English name: Kellogg's Rush, Kellogg's Dwarf Rush

Other English name: none

Scientific name: *Juncus kelloggii* Engelm.

Other scientific name: *Juncus triformis* var. *brachystylus* Engelm.

Family: *Juncaceae* (Rush Family)

Risk status

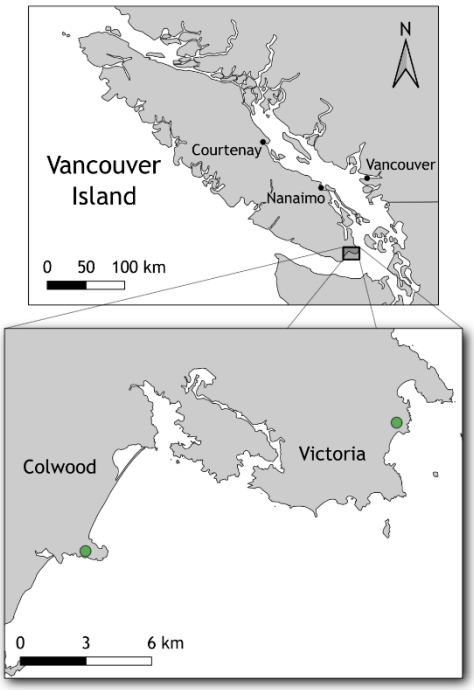
BC: critically imperilled (S1S2); red-listed

Canada: Endangered

Global: vulnerable (G3)

Elsewhere: Washington critically imperilled (S1), Oregon imperilled (S2?), California SNR

Range/Known distribution: In Canada, Kellogg's Rush is known from two sites in the Victoria area. These are disjunct by about 300 km from the nearest populations in southern Washington and Oregon. There, it occurs on both sides of the Cascade Mountains south to California's Coast and Sierra Nevada, perhaps as far as northern Baja California.

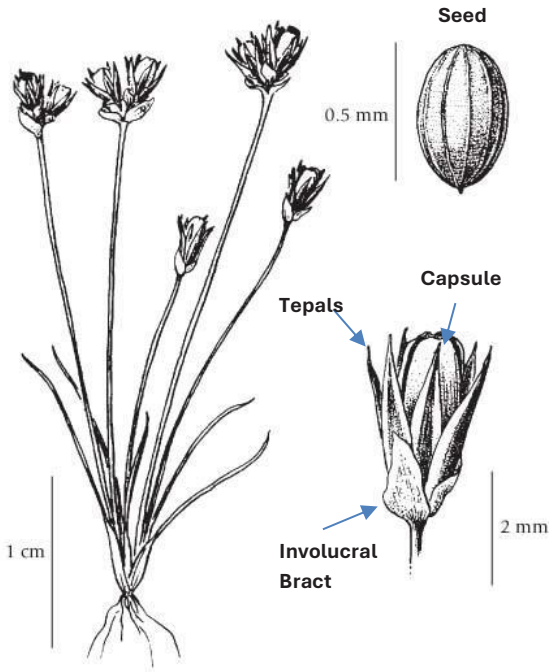


Distribution of *Juncus kelloggii*
● Confirmed Sites

Field description: Kellogg's Rush is a tiny, inconspicuous annual herb that grows from a short, fibrous root. Its erect stems are 0.4-4 cm tall. Its linear, bristle-like leaves are basal, nearly circular in cross-section, and tapered. It bears one or two flowers, at the top of a leafless stem. The perianth (petals and sepals) segments are brown or reddish-brown, 2.5-3.5 mm long, pointed, and unequal. There are three stamens. The 0.4 mm long anthers are shorter than the filaments. Its involucre bracts (bracts below the flowers) are scale-like and inconspicuous. The fruit is a blunt capsule and is as long as the perianth segments. The barrel-like seeds have prominent longitudinal ribs and honeycombed cross-walls. The seeds are about 0.4 mm long and, unlike in some species of rush, lack tail-like appendages Each capsule contains approximately fifty seeds.

Identification tips: There are only two other annual species of *Juncus* in Garry Oak and associated ecosystems. Hermann's Dwarf Rush (*Juncus hemiendytus* var. *hemiendytus*), which grows in similar habitats, looks quite similar but never has more than one flower per stem and its seeds lack prominent longitudinal ribs. In Toad Rush (*Juncus bufonius*), the flowers are born in branched inflorescences, the stems bear leaves, and the involucre bract is evident - appearing to be an extension of the stem.

