

## Plant Propagation Protocol for *Artemisia campestris*

ESRM 412 – Native Plant Production

URL: <https://courses.washington.edu/esrm412/protocols/2022/ARCA12.pdf>



Figure 1. Photograph of *A. campestris* (Lavin, 2010).

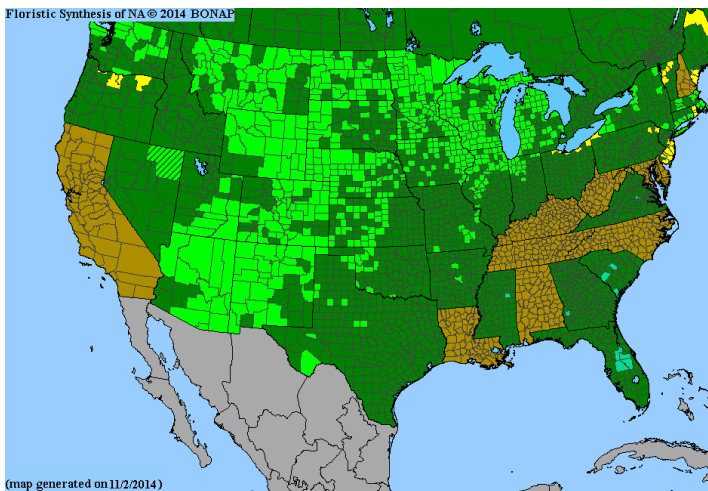


Figure 2. Distribution map of *A. campestris* in North America (Kartesz, 2015)



Figure 3. Geographical distribution map of *A. campestris* constructed by the Burke Museum

Species present in state and native

Species present in county and not rare

Species not present in state



TAXONOMY	
Plant Family	
Scientific Name	Asteraceae

Common Name	Aster family												
Species Scientific Name													
Scientific Name	<i>Artemisia campestris</i> Linnaeus												
Varieties													
Sub-species													
Cultivar													
Common Synonym(s)													
Common Name(s)	Northern Wormwood Field sagewort Beach wormwood Field sagebrush Field wormwood Prairie sagewort Tall wormwood												
Species Code (as per USDA Plants database)	ARCA12												
<b>GENERAL INFORMATION</b>													
Geographical range	See Figures 2 and 3 above.  <i>A. campestris</i> is widely distributed throughout the United States, Canada, and Eurasia, with a higher concentration on the Pacific Coast of North America (Hitchcock et al., 2018).												
Ecological distribution	<i>A. campestris</i> can be found in relatively dry, open sandy or rocky regions along coastal beaches, riverbanks, plains, and mountainous meadows (Gucker, 2007).												
Climate and elevation range	Table 1. <i>A. campestris</i> subspecies and elevation (Gucker, 2007). <table border="1"> <thead> <tr> <th>Subspecies/variety</th><th>Elevation (feet)</th></tr> </thead> <tbody> <tr> <td><i>A.c. subsp. borealis</i> var. <i>scouleriana</i></td><td>5,500-8,500</td></tr> <tr> <td><i>A. c. subsp. borealis</i></td><td>±7,200</td></tr> <tr> <td><i>A.c. subsp. borealis</i> var. <i>borealis</i></td><td>11,500-12,000</td></tr> <tr> <td><i>A.c. subsp. borealis</i> var. <i>scouleriana</i></td><td>4,500-9,000</td></tr> <tr> <td><i>A. c. subsp. caudata</i></td><td>5,000-7,500</td></tr> </tbody> </table>	Subspecies/variety	Elevation (feet)	<i>A.c. subsp. borealis</i> var. <i>scouleriana</i>	5,500-8,500	<i>A. c. subsp. borealis</i>	±7,200	<i>A.c. subsp. borealis</i> var. <i>borealis</i>	11,500-12,000	<i>A.c. subsp. borealis</i> var. <i>scouleriana</i>	4,500-9,000	<i>A. c. subsp. caudata</i>	5,000-7,500
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	<i>A. c. subsp. borealis</i>	5,500-6,500
	<i>A. c. subsp. caudata</i>	5,000-7,000
	<i>A.c. subsp. borealis</i>	6,000-8,000
	var. <i>scouleriana</i>	
Local habitat and abundance	<p>Commonly associated species include associated species include <i>Coreopsis tinctoria</i> var. <i>atkinsoniana</i>, <i>Cymopterus terebinthinus</i>, <i>Eriogonum compositum</i>, <i>Lupinus polyphyllus</i>, <i>Phacelia hastata</i>, <i>Salix exigua</i>, <i>Bromus tectorum</i> and <i>Centaurea diffusa</i> (Northern wormwood).</p> <p>One notable associated species is the fungus <i>Erysiphe artemisiae</i> which parasitizes <i>A.campestris</i> (Encyclopedia of Puget Sound).</p> <p>The subspecies <i>Artemisia campestris</i> var. <i>Wormskioldii</i> is believed to be eradicated from Oregon and the remaining two populations in Washington State exist in Grant County and Klickitat County. This population decline is largely due to habitat loss, dam construction, invasive weeds, and urban development within the riparian habitat (Northern wormwood).</p>	
Plant strategy type / successional stage	<i>A. campestris</i> is tolerant of drought and heat stress, as they inhabit drier regions (Hitchcock et al., 2018).	
Plant characteristics	<p>See Figure 1 above.</p> <p>Slightly aromatic perennial herb with deeply divided basal leaves. Leaves range from hairy to glabrous.</p> <p>In the first year of growth, the leaves are long-petioled, but may grow 6-36 inches tall with shorter-petioled leaves in the following year (Pojar &amp; Alaback, 1994).</p> <p>Outermost flowers have a distinct pistil, a prominent ovary, and a two branched stigma. Innermost flowers differ greatly, with a simple, shriveled ovary (Clark, 1976).</p> <p>Prominent, deep taproot (Amidon et al., 2014).</p>	

