English name Muhlenberg's Centaury

Scientific name *Zeltnera muehlenbergii* (Griseb.) G. Mans.

Family Gentianaceae

Other scientific names *Centaurium muehlenbergii (Griseb.)* W. Wight ex Piper, *C. curvistamineum* (Wittr.) Abrams,

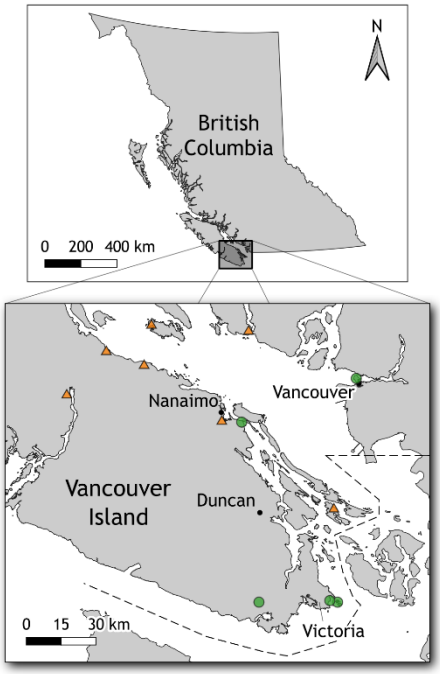
Risk status

BC: critically imperiled (S1); red-listed Canada: Endangered

Global: secure? (G5?)

Elsewhere: California – unranked (SNR); Washington, Nevada – critically imperiled (S1); Idaho, Oregon – not ranked (SNR)

Range/Known distribution Muhlenberg's Centaury occurs from southwestern British Columbia south to California and Nevada, and east into the Willamette Valley. In Canada, Muhlenberg's Centaury is at the northern limit of its range and has been recorded only from moist sites on southern and central Vancouver Island and nearby islands. There are a number of unconfirmed reports based on photographs which may be of the very similar-looking Common Centaury* (*Centaurium erythrae*). Currently, there are only four confirmed occurrences of Muhlenberg's Centaury in British Columbia, from Uplands Park and Chatham Island in the Victoria area, Mary Vine Creek near Sooke, and Joan Point, near Nanaimo. A report from Vancouver, was based on a specimen of Common Centaury* which had been mis-identified



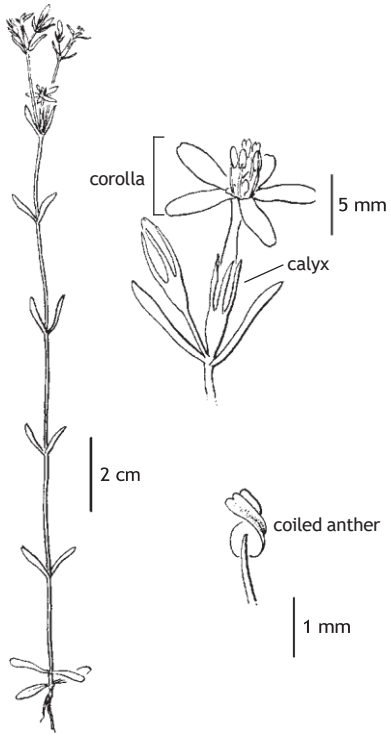
Distribution of *Zeltnera muehlenbergii*
● Confirmed Sites
▲ Unconfirmed Sites

Field description

Muhlenberg's Centaury is a small (3-30 cm tall) annual herb arising from a short taproot. The solitary stem may be simple or branched near the tip. The few oval basal leaves (5-25 mm long) do not form an obvious rosette. The stem leaves are narrower band come to a sharp point. The inflorescence is comprised of only a few short-stalked, white to deep pink flowers. The calyx lacks hairs and is deeply lobed. The corolla consists of white to pink petals that are united below to form a tube, but are separate above, where they form a spreading, saucer-shaped tip. The anthers are about 1 mm long and somewhat coiled. The fruits are slim capsules, 12-16 mm long and roughly twice the length of the calyx, with very small (<0.5 mm) brown seeds.