Juncus kelloggii



Life history: This annual species is generally self-pollinating. Dispersal may occur by waterfowl and other birds transporting seeds in their feet and feathers after walking through muddy habitat. Little is known about the biology of Kellogg's Rush, and specifically its life history in Canada. It appears that germination occurs as standing water disappears from the vernally moist areas where it grows, and the soil becomes warm and damp. Most Canadian collections were made between early May and early July which suggests that it flowers in May, produces fruit in May and June, and withers and dies in June or early July.

Habitat: Kellogg's Rush is restricted to seasonally moist depressions – wet to inundated in the winter and remaining moist in late spring long after the surrounding meadow habitats have started to dry out. The waterlogged winter conditions discourage growth of most upland perennial plants. By mid-summer, the soil is extremely dry, which discourages the growth of wetland perennials. Other small annual plants co-occur in these habitats, where they form a low, sparse sward. These include many native species including Spanish Clover (*Acmispon americanus*), Carolina Meadow-foxtail (*Alopecurus carolinianus*), Lowland Cudweed (*Gnaphalium palustre*), Rare-flowering Heterocodon (*Heterocodon rariflorus*), Chaffweed (*Lysimachia minima*), Slender Phlox (*Microsteris gracilis*) Tiny Mousetail (*Myosurus minimus*), Slender Plantain (*Plantago elongata*), Scouler's Popcornflower (*Plagiobothrys scouleri*), Tall Woollyheads (*Psilocarphus elatior*), Dwarf Owl-clover (*Triphysaria pusilla*), Bearded Owl-clover (*Triphysaria versicolor*), and Muehlenberg's Centaury (*Zeltnera muehlenbergii*). A few native perennials may occur in the same vernally moist depressions - usually along the slightly drier periphery - including Harvest Brodiaea (*Brodiaea coronaria*), Common Camas (*Camassia quamash*), California Oatgrass (*Danthonia californica*), Nuttall's Quillwort (*Isoetes nuttallii*), Western Rush (*Juncus occidentalis*), Western Buttercup (*Ranunculus occidentalis*), Straight-beaked Buttercup (*Ranunculus orthorhynchos*), Yellow Rattle (*Rhinanthus minor*), Hooded Lady's-tresses (*Spiranthes romanzoffia*), and White Triteleia (*Triteleia hyacinthina*).

Why this species is at risk: Kellogg's Rush occurs in habitat types which have, for the most part, been lost due to agricultural and urban development and 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. A number of invasive species thrive in the vernally moist depressions, competing for space, moisture, and nutrients. These include annuals such as Silver Hairgrass* (*Aira caryophyllea*), Early Hairgrass* (*Aira praecox*), Soft Brome* (*Bromus hordeaceus*), Hedgehog Dogtail* (*Cynosurus echinacea*), Toad Rush* (*Juncus bufonius*), Upright Chickweed* (*Moenchia erecta*), Small-flowered Catchfly* (*Silene gallica*), Red Sand-spurry* (*Spergularia rubra*), Small Hop-clover* (*Trifolium dubium*), and Wall Speedwell* (*Veronica arvensis*). Invasive perennial herbs may also invade the vernally moist depressions, including Creeping Bentgrass* (*Agrostis stolonifera*), Crow Garlic* (*Allium vineale*), Sweet Vernal Grass* (*Anthoxanthum odoratum*), Common St John's Wort* (*Hypericum perforatum*), Hairy Cat's-ear* (*Hypochaeris radicata*), Bulbous Bluegrass* (*Poa bulbosa*), Sheep Sorrel* (*Rumex acetosella*), and Curled Dock* (*Rumex crispus*).

The greatest threat facing Kellogg's Rush is climate change. The seeps and moist depressions where it occurs will dry out more quickly as summer droughts arrive earlier and last longer. While other areas - currently too wet for Kellogg's Rush - 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.

Management needs include securing protection from trampling, learning more about the life history of the species in British Columbia, and controlling invasive species in adjacent meadows. It is difficult and expensive to control invasive annual plants within the vernally moist depressions where Kellogg's Rush grows but populations should be regularly monitored to ensure that control measures are implemented when absolutely necessary to protect populations.

References

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

*Refers to non-native species