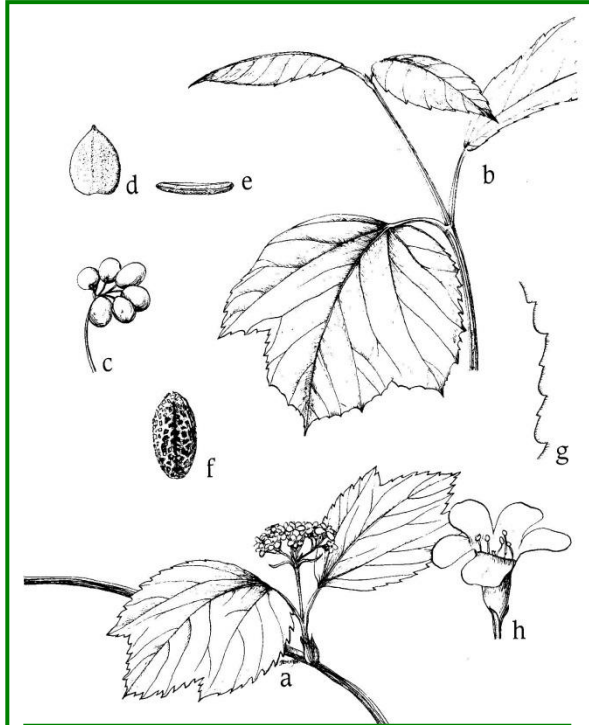


Scientific name: *Viburnum edule* (Michx.) Raf. **Family:** *Caprifoliaceae*

Common Names: lowbush cranberry, mooseberry, squashberry, squawberry, crampbark, pembina



***Viburnum edule* a. flowering branch and inflorescence b. leaves c. fruit d & e. seeds f. pollen g. leaf margin h. individual flower.**

Plant Description

Branching perennial shrub, erect, 1 to 2 m high; glabrous, light grey, moderately slender twigs somewhat six sided with wings at the nodes; opposite ovate to obovate coarsely-toothed leaves often three lobed at apex 6 to 10 cm long; 1 to 3 cm wide cyme at leaf axils of 3 to 30 small white flowers; corolla is 3 to 6 mm long and 4 to 7 mm diameter (Moss 1983). **Fruit:** Spherical, light red, 8 to 10 mm long, acid, strong scented, edible drupe, one seed per drupe, 2 to 6 drupes per cluster (Moss 1983).

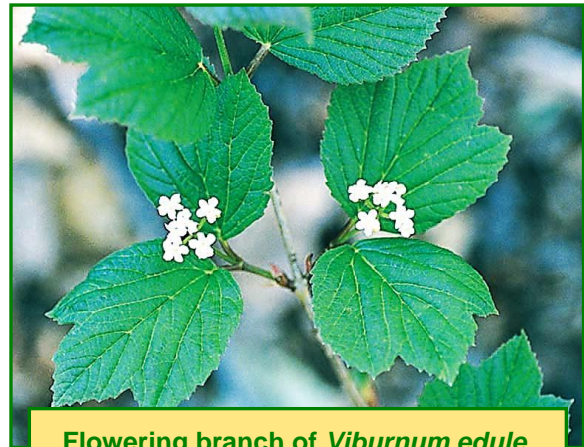
Seed: 5 to 8 x 5 to 6 mm flattened wedge, flat oval or heart-shaped seeds, flesh-coloured to whitish, ribbed on one face, rough.

Habitat and Distribution

Moderately shade tolerant. Common in moist woods, thickets, margins of wetlands and stream banks, on rocky gravel banks at higher elevations. Prefers rich moist soils in heavily wooded areas (Inkpen and Van Eyk n.d.).

Picea glauca forests may include lowbush cranberry as a dominant understory species, and as such is moderately shade tolerant. *Populus tremuloides*, *P. balsamifera* and *Betula papyrifera* groves may also contain some cranberry. Fellow understory species found with *Viburnum edule* include: *Rosa acicularis*, *Corylus cornuta*, *Rhododendron groenlandicum*, *Symphoricarpos albus*, *Cornus sericea*, *C. canadensis*, *Shepherdia canadensis*, *Chamerion angustifolium*, *Calamagrostis sp.*, *Salix sp.*, *Alnus sp.*, *Rubus sp.* and *Ribes sp.* (Matthews 1992).

Seral Stage: Pioneers in flood plain succession.



Flowering branch of *Viburnum edule*.

Viburnum edule is an important species in all stages of post-fire communities (Matthews 1992).

Soils: Prefers moist, well-drained soils of alluvial origins. Textures range from clay to clay and fine loams with pH 6.5 (Gerling et al. 1996).

Distribution: Widespread across Canada and northern USA. Alberta (parkland and boreal areas). Alaska, Yukon, western District of Mackenzie to James Bay, northern Quebec, Newfoundland south to Oregon, Idaho, Colorado, Minnesota, Pennsylvania (Moss 1983).



Phenology

Flowers mid-April to mid-June. Fruits ripen end of June to first week of July (Banerjee et al. 2001). In northeastern Alberta, flowering is more common in late June through July with fruit ripening in August and falling toward the end of August, beginning of September.

Pollination

Likely pollinated by bees, butterflies and birds (Dave's Garden n.d.).

Seed Dispersal

Animal dispersal, birds and mammals.

Genetics

2n=18 (Moss 1983).

Seed Processing

Collection: Berries may be sparse on shrubs, although in general the height of bushes facilitates collections.

Seed Weight: 21,740 g/1,000 seeds.

Fruit Volume: 1,770 fruit/L (1,770 seeds/L fruit).

Fruit Weight: 3,030 fruit/kg (3,030 seeds/kg fruit).

