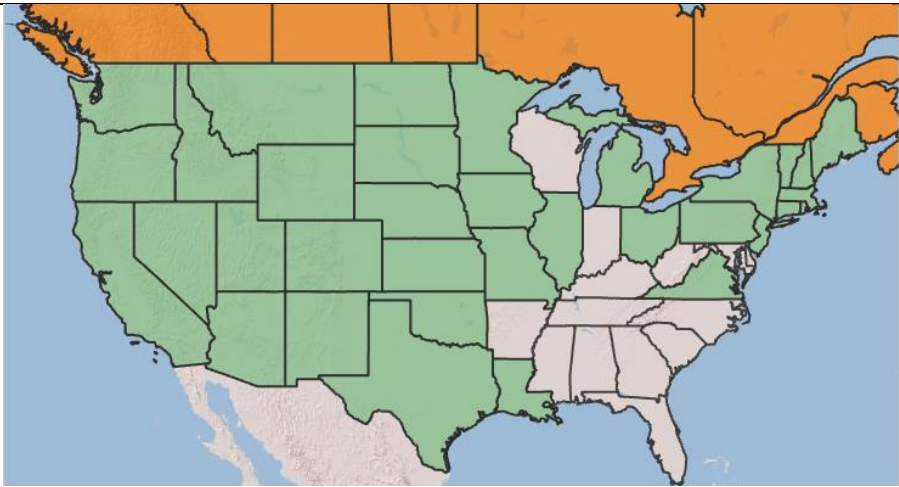




Plant Propagation Protocol for *Cosmopolitan Bulrush*

ESRM 412 – Native Plant Production

URL: <https://courses.washington.edu/esrm412/protocols/2024/BOMA7.pdf>

TAXONOMY	
Plant Family	
Scientific Name	Cyperaceae
Common Name	Sedge family
Species Scientific Name	
Scientific Name	<i>Bolboschoenus maritimus</i> Palla
Varieties	N/A
Sub-species	Bolboschoenus maritimus subsp. affinis (Roth) Bolboschoenus maritimus subsp. Maritimus (T. Koyama) Bolboschoenus maritimus subsp. Paludosus ³
Cultivar	N/A
Common Synonym(s)	Reigera maritima (L.) Opiz Schoenoplectus maritimus (L.) Lye Scirpus maritimus L. Scirpus maritimus var. genuinus Godr. ²
Common Name(s)	Cosmopolitan bulrush
Species Code (as per USDA Plants database)	BOMA7
GENERAL INFORMATION	
Geographical range	 <p>Green represents areas where the plant can be found. Orange indicates areas in Canada specifically the plant can be found.</p>

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Ecological distribution	Seaside environments, wetlands, marshes, and backwater ponds. ^{4,6}
Climate and elevation range	Elevation ranges from near sea level to 100m. Thrives in cooler, seaside climates that experiences flooding in the later spring and early summer months. ^{4,8}
Local habitat and abundance	Found in the counties of Washington surrounding Puget Sound and along the Columbia River. ⁸
Plant strategy type / successional stage	Tolerant of salinity, flooding, CaCO ₃ , and (moderately) fire. Intolerant of drought, shade, and alkaline soils. ⁸ This species tends to be an initial colonizer, but is not a dominant species. ⁵
Plant characteristics	<p>Perennial sedge with small, bulbous flowers arranged into spikelets. Flowers produce small, one-seeded achenes while its thick stem produces long, leafy bracts. Spread by rhizomes, which can be found in clumps at base of plant. ^{4,8}</p> 

