Plant Propagation Protocol for *Ericameria bloomeri*
ESRM 412 – Native Plant Production
Protocol URL: https://courses.washington.edu/esrm412/protocols/ERBL2.pdf

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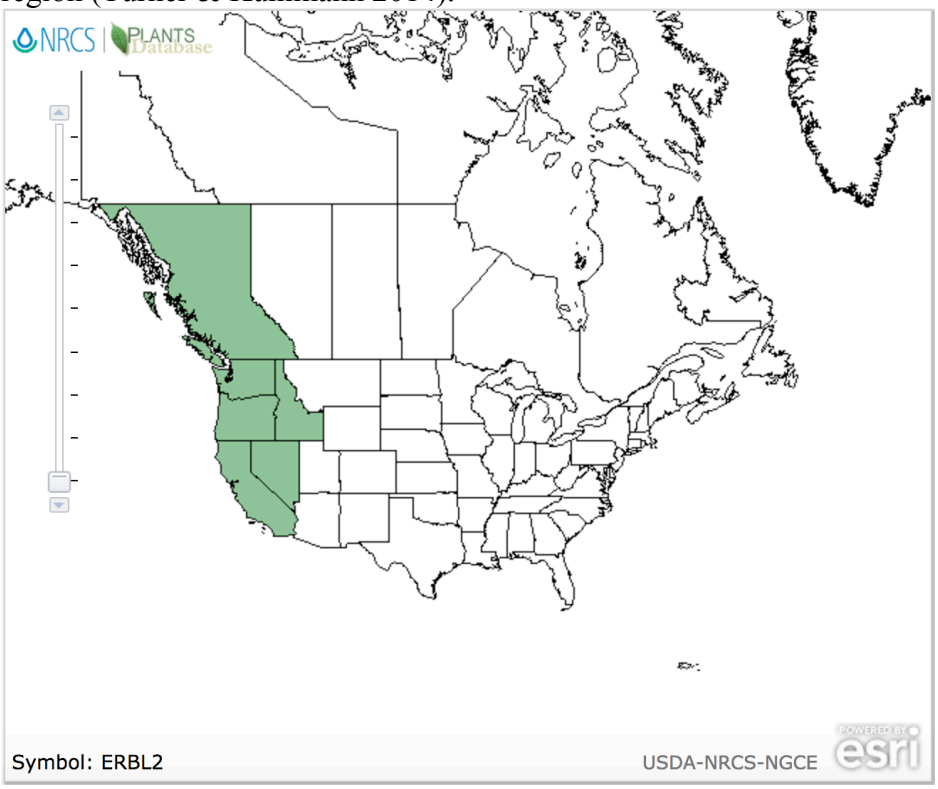
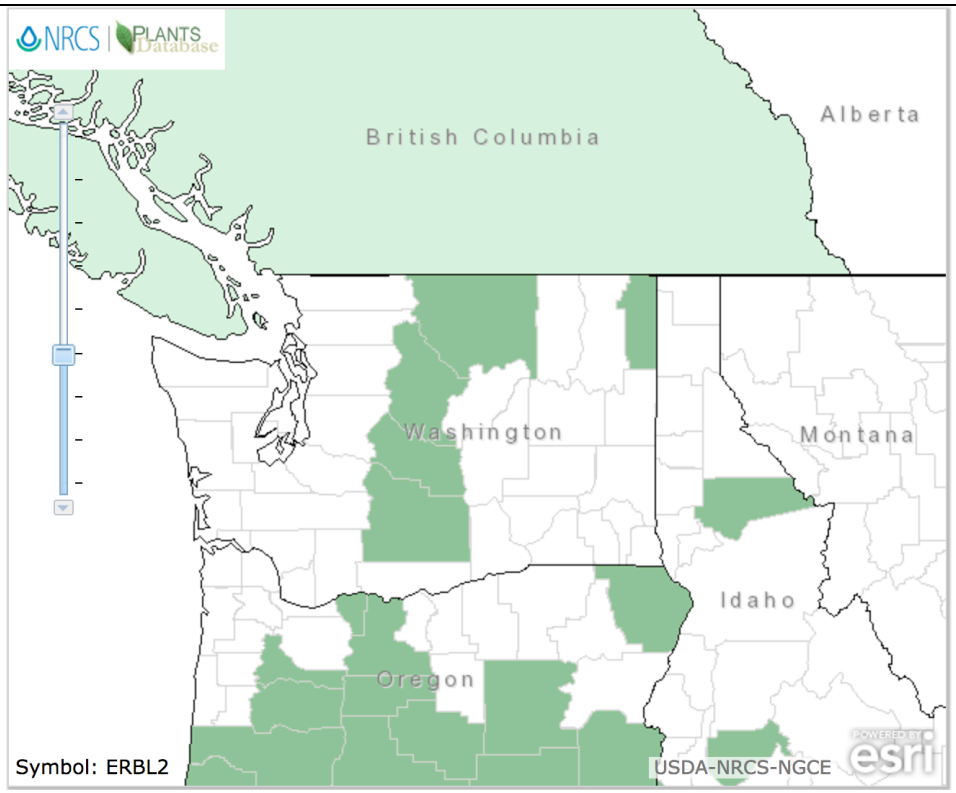
TAXONOMY	
Plant Family	
Scientific Name	Asteraceae/Compositae
Common Name	Aster Family
Species Scientific Name	
Scientific Name	*Ericameria bloomeri* (A. Gray) J.F. Macbr.
Varieties	N/A

Sub-species	N/A
Cultivar	N/A
Common Synonym(s)	*Haplopappus bloomeri* A. Gray *Haplopappus bloomeri* A. Gray var. *sonnei* (A. Gray) H.M. Hall *Haplopappus bloomeri* A. Gray var. *sonnei* (A. Gray) Greene *Haplopappus bloomeri* A. Gray var. *angustatus* (USDA).
Common Name(s)	Rabbitbrush, Bloomer's Goldenbrush, Goldenweed, Heath Goldenrod
Species Code (as per USDA Plants database)	ERBL2
GENERAL INFORMATION	
Geographical range	Central/Northeastern Washington, south through the Cascades; in mountainous regions of eastern Oregon and California as well as Nevada and Idaho (Knoke). Extremely rare in British Columbia; possibly extirpated from this region (Turner & Kuhlmann 2014).  Source: USDA Plants Database

	 Source: USDA Plants Database
Ecological distribution	Grows in dry, rocky forested areas, typically on slopes or open forests (Knoke). Often grows in open mountainous zones (Klinkenberg 2017).
Climate and elevation range	Mid to high elevation range, typically from 5,000 to 11,000 feet (Wenk 2015).
Local habitat and abundance	Commonly found in dry, rocky, open areas throughout central Washington. Known to be associated with *Pinus ponderosa, Pinus contorta, Purshia tridentata, Ribes* sp., and *Ceanothus velutinus* (Consortium of Pacific Northwest Herbaria).
Plant strategy type / successional stage	This is a seral species in Sierran montane forests. In the Pacific Northwest and other ecosystems west of the Great Basin, this species is a post-disturbance colonizer that persists for long periods of time, becoming a subclimax species in some *Pinus*-dominated forest ecosystems (Hall 1928). This species is a wind-pollinator and self-pollinator due to an inability to attract pollinators. Seeds are also wind-dispersed (Douglas 1999).
Plant characteristics	Multiple-branched shrub, reaching 2-3 feet in height at maturity. Stems are thin and brittle, and can be glabrous or pubescent (Knoke; Turner & Kuhlmann 2014). Leaves are linear and very thin, approximately 1-3 inches long, straight or contorted in shape, tapering to a point at the leaf tip. Leaves are deciduous and leaf arrangement is alternate (Turner & Kuhlmann 2014). Flowers are clustered at the end of stems with long, narrow inflorescences; flowers are bright yellow in color. Both ray and disk flowers occur (Kuhlmann & Turner 2014). Bloom occurs from July to September (Knoke). Fruits are small

	glabrous achenes with thin white bristles (Klinkenberg).
PROPAGATION DETAILS (Seed Propagation at NRCS Corvallis Plant Materials Center)	
Ecotype	Crater Lake National Park, Elevation 6,000 to 7,000 feet (Trindle & Flessner 2003).
Propagation Goal	Plants
Propagation Method	Seed
Product Type	Container (plug) (Trindle & Flessner 2003).
Stock Type	One gallon containers (Trindle & Flessner 2003).
Time to Grow	14-16 months (Trindle & Flessner 2003).
Target Specifications	Substantially branching plant with woody base and healthy root system, free of rot, that fills the one-gallon container (Trindle & Flessner 2003).
Propagule Collection Instructions	Collection of seeds from wild site in late August to September, when seed crop was available undamaged (substantial insect damage was noted in some years). Seeds were stored in paper bags and air-dried in nursery (Trindle & Flessner 2003).
Propagule Processing/Propagule Characteristics	Information about seeds of a similar species, *Ericameria nauseosa:* Seed density is 693,000 seeds per pound. Seed longevity is up to three years in proper storage conditions (Scheinost et al. 1998).
Pre-Planting Propagule Treatments	After drying, seeds were gently hand-rubbed and shaken over a fine screen to remove chaff. Note that during this specific process, many seeds showed signs of insect damage and were likely non-viable. Put seeds in cold-moist stratification for 2 weeks (experimentation showed that stratification is necessary for germination but longer periods of stratification did not enhance germination) (Trindle & Flessner 2003).
Growing Area Preparation / Annual Practices for Perennial Crops	Soil mix should have excellent drainage; in this protocol, Fison's Sunshine #3 soil-less potting mix with added perlite was used. Seeds were sown in a greenhouse with lots of sun exposure in the springtime, when temperatures were approximately 85° F during the day and 55-65° F at night; no bottom heat. (Trindle & Flessner 2003). No information available about containers used for sowing.
Establishment Phase Details	Seedlings will emerge slowly and are very susceptible to damping-off, so they should be frequently monitored. No fertilizer should be used during this stage. Only light watering is needed (Trindle & Flessner 2003).
Length of Establishment Phase	8 to 10 weeks (Trindle & Flessner 2003).
Active Growth Phase	Successfully established seedlings were transplanted into 3.5" pots with a growing media of 5:1 Fison's Sunshine #3 soil-less mix and horticultural sand. Fertilizer (Peter's triple 20 at half-strength) was given monthly, in small amounts. Plants were monitored carefully for overwatering. After

	overwintering in a greenhouse on a nursery bench, established plants were transplanted to one-gallon pots in the spring and put outside in full sun from May to August (Trindle & Flessner 2003).
Length of Active Growth Phase	4 months – May to August (Trindle & Flessner 2003).
Hardening Phase	Fertilization treatment was suspended and watering occurred at more infrequent intervals. Plants were still outside, exposed to full sun (Trindle & Flessner 2003).
Length of Hardening Phase	6 weeks (Trindle & Flessner 2003).
Harvesting, Storage and Shipping	Shipped in a refrigerated van to outplanting site (Crater Lake National Park) (Trindle & Flessner 2003).
Length of Storage	Plants were stored overwinter in an outdoor lean-to shelter before transplanting in early spring. After shipping to outplanting site, plants were stored in refrigeration for 2-4 weeks before outplanting occurred (Trindle & Flessner 2003).
Guidelines for Outplanting / Performance on Typical Sites	Root-ball should be scored before outplanting. Outplanting success of the first year at Crater Lake National Park was good (Trindle & Flessner 2003).
Other Comments	Red List species in British Columbia (Klinkenberg); known to be completely extirpated from British Columbia (Douglas 1999). Idaho Bureau of Land Management Sensitive Species Type 4 (no information available on collection restrictions) (Idaho Department of Fish and Game).

INFORMATION SOURCES

References	Consortium of Pacific Northwest Herbaria. N.d. "Ericameria bloomeri." Web. Retrieved from http://www.pnwherbaria.org/data/results.php?DisplayAs=WebPage&ExcludeCultivated=Y&GroupBy=ungrouped&SortBy=ScientificName&SearchAllHerbaria=Y&QueryCount=1&Genus1=Ericameria&Species1=bloomeri&Zoom=4&Lat=55&Lng=-135&PolygonCount=0. Accessed 4 May 2017. Douglas, George. 1999. "Status of Rabbitbrush Goldenweed in British Columbia." British Columbia Ministry of Environment, Lands, and Parks, Wildlife Branch and Resources Inventory Branch. Web. Retrieved from http://www.env.gov.bc.ca/wld/documents/statusrpts/b92.pdf. Accessed 4 May 2017. Hall, Harvey. *The Genus Haplopappys: A Phylogenic Study in the Compositae.* Carnegie Institute of Washington, 1928. Print.

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