornamental species (Tannas 1997).

### Photo Credits

**Photos:** Wild Rose Consulting, Inc. 2012.

### References

Hammermeister, A.M., 1998. Seeding rate conversion charts for using native species in reclamation projects. Alberta Agriculture, Food and Rural Development, Edmonton, Alberta. 13 pp. [http://www.npss.sk.ca/docs/2\\_pdf/Seeding\\_Rate\\_Conversion.pdf](http://www.npss.sk.ca/docs/2_pdf/Seeding_Rate_Conversion.pdf) [Last accessed August 26, 2014].

Hardy BBT Limited, 1989. Manual of plant species suitability for reclamation in Alberta - 2nd Edition. Alberta Land Conservation and Reclamation Council Report No. RRTAC 89-4. 436 pp. <http://hdl.handle.net/10402/era.22605>. [Last accessed May 15, 2013].

Mackinnon, A., L. Kershaw, J.T. Aranason, P. Owen, A. Karst and F Hamersley, 2009. Edible and Medicinal Plants of Canada. Lone Pine Publishing, Edmonton, Alberta. 417 pp.

Moss, E.H., 1983. Flora of Alberta. A manual of flowering plants, conifers, ferns, and fern allies found growing without cultivation in the province of Alberta, Canada. 2nd edition. University of Toronto Press, Toronto Ontario. p. 379.

Pahl, M.D. and A. Smreciu, 1999. Growing native plants of western Canada: common grasses and wildflowers. Alberta Agriculture, Food and Rural Development, Edmonton, Alberta. 118 pp.



Royal Botanic Gardens Kew, 2008. *Hedysarum boreale* Nutt. Seed Information Database.  
<http://data.kew.org/sid/SidServlet?ID=11711&Num=761> [Last accessed June 14, 2013].

Tannas, K., 1997. Common plants of the western rangelands. Volume 2 – Forbs. Lethbridge Community College. Lethbridge, Alberta. 310 pp.

USDA NRCS, n.d. *Hedysarum boreale* Nutt. Utah sweetvetch. The PLANTS Database. National Plant Data Center, Baton Rouge, Louisiana.  
<http://plants.usda.gov/core/profile?symbol=HEBO> [Last accessed June 24, 2013].

