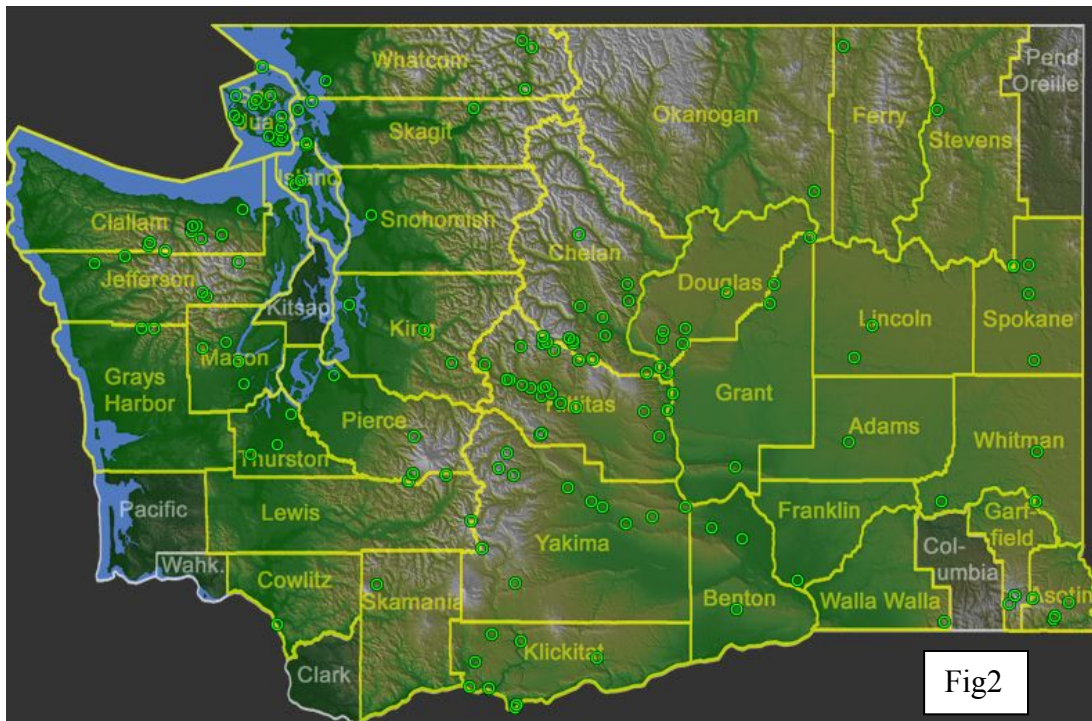
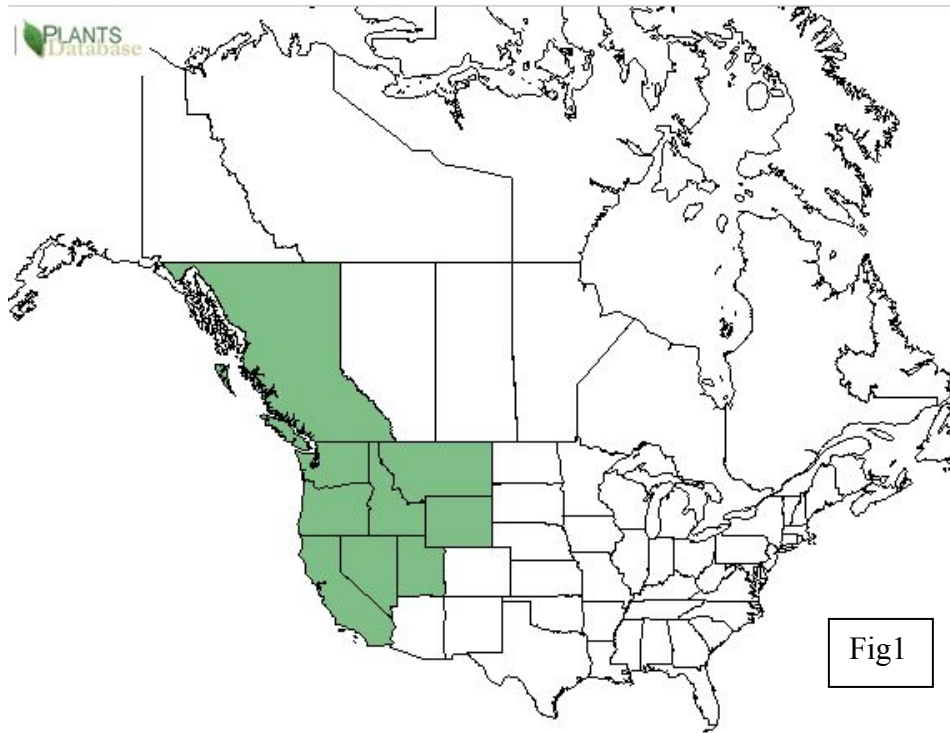


