

Botrychium pedunculatum

Family:	Ophioglossaceae
Genus:	<i>Botrychium</i>
Subgenus:	<i>Botrychium</i> (syn. <i>Eubotrychium</i>)
Species:	<i>Botrychium pedunculatum</i> W. H. Wagner
Common Name:	Stalked Moonwort
Ploidy:	Tetraploid



Published description: Plants exclusive of roots (5) 11—13 (25) cm tall; common stalk usually with narrow pale brown stripe running down from the trophophore, (4) 6—7 (15) cm tall; sporophore (1.5) 2 (2.5) times as long as the trophophore; trophophore (in life) gray-green, dull, leathery, with veins submersed; trophophore stalk (10) 30 (50) percent of total trophophore length; blade (in life) commonly shallowly rolled, spoon-like, triangular to ovate-triangular, widest at the base, av. 4 cm long, 2.5 cm wide; pinnae somewhat ascending, commonly approximate, (2) 3 (6) pairs, broadly attached, the lower ones asymmetrical, rhomboidal, angular, the tips usually more or less pointed, with 1—6 entire to coarsely crenate lobes, the upper ones becoming narrowly flabellate; largest pinnae up to 15 mm long and 10 mm wide; sporophore stalk (20) 50 (70) percent of sporophore length, sporophore branches in large plants with two major ascending lateral branches up to 70—100 percent as long as whole sporangial cluster; spores finely verrucate (36) 37—41 (43) μm diameter; chromosomes $n = 90$. (Wagner and Wagner 1990)

Identification

The name *Botrychium pedunculosum* refers to the unusually long trophophore stalk of this species. This is the only western twice-dissected moonwort in which the length of the stalk equals or exceeds the distance between the first two pinna pairs. Its strongly glaucous, bluish-green color, its more or less triangular trophophore blade, and the frequent presence of sporangia on the margins of its lower pinnae further distinguish *B. pedunculosum*. The common stalk usually possesses a distinctive reddish- to pinkish-brown stripe leading down from the trophophore base, but this character is also sometimes present in *B. hesperium* and *B. michiganense*, and is even more pronounced in the eastern species *B. matricariifolium*. It is not known to occur in the range of *B. matricariifolium*, but *B. pedunculosum* has recently been discovered in northern Quebec and its possible occurrence further south should be considered. It can be distinguished from *B. matricariifolium* by the more triangular outline of its trophophore blade, pinnae that are more rhomboidal in outline (a rectangle attached at one corner), and usual presence of sporangia on the lower pinnae.

All moonwort species occasionally produce supernumerary (extra) sporangia on the basal pair of trophophore pinnae, but only two, *B. ascendens* and *B. pedunculosum*, do it with such regularity in nearly all populations that it can be used as a taxonomic character. Even with these species it must be used with caution, and only at the population level, i.e., most (but not all) of the plants in the population possess the character. It is notoriously unreliable for identification of single individuals. Having said the above, *B. pedunculosum* is often striking in the degree to which supernumerary sporangia are produced, often, especially in sun grown plants, producing skeletonized lower pinna pairs. Conversely, plants in deep shade often produce no supernumerary sporangia at all.

Distribution

Botrychium pedunculosum occurs in the Rocky Mountains from northeastern Oregon, northern Idaho and northwestern Montana northward to central British Columbia. It has disjunct occurrences in north-central Alberta, northeastern Quebec, in the Alaska peninsula, and in the Sierra Mountains west of Yosemite NP in California.

Habitat

In the Rocky Mountains, *B. pedunculosum* occurs in mountain meadows, roadsides, brushy secondary woodlands, and open to closed canopy forests. The Quebec occurrence is at the base of a mountain scree slope. In Alaska it occurs in a moist meadow under tall forbs. In California *B. pedunculosum* occurs in small, well drained meadows on andesitic tuff in white fir forests at about 6,000ft.

Additional photographs of *Botrychium pedunculatum*:



Plant from Quebec