**English name:** Needle-leaved Navarretia

**Other English name:** N/A

**Scientific name:** *Navarretia intertexta* (Benth.) Hook.,

**Other scientific name:** *Navarretia intertexta* (Benth.) Hook. var. *intertexta*, *Navarretia minima* var. *intertexta* (Benth.) B. Boivin

**Family:** *Polemoniaceae* (Phlox Family)

**Risk status**

BC: vulnerable (S3); blue-listed

Canada: N3

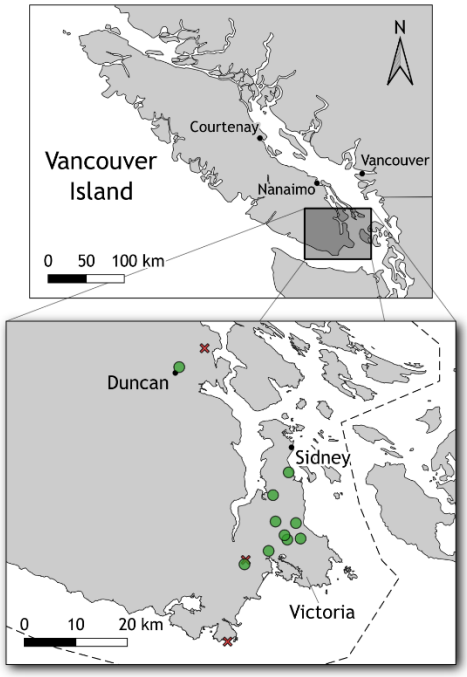
Global: vulnerable (G5)

Elsewhere: Washington, Oregon, California, Idaho, Montana, Wyoming, Colorado, Massachusetts not ranked (SNR), Nevada vulnerable (S3), South Dakota historic (SH)

**Taxonomic note:** Needle-leaved Navarretia has been reported from the BC interior. It appears that those populations are all Near Navarretia (*N. propinqua*), also known as *Navarretia intertexta* var *propinqua*. This has caused confusion with mapping both in Canada and in the United States.

**Range/Known distribution:** In Canada, Needle-leave Navarretia has been reliably reported from twelve populations (nine apparently extant), from the Cowichan Valley through the Victoria area, west to near Metchosin. It is known from the San Juan Islands, where it is also rare.

There is a range gap between populations in the San Juan Islands and those in the vicinity of Olympia, and from the Olympia area to those near Portland, Oregon. South of Portland it occurs more regularly south through the Willamette Valley to southern Oregon. It is widespread in southern Oregon and California. There appear to be populations in eastern Washington and eastern Oregon, and perhaps into western Idaho.

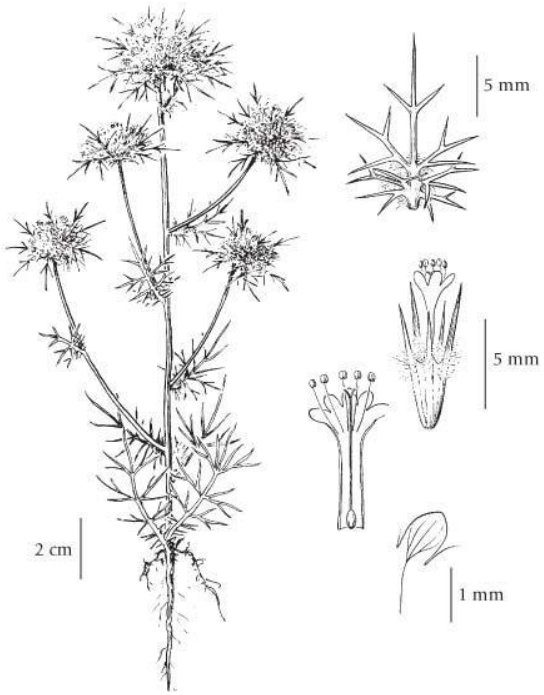



Distribution of *Navarretia intertexta*
Confirmed Sites
Extirpated Sites

**Field description:** Needle-leaved Navarretia is a small (< 25 cm tall) annual herb with a single, often branched stem arising from a taproot. It has alternate leaves, 1-3 cm long, that are one- to twice-pinnately cleft into very thin, needle-like segments. The inflorescence is a dense, leafy-bracted, terminal cyme. The calyx is composed of five sepals, which are fused below and divided into thin, long, spine-tipped lobes above. The calyx is conspicuously white-woolly at its midpoint. The white or pale blue corolla is six to eight mm long and is fused into a long tube below with free tips. The anthers protrude prominently beyond the corolla. The fruit is a dry 2-chambered capsule, each chamber containing 3-5 brown, pitted seeds that become mucilaginous when wet.

**Identification tips:** The only other Navarretia on southern Vancouver Island is Skunkweed (*Navarretia divaricata*), a more robust, sticky-hairy plant with an acrid, skunk-like smell and generally dark blue flowers.

Near Navarretia, which does not appear to grow on Vancouver Island, is very similar to Needle-leaved Navarretia but it has significantly smaller corollas (4-7 mm long) which rarely exceed the calyx.




***Navarretia intertexta***

**Life history:** Little is known about the life history of Needle-leaved Navarretia in Canada. It probably germinates in May, and it flowers in late June or early July. It is an annual species that can only reproduce by seed. The seeds have an external mucilaginous coating which causes the seed to swell up into a sticky mass when wetted. The mucilage can inhibit or promote germination, it may help the seeds to disperse by sticking onto passing animals, it may lubricate the proto-root during germination and establishment, and it may cement the seeds to the substrate, reducing seed predation.

