Scientific Name: *Castilleja raupii* Pennell **Family:** *Scrophulariaceae*

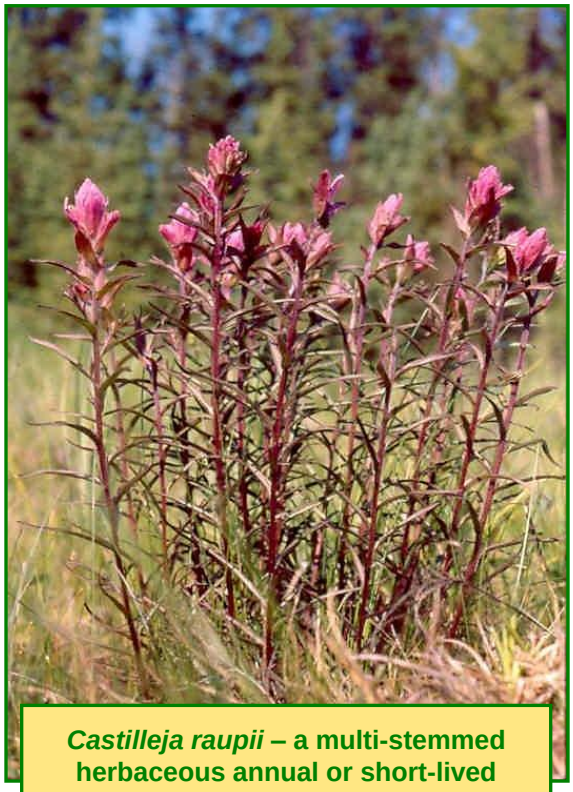
Common Names: purple paintbrush, Raup's Indian paintbrush

Plant Description

Erect short-lived perennial herb, 30 to 50 cm high; slender, green or purplish stem, distinctly hairy; leaves alternate, linear, sessile 4 to 5 cm long; dense terminal spikes; brightly pink to purple bracts are more obvious than petals, oval to lance-shaped, paired, fuzzy; short weak roots, partially parasitic (Moss 1983).

Fruit: Oval shaped capsule is more pointed than egg-shaped (Moss 1983).

Seed: 1.5 to 3 mm long, silvery, irregularly shaped seeds, ridged, honeycomb-like surface texture (Moss 1983).



***Castilleja raupii* – a multi-stemmed herbaceous annual or short-lived perennial.**

Habitat and Distribution

Habitat: Roadsides, open moist forests, forest margins, grassy areas, bogs and shores (Moss 1983).

Seral Stage: Early to mid seral.

Soils: Moist to well drained soils with some organic matter (Moss 1983).

Distribution: Boreal forests of Alberta. Alaska, Yukon, District of Mackenzie to James Bay south to northern British Columbia, Alberta, Saskatchewan, northeastern Manitoba (Moss 1983).

Phenology

Bracts gain colour and plant blooms in late June and July. Seeds ripen in late July and August.

Pollination

The *Castilleja* genus is generally pollinated by hummingbirds (CYSIP: Botany n.d.) as well as self-pollinating.

Genetics

2n=72 (Moss 1983).

Symbiosis

Partially parasitic (CYSIP: Botany n.d.); infecting roots of a wide range of angiosperm families. This parasitic habit increases its vigour with more branching, greater height and earlier flowering (Heckard 1962).

Seed Processing

Collection: Harvest upper stems by cutting just below the seed capsules. Care should be taken to avoid pulling up plants due to weak roots (Luna 2005).

Seed Weight: 0.06 to 0.09 g/1,000 seeds (0.07 average).

Harvest Dates: Late July and late August.

Cleaning: Air-dry fruits. Crush material or remove large chaff and crush remaining material. Sieve to remove seeds from chaff using appropriate size screens. Small chaff and dust can be removed by winnowing. If capsules are intact merely open capsules and empty seeds; sieve or winnow to remove chaff.
Storage Behaviour: This genus is reported to be orthodox (Royal Botanic Gardens Kew 2008)
Storage: Store dry in sealed containers (seeds are light weight and easily blown away).
Longevity: Seed harvested in north-eastern Alberta are viable for at least two years.

Propagation

Natural Regeneration: Emerges from seed (Gerling et al. 1996). They require a host plant to grow successfully; without a host they may grow stunted and/or die (Luna 2005).
Germination: More than 80% in 30 days with fresh, 1 or 2 year old seed in northeastern Alberta. Luna (2005) observed that seeds for *Castilleja* spp. collected at lower elevations had greater germination percentages the seeds collected at higher elevations. Stratified seeds germinate 10 to 14 days after they are sown in greenhouse (Luna 2005).
Pre-treatment: Cold stratification of 30 days. Luna (2005) working with *Castilleja* species, first imbibed seed with water for 4 to 8 hours, poured all water off and then cold stratified them for 30 to 150 days at 1 to 2°C. A non-aggressive or weakly rhizomatous host plant should also be selected to grow with *Castilleja* spp. (Luna 2005).
Direct Seeding: 0.43% emergence after the first year and fully established by year four (flowering, producing seeds and spreading) on oil sands reclamation sites in north-eastern Alberta.
Seeding Rate: 500 seeds/m² to obtain 2 plants/m² – these will spread by seed to produce a much greater density after 3 to 5 years (Wild Rose Consulting Inc. 2013).

Aboriginal/Food Uses

Connected to love charms and used in medicines (CYSIP: Botany n.d., Gerling et al. 1996).

***Castilleja raupii* seedling growing in a direct-seeded revegetation plot.**

Wildlife/Forage Usage

Wildlife: Fair forage value (Gerling et al. 1996).
Livestock: Poor forage value (Gerling et al. 1996).
Grazing Response: Increases in abundance following grazing (Gerling et al. 1996).

Reclamation Potential

Was evaluated in Churchill Manitoba to determine its ability to revegetate heavily gravelled areas; the study resulted in no germination in the first season and a low to moderate germination rate when it did come up (Rausch and Kershaw 2007).

Commercial Resources

Availability: Plants are occasionally available from local Alberta nurseries, collections from native populations preferred for reclamation.
Is available as seed in Alberta (ANPC 2010).

Photo Credit

Photos: Wild Rose Consulting, Inc. 2012.

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