English name: Deltoid Balsamroot

Other English names: N/A

Scientific name: *Balsamorhiza deltoidea*

Other scientific names: N/A

Family: *Asteraceae* (Aster Family)

Risk status

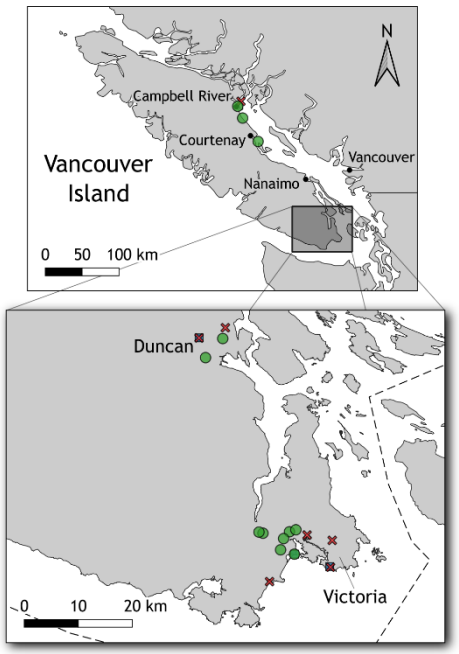
BC: imperilled (S2); red-listed

Canada: endangered

Global: secure (G5)

Elsewhere: Washington, Oregon, and California– reported (SNR)

Range/Known distribution: Deltoid Balsamroot occurs from southwestern British Columbia, south through the south Puget Sound, Willamette Valley, and intermountain areas of Washington and Oregon to California, where it occurs primarily in the Coast ranges and the Sierra Nevadas. In Canada, it is restricted to the dry southeastern side of Vancouver Island from Campbell River to Victoria. Currently, there are 11 known occurrences. At least 10 (and possibly as many as 13) populations have been extirpated and plants have been experimentally re-introduced to three of the extirpated sites.

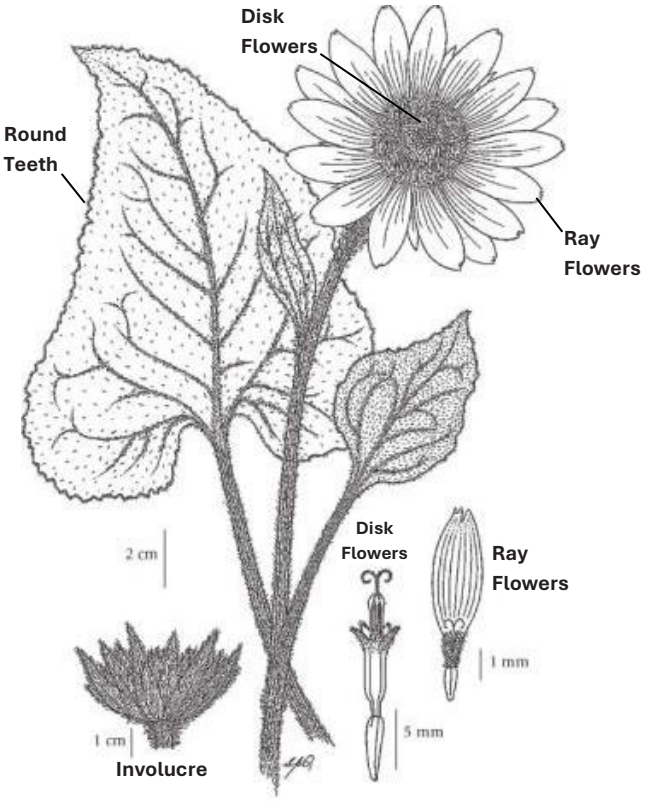


Distribution of *Balsamorhiza deltoidea*
- Confirmed Sites
- Experimental Sites
- Extirpated Sites

Field description: Deltoid Balsamroot is a large perennial that produces one or more crowns from a deep taproot. Each crown produces stems reaching 0.2 –1.0 m tall. The triangular basal leaves (10-50 cm long and 10-20 cm wide) are long-stalked, with small, rounded teeth along the edge of the leaf, inconspicuous stiff hairs, and prominent veins. Juvenile plants have relatively few small, narrowly elliptic leaves compared to mature plants. The leaves on the flowering stems are much smaller and are lance- to linear-shaped. The flower heads have 13-21 yellow strap-like ray flowers, each 2-3 cm long. These ray flowers surround a disk of yellow tube-like flowers, each 5-7 mm long. The disk flowers comprise a central area of 2.5 cm or more wide. The fruits are small achenes that resemble sunflower "seeds".

Identification tips: The large, sunflower-like flower heads combined with the large leaves are not likely to be confused with any other species on the coast. Arrowleaf Balsamroot (*Balsamorhiza sagittata*), the only other species of *Balsamorhiza* that occurs in Canada, is restricted to east of the Coast Cascade Mountains in the southern interior.

