
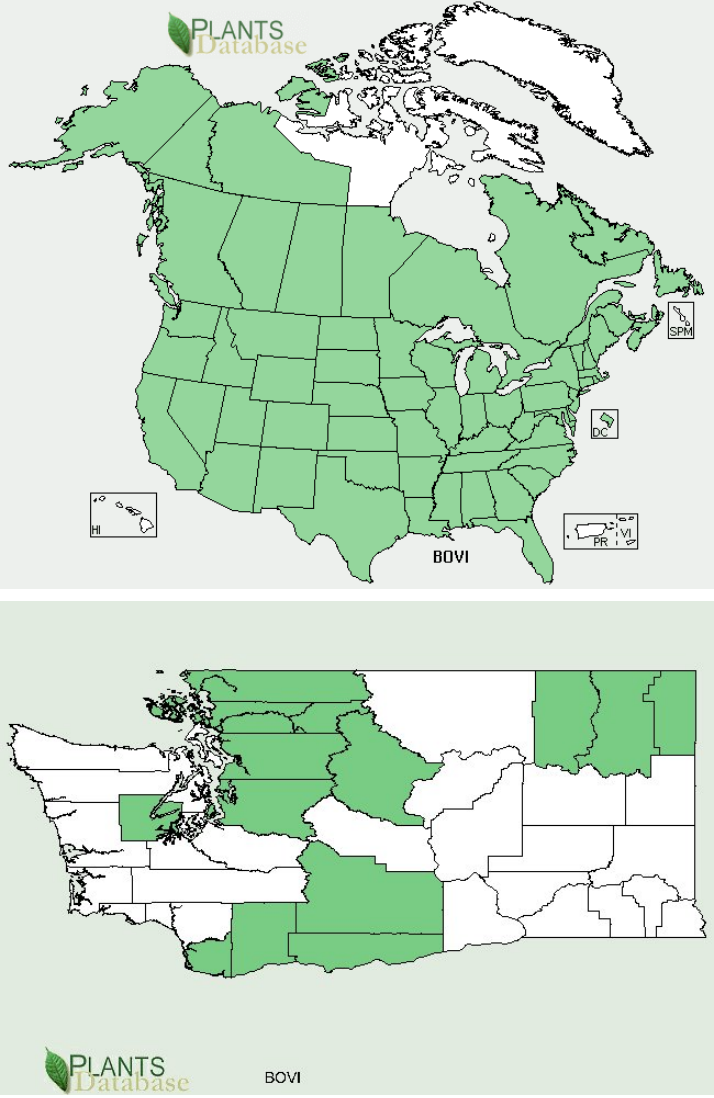


Plant Propagation Protocol for /*Botrychium virginianum*/

ESRM 412 – Native Plant Production

Protocol URL: [https://courses.washington.edu/esrm412/protocols/\[BOVI.pdf\]](https://courses.washington.edu/esrm412/protocols/[BOVI.pdf])

<p align="center">TAXONOMY</p>	 <p align="center">[Virginia natives]</p>
<p>Plant Family</p>	
<p>Scientific Name</p>	<p>Ophioglossaceae</p>
<p>Common Name</p>	<p>Snake tongue family</p>
<p>Species Scientific Name</p>	
<p>Scientific Name</p>	<p><i>Botrychium virginianum</i></p>
<p>Varieties</p>	<p>Var. Laurentianum. Var. Intermedium. Var. Europaeum [The Fern Lover's Companion]</p>
<p>Sub-species</p>	
<p>Cultivar</p>	
<p>Common Synonym(s)</p>	<p><i>Botrypus virginianus</i></p>
<p>Common Name(s)</p>	<p>Rattlesnake fern, Common grapefern</p>
<p>Species Code (as per USDA Plants database)</p>	<p>BOVI</p>
<p>GENERAL INFORMATION</p>	

<p>Geographical range</p>	
<p>Ecological distribution</p>	
<p>Climate and elevation range</p>	<p>700-1200 meters. Zones 4-9. [Jepson herbarium]</p>
<p>Local habitat and abundance</p>	<p>Abundant. Prefers shaded valleys along small streams. Associated with Oaks and Hickories [Illinois wildflowers]</p>
<p>Plant strategy type / successional stage</p>	<p>Fire resistant. Will colonize disturbed areas [Illinois wildflowers]</p>
<p>Plant characteristics</p>	<p>Fern. Perennial. Moderate lifespan. Deciduous. Leaves ternate. Up to 0.4 meter in height when mature. Spreads through spores and rhizomes. [USDA plants database]</p>
<p>PROPAGATION DETAILS</p>	
<p>Ecotype</p>	

