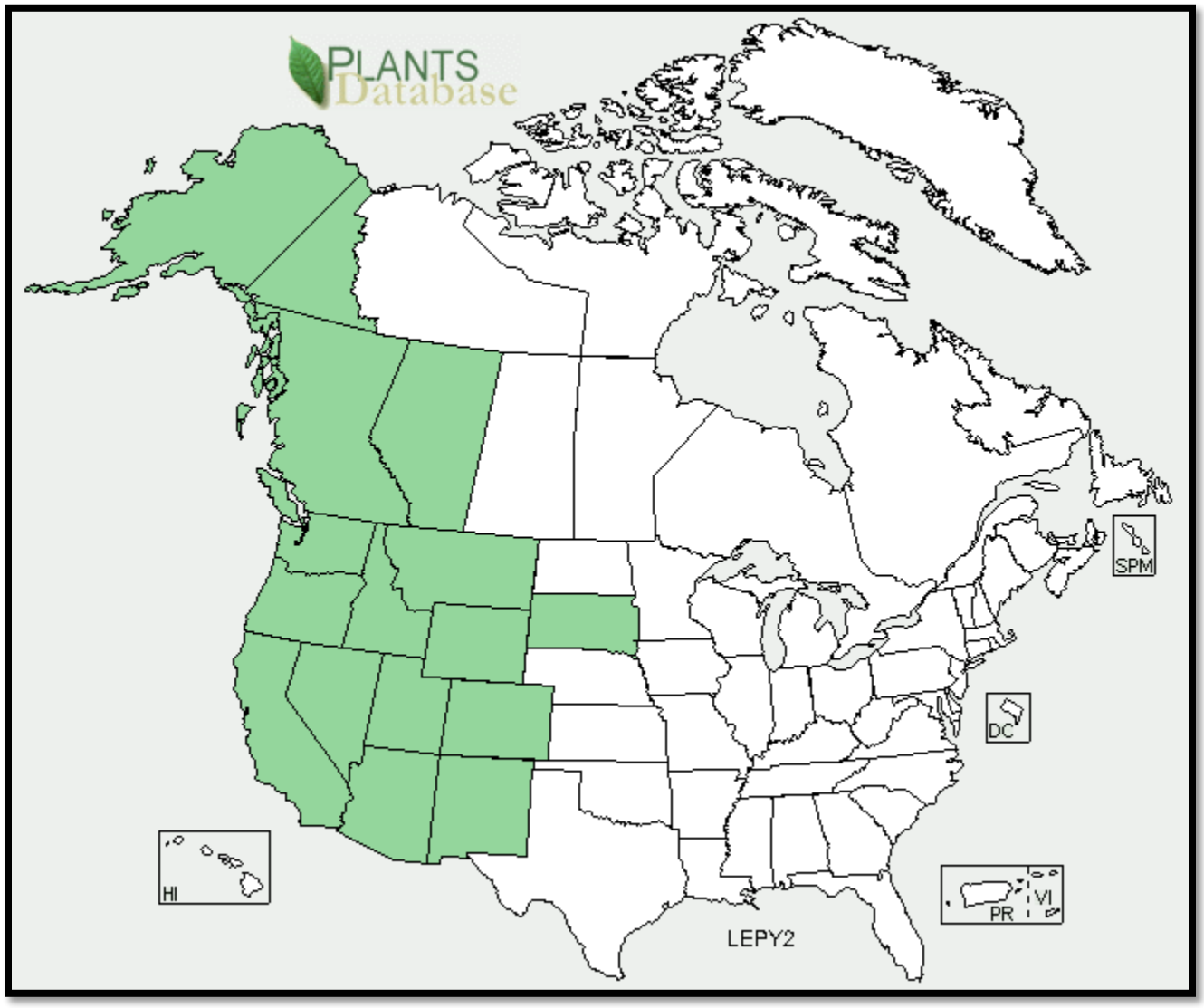
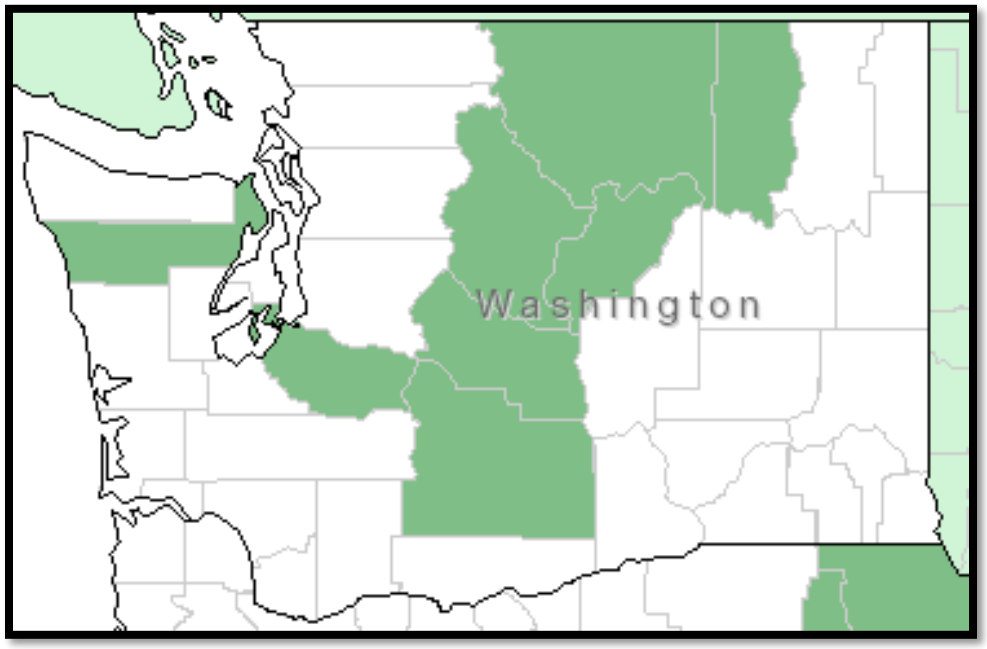
Plant Propagation Protocol for *Lewisia pygmaea*
ESRM 412 – Native Plant Production
Protocol URL: https://courses.washington.edu/esrm412/protocols/*LEPY2.pdf*