Average Seeds/Fruit: 1 seed/fruit.

Harvest Dates: Late July to late August, fruit should be picked when colour changes from green to red-orange (Banerjee et al. 2001).

August 1 to September 30 (Formaniuk 2013).

Cleaning: Mash fruit in a sieve (1.40 mm works well). A blender with taped blades may also be used to macerate the fruit. Suspend residue in water allowing seeds to settle. Decant water and chaff. Repeat suspension and decanting until only seeds remain.

Alternatively, a tomato de-seeder may be used although care must be taken to remove cracked and broken seed. Allow seed to dry at room temperature in a moving air stream.

Storage Behaviour: Orthodox (Royal Botanic Gardens Kew 2008).

Storage: Store dry at low temperatures (Young and Young 1992).

Longevity: At low temperature, dried seeds can be stored for several years (Young and Young 1992). If sealed in containers at 1 to 3°C, seeds can be viable for up to 10 years (Luna 2008, Rose et al. 1998).

Propagation

Natural Regeneration: Sprouting from damaged rootstalks, stem bases, and stumps (Matthews 1992).

Germination: Difficult to germinate due to two year embryonic dormancy. Royal Botanic Gardens Kew (2008) report 75% germination. Emergence in the field is more successful than *in vitro* germination.

Pre-treatment: 1 year cold stratification before seeding (Wood pers. comm.).

180 days stratification (Formaniuk 2013).



3 to 5 month warm moist stratification (22°C) followed by three months cold moist stratification (5°C) (Luna 2008). Seeds are dormant and require a double cold period to initiate germination (Smreciu and Barron 1997).

Mechanical scarification (chipping with scalpel) followed by 250 mg/L GA3 and warm conditions (30°C/20°C and 8 h light/16 h dark) is recommended by Royal Botanic Gardens Kew (2008).

Direct Seeding: In trials on a reclaimed oil sands site, no significant emergence was observed by sowing seeds. When entire fruit were sown, approximately 18% of seeds emerged after five years. Spring sown fruit tend to emerge better than fall sown ones (Smreciu, et al 2012).

Seed Rate: 100 seeds/m², 50 fruit/m².

Planting Density: 790 to 3,200 plants/ha (USDA NRCS n.d.).

Vegetative Propagation: Softwood cuttings (6 cm) in July and August are successful, particularly when treated with rooting hormone powder (auxin) and stuck into flats of perlite until rooting occurs (from six to eight weeks using intermittent mist); then transplant into flats of potting soil (Rose et al. 1998). Stem cuttings collected in June, 20 cm long and 0.5 cm in diameter, with 1/3 of the basal leaves removed, given a two minute fungicide (Domain) bath and treated with 3,000 ppm Hormex rooting powder and placed in rooting media under mist with bottom heat for seven weeks produced 100% rooting (Luna 2008).

Rhizome cuttings can also be successfully established in a greenhouse (Holloway and Zasada 1979). When planted immediately after the fall collection, rhizome cuttings successfully produce roots (Matthews 1992). Plants may regenerate by layering in the summer in sandy soil (Babb 1959).

Rooted cuttings can be slow to grow and may develop secondary bud dormancy.

Greenhouse Timeline: 1 year in greenhouse before out-planting. Plants can be stored over winter for spring or summer plant (Wood pers. comm.). Grow for 170 days before harvest (Formaniuk 2013).



Aboriginal/Food Uses

Food: Fruit are cooked to make jelly and cough medicine. Can be eaten fresh, however can cause vomiting and cramps if eaten in large quantities (CYSIP: Botany n.d., Marles et al. 2000). Fruit is an excellent source of vitamin C; flavour is improved if picked after a frost (Royer and Dickinson 1996, Turner 1997).

Medicinal: Chewing twig tips can treat sore throats. Closed buds were rubbed on lips to heal lip sores. Tea made from roots was used as teething pain relief, as a gargle for sore throat and as a blood purifier. Boiled fresh or dried bark was used to relieve menstrual pain (Marles et al. 2000, Royer and Dickinson 1996). Simmered bark acts as an antispasmodic (hence the name crampbark – Gray 2011).

Other: Hollowed out branches were used to make pipe stems and the bark used as a tobacco substitute (Marles et al. 2000, Turner 1997, Wilkinson 1990).

Wildlife/Forage Usage

Wildlife: Highly browsed by game (mostly during winter). The fruit is a valued food source for many bird species (CYSIP: Botany n.d.). Grizzly and black bears, deer, rabbits, chipmunks, squirrels, skunks, grouse, pheasants and many other birds eat the berries. Deer, moose, rabbits, and beaver browse on

the foliage. Provides cover for small mammals and birds (Tannas 1997).

Livestock: Low palatability, little use to livestock (Tannas 1997).

Grazing Response: Increaser (Tannas 1997).

Reclamation Potential

Versatility in cranberry, range of light and soil tolerance (sun, part shade or shade, clays to loams), re-sprout ability and tolerance to disturbance all make this species useful in reclamation applications.

Commercial Resources

Availability: Seed is commercially available in Alberta (ANPC 2010).

Seeds have been collected by the Oil Sands Vegetation Cooperative for use in the Athabasca oil sands region.

Cultivars: None are known.

Uses: The fruit can be eaten raw but is more generally used to make jams, jellies and syrups. The plant is sometimes used as an ornamental.

Notes

V. edule is listed as 84% intact (less occurrences than expected) in the Alberta oil sands region (Alberta Biodiversity Monitoring Institute 2014).

Fruit are produced at around five years of age, after which the plants produce large crops nearly every year.

V. edule is a seed banking species and soil disturbance resulting from mechanical site preparation can favour germination of stored seed and may provide suitable seedbeds for freshly deposited seed (Matthews 1992).

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