Plant Propagation Protocol for *Carex spectabilis*
ESRM 412 – Native Plant Production
URL: https://courses.washington.edu/esrm412/protocols/2024/CASP5.pdf

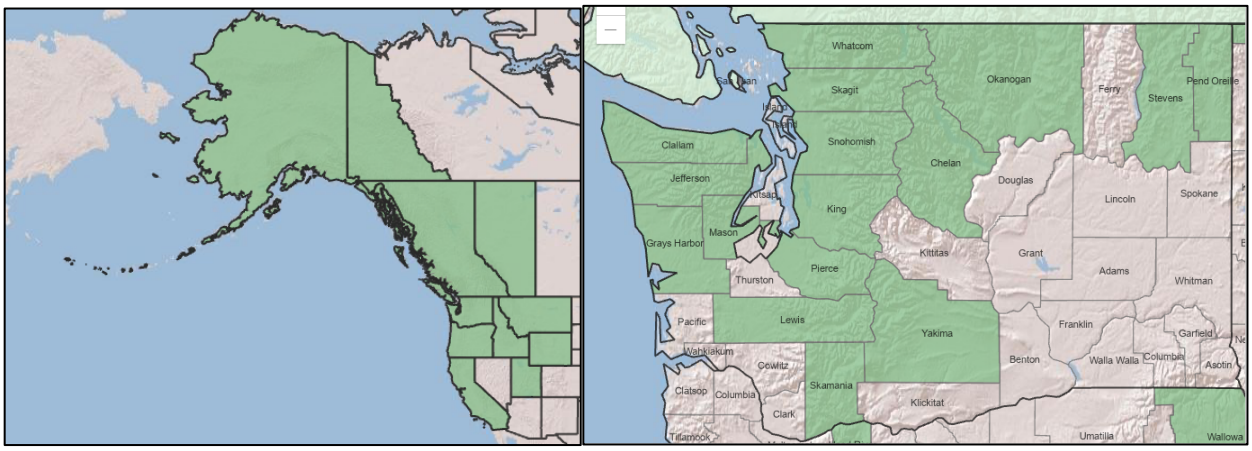

Figure 1. *Carex spectabilis* global distribution (left) and Washington distribution (right)[1]


Figure 2. Photos of *Carex spectabilis* plant (left) and inflorescences (right) from the Burke Image Collection[2].

TAXONOMY	
Plant Family	
Scientific Name	Cyperaceae
Common Name	Sedge family
Species Scientific Name	
Scientific Name	*Carex spectabilis* Dewey
Varieties	
Sub-species	

Cultivar	
Common Synonym(s)	*Carex invisa* L.H. Bailey *Carex nigella* Boott *Carex spectabilis* Dewey var. *superba* Holm *Carex tolmiei* Boott *Carex tolmiei* Boott var. *invisa* (L.H. Bailey) Kük.
Common Name(s)	Showy sedge
Species Code (as per USDA Plants database)	CASP5
GENERAL INFORMATION	
Geographical range	See Figure 1. Found in Alaska, California, Idaho, Montana, Oregon, Utah, Washington, and Wyoming. Also found in western Canada. In Washington, it is found in subalpine habitats in Skamania, Yakima, Lewis, Pierce, King, Chelan, Snohomish, Skagit, Whatcom, Okanagan, Mason, Clallam, Jefferson, Grays Harbor, Stevens, and Pend Oreille counties[1].
Ecological distribution	Subalpine to alpine ecosystems and forest openings[2,3]
Climate and elevation range	1200-2700 meters[3]
Local habitat and abundance	Common in moist, middle to high elevation meadows and rocky slopes[2,4]
Plant strategy type / successional stage	Colonizer of disturbed areas[5]
Plant characteristics	Perennial graminoid. See Figure 2.
PROPAGATION DETAILS – Plugs from seed	
Ecotype	NA
Propagation Goal	Plants
Propagation Method	Seed
Product Type	Plug
Stock Type	Luna and others[6] report successfully growing this species in 172 ml contetainers.
Time to Grow	11 months (if sown in fall)[6]. J. Drown (pers. comm) reports sowing in mid-May for outplantings mid to late September.
Target Specifications	Seedlings with 6-10 true leaves, 8-10 cm across with a firm root system[6].
Propagule Collection Instructions	Seeds from wild individuals in Logan Pass, WA developed in late August to mid-September[6].
Propagule Processing/Propagule Characteristics	Luna and others[6] achieved 100% purity and 80-90% viability by cleaning seeds using a Hammermill with a 3/16 in screen then and office clipper with a #14 screen and medium air speed. Their lot contained 2,030,368 seeds/kg.