North America distribution



Washington State distribution



TAXONOMY	
Plant Family	
Scientific Name	*Portulacaceae*
Common Name	Purslane family
Species Scientific Name	
Scientific Name	*Lewisia pygmaea* (A. Gray) B.L. Rob
Varieties	*Lewisia pygmaea* (A. Gray) B.L. Rob. Var. *pygmaea* *Lewisia pygmaeum* (A. Gray) B.L. Robinson var. *aridorum* Bartlett
Sub-species	N/A
Cultivar	N/A
Common Synonym(s)	*Calandrinia grayi* Brittion *Calandrinia pygmaea* C. pygmaea (A. Gray) *Lewisia exarticulata* H. St. John *Lewisia glandulosa* (Rydberg) Clay *Lewisia minima* (A. Nelson) A. Nelson *Lewisia pygmaea* (A. Gray) B.L. Rob. Var. *pygmaea* *Lewisia pygmaeum* (A. Gray) B.L. Robinson *Lewisia pygmaeum* (A. Gray) B.L. Robinson var. *aridorum* Bartlett *Oreobroma aridorum* (Bartlett) A. Heller *Oreobroma pygmaeum (*A. Gray) Howell *Talinum pygmaeum* A. Gray *Lewisia Sierrae* Ferris

Common Name(s)	Alpine lewisia, Alpine bitter-root
Species Code (as per USDA Plants database)	LEPY2
GENERAL INFORMATION	
Geographical range	AK, Canada, WA, OR, CA, ID, NV, MT, WY, UT, AZ, CO, NM, SD- See maps above. (2)
Ecological distribution	Occurs in the Olympic and Cascade mountains of WA, British Columbia south to California, East to the Rocky Mountains. (6)
Climate and elevation range	Mid- high elevations in the mountains (6)
Local habitat and abundance	Open, often gravelly, moist to rather dry areas. Highly variable species with a wide distribution. (6)
Plant strategy type / successional stage	Prefers seasonally moist areas rocky slopes, wet granite sand or gravel, moist meadows and stream edges, partial shade. (6)
Plant characteristics	Low growing perennial with long, skinny, fat leaves that are about 4 inches long. They look sort of like the leaves of an Allium, or Ornamental Onion. The flower is small and is actually white with dark pink veins running through the petals. This makes it look pink. Its throat is green and holds a cluster of yellow stamen on green anthers. It grows to be 4 - 6 inches tall and spreads about 8 inches wide. (4)
PROPAGATION DETAILS	
Ecotype	Glacier National Park, 1585 m. elev., Montana
Propagation Goal	Plants
Propagation Method	Seed
Product Type	Container (plug)
Stock Type	490 ml containers
Time to Grow	7 months
Target Specifications	Stock Type: Container seedling Height: 6 to 10 true leaves, 4 cm Caliper: n/a Root System: firm plug in container. (7)
Propagule Collection Instructions	Seeds are collected in mid-summer. The development and ripening of the seeds occurs over a 2 to 3-week period. Seeds are shiny black at maturity. (7)
Propagule Processing/Pro	Seeds are hand cleaned at the nursery. Seed storage is at least 5 years under cool, dry conditions.

