Plant Propagation Protocol for *Campanula apar*inoides
ESRM 412 – Native Plant Production
Protocol URL: https://courses.washington.edu/esrm412/protocols/*CAAP2.pdf*

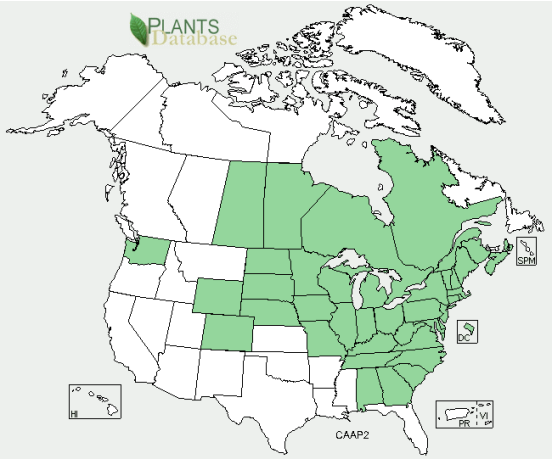

Figure 1: US Distribution Map [1]

TAXONOMY	
Plant Family	
Scientific Name	Campanulaceae
Common Name	Bellflower Family
Species Scientific Name	
Scientific Name	
Genus:	*Campanula L.*
Species:	*aparinoides*
Species Authority:	Pursh
Variety:	aparinoides
Sub-species:	
Cultivar:	
Authority for Variety/Subspecies:	
Common Synonym(s)	CAAPU *Campanula aparinoides* Pursh. var. *uliginosa* (Rydb.) Gleason CAAPG *Campanula aparinoides* Pursh. var. *grandiflora* Holz. CAUL3 *Campanula uliginosa* Rydb.
Common	Marsh Bellflower

Name(s)	
Species Code (as per USDA Plants database)	CAAP2
GENERAL INFORMATION	
Geographical range	**USA** (AL, CO, CT, DC, DE, GA, IA, IL, IN, KY, MA, MD, ME, MI, MN, MO, NC, ND, NE, NH, NJ, NY, OH, PA, RI, SC, SD, TN, VA, VT, WA, WI, WV, WY), **CAN** (MB, NB, NS, ON, QC, SK) Originally North American, the marsh bellflower grows in peatland meadows mostly on the eastern side of Canada and the USA. It has a general rangewide distribution but of the western states it is only prevalent in Washington.
Ecological distribution	The Marsh bellflower can be found mostly in wet environments such as marshes, shorelines, wet meadows, and stream banks across the U.S. [2].
Climate and elevation range	Climate: The minimum temperature for the marsh bellflower is -38 degrees Fahrenheit [5]. Elevation: This flower is often found at an elevation of about 254 to 1,600 meters [1,3].
Local habitat and abundance	The marsh bellflower is found locally in wet habitats such as marshes and meadows. It also has a low fruit and seed abundance [5].
Plant strategy type / successional stage	This species is known to have a high fire tolerance and successional growth thereafter although it is not fire resistant, which indicates that in the event of a fire it may disappear from vegetation and then regrow only to flourish [4,5].
Plant characteristics	The growth habitat for this species is as a forb/herb and has a perennial duration [5]. The flower can usually take a white coloration but is also found as blue or purple with simple leaves and 5 stamens. It creates capsule fruits that curve or droop downwards. This flower is often referred to as delicate and uncommon [2].
PROPAGATION DETAILS	
Ecotype	
Propagation Goal	Plants, cuttings, and seeds.
Propagation Method	Seed [5]
Product Type	Bare Root [5]
Stock Type	
Time to Grow	

Target Specifications	Target size of plants at maturity is 2 feet [5].
Propagule Collection Instructions	
Propagule Processing/Propagule Characteristics	Planting Density Per Acres, Minimum (11,000) and Maximum (18,000) [5