

## *Botrychium mormo*

**Family:** Ophioglossaceae  
**Genus:** *Botrychium*  
**Subgenus:** *Botrychium* (syn. *Eubotrychium*)  
**Species:** *Botrychium mormo* W. H. Wagner  
**Common Name:** Little Goblin  
**Ploidy:** Diploid



**Published description:** Gametophyte commonly persisting at the bases of even the largest plants; leaf 8.9 (7—12.5) cm tall, very succulent, yellow-green shiny; the common stalk making up 50 (20—70) % of the total length; sterile segment linear, 2 (1.3—4.1) cm long, 5 (3—7) mm wide, the stalk 1 (0.5—1.6) cm long; lobes 2 (1—3) pairs, round-pointed to truncate, the distal margins entire or shallowly crenate, not sharply dentate or irregularly lacerate, and with no tendency for exaggerated basal lobes; the tip usually with 2—4 angular triangular or squarish lobes; fertile segment 4.5 (2.4—7.5) cm tall, commonly branched in the lower third, the branches 1/3 to 2/3 as long as the main axis; sporangia large, sunken, not opening until late September and October, the aperture narrow, only 15–30°; spores 49 (45—53)  $\mu\text{m}$  in diameter; chromosomes  $2n = 90$ . (Wagner and Wagner 1981)

## Identification

*Botrychium mormo* is unlikely to be mistaken for any other moonwort except *Botrychium simplex* variety *tenebrosum*. Like var. *tenebrosum*, it is a small plant found growing in moist, dark forests in the upper Great Lakes region and is similar in dissection, being once dissected with broadly decurrent pinna with conspicuous space between the basal and second pinna pair. *B. mormo* can be distinguished from var. *tenebrosum* by its squarish outer pinna margin that is coarsely toothed, those of var. *tenebrosum* being somewhat rounded with a smooth outer margin. The tip of the trophophore in *B. mormo* is clearly divided into blunt segments whereas the trophophore tip in var. *tenebrosum*, as in other *B. simplex* varieties, is typically entire and boat-shaped. *B. mormo* is also a more succulent plant with a thicker sporophore with more deeply embedded sporangia. *B. mormo* ranges in color from deep green to nearly white depending on the degree to which it is exposed above the leaf litter. *B. simplex* var. *tenebrosum* typically emerges completely above the leaf litter and is more uniformly yellow-green.

Because some plants of *B. mormo* continue to emerge late into the fall and many fail to emerge above the leaf litter it is sometimes incorrectly assumed that any moonwort found under the litter in fall is *B. mormo*. In fact, next year leaves of *B. matricariifolium* and perhaps those of other moonwort species begin to enlarge in the fall and can be found under the leaf litter standing a centimeter or more above the soil surface. These can be distinguished from *B. mormo* using a 10x hand lens to observe their pinna shape and dissection which at that stage are already characteristic of the species.

## Distribution

*Botrychium mormo* is known only from the boreal forests of northern Michigan, Wisconsin and Minnesota. However, it is genetically and morphologically very similar to *B. montanum* of northwestern North America and may ultimately be merged taxonomically with that species.

## Habitat

The whitish appearance of *Botrychium mormo* plants and their dark habitat inspired both the Latin and common name (Goblin Fern) of this species. It most typically occurs in mesic but well drained mature forests of basswood (*Tilia americana*), sugar maple (*Acer saccharum*) and, in Michigan, beech (*Fagus americana*).

Additional photographs of *Botrychium mormo*:

