

**Plant Propagation Protocol for *Antennaria geyeri* A. Gray**

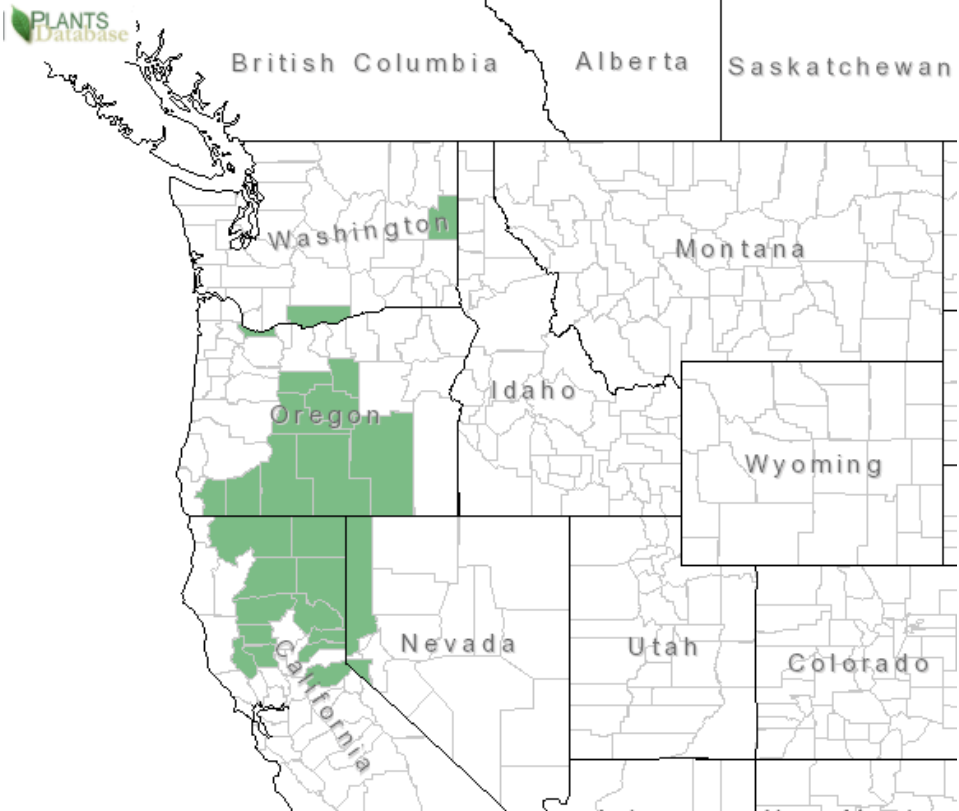
ESRM 412 – Native Plant Production

Protocol URL: <https://courses.washington.edu/esrm412/protocols/ANGE3.pdf>



(Tom Wainwright n.d.)

<b>TAXONOMY</b>	
<b>Plant Family</b>	
Scientific Name	Asteraceae
Common Name	Aster or Daisy family
<b>Species Scientific Name</b>	
Scientific Name	<i>Antennaria geyeri</i> A. Gray
Common Synonym(s)	<i>Gnaphalium alienum</i> Hook. & Arn. (The Plant List 2012)
Common Name(s)	Pinewoods Pussytoes, Mountain Pussytoes, Geyer's Pussytoes (Lady Bird Johnson Wildflower Center 2018)
Species Code (as per USDA Plants database)	ANGE3
<b>GENERAL INFORMATION</b>	

