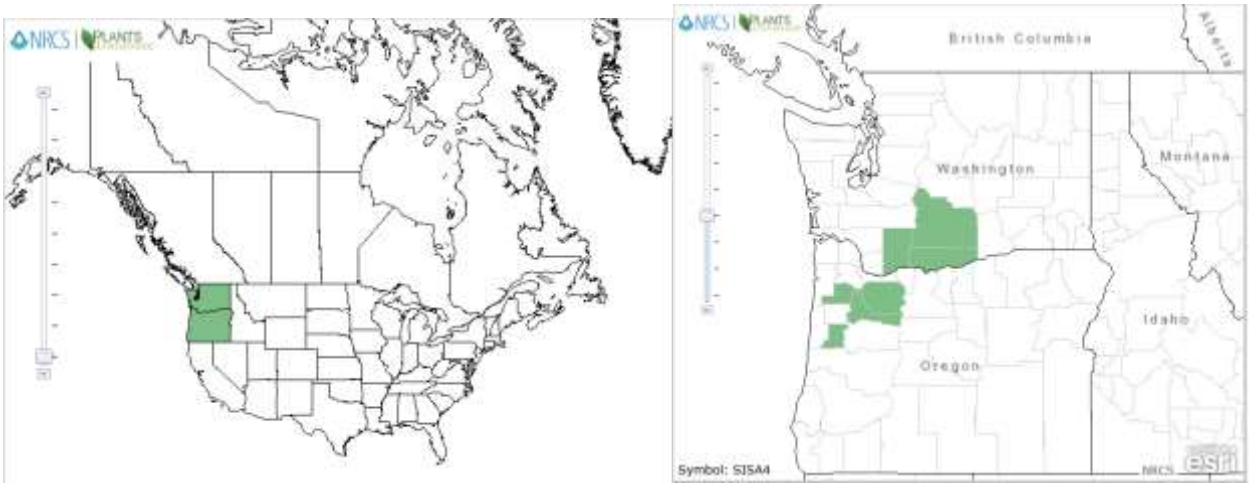
Plant Propagation Protocol for *Sisyrichium sarmentosum*
ESRM 412 – Native Plant Production
Protocol URL: https://courses.washington.edu/esrm412/protocols/SISA4.pdf



Source: USDA PLANTS Database[6]

TAXONOMY	
Plant Family	
Scientific Name	Iridaceae
Common Name	Iris family
Species Scientific Name	
Scientific Name	*Sisyrinchium sarmentosum* Suksd. Ex Greene
Varieties	
Sub-species	
Cultivar	
Common Synonym(s)	
Common Name(s)	Pale Blue-eyed grass,[5,8,9,10] Blue-eyed grass[1], Mountain Blue-eyed grass,[6] Pale Mountain Blue-eyed grass[8]
Species Code	SISA4
GENERAL INFORMATION	
Geographical range	See maps above for distribution in North America and Washington State.[6]
Ecological distribution	Limited to few populations in Gifford Pinchot National Forest in Washington and Mt. Hood National Forest in Oregon. [1,2,3,5,8] Moist grass/sedge meadows
Climate and elevation range	100 – 1700 m (365-5700 ft)[5] 480- 1220 m [9,10]
Local habitat and abundance	Listed as Threatened in WA state.[6] Seasonally moist grass/sedge meadows in Gifford Pinchot National Forest.[2,5,8,10]

	Faces threats from competition with woody shrub succession, tree species, encroachment of invasive species, livestock trampling, elk grazing, recreational impacts and agricultural practices.[2,8,9,10]
Plant strategy type / successional stage	Early seral[8]
Plant characteristics	 Photo Credit: Joe Arnett (2012)[3] Consortium of Pacific Northwest Herbaria & Burke Museum of Natural History and Culture Despite what the name suggests, this species is not a grass, it's in the iris family.[4,9] Perennial herbaceous plant.[2] Small in size, only 32 cm tall.[9] Small narrow, elongated leaves at base of plant. 2-7 flowers on slender stems.[9] Six tepals, pale blue with yellow eye.[2,5,8] Reproduces both through seed production (sexual) and numerous dark rhizomatous roots (asexual).[1,8,10] Flowers are protandrous, male parts of flower mature before female parts, promoting cross-pollination and reducing self-pollination.[2,8,9] Cross-pollination accomplished by bees.[2,8,9] Plants at lower elevations begin flowering in early June and produce mature seed capsules mid-July, while plants at higher elevations flower mid-July. Capsules produced in mid-August.[4,8] Seeds are dark brown, 1 – 1.5 mm in diameter. Approximately 18 – 37 seeds per capsule.[2,4]

