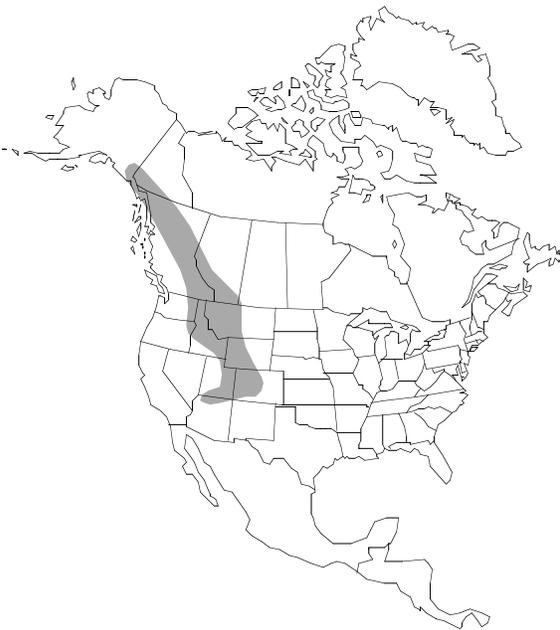


Botrychium hesperium

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| Family: | Ophioglossaceae |
| Genus: | <i>Botrychium</i> |
| Subgenus: | <i>Botrychium</i> (syn. <i>Eubotrychium</i>) |
| Species: | <i>Botrychium hesperium</i> (Maxon & Clausen) W. H. Wagner & Lellinger |
| Synonym: | <i>Botrychium matricariifolium</i> subsp. <i>hesperium</i> Maxon & Clausen |
| Varieties: | “fenestratum”, “venulosum” (see discussion) |
| Common name: | Western Moonwort |
| Ploidy: | Tetraploid |



Published description: Plants exclusive of their roots 12 (5-20) cm tall, the common stalk 7 (3-13) cm tall, sporophore relatively tall, 5 (3-10) cm tall, nearly twice as long as sterile segment, 80% with one or more basal branches 1/3 or more as long as main axis of sporangial cluster; sterile segment gray-green and dull in life, mostly short-stalked, subdeltate, 2.5 (1-5) cm long; pinnae broadly attached to a relatively wide rachis, crowded to commonly overlapping, ovate to lanceolate with rounded apices, the pinna bases asymmetrical, the lamina margins finely repand; basal pinnae commonly exaggerated, up to twice as long as the adjacent ones, often upright and commonly clasping; spores 37 (29-50) micrometers in maximum diameter, irregularly and coarsely verrucate, the warts large, prominent, and separated by wide, deep channels. (Wagner and Wagner, 1983)

Identification

Botrychium hesperium is a stout glaucous plant with a clearly stalked pinnate pinnatifid (doubly divided) trophophore and a sporophore divided into three main branches. Other sympatric western pinnate-pinnatifid species can be differentiated from *B. hesperium* by one or more of these characters. *B. pedunculatum* has a more glaucous surface, a more pronounced trophophore stalk, a conspicuous pink stripe down half of the common stalk, and usually has many sporangia on the basal trophophore pinnae, especially in sun-grown plants.

Botrychium pinnatum and *Botrychium lanceolatum* have trophophores that are lustrous deep green and sessile. The sporophore of *B. pinnatum* is rarely ternately divided.

Botrychium echo has well spaced pinnae with diverging lobes and pinna bases and apices that are acutely angled. The pinnae and pinna lobes of *B. hesperium* are approximate to overlapping and have obtusely angled to rounded pinna bases and apices. Their sporophores also differ, those of *B. echo* are pinnately branched with a single strong axis and those of *B. hesperium* are ternately divided into three strong axes.

B. michiganense has a greater exaggeration of the basal pinna and more reduced "stubby" pinnae above the base. It also has a short-stalked to sessile trophophore. *B. michiganense* co-occurs with *B. hesperium* only in the northern part of the range of the latter where *B. hesperium* occurs as variety *fenestratum*.

The 'fenestrate' form of *B. hesperium* found in Washington and Oregon plants and the 'venulose' form reported from Montana are rarely encountered in Colorado and thus not encompassed in the original description of the species. These northern plants tend to be larger and broader with more deeply lobed pinnae. The pinnae tend to overlap strongly, but leave windows of space along the rachis. The name, 'fenestratum', refers to these windows. The fenestrate form and typical form intergrade in Washington and Oregon and the fenestrate form has recently been collected in Colorado (Kolb and Spribille, 2001).

Distribution

Botrychium hesperium ranges from northern Arizona in the San Francisco Peaks northward through the Rocky Mountains to southern British Columbia and Alberta, Yukon Territory and southeastern Alaska in the Wrangell-St. Elias Mountains. The species is unknown east of the Rocky Mountains. Great Lakes plants indicated in *Flora of North America* are of a new species, *B. michiganense* as are plants from the Black Hills of Wyoming and South Dakota.

Botrychium hesperium is considered common throughout most of its range, but it may be less abundant than previously thought, due to its confusion with similar

taxa, especially *B. echo* in the southern part of its range, and *B. michiganense* in the northern part.

Habitat

In the southern part of its range (Colorado) *Botrychium hesperium* is found in open-canopied forests at altitudes between 8,500 and 11,500 ft. It grows in gravelly soil, including roadsides where the substrate has been compacted. In northern regions it occurs primarily in open meadows.

Additional photographs of *Botrychium hesperium*:



variety hesperium



intermediate



variety fenestratum