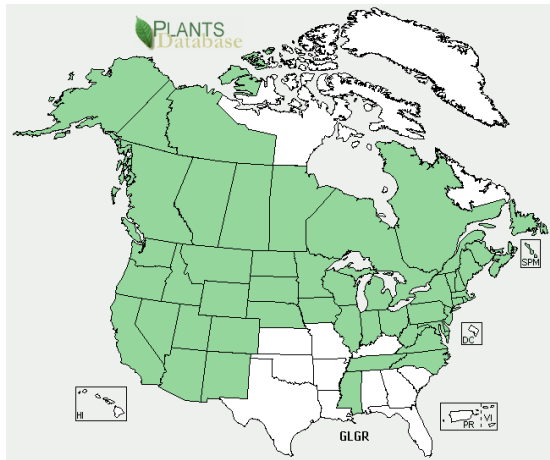
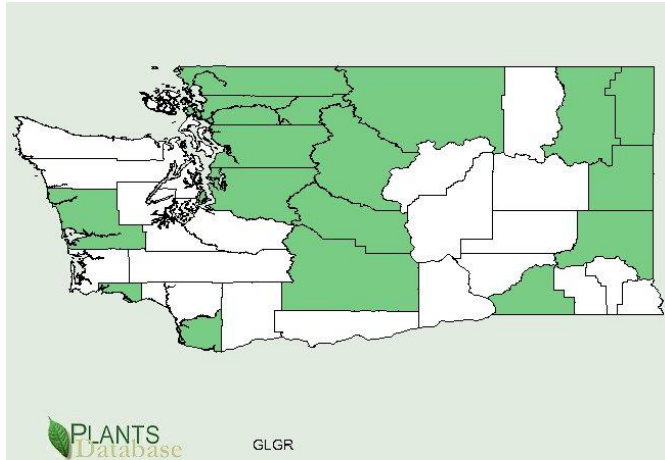


**Plant Propagation Protocol for *Glyceria grandis***  
**ESRM 412 – Native Plant Production**



US and Canada Distribution



Washington State Distribution

From PLANTS Database

<b>TAXONOMY</b>	
<b>Plant Family</b>	
Scientific Name	Poaceae
Common Name	Grass
<b>Species Scientific Name</b>	
Scientific Name	<i>Glyceria grandis</i> S. Watson
Varieties	var. <i>grandis</i> var. <i>komarovii</i> L. Kelso
Sub-species	None.
Cultivar	None.
Common Synonym(s)	None.
Common Name(s)	American mannagrass Tall mannagrass (ARS)
Species Code (as per USDA Plants database)	GLGR
<b>GENERAL INFORMATION</b>	
Geographical range	See above maps for distribution.
Ecological distribution	Along streams, lakes, meadows, bogs, and marsh sites. Tolerant of full sun and shade (North Fork Native Plants) (Pettinger). Salt and drought intolerant (LCD).
Climate and elevation range	Found at mid-low elevations in Washington State, (WNPS) and at 1340 to 2715 m in southeastern Oregon, southern Idaho, and western Montana (Natureserve). It is found across many climatic conditions across North America ranging from Alaska to New Mexico to Mississippi to Nova Scotia but not in the humid subtropical climate of the Southeast (PLANTS).
Local habitat and abundance	Found through much of Washington State (PLANTS)
Plant strategy type / successional	Seral <i>Glyceria grandis</i> /mesic forb association found in CO, ID,