pagule Characteristics	Seed dormancy is classified as physiological dormancy. Seeds/Kg: unknown % Purity: 100% % Germination: N/A (7)
Pre-Planting Propagule Treatments	60 to 90-day cold, moist stratification. Seeds are placed in moist paper towels inserted into an opened zip-lock bag and placed in the refrigerator at 1 to 3 C. Germination occurs in early spring at temperatures slightly above freezing to 10C. (7)
Growing Area Preparation / Annual Practices for Perennial Crops	-Growing medium used is 6:1:1 milled spaghnum peat, perlite, and vermiculite with Osmocote controlled release fertilizer and Micromax fertilizer. -Conetainers are filled and sown in late fall and irrigated thoroughly prior to winter stratification. Seedlings germinate in spring under fluctuating outdoor temperatures and are grown under full sun exposure. -Seedlings are irrigated with automatic irrigation system in early morning until containers are thoroughly leached. -Average growing season of nursery is from late April after snowmelt to mid- October. (7)
Establishment Phase Details	Seedlings emerge 14 days after sowing under cool fluctuating temperatures during early spring. True leaves appear 3 weeks after germination.
Length of Establishment Phase	6 weeks. (7)
Active Growth Phase	Plants produced 4 to 6 true leaves and reached flowering maturity the first year. Plants are root tight in 490 ml containers by fall. (7)
Length of Active Growth Phase	16 weeks. (7)
Hardening Phase	Irrigation frequency is gradually reduced in September and October. (7)
Length of Hardening Phase	4 weeks. (7)
Harvesting, Storage and Shipping	Total time to harvest: 7 months Harvest date: September Storage conditions: overwinter in outdoor nursery under insulating foam and snow cover.(7)
Length of Storage	5 months. (7)
Guidelines for Outplanting/ Performance on Typical Sites	No information

Other Comments	N/A
INFORMATION SOURCES	
References	1. Knoke, D; Giblin, D. 2018. "*Lewisia pygmaea"*. Retrieved from http://biology.burke.washington.edu/herbarium/imagecollection.php?Genus=Lewisia&Species=pygmaea *2. "Lewisia pygmaea (A. Gray) B.L. Rob. alpine lewisia"*. Retrieved from https://plants.usda.gov/core/profile?symbol=lepy2 3. TWC staff. 2007. *"Lewisia pygmaea"*. Retrieved from https://www.wildflower.org/plants/result.php?id_plant=LEPY2 4. "Pygmy bitterroot". Retrieved from http://www.blueplanetbiomes.org/pygmy_bitterroot.htm 5. Kratz, Andrew. "Pygmy Bitterroot (*Lewisia pygmaea*)". Retrieved from https://www.fs.fed.us/wildflowers/plant-of-the-week/lewisia_pygmaea.shtml 6. "Flora of North America". Retrieved from http://www.efloras.org/florataxon.aspx?flora_id=1&taxon_id=242415778 7. Luna, T; Evans, J; Wick, D. 2008. *Lewisia(pygmaea).* Retrieved from: https://npn.rngr.net/renderNPNProtocolDetails?selectedProtocolIds=portulacaceae-lewisia-131&referer=wildflower
Other Sources Consulted	"Alpine Lewisia (*Lewisia pygmaea)*". Retrieved from https://garden.org/plants/view/82929/Alpine-lewisia-Lewisia-pygmaea/
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Date Protocol Created	5/16/2018