Plant Propagation Protocol for *Carex livida*

ESRM 412 – Native Plant Production

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

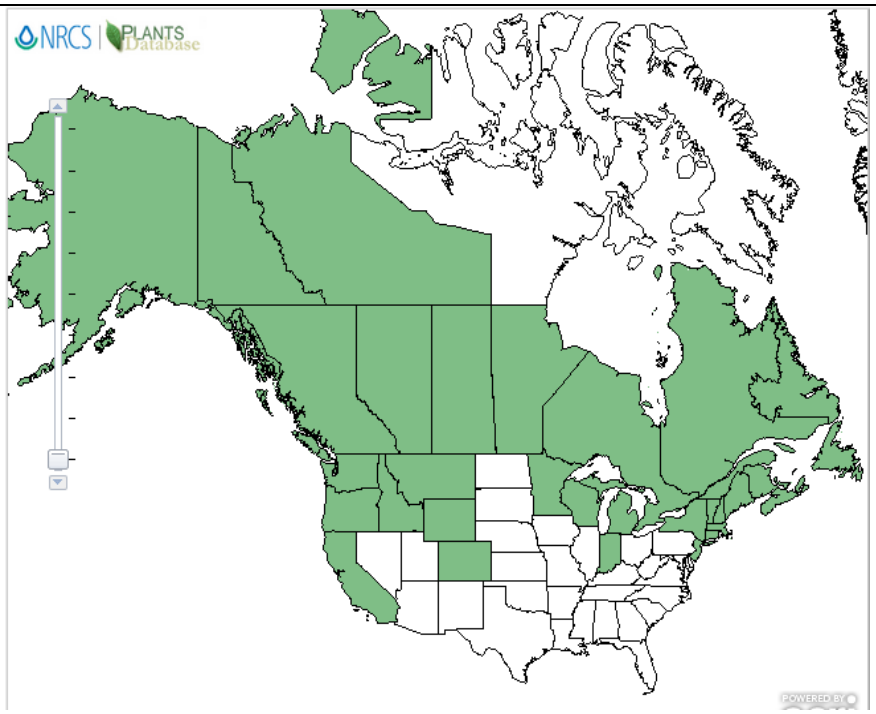
The plant and Pacific Northwest distribution

http://www.maine.gov/dacf/mnap/images/cxlivi_spike_3.jpg

Carex livida (The Livid Sledge)

TAXONOMY	
Plant Family	*Cyperaceae* (USDA 2016).
Scientific Name	*Carex livida* (USDA 2016).
Common Name	Livid sledge (USDA 2016).
Species Scientific Name	*Carex livida* (USDA 2016).
Scientific Name	Family – *Cyperaceae* Genus- *carex*

	Species- *livida* Scientific name- *carex livida* (USDA 2016).
Common Names	Leatherleaf sedge Berkeley sedge Oheme palm sedge Seersucker sedge Broad-leaf sedge Bowles' golden sedge (Nowick & Zea E-Books, 2015).
Sub-species	*Carex buchananii* *Carex divulsa* *Carex elata* *Carex morrowii* *Carex siderosticha* *Carex plantaginea* (USDA 2016).
Cultivar	*Variegate* *Ice dance* *Oehme* *Aurea* (Nowick & Zea E-Books, 2015).
Common Synonym(s)	*Carex livida* (Wahlenb.) Willd. var. *grayana* Fern. (Dewey) *Carex livida* (Wahlenb.) Willd. var. *radicaulis* (Paine) (USDA 2016).
Common Name(s)	Dewey Paine. (Nowick & Zea E-Books, 2015).
Species Code	OBL (USDA 2016).
GENERAL INFORMATION	

Geographical range	 Maine, Massachusetts, Vermont, New Hampshire, Rhodes island (USDA 2016).
Ecological distribution	It is found is the wetlands areas of Alaska, Atlantic Plains, Western Mountains, Midwest and Arid West (USDA 2016).
Climate and elevation range	The plant grows in areas of mesothermic climates, cool or boreal temperatures of 62^{O} F and is an indicator of high soil nitrogen content, surface ground water table or wet soil. It thrives in low elevations of between 2200 feet to 6000 feet. It can tolerate 120 frost free days, 15-45-inch precipitation and 12-inch soil depth (Michelle, 2008).
Local habitat and abundance	The livid Sledge is native to and abounds in the wetlands areas of Alaska, Atlantic Plains, Western Mountains, Midwest and Arid West (Michelle, 2008).
Plant strategy type / successional stage	The plant is tolerating to cold temperatures. The seed period starts and ends in summer (Michelle, 2008).
Plant characteristics	They are grass-like plants. In the fruits the achene dimples have no folds and an average length of 2.3 mm and with 1.5 mm. the styles also fall off after maturation. The leaves are arranged at the base of the plant. The sheath of the leaf has no dots or corrugations

