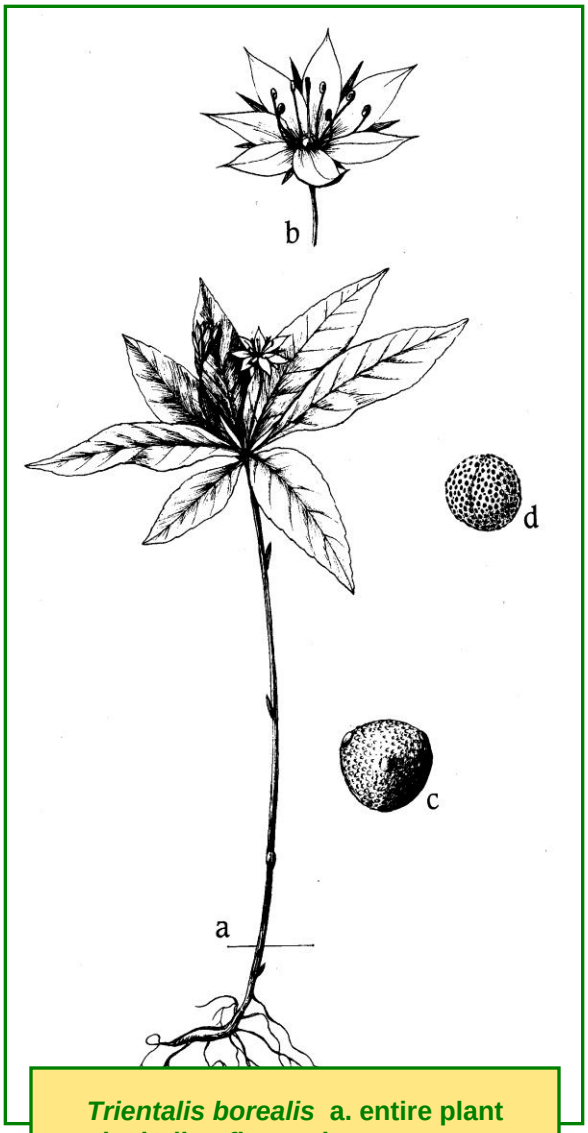
Scientific name: *Trientalis borealis* Raf. **Family:** *Primulaceae*

Common Names: northern starflower



Trientalis borealis **a. entire plant including flower, leaves, stem, rhizome and roots b. flower detail c. pollen d. seed.**

Plant Description

Perennial herb, erect stems 6 to 18 cm high, glabrous or minutely glandular, from slender creeping rhizomes, approximately 30 cm long; leaves are thin lanceolate, acuminate 3 to 10 cm long, in whorls of 5 to 9 at stem tip, sessile or short-petiolate, entire or finely crenulated; single (or sometimes up to three) white flowers 8 to 14 mm wide on slender stalks from center of leaf cluster; ovate or lanceolate 5 to 9 petals, long acuminate (Moss 1983).

Fruit: Spherical, five-chambered dry, brown capsules, 2.2 mm in diameter (Anderson and Loucks 1973).

Seed: Seeds are 7.5 mm long and 7.5 mm wide, brown in colour with a thick, very white outer coat with small spots.

Habitat and Distribution

Found in moist woods. Shade tolerant.

Seral Stage: Mid to late seral.

Soils: Sandy, acidic soil with pH 5 to 6 (Rook 2002).

Distribution: Across boreal forest of prairie provinces and the northern conifer hardwoods in the USA, and from the east coast west to Great Slave Lake (Anderson and Loucks 1973).

British Columbia, Alberta to northern Quebec, Newfoundland south to California, Idaho, Saskatchewan, southern Manitoba, Great Lakes, Georgia, Virginia; Yukon (Moss 1983).

Trientalis borealis **in its natural habitat.**

Phenology

Flowers May to early June; fruit ripens in July; rhizomes are initiated in June to end of July; tubers start to form during the second and third week of July or early August (Anderson and Loucks 1973).

Pollination

Pollinated by bumblebees (Rook 2002), syrphid flies and solitary bees (Anderson and Beare 1983). Self-incompatible with 83% fruit set when cross-pollinated and only 2% fruit set when self-pollinated (Anderson and Beare 1983).

Seed Dispersal

Unknown. Likely scattered by passing animals, brushing seed from stems.

Genetics

2n=96 (Moss 1983).

***Trientalis borealis* seed. Approximately 7 mm.**

Seed Processing

Collection: Collect by hand in the spring.
Seed Weight: 0.4273 g/1,000 to 0.533 g/1,000 seeds on average (Royal Botanic Gardens Kew 2008).
Average Seed/Fruit: 2 to 14 seeds per capsule (Anderson and Loucks 1973).
Harvest Dates: Although seeds ripen in late August the capsules are extremely tiny and difficult to spot. It is best to wait for the following spring, when snow melts. Harvest prior to the undergrowth greening when the whitish-blue capsules stand out above other vegetation.
Cleaning: Air-dry fruits and cones. 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 and dust.
Storage Behaviour: Likely orthodox: seed can be dried prior to cold storage.
Storage: Seed should be stored in airtight containers at freezing temperatures.
Longevity: Six year old seed retains some viability (WRC 2012).

Propagation

Natural Regeneration: By seed but primarily by rhizomes (Rook 2002).
Germination: In their study, Anderson and Loucks (1973) obtained these results: 75.5% germination after 40 days at room temperature with no treatment, and 84.2% germination in 90 days at room temperature following 90 days cold stratification (0 to -1°C). They found that seeds germinated better on sand than filter paper.
Germination was slow, requiring up to eight weeks (Baskin and Baskin 2001).
Optimum germination temperature for fresh and stratified seed was found to be 20/10°C (Baskin and Baskin 2001).
Pre-treatment: 8 to 12 weeks warm stratification. Baskin and Baskin (2001) found that no stratification was required in one trial.
Direct Seeding: No literature found.
Planting Density: No literature found.
Seed Rate: No literature found.
Vegetative Propagation: By division in early spring (Rook 2002).
Micro-propagation: No literature found.

Aboriginal/Food Uses

Food: Inedible.
Medicinal: Steeping the whole plant in boiling water would make a medicinal tea to treat general sickness.

Commercial Resources

Availability: Seed is commercially available in Alberta (ANPC 2010).
Cultivars: None are known.
Uses: No literature found.

Notes

Synonym: *Trientalis americana* (Rook 2002).
Trientalis borealis is listed as 89% intact (less occurrences than expected) in the Alberta oil sands region (Alberta Biodiversity Monitoring Institute 2014).
Can be very slow to establish, but spreads to form colony after several years (Rook 2002).

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