Geographical range	 <p>(USDA, 2020) <a href="https://plants.usda.gov/core/profile?symbol=ANGE3">https://plants.usda.gov/core/profile?symbol=ANGE3</a></p>
Ecological distribution	Occurs in woodland and scrub, often on the forest floor beneath the duff under trees in the species <i>Pinus ponderosa</i> (California Native Plant Society 2020; Bayer 2006).
Climate and elevation range	Occurs in elevations between 600-2400 m (Bayer 2006) from Washington down through California and northwestern Nevada (USDA 2020).
Local habitat and abundance	It is found in montane to lower montane areas, particularly in coniferous forest dominated by <i>Pinus ponderosa</i> (Bayer 2006). It is also associated with the Lepidoptera species of <i>Vanessa virgiansis</i> , <i>Eutricopis nexilis</i> , and <i>Pyrausta unifascialis</i> (California Native Plant Society 2020)
Plant strategy type / successional stage	Tolerates lower quality-sandy soils (Damrosch 2008). The species is known as subdioecious with a perennial life cycle habit (Bayer 2006).
Plant characteristics	This small herbaceous species is 3-14 cm in size with an upright growth habit. From their base they send up stems along which lance-shaped leaves are arranged. These small leaves are coated in long hairs that give them a “woolly” appearance. Their blooms have up to 25 flowers also with silvery hairs and pink phyllaries. The fruit that follows is an achene. During flowering it loses its basal leaves and has subdioecious heads. They do not produce stolons and have woody upright branches which sets them apart from the other species within the <i>Antennaria</i> genus (iNaturalist 2020).
<b>PROPAGATION DETAILS</b>	
	This propagation protocol was created using the propagation of <i>A. rosea</i> as a guide for best practices to use within the genus. The species <i>A. rosea</i> has an

	overlapping native distribution with <i>A. geyeri</i> . Due to the unique nature of the species <i>A. geyeri</i> however, the ability to produce propagules from stolons differs from the other species within the genus. The possibility for small differences in best practice between plants of the same genus should be kept in mind when using this protocol.
Propagation Goal	Plants (Luna et al. 2008)
Propagation Method	Recommended seed propagation (Luna et al. 2008)
Product Type	Container (plug) (Luna et al. 2008)
Stock Type	172 ml containers (Luna et al. 2008)
Time to Grow	About 4 months (Luna et al. 2008)
Target Specifications	2 cm in height with 6-10 true leaves (Luna et al. 2008)
Propagule Collection Instructions	Collect in mid-summer (late June to July), achenes should be easily separated from heads by hand at this point. Mature seeds are usually dark grey (Luna et al. 2008).
Propagule Processing/Propagule Characteristics	Generally a hammermill is used to process the seeds, but any means of controlled crushing will be effective. They can then be run over with a clipper office tester to sort out the pure seeds. These seeds can be stored for up to 5 years in properly sealed containers kept at 37.4 – 41° F. Seeds density is around 6,586,170/lb. with 80-98% germination (Luna et al. 2008).
Pre-Planting Propagule Treatments	Collected seeds should be stored in a dry place with good ventilation. No stratification is needed before sowing (Luna et al. 2008).
Growing Area Preparation / Annual Practices for Perennial Crops	These seeds can be sown in an outdoor growing facility in the late fall, they should be irrigated thoroughly before winter. Direct seeding is a viable option, with seeds being surface sown. Preferred growing medium is a mixture of sphagnum peat, perlite, and vermiculite sused in 172 ml conetainers (Luna et al. 2008).
Establishment Phase Details	Plants within this genus are observed to germinate slowly over a 21-day time frame. The seeds will require light to germinate and burial will result in poor outcomes (Luna et al. 2008).
Length of Establishment Phase	Around 4 weeks (Luna et al. 2008).
Active Growth Phase	After around 4 weeks of germination root and shoot growth occurs much more quickly. This is when fertilization is recommended using liquid NPK (100 ppm) bi-weekly (Luna et al. 2008).
Length of Active Growth Phase	About 8 weeks (Luna et al. 2008).
Hardening Phase	In early fall the plants should be fertilized at a higher dosage (200 ppm) followed by a leaching of the pots with water. The irrigation should then be decreased gradually throughout September and October (Luna et al. 2008).

