

## Plant Propagation Protocol for *Lupinus amphibius*

ESRM 412 – Native Plant Production

Protocol URL: <https://courses.washington.edu/esrm412/protocols/LUAM2.pdf>



3

### TAXONOMY

TAXONOMY	
Plant Family	
Scientific Name	Fabaceae
Common Name	Pea family
Species	
Scientific Name	
Scientific Name	
Scientific Name	<i>Lupinus amphibius</i> Suksd.
Varieties	No information found on varieties.
Sub-species	No information found on sub species.
Cultivar	No information found on cultivar.
Common Synonym(s)	No information found on synonyms.
Common Name(s)	Amphibious lupine
Species Code (as per USDA Plants database)	LUAM2
GENERAL INFORMATION	

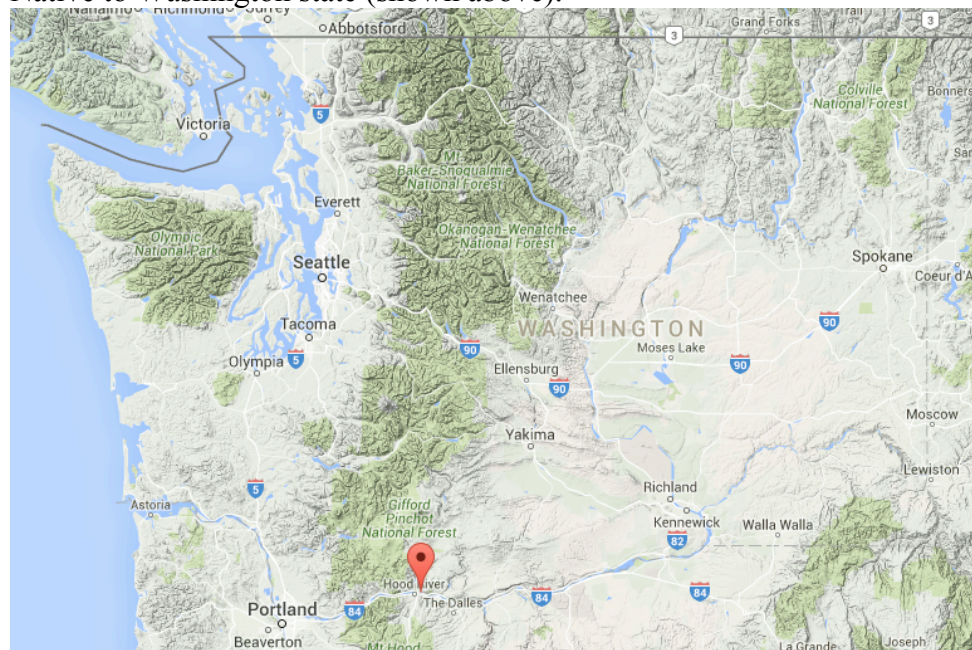
Geographical  
range




Symbol: LUAM2

USDA-NRCS-NGCE  4

Native to Washington state (shown above). 4



	 <p>United States of America, Washington, Klickitat Co., On a rocky island in the Columbia River at Bingen (shown in the above two maps with a pink tag).<sup>3</sup></p>
Ecological distribution	<i>Lupinus amphibius</i> occurs on gravel or sandy substrates, sagebrush covered slopes, riverbanks, and rocky river islands. <sup>2</sup>
Climate and elevation range	No specific information found on climate and elevation range. This species was, however, found on an island in the Columbia River, at sea level. <sup>3</sup>
Local habitat and abundance	Local habitat includes gravel or sandy substrates, sagebrush covered slopes, riverbanks, and rocky river islands in Klickitat county. <sup>2</sup> Abundance of <i>Lupinus amphibius</i> is low at an N2 status – imperiled. <sup>1</sup> No information found on associated species.
Plant strategy type / successional stage	No information found on strategy or succession type.
Plant characteristics	<i>Lupinus amphibius</i> is a perennial forb. Its leaves are palmately compound and alternate. There are 5 to 9 leaflets per leaf and they are pubescent. Flower petals can be blue, lavender, purple, or violet. The fruit is a legume, freely dehiscent, and olive, brown, or black in color. <sup>1</sup>
<b>PROPAGATION DETAILS</b>	
Ecotype	No information was found on previously collected seeds, cuttings, or other propagules for <i>Lupinus amphibius</i> . Information was gathered from a similar legume, <i>Lupinus sericeus</i> . <sup>5</sup>
Propagation Goal	Plants.
Propagation Method	Seed.