## PROPAGATION DETAILS

Ecotype	In Alexis Brickner's study, the seeds tested were sourced from Miller Island and Beverly, Washington (Brickner, 2013).
Propagation Goal	Plants
Propagation Method	Seeds
Product Type	Container
Stock Type	10 × 10 cm pots
Time to Grow	About 5 months
Target Specifications	1-4 feet tall, well established root system
Propagule Collection Instructions	Information regarding propagule collection is lacking.
Propagule Processing/Propagule Characteristics	Information on seed longevity and density is lacking (Gucker, 2007).
Pre-Planting Propagule Treatments	Seeds should be stored in dry, cool envelopes. Dormancy treatments are not needed.
Growing Area Preparation / Annual Practices for Perennial Crops	<p>Growing media is Sunshine Professional Growing Mix® (Canadian sphagnum peat moss, horticultural grade perlite, pumice, and dolomite limestone). Plants should be watered daily and fertilized weekly with Dyna-Gro® (7-9-5).</p> <p>Generally, media for <i>A. campestris</i> should be slightly alkaline and well-draining (Fern).</p>
Establishment Phase Details	Begin sowing process in late winter to early summer. Within a greenhouse setting, begin germination process by placing a maximum of 15 seeds to a sanitized Petri dishes with dampened filter paper. Re-wet seeds as necessary to maintain ample moisture during establishment phase.
Length of Establishment Phase	Seedlings should be able to be replanted after one week.
Active Growth Phase	Using tweezers, gently transfer seedling from filter paper into damp potting soil. Carefully, pat surrounding soil to ensure seedlings are sufficiently covered by soil.
Length of Active Growth Phase	6-8 weeks
Hardening Phase	Place plants outdoors in area with full sun to begin acclimating plant to outdoor conditions.
Length of Hardening Phase	10-12 weeks
Harvesting, Storage and Shipping	Information regarding harvesting, storage, and shipping is lacking.
Length of Storage	20 weeks

