

Plant Propagation Protocol for *Antennaria rosea*
 ESRM 412 – Native Plant Production
 Protocol URL: <https://courses.washington.edu/esrm412/protocols/ANRO2>

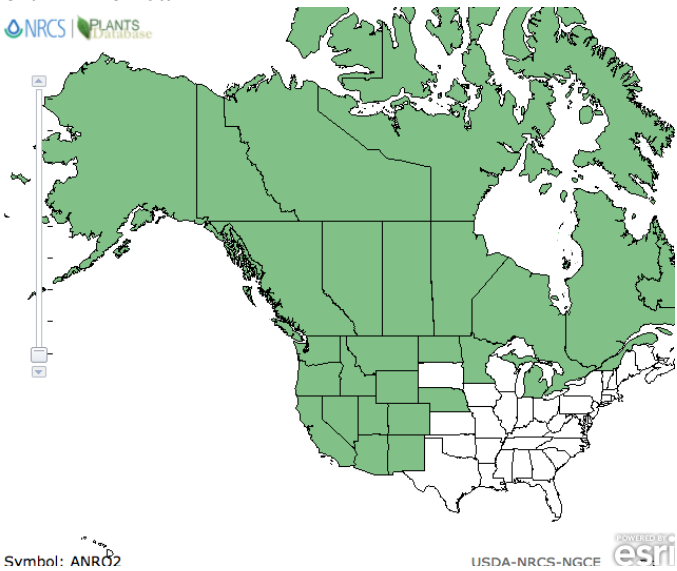
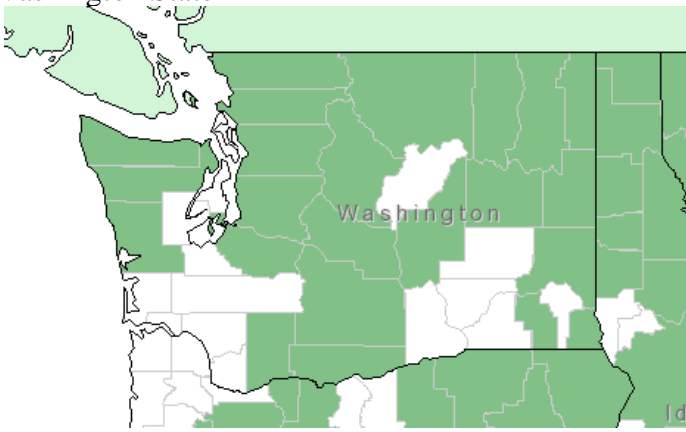


Source: USDA PLANTS Database¹²

TAXONOMY	
Plant Family	
Scientific Name	Asteraceae
Common Name	Daisy or Sunflower
Species Scientific Name	
Scientific Name	<i>Antennaria rosea</i> Greene
Varieties	<i>Antennaria rosea</i> Greene var. <i>angustifolia</i> (Rydb.) E.E. Nelson <i>Antennaria rosea</i> Greene var. <i>imbricata</i> (E.E. Nelson) E.E. Nelson
Sub-species	Ssp. <i>arida</i> (E. E. Nelson) Bayer Ssp. <i>confiniis</i> (Greene) Bayer Ssp. <i>pulvinata</i> (Greene) Bayer Ssp. <i>rosea</i>
Cultivar	
Common Synonym(s)	<i>Antennaria rosea</i> Greene var. <i>angustifolia</i> (Rydb.) E.E. Nelson <i>Antennaria rosea</i> Greene var. <i>imbricata</i> (E.E. Nelson) E.E. Nelson <i>Antennaria rosea</i> Greene ssp. <i>arida</i> (E. E. Nelson) Bayer <i>Antennaria rosea</i> Greene ssp. <i>confiniis</i> (Greene) Bayer <i>Antennaria rosea</i> Greene ssp. <i>pulvinata</i> (Greene) Bayer <i>Antennaria rosea</i> Greene ssp. <i>rosea</i> <i>Antennaria microphylla</i> Rydb. ⁴
Common Name(s)	Rosy pussytoes, rosy everlasting