PROPAGATION DETAILS [7]Raven, A. (2007) "*An Exploration of Possible Hybridization Between Pale Blue-eyed grass & Idaho Blue-eyed grass in Washington and Oregon*" A report submitted to the Gifford Pinchot National Forest, Washington. Prepared by The Berry Botanic Garden, Portland, OR.	
Ecotype	Terrestrial
Propagation Goal	Seed germinates
Propagation Method	Seeds
Product Type	
Stock Type	
Time to Grow	
Target Specifications	
Propagule Collection Instructions	Seeds were collected in July and August of 2005 in the Cave Creek Wildlife Special Area. Only intact, mature fruits were removed from study plants.
Propagule Processing/Propagule Characteristics	
Pre-Planting Propagule Treatments	After collection, fruits were transported to Berry Botanic Garden for processing. This entailed time in the drying vault (15 degrees C with 20% relative humidity). Once drying was complete the seeds were tested under eight different germination treatments. Five seeds were selected per treatment, totaling to 40 total seeds used in the germination experiment.
Growing Area Preparation / Annual Practices for Perennial Crops	The eight different germination treatments included: Constant 20 degree C temperature with alternating light (8 hrs) and dark cycles (16 hrs), Alternating temperatures: 10 degree C during dark cycles and 20 degree C during light cycles, 8 weeks of moist cold stratification in a refrigerator followed by placement into the constant 20 degree C germination chamber 8 weeks of moist cold stratification followed by placement in the alternating 10 degree C and 20 degree C chambers 16 weeks of moist cold stratification followed by placement in the 20 degree C chamber

	16 weeks of moist cold stratification followed by placement in the alternating temperature chamber 24 weeks of moist cold stratification followed by placement in the 20 degree C chamber 24 weeks of moist cold stratification followed by placement in the alternating temperature chamber
Establishment Phase Details	
Length of Establishment Phase	
Active Growth Phase	
Length of Active Growth Phase	
Hardening Phase	
Length of Hardening Phase	
Harvesting,	
Length of Storage	
Guidelines for Outplanting / Performance on Typical Sites	
Other Comments	Unfortunately, none of the 40 seeds germinated in any of the eight treatments. Additional research and field germination studies are necessary to further investigate the physiological dormancy of *Sisyrinchium sarmentosum* seeds. Future techniques to germinate these seeds may include nicking the seed coat or chemical scarification.
INFORMATION SOURCES	
References	See Below
Other Sources Consulted	See Below
Protocol Author	Jacqueline Watts
Date Protocol Created or Updated	May 16, 2015

References:

[1]Flora of North American Editoral Committee. "*Flora of North America North of Mexico: Volume 26* New York and Oxford, 2002. Print.

[2]Henderson, D. (1976) "A Biosystematic Study of Pacific Northwestern Blue-Eyed Grasses (Sisyrinchium, Iridaceae)" *Brittonia* 28(2): 149-176

[3]"*Herbarium Specimens from the Pacific Northwest*" Consortium of Pacific Northwest Herbaria & Burke Museum of Natural History and Culture (2013). Web. Accessed 16, May 2015. http://www.pnwherbaria.org/index.php

[4]Knoke, D. & Giblin, D. (n.d) "*Sisyrinchium sarmentosum*" Burke Museum of Natural History and Culture (2013). Web. Accessed 16, May 2015. http://biology.burke.washington.edu/herbarium/imagecollection.php?SciName=Sisyrinchium%20sarmentosum

[5]*"List of Vascular Plants Tracked by Washington Natural Heritage Program"* Washington Department of Natural Resources. Web. Accessed 16, May 2015. http://www1.dnr.wa.gov/nhp/refdesk/lists/plantrnk.html

[6]*"Plant Profile"* USDA Natural Resources Conservation Service, Web. Accessed 17, May 2015. http://plants.usda.gov/core/profile?symbol=SISA4

[7]Raven, A. (2007) "*An Exploration of Possible Hybridization Between Pale Blue-eyed grass & Idaho Blue-eyed grass in Washington and Oregon*" Unpublished report prepared by The Berry Botanic Garden, Portland, OR.

[8]Ruchty, A. & Raven, A. (2011) "Conservation Assessment for *Sisyrinchium sarmentosum* Suks. Ex. Greene" USDA Forest Service

[9]"*Sisyrinchium sarmentosum*" (2011) Center for Plant Conservation
Web. Accessed 17, May 2015.
http://www.centerforplantconservation.org/collection/CPC_ViewProfile.asp?CPCNum=4016

[10]Wilson, B., Doede, D., & Hipkins, V. (2000) "Isozyme Variation in *Sisyrinchium sarmentosum (*Iridaceae)" *Northwest Science* 74(4): 346-354