Balsamorhiza deltoidea



Life history: In Canada, the shoots of Deltoid Balsamroot emerge in April and flowering peaks in May. The flowers are pollinated by insects, often bees. Herbivores sometimes graze on the flower heads before the seeds have a chance to develop. Many seeds may fail to develop so the annual seed crop may be far smaller than the number of fertile flowers. The plants wither and die back to their crowns in June or early July. The achenes are shed as the plant withers, or soon afterwards. Most achenes probably remain close to the parent plant because they lack structures to help them disperse over long distances. The seeds appear to germinate in the early spring. The young plants may take 4-8 years to reach maturity. Young plants may be quite susceptible to root rot if the soil remains damp during the summer, but that rarely happens in Canadian populations.

Habitat: Deltoid Balsamroot inhabits dry, well-drained Garry Oak (*Quercus garryana*) and/or Douglas-fir (*Pseudotsuga menziesii*) meadow sites. Two kinds of habitats offer these well-drained conditions: shallow soils over deeply fissured, sloping bedrock; and flat bodies of coarse gravel and sand. Deltoid Balsamroot ranges from sea level up as high as 250 m, with slopes varying from level ground to up to 50%. On steeper ground, the plants are found on west or south facing slopes. The sites may have a sparse shrub cover of Tall Oregon-grape (*Berberis aquifolium*), Common Snowberry (*Symphoricarpos albus*), Spurge Laurel* (*Daphne laureola*), and Scotch Broom* (*Cytisus scoparius*). Associated native herbs include Common Yarrow (*Achillea millefolium*), camas (*Camassia* spp.), Field Chickweed (*Cerastium arvense*), Menzies' Larkspur (*Delphinium menziesii*), Western Buttercup (*Ranunculus occidentalis*), Pacific Sanicle (*Sanicula crassicaulis*), Spring Gold (*Lomatium utriculatum*), Meadow Death-camas (*Toxicoscordion venenosum var. venenosum*) and Blue Wildrye (*Elymus glaucus*). Introduced grasses, including Sweet Vernal Grass* (*Anthoxanthum odoratum*), Soft Brome* (*Bromus hordeaceus*), Hedgehog Dogtail* (*Cynosurus echinatus*), Kentucky Bluegrass* (*Poa pratensis*) and Barren Brome* (*Vulpia bromoides*), are often abundant in the same habitat. Many sites where Deltoid Balsamroot occurs were likely maintained in the past by periodic fires set by Indigenous peoples. Fires would have controlled competing woody vegetation and allowed the successful establishment of seedlings.

Why the species is at risk: Habitat loss has been the most direct and immediate threat to Deltoid Balsamroot populations. A large portion of the largest remaining population was recently converted to parking lots and industrial development. Several populations are located next to trails, where they may be damaged by recreational users through soil compaction and flower-picking, both of which may prevent reproduction and recruitment. Plants may also be damaged during trail maintenance activities. The suppression of fires has favoured tree and shrub growth, increasing competition for light, moisture, and nutrients. Fire suppression may have also changed soil fertility levels, increased the number of competing herbaceous species and decreased the availability of safe sites for germination. Shrubs such as the native Common Snowberry (*Symphoricarpos albus*) and the exotic Scotch Broom* (*Cytisus scoparius*) have taken over some sites where Deltoid Balsamroot grows. Herbivory by Black-tailed Deer (*Odocoileus hemionus*), Eastern Cottontail Rabbits* (*Sylvilagus floridanus*) and invertebrates may also have contributed to the decline of Deltoid Balsamroot.

What you can do to help this species: All populations should be monitored to determine their viability, as well as for any negative impacts stemming from land development, recreational pressure, and invasion by competitive shrubby species.

Existing populations, especially where they occur on private lands, require improved protection if they are to persist.

Fencing may be required to protect populations from trampling and trail maintenance activities. Deer- and rabbit-proof fencing may be necessary where populations are being damaged by herbivory..

Invasive species within populations of Deltoid Balsamroot should be controlled. This includes removing invasive shrubs but may also include mowing invasive grasses and raking the thatch. Mowing and raking should not be done until after thorough consideration of the pros and cons, as it could have undesirable impacts on native species including other rare plants unless conducted properly.

References

COSEWIC. 2009. COSEWIC assessment and update status report on the Deltoid Balsamroot Balsamorhiza deltoidea in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa, ON.

Parks Canada Agency. 2006. Recovery Strategy for Multi-Species at Risk in Garry Oak Woodlands in Canada. In Species at Risk Act Recovery Strategy Series. Ottawa, ON.

For further information, contact the Garry Oak Ecosystems Recovery Team, or see the web site at: www.goert.ca

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*Refers to non-native species.