

## *Hosackia gracilis* – Seaside Bird’s-foot Lotus

**English name:** Seaside Bird’s-foot Lotus

**Other English name:** Seaside Bird's-foot Trefoil, Harlequin Lotus, Witch's-Teeth

**Scientific name:** *Hosackia gracilis* Benth.

**Other scientific name:** *Lotus formosissimus* Greene

**Family:** *Fabaceae* (Pea Family)

### Risk status

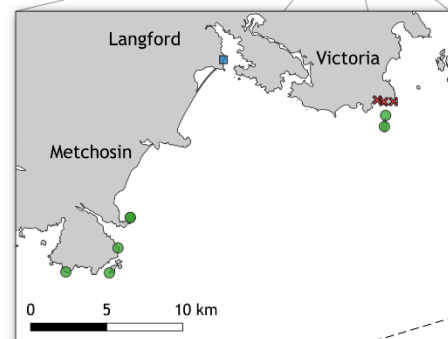
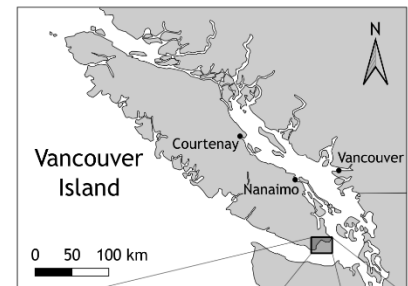
BC: imperilled (S2); red-listed

Canada: Endangered

Global: apparently secure (G4)

Elsewhere: Washington, Oregon not ranked (SNR), California vulnerable (S3)

**Range/Known distribution:** In Canada, Seaside Bird’s-foot Lotus is known from six recently-confirmed sites and one to three extirpated sites, all between Sooke and Oak Bay. In Washington and Oregon, it occurs in coastal settings and in lowlands between the Coast and Cascade Ranges with an outlier population on the east slopes of the Cascades. In California it occurs along the coast as well as scattered in the Coast Ranges, as far south as San Luis Obispo (and in an outlier population on the east slopes of the Sierra Nevada).



Distribution of *Hosackia gracilis*

- Confirmed Sites
- Experimental Sites
- \* Extirpated Sites

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**Field description:** Seaside Bird’s-foot Lotus is a sprawling to ascending perennial (20-50 cm long) which grows from stolons and rhizomes. The leaves are 4-8 cm long and have large, triangular, membranous stipules, and 5-7 ovate to obovate leaflets. Stalked clusters of flowers grow from the angles between the stems and leaves. Each cluster has 3 to 12 pea-like flowers that grow from a central point. Three (occasionally 1, or as many as 7) thin bracts (leaf-like structures) are found on the stalk immediately below the flower cluster. The flowers are pea-like with a yellow upper petal (banner), two pinkish to purplish-tinged side petals (wings), and 2 purple-tipped, fused petals below (the keel). The pods are splayed like the toes of a bird’s foot and are thin, 3-6 cm long, non-hairy, and have 5-20 seeds.

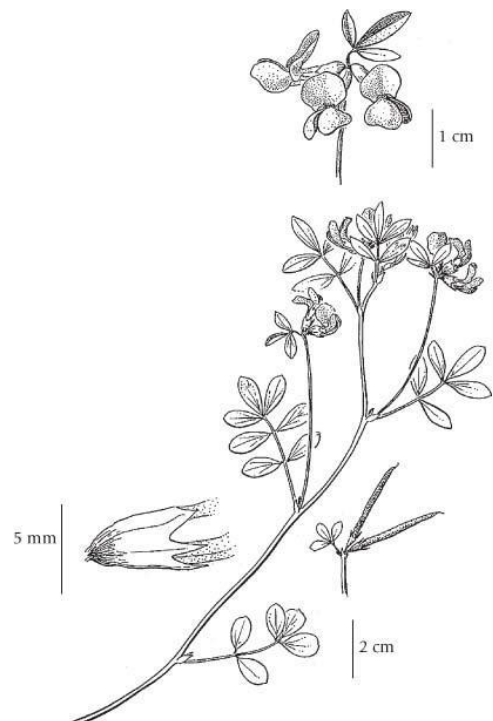
### Identification tips:

In BC, Seaside Bird’s-foot Lotus may be confused with its close relative Bog Bird’s-foot Lotus (*Hosackia pinnata*) which has a similar form. The wing petals on Bog Bird’s-foot Lotus are white but that distinction is imperfect because those of Seaside Bird’s-foot Lotus often become white as they dry out. The keel of the Bog Bird’s-foot Lotus flower is not purple tipped. The BC ranges of the two species do not overlap.

The stipules of both Seaside Bird’s-foot Lotus and Bog Bird’s-foot Lotus are green and well-developed while the stipules of invasive European species of *Lotus* known from our area are very small, often reduced to small gland-like bumps at the base of the leaves. The flowers of the European species are also entirely yellow (or occasionally entirely orange or red) unlike in our species of *Hosackia*, where there are striking colour differences between the wing and the banner petals.



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**Life history:** The seeds of Seaside Bird’s-foot Lotus have an outer shell that prevents water from getting in. This enforced dormancy allows many seeds to remain viable in the soil seed bank for years.