stage	MT, OR, WA which can have up to 90% cover by GLGR. (Natureserve). Can compete with Washington State invasive species at times (Sound Native Plants). Spreads by rhizomes (LCD) and seed (Genesis Nursery Inc). Adapted to fine textured soils and medium water usage (LCD).
Plant characteristics	Short lived clumping perennial grass (LCD, Pettinger) growing up to 5 ft tall (WNPS). Utilizes C3 carbon fixation (Ketzner). Leaves are 6 to 15 mm wide coming up from soft thick stems (Pojar). Flowers in June, July, and August with purple panicles 20-40 cm long (WNPS).
<b>PROPAGATION DETAILS</b>	
Ecotype	Seed propagation described by Genesis Nursery Inc. from seed collected in drainage ditch near Van Petten, Green River Lowland, Illinois. (Genesis Nursery Inc.)
Propagation Goal	Plants
Propagation Method	Seed
Product Type	Plug (Genesis Nursery Inc.)
Stock Type	N/A
Time to Grow	N/A
Target Specifications	N/A
Propagule Collection Instructions	Washington State seed collection following flowering period of June, July, and August (WNPS). A similar species <i>Glyceria Striata</i> has seeds which mature July-September and turn brown when ripe (USDA).
Propagule Processing/Propagule Characteristics	1,814,000 seeds per pound. Long term storage unknown but seed is orthodox and undergoes dormancy (Genesis Nursery Inc.).
Pre-Planting Propagule Treatments	Can require cold, dry stratification for two to three months, however not all collected seeds have required this (Everwilde Farms, Genesis Nursery Inc.).
Growing Area Preparation / Annual Practices for Perennial Crops	N/A
Establishment Phase Details	Sow seeds on surface as seeds need light to break dormancy and germinate (Prairie Moon 2009). Outdoor spring sowing is very effective (Genesis Nursery Inc.). In Illinois sow seeds at 70° F with water (Genesis Nursery Inc.).
Length of Establishment Phase	N/A
Active Growth Phase	N/A
Length of Active Growth Phase	N/A
Hardening Phase	N/A
Length of Hardening Phase	N/A
Harvesting, Storage and Shipping	N/A
Length of Storage	N/A
Guidelines for Outplanting /	Can establish very well, in some cases competing with invasive

Performance on Typical Sites	species (Sound Native Plants). Capable of excluding reed canary grass if establish before (North Fork Nursery). Medium seedling vigor (LCD)
Other Comments	No collection restrictions or guidelines found.
<b>INFORMATION SOURCES</b>	
References	<p>ARS, National Genetic Resources Program, USDA. <i>Glyceria grandis</i> S. Watson. Germplasm Resources Information Network - (GRIN) [Online Database]. National Germplasm Resources Laboratory, Beltsville, Maryland. 20 May 2014. &lt; <a href="http://www.ars-grin.gov/cgi-bin/npgs/html/taxon.pl?17677">http://www.ars-grin.gov/cgi-bin/npgs/html/taxon.pl?17677</a>&gt;</p> <p>Everwilde Farms. "<i>Glyceria Grandis Seeds</i>." Everwilde Farms. Web. 20 May 2014. &lt;<a href="http://www.everwilde.com/store/Glyceria-grandis-Seed.html">http://www.everwilde.com/store/Glyceria-grandis-Seed.html</a>&gt;</p> <p>Genesis Nursery Inc. "<i>GRAMINEAE 2</i>." Genesis Nursery Inc. Sept. 2012. Web. 20 May 2014. &lt;<a href="http://www.genesisnurseryinc.com/Up%20Ur%20C/C7%20Grass%20era_ziz.pdf">http://www.genesisnurseryinc.com/Up%20Ur%20C/C7%20Grass%20era_ziz.pdf</a>&gt;</p> <p><i>Glyceria grandis</i> S Watson. USDA, NRCS. 2014. The PLANTS Database (<a href="http://plants.usda.gov">http://plants.usda.gov</a>, 20 May 2014). National Plant Data Team, Greensboro, NC 27401-4901 USA. 20 May 2014.</p> <p>Ketzner, David, and Jeanne Karnes. "<i>Glyceria grandis</i>." ILLINOIS PLANT INFORMATION NETWORK. Web. 20 May 2014. &lt;<a href="http://www.fs.fed.us/ne/delaware/ilpin/1395.co">http://www.fs.fed.us/ne/delaware/ilpin/1395.co</a>&gt;</p> <p>LCD. "<i>Riparian Planting Guide for Lincoln County</i>." Lincoln County Conservation District. Aug. 2004. Web. 20 May 2014. &lt;<a href="http://www.co.lincoln.wa.us/Planning/wria43/miscdocs/riparianplantingguide.pdf">http://www.co.lincoln.wa.us/Planning/wria43/miscdocs/riparianplantingguide.pdf</a>&gt;</p> <p>NatureServe. 2014. NatureServe Explorer: An online encyclopedia of life [web application]. Version 7.1. NatureServe, Arlington, Virginia. Available <a href="http://explorer.natureserve.org">http://explorer.natureserve.org</a>. 20 May 2014.</p> <p>North Fork Native Plants. <i>Wetland Plant Guide</i>. North Fork Native Plants. Mar. 2009. Web. 20 May 2014. &lt;<a href="http://www.northforknativeplants.com/images/projects/NFNP%20Wetland%20Plant%20Guide_031309.pdf?pkReferences=10">http://www.northforknativeplants.com/images/projects/NFNP%20Wetland%20Plant%20Guide_031309.pdf?pkReferences=10</a>&gt;</p> <p>Pettinger, April, and Brenda Costanzo. <i>Native Plants in the Coastal Garden: A Guide for Gardeners in the Pacific Northwest</i>. Portland, Or.: Timber, 2003. Print. 56-57 p.</p> <p>Pojar, Jim and MacKinnon, Andy. <i>Plants of the Pacific Northwest Coast: Washington, Oregon, British</i></p>

