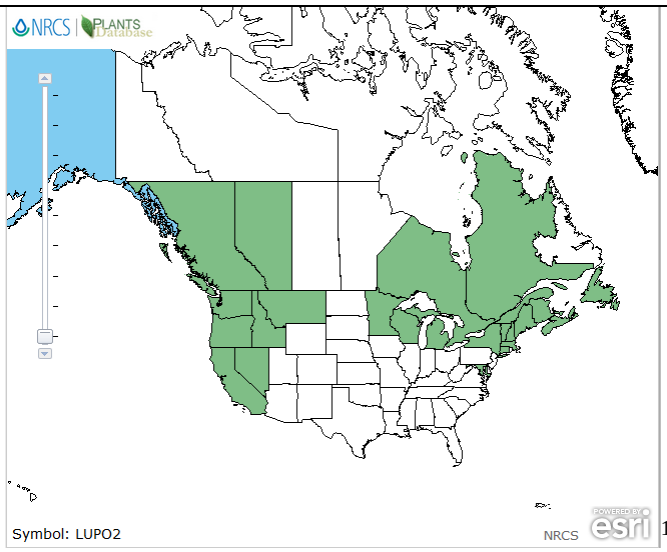
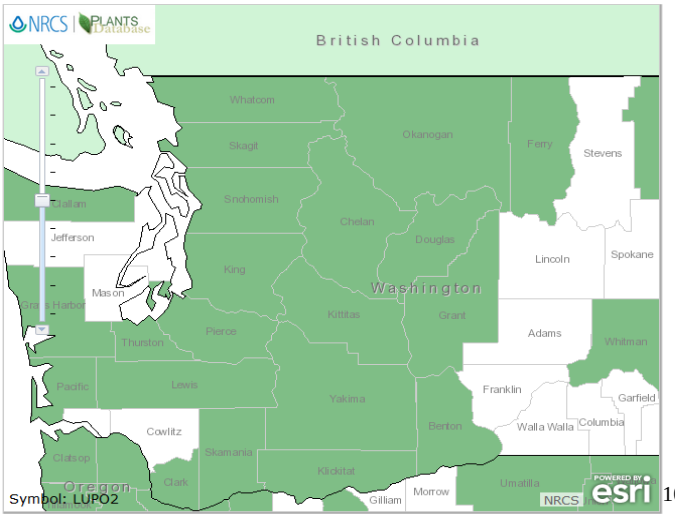
Plant Propagation Protocol for *Lupinus polyphyllus*
ESRM 412 – Native Plant Production
Protocol URL: https://courses.washington.edu/esrm412/protocols/LUPO2.pdf

TAXONOMY	
Plant Family	
Scientific Name	Fabaceae [10]
Common Name	Pea Family [10]
Species Scientific Name	
Scientific Name	*Lupinus polyphyllus* Lindl. [10]
Varieties	*Lupinus polyphyllus* Lindl. var. *albiflorus* Lindl., *Lupinus polyphyllus* Lindl. var. *pallidipes* (A. Heller) C. P. Sm., *Lupinus polyphyllus* Lindl. var. *polyphyllus* [2]
Sub-species	*Lupinus polyphyllus* Lindl. *ssp. bernadinus* (Abrams ex C.P. Sm.) Munz, *Lupinus polyphyllus* Lindl. *ssp. polyphyllus* [2]
Cultivar	Rainbow Lupins, Lupin Tutti Fruitti, Band of Nobles (mixed), Chandelier (yellow), My Castle (red), Noble Maiden (white), The Chatelaine (pink), The Governor (blue) [2]
Common Synonym(s)	*Lupinus garfieldensis* C.P. Sm., *Lupinus matanuskensis* C.P. Sm., *Lupinus pseudopolyphyllus* C.P. Sm., *Lupinus stationis* C.P. Sm. [2]
Common Name(s)	Bigleaf lupine, altramuz perenne, garden lupine, Washington lupine, large leaf lupine, marsh lupine, blue-pod lupine, large-leaved lupine [2]
Species Code (as per USDA Plants database)	LUPO2 [10]
GENERAL INFORMATION	
Geographical range	In North American, *Lupinus polyphyllus* is native from British Columbia and Alberta, south to California and east to Montana, Idaho, and Nevada. It is considered an invasive species and has become an issue from the Great Lakes states, into the northeastern coastal states, and eastern Canada [2]

	 10  10
Ecological distribution	Moist to wet areas with well drained, slightly acidic to neutral soil,[4] in open areas such as seashores, streamsides, wet meadows, and disturbed areas [1]
Climate and elevation range	Full sun to part shade [8] Low to mid elevations [1]
Local habitat and abundance	Dry or wet meadows, stream banks, bogs, ditches, wetlands, and moist woods [5] [2] *L. polyphyllus* does not do well in areas with hot summers and cold winters [4]
Plant strategy type / successional stage	Weedy [5], nitrogen fixer that helps to fertilize soils [2]
Plant characteristics	Perennial herb, branching woody rhizome, erect stems, up to 1.5 m tall. Leaves are palmately compound with 10-17 leaflets up to 12 cm long. Flowers are blue to violet color up to 1.5 m long that form in dense clusters. Fruits are hairy pods up to 5 cm long [1]
PROPAGATION DETAILS	
Ecotype	N/A