Identification tips: The range of Muhlenberg's centaury in British Columbia overlaps with a similar-looking invasive species, Common Centaury*, which has more basal leaves that often form an evident rosette. The leaves of Muhlenberg's Centaury only have one main vein while those of Common Centaury* are rather conspicuously 2- (occasionally 5-) veined. Common Centaury* often has many flowe

Zeltnera muhlenbergii



Life history

The seeds of Muhlenberg's Centaury likely germinate in early spring and plants flower from June to late July or even early August if there are summer rains. Individual plants may persist as biennials if they are damaged in their first year. Common Centaury*, a closely related species found in British Columbia, depends upon a mycorrhizal relationship to survive in poorly nourished sites. It is not known whether Muhlenberg's Centaury has similar requirements. Most species of Centaury are weak competitors and require lightly vegetated sites or disturbed soils. The tiny seeds of Muhlenberg's Centaury might be spread by local water flows during the wet season.

Habitat

In southwestern British Columbia, Muhlenberg's Centaury is confirmed from two habitat types: open, wet seeps often associated with Garry Oak meadows, and the dry edges of a salt marsh. The known sites are bare or lightly vegetated, have fairly shallow sandy or organic soils and are less than 10 m above sea level. At Uplands Park, the species is present in natural moist depressions and damp wheel ruts. Several native herbaceous species occur there in association with Muhlenberg's Centaury, including Common Camas (*Camassia quamash*), Harvest Brodiaea (*Brodiaea coronaria*), Small-flowered Lotus (*Acmispon parviflora*), Scouler's Popcornflower (*Plagiobothrys scouleri*), and White Triteleia (*Triteleia hyacinthina*). At Chatham Island, Muhlenberg's Centaury occurs on the edge of a Seashore Saltgrass (*Distichlis spicata*) marsh with along with Purple-leaved Willowherb (*Epilobium ciliatum*) and Baltic Rush (*Juncus balticus*). The key habitat features for *Muhlenberg's* Centaury are adequate sunlight and pronounced seasonal fluctuations in moisture.

Red-listed Winged Water-starwort (*Callitriche marginata*) occurs in the same habitat at Uplands Park.

Fire suppression and subsequent growth of native and non-native shrubs such as Common Snowberry (*Symphoricarpos albus*) and Scotch Broom* (*Cytisus scoparius*) have altered seasonally wet habitats on southeastern Vancouver Island. These changes have increased competitive pressure on

Muhlenberg's Centaury and have also altered hydrological regimes. Saltwater marsh habitats have not generally been affected by fire.

Why the species is at risk

Muhlenberg's Centaury occupies a broader range of habitats in the United States, and its restricted distribution in British Columbia may be a result of recent establishment in the region. Alternatively, its habitat requirements may be more specialized at the edge of its range. The amount of suitable habitat in British Columbia has decreased due to loss of open, vernally moist sites, and because of habitat alteration by competitive exotic grasses and other non-native plants including Bentgrass* (*Agrostis capillaris*), Crested Dogtail* (*Cynosurus cristatus*) and Common Velvet-grass* (*Holcus lanatus*), Brass Buttons* (*Cotula coronopifolia*), and Hairy Cat's-ear* (*Hypochaeris radicata*)

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.

This and other rare native plants requiring vernally wet habitat might benefit from the removal of native and non-native shrubs at suitable sites. New techniques must be developed to control the invasive species (including exotic grasses) that alter moist meadow habitat. Techniques can also be developed for propagating Muhlenberg's Centaury and introducing it to suitable areas.

Although Uplands Park is protected from urban development, it is heavily used for dog walking and other forms of outdoor recreation. These activities lead to trampling and soil damage, particularly in the winter and spring when the soil is wet, so access should be restricted. Potential sites should be surveyed for undiscovered populations and occurrences only reported on iNaturalist should be checked to confirm the identity of the plants.

References

Miles, W. 2002. Stewardship Account: *Centaurium muhlenbergii* (Muhlenberg's Centaury). Garry Oak Ecosystems Recovery Team. Victoria, British Columbia.

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

*Refers to non-native species.