Plant Propagation Protocol for *Carex geyeri*

ESRM 412 – Native Plant Production

Protocol URL: https://courses.washington.edu/esrm412/protocols/CAGE2.pdf

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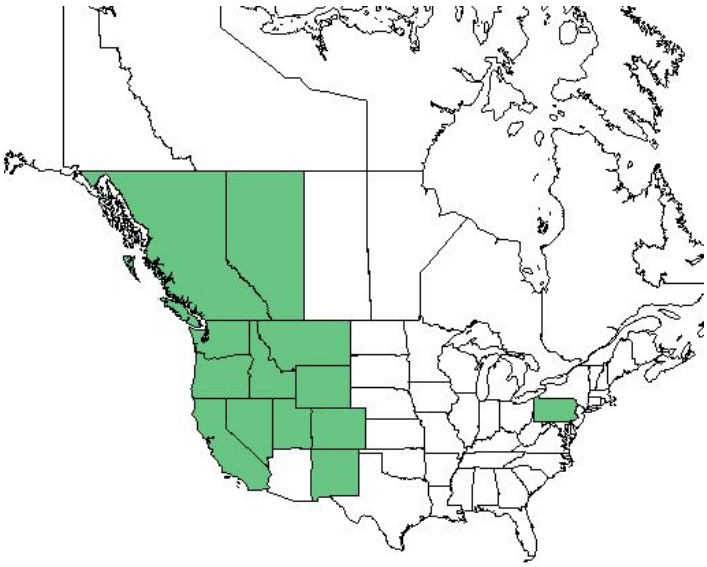
TAXONOMY	
Plant Family	
Scientific Name	Cyperaceae [4]
Common Name	Sedge Family
Species Scientific Name	
Scientific Name	*Carex geyeri* Boott.[4]
Varieties	N/A
Sub-species	N/A
Cultivar	N/A
Common Synonym(s)	N/A
Common Name(s)	Geyer's Sedge.[6] Elk Sedge.[2] Pine sedge.[1] Elk Grass.[1]
Species Code (as per USDA Plants database)	CAGE2 [4]
GENERAL INFORMATION	
Geographical range	In the United States and Canada found in mountains east of the cascade crest, rare in Pennsylvania.[11]

	 
Ecological distribution	Occurs in dry, open, coniferous forest with well-drained mesic soils [11, 7] or soils that are sandy, gravelly or rocky.[3] Usually woodlands, open slopes, dry meadows and burns.[2]
Climate and elevation range	Found in moderate elevations in foothills to mid montane elevations [10, 5] of 800-3300 m.[2] Very abundant on dry hillsides.[8] Full sun to partial sun.[7]
Local habitat and abundance	Dry coniferous forest.[1] Open slopes, meadows and woodlands. Plant associations include Ponderosa pine (*Pinus ponderosa*), Douglas-fir (*Pseudotsuga menziesii*), Whitebark pine (*Pinus albicaulis*), grand fir (*Abies grandis*), Quaking aspen (*Populus*

	tremuloides), Subalpine fir (*Abies lasiocarpa*), Engelmann spruce (*Picea engelmannii*), and Lodgepole pine (*Pinus contorta*).[1] Found a as solitary ground cover or with other species such as Pinegrass (*Calamagrostis rubescens*) or Idaho fescue (*Festuca idahoensis*).[1]
Plant strategy type / successional stage	*C. geyeri*, when dominant, is considered a late successional species.[1] Dominance occurs in dry open, coniferous forest where it tends to form a groundcover.[11] Species is unique as it is one of the few sedges that regularly occur in upland areas[7] consequently it is considered one of the more drought tolerant sedges.[3] Usually C. geyeri populations remain stable or increase after fire, regenerating from both rhizomes and buried seeds, especially in areas of low intensity and frequent burns.[1]
Plant characteristics	Grass-like, perennial sedge.[7] Loosely cespitose [10] and shallowly rhizomatous.[11] Rhizomes are dark, scaley and may be exposed at the soil surface.[11] Culms are triangular in cross section.[2] Leaves are flat, long and leathery and 1.5-3 mm wide.[11] Inflorescences can be inconspicuous but large perigynia are very distinctive if present.[11] If perigynia have fallen, the pattern of 1-3 empty female scales below a male spike aids also aids in identification.[7]

PROPAGATION DETAILS

Ecotype	N/A
Propagation Goal	Plants
Propagation Method	Seed
Product Type	Propagules
Stock Type	Direct Seed
Time to Grow	N/A
Target Specifications	Mature plants able to produce seed and colonize vegetatively.

Propagule Collection Instructions	N/A
Propagule Processing/Propagule Characteristics	91,400 seeds per pound.[9] In a non-irrigated setting, sow seed using a drill at 9.0 pounds PLS per acre.[9] If sowing seed using the broadcast method use 18.0 pounds PLS per acre in a non irrigated setting.[9] Seed production in natural populations can be infrequent and is generally low [7, 3] although seed production may increase after disturbance.[1] Generally, seed viability is also considered to be low.[3]
Pre-Planting Propagule Treatments	Seed requires cold, moist stratification.[7] Information regarding length of stratification could not be found. Scarification is also used to increase germination rates, especially methods that remove the perigynium before stratification [7] although information regarding this technique could not be found.
Growing Area Preparation / Annual Practices for Perennial Crops	N/A
Establishment Phase Details	Sow seed in fall.[7] Seed germinates in early spring when soil moisture is optimum.[3]
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 / Performance on Typical Sites	N/A
Other Comments	In flower from May to July.[3]
PROPAGATION DETAILS	

Ecotype	N/A
Propagation Goal	Plants.
Propagation Method	Vegetatively through rhizome division. If seed germination is unsuccessful vegetative propagation is recommended.[3]
Product Type	Plug
Stock Type	N/A
Time to Grow	N/A
Target Specifications	Plants able to produce seed and colonize vegetatively.
Propagule Collection Instructions	N/A
Propagule Processing/Propagule Characteristics	N/A
Pre-Planting Propagule Treatments	N/A
Growing Area Preparation / Annual Practices for Perennial Crops	Adding a nitrogen fertilizer may initiate positives responses.[3]
Establishment Phase Details	N/A
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 / Performance on Typical Sites	N/A
Other Comments	N/A

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