Pre-Planting Propagule Treatments	*C. spectabilis* exhibits physiological dormancy[6], and can be subjected to cold-moist stratification to break dormancy[6,7]. While low germination rates can occur after only 6 weeks of stratification at 3°C, Luna and others[6] report 80-90% germination following a 5 month period of outdoor cold-moist stratification. J. Drown (pers. comm.) reports this species germinates readily without treatment, but achieves more uniform germination with 2 weeks of cold stratification or soaking for a few days followed by air-drying the seed surface.
Growing Area Preparation / Annual Practices for Perennial Crops	Luna and others[6] used a growing medium with 6:1:1 peat moss: perlite: vermiculite and supplemented with two fertilizers. For each 172 ml cone, they added 1g Osmocote (13:13:13 N:P_2O_5:K_2O) and 0.2g Micromax fertilizer (12%S, 0.1%B, 0.5%Cu, 12%Fe, 2.5%Mn, 0.05%Mo, 1%Zn)[6].
Establishment Phase Details	Sow seeds on the soil surface in flats in late October or November, and store flats in cold (not freezing) dark conditions through March or April[6,8]. Keep media lightly moist. In spring, Weisberg[8] suggests increasing soil temperature to 85°C which should promote germination after approximately two days. Alternatively, Luna and others[6] found that seedlings will germinate when springtime temperatures fluctuate between 15-21°C and 0-15°C.
Length of Establishment Phase	5-7 months[8]. J. Drown (pers. comm.) reports germination occurs within two to three weeks after soaking or cold stratification.
Active Growth Phase	Fertilize through the growing season using a 20:20:20 NPK fertilizer at 100 ppm[6].
Length of Active Growth Phase	12 weeks[6]
Hardening Phase	Fertilize in August and September using a 10:20:20 NPK fertilizer at 200 ppm, and gradually reduce watering from September to October[6].
Length of Hardening Phase	4 weeks[6]
Harvesting, Storage and Shipping	North Cascades National Park successfully (95% survival) overwintered *Carex* sp. plugs (in containers) by creating an insulated storage area out of peat moss bales and placing potted plants into loose peat moss[8]. Plants can also be overwintered in insulating foam and snow[6].
Length of Storage	Store during dormancy for the duration of winter[6,8]
Guidelines for Outplanting / Performance on Typical Sites	*C. spectabilis* outplantings at Sunrise, Mt. Rainier increased from 4% cover the year after planting to 7% cover 6 years after planting[4], however, this species

	tends to spread more slowly than forbs and low-growing woody shrubs in Mt. Rainier restoration plantings[9]. When planted in low-elevation habitats near Corvallis to produce a seed-increase bed, *C. spectabilis* survival was poor[9].
Other Comments	Del Moral[10] found this species was resistant to trampling damage in high-foot-traffic areas.
PROPAGATION DETAILS – Direct Sowing	
Ecotype	NA
Propagation Goal	Plants
Propagation Method	Seed
Product Type	Field grown plants (via direct sowing)
Stock Type	NA
Time to Grow	NA
Target Specifications	Restoration site revegetation using direct-sown seeds[8]
Propagule Collection Instructions	Collect seeds from the sowing location[8].
Propagule Processing/Propagule Characteristics	See "Plugs from seed" section above.
Pre-Planting Propagule Treatments	No published information on this topic.
Growing Area Preparation / Annual Practices for Perennial Crops	Break up the soil and mix in peat moss as needed before sowing seeds[8].
Establishment Phase Details	Sow seeds in fall and press the seeds into the soil to ensure seeds are in contact with the soil but not buried then cover the site with a biodegradable excelsior erosion control blanket (plastic netting removed)[8]. To promote seed germination, once snow has melted the spring after sowing, cover the site with plastic sheeting (over the excelsior blanket) to increase the soil temperature to 29°C. Vent the plastic if soil temperature exceeds 29°C. Once germination occurs remove the plastic sheeting[8].
Length of Establishment Phase	No published information on this topic.
Active Growth Phase	Water seedlings deeply and fertilize through summer to encourage strong root establishment before fall rains arrive.[8]
Length of Active Growth Phase	No published information on this topic.
Hardening Phase	No published information on this topic.
Length of Hardening Phase	No published information on this topic.
Harvesting, Storage and Shipping	NA
Length of Storage	NA
Guidelines for Outplanting / Performance on Typical Sites	NA
Other Comments	None.
PROPAGATION DETAILS – Vegetative	

Ecotyp	NA
Propagation Goal	Plants
Propagation Method	Vegetative Weisberg[8] recommends propagation of most *Carex* spp. through rhizomes, though also recommends using seeds to propagate *Carex spectabilis*.
Product Type	Plug
Stock Type	No published information on this topic.
Time to Grow	No published information on this topic.
Target Specifications	No published information on this topic.
Propagule Collection Instructions	No published information on this topic.
Propagule Processing/Propagule Characteristics	No published information on this topic.
Pre-Planting Propagule Treatments	No published information on this topic.
Growing Area Preparation / Annual Practices for Perennial Crops	No published information on this topic.
Establishment Phase Details	No published information on this topic.
Length of Establishment Phase	No published information on this topic.
Active Growth Phase	No published information on this topic.
Length of Active Growth Phase	No published information on this topic.
Hardening Phase	No published information on this topic.
Length of Hardening Phase	No published information on this topic.
Harvesting, Storage and Shipping	No published information on this topic.
Length of Storage	No published information on this topic.
Guidelines for Outplanting / Performance on Typical Sites	No published information on this topic.
Other Comments	This species expands readily through rhizomes when colonizing new areas[5].
INFORMATION SOURCES	
References	See below.
Other Sources Consulted	
Protocol Author	Alexandra M. Howell
Date Protocol Created or Updated	05/22/24

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Personal Communications:

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