Species Code (as per USDA Plants database)	ANRO2
Taxonomy Sources	4, 6, 12

GENERAL INFORMATION

Geographical range	<p>North America</p>  <p>Washington State</p>  <p>Source: USDA PLANTS Database¹²</p>
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Ecological distribution	Open areas, meadows, open woods and forests, plains, alpine meadows ⁷ , prairies, foothills ⁸
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Climate and elevation range	<p>Sea level to alpine zones¹ with elevations ranging from 915 feet to 14034 feet¹¹</p> <p>Dry to wet climates with annual precipitation ranging from 6.9 to 154.7 inches and summer precipitation as low as 0.36 inches. The minimum temperature it can tolerate is 11.1 degrees F and the maximum is 77.1</p>
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	<p>degrees F.¹¹ The area's growing season can be up to 4 months long. It belongs to the hardiness zone of 5a to 8b.⁹</p> <p>Soil should have a pH of 4.8 to 7.4, a non-saline maximum salinity of 1.4 and be a minimum depth of 28 centimeters of medium or coarse texture with low CaCO₃.⁹ Soil should be somewhat dry and freely draining.⁵</p>
Local habitat and abundance	<p>Plant communities include red fir, lodgepole and subalpine forests along with alpine fell fields.³ It is often found with the American Lady butterfly as it is larval food for the insect.⁵</p>
Plant strategy type / successional stage	<p>A perennial⁷ that can tolerate sun or part sun. Often times it fills the role of understory or groundcover between larger plants⁵. It blooms in June, July or August.⁷</p>
Plant characteristics	<p>This forb is morphologically diverse with unique individuals. Growing between 10 and 40 centimeters, it is a small flowering plant. The plant has basal woolly gray leaves up to 4 centimeters long along with flower clusters. These clusters exhibit multiple flower heads which are lined with wide, pointed phyllaries. Its name comes from the rosy variation in its phyllaries but they can also be brown, white or yellow.¹¹ Leaves are oblanceolate and spatulate with pointy tips.⁷</p> <p>While the plant is dioecious, most of the plants are females and reproduce asexually. To spread and reproduce vegetative, it creates a network of short stolons. However, most bear pistillate flowers to produce an achene fruit of less than 2 millimeters and a pappus up to 7 millimeters long. Fertile seeds are produced often and can be pollinated by other <i>Antennaria</i> species to increase genetic diversity.¹¹</p> <p>Plants grow in semi-evergreen mats on the ground.⁵</p>

PROPAGATION DETAILS

Information comes from Source #8 unless otherwise annotated.

Ecotype	Fescue Grassland, Two Medicine, Glacier National Park. ⁸
Propagation Goal	Plants
Propagation Method	Seed
Product Type	Container (plug) of 172 milliliters
Stock Type	
Time to Grow	4 months
Target Specifications	2 centimeters tall with 6 to 10 true leaves and a firm root system in the container
Propagule Collection Instructions	Seed harvest is difficult but should occur in July. ¹⁰
Propagule Processing/Propagule Characteristics	Seeds can be cleaned with a hammermill and run over with an officer clipper. Seeds can be stored for up to 5 years if sealed in a cool container of 3 to 5 degrees C.
Pre-Planting Propagule Treatments	No stratification is needed if seeds were stored dry.
Growing Area Preparation / Annual Practices for Perennial Crops	172 milliliter container plug containing milled sphagnum peat, perlite and vermiculite. It is best when 1 gram of 13N:13P2O5:13K2O Osmocote controlled releaser fertilizer, which has about a 9 month release rate a 21 degrees C, and 0.2 grams of 12% S, 0.1% B, 0.5% Cu, 12% Fe, 2.5% Mn, 0.05% Mo, 1% Zn Micromax fertilizer is added to each container.
Establishment Phase Details	In late fall, seeds are directly sown into container plugs. Compared to other forbs, rosy pussytoes germinate slowly, requiring over 21 days. Thinning should occur once the leaves have reached their true stage. Once establishment does occur, however, plants rapidly develop shoots and roots over the next four weeks.
Length of Establishment Phase	1 month

Active Growth Phase	Biweekly fertilization with 100ppm 13-13-13 liquid NPK should be applied during this growing season.
Length of Active Growth Phase	2 months
Hardening Phase	Plants should be fertilized with 200ppm 10-20-20 liquid NPK in the early fall. Furthermore irrigation is gradually reduced from September into October, leaching the pot with water. In the winter, outdoor nurseries should insulate with foam cover.
Length of Hardening Phase	1 month
Harvesting, Storage and	After the total four months, harvest usually occurs in July when the plant is 2 centimeters tall with 6 to 10 true leaves and a firm root system in the container.
Length of Storage	
Guidelines for Outplanting / Performance on Typical Sites	<p>After rosettes have begun rooting, about four weeks after flowering as ended, plants can be moved to a suitable place which will not get overrun by animal or human traffic.⁵ Transplant is most successful in the spring.¹⁰</p> <p>Since seeds require light to germinate, restoration scale direct seeding must include rolling or pressing seeds into prepared seed beds. Poor establishment is associated with raking and burying.</p>
Other Comments	
PROPAGATION DETAILS	
Ecotype	
Propagation Goal	Plants
Propagation Method	Vegetative
Product Type	
Stock Type	
Time to Grow	
Target Specifications	
Propagule Collection Instructions	<p>Vegetative propagation is possible with established nursery stocks.⁸ However, this plant is rarely available in nurseries.¹¹</p> <p>Divide mats of individuals into individual plants, each with some stem, body and root.²</p>

