

Botrychium ascendens W.H. Wagner
triangular-lobed moonwort
Ophioglossaceae (Adders-Tongue Family)

Status: State Sensitive, USFWS Species of Concern
Rank: G2G3S2S3

General Description: Adapted from FNA (1993) and Wagner (1992): *Botrychium ascendens* is a perennial fern that can be up to 7¾ in. (20 cm) tall, and produces one frond per season. 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 trophophore stalk is 1/8 to 1/3 in. (3-10 mm) long, 1/6 of the length of the trophophore rachis (the portion bearing the pinnae). The blade is yellow-green, oblong to oblong-lanceolate, once pinnate, 1-1/8 to 2-1/3 in. (3-6 cm) long, ½ in. (1.5 cm) wide, and thin but firm. There are up to 5 pairs of pinnae, which are strongly ascending (angled sharply towards the apex of the blade) and well separated. The distance between the first and second pair of pinnae is equal to or slightly more than the distance between the second and third pinnae pairs. The basal pinnae pair is approximately equal in size to the adjacent pair. The basal pinnae are narrowly wedge-shaped and sharply toothed. They are also often shallowly and irregularly cut. The trophophore pinnae sometimes bear sporangia. The sporophore is 1.3-2 times the length of the trophophore. It is twice pinnate (divided into opposite pairs of pinnae, which are then divided once more), at the base of sporangial clusters.

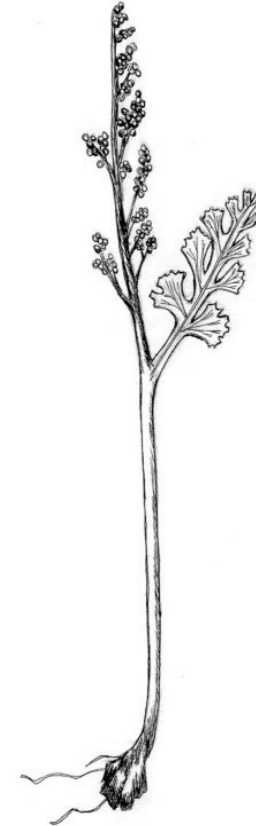
Identification Tips: *Botrychium ascendens* may be confused with *B. manganense* and *B. crenulatum*. All of these will key to *B. lunaria* var. *onondagense* in Hitchcock et al. (1969), however they can be distinguished by the following. The pinnae of *B. ascendens* are narrowly wedge shaped and ascending, while those of *B. manganense* and *B. crenulatum* are not wedge shaped and spread at nearly right angles to the axis of the blade. The pinnae margins of *B. ascendens* are toothed with frequent deeper clefts and often have sporangia on them, while the pinnae margins of *B. manganense* are entire and usually lack sporangia, and the pinnae margins of *B. crenulatum* are wavy and also lack sporangia. *B. ascendens* and *B. pedunculosum* are the only grapeferns that often have extra sporangia on the trophophore pinnae. A technical key is needed for identification.

Phenology: In Washington this species has been observed with sporangia clusters present from June to September. The leaves of this species generally appear in late spring to midsummer.

Range: This species is known from Alaska, south to California and Nevada, and west to Montana and Wyoming. In Washington it occurs in Mason, Pierce, Whatcom, Okanogan, Ferry, Stevens and Pend Oreille counties.

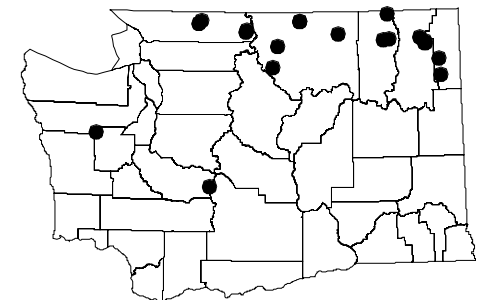
Habitat: This species has been found within coniferous forests, in wet and dry meadows, a meadow pasture, roadsides, ravines, and

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Walt Fertig (2000)

Known distribution
of *Botrychium ascendens*
in Washington



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

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Cindy Johnson-Groh

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perennial streams. It has been found growing in surface gravel, moist decayed litter, and rocky soil. In Washington it has been found from 2100 to 6400 feet (640-1950 m) elevation, with the following species: red baneberry (*Actaea rubra*), ladyfern (*Athyrium filix-femina*), American trailplant (*Adenocaulon bicolor*), horsetail (*Equisetum* sp.), false lily of the valley (*Smilacina stellata*), rattlesnake fern (*Botrychium virginianum*), little grapefern (*B. simplex*), and Mingan moonwort (*Botrychium minganense*).

Ecology: This species has been found growing with several other *Botrychium* species.

State Status Comments: There are less than 20 known recent occurrences of *Botrychium ascendens* in Washington.

Inventory Needs: Sightings of *Botrychium ascendens* should be verified for correct identification, as this species is easily confused with others.

Threats and Management Concerns: Cattle grazing should not occur in known sites until spores have been shed. Other threats may be from hikers and climbers, hydroelectric development, and roadside vegetation mowing.

Comments: *Botrychium ascendens* will key to *B. lunaria* var. *onondagense* in Hitchcock et al. (1969). Use Douglas (2000) or FNA (1993) to identify this species.

References:

- Douglas, G.W., G.B. Straley, D. Meidinger, and J. Pojar. 2000. *Illustrated Flora of British Columbia* vol. 5: *Dicotyledons (Salicaceae Through Zygophyllaceae)*. Ministry of Environment, Lands and Parks, Victoria, British Columbia. 389 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, D. 1992. Guide to the species of *Botrychium* in Oregon. Unpublished. On file with WNHP.