Length of Hardening Phase	About 4 weeks (Luna et al. 2008).
Harvesting, Storage and Shipping	Total time from sowing to harvest is around 4 months, putting the harvest date in July. The plants should be overwintered in an outdoor nursery under some insulation (Luna et al. 2008).
Length of Storage	About 5 months (Luna et al. 2008).
Guidelines for Outplanting / Performance on Typical Sites	No information found.
Other Comments	This plant is considered subdioecious due to the fact that the central flowers are often bisexual (Bayer 2006). Note that <i>A. geyeri</i> cannot be propagated from stolons as it does not produce them.

### INFORMATION SOURCES

References	<p>“<i>Antennaria geyeri</i> A. Gray.” The Plant List, 2012. URL: <a href="http://www.theplantlist.org/tp11.1/record/gcc-145023">www.theplantlist.org/tp11.1/record/gcc-145023</a> (accessed on 04/30/20).</p> <p>Damrosch, Barbara. “Garden Primer.” Workman Publishing, 2008, pp. 572.</p> <p>Luna, Tara; Evans, Jeff; Wick, Dale; Hosokawa, Joy. “Propagation protocol for production of Container (plug) <i>Antennaria rosea</i>.” Native Plant Network, US Department of Agriculture, Forest Service, National Center for Reforestation, Nurseries, and Genetic Resources, 2008. URL: <a href="http://NativePlantNetwork.org">NativePlantNetwork.org</a> (accessed 04/30/20).</p> <p>“Pinewoods Pussytoes (<i>Antennaria geyeri</i>).” n.d. URL: <a href="http://www.inaturalist.org/taxa/75462-Antennaria-geyeri">www.inaturalist.org/taxa/75462-Antennaria-geyeri</a> (accessed on 04/30/20).</p> <p>“Pinewoods Pussytoes; <i>Antennaria geyeri</i>.” California Native Plant Society, n.d. URL: <a href="http://calscape.org/Antennaria-geyeri-()">calscape.org/Antennaria-geyeri-()</a> (accessed on 04/30/20).</p> <p>“Plant Profile for <i>Antennaria geyeri</i>.” Lady Bird Johnson Wildflower center, 2018. URL: <a href="http://www.wildflower.org/plants/result.php?id_plant=ANGE3">www.wildflower.org/plants/result.php?id_plant=ANGE3</a> (accessed on 04/30/20).</p> <p>“Plants Profile for <i>Antennaria geyeri</i> (Pinewoods Pussytoes).” USDA Natural Resources Conservation Service, n.d. URL: <a href="http://plants.usda.gov/core/profile?symbol=ANGE3">plants.usda.gov/core/profile?symbol=ANGE3</a> (accessed on 04/30/20).</p> <p>Bayer, Randall J. “Taxon page for <i>Antennaria geyeri</i>.” Flora of North America, 2006. URL: <a href="http://www.efloras.org/florataxon.aspx?flora_id=1&amp;taxon_id=250066075">www.efloras.org/florataxon.aspx?flora_id=1&amp;taxon_id=250066075</a> (accessed 04/30/20).</p> <p>Wainwright, Tom. “Pinewoods pussytoes.” n.d. JPEG file. URL: <a href="http://www.inaturalist.org/taxa/75462-Antennaria-geyeri">www.inaturalist.org/taxa/75462-Antennaria-geyeri</a> (accessed on 04/30/20).</p>
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Other Sources Consulted	“ <i>Antennaria geyeri</i> : Geyer’s pussytoes, pinewoods pussytoes.” Burke Herbarium Image Collection. 2018. URL: <a href="http://biology.burke.washington.edu/herbarium/imagecollection/taxon.php?Taxon=Antennaria%20geyeri">biology.burke.washington.edu/herbarium/imagecollection/taxon.php?Taxon=Antennaria%20geyeri</a> (accessed on 04/30/20).
Protocol Author	Casey Jones
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