In Canada, germination may occur as early as late November and continue until April. Early-germinating seeds can build larger root systems during the winter months, which allows them to support growth later into the spring and summer, while late-germinating seeds avoid the risk of frost damage but tend to die back first because their weaker root systems are unable to support the foliage as the summer drought begins to develop. Mature plants break dormancy in September or October, with the return of the autumn rains. They produce pallid, leafless, creeping stolons that develop slowly during the winter months, then start to produce green leafy shoots in February, March, or April. Plants reach full size in May. Flower buds first appear in late April or early May and flowering peaks in late May or early June. Bees and other insects pollinate the flowers. Green fruits reach full size by late June and soon ripen and split, dispersing their seeds by late July. The foliage begins to die back as the fruits mature and the leaves have usually withered by mid July.

As with many members of the *Fabaceae*, the roots of Seaside Bird’s-foot Lotus support nodules containing nitrogen-fixing *Rhizobium* bacteria. The nodules develop in the spring and are shed as the plants die back during the summer.

Deer may graze heavily on Seaside Bird’s-foot Lotus, and this may limit the species’ persistence where deer populations are moderate to high.

**Habitat:** In Canada Seaside Bird’s-foot Lotus grows where there is a sub-Mediterranean climate caused by the rain shadow of the Olympic and Vancouver Island mountains. It grows near the ocean, where winter frosts are ameliorated by the influence of the ocean. It most often occurs on deep, moderately well- to well-drained soil. It is largely restricted to open, dry to mesic meadows or low shrublands but may occasionally grown in open Garry Oak woodlands. It may be found sprawling over the foliage of Nootka Rose (*Rosa nutkana*), Common Snowberry (*Symphoricarpos albus*) or Salal (*Gaultheria shallon*) but more often than not, shrubs are absent. It typically shares its meadow habitat with a diversity of native forbs - including Yarrow (*Achillea millefolium*), Small-flowered Birds-foot Trefoil (*Acmispon parviflorus*), Thrift (*Armeria maritima*), camas (*Camassia quamash* or *C. leichtlinii*), Pacific Sanicle (*Sanicula crassicaulis*), Dwarf Owl-clover (*Triphysaria pusilla*), and White Tritelia (*Triteleia hyacinthina*); and native graminoids – including California Oatgrass (*Danthonia californica*), Blue Wild Rye (*Elymus glaucus*), Beach Red Fescue (*Festuca rubra* ssp. *pruinosa*), and Pacific Woodrush (*Luzula comosa*). Non-native forbs and grasses are often abundant (see below).

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**Why this species is at risk:** The greatest threats come from habitat loss and invasive species, while altered fire and hydrological regimes and grazing are significant secondary threats. Populations in south Oak Bay (Foul Bay, Gonzales Hill, and Gonzales Point) were apparently lost as habitat was converted to residential, transportation and recreational uses. Several other populations may have been similarly destroyed without ever being reported. The five remaining populations are protected from habitat loss at present. A number of invasive species have become abundant in meadows supporting Seaside Bird’s-foot Lotus and compete with it for space, water, and nutrients. These include shrubs such as Scotch Broom\* (*Cytisus scoparius*); English Ivy\* (*Hedera helix*) which forms creeping mats” to “These include shrubs such as Scotch Broom\* (*Cytisus scoparius*) and English Ivy\* (*Hedera helix*); a diverse assemblage of forbs including Cleavers\* (*Galium aparine*), Hairy Cat’s-ear\* (*Hypochaeris radicata*), Ribwort Plantain\* (*Plantago lanceolata*), and Common Vetch\* (*Vicia sativa*); and several grasses including Common Velvet Grass\* (*Holcus lanatus*), Kentucky Bluegrass\* (*Poa pratensis*), Barren Fescue\* (*Vulpia bromoides*), Soft Brome\* (*Bromus hordeaceus*), and hairgrasses\* (*Aira praecox* and *A. caryophyllea*).

Altered fire regimes allow forest ingrowth, shading out Seaside Bird’s-foot Lotus as is evident at Church Point. Deer and Canada Geese feed preferentially on the species, particularly when it is in flower.

**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.

The most valuable management step would be to remove invasive species – particularly shrubs and perennial bunchgrasses – from populations of Seaside Bird’s-foot Lotus. The other major management step will be to establish compensatory populations to offset the loss of plants from south Oak Bay. These populations may have to be fenced to protect them from deer.

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### References

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- COSEWIC. 2010. COSEWIC assessment and status report on the Seaside Birds-foot Lotus *Lotus formosissimus* in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. ix + 19 pp.
- Fairbarns, M. 2005. Demographic and phenological patterns of *Lotus formosissimus* (Seaside Bird's-foot Lotus). 26 pp.
- Parks Canada Agency. 2006. Recovery Strategy for Multi-species at Risk in Maritime Meadows Associated with Garry Oak Ecosystems in Canada. In Species at Risk Act Recovery Strategy Series. Ottawa: Parks Canada Agency. 93 pps.

For further information, contact the Garry Oak Ecosystems Recovery Team, or see the web site at:  
[www.goert.ca](http://www.goert.ca)

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\*Refers to non-native species