

Plant Propagation Protocol for *Delphinium multiplex*

ESRM 412 – Native Plant Production

URL: <https://courses.washington.edu/esrm412/protocols/2024/DEMU.pdf>



Figure 1: © Ian Morrison | Burke Herbarium Image Collection⁷



Figure 2: © 2012 Gerald D. Carr | Burke Herbarium Image Collection⁷

TAXONOMY

Plant Family

Scientific Name Ranunculaceae³

Common Name Buttercup family

Species Scientific Name

Scientific Name *Delphinium multiplex* (Ewan) C.L. Hitchc.^{3, 6}

Varieties none

Sub-species none

Cultivar none



Common Synonym(s) *Delphinium cyanoreios* Piper f. *multiplex* Ewan^{5, 7}

Common Name(s) Kittitas larkspur

Species Code (as per USDA Plants database) DEMU³

GENERAL INFORMATION

Geographical range Distribution Map for North America³

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| |  <p>Distribution Map for Washington State³</p>  |
| Ecological distribution | <i>D. multiplex</i> is found east of the Cascade mountain range in Washington State. It is currently found only in Chelan, Kittitas, Yakima, and Klickitat counties in Washington. ⁷ |
| Climate and elevation range | 1500-1800m ² |
| Local habitat and abundance | Rocky streambeds or near springs in sagebrush-steppe habitats. It can also be found in moderate elevations in the mountains. ² |
| Plant strategy type / successional stage | <i>D. multiplex</i> can flower in late summer and overwinters well. ² |
| Plant Characteristics | <p>Perennial herb with thick, fibrous roots and several slim, hollow stems. Typically grows 50-100cm tall.⁷ Flowers from late spring to late summer (June - August)²; pollinated by bumblebees, bees, flies, butterflies, and hummingbirds⁸</p> <p>Key Identifiers:</p> |

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| | <ul style="list-style-type: none"> - Stems are green and hairless. Basal leaves are typically 5-14cm long and may have 2-3 lobes per leaf.^{2, 7} - Dense inflorescences contain 25-50 flowers with 4 pale to darker blue petals, 5 bluish-purple sepals, many stamens, and green-blue bracts.⁷ |
| PROPAGATION DETAILS: FROM SEED | |
| Ecotype | N/A |
| Propagation Goal | Plants |
| Propagation Method | Seed |
| Product Type | Container (plug) |
| Stock Type | N/A |
| Time to Grow | Months to years |
| Target Specifications | Established densely rooted plug |
| Propagule Collection Instructions | Seeds are hand-collected when the fruits start to split open in June or July. The follicles can be shaken over a seed envelope so seeds fall directly into that, or follicles can be harvested whole. |
| Propagule Processing/Propagule Characteristics | A protocol written for a similar species, <i>D. nuttallianum</i> Pritz. ex Walp. found ~600,000 seeds/lb. ⁹ |
| Pre-Planting Propagule Treatments | <p>Collected material is stored in paper bags or envelopes at room temperature until cleaned.⁹</p> <p>Seeds shaken directly from follicles typically do not need cleaning. If follicles are collected whole, they are crushed to release seeds which are then cleaned via an air column separator. Clean seeds can be stored at 40°F and 40% relative humidity.⁹</p> <p>Some delphinium species either need to be sown within 2-3 days post-harvesting or must be properly stored in very cool conditions.⁴</p> <p>Seeds can be soaked prior to sowing which may induce quicker germination.⁴ Extended cold, moist stratification in a cool freezer or outside over winter is typically necessary for successful germination.⁹</p> |
| Growing Area Preparation / Annual Practices for Perennial Crops | <p>Recommended growing media is one made primarily of high organic content compost with up to 50% sand, vermiculite, or perlite for good drainage.⁴</p> <p>Seeds cannot be sown too deep, otherwise germination may not occur. The recommended technique is for seeds to be sown in 10 cu. in. Ray Leach Super cell containers. A layer of fine pea gravel can be placed on top.⁹</p> |

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| Establishment Phase Details | Temperatures should be kept low at 50°F. ⁴ Plants can remain outside, but they should be kept moist and watered well during dry spells. ⁹ Germination typically begins in March if sown outside. ⁹ |
| Length of Establishment Phase | 10 days - several weeks ^{4, 9} |
| Active Growth Phase | Seedlings should be kept out of full sunlight and should be watered as needed to ensure that the soil does not completely dry out. ^{4, 9} |
| Length of Active Growth Phase | 2 months ^{4, 9} |
| Hardening Phase | Hardening is generally not needed if plants are grown outside because they gradually become dormant as winter approaches with diminishing light. |
| Length of Hardening Phase | 2-3 weeks |
| Harvesting, Storage, and Shipping | Late November or December ¹ |
| Length of Storage | No information found |
| Guidelines for Outplanting / Performance on Typical Sites | If seeds were sown in autumn, propagules may flower normally from June to July. ⁴ Plants can transition to being planted out in soil as long as care is taken to ensure that the roots are not disturbed in the process. ⁹ |
| Other Comments | A similar species, <i>Delphinium nuttallianum</i> Pritz. ex Walp. (upland larkspur), grows in similar habitats but is more widespread. Some of the above information has been adapted from a protocol written for this similar species. ⁹ Some of the information available about growing flowers from the Campanulaceae family is intended for home gardeners and does not have the desired details for nursery propagation. |
| PROPAGATION DETAILS: VEGETATIVE | |
| Ecotype | N/A |
| Propagation Goal | Plants |
| Propagation Method | Vegetative |
| Product Type | Propagules - cuttings |
| Stock Type | N/A |
| Time to Grow | Weeks to months |
| Target Specifications | Rooted propagules |
| Propagule Collection Instructions | To obtain a cutting, dig up the crown of a mother plant in late January or early February. Plant in a container with soil or damp peat moss and place in a greenhouse. Typically, new shoots will be produced in a few weeks. Once they are 2-3in long they can be |

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| | <p>removed from the crown, taking care to include a small piece of the crown.⁴</p> <p>Another method can be performed from late February into March, and sometimes early April. Remove shoots as they begin to bud out from the crown while the mother plant is still planted in the soil. This requires treating the wound with a fungicide to prevent damage to the mother plant.⁴</p> |
| Propagule Processing/Propagule Characteristics | N/A |
| Pre-Planting Propagule Treatments | Cuttings should be immediately placed in the growing area. ^{1,4} |
| Growing Area Preparation / Annual Practices for Perennial Crops | <p>Cuttings can be rooted in containers filled with 1in of coarse sand or grit and then filled with water to ~1/2in above the sand.⁴</p> <p>Another method is to use perlite trays that are kept moist.⁴</p> |
| Establishment Phase Details | <p>Ensure that the temperature does not exceed 55°F, and keep containers out of direct, full sunlight.⁴</p> <p>Check the cuttings a few weeks following striking. Thorough watering must be done to keep the growing medium moist.^{1,4}</p> |
| Length of Establishment Phase | Rooting occurs within 3-5 weeks |
| Active Growth Phase | <p>Once rooted, plant the cuttings in soil containing high amounts of organic matter, and minimal amounts of peat moss due to its high acidity.⁴</p> <p>Pot individually into 3in pots, keep well watered and in a shady place.¹ Nitrogen-containing fertilizers can be used in moderation to increase the nutrient content of the growing medium.⁴</p> |
| Length of Active Growth Phase | 2-3 months |
| Hardening Phase | Hardening is generally not needed if plants are transplanted outside for the active growth phase because they gradually become dormant as winter approaches with diminishing light. |
| Length of Hardening Phase | 2-3 weeks |
| Harvesting, Storage, and Shipping | No information found |
| Length of Storage | Late November or December |
| Guidelines for Outplanting / Performance on Typical Sites | Plants can transition to being planted out in soil as long as care is taken to ensure that the roots are not disturbed in the process. ⁹ |

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| Other Comments | Most of the information available regarding vegetative propagation for the <i>Delphinium</i> genus is intended for home gardeners and does not have the desired details for nursery propagation. |
| INFORMATION SOURCES | |
| References | See attached appendix |
| Other Sources Consulted | American Delphinium Society. <i>Delphinium, the Book of the American Delphinium Society</i> . Edited by Leon Leonian, Ph.D., 1945. Bassett, David, and Shirley Bassett. <i>Delphiniums</i> . Royal Horticultural Society (Great Britain), 1990. Bishop, Frank. <i>The Delphinium</i> . 1949. Genders, Roy. <i>Delphiniums</i> . London, J. Gifford, 1963. |
| Protocol Author | Nova Moss Ravenscroft |
| Date Protocol Created or Updated | 5/22/24 |

Appendix - References

¹Cooper, Leslie. *A Plantsman's Guide to Delphiniums*. New York, NY, Ward Lock Limited, 1990.

²"Delphinium Multiplex." *Www.efloras.org*, Flora of North America,
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³"Delphinium Multiplex (Ewan) C.L. Hitchc." *Plants.usda.gov*, USDA NRCS,
plants.usda.gov/home/plantProfile?symbol=DEMU. Accessed 21 May 2024.

⁴Edwards, Colin. *Delphiniums*. Crowood Press (UK), 1989.

⁵"ITIS - Report: Delphinium Cyanoreios." *Www.itis.gov*,
www.itis.gov/servlet/SingleRpt/SingleRpt?search_topic=TSN&search_value=512141#nuli. Accessed 21 May 2024.

⁶“ITIS - Report: Delphinium Multiplex.” *Www.itis.gov*,

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⁷Knoke, Don, and David Giblin. “Delphinium Multiplex - Burke Herbarium Image Collection.”

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⁸Pojar, Jim, et al. *Plants of the Pacific Northwest Coast : Washington, Oregon, British Columbia &*

Alaska. 1994. Edited by Andy MacKinnon, Revised ed., Vancouver, B.C., Lone Pine

Publishing, 2014, pp. 194–195.

⁹Skinner, Dave. “Protocol Information - Delphinium Nuttallianum Pritz. Ex Walp.” *Npn.rngr.net*,

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npn.rngr.net/renderNPNProtocolDetails?selectedProtocolIds=ranunculaceae-delphinium

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