Propagule Processing/Propagule Characteristics	
Pre-Planting Propagule Treatments	
Growing Area Preparation / Annual Practices for Perennial Crops	
Establishment Phase Details	
Length of Establishment Phase	
Active Growth Phase	
Length of Active Growth Phase	
Hardening Phase	
Length of Hardening Phase	
Harvesting, Storage and	
Length of Storage	
Guidelines for Outplanting / Performance on Typical Sites	
Other Comments	
INFORMATION SOURCES	
References	See below.
Other Sources Consulted	Snyder, Leon C. <i>Flowers for Northern Gardens</i> . University of Minnesota Press, 1993. Accessed 25 Apr. 2018.
Protocol Author	Ariana Winkler
Date Protocol Created or Updated	04/25/18

References

- ¹“Antennaria Rosea.” *Flora of North America*, EFloras, www.efloras.org/florataxon.aspx?flora_id=1&taxon_id=250066087. Accessed 25 Apr. 2018.
- ²“ANTENNARIA Rosea.” *Learn2Grow*, Preferred Commerce , www.learn2grow.com/plants/antennaria-rosea-care-and-maintenance/. Accessed 25 Apr. 2018.
- ³“Antennaria Rosea - Rosy Everlasting.” *California Native Plant Link Exchange PLANT INFORMATION*, [www.cnplx.info/nplx/species?taxon=Antennaria rosea](http://www.cnplx.info/nplx/species?taxon=Antennaria%20rosea). Accessed 25 Apr. 2018.
- ⁴“Antennaria Rosea Greene.” *Tropicos* , Missouri Botanical Garden, www.tropicos.org/Name/2701689. Accessed 25 Apr. 2018.

- ⁵ Cullina, William. *The New England Wild Flower Society Guide to Growing and Propagating Wildflowers of the United States and Canada*. Houghton Mifflin Co., 2000. Accessed 25 Apr. 2018.
- ⁶ Knoke, Don, and David Giblin. "Antennaria Rosea." *WTU Herbarium Image Collection - Burke Museum*, Burke Museum of Natural History and Culture, biology.burke.washington.edu/herbarium/imagecollection.php?Genus=Antennaria&Species=rosea. Accessed 25 Apr. 2018.
- ⁷ Lady Bird Johnson Wildflower Center. *Antennaria Rosea*. 1 Jan. 2007, www.wildflower.org/plants/result.php?id_plant=ANRO2. Accessed 25 Apr. 2018.
- ⁸ Luna, Tara, et al. "Propagation Protocol for Production of Container (Plug) Antennaria Rosea Greene Plants 172 MI Containers." *Native Plant Network*, US Department of Agriculture, Forest Service, National Center for Reforestation, Nurseries, and Genetic Resources, 2008, npn.rngr.net/renderNPNProtocolDetails?selectedProtocolIds=asteraceae-antennaria-16&referer=wildflower. Accessed 25 Apr. 2018.
- ⁹ "Plant Location Suitability." *Calflora*, Calflora, www.calflora.org/entry/compare.html?crn=386#y=47.93107&x=-121.76147&z=7. Accessed 25 Apr. 2018.
- ¹⁰ "Plant Species: Antennaria Rosea, Rosy Pussytoes." *Palouse Prairie Foundation Native Plant Database*, Palouse Prairie Foundation, dev.palouseprairie.org/plants/plantdb/PPFplants.php?USDA=ANRO2. Accessed 25 Apr. 2018.
- ¹¹ "Rosy Pussytoes ." *California Native Plant Society*, California Native Plant Society, [calscape.org/Antennaria-rosea-\(Rosy-Pussytoes\)?srchcr=sc58afd1aba302a](http://calscape.org/Antennaria-rosea-(Rosy-Pussytoes)?srchcr=sc58afd1aba302a). Accessed 25 Apr. 2018.

¹² USDA Natural Resources Conservation Service. *Plants Profile for Antennaria Rosea (Rosy Pussytoes)*. plants.usda.gov/core/profile?symbol=ANRO2. Accessed 25 Apr. 2018. Accessed 25 Apr. 2018.