

## *Botrychium echo*

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



**Published description:** Plants exclusive of their roots 9.5 (3—15) cm tall, the common stalk 6 (2—10) cm tall, sporophore relatively short, 3.5 (1.5—8) cm tall, only half again as long as the sterile segment and only 20% with 1 or more branches 1/3 or more as long as main axis of sporangial cluster; sterile segment bright green and shiny in life, nearly sessile to short-stalked, broadly oblong, 2.2 (1—4.5) cm long; pinnae narrowly attached to a relatively narrow rachis, remote to approximate, not overlapping, lanceolate to oblanceolate to linear with pointed apices, the pinna bases subsymmetrical, the laminar margins nearly entire; basal pinna pair not exaggerated in length, equal to or somewhat longer than the adjacent pair, spreading or only moderately ascending, not clasping; spores 37 (27—53)  $\mu\text{m}$  in maximum diameter, irregularly and finely verrucate, the warts small, low, and separated by narrow, shallow channels. (Wagner and Wagner 1983)

## Identification

*Botrychium echo* is one of four twice dissected moonwort species in the southern Rocky Mountains. It is distinguished from *B. lanceolatum* by its pinnate trophophore and sporophore, and from *B. pinnatum* by its sharply angular pinna bases and apices, and by its short sporophore stalk that is less than  $\frac{1}{2}$  the length of the trophophore. Its surface is semi-lustrous, usually more glaucous than those of *B. lanceolatum* and *B. pinnatum*.

*Botrychium echo* is most often confused with *B. hesperium* which it closely resembles. It can be distinguished from large plants of *B. hesperium* by its pinnately rather than ternately branching sporophore, by its more angular pinna bases and apices, and by the spreading angle of its pinna lobes, particularly the inner lower lobes of the basal pinnae.

## Distribution

*Botrychium echo* occurs in the Rocky Mountains from Central Colorado southwestward through southern Utah to northern Arizona.

## Habitat

*Botrychium echo* occurs in mountain meadows and open woodlands at altitudes above 8000 ft. It is often found along roadsides, in campgrounds and in similarly disturbed habitats.

Additional photographs of *Botrychium echo*:

