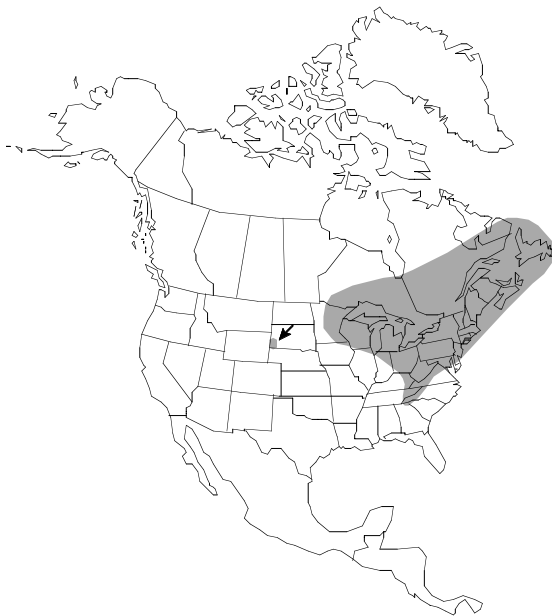


## *Botrychium matricariifolium*

<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 matricariifolium</i> (Döll) A. Braun
<b>Synonym:</b>	<i>Botrychium acuminatum</i> W. H. Wagner
<b>Common Name:</b>	Daisy-leaved Moonwort, Matricary Fern
<b>Ploidy:</b>	Tetraploid



**Published description.** Trophophore stalk 0—5 mm, to 1/6 length of trophophore rachis; blade dull, ± glaucescent green, oblong, 1—3 pinnate, to 10 x 9 cm, firm. Pinnae to 7 pairs, somewhat ascending, approximate to slightly remote, distance between 1<sup>st</sup> and 2<sup>nd</sup> pinnae not or slightly more than between 2<sup>nd</sup> and 3<sup>rd</sup> pairs, basal pinna pair approximately equal in size and cutting to adjacent pairs, spatulate-ovate to narrowly ovate, divided to tip, ultimate segments squarish to linear, rounded to square to acute at apex, margins entire to lobed to fully dissected, apex rounded to acute, venation pinnate. Sporophores 1—3 pinnate, 1.3—2.4 times length of trophophore.  $2n = 180$ . (Wagner and Wagner 1993)

## Identification

*Botrychium matricariifolium*, along with *B. lanceolatum*, are the only twice-dissected moonworts common and widespread in the eastern United States. *B. matricariifolium* can be distinguished from *B. lanceolatum* by its glaucous surface (lustrous in *B. lanceolatum*), pinnate ovate trophophore (ternate and triangular in *B. lanceolatum*), and strongly stalked trophophore (sessile in *B. lanceolatum*).

In the western Great Lakes region, two other twice dissected moonworts occur. *B. michiganense* is similar in color and texture but differs in having a sessile to short-stalked trophophore and pinnae above the first pair that are much less dissected than those of *B. matricariifolium*. *B. michiganense* is further distinguished by having an abrupt decrease in the degree of dissection from the first to the second pair of pinnae, the latter often having little or no incision on the upper margin. *B. michiganense* also usually has basal pinnae that are exaggerated in size, i.e., much longer than the second pinna pair. However this is also sometimes the case in *B. matricariifolium* and not always true of *B. michiganense*.

*B. pseudopinnatum* is a very rare species known only from the north shore of Lake Superior that resembles a stout, compact *B. matricariifolium*. It differs from *B. matricariifolium* in having a short stalked trophophore, approximate to overlapping pinnae with rounded apices, and a more lustrous surface. Similarly stout plants of *B. matricariifolium* tend to have ternately branching sporophores whereas the sporophore of *B. pseudopinnatum* is regularly pinnately branched.

Large plants of *Botrychium simplex* may have basal pinnae that are elongated and sometimes again dissected, thus somewhat resembling *B. matricariifolium* and other glaucous, twice-dissected species, but in *B. simplex* the second and higher pairs of pinnae remain clearly fan-shaped and not at all elongated, unlike the middle pinnae of *B. matricariifolium*.

Small plants of *B. matricariifolium* often lack conspicuous dissection of the pinnae and thus are sometimes be confused with once-dissected moonworts. Careful inspection of such plants usually reveal that at least the basal pinnae are more elongate in shape than any once dissected species and have a more or less distinct midrib rather than the evenly spread veins of once-dissected fan-leaved species. It is not always possible to distinguish between small plants of *B. matricariifolium* and those of *B. michiganense*.

The great variability of form displayed by *B. matricariifolium* has led to the provisional recognition of a number of subtypes, including one formally designated species, *B. acuminatum*. A genetic study of *B. matricariifolium* by Farrar and Wendel found no consistent genetic differentiation of any of these forms. All, including *B. acuminatum*, at most contain a subset of the alleles present in typical *B. matricariifolium*. On this basis, *B. acuminatum* is reduced to synonymy in this treatment.

## **Distribution**

*Botrychium matricariifolium* is the most frequently encountered moonwort from New England to eastern Minnesota in the Great Lakes region. In the east, it becomes less common northward to Newfoundland and southward along the Appalachian Mts. to North Carolina and Tennessee. In the western part of its range it has been documented as far south as northeastern Iowa and recently has been recorded from the Black Hills in western South Dakota.

## **Habitat**

*Botrychium matricariifolium* is highly cosmopolitan in its habitats, occurring in deep forests, forest edges, grassy meadows and roadsides, stabilized but sparsely vegetated sand dunes, mine tailings and borrow pits. It is unusual among moonworts in its common occurrence in acidic as well as neutral soils. In its woodland habitats it is often most common in abandoned road beds and adjacent to active roads. It can also become abundant in recently harvested forests and in utility corridors. In the southern Appalachian Mts. it is more restricted to mature hardwood forests at high elevations. Its currently known occurrence in the Black Hills is above 4000 ft.

Additional photographs of *Botrychium matricariifolium*:

