

Castilleja levisecta – Golden Paintbrush

English name: Golden Paintbrush

Other English names: N/A

Scientific name: *Castilleja levisecta* Greenman

Other scientific names: N/A

Family: *Orobanchaceae* (Broomrape Family)

Risk status

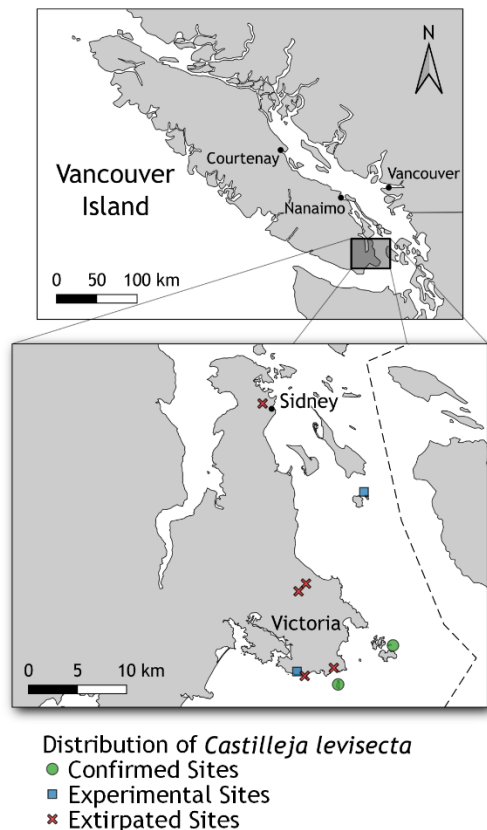
BC: critically imperilled (S1); red-listed

Canada: Endangered

Global: imperilled (G2)

Elsewhere: Washington imperilled (S2), Oregon extirpated (SX)

Range/Known distribution: Golden Paintbrush ranges from islands offshore of Victoria British Columbia east and south through the San Juan Islands to near Olympia Washington. In Oregon and southern Washington, Golden Paintbrush was found in the grasslands and prairies of the southern Puget Trough and Willamette Valley, but all of those populations disappeared as their habitat was converted for agricultural, residential, and commercial development.



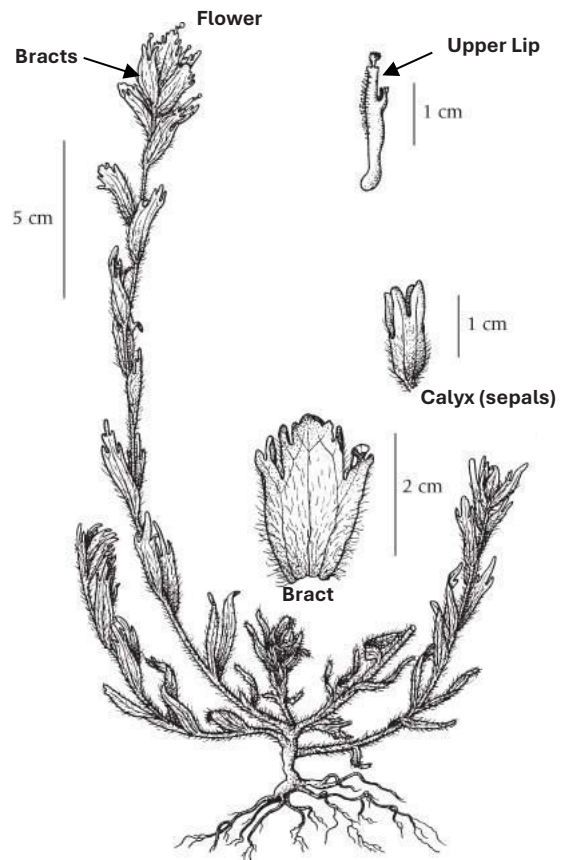
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Field description: Golden Paintbrush is a perennial herb with several unbranched stems (10-50 cm tall) arising from a slightly woody base. The leaves are alternate and have long, soft, sticky glandular hairs, particularly at the top of the stem. The leaves range from lance-shaped at the bottom of the stem to egg-shaped at the top and have 1 to 3 pairs of short lobes. The inconspicuous greenish flowers are concealed within soft-hairy, golden-yellow, leaf-like bracts. The bracts are about as wide as the upper leaves, with 1 to 3 pairs of short lobes. The fused petals (corolla) are minutely hairy, 20-23 mm long with two lips, the upper lip resembling a beak. The upper lip is, at most, 3 to 4 times as long as the lower lip. The fused sepals (calyx) are 15-18 mm long, long-hairy, and deeply 2-lobed. Fruits are dry capsules that contain 70-150 seeds.

Identification tips: No other Paintbrush species on southern Vancouver Island regularly have yellow flowers, but Scarlet Paintbrush (*Castilleja miniata*) and Harsh Paintbrush (*Castilleja hispida*) may occasionally have yellow rather than scarlet flowers. With Scarlet Paintbrush and Harsh Paintbrush, however, the upper lip is at least 5 times as long as the stubby little lower lip.



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Life history: Golden Paintbrush is a short-lived perennial with most plants living no more than 5-6 years. Shoots begin to break dormancy as early as mid-September and by January most shoots have emerged. The shoots elongate in March. Flowering peaks in April and May and may continue until July in years with favourable weather conditions. Self-pollination occurs but cross-pollination, often by bees, leads to much higher levels of fruit set. Seed viability varies between populations and seedlings are rarely observed in the wild. Most seeds mature and are dispersed from late August through September, but seed dispersal can continue until December. The seeds lack any structures to promote long-distance dispersal and rarely move far from the parent plant. Few if any seeds remain viable in the soil for more than 1-2 years. The seedlings are very small and extremely difficult to detect in the field. Golden Paintbrush does not reproduce asexually.

As with its other relatives in the *Castillineae*, Golden Paintbrush is a hemiparasite (root parasite): it derives some of its carbohydrates from photosynthesis, but rather than developing an extensive root system it usually forms parasitic root connections with other plant species that allow it to take in water and mineral nutrients..

Habitat: Golden Paintbrush is restricted to open maritime meadows associated with Garry oak (*Quercus garryana*) ecosystems. Both extant Canadian sites are at low elevations (< 25 m), close to the ocean, and on level to gently sloping ground. The sites are well-drained with relatively deep soils (>15- 50 cm deep). Drought conditions prevail during the summer and may help to limit competition from other species. Golden Paintbrush is intolerant of shade. Native tree and shrub cover is low and may often include stunted Nootka rose (*Rosa nutkana*), and Trailing Blackberry (*Rubus ursinus*); less common woody species include stunted Garry Oak, Tall Oregon-grape (*Berberis aquifolium*), and Common Snowberry (*Symphoricarpos albus*). The herb layer usually has a diverse and abundant assemblage of native and non-native forbs and graminoids, but relatively few non-vascular plants (apart from Coastal Reindeer Lichen - *Cladonia portentosa*). The most frequently-occurring native forbs are yarrow (*Achillea millefolium*), Hooker's Onion (*Allium acuminatum*), camas (both *Camassia quamash* and *C. leichtlinii*), Field Chickweed (*Cerastium arvense*), Woolly Sunflower (*Eriophyllum lanatum*), Common Strawberry (*Fragaria virginiana*), Chocolate Lily (*Fritillaria affinis*), Gumweed (*Grindelia*), Spring Gold (*Lomatium utriculatum*), Pacific Sanicle (*Sanicula crassicaulis*), and Canada Goldenrod (*Solidago lepida*).

Why the species is at risk: In the past, the greatest threat may have come from habitat loss as native meadows were developed for residential, transportation and recreational uses. Many populations may have been destroyed without ever being reported. The most recent population to be lost, at Beacon Hill Park in the 1990's, disappeared to mowing (to reduce fire risks) and trampling.

More recently, invasive species and forest encroachment have become a greater threat. At many locations Golden Paintbrush suffers considerably from suppression by invasive shrubs such as Scotch Broom* (*Cytisus scoparius*), English Ivy* (*Hedera helix*), Himalayan Blackberry* (*Rubus armeniacus*), Spurge Laurel* (*Daphne laureola*). and Gorse* (*Ulex europaeus*). Invasive herbaceous plants, particularly grasses such as Sweet Vernal Grass* (*Anthoxanthum odoratum*), Orchard

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Grass* (*Dactylis glomerata*), Hedgehog Dogtail* (*Cynosurus echinatus*), Common Velvet-grass* (*Holcus lanatus*), Silver* and Early Hairgrass* (*Aira caryophyllea* and *A. praecox*), and Kentucky Bluegrass* (*Poa pratensis*), may be abundant and compete strongly for moisture and nutrients.

Since 2006, the increasing populations of non-migratory and non-native Canada Geese have begun to harm the Trial Island population through trampling and grazing.

What you can do to help this species: Management practices should be tailored to the needs of the site. Potential management tools will depend on the specific circumstances and may require experimentation prior to implementation. Before taking any action, expert advice should be obtained, and no action taken without it. Public and private landowners should be made aware of new populations of this species if they are discovered, and appropriate management practices suggested.

Management needs include management of invasive plants, control of non-migratory Canada Geese, and establishment of new populations to offset the loss of historical 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.