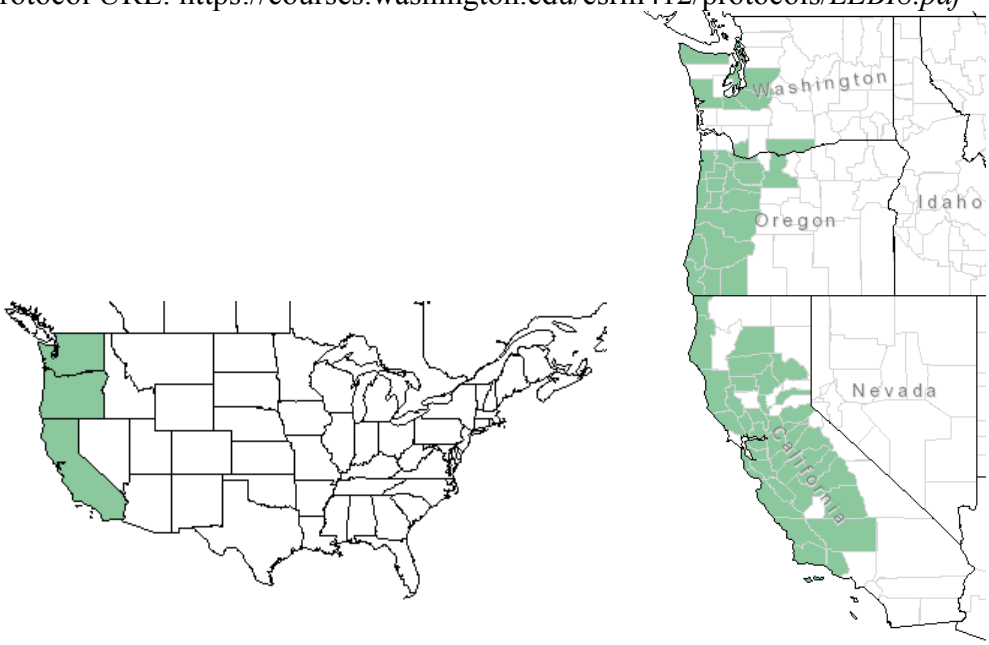
Plant Propagation Protocol for *Leptosiphon Bicolor*
ESRM 412 – Native Plant Production
Protocol URL: https://courses.washington.edu/esrm412/protocols/*LEBI8.pdf*



TAXONOMY	
Plant Family	
Scientific Name	Polemoniaceae
Common Name	Phlox family
Species Scientific Name	
Scientific Name	Leptosiphon bicolor Nutt.
Varieties	
Sub-species	
Cultivar	
Common Synonym(s)	*Linanthus bicolor* (Nutt.) Greene, *Linanthus bicolor* (Nutt.) Greene subsp. *bicolor*
Common Name(s)	True babystars, bicolored flaxflower
Species Code (as per USDA Plants database)	LEBI8
GENERAL INFORMATION	
Geographical range	West of the Cascades, Vancouver Island, B. C., to California, east through the Columbia Gorge (see above maps above).[4]
Ecological distribution	Found in open, dry or vernally moist prairies.[4]
Climate and elevation range	Low elevations.[4]

Local habitat and abundance	
Plant strategy type / successional stage	Scatters; blooms April-June.[3]
Plant characteristics	*L. bicolor* is a herbaceous, taprooted annual that grows up to 15 cm tall. Leaves are opposite, sessile, and palmately cleft into narrow lobes, giving them the appearance of a whorl of linear leaves. Flowers are pink to purplish or white, on slender tubes that become a flared, bright yellow throat. Fruit is a three chambered capsule with several seeds per chamber. Seeds become mucilaginous (sticky, coated in mucilage) when wetted.[5]
Seed Propagation[1]	
Ecotype	Lane co, Oregon (near Eugene)[1]
Propagation Goal	Plants
Propagation Method	Seed
Product Type	Plug
Stock Type	
Time to Grow	One to two weeks.
Target Specifications	Germinated seedling
Propagule Collection Instructions	Collect capsules in late summer. Thresh before sieving out seed.[6]
Propagule Processing/Propagule Characteristics	N/A
Pre-Planting Propagule Treatments	None required.[1]
Growing Area Preparation / Annual Practices for Perennial Crops	Fill cone-tainers with Sunshine #1, a soil-less, peat-based media. Amend media with micronutrients (Micromax) and slow-release fertilizer (Osmocote 14-14-14).[1]
Establishment Phase Details	Set flats of cone-tainers in a greenhouse at a moderate temperature (70 degree days/ 50 degree nights).[1]
Length of Establishment Phase	One to two weeks.[1]
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	N/A
Other Comments	

