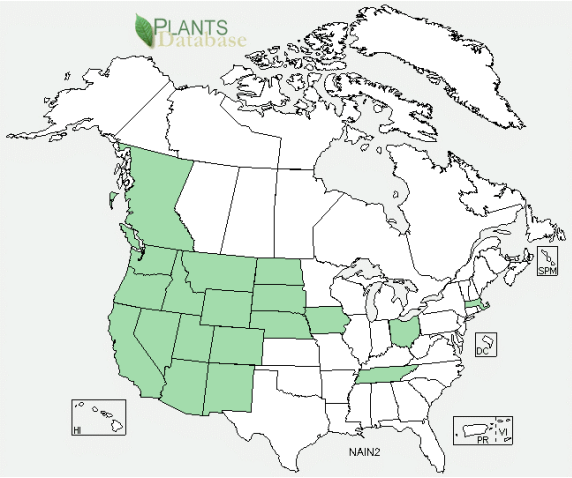
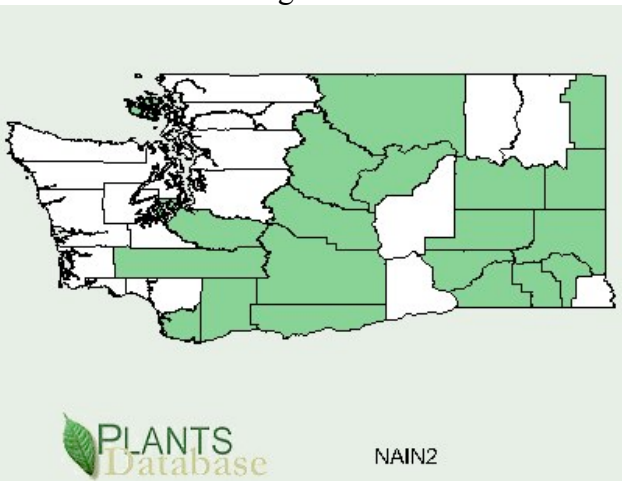
**Plant Propagation Protocol for *Navarretia intertexta***
ESRM 412 – Native Plant Production

North America Distribution




Washington Distribution




Source: USDA PLANTS Database (6)

| TAXONOMY | |
|---|---|
| Family Names | |
| Family Scientific Name: | Polemoniaceae |
| Family Common Name: | Phlox Family |
| Scientific Names | |
| Genus: | *Navarretia* |
| Species: | *intertexta* |
| Species Authority: | (Benth.) Hook. |
| Variety: | |
| Sub-species: | |
| Cultivar: | |
| Authority for Variety/Sub-species: | |
| Common Synonym(s) (include full scientific names (e.g., *Elymus glaucus* Buckley), including variety or subspecies information) | |
| Common Name(s): | Needleleaf navarretia, Needle Leaved Navarretia, interwoven navarretia |
| Species Code (as per USDA Plants database): | NAIN2 |
| **GENERAL INFORMATION** | |
| Geographical range (distribution maps for North America and Washington state) | Southern British Columbia, Washington, Oregon, California (5, 7) |

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| | See maps. |
| Ecological distribution (ecosystems it occurs in, etc): | Needleleaf navarretia is found in moist ground, drying soil of ditches, intermittent streams (1), vernal ponds (1, 2, 5), open meadows (5), chaparral (7), and valley grassland (7). |
| Climate and elevation range | Below 6000 feet (5), 0-7000 feet (7) |
| Local habitat and abundance; may include commonly associated species | Found in yellow pine forest, Red fir forest, Lodgepole pine forest (7).<br><br>Associated with *Salix lasiolepis, Hordeum brachyantherum, Deschampsia elongata, Mimulus guttatus, Leymus triticoides, Juncus balticus, Asclepias fascicularis,* and *Apocynum cannabinum* (7). |
| Plant strategy type / successional stage (stress-tolerator, competitor, weedy/colonizer, seral, late successional) | Understory species (7) |
| Plant characteristics (life form (shrub, grass, forb), longevity, key characteristics, etc) | Annual with pale blue to white flowers in dense clusters (2, 3, 5). Shaggy-haired leaves with forked tips (5), stem brown with crisped white hairs (2, 5). Average height is 2-8 inches (1, 2). |
| **PROPAGATION DETAILS**<br><br>**Native Plant Network (4)** | |
| Ecotype (this is meant primarily for experimentally derived protocols, and is a description of where the seed that was tested came from): | Collected near Eugene in Lane County, Oregon. |
| Propagation Goal (Options: Plants, Cuttings, Seeds, Bulbs, Somatic Embryos, and/or Other Propagules): | Plants |
| Propagation Method (Options: Seed or Vegetative): | Seed |
| Product Type (options: Container (plug), Bareroot (field grown), Plug + (container-field grown hybrids, and/or Propagules (seeds, cuttings, poles, etc.)) | Container (plug) |
| Stock Type: | |
| Time to Grow (from seeding until plants are ready to be outplanted): | |
| Target Specifications (size or characteristics of target plants to be produced): | |
| Propagule Collection (how, when, | |

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|---|---|
| etc): | |
| Propagule Processing/Propagule Characteristics (including seed density (# per pound), seed longevity, etc): | |
| Pre-Planting Propagule Treatments (cleaning, dormancy treatments, etc): | Seeds were sown in Cone-tainers filled with Sunshine #1 (a peat-based media), and amended with Micromax micronutrients and Osmocote 14-14-14, a slow-release fertilizer. Flats were placed in an unheated green house where temperatures averaged 40 degrees during the day and 35 degrees at night. |
| Growing Area Preparation / Annual Practices for Perennial Crops (growing media, type and size of containers, etc): | Flats were moved to a heated greenhouse (65 degree days, 50 degree nights) after one month. |
| Establishment Phase (from seeding to germination): | Seeds only germinated in cool temperatures. |
| Length of Establishment Phase: | 2-4 weeks |
| Active Growth Phase (from germination until plants are no longer actively growing): | |
| Length of Active Growth Phase: | |
| Hardening Phase (from end of active growth phase to end of growing season; primarily related to the development of cold-hardiness and preparation for winter): | |
| Length of Hardening Phase: | |
| Harvesting, Storage and Shipping (of seedlings): | |
| Length of Storage (of seedlings, between nursery and outplanting): | |
| Guidelines for Outplanting / Performance on Typical Sites (eg, percent survival, height or diameter growth, elapsed time before flowering): | |
| Other Comments (including collection restrictions or guidelines, if available): | |
| **INFORMATION SOURCES** | |
| References (full citations): | See below. |
| Other Sources Consulted (but that contained no pertinent information) (full citations): | See below. |
| Protocol Author (First and last name): | Natalie R. Schmidt |

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| Date Protocol Created or Updated (MM/DD/YY): | 05/18/11 |

**References:**


(1) Jolley, R. 1988. Wildflowers of the Columbia Gorge. Oregon Historical Society. Portland, Oregon. Pg 461.

(2) Niehaus, T. F. and C. L. Ripper. 1976. A Field Guide to Pacific States Wildflowers. Houghton Mifflin Company. Boston, Massachusetts. Pg 364.

(3) Kozloff, E. N. 2005. Plants of Western Oregon, Washington, and British Columbia. Timber Press. Portland, Oregon. Pg 278.

(4) Bartow, Amy 2005. Propagation protocol for production of container *Navarretia intertexta* (Benth.) Hook. plants; USDA NRCS - Corvallis Plant Materials Center, Corvallis, . In: Native Plant Network. URL: http://www.nativeplantnetwork.org (accessed 6 May 2011). Moscow (ID): University of Idaho, College of Natural Resources, Forest Research Nursery.

(5) Turner, M. 2011. Entry on *Navarretia intertexta*. Turner Photographics Website. URL: http://www.pnwflowers.com/flower/navarretia-intertexta (accessed 7 May 2011).

(6) USDA Natural Resources and Conservation Service Website. Plant Profile for *Navarretia intertexta*. URL: http://plants.usda.gov (accessed 7 May 2011). http://plants.usda.gov/java/profile?symbol=NAIN2

(7) California Native Plant Link Exchange. Entry on *Navarretia intertexta*. URL: http://www.cnplx.info/nplx/species?taxon=Navarretia+intertexta (accessed 7 May 2011).


**Other Sources Consulted:**


(1) St. John, H. 1937. Flora of Southeastern Washington. Outdoor Pictures. Escondido, California


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