	<p>Columbia &amp; Alaska. Vancouver: Lone Pine Pub., 2004. Print. 380 p.</p> <p>Sound Native Plants. "Grasses, Rushes &amp; Sedges." Sound Native Plants. 20 May 2014. Web. &lt;<a href="http://www.soundnativeplants.com/grasses-rushes-sedges">http://www.soundnativeplants.com/grasses-rushes-sedges</a>&gt;</p> <p>USDA. <i>Range Plant Handbook</i>. New York: Dover Publications, 1988. Print. 112 p.</p> <p>WNPS. "<i>Glyceria grandis</i>." Washington Native Plant Society. Nov. 2007. Web. 23 May 2014. &lt;<a href="http://www.wnps.org/landscaping/herbarium/pages/glyceria-grandis.html">http://www.wnps.org/landscaping/herbarium/pages/glyceria-grandis.html</a>&gt;</p>
Other Sources Consulted	<p>Baskin, Carol C., and Jerry M. Baskin. <i>Seeds: Ecology, Biogeography, and Evolution of Dormancy and Germination</i>. San Diego, CA: Academic, 2001. Print.</p> <p>"King Conservation District." Personal interview. 2 May 2014.</p> <p>Klinka, K. <i>Indicator Plants of Coastal British Columbia</i>. Vancouver: U of British Columbia, 1989. Print.</p> <p>Kruckeberg, Arthur R. <i>Gardening with Native Plants of the Pacific Northwest</i>. Seattle: U of Washington, 1996. Print. 126-127 p.</p> <p>Harper-Lore, Bonnie, and Maggie Wilson. <i>Roadside Use of Native Plants</i>. Washington, D.C.: Island, 2000. Print.</p> <p>Leigh, Michael. <i>Grow Your Own Native Landscape – A Guide to Identifying, Propagating &amp; Landscaping with Western Washington Native Plants</i>. Native Plant Salvage Project, Washington State University Cooperative Extension, Thurston County, revised edition June 1999.</p> <p>Potash, L., C. Aubry, B. Busse, W. Hamilton, G. Ketcheson, J. Henderson, and R. Mace. 1994. "<i>Mt. Baker-Snoqualmie National Forest Native Plant Notebook</i>", Mt. Baker-Snoqualmie National Forest, Mountlake Terrace, Washington.</p> <p>"Propagation Protocol Database." Propagation Protocol Database. Web. &lt;<a href="http://www.nativeplantnetwork.org/Network/">http://www.nativeplantnetwork.org/Network/</a>&gt;</p> <p>Rose, Robin, Caryn E. C. Chachulski, and Diane L. Haase. <i>Propagation of Pacific Northwest Native Plants</i>. Corvallis: Oregon State UP, 1998. Print.</p> <p>"WNPS." Personal interview. 5 May 2014.</p> <p>Young, James A., and Cheryl G. Young. <i>Collecting, Processing and Germinating Seeds of Wildland Plants</i>. Timber, 1986. Print.</p>
Protocol Author	Ben Saari

Date Protocol Created or Updated	05/21/14
----------------------------------	----------