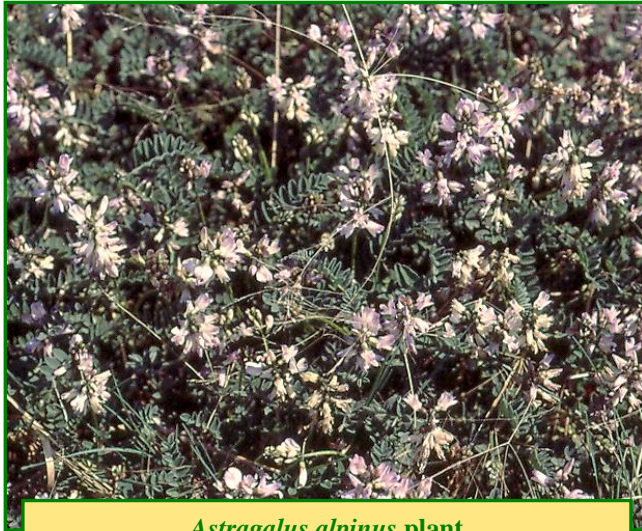


Scientific Name: *Astragalus alpinus* L.

Family: *Fabaceae*

Common Names: alpine milkvetch



Astragalus alpinus plant

Plant Description

Low, mat forming perennial 5 to 30 cm tall with widespread rhizomes: stems leafy, spreading or ascending; leaves compound, 5 to 15 cm long; 11 to 25 leaflets, 5 to 20 mm, oval to oblong elliptic, rounded or shallowly notched at the tip; flowers, 5 to 17 in crowded, 1 to 4 cm long cluster at stem tip; sepals black-hairy; petals light bluish or pinkish purple to almost white, side petals often whitish 7 to 12 mm long (Johnson et al. 1995).

Fruit: Black-hairy pods about 1 cm, short stalked, bent downwards on stalk (Johnson et al. 1995).

Seed: Light to dark brown, kidney shaped, 2 to 3 mm long, smooth (Pahl and Smreciu 1999).

Habitat and Distribution

Forest edges, meadows, and open sandy or gravelly places; widespread across boreal forest (Johnson et al. 1995).

Seral Stage: Early seral colonizer but can persist to climax communities on tundra (Anderson 2007).

Distribution: Circumpolar: Alaska, Prince Patrick Island to northern Baffin Island to Newfoundland south to Washington, northeast Oregon, northeast Nevada, New Mexico, Alberta, Saskatchewan, Manitoba, western Ontario, James Bay, Quebec (Moss 1983).

Phenology

Short lived, cool season perennials; flowers continuously from early June to September; seeds ripen from mid-June to late September. Cultivated plants flower as early as the beginning of May and continue throughout the growing season (Pahl and Smreciu 1999). Cultivated stands can live 2 to 3 years (Pahl and Smreciu 1999).

Pollination

Insect pollinated. Self-incompatible and mainly pollinated by bumble bees at alpine sites and as elevations decrease, pollination by moths increases (Kudo and Molau 1999).

Seed Dispersal

Seeds are dispersed by wind (Royal Botanic Gardens Kew 2008) and water. Seeds can float from 3 to 13 days (Anderson 2007).

Genetics

$2n=16, 32$ (Moss 1983).

Symbiosis

Forms nodules with rhizobial bacteria to fix atmospheric nitrogen; associated with dematiaceous surface root fungi (Pahl and Smreciu 1999).

Seed Processing

Collection: In cultivation, expect the greatest seed yield in the second year of growth (Pahl and Smreciu 1999). Use a seed stripper or for smaller lots: cut,



bag, hang, or spread to dry and thresh (Pahl and Smreciu 1999).

Seed Weight: 476 to 588 seed/g or 1.7 to 2.1 g/1,000 seeds (Pahl and Smreciu 1999).

Harvest Dates: Early to mid-July (Pahl and Smreciu 1999).

Cleaning: Coarse screen to remove leafy material from harvested seed. Use a top screen 5 1/2 / 64" round and a bottom screen 6 x 26 mesh (Pahl and Smreciu 1999).

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

Storage: Store hermetically in sealed containers at freezing temperatures (Royal Botanic Gardens Kew 2008).

Longevity: No literature found.



Propagation

Natural Regeneration: Emerges from seed; mats expand by rhizomes.

Germination: 95% to 100% in 3 to 10 days with pre-treatment (Pahl and Smreciu 1999).

Pre-treatment: Scarification (either scratch seed coat or immerse seeds for 5 to 7 minutes in concentrated sulphuric acid followed by 4 to 7 successive washes in water (Pahl and Smreciu 1999).

Direct Seeding: Seed at a depth of 0.6 cm. Seeding in mid-August or later may result in winterkill (Pahl and Smreciu 1999).

Seed Rate: 100 to 120 seeds/linear m of row (Pahl and Smreciu 1999).

Vegetative Propagation: Rhizome cuttings; divide mature plants (Pahl and Smreciu 1999).

Wildlife/Forage Usage

Wildlife: Caribou, arctic hares and greater snow geese graze *A. alpinus* and grizzly bears forage for underground parts (Anderson 2007).

Livestock: It is grazed by livestock though some members of the *Astragalus* genus are poisonous (Anderson 2007).

Grazing Response: Increaser (Pahl and Smreciu 1999).

Reclamation Potential

Potential species for reclamation, due to its ability to colonize disturbed sites, in a study comparing abandoned borrow pits in southwestern Canada (Kershaw and Kershaw 1987). It is effective for erosion control and fixes atmospheric nitrogen to increase nitrogen levels in soil (Anderson 2007, Pahl and Smreciu 1999).

It is recommended for use to at least 2,000 m elevation in the Alberta Rocky Mountains and at lower elevations in northern Alberta. It has also been successfully established on capped tailings sands in the Athabasca oil sands region, on un-amended coal mine spoils in several areas of BC, and has shown potential for revegetation of calcareous mine spoils at high elevations in Montana (Pahl and Smreciu 1999). Transplanting of *Astragalus alpinus* has been moderately successful with 53% to 73% on un-amended coal mine soils (Anderson 2007).

Photo Credits

Photo 1: Wild Rose consulting Inc. 2011.

Photo 2 & 3: (smaller) Tracey Slotta @ USDA plants database. (larger) Wild Rose Consulting, Inc. 2010.



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