Seed Propagation[2]	
Ecotype	Seeds were taken from 10 sites in Henry W. Coe State Park, near Morgan Hill, CA.[2]
Propagation Goal	Plants
Propagation Method	Seed
Product Type	Container
Stock Type	
Time to Grow	
Target Specifications	N/A
Propagule Collection Instructions	Collect capsules in late summer. Thresh before sieving out seed.[6]
Propagule Processing/Propagule Characteristics	N/A
Pre-Planting Propagule Treatments	To initiate germination, each seed was placed on moist Kim-wipes in separate, covered petri dishes. Dishes were kept in a 2 degrees C refrigerator for 2 days, after which they were removed and put under fluorescent light at 20 degrees celsius for two additional days.[2]
Growing Area Preparation / Annual Practices for Perennial Crops	25-cm conetainer filled with saturated potting soil.[2]
Establishment Phase Details	Set flats of cone-tainers in a greenhouse at a moderate temperature (70 degree days/ 50 degree nights).[2]
Length of Establishment Phase	One to two weeks.
Active Growth Phase	After the radicles emerged, each seedling was transferred to individual conetainers, which were arranged randomly in racks on the greenhouse bench. For the first week, plants were misted and watered daily. Then plants were watered to saturation every 2 days for 4 weeks.[2]
Length of Active Growth Phase	5 weeks.
Hardening Phase	Plants were watered to saturation every 4 days for the remainder of the experiment. Every 2 weeks, plants were fertilized with a 5% solution of 20:20:20: NPK fertilizer. Air temperature varied betweed 10 and 30 degrees C. Relative humidity varied between 30 and 90%.[2]
Length of Hardening Phase	N/A
Harvesting, Storage and Shipping	N/A
Length of Storage	N/A
Guidelines for Outplanting / Performance on Typical Sites	N/A

Other Comments	This greenhouse protocol was part of a study that examined how floral traits of *L. bicolor* varied with moisture availability. Floral size increased with site moisture. *L. bicolor* was chosen because it is rarely influenced by pollinators, is highly selfing, and is therefore unlikely to vary in genetic flower size.[2]
	INFORMATION SOURCES
References	1) Bartow, Amy. "Protocol Information, Linanthus Bicolor (Nutt.) Greene." *Native Plant Network*. N.p., n.d. Web. 18 May 2015. 2) Lambrecht, Susan C. "Floral Water Costs and Size Variation in the Highly Selfing Leptosiphon Bicolor (Polemoniaceae)." *International Journal of Plant Sciences* 174.1 (2013): 74-84. Web. <http://www.biology.sjsu.edu/facultystaff/lambrecht/pdfs/2013-slc-ijps-floral.pdf>. 3) "Leptosiphon Bicolor." - *Puget Prairie Plants*. N.p., 21 May 2012. Web. 18 May 2015. 4) "Plants Profile for Leptosiphon Bicolor (true Babystars)." *USDA PLANTS.* N.p., n.d. Web. 18 May 2015. 5) Pojar, Jim, A. MacKinnon, and Paul B. Alaback. *Plants of the Pacific Northwest Coast: Washington, Oregon, British Columbia & Alaska*. Redmond, WA: Lone Pine Pub., 1994. Print. 6) Woodger, Terry A. *The Pictorial Guide to Seeds of the World: An Introduction Into The Collection, Cleaning, and Storage of Seeds*. Boca Raton, FL: Universal-Publishers, 2011. Print.
Other Sources Consulted	7) Abrams, Le Roy, and Roxana S. Ferris. *An Illustrated Flora of the Pacific States: Washington, Oregon, and California*. Stanford University: Stanford UP, 1923. N. pag. Print. 8) Franklin, Jerry F., and C. T. Dyrness. *Natural Vegetation of Oregon and Washington*. Portland, Or.: Pacific Northwest Forest and Range Experiment Station, Forest Service, U.S. Dept. of Agriculture, 1973. Print. 9) Goodwillie, Carol. "Inbreeding Depression and Mating Systems in Two Species of Linanthus (Polemoniaceae)." *Heredity* 84.3 (2000): 283. Web. <http://www.nature.com/hdy/journal/v84/n3/full/6886560a.html>.

	10) Turner, Mark, and Phyllis Gustafson. *Wildflowers of the Pacific Northwest*. Portland, Or.: Timber, 2006. Print.
Protocol Author	Colleen Brennan
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