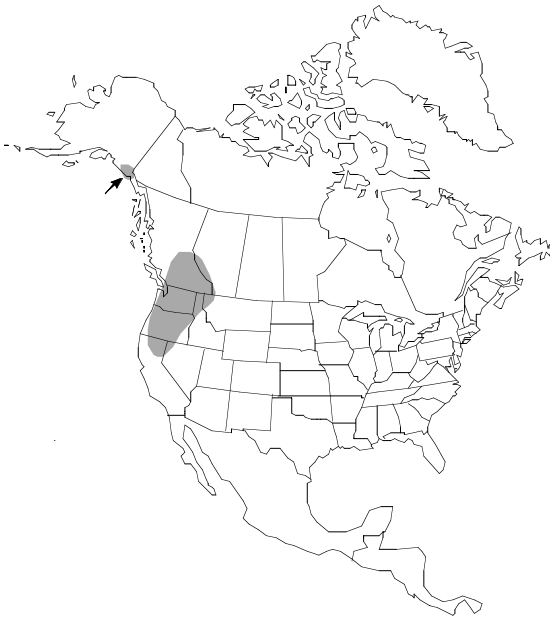


Botrychium montanum

Family: Ophioglossaceae
Genus: *Botrychium*
Subgenus: *Botrychium* (syn. *Eubotrychium*)
Species: *Botrychium montanum* W. H. Wagner
Common names: Western goblin, Mountain moonwort
Ploidy: Diploid



Published description: Leaf 8.7 (4-12.5) cm tall, herbaceous, glaucous, dull; the common stalk making up 60 (40-90) per cent of the total length; sterile segment oblong to linear, 2.1 (0.7-4.0) cm long, 5.5 (2-9) mm wide, the stalk 0.7 (0.3-1.5) cm long; lobes 3 (1-6) pairs, irregular, narrow and pointed, oblong, square, often grouped or confluent, the distal margins irregularly toothed to lacerate, frequently with linear teeth, basal lobes lacking tendency for enlargement; the blade tip usually with 2-4 angular, triangular to oblong teeth or lobes; fertile segment 3.7 (1-6.5) cm tall, not (or only rarely) branched below the upper two-thirds; sporangia not sunken, opening in July and August, the aperture wide, 40-90°; spores 54 (47-57) micrometers in diameter; chromosomes $2n = 90$. (Wagner and Wagner, 1981; F.S. Wagner, 1993)

Identification

Western goblin is so named because of its gray-green appearance and occurrence in dark moist habitats, and its similarity to *Botrychium mormo*, the eastern goblin or little goblin moonwort of the Great Lakes Region. Because of the similarities between the two species, Wagner and Wagner (1993) noted in Flora North America that “*Botrychium montanum* may come to be recognized as a subspecies of the eastern *B. mormo*.”

In the publication describing both species, Wagner and Wagner (1981) listed eight morphological differences between the species as well as differences in range, habitat and phenology. The most distinctive features of *B. montanum* (relative to *B. mormo*) are a glaucous surface, irregularly and more deeply cut pinnae, confluence of pinnae, and more broadly opening sporangia.

Among other western moonworts, *B. montanum* most closely resembles small forms of *B. simplex*. It differs from *B. simplex* in having a sporophore-trophophore union well above ground level, rhombic pinnae (like a diamond attached along one side) with toothed outer margins, and basal pinnae that are seldom enlarged or further divided. Both trophophore and sporophore of *B. montanum* stand stiffly erect whereas both segments tend to be lax in *B. simplex*. The rectangular shape of the upper pinnae, due to their broad (adnate) attachment to the rachis and truncate outer margin, as well as the distinct marginal teeth also serve to distinguish *B. montanum* from small forms of *B. minganense* and similar species.

Distribution

Botrychium montanum has a relatively narrow range of distribution from northern California northward through Oregon and Washington to British Columbia and southeastern Alaska. Eastward it extends through northern Idaho and northwestern Montana.

Habitat

The preferred habitat of *Botrychium montanum* in the northern part of its range is under old growth western red cedar (*Thuja plicata*) on alluvial terraces along small streams where the soil is moist and high in organic matter. In California it grows in similar soils under incense cedar (*Calocedrus decurrens*).

The other primary habitat of *B. montanum* is in fens, seeps and meadows along streams where the substrate is saturated. Though these habitats of dark forest and open meadows have opposite extremes of light, they have in common a continuous supply of moisture and a high mineral content. Leaf litter of *Thuja* is well known for supporting species of bryophytes and ferns that elsewhere grow on calcareous substrates including fens and limestone/dolomite cliffs.

Additional photographs of *B. montanum*:

