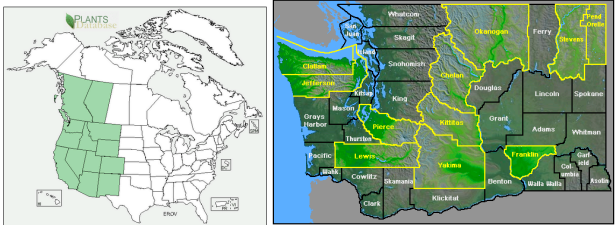



Plant Propagation Protocol for *Eriogonum ovalifolium*
 ESRM 412 – Native Plant Production

TAXONOMY	
Family Names	
Family Scientific Name:	Polygonaceae
Family Common Name:	Buckwheat family
Scientific Names	
Genus:	<i>Eriogonum</i>
Species:	<i>ovalifolium</i>
Species Authority:	Nutt.
Variety:	<i>ovalifolium</i> , <i>purpureum</i> , <i>caelestinum</i> , <i>depressum</i> <i>eximium</i> , <i>nivale</i> , <i>williamsiae</i> ³
Sub-species:	
Cultivar:	
Authority for Variety/Sub-species:	<i>Eriogonum ovalifolium</i> var. <i>purpureum</i> Durand <i>Eriogonum ovalifolium</i> var. <i>caelestinum</i> Reveal <i>Eriogonum ovalifolium</i> var. <i>depressum</i> Blank <i>Eriogonum ovalifolium</i> var. <i>eximium</i> J. T. Howell <i>Eriogonum ovalifolium</i> var. <i>nivale</i> M. E. Jones
Common Synonym(s)	<i>Eriogonum ovalifolium</i> var. <i>multiscapum</i> <i>Eriogonum ovalifolium</i> var. <i>nevadense</i>
Common Name(s):	Cushion buckwheat Oval-leafed Eriogonum
Species Code (as per USDA Plants database):	EROV
GENERAL INFORMATION	
Geographical range (distribution maps for North America and Washington state)	 <p align="center">Distribution in US¹² Distribution in WA⁵</p>
Ecological distribution (ecosystems it occurs in, etc):	Sagebrush deserts, juniper and ponderosa pine forests, and alpine ridges.
Climate and elevation range	Annual precipitation with a principal peak in December (in the form of snow) and a smaller peak in May (in the form of rain). A period of relative drought (surface soil temperatures occasionally exceed 65°) occurs from mid-June through September. ⁴ Grows between 1400 and 2400 m elevation ⁸ At lower elevations annual precipitation averages 14 cm per year, and temperatures range from -17° to 43°C.

	At higher elevations precipitation averages 58 cm per year, and temperatures range from -28° to 32°C. ¹
Local habitat and abundance; may include commonly associated species	Abundant especially at Cascade mountains in northern CA, OR, and southern WA. These peaks include Mount Lassen, Mt. Shasta, Mt. Maxama, Mt. St. Helens, and Mt. Rainier. ²
Plant strategy type / successional stage	Drought tolerant ²
Plant characteristics	Low, densely matted, compact perennial herbs Densely leaved and caudex (axis of woody plant) branches arising from a woody taproot ⁹
PROPAGATION DETAILS	
Ecotype:	In south central Idaho along the northwestern edge of the Snake River Plain (43°28' N, 114°30'W). ¹¹
Propagation Goal:	Plants
Propagation Method:	Seed
Product Type:	Bareroot
Time to Grow:	About 16 weeks ¹²
Target Specifications:	Leaf blades 5-20 mm long and 3-15 mm wide Plant height up to 30 cm tall and 40 cm wide ¹⁴ 
Propagule Collection (how, when, etc):	From June to August, the upper 7cm of soil from a 10cm ² area under six <i>E. ovalifolium</i> individuals was collected. Those areas were having no other plants within 50 cm of their canopy. Then, soil samples were sieved through a 2mm screen and seeds were collected. ⁴
Propagule Processing/Propagule Characteristics (including seed density (# per pound), seed longevity, etc):	In natural habitats, the plant produces 0.02 to 1.0 ounces of seed per plant. Number of seed per pound ranges from 585,400 to 616,740. Seed germination ranges from 42% to 73% in 65 days trial. Also, vigorous threshing may damage the seed coat and result in reduced seed longevity. Cleaning of threshed seed can be performed with a small office clipper. ¹¹
Pre-Planting Propagule Treatments	Seed viability can also be determined by a tetrazolium

(cleaning, dormancy treatments, etc):	test, which involve soaking seeds for 4 days in distilled water, splitting the seeds, and applying tetrazolium solution. After 10 days, reddish embryo indicates viable seeds. ⁴ Before seeding, seeds can be placed on damp filter paper for two days. ¹²
Growing Area Preparation / Annual Practices for Perennial Crops (growing media, type and size of containers, etc):	In a pot test using nitrogen, phosphorus, potassium, and sulfur, the plant responded only to nitrogen fertilization. ¹¹
Establishment Phase (from seeding to germination):	Seeds could be planted at the site as 4-inch container stock in May without soil amendments other than the nursery planting mix. Drip system with a 1 gallon per hour emitter was used and each plant was irrigated for 2 hours. ¹¹
Length of Establishment Phase:	Less than a week
Active Growth Phase (from germination until plants are no longer actively growing):	The wintergreen species <i>Eriogonum</i> has much lower levels of nutrient demand and requires a longer season to complete growth and reproduction. From the experiment done at the Mt. Adams site in 1982, snowmelt was on August 1 st and much shorter growing season was resulted with lower reproductive and growth level. ²
Length of Active Growth Phase:	June to September
Hardening Phase:	In fall, natural wet chilling (stratification) of the seed occurs throughout the winter. ¹¹
Harvesting, Storage and Shipping (of seedlings):	Around last week in October or first week in November, fall seeding is recommended. Seeds should be collected when the majority of petals have dried to a light brown color. ¹¹
Length of Storage:	In this particular experiment, seeds were removed from empty fruits and stored in coin envelopes at 4°C for four months before use. ¹²
Guidelines for Outplanting / Performance on Typical Sites (elapsed time before flowering):	Seed production for 24 inch spacing produced 33 to 200% more seed on a per acre basis than 36 or 48 inch row spacings. ¹¹
Other Comments (including collection restrictions or guidelines, if available):	From the experiment, high rates of outcrossing was observed in <i>E. ovalifolium</i> and indicated that <i>E. ovalifolium</i> is dependent on pollen vectors for successful reproduction and production of fit progeny Thus, reduction of pollinator service could be decrease the plant population. ⁷ Continued habitat destruction and fragmentation, primarily from limestone mining activities, contributes

	to loss of individuals, loss and reductions of populations, and fragmentation of remaining <i>E. ovalifolium</i> populations. As a result of existing habitat and population losses, continuing threats, and lack of protective mechanisms, the US Fish and Wildlife Service listed <i>E. ovalifolium</i> as endangered ⁶
INFORMATION SOURCES	
References (full citations):	See below
Protocol Author (First and last name):	Sarah Choe
Date Protocol Created or Updated (MM/DD/YY):	06/08/12

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

Reference:

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- ³Cole, N. H. "Comparative Physiological Ecology of the Genus *Eriogonum* in the Santa Monica Mountains, Southern California." *Ecological Society of America* 37.1 (1967): 1-24. *JSTOR*. Web. 30 Apr. 2012. <<http://www.jstor.org/stable/1948480> .>.
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