



## Plant Propagation Protocol for *Delphinium nuttallii*

ESRM 412 – Native Plant Production

URL: <https://courses.washington.edu/esrm412/protocols/2025/DENU3.pdf>

<b>TAXONOMY</b>	
<b>Plant Family</b>	
Scientific Name	Ranunculacea Juss. [1]
Common Name	Buttercup family [1]
<b>Species Scientific Name</b>	
Scientific Name	<i>Delphinium nuttallii</i>
Varieties	<i>Delphinium nuttallii</i> A. Gray [1]
Sub-species	<i>Delphinium nuttallii</i> ssp. <i>ochroleucum</i> (Nutt.) Warnock [5]
Cultivar	N/A
Common Synonym(s)	<i>Delphinium nuttallii</i> A. Gray ssp. <i>Nuttallii</i> [2]
Common Name(s)	Nuttall's Larkspur [4]
Species Code (as per USDA Plants database)	DENU3
<b>GENERAL INFORMATION</b>	
Geographical range	<p>Found in Washington and Oregon west of the Cascades and also east in the Columbia River Gorge in Washington to Willamette Valley</p>  <p>Oregon. [1]</p>
Ecological distribution	Rocky meadows [4].
Climate and elevation range	20-300m [8] and is primarily in a temperate climate.

Local habitat and abundance	Found amongst basaltic cliffs and in gravelly outwash prairies [2].
Plant strategy type / successional stage	Pollinated by bees, flies, butterflies, hummingbirds, and bumblebees [2].
Plant characteristics	<p>Flowers from May-June [2]. Perennial and has forb/herb growth habits [1]. Small, globose, fleshy roots, the single stems range from 3-6 dm. tall. Is crisp-puberulent. The leaves are long-petiolate that are evenly distributed with blades up to 10 cm. broad and are 3-4 times dissected into linear segments. The flowers are numerous and crowded. There are 5 deep bluish purple sepals that are 7-12 mm long. [2].</p>  <p>[2].</p>

**PROPAGATION DETAILS**

Ecotype	Paradise Creek Drainage [6].
Propagation Goal	Plants
Propagation Method	Seed
Product Type	Container (plug) [6].
Stock Type	Sow seeds in media in container (plug) [6].
Time to Grow	2 years [6].
Target Specifications	Tight root plug in container [6].
Propagule Collection Instructions	Seed collection begins in June when the follicles begin to split. The fruit is a follicle, and the seed is black in color when mature [6]. The seed shape is usually broader at hilum end and the bud seeds are variable. Seeds are in baggy seed coat that occasionally appear winged around the edges. The inner seed is dark brown to black and the seed coat is white and transparent. The seed coat is glossy [5]. Collect seeds by shaking them from follicle into an envelope. Whole follicles can be collected to but will need to be cleaned later [6].
Propagule Processing/Propagule Characteristics	Store collected material in paper bags or envelopes at room temperature until ready to clean [6]. Clean seeds should be stored at 40 degrees Fahrenheit at 40% relative humidity [6].
Pre-Planting Propagule Treatments	Seeds still in follicles are crushed to release seed and then cleaned with an air column separator. Seeds collected from being shaken from follicle do not need cleaning but need treatments. Extended cold stratification is needed. Ensure to keep seeds moist as well [6].
Growing Area Preparation / Annual Practices for Perennial Crops	Sow seeds in November in 10 cubic inch conetainers. The media should be Sunshine mixture #4 and then covered lightly with a layer of gravel to prevent seeds from floating out of conetainer. Water thoroughly and place outside. It is important to use a well draning potting soil to improve growth performance [6].
Establishment Phase Details	Germination is expected to occur in March if sown in November. Germination expected to continue for 2-3 weeks. Continue to keep plants outside. Water during dry spells.
Length of Establishment Phase	1 month [6].
Active Growth Phase)	Water plants as needed. Add water soluble complete fertilizer once a week. In June, move to lath house. Once plants reach dormancy, stop fertilizing and only water to avoid desiccation of soil [6].
Length of Active Growth Phase	2 months [6].
Hardening Phase	Plants are grown outside so hardening is not needed [6].
Length of Hardening Phase	N/A
Harvesting, Storage and Shipping	Store plants over the winter in lath house with snow cover. Ready to harvest ideally when a tight root plug has been obtained. This could require around 2 years of care in a nursery setting [6].
Length of Storage	Limited information on this. Some studies show that after 2 years roots are still fleshy and fibrous so these plants can be in nursery for extended amounts of time [6].