Propagation Goal	Plants
Propagation Method	Vegetative (division), spores (very difficult) [Plants for a future]
Product Type	Bareroot [Illinois wildflowers]
Stock Type	
Time to Grow	
Target Specifications	0.2-0.4 meter in height. Upright stem with a fleshy root system, similar to spaghetti in texture. [Backyard nature]
Propagule Collection Instructions	Divide in spring, when new growth has begun. [Virginia natives]
Propagule Processing/Propagule Characteristics	
Pre-Planting Propagule Treatments	No cold stratification required. If propagating from spores, complete darkness and the presence of mycorrhizal fungi are required for germination. [Virginia natives]
Growing Area Preparation / Annual Practices for Perennial Crops	<i>Botrychium virginianum</i> grows in soils ranging from a pH of 5.6 (acidic ranges from 5.6 to 6) to 6.9 (neutral ranges from 6.6 to 7.5). It is adapted to silt, loam, clay loam, silt loam, sandy loam, silty clay loam and sandy clay loam soils and prefers high fertility. Does not grow well in containers. Shade tolerant. [Plant database]
Establishment Phase Details	The preference is partial sun to light shade, mesic to dry-mesic conditions, and a fertile loamy soil with an abundance of decaying organic matter. Generally, this fern is nearly impossible to cultivate from spores, which form underground gametophytes (the sexual life stage of ferns that lack chlorophyll and take several years to develop). Their survival is dependent on the presence of appropriate mycorrhizal fungi in the soil. After this life stage is complete, a fern will begin to produce above-ground leaves (the sporophytic life stage). This fern is also difficult to propagate by division of its root system, and a transplanted fern usually fails to thrive at its new site. As a result of these difficulties, Rattlesnake Fern is rarely available for purposes of cultivation. [Illinois wildflowers]
Length of Establishment Phase	
Active Growth Phase	
Length of Active Growth Phase	Spring and Summer

	[USDA plants database]
Hardening Phase	
Length of Hardening Phase	
Harvesting, Storage and Shipping	Keep cool and moist. [Wildflower]
Length of Storage	Winter [Creative propagation]
Guidelines for Outplanting / Performance on Typical Sites	1700-4800 per acre. [USDA plants database]
Other Comments	
INFORMATION SOURCES	
References	<p>http://www.wildflower.org/plants/result.php?id_plant=BI (accessed 6/13/14)</p> <p>http://www.pfaf.org/user/Plant.aspx?LatinName=Botrychium+virginianum (accessed 6/13/14)</p> <p>http://www.plantoftheweek.org/week270.shtml (accessed 6/13/14)</p> <p>http://www.illinoiswildflowers.info/grasses/plants/rattlesnake_fern.html (accessed 6/13/14)</p> <p>http://www.plantdatabase.co.uk/Botrychium_virginianum (accessed 6/13/14)</p> <p>http://virginianatives.blogspot.com/2008/01/botrychium-virginianum.html (accessed 6/13/14)</p> <p>http://www.amjbot.org/content/95/4/414.full (accessed 6/13/14)</p> <p>http://www.backyardnature.net/n/x/rattle-f.htm (accessed 6/13/14)</p> <p>http://www.gutenberg.org/files/11365/11365-h/11365-h.htm#rattlesnake (accessed 6/13/14)</p> <p>http://ucjeps.berkeley.edu/cgi-bin/get_IJM.pl?tid=91686 (accessed 6/13/14)</p> <p>Thompson, Peter. 2005. Creative Propagation. Timber Press.</p> <p>Hilty, J. Editor. 2014. Illinois Wildflowers. World Wide Web electronic publication. flowervisitors.info (accessed 6/13/14)</p>
Other Sources Consulted	<p>Krukeberg, Arthur. 1996. Gardening with Native Plants. University of Washington Press.</p> <p>King County Dept of Public Works. 1994. Northwest Native Plants.</p>
Protocol Author	Connor McGarry

Date Protocol Created or Updated	06/13/14
----------------------------------	----------