English name: Yellow Montane Violet

Other English name: Canary Violet, Upland Yellow Violet, Hairy Violet

Scientific name: *Viola praemorsa* Dougl. ex Lindl. ssp. *praemorsa*

Other scientific name: *Viola nuttallii* Pursh ssp. *praemorsa* Dougl. ex Lindl.

Family: *Violaceae* (Violet Family)

Risk status

BC: critically imperilled (S1); red-listed

Canada: Endangered

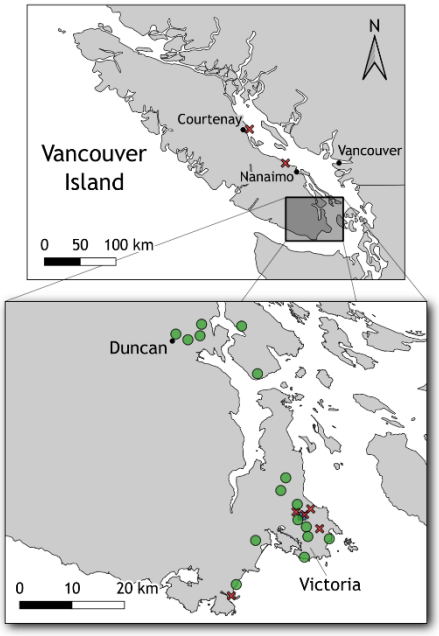
Global: secure (G5T3T5)

Elsewhere: Washington, Oregon, California not ranked (SNR) – see taxonomic note

Taxonomic notes: Yellow Montane Violet belongs to a complicated group of poorly-defined entities that are treated as varieties in the Flora North America treatment. One other variety occurs in Canada, Broad-leaved Yellow Prairie Violet (*Viola praemorsa* var. *linguifolia*). The latter occurs in southwest Alberta but has not been reported from British Columbia.

Range/Known distribution: In Canada, twenty-eight naturally occurring populations of Yellow Montane Violet have been reported (of which eighteen are extant), along a narrow coastal band from near Comox south to Victoria and west to the Metchosin area, and in the southern Gulf Islands. An experimental population was established in the Victoria area.

In the United States, Yellow Montane Violet (as the entity described in this fact sheet) occurs in valleys and prairies, chiefly west of the Cascades, from BC to northern California.

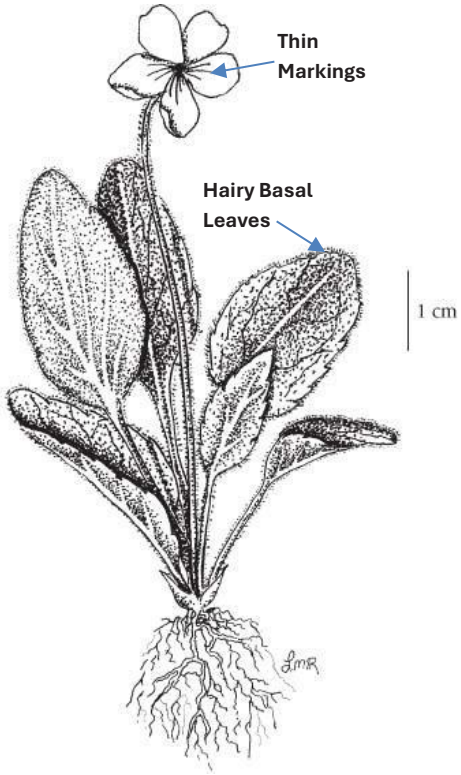


Distribution of *Viola praemorsa spp. praemorsa*
- Confirmed Sites
- Experimental Sites
- Extirpated Sites

Field description: Yellow Montane Violet is a 5-20 cm tall perennial with 1-3 stems arising with a 1-3 cm long leafy stem arising from a vertical rhizome. It does not produce stolons. The leaves are usually conspicuously hairy with thick, somewhat fleshy blades. The basal leaves have a 2.6-13 cm long petiole and a blade that is usually narrowly to broadly egg-shaped and 1.7-5.9 cm long and 0.8-3.3 cm wide. The leaf base is truncate to slightly cordate and the margins may be entire or toothed. The stem leaves are similar but tend to have somewhat shorter petioles.

The flower stalks are usually 5-15 mm long. Some of the lower flowers are cleistogamous: they are so reduced they are hardly noticed, lack petals, and never open up because they self-fertilize. The 'normal' showy flowers are typical of violets: bilaterally symmetrical with five petals, two at the top, two on the side, and one below. The petals are deep lemon-yellow in the front and at least the two upper petals are brownish-purple beneath. The two lateral petals are sparsely bearded. The lowest petal is 12-15 mm long and has a yellow or bright green spur, 0.5-3.0 mm long. The capsules, which contain numerous seeds, are egg-shaped and 6-11 mm long. When the capsule has ripened and dried out it splits into three valves, releasing the dark brown seeds. The seeds have an elaiosome, a fleshy structure that is rich in lipids and proteins and plays a role in seed dispersal.

Identification tips: Within its range in Canada, there are only three other yellow-flowered violets. Stream Violet (*Viola glabella*) has large, thin leaves and there are no leaves on the lower part of the erect stem. Round-leaved Violet (*V. orbiculata*) Trailing Yellow Violet (*V. sempervirens*) have leaves as wide as they are long, with a heart-shaped base.



