Scientific Name: *Heracleum sphondylium ssp. montanum* (Schleich. ex Gaudin) Briq.

Family: *Apiaceae*

Common Name: common cow parsnip, cow parsnip

***Heracleum sphondylium* in flower.**

Plant Description

An erect, perennial forb; pubescent or tomentose hollow stems, 1 to 2 m tall, unpleasant smelling; large hairy leaves divided into three segments with lobed and toothed leaflets 10 to 30 cm wide and cordate at the base; numerous flowers with five lobed irregular white petals in a flat-topped umbel 10 to 30 cm across; lance-shaped bracts (Budd and Best 1969, Johnson et al. 1995, Moss 1983).

Fruit: Flat, ovate to hear-shaped schizocarp, 1 cm long, winged, lightly pubescent (Moss 1983) with dark vertical ribs or lines.

Seed: Single brown seed in each segment (Royer and Dickinson 2007).

Habitat and Distribution

Found in moist woods, ditches clearings and other moist areas (Moss 1983) in full sun (USDA NRCS n.d.).

Seral Stage: Early succesional and often after disturbance (Rook 2002).

Soil: Grows in all soil textures, pH between 5.4 and 7.3 with no salinity tolerance (USDA NRCS n.d.) but best on loam and sandy loam textures (Rook 2002).

Distribution: Widespread and common throughout Canada and most of US except the most south-eastern states (USDA NRCS n.d.).

Southern Alaska, Yukon, southwestern District of Mackenzie to Hudson Bay, Newfoundland south to California, Arizona, New Mexico, Kansas, Ohio, Georgia (Moss 1983).

Flowering umbels of *H. sphondylium* showing differential flowering times of inflorescences on the same plant.

Phenology

Umbels on each plant will flower at different times such that seeds will ripen over a long period. In northern Alberta, plants bloom in June and seeds ripen through July.

Pollination

Frequently pollinated by syrphid and tachinid flies (Tooker et al. 2006).

Seed Dispersal

Heracleum sp. are spread by wind as well as by water (Page et al. 2006).

***Heracleum maximum* seeds.**

Genetics

2n=22 (Moss 1983).

Symbiosis

No known symbionts.

Seed Processing

Collection: Hand collected in paper bags (Luna et al. 2008). Has been found to be a skin irritant; it is recommended that gloves are worn if you are handling plants (Tilford 1997).
Seed Weight: 6.0 to 14.6 g/1,000 seed (Royal Botanic Gardens Kew 2008).
Seed by Weight: 105,000 seeds/kg (USDA NRCS n.d.).
Fruit Weight: 217.30 seeds/g or 4.606 g/1,000 seeds.
Harvest Dates: Mid to late August – early September.
Cleaning: Seeds are cleaned using an air blower and screens.
Storage Behaviour: Orthodox (Royal Botanic Gardens Kew 2008).
Storage: Viability is lost after five years of storage in a warehouse. Viability maintained when stored in hermetic storage at -18°C (Royal Botanic Gardens Kew 2008).
Longevity: Seed dormancy is non-deep morphological-physiological dormancy (Luna et al. 2008). Seed has remained viable in storage for 8 years (Royal Botanic Gardens Kew 2008).

Propagation

Natural Regeneration: By seed (Rook 2002).
Germination: Germination did not occur in the first year (Luna et al. 2008).
Germination occurred at temperatures 22/17°C (night/day) with pre-treatments (Baskin and Baskin 2001).
96% germination on a medium of 1% agar under temperatures of 5°C in 8 hr light and 16 hr dark (Royal Botanic Gardens Kew 2008).
Pre-treatment: Luna et al. (2008) used the following: pre-planting treatment of a 72 hour water soak of fresh seeds, water changed daily. Seeds were placed into a 100 day cold, moist stratification, i.e., in fine mesh bags and buried in moist peat moss in a ventilated container under refrigeration at 1 to 3°C. The running water pre-soak treatment is necessary to leach out inhibitors on seed coats.
Direct seeding by hand, lightly covered with 50% milled sphagnum peat, perlite, and vermiculite with Osmocote controlled release and Micromax fertilizers. Seeds did not germinate the 1st year; containers were placed in outdoor nursery for remainder of growing season and were winterized outdoors. Initial germination occurred the following spring. Total time to harvest was 1.5 years.

112 day cold stratification was used to coax seed to germinate (Baskin and Baskin 2001).
Vegetative Propagation: No literature found.

Aboriginal/Food Uses

Food: Young stalks can be roasted and the pith scraped out and eaten; stem marrow has a sweet licorice taste and can be eaten raw or cooked as can leaf stalks; roots can also be cooked (Johnson et al. 1995, Turner 1997). *H. maximum* can be substituted for celery and eaten raw or cooked (MacKinnon et al. 2009).
Medicinal: A paste can be made with *H. maximum* roots and applied to relive swollen or aching limbs (Johnson et al. 1995). Cooked roots can be ingested to treat gas, colic and cramps, and fresh roots are used as a tea to relieve sore throats, coughs and headaches (MacKinnon et al. 2009). However, caution is necessary: this plant contains furanocoumarins (light-activated antimicrobials) so the roots and outer skin of the plant can irritate and blister skin and lips and may damage DNA (Johnson et al. 1995, MacKinnon et al. 2009).
Can also be used as an immunostimulant as well as has significant anti-fungal, antimycobacterial and antiviral properties (Webster et al. 2006).
Other: Stalks were part of Sun Dance rituals of the Blackfoot Tribe (Tannas 2004).

Wildlife/Forage Uses

Wildlife: It is moderately palatable to grazing and browsing animals as well as to humans (USDA NRCS n.d.) and decreases with grazing. In the fall, deer, elk and bears eat the stems and leaves, and birds eat the seeds (Johnson et al. 1995).
Livestock: Forage value is good, palatable all season long (Tannas 2004).
Grazing Response: A decreaser and in some cases an increaser depending on livestock accessibility to area; plants produce numerous seeds large food reserves in its roots so it can withstand some grazing (Tannas 2004).

Reclamation Potential

Said to be moderately good for soil stabilization and erosion control (Parks Conservancy 2013).

Commercial Resources

Availability: None known in Alberta.

Notes

Heracleum maximum is listed as 68% intact (less occurrences than expected) in the Alberta oil sands region (Alberta Biodiversity Monitoring Institute 2014).
Can be confused with *Heracleum mantegazzianum* which is an invasive weed in Canada *(*Page et al. 2006).
Synonyms include *Heracleum maximum* and *Heracleum lanatum* (ITIS n.d.).
Known in British Columbia as Indian rhubarb or wild rhubarb (Turner 1997).
The genus refers to the son of Zeus, Hercules.
Has been known to cause dermatitis in humans (Budd and Best 1969).

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Photo 3: Steve Hurst @ USDA-NRCS Plant Materials Database.

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