Guidelines for Outplanting / Performance on Typical Sites	Ensure roots are not crowded before replanting at outplanting site and that there are no air pockets in the soil. Water amply, taking care to not expose roots in the process. Maintain that the plants are exposed to full sun.
Other Comments	
<b>INFORMATION SOURCES</b>	
References	<ol style="list-style-type: none"> <li>1. Amidon, Caroline et al., <i>Artemisia An Essential Guide from The Herb Society of America</i>. Edited by Mary Ann Thomas et al., The Herb Society of America, 2014, <a href="https://www.herbsociety.org/file_download/inline/5d817361-5b96-4679-a23d-27f833cdb1fb">https://www.herbsociety.org/file_download/inline/5d817361-5b96-4679-a23d-27f833cdb1fb</a>.</li> <li>2. <i>Artemisia campestris</i> / <i>Encyclopedia of Puget Sound</i>. (n.d.). Retrieved May 2, 2022, from <a href="https://www.eopugetsound.org/species/artemisia-campestris#Habitat">https://www.eopugetsound.org/species/artemisia-campestris#Habitat</a></li> <li>3. Brickner, A. (2013). <i>Experimental Reintroduction of Northern Wormwood (Artemisia campestris var. Wormskioldii), a Rare Species of Dynamic Cobble Bar Environments on the Columbia River</i> [Oregon State University]. <a href="https://ir.library.oregonstate.edu/concern/graduate_thesis_or_dissertations/nc580p79b">https://ir.library.oregonstate.edu/concern/graduate_thesis_or_dissertations/nc580p79b</a></li> <li>4. Clark, L. J. (1976). <i>Wild flowers of the pacific northwest, from alaska to northern california</i>. Gray's Pub.</li> <li>5. Fern, Ken. <i>Artemisia Campestris - Useful Temperate Plants</i>. <a href="http://temperate.theferns.info/plant/Artemisia+campestris">http://temperate.theferns.info/plant/Artemisia+campestris</a>.</li> <li>6. Gucker, Corey L. 2007. <i>Artemisia campestris</i> (field sagewort). In: Fire Effects Information System, [Online]. U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station, Fire Sciences Laboratory (Producer). Retrieved April 21, 2022, from <a href="http://www.fs.fed.us/database/feis/plants/forb/artcam/all.html">http://www.fs.fed.us/database/feis/plants/forb/artcam/all.html</a>.</li> </ol>

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8. Kartesz, J.T., The Biota of North America Program (BONAP). 2015. *Taxonomic Data Center*. (<http://bonap.net/MapGallery/County/Artemisia%20campestris.png>). Chapel Hill, N.C. [maps generated from Kartesz, J.T. 2015. Floristic Synthesis of North America, Version 1.0. Biota of North America Program (BONAP). (in press)]
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11. Northern Wormwood (*Artemisia Campestris* Var. *Wormskioldii*). Oregon Department of Agriculture, <https://www.oregon.gov/oda/shared/Documents/Publications/PlantConservation/ArtemisiaCampestrisWormskioldiiProfile.pdf>.
12. Pojar, J., & Alaback, P. B. (Eds.). (1994). *Plants of the pacific northwest coast: Washington, oregon, british columbia & alaska* (1. print). Lone Pine Publ.
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Other Sources Consulted	<ol style="list-style-type: none"> <li>1. Douglas, G. W., &amp; Stephen, E. J. (1995). <i>The sunflower family (Asteraceae) of british columbia. Vol. 2: Astereae, anthemideae, eupatorieae and inuleae</i> (Vol. 2). British Columbia Provincial Museum.</li> <li>2. Turner, M., &amp; Gustafson, P. (2006). <i>Wildflowers of the pacific northwest</i>. Timber Press.</li> <li>3. <i>Artemisia campestris</i> in <i>Flora of North America</i> @ efloras.org. (n.d.). Retrieved April 21, 2022, from <a href="http://www.efloras.org/florataxon.aspx?flora_id=1&amp;taxon_id=200023184">http://www.efloras.org/florataxon.aspx?flora_id=1&amp;taxon_id=200023184</a></li> </ol>
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Date Protocol Created or Updated	04/11/22