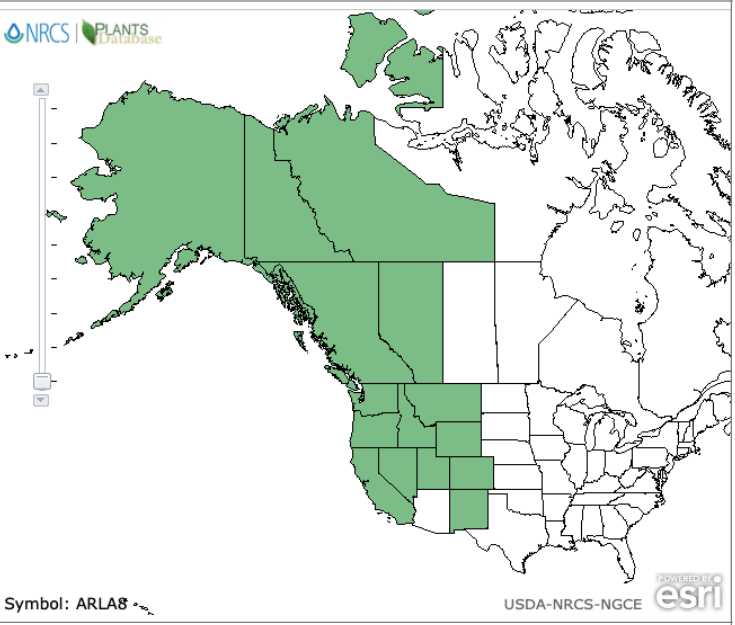
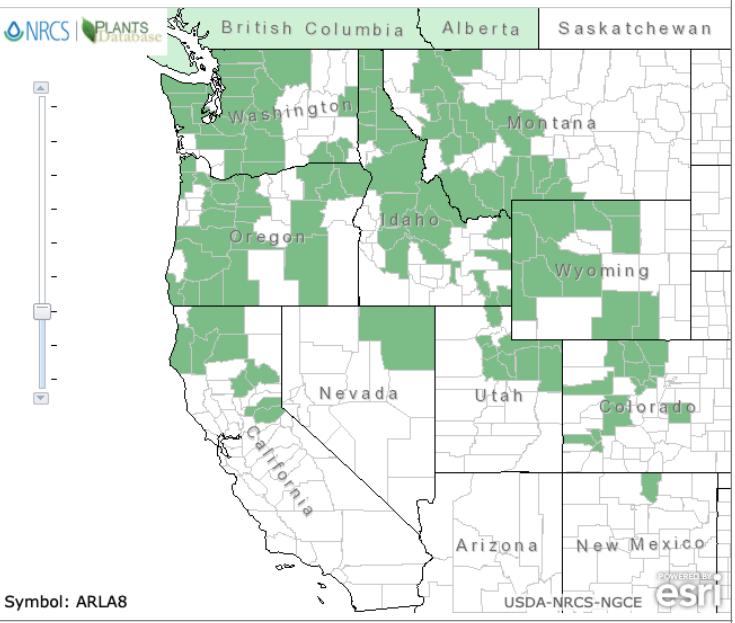
Plant Propagation Protocol for *Arnica latifolia*
ESRM 412 – Native Plant Production
Protocol URL: https://courses.washington.edu/esrm412/protocols/*ARLA8.pdf*

Photo credit: Barry Beckling 2009[3]

TAXONOMY	
Plant Family	
Scientific Name	Asteraceae
Common Name	Aster family
Species Scientific Name	
Scientific Name	*Arnica latifolia* Bong.
Varieties	None
Sub-species	None
Cultivar	None
Common Synonym(s)	*Arnica latifolia* Bong. var. *angustifolia* Herder

Common Name(s)	broadleaf arnica, mountain arnica
Species Code	ARLA8
GENERAL INFORMATION	
Geographical range in North America	
Geographical range in the Northern United States	
Ecological distribution	Moist, open forests, meadows, stream banks, and rocky slopes[5].
Climate and elevation range	Common at middle to high elevations from 1800-2400 meters[7].