Guidelines for Outplanting / Performance on Typical Sites	Generally, plants respond well to out planting, especially if the roots are intact. In some cases, they are short-lived but reseed readily [6].
Other Comments	Limited information regarding the specifics for propagation for <i>Delphinium nuttallii</i> . Protocol is based off of protocol for a similar species in the same family, <i>Delphinium nuttallianum</i> (DENU2), with the incorporation of propagation research specified for <i>Delphinium nuttallii</i> .

**INFORMATION SOURCES**

References	<p>[1] "<i>Delphinium nuttallii</i>." <i>USDA Plants Database</i>, <a href="https://plants.usda.gov/plant-profile/DENU3">https://plants.usda.gov/plant-profile/DENU3</a>. Accessed 26 May 2025.</p> <p>[2] "<i>Delphinium nuttallii</i>." <i>Burke Herbarium Image Collection</i>, <a href="https://burkeherbarium.org/imagecollection/taxon.php?Taxon=Delphinium%20nuttallii">https://burkeherbarium.org/imagecollection/taxon.php?Taxon=Delphinium%20nuttallii</a>. Accessed 26 May 2025.</p> <p>[3]"<i>Flora of North America: Delphinium nuttallii</i>." <i>eFloras.org</i>, <a href="http://www.efloras.org/florataxon.aspx?flora_id=1&amp;taxon_id=233500526">http://www.efloras.org/florataxon.aspx?flora_id=1&amp;taxon_id=233500526</a>. Accessed 26 May 2025.</p> <p>[4]"<i>Delphinium nuttallii</i>." <i>Lady Bird Johnson Wildflower Center</i>, <a href="https://www.wildflower.org/plants/result.php?id_plant=DENU3">https://www.wildflower.org/plants/result.php?id_plant=DENU3</a>. Accessed 26 May 2025.</p> <p>[5]"<i>Delphinium nuttallii</i>." <i>Wikis for Puget Prairie Plants</i>, The Evergreen State College, <a href="https://wikis.evergreen.edu/pugetprairieplants/index.php/Delphinium_nuttallii">https://wikis.evergreen.edu/pugetprairieplants/index.php/Delphinium_nuttallii</a>. Accessed 26 May 2025.</p> <p>[6]"Propagation Protocol for <i>Delphinium nuttallii</i>." <i>Native Plant Network</i>, <a href="https://nprn.rngr.net/renderNPNProtocolDetails?selectedProtocolIds=ranunculaceae-delphinium-2192">https://nprn.rngr.net/renderNPNProtocolDetails?selectedProtocolIds=ranunculaceae-delphinium-2192</a>. Accessed 26 May 2025.</p>
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Other Sources Consulted	<p>[7] Kaye, Thomas N., and Erin M. Meinke. "Demographic and Ecological Factors Affecting Population Viability of <i>Delphinium leucocephalum</i>." <i>Ecological Restoration</i>, vol. 16, no. 1, 1998, pp. 33–41. <a href="https://er.uwpress.org/content/wper/16/1/33.full.pdf">https://er.uwpress.org/content/wper/16/1/33.full.pdf</a>. Accessed 26 May 2025.</p> <p>[8] "Compare Plants: <i>Delphinium nuttallii</i> ssp. <i>nuttallii</i>, <i>Delphinium distichum</i>." <i>Northwest Wildflowers</i>, <a href="https://nwwildflowers.com/compare/?t=Delphinium+nuttallii+ssp.+nuttallii,+Delphinium+distichum">https://nwwildflowers.com/compare/?t=Delphinium+nuttallii+ssp.+nuttallii,+Delphinium+distichum</a>. Accessed 26 May 2025.</p>
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	<p>[9]Dunwiddie, Peter, and Sarah Bakker. <i>Germination Requirements for South Sound Prairie Species</i>. South Sound Prairies, <a href="http://w.southsoundprairies.org/documents/GerminationRequirements.pdf">http://w.southsoundprairies.org/documents/GerminationRequirements.pdf</a>. Accessed 26 May 2025.</p> <p>[10]Natural Resources Conservation Service. <i>Plant Guide: Delphinium nuttallii</i>. USDA, <a href="https://www.nrcs.usda.gov/plantmaterials/wapmcot6072.pdf">https://www.nrcs.usda.gov/plantmaterials/wapmcot6072.pdf</a>. Accessed 26 May 2025.</p> <p>[11]"Oregon Flora: <i>Delphinium nuttallii</i>." <i>Oregon Flora Project</i>, <a href="https://oregonflora.org/taxa/index.php?taxon=4511">https://oregonflora.org/taxa/index.php?taxon=4511</a>. Accessed 26 May 2025.</p>
Protocol Author	Hailey Sheffer
Date Protocol Created or Updated	5/26/2025