Stewardship Account for Dense Spike-primrose

Epilobium densiflorum

Prepared for the
Garry Oak Ecosystems Recovery Team
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by
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STEWARDSHIP ACCOUNT

Epilobium densiflorum (Lindl.) Hoch & Raven

Species information:

Kingdom: Plantae
Subkingdom: Tracheobionta
Superdivision: Spermatophyta
Division: Magnoliophyta
Class: Manoliopsida
Subclass: Rosidae
Order: Myrtales
Family: Onagraceae
Tribe: Epilobieae
Genus: *Epilobium*
Species: *densiflorum*

Epilobium densiflorum (Lindl.) Hoch & Raven
Dense spike-primrose

Synonyms:
Boisduvalia densiflora (Lindl.) S. Wats.
Boisduvalia densiflora (Lindl.) S. Wats. var. *pallescens* Suksdorf
Boisduvalia densiflora (Lindl.) S. Wats. var. *salicina* (Nutt. *ex* Torr. & Gray) Munz
Boisduvalia salicina (Nutt. *ex* Torr. & Gray) Rydb.
Oenothera densiflora Lindl.

(from U.S.D.A. Natural Resources Conservation Service Plants Database)

Epilobium is derived from the Greek words *epi* (upon) and *lobos* (pod) meaning that the corolla is borne on the end of the ovary (Coombes, 1985).

Description:

Annual herb from a taproot. Stems 15-100 cm tall, simple or branched above, peeling below. Plants are densely white-hairy to long soft- or stiff-hairy, sometimes glandular. Leaves are alternate, except near the base, lanceolate, becoming narrowly egg-shaped in the inflorescence, 1-8.5 cm long, entire or remotely fine-toothed, upper ones hairy; unstalked or nearly so. Flowers in a crowded inflorescence of densely-leafy, terminal and lateral spikes; hypanthium 1.5-4 mm long; petals 3-10 mm long, white to rose-purple and notched at the tip. Sepals 2-9 mm long. Stigmas rarely 4-lobed. Fruit are capsules more or less spindle-shaped, long-hairy, 0.4-1.1 cm long, very short-beaked, 4-chambered. Seeds 3-6 per chamber, flat, 1.2-2 mm long, netted, glabrous, brown, without tufts of hairs (Douglas et al. 1999).

Range and Known Distribution:

Dense spike-primrose occurs in North America from British Columbia to Alberta and south to California (rarer on the immediate coast and in the Central Valley) and east to Montana, Nevada and Utah. It also is known to occur in northern Baja California, Mexico (Raven and Moore, 1965).

Habitat Description:

Epilobium densiflorum occurs in moist to dry meadows, roadsides and waste areas in the lowland zone (CDFmm) (Douglas et al. 2002). In Montana, this species occurs in vernally wet soils, often around pools to 900 metres (Montana Natural Heritage Program web site). In California, Hickman (1993) describes the habitat as along stream banks and outwashes less than 2600 metres. In Utah, this species occurs in marshy areas from 1310 to 1435 metres in two counties (Welsh, 1987). Gilkey (1967) describes the habitat as low ground and dried pools in Oregon. Raven and Moore (1965) describe the habitat as wet places that are sometimes seasonally dry from sea level to 2600 metres. Booth and Wright (1959) state that in Montana this species occurs in disturbed sites. In Idaho, *E. densiflorum* is stated to occur on sites that are more or less moist early in the season, then becoming dry later on (Davis 1952).

Status of Species:

Global rank: G5
Canada Heritage Rank: N2
British Columbia: S2
California, Arizona, Idaho, Nevada, Oregon and Washington: SR
Montana: SH
Utah: S1

(from NatureServe web site)

Other related species that are threatened *Epilobium torreyi* (brook spike-primrose).

There are no other known pharmacological, ethnobotanical or horticultural uses for *Epilobium densiflorum* (Bailey and Bailey, 1976).

Life History:

a) General - A small-flowered autogamous flower that germinates in seasonally wet habitats in hills or low to middle elevations (Seavey, 1992). It often inhabits moist places that are xeric at flowering time (Raven and Moore, 1965).

b) Phenology – This is an annual species that produces seedlings with glabrous, round, opposite connate leaves similar to other *Epilobium* species. The mature leaves differ from the juvenile in that they are spiralled, narrow and villous (Raven and Moore, 1965). Flowers in June.

c) Pollination Biology – Predominantly bees and to a lesser extent by syrphid flies (Raven 1979).

d) Reproductive ecology – Annual species completing its life cycle in one year, 4-lobed stigma, seeds with no coma and a uniform loculicidal caspules that dehisce late fall. Pollen is shed in tetrads (Raven, 1976). Chromosome number n = 10 (Seavey, 1992).

e) Survival – Seedlings germinate when there is abundant water, and maybe submerged for a time (Raven and Moore, 1965; Raven, 1976). Crosses between interpopulations of *E. densiflorum* were successful and produced abundant seed, but crosses between species *E. densiflorum* and *E. torreyi* only produced capsules 33% and 43% of the time. This paralleled annual *Clarkia* which are difficult to hybridize and in which mature progreny are sterile (Seavey, 1992).

f) Physiology – Nothing known.

g) Dispersal – Since there is no coma, the seeds are not likely wind dispersed. They are potentially knocked to the ground by winter rains (Raven, 1976). The seeds are irregularly angular and fusiform (Raven, 1976), and they differ from other species of *Epilobium* (except for *E. torreyi*) which are obovoid, flattened and having a coma. In *Epilobium densiflorum* the seeds surface cells are low, flat and irregularly polygonal (Seavey et al. 1977).

h) Nutrition & Interspecific Interactions – Nothing known.

i) Behaviour/Adaptability – Germinates in moist places but matures under xeric conditions and is therefore adapted to drought conditions.

How the species is at risk:

There are only 12 known occurrences in Canada, all of which are on southeastern Vancouver Island. Populations of *E. densiflorum* are potentially under threat in some localities to development pressures, the invasion of non-native species, and a change in hydrological patterns due to development in surrounding areas. Only two populations are in parks, one regional and one municipal and there are no other populations in protected areas.

Management Recommendations:

There are no current management policies or actions for the occurrences of *Epilobium*

densiflorum. The current sites that are outside parks should be protected from development and also from hydrological changes.

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Authorities Consulted/Personal Communications:

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