PROPAGATION DETAILS: FROM SEED	
Ecotype	Boulder County, Parks and Open Space, Sombraero Marsh, CO ¹
Propagation Goal	Plants.
Propagation Method	Seeds.
Product Type	Planting plugs are recommended for propagation. ¹
Stock Type	1+0 container ¹
Time to Grow	4-8 weeks to fully establish. ^{5,9} No information found regarding full time to grow.
Target Specifications	Height of 3.2 feet. ⁸
Propagule Collection Instructions	Seeds should be collected in late summer to early fall, and subsequently sown 1-2 weeks later. They can be collected by hand, using hand shears, or using a power seed harvester. After collection, seeds should be shaken loose from seedhead and sieved to filter out debris. Seeds should be sown in wet soil (~3cm), placed on the soil surface, and exposed to full sun or partial shade. When they reach appropriate size, can be directly outplanted to site. ⁷
Propagule Processing/Propagule Characteristics	Seed density is typically ~250,000 seeds per pound. If properly monitored, seeds can be stored in a dry place at room temperature for up to 20 years. ¹
Pre-Planting Propagule Treatments	To increase germination rates, treating seeds with gentle solutions of sodium hypochlorate can be used. No specific details found. Another way to increase germination rates include cold stratification in a mixture of water and sphagnum moss for 30 days. ^{5,7}
Growing Area Preparation / Annual Practices for Perennial Crops	This species is adapted to soil textures ranging from sands and loam to clay, however a wet sandy loam is recommended. pH levels tend to be more alkaline, with a tolerance up to 9. Recommended container type is plugs (2"x2", 5" deep. ^{7,10}
Establishment Phase Details	This species should be kept under greenhouse temperatures and constant moisture during germination. ⁸
Length of Establishment Phase	1-2 weeks.
Active Growth Phase	A cultural practice while plant is in the active growth phase is fluctuating water levels during the first establishment year. Can handle 2-3 inches of standing water at this time. ⁶
Hardening Phase	A cultural practice while plant is in the hardening phase is to leave germinants outside over the winter to experience hardening. ¹⁰
Guidelines for Outplanting / Performance on Typical Sites	Can be directly planted to desired site. Areas with little competition from weeds can boost growth, which can be completed after one growing season. Mature plants grow up to 3 feet tall, with flowers blooming in late spring. ^{1,9}
Other Comments	<ul style="list-style-type: none"> - When collecting seeds, be wary of bracts in the seed heads, which are irritating to eyes and skin. Gear such as gloves and protective eyewear are recommended.

	<ul style="list-style-type: none"> - When researching this species, the information found was either incomplete or very vague, as this species is extremely variable. As a result, I was unable to find complete information about the length of each growth phase and seedling storage.
INFORMATION SOURCES	
References	<p>(1) Barner, Jim. "Native Plant Network Protocol Information: Bolboschoenus (Maritimus)." Native Plant Network- Reforestation, Nurseries & Genetic Resources, npn.rngr.net/. Accessed 1 May 2024.</p> <p>(2) "Bolboschoenus Maritimus (L.) Palla: Plants of the World Online: Kew Science." Plants of the World Online, powo.science.kew.org/taxon/urn:lsid:ipni.org:names:298094-1. Accessed 1 May 2024.</p> <p>(3) "Integrated Taxonomic Information System- Report: Bolboschoenus Maritimus (L.) Palla", ITIS, https://www.itis.gov/servlet/SingleRpt/SingleRpt?search_topic=TSN&search_value=508145#null. Accessed 1 May 2024.</p> <p>(4) L. "Schoenoplectus Maritimus - L." Pfaf Plant Search, pfaf.org/user/Plant.aspx?LatinName=Schoenoplectus%2Bmaritimus. Accessed 1 May 2024.</p> <p>(5) Robson, Kathleen A., et al. Encyclopedia of Northwest Native Plants for Gardens and Landscapes. Timber Press, 2008.</p> <p>(6) Rose, Robin, et al. Propagation of Pacific Northwest Native Plants. Oregon State University Press, 1998.</p> <p>(7) Tilley, D., and L. St. John. 2012. Plant guide for cosmopolitan bulrush (Schoenoplectus maritimus). USDA-Natural Resources Conservation Service, Idaho Plant Materials Center. Aberdeen, ID. 83210. Published: October 2012</p> <p>(8) USDA Plants Database, plants.usda.gov/home/plantProfile?symbol=BOMA7. Accessed 1 May 2024.</p> <p>(9) Wilman, Victoria. "Bolboschoenus Maritimus." Bolboschoenus Maritimus PlantZAfrica, Mar. 2006, pza.sanbi.org/bolboschoenus-maritimus.</p>

	(10) Young, James A., and Cheryl G. Young. Collecting, Processing and Germinating Seeds of Wildland Plants. Timber Press, 1995.
Other Sources Consulted	Palla, (Linnaeus), and S. Galen Smith. "Bolboschoenus Maritimus." Bolboschoenus Maritimus - FNA, floranorthamerica.org/Bolboschoenus_maritimus . Accessed 1 May 2024.
Protocol Author	Larasati Villa
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