Propagation Goal	Seeds
Propagation Method	Seed
Product Type	Container (plug) [2]
Stock Type	N/A
Time to Grow	6-8 weeks to reach transplanting size [6]
Target Specifications	N/A
Propagule Collection Instructions	Gather seeds of *L. polyphyllus* after the blooming period from May – July/August [2] by collecting pods by hand promptly after they turn brown but before they burst open [6] Seeds can also be collected by placing a netted material over the plants to catch seeds as they are expelled from the pods [2]
Propagule Processing/Propagule Characteristics	There is about 96 seeds per gram, with seeds being on average 3.83 mm long and 2.67 mm. wide [3] Seeds are viable for 2 years [6]
Pre-Planting Propagule Treatments	Seeds can be cleaned by separating seeds from seed pods with a combine or stationary thresher and then using an air screen machine to remove unwanted material [2] a sequence of screens can also be used to separate seeds from organic material [1] Pre-treatment is not necessary but seeds that have been stored need hot water or acid scarification for germination. [9] Although pre-treatment is not necessary seeds are likely to germinate inconsistently, cutting or scratching a small nick on each seed or soaking them for 24 hours can create a more even germination window. [4] It has also been noted for germination to scratch seeds and then soak them in water for 24 hours. [6] When using hot water scarification steep seeds for twelve hours in water brought to a boil. [7] Store seeds in cool dry environment [3]
Growing Area Preparation / Annual Practices for Perennial Crops	Apply fertilizer (15-15-15) following outplanting [2]
Establishment Phase Details	Germinate seeds at 68˚F [6]
Length of Establishment Phase	14-56 days to germinate seeds [6]
Active Growth Phase	N/A
Length of Active Growth Phase	N/A
Hardening Phase	N/A
Length of Hardening Phase	N/A
Harvesting, Storage and Shipping	N/A
Length of Storage	N/A
Guidelines for Outplanting / Performance on Typical Sites	Plant plugs spaced about 24-36 inches apart to allow for plant growth and management [2] *L. polyphyllus* does not flower during first growing season [2] There is a higher survival rate for *L. polyphyllus* when

	transplanted instead of seeded directly as it may be outcompeted by weeds [2]
Other Comments	Seeds can be toxic to livestock in large quantities [2] and should be considered when outplanting *L. polyphyllus*
INFORMATION SOURCES	
References	See below
Other Sources Consulted	See below
Protocol Author	Raona Mecka
Date Protocol Created or Updated	06/07/15

This propagation protocol template was modified by J.D. Bakker from that available at: http://www.nativeplantnetwork.org/network/SampleBlankForm.asp

References

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5. Gilkey, H. M., & Dennis, L. R. J., (2001). *Handbook of Northwestern plants*. Corvallis, OR: Oregon State University.

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10. USDA, NRCS. 2015. The PLANTS Database (http://plants.usda.gov, 19 April 2015). National Plant Data Team, Greensboro, NC 27401-4901 USA

Other Sources Consulted

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This protocol has been update and revised from previous protocol completed 05/21/06 by Jack Hebert, the original protocol is attached

Species (common name, Latin name):

Bigleaf Lupine, Lupinus polyphyllus

Range

North from California to British Columbia

Climate, elevation

Low to fairly high elevations. (0 to 9800 feet)

Local occurrence (where, how common)

Habitat preferences

Prefers part shady, moderately dry, well-drained, sandy-loam soil to moist areas and stream banks. Can tolerate drought and wind, but not maritime exposure.

Plant strategy type/successional stage (stress-tolerator, competitor, weedy/colonizer, seral, late successional)

Associated species

May be collected as: (seed, layered, divisions, etc.)

Seed or division, though divisions are difficult.

Collection restrictions or guidelines

Allow pods to dry on plant; break open to collect seeds. Allow seed heads to dry on plants; remove and collect seeds

Seed germination (needs dormancy breaking?)

Scarify seed before sowing

Propagation recommendations (plant seeds, vegetative parts, cuttings, etc.)

From seed there are several options: Direct sow outdoors in fall; winter sow in vented containers, cold-frame or unheated greenhouse; stratify if sowing indoors and sow before last frost.

Soil or medium requirements (inoculum necessary?)

Prefers an acid to neutral soil, though can succeed in poor soils. Dislikes root disturbance.

This species has a symbiotic relationship with certain soil bacteria. These bacteria form nodules on the roots and fix atmospheric nitrogen. Some of this nitrogen is utilized by the growing plant but some can also be used by other plants growing nearby.

The plant prefers light (sandy), medium (loamy) and heavy (clay) soils, requires well-drained soil and can grow in nutritionally poor soil.

Installation form (form, potential for successful outcomes, cost)

Recommended planting density

Care requirements after installed (water weekly, water once etc.)

Normal rate of growth or spread; lifespan

Sources cited

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http://biology.burke.washington.edu/herbarium/imagecollection.php?Genus=Lupinus&Species=polyphyllus&Comp=Overview

http://davesgarden.com/pf/go/512/

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Compiled by Jack Hebert 5-21-06