**Habitat:** In Canada, Needle-leaved Navarretia is a species of wet meadows, wet old fields, and vernal pools. It grows in areas of low, sparse vegetation, where competition is light. Because it is a diminutive annual, Needle-leaved Navarretia may have benefited greatly from regular disturbance before the arrival of invasive species. Invasive plants now dominate most sites (see below), but native species include annual forbs like Skunkweed, Scouler's Popcornflower (*Plagiobothrys scouleri*), Clustered Tarweed (*Madia glomerata*), Yellow Rattle (*Rhinanthus minor*) and perennial graminoids such as California Oatgrass (*Danthonia californica*), Bractless Hedge-hyssop (*Gratiola ebracteata*), Lowland Cudweed (*Gnaphalium palustre*), and Slender Rush (*Juncus tenuis (s.l.)*).

**Why this species is at risk:** Needle-leaved Navarretia occurs in habitat types which have, for the most part, been lost due to agricultural and urban development. Many populations of this obscure species may have disappeared as that happened. Existing populations may be damaged by trampling, or nearby disturbances which upset hydrological patterns. The meadows where it occurs were historically burned by Indigenous people and may now be invaded by native and exotic shrubs, upsetting hydrological patterns and casting shade.

At present, the greatest threat appears to be associated with invasive species competing for space, water, and nutrients. Most Needle-leaved Navarretia populations grow on sites with a high proportion of invasive annual plants such as Hedgehog Dogtail* (*Cynosurus echinatus*), Marsh Cudweed* (*Gnaphalium uliginosum*), Barren Fescue* (*Vulpia bromoides*), Toad Rush* (*Juncus bufonius*), and Common Sow-thistle* (*Sonchus oleraceus*). Bur-chervil* (*Anthriscus caucalis*) threatens to become a major competitor in some populations.

Perennial herbs have also become a major threat, sometimes creating thick mats which smother seedlings of Needle-leaved Navarretia, as well as competing for space, moisture, and nutrients. These include Creeping Bentgrass* (*Agrostis stolonifera*), Quackgrass* (*Elymus repens*), Common St John's-wort* (*Hypericum perforatum*), Sweet Vernal Grass* (*Anthoxanthum odoratum*), Queen Anne's Lace* (*Daucus carota*), Hairy Cat's-ear* (*Hypochaeris radicata*), Hairy Hawkbit* (*Leontodon saxatilis*), Self Heal* (*Prunella vulgaris* ssp. *vulgaris*), Pennyroyal* (*Mentha pulegium*), Common Plantain* (*Plantago major*), Kentucky Bluegrass* (*Poa pratensis*), Creeping Buttercup* (*Ranunculus repens*), White Clover* (*Trifolium repens*), Oxeye Daisy* (*Leucanthemum vulgare*) and Subterranean Clover* (*Trifolium subterraneum*).

Recreational activities that lead to trampling, changes in hydrology, and erosion also threaten Needle-leaved Navarretia.

Adjacent habitats are often dominated by shrubs, including Scotch Broom* (*Cytisus scoparius*), Nootka Rose (*Rosa nutkana*), Hardhack (*Spiraea douglasii*), and Common Snowberry (*Symphoricarpos albus*). The arrival of non-native shrub species, and the expansion of native shrub species because of the suppression of Indigenous burning, means that the edges of some populations of Needle-leaved Navarretia face increased suppression by shading, and competition for moisture and nutrients.

The greatest threat facing Needle-leaved Navarretia is climate change. The vernal pools and moist meadows where it occurs will dry out more quickly as summer droughts arrive earlier and last longer. While other areas - currently too wet for Needle-leaved Navarretia - may become more suitable, its weak powers of dispersal may prevent it from reaching them in time.

**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.

Protective agreements are needed wherever it occurs, particularly on private lands. Populations should be protected from trampling where they occur in parks and other publicly accessible areas. It may be prohibitively expensive to control herbaceous weeds in all areas but weed competition should be monitored where smaller populations are at greatest risk of extirpation. And experiments should be conducted to determine how replacement populations can be established to compensate for those lost, particularly to climate change.

## References

B.C. Conservation Data Centre. 2024. BC Species and Ecosystems Explorer. B.C. Minist. of Environ. Victoria, B.C. Available: https://a100.gov.bc.ca/pub/eswp/ (accessed Mar 15, 2024).

Consortium of Pacific Northwest Herbaria Specimen Database (CPNWH). 2024. Website https://www.pnwherbaria.org (accessed March 22, 2024).

Johnson, L.A. n.d. Navarretia intertexta. Digital Jepson Manual. Available: https://ucjeps.berkeley.edu/eflora/eflora_display.php?tid=34455 (accessed Mar 27, 2024).

Legler, B. 2018. Navarretia. Pp. 389-390 in Hitchcock, C.L. and A. Cronquist. 2018. Flora of the Pacific Northwest: An Illustrated Manual, 2nd Edition. Edited by D.E. Giblin, B.S. Legler, P.F. Zika, and R.G. Olmstead. University of Washington Press, Seattle, WA. 882 pp.

Oklahoma State University Plant Insect Lab. n.d. Seed mucilage ecology. https://plantinsectlab.okstate.edu/research/seed-mucilage-ecology. (accessed Mar 27, 2024).

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



*Refers to non-native species