

***Botrychium hesperium*** (Maxon & Clausen) W.H.  
Wagner & Lellinger  
western moonwort  
Ophioglossaceae (Adders-Tongue Family)

***Botrychium hesperium***  
western moonwort

**Status:** State Threatened

**Rank:** G3G4S1

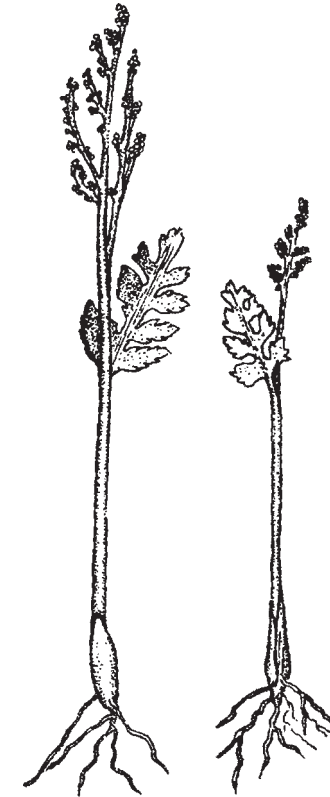
**General Description:** Adapted from Douglas (1993) and Wagner and Wagner (1983): *Botrychium hesperium* is a perennial herb that is 4¾ to 8 in. (12-20 cm) tall. It typically produces one leaf per year from an underground upright stem. The aboveground portion is divided into two axes, borne from a common stalk. One axis, the trophophore, is sterile, while the other axis, the sporophore, is fertile and bears a cluster of numerous globose sporangia. The common stalk is 1-1/8 to 5-1/8 in. (3-13 cm) long. The 2 to 4 in. (5-10 cm) long sporophore is twice as long as the 1/3 to 2 in. (1-5 cm) long trophophore. The sporophore's basal branches are usually at least a third the length of the main axis of the sporangial cluster. The trophophore stalk is up to 1 cm long, about ¼ the length of the trophophore's relatively thick main axis (rachis), which bears up to six pairs of dull, gray-green, ascending pinnae (leaflets) that are usually close together or overlapping, oblong to broadly triangular (deltate), with finely wavy margins, and asymmetrical bases. The distance between the first and second pinnae pairs is often slightly more than the distance between the other pairs of pinnae. The basal pinnae pair is oblong to oblong-lanceolate with lobed margins, and is commonly much larger and more divided than the other pairs. The remaining pinnae are broadly spatulate with entire margins or at least one shallow lobe, and a rounded apex.

**Identification Tips:** *Botrychium hesperium* is most similar to the wide-ranging *B. matricariaefolium*: *B. hesperium* is 4¾ to 8 in. (12-20 cm) tall, and dull gray-green, while *B. matricariaefolium*, which is 4 to 12 in. (10-30) cm tall and dark blue-green or covered with a bluish waxy coating. A technical key is needed for identification.

**Phenology:** The leaves of this species appear in early spring, and begin dying in early fall. In Washington sporophores have been observed from late May to late June.

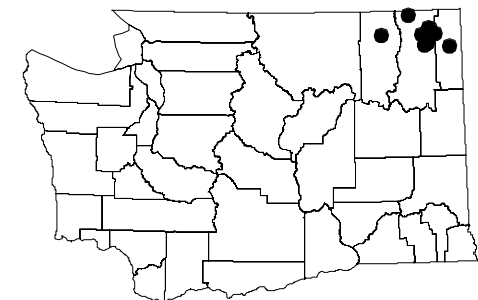
**Range:** The species is uncommon throughout its range. It is known from southern Arizona to the northern Rockies and the Pacific Northwest. In Washington it is known from Stevens, Pend Oreille and Ferry counties.

**Habitat:** In Washington this species has been observed in sagebrush shrubland and in moist and dry meadows. It has been



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Known distribution  
of *Botrychium hesperium*  
in Washington



● Current (1980+)  
○ Historic (older than 1980)

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western moonwort



Susan R. Crispin

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western moonwort

found in dry, gravelly or sandy loam soils, from 2760 to 6300 feet (841-1920 m) elevation. Associated species include big sagebrush (*Artemisia tridentata*), lodgepole pine (*Pinus contorta*), Douglas fir (*Pseudotsuga menziesii*), lanceleaf grapefern (*Botrychium lanceolatum*), peculiar moonwort (*B. paradoxum*), and stalked moonwort (*B. pedunculosum*).

**Ecology:** This species may have the ability to remain dormant during droughty years. Several to many species of *Botrychium* often occur together (Wagner and Wagner 1983).

**State Status Comments:** There are less than fifteen known occurrences of *Botrychium hesperium* in Washington

**Inventory Needs:** Populations in Washington may be more widespread, as some survey sites have been so heavily grazed that additional plants may not be accounted for. Appropriate habitats in Stevens, Pend Oreille and Ferry counties should be systematically surveyed for additional populations.

**Threats and Management Concerns:** Cattle grazing should not occur in known sites until spores have been shed.

**Comments:** This species cannot be found in Hitchcock (1969). Use Douglas (1993) or FNA (1993) to identify this species.

### **References:**

- Douglas, G.W., G.B. Straley, D. Meidinger, and J. Pojar. 1993. *Illustrated Flora of British Columbia* vol. 2: *Dicotyledons (Balsaminaceae Through Cuscutaceae)*. Ministry of Environment, Lands and Parks, Victoria, British Columbia. 475 pp.
- Flora of North America Editorial Committee, eds. 1993. *Flora of North America North of Mexico. Volume 2: Pteridophytes and Gymnosperms*. Oxford University Press, New York. 475pp.
- Hitchcock, C.L., A. Cronquist, M. Ownbey, J.W. Thompson. 1969. *Vascular Plants of the Pacific Northwest Part 1: Vascular Cryptogams, Gymnosperms, and Monocotyledons*. University of Washington Press, Seattle, WA. 914 pp.
- Wagner, W.H. and F.S. Wagner. 1983. Two moonworts of the Rocky Mountains; *Botrychium hesperium* and a new species formerly confused with it. *American Fern Journal* 73(1): 53-62.