Local habitat and abundance	Typically can be found in sub-alpine forests and wetland or riparian areas[4]. Is common associated with *Berberis aquifolium, Cercocarpus betuloides, Symphoricarpos mollis, Amelanchier alnifolia, Festuca idahoensis, Danthonia californica, Delphinium menziesii, Fragaria vesca, Osmorhiza chilensis, and Achillea millefolium*[6].
Plant strategy type / successional stage	Information not available.
Plant characteristics	Perennial herb from horizontal rhizomes, 10-60 cm tall. Stems are sparsely hairy and glandular, solitary or clustered in small groups[5]. Basal leaves may be round, lanceolate, or cordate. Stem leaves coarsely toothed, hairy and ovate to lance-elliptic, often becoming narrower above. Leaves grow in 2-4 (5) opposite pairs[5]. Flowers are terminal, yellow, and radiate; solitary or clustered in small groups; blooming in June and July[1].
PROPAGATION DETAILS	
Ecotype	*A. latifolia* is highly variable and thrives in a variety of ecosystems[1].
Propagation Goal	Plants[3]
Propagation Method	Seed[3]
Product Type	Container[3]
Stock Type	Information not available.
Time to Grow	6 months-1 year[3]
Target Specifications	Plants will typically grow 10-60 cm tall[5].
Propagule Collection Instructions	Seeds should be collected from an area with an ecosystem that matches that of the propagation site[1].
Propagule Processing/Propagule Characteristics	Information not available.

Pre-Planting Propagule Treatments	Germination is increased with 30 days of cold-moist stratification[1].
Growing Area Preparation / Annual Practices for Perennial Crops	Prefers sandy or loamy soils; does not do well in clay soils[4].
Establishment Phase Details	Plants may be planted outside after the last frost, or in cold frames between midsummer and early fall. For earlier blooms, plant in small pots in the greenhouse in midwinter[3].
Length of Establishment Phase	Information not available.
Active Growth Phase	If seeds were sown after the last frost, transfer to permanent location at least 1 month before cold weather begins[3]. If planted in cold frames, protect over the winter and plant in permanent location in early spring[3]. If seeds were sewn in midwinter, transplant seedlings to their permanent location after the last frost[3].
Length of Active Growth Phase	Information not available.
Hardening Phase	Young flowers may be harvested and dried for medicinal uses[5].
Length of Hardening Phase	Information not available.
Harvesting, Storage and Shipping	Information not available.
Length of Storage	Seedlings may be stored between 6 months to 1 year before they are ready to be outplanted[3].
Guidelines for Outplanting / Performance on Typical Sites	Information not available.
Other Comments	Plants may also be propagated vegetatively through separation of rhizomes or mature plants[1].
INFORMATION SOURCES	

References	[1]Arnica latifolia. (n.d.). Retrieved from https://www.wildflower.org/plants/result.php?id_plant=ARLA8 [2]Arnica latifolia. (n.d.). Retrieved from https://plants.usda.gov/core/profile?symbol=ARLA8 [3]Kains, M. G. (1916). *Plant Propagation: Greenhouse and Nursery Practice*. Orange Judd Company. [4]Mountain Arnica, Arnica latifolia. (n.d.). Retrieved from https://calscape.org/Arnica-latifolia-() [5]Pojar, J., & MacKinnon, A. (2014). *Plants of the Pacific Northwest coast: Washington, Oregon, British Columbia & Alaska*. Auburn, WA, USA: Lone Pine. [6]U.S. Department of the Interior. (2002). *Cascade-Siskiyou National Monument: Draft Resource Management Plan/ Environmental Impact Statement (Volume 2)*. Medford, OR. [7]Wolf, S. J., & Barkley, T. M. (2012). Arnica latifolia. Retrieved from https://ucjeps.berkeley.edu/eflora/eflora_display.php?tid=1133
Other Sources Consulted	Antos, J. A., & Zobel, D. B. (1984). Ecological Implications of Belowground Morphology of Nine Coniferous Forest Herbs. *Botanical Gazette*, *145*(4), 508–517. doi: 10.1086/337486 Hitchcock, C. L., Cronquist, A., Giblin, D., Legler, B., Zika, P. F., Olmstead, R. G., … Porcino, N. (2018). *Flora of the Pacific Northwest: an illustrated manual*. Seattle: University of Washington Press. Schneider, A. (1912). *Pharmacal Plants and Their Culture*. Sacramento, CA. U.S. G.P.O. (1892). *Contributions from U.S. National Herbarium*. Washington, D.C. Young, D. R., & Smith, W. K. (1983). Effect of Cloudcover on Photosynthesis and Transpiration in the Subalpine Understory Species Arnica Latifolia. *Ecology*, *64*(4), 681–687. doi: 10.2307/1937189
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