	The leaf blade has a length to width ratio of 30- 62, and is folded length-wisely with a prominent mid-vein. The leaf sheath may or may not be tinted pink or purple in color. The leaf blade has a width of 1.5-6.5 mm. The leaf ligule length is between 1.2- 3.9 mm. There are no hairs present in the perimysium, whose length ranges between 3-5 mm. The upper stalk spike has staminate flowers while the lowest possesses a peduncle. The lower bract sheath is more than 4 mm long (Michelle, 2008).
PROPAGATION DETAILS	
Ecotype	The species grow in wet areas, like damps and blogs woods (Dumroese et. al., 2009).
Propagation Goal	The plant is propagated through seeds. The vegetative seed spread rate is moderate (Dumroese et. al., 2009).
Propagation Method	The propagation of the plant is mostly done using seeds (Nowick & Zea E-Books, 2015).
Product Type	Seeds are sown in containers, in cold frame during winter. Rhizomes are used for propagation. The main stems of the plant are usually triangular in shape (Michelle, 2008).
Stock Type	Rhizomes. This is the primary growth form of the plant (Michelle, 2008).
Time to Grow	It necessitates for a cold stratum. It has a short lifespan. It has an active growth rate during summer. The regrowth after harvesting is moderate (Dumroese et. al., 2009).
Target Specifications	The height of a mature plant should be 1.0 ft. The grains are always small (Michelle, 2008).
Propagule Collection Instructions	There should be long rhizomes for use. The precipitation tolerance should be between 15- 45 inches. There should be no frost for 120 days (Dumroese et. al., 2009).

Propagule Processing/Propagule Characteristics	It is propagated with 823,186 seeds per pound and is planted with a planting density per acre that ranges between 5120- 20000 plants (Dumroese et. al., 2009).
Pre-Planting Propagule Treatments	The grains are sorted and the potential seeds for germination are stored in a cool dry place till the next planting season. The seeds are dormant during winter and seed dormancy is broken during summer (Dumroese et. al., 2009).
Growing Area Preparation / Annual Practices for Perennial Crops	Growth habit is grained, in wetland regions. The PH is slight acidic and should range between 5.0– 6.5 (Michelle, 2008).
Establishment Phase Details from seeds to germination	The seeds are subjected to favorable conditions for germination and the rate depends on the hardness (Dumroese et. al., 2009).
Length of Establishment Phase	It depends on dormancy and hardness factors Michelle, A. (2008).
Active Growth Phase	This is experienced in early summer and ceases with the end of the summer period and onset of winter (Michelle, 2008).
Length of Active Growth Phase	The duration of growth is perennial in a federal status (Dumroese et. al., 2009).
Hardening Phase	Hardening or dormancy occurs during winter to escape the harsh weather (Michelle, 2008).
Length of Hardening Phase	Seeds are stored from the end of summer to the next season (Michelle, 2008).
Harvesting, Storage and Shipping	Harvesting of seeds it done by end of summer using thin membranes that cannot allow the small grains pass. The grains are stored in dry conditions to prevent germination process (Dumroese et. al., 2009).
Length of Storage of the seedlings between nursery and out-planting.	The grains stored for over the winter season (Dumroese et. al., 2009).
Guidelines for Out planting / Performance on Typical Sites	The seedlings are closely spaced between each other (Dumroese et. al., 2009).

Other Comments	The seeds are very small and should be collected carefully. They a have no allelopathy and resistance to fire. The plants are also not adapted to coarse, medium or fine textured soils for growth. Their anaerobic soil tolerance and calcareous soil tolerance is low. They also experience low tolerance to drought and shade (Dumroese et. al., 2009).
INFORMATION SOURCES	
References	Dumroese, R. Kasten; Luna, Tara; Landis, Thomas D., editors (2009). Nursery manual for native plants: A guide for tribal nurseries - Volume 1: *Nursery management. Agriculture Handbook 730.* Washington, D.C.: U.S. Department of Agriculture, Forest Service. 302 p. Michelle, A. (2008). *Carex livida*. *Fs.fed.us*. Retrieved 22 June 2016, from http://www.fs.fed.us/database/feis/plants/graminoid/carros/all.html United States Department of Agriculture. (2016). *Plants Profile for Carex livida (Livid sedge)*. (2016). *Plants.usda.gov*. Retrieved 22 June 2016, from http://plants.usda.gov/core/profile?symbol=CARO5 Nowick, E. M., & Zea E-Books,. (2015). *Historical common names of Great Plains plants, with scientific names index*.

Other Sources Consulted	American Journal of Science, and Arts 25: 141, pl. S, f. 59. 1834. (Amer. J. Sci. Arts) Gage, E. and D. J. Cooper. *Carex livida*: A Technical Conservation Assessment. USDA Forest Service, Rocky Mountain Region. June 21, 2006 Williams, Tara Y. 1990. *Carex livida*. In: Fire Effects Information System, [Online]. U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station, Fire Sciences Laboratory
Protocol Author	Qiao Li
Date Protocol Created or Updated	06/23/2016