Product Type	Container (plug). <sup>5</sup>
Stock Type	10 cu. in. <sup>5</sup>
Time to Grow	About 4 months. <sup>5</sup>
Target Specifications	Tight root plug in container. <sup>5</sup>
Propagule Collection Instructions	Seeds should be collected when the pods begin to split. The seed pods will shatter readily when ripe. This should occur around July and August. Seeds can be collected individually. Seeds can be stored in paper bags or envelopes at room temperature until they are cleaned. <sup>5</sup>
Propagule Processing/Propagule Characteristics	Seed size varies greatly; there can be anywhere from 12,900 to 42,000 seeds/pound. <sup>5</sup>  Clean seed can be stored at 40% relative humidity and 40 degrees Fahrenheit. <sup>5</sup>  Seeds can germinate after storage of up to 15 years in an unheated controlled environment. <sup>5</sup>
Pre-Planting Propagule Treatments	The Lupine seed coat is thick and usually needs to be scarified to germinate. No information was found on how to scarify <i>Lupinus amphibius</i> , but other Lupine species can require hot water, acid, or no pretreatment. Some Lupine seeds are also brittle and can be damaged by mechanical scarification. <sup>5</sup>
Growing Area Preparation / Annual Practices for Perennial Crops	Seed should be inoculated with Rhizobium before sowing. Seeds can be sown in January in a greenhouse in 10 cu. in. Ray Leach Super Cell containers. Seeds should be covered lightly with soil. Leave 1/4 to 1/2 inch at the top of each container to allow for watering. Apply a thin layer of coarse grit to prevent seeds from moving during watering. <sup>5</sup>
Establishment Phase Details	Medium should be kept moist. Emergence should occur in about 5 days and is usually complete within 3 weeks. <sup>5</sup>
Length of Establishment Phase	About 3 weeks. <sup>5</sup>
Active Growth Phase	Water deeply every other day and fertilize once per week. <sup>5</sup>
Length of Active Growth Phase	About 2-3 months. <sup>5</sup>
Hardening Phase	Plants can be moved to a cold frame in March or April, depending on weather. They should be watered every other day if the weather is cool, and every day if the weather is hot and dry. <sup>5</sup>
Length of Hardening Phase	About 2 weeks. <sup>5</sup>
Harvesting, Storage and Shipping	No information was found on harvesting, storage, and shipping.
Length of	No information was found on the length of storage.

Storage	
Guidelines for Outplanting / Performance on Typical Sites	Seedlings can be transplanted in May in 1.5 inch diameter holes. In seed increase beds, survival averages about 90%. Survival in in sites with existing competitive vegetation reduces survival rates. <sup>5</sup>  Flowering and seed production usually occurs the same year as planting. <sup>5</sup>
Other Comments	Plants can be short lived but they reseed themselves. <sup>5</sup> Seed is also preyed on by insects and rodents will eat the crowns. <sup>5</sup> Lupines contain poisonous alkaloids. <sup>5</sup>
<b>INFORMATION SOURCES</b>	
References	<sup>1</sup> Encyclopedia of Life. Amphibious Lupine. Retrieved May 23, 2016, from <a href="http://eol.org/pages/416157/details">http://eol.org/pages/416157/details</a>  <sup>2</sup> Nature Serve Explorer. Comprehensive Report Species - Lupinus amphibius. Retrieved May 23, 2016, from <a href="http://explorer.natureserve.org/servlet/NatureServe?searchName=Lupinus%20amphibius">http://explorer.natureserve.org/servlet/NatureServe?searchName=Lupinus amphibius</a>  <sup>3</sup> SEINet. Lupinus amphibius Suksd. Retrieved May 23, 2016, from <a href="http://swbiodiversity.org/seinet/taxa/index.php?taxon=90143">http://swbiodiversity.org/seinet/taxa/index.php?taxon=90143</a>  <sup>4</sup> USDA. Plants Profile for Lupinus amphibius (amphibious lupine). Retrieved May 23, 2016, from <a href="http://plants.usda.gov/core/profile/?symbol=LUAM2">http://plants.usda.gov/core/profile/?symbol=LUAM2</a>  <sup>5</sup> USDA. Protocol Information - Lupinus sericeus. Retrieved May 23, 2016, from <a href="http://www.nrcs.usda.gov/Internet/FSE_PLANTMATERIALS/publications/wapmcmt7129.pdf">http://www.nrcs.usda.gov/Internet/FSE_PLANTMATERIALS/publications/wapmcmt7129.pdf</a>
Other Sources Consulted	BONAP. (2013). North American Plant Atlas. Retrieved May 23, 2016, from <a href="http://bonap.net/NAPA/TaxonMaps/Genus/County/Lupinus">http://bonap.net/NAPA/TaxonMaps/Genus/County/Lupinus</a>  ITIS. (n.d.). ITIS Standard Report: Lupinus amphibius Suksd. Retrieved May 23, 2016, from <a href="http://www.itis.gov/servlet/SingleRpt/SingleRpt?search_topic=TSN">http://www.itis.gov/servlet/SingleRpt/SingleRpt?search_topic=TSN</a>  Idaho Fish and Game. (n.d.). Amphibious Lupine (Lupinus amphibius). Retrieved May 23, 2016, from <a href="https://idfg.idaho.gov/species/taxa/54783">https://idfg.idaho.gov/species/taxa/54783</a>  Intermountain Region Herbarium Network. (n.d.). Lupinus amphibius Suksd. Retrieved May 23, 2016, from <a href="http://intermountainbiota.org/portal/taxa/index.php?taxon=90143">http://intermountainbiota.org/portal/taxa/index.php?taxon=90143</a>  MABA Flora. (n.d.). Lupinus amphibius Suksd. Retrieved May 23, 2016, from <a href="http://www.madrean.org/symbflora/taxa/index.php?taxon=90143">http://www.madrean.org/symbflora/taxa/index.php?taxon=90143</a>

	<p>Planet Natural. (2012). Growing Lupine. Retrieved May 23, 2016, from <a href="http://www.planetnatural.com/growing-lupine/">http://www.planetnatural.com/growing-lupine/</a></p> <p>Smithsonian Museum of Natural History. (n.d.). <i>Lupinus amphibius</i> Suksd. Retrieved May 23, 2016, from <a href="http://collections.nmnh.si.edu/search/botany/?irn=2093096">http://collections.nmnh.si.edu/search/botany/?irn=2093096</a></p> <p>The Plant List. (n.d.). <i>Lupinus amphibius</i> Suksd. Retrieved May 23, 2016, from <a href="http://www.theplantlist.org/tpl1.1/record/ild-14373">http://www.theplantlist.org/tpl1.1/record/ild-14373</a></p>
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