Viola praemorsa var. praemorsa

Life history: Yellow Montane Violet relies upon seeds for reproduction. The seeds germinate in late March or early April and the plants grow slowly, usually taking at least 2 years to reach flowering size. The shoots of overwintering plants break dormancy in late March or early April, slightly before when the seeds germinate. The showy cross-pollinated flowers appear in late April and May and the inconspicuous cleistogamous flowers are produced slightly later, well into late May or June if the summer drought arrives later than normal. The seeds are explosively ejected from the drying capsules and the plants usually die back by early to midsummer.

The elaiosomes on the seed attract ants, which try to drag the seed back to their nests as a food source. The elaiosome snaps off part way along the journey and by doing so enables the seed to disperse farther from the parent plant than would be otherwise possible, yet without ending up being consumed in the ant nest.

Habitat: In British Columbia, Yellow Montane Violet occurs in Garry oak woodlands and maritime meadows. These low-elevation (< 30 m), herb-dominated ecosystems are largely confined to coastal situations (within 3 km of the shoreline) Summer and winter temperatures are greatly moderated by proximity to the ocean. Maritime meadows and Garry oak woodlands may be largely free of shrubby vegetation for a variety of reasons, including strong summer moisture deficits (particularly on wind-exposed sites and/or those with thin, coarse-textured soils), salt spray and a long history of First Nations burning. These forces may act alone or in concert, consequently some Garry oak woodlands and maritime meadows are subject to forest ingrowth while others remain open despite fire suppression. Most microhabitats occupied by yellow montane violet have shallow soils over bedrock, are relatively level or south-facing, have little or no shrub cover and have an abundant cover of herbaceous species.

The canopy, when present, is either composed of Garry Oak (*Quercus garryana*) which is leafless and lets abundant light in when the plants are young, or open Douglas-fir (*Pseudotsuga menziesii*). The native shrub layer is most often dominated by Common Snowberry (*Symphoricarpos albus*), although Ocean-spray (*Holodiscus discolor*) is often present. The native herb layer is usually dominated by perennial forbs, including Common Camas (*Camassia quamash*), Great Camas (*C. leichtlinii*), Pacific sanicle (*Sanicula crassicaulis*), Field Chickweed (*Cerastium arvense*), Broad-leaved Shooting-star (*Primula hendersonii*), Spring Gold (*Lomatium utriculatum*), Western Buttercup (*Ranunculus occidentalis*), White Triteleia (*Triteleia hyacinthina*), and a number of other species that are either less abundant, or less frequent. Native graminoids, generally less abundant, include Blue Wildrye (*Elymus glaucus*), California Oatgrass (*Danthonia californica*), Long-stoloned Sedge (*Carex inops*), and California Brome (*Bromus carinatus*). Native annual forbs such as Sea-blush (*Plectritis congesta*) and Miner's Lettuce (*Claytonia perfoliata*) are generally sparse or absent. The moss/lichen layer is usually sparse.

Why this species is at risk: Over 95% of Garry Oak and associated ecosystems have been lost to development since European settlement began in the 19th century and is likely that and even greater proportion of Yellow Montane Violet populations were lost in the process, because of its preference for relatively level, deep-soil sites which are most suited to conversion to agriculture

and residential use. Populations along roads and on private property remained threatened by development.

Fire suppression, and concomitant forest and shrubland ingrowth, appears to be a threat to some of the remaining populations. Although Common Snowberry is frequently abundant in the vegetation, yellow Montane Violet is usually restricted to openings in the shrub cover.

The most serious contemporary threat comes from invasive species. These include shrubs such as Scotch Broom* (*Cytisus scoparius*), One-seed Hawthorn* (*Crataegus monogyna*), and English Ivy* (*Hedera helix*), the last of which forms creeping mats; and a diverse assemblage of forbs including Dandelions* (*Taraxacum* spp.), Hairy Cat's-ear* (*Hypochaeris radicata*), Ribwort Plantain* (*Plantago lanceolata*), Crow Garlic* (*Allium vineale*), and Common Vetch* (*Vicia sativa*). A number of annual forbs have become quite common and may compete strongly with Yellow Montane Violet seedlings. This includes Purple Dead-nettle* (*Lamium purpureum*), Cleavers* (*Galium aparine*), Dove-foot Geranium* (*Geranium molle*), Bur-chervil* (*Anthriscus caucalis*), and Upright Hedge-parsley* (*Torilis japonica*). Perennial grasses such as Sweet Vernal Grass* (*Anthoxanthum odoratum*), Orchard Grass* (*Dactylis glomerata*), Kentucky Bluegrass* (*Poa pratensis*) and Perennial Ryegrass* (*Lolium perenne*) and annual grasses such as Barren Brome* (*Bromus sterilis*), Soft Brome* (*B. hordeaceus*), and Crested Dogtail* (*Cynosurus echinatus*) may shade out Yellow Montane Violet and compete for space, moisture, and nutrients.

Some populations are located near trails, where they may be damaged by recreational users through soil compaction and picking of flowers, both of which may prevent reproduction and recruitment.

What you can do to help this species: Populations should be monitored regularly to identify changing threats and assess the effectiveness of management actions, with an emphasis on small populations on the edge of extirpation.

Measures should be taken to protect populations on private lands through conservation agreements. Populations near trails should be protected from trampling.

Forest and shrub ingrowth presents a particularly serious threat but it is unlikely that fire can be returned to most areas so novel techniques must be devised and implemented to reverse encroachment.

Invasive woody species such as Scotch Broom and One-seeded Hawthorn should be removed, but this must be done carefully or else they will simply be replaced by invasive herbaceous species. Invasive forbs and grasses are difficult to control, and this can be ongoing and very time-consuming. Nevertheless, given the very high threat they pose, their control should be considered in high quality occurrences.

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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