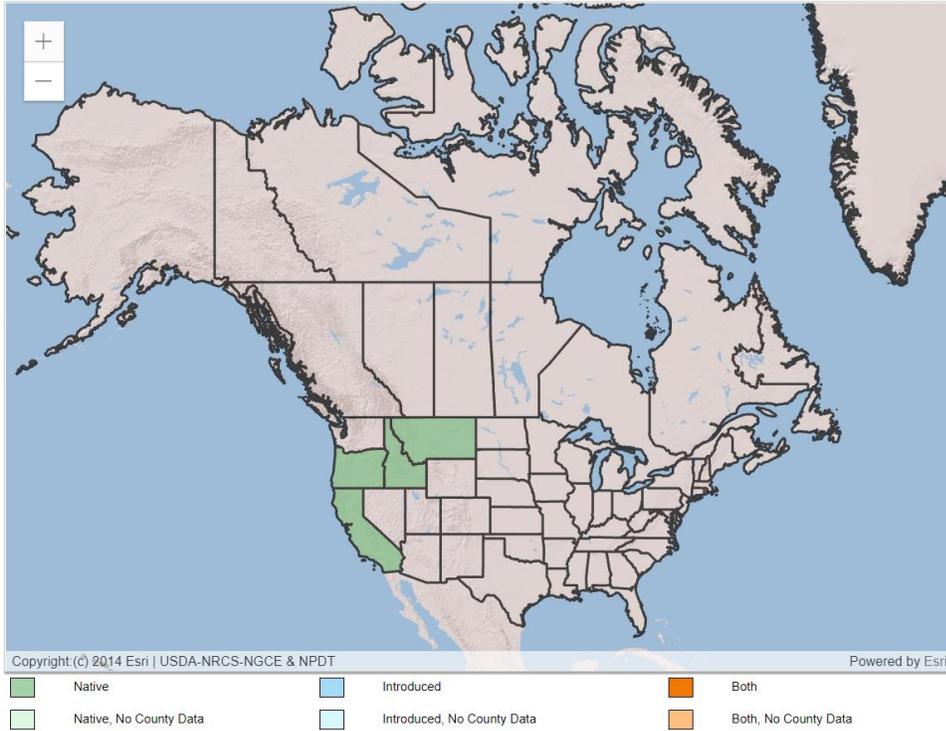


Plant Propagation Protocol for *Mertensia bella*
ESRM 412 – Native Plant Production
Spring 2022

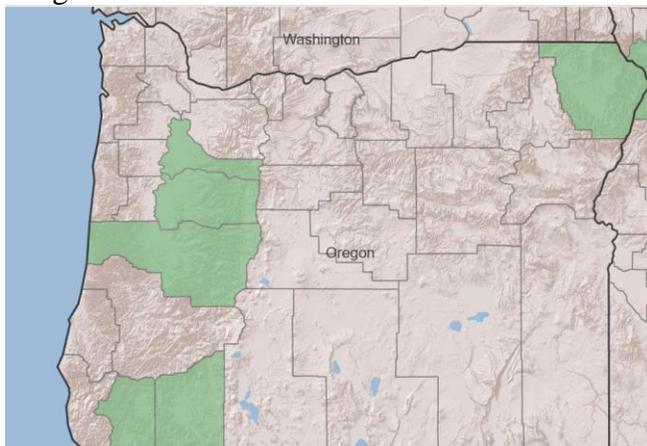
URL: <https://courses.washington.edu/esrm412/protocols/2022/MEBE>

North America Distribution



Source: USDA PLANTS Database

Oregon Distribution



Source: USDA PLANTS Database

California Distribution



TAXONOMY	
Plant Family	
Scientific Name	Boraginaceae
Common Name	Borage Family
Species Scientific Name	
Scientific Name	Genus: <i>Mertensia</i> Species: <i>bella</i> Species Authority: Piper
Varieties	N/A
Sub-species	N/A
Cultivar	N/A
Common Synonym(s)	<i>Mertensia siskiyouensis</i> Applegate
Common Name(s)	Beautiful Bluebells, Oregon Lungwort ³ , Oregon Bluebells
Species Code (as per USDA Plants database)	MEBE
GENERAL INFORMATION	
Geographical range	North Western United States: California, Southwestern Oregon, northern Idaho, and northwestern Montana ⁸ . See maps above for distribution in North America and the U.S.
Ecological distribution	Wet, seepy, open or partially shaded slopes in the montane and subalpine zones, often in mesic, forb dominated communities or openings in spruce-fir forests ⁹ .
Climate and elevation range	Climate ³ : -Annual Precipitation: 74.1" - 105.3" -Summer Precipitation: 1.93" - 3.61" -Coldest Month: 38.3" - 39.2" -Hottest Month: 57.7" - 58.2" -Humidity: 2.29" - 12.25" Elevation: 1500-1800 m ⁸
Local habitat and abundance	Prefers wet meadows ⁸ and partially shaded mountain habitats ⁹ .
Plant strategy type / successional stage (stress-tolerator, competitor, weedy/colonizer, seral, late successional)	I could not find its strategy type; Records indicate that its flowers can be eaten raw and its leaves can be eaten raw or cooked (however cooked is preferred) ⁴ .
Plant characteristics	It is a perennial herb with solitary stems that grow from a bulb-like root, which ranges from 10-40 cm tall ⁹ . The leaves are ovate, thin, evidently veiny, and 38 cm long ⁹ . "The blue flowers are stalked and borne in open