**Plant Propagation Protocol for *Eriophyllum lanatum*  
ESRM 412 – Native Plant Production  
Spring 2015**



Source: [1]: USDA PLANTS [2]:Databaseburke.washington.edu

<b>TAXONOMY</b>	
<b>Plant Family</b>	
Scientific Name	Asteraceae
Common Name	Sunflower
<b>Species Scientific Name</b>	
Scientific Name	<i>Eriophyllum lanatum</i> (Pursh) Forbes
Varieties	
Sub-species	<i>Eriophyllum lanatum</i> var. <i>achillaeoides</i> (DC.) Jeps. <i>Eriophyllum lanatum</i> var. <i>aphanactis</i> J.T. Howell <i>Eriophyllum lanatum</i> var. <i>arachnoideum</i> (Fisch. & Avé-Lall.) Jeps. <i>Eriophyllum lanatum</i> var. <i>aroceum</i> (Greene) Jeps. <i>Eriophyllum lanatum</i> var. <i>auneatum</i> (Kellogg) Jeps. <i>Eriophyllum lanatum</i> var. <i>grandiflorum</i> (A. Gray) Jeps. <i>Eriophyllum lanatum</i> var. <i>hallii</i> Constance <i>Eriophyllum lanatum</i> var. <i>integrifolium</i> (Hook.) <i>Eriophyllum lanatum</i> var. <i>lanatum</i> (Rydb.) Jeps. <i>Eriophyllum lanatum</i> var. <i>lanceolatum</i> (Howell) Jeps. <i>Eriophyllum lanatum</i> var. <i>leucophyllum</i> (DC.) W.R. Carter <i>Eriophyllum lanatum</i> var. <i>obovatum</i> (Greene) H.M. Hall
Cultivar	
Common Synonym(s)	
Common Name(s)	Sunflower, Oregon sunshine, common woolly sunflower
Species Code (as per USDA Plants database)	ERLA6
<b>GENERAL INFORMATION</b>	
Geographical range	Grasslands and dry forest from southern British Columbia to California and east to Montana, Wyoming, and Utah.
Ecological distribution	Dry, open, often rocky areas at low to mid-elevations
Climate and elevation range	Dry and sunny; Lowlands to mid elevations in the mountains. (Sierra Smith)
Local habitat and abundance	Selaginella wallacei, Allium acuminatum, Grindelia integrifolia, Achillea, Juncus, Bromus, Erodium, Centaurea, Sisymbrium, Agropyron, Anthriscus, Salix, Poa, Medicago, Nepeta, Chrysopsis (Sierra Smith)
Plant strategy type / successional stage	Long-lived herbaceous perennial. Rapid colonizer. Produces seed the first year.
Plant characteristics	Perennial herb 10-60 cm tall with several often lax stems from the base. Woolly, grey-green leaves usually lobed but may be entire, 1-8 cm long. Bright yellow flowers, 2-5 cm across, singly atop long stems. Fruit is

	a slender four-angled achene with a pappus of 6-12 translucent scales, or a toothed crown (Pojar and MacKinnon,1994).
<b>PROPAGATION DETAILS</b>	
Ecotype	
Propagation Goal	Plants
Propagation Method	Seed
Product Type	Container (plug)
Stock Type	10 cu. in.
Time to Grow	4 Months
Target Specifications	Tight root plug in container.
Propagule Collection Instructions	Fruit is an achene which ripens in mid to late July. Seed is dark grayish brown to nearly black in color. The pappus is reduced to short scales or is lacking entirely and the achene is not windborne. Seed will hold in the inflorescence longer than the seed of many other members of Asteraceae, but will shatter within a week or so of ripening. Small amounts are collected by hand and stored in paper bags or envelopes at room temperature until cleaned. 818,000 seeds/lb (Hassell et al 1996).
Propagule Processing/Propagule Characteristics	Small amounts are rubbed to free the seed, then cleaned with an air column separator. Larger amounts can probably be threshed with a hammermill, then cleaned with air screen equipment. Clean seed is stored in controlled conditions at 40 degrees Fahrenheit and 40% relative humidity.
Pre-Planting Propagule Treatments	Seed stored at room temperature remains viable after 8 years (Mooring 1975) but germination decreases sharply after 2 years (Mooring 2001). Seed collected in Washington germinated at 80% in the dark at 20oC and 84% in the dark at alternating temperatures of 20/30oC (Maguire & Overland 1959).  Extended cold, moist stratification is needed. Unpublished data from trials conducted at the Pullman Plant Materials Center revealed that no germination occurred without stratification. 45 days of cold, moist stratification resulted in 10% germination. 90 days of cold, moist stratification resulted in 75% germination. Some seed germinated while in stratification, indicating germination will occur at low temperatures. Containers sown in November and left outside under cool, fluctuating spring temperatures achieved 82% germination. Seedlings which germinated in the

	<p>greenhouse thrived in the constant warmth, so it is likely the longer stratification time and not the cool, fluctuating temperature was the factor in the increased germination.</p> <p>Seed stored in controlled conditions at 5oC and 40% relative humidity for 1 year and then sown without pretreatment failed to emerge, indicating after-ripening is not a factor in germination.</p>
Growing Area Preparation / Annual Practices for Perennial Crops	<p>In October or November seed is sown in 10 cu. in. Ray Leach Super cell conetainers filled with Sunshine #4 and covered lightly. A thin layer of coarse grit is applied to the top of the planting soil to prevent seeds from floating during watering. Conetainers are watered deeply and placed outside. Conetainers are moved to the greenhouse in January. Alternately, seed can be moist stratified in a refrigerator at 35-40 degrees F for 90 or more days before sowing in the greenhouse. Some seed will germinate during stratification.</p>
Establishment Phase Details	<p>Medium is kept moist until germination occurs. Emergence usually begins in 3 days and is complete in 13 days</p>
Length of Establishment Phase	2 weeks
Active Growth Phase	<p>Plants are watered deeply every other day and fertilized once per week with a complete, water soluble fertilizer containing micro-nutrients. Plants may require water every day during the final part of the active growth period.</p>
Length of Active Growth Phase	3 months
Hardening Phase	<p>Plants are moved to the cold frame in late March or early April, depending on weather conditions. They are watered every other day if the weather is cool, and every day during hot, dry spells.</p>
Length of Hardening Phase	2-4 weeks
Harvesting, Storage and Shipping	<p>Good germination after cold storage and fall planting in cold frames. Dry down to 5-8% moisture. Store cold at 0-2° C.</p>
Length of Storage	Many years when well stored
Guidelines for Outplanting / Performance on Typical Sites	<p>Transplanting is done in early May by using an electric drill and portable generator to drill 1.5 inch diameter holes at the planting site.</p> <p>Survival in seed increase plantings without competing vegetation exceeds 95%. Transplanting into sites with existing vegetation may reduce survival and vigor depending on weather conditions following planting.</p> <p>Plants produce a few flowers and small amounts of seed late in the first season.</p>

Other Comments	
<b>INFORMATION SOURCES</b>	
References	See below
Other Sources Consulted	Previous protocol compiled by Sierra Smith on 4/11/06 <a href="http://depts.washington.edu/propplnt/Plants/Eriophyllum%20lanatum.htm">http://depts.washington.edu/propplnt/Plants/Eriophyllum%20lanatum.htm</a>
Protocol Author	Jiannan Huang
Date Protocol Created or Updated	4/27/2015

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**Previous protocol by Sierra Smith on 4/11/06**  
***Eriophyllum lanatum* (Pursh) Forbes var. *lanatum***  
**Oregon Sunshine/Woolly Sunflower**



of Joy Creek Nursery



Courtesy of Sheila Williams

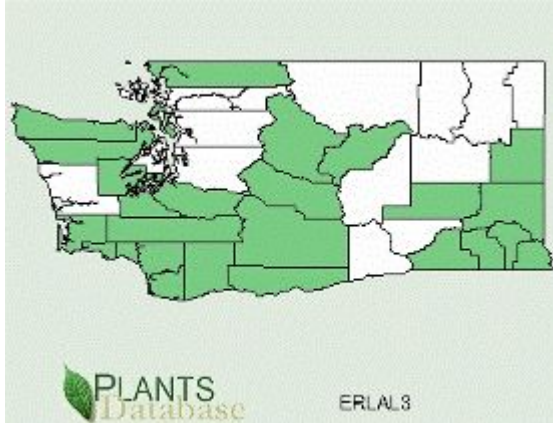
Courtesy

**Range:** WA, OR, ID, MT and lower BC

**Climate, elevation:** Lowlands to mid elevations in the mountains. Dry and sunny



Local occurrence (where, how common):



Common

Habitat preferences: Dry meadows and rocky slopes

Plant strategy type/successional stage: Long-lived herbaceous perennial. Rapid colonizer. Produces seed the first year.

Associated species: *Selaginella wallacei*, *Allium acuminatum*, *Grindelia integrifolia*, *Achillea*, *Juncus*, *Bromus*, *Erodium*, *Centaurea*, *Sisymbrium*, *Agropyron*, *Anthriscus*, *Salix*, *Poa*, *Medicago*, *Nepeta*, *Chrysopsis*

May be collected as: Seeds. Collect whole fruiting heads when fruit is completely ripe from mid-summer to early fall.

Collection restrictions or guidelines: None: common and unlisted

Seed germination: Good germination after cold storage and fall planting in cold frames

Seed life: Many years when well stored

Recommended seed storage conditions: Dry down to 5-8% moisture. Store cold at 0-2° C.

Propagation recommendations: Good germination from seed.

Soil or medium requirements:

Recommendation 1:1:1:2 sand:pumice:peat moss:fir bark

Installation form: Direct seeding into site may reduce seedling dormancy or loss.

Recommended planting density: Dense and patchy

Care requirements after installed: Good drought tolerance, no after care with appropriate planting time.

Normal rate of growth or spread; lifespan: Rapidly occupies a restoration site. Long-lived.

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- Data compiled by: Sierra Smith 4/11/06
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