Photo credit³:
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inflorescences at the top of the stem and in the axils of the upper leaves”⁹.

“The lower two-thirds of the 5 petals are united into a bell-shaped corolla that is 6-10 mm long”⁹.

The calyx is 2-3 mm long and sparsely hairy⁹.

“The bell-shaped flowers lack a distinctly constricted lower tubular portion separate from a flaring upper portion”⁹; this distinguishes it from other *Mertensia* in the U.S.

It reproduces sexually through seeds⁴.

PROPAGATION DETAILS

Ecotype	N/A
Propagation Goal	Plants
Propagation Method	Seed
Product Type	Could not find product type explicitly stated. However, looking at protocols for similar species, <i>Mertensia virginica</i> (L.) Pers. ex Link ¹ and <i>Mertensia viridis</i> A. Nels. ² , the product type is container (plug).
Stock Type	Could not find this information.
Time to Grow	Could not find this information.
Target Specifications	Wild, mature plants can grow up to between 0.7 - 1.6 ft tall ³ .
Propagule Collection Instructions	<i>Mertensia bella</i> Piper flowers around May, June, and July so seed collection would need to take place some period of time after flowering.
Propagule Processing/Propagule Characteristics	Could not find this information for this specific species, however another plant with the same genus and same range distribution, <i>Mertensia viridis</i> A. Nels, indicates that the inferred seed dormancy is physiological dormancy ² . This may or may not apply to <i>Mertensia bella</i> Piper. Seeds should be kept in cold storage until ready to plant.
Pre-Planting Propagule Treatments	Seeds need to be treated for physiological dormancy if it grows similarly to <i>Mertensia viridis</i> A. Nels.
Growing Area Preparation / Annual Practices for Perennial Crops	Media type was not specified. However, since its ideal habitat is wet meadows and partially shaded mountainous areas, soil conditions similar to that would probably be best. Container: a pot, size was not specified.
Establishment Phase Details	Could not find this information.
Length of Establishment Phase	Could not find this information.

Active Growth Phase	Could not find this information.
Length of Active Growth Phase	Could not find this information.
Hardening Phase	Could not find this information.
Length of Hardening Phase	Could not find this information specifically. However, this plant will flower from May-July, and will become dormant again until its next flowering season ⁹ .
Harvesting, Storage and Shipping	Could not find this information.
Length of Storage	Seeds are best sown in a cold frame as soon as they are ripe ⁶ . Sow stored seed as early in the year as possible ⁶ . Protect them from direct sunlight ⁶ .
Guidelines for Outplanting / Performance on Typical Sites	When the seedlings are large enough to handle, put the seedlings out into individual pots and grow them in the greenhouse for at least their first winter ⁴ . Plant them out into their permanent positions in late spring or early summer, after the last expected frosts ⁴ .
Other Comments	There is very little propagation information and growth information to be found for this species as it is a more obscure plant with a very narrow habitat range. It is also labeled as a sensitive species ⁹ U.S.-wide by the USFS, thus more research into this plant would be beneficial.
INFORMATION SOURCES	
References	See below for full reference list
Other Sources Consulted	Fukuda, T., & Ikeda, H. (2012). Palynological analysis and taxonomic position of The genus <i>Mertensia</i> (Boraginaceae). <i>Botany</i> , 90(8), 722+. https://cdnsiencepub-com.offcampus.lib.washington.edu/doi/10.1139/b2012-024 Nazaire, M., & Hufford, L. (2014). Phylogenetic Systematics of the Genus <i>Mertensia</i> (Boraginaceae). <i>Systematic Botany</i> , 39(1), 268+.
Protocol Author	Emily Oh
Date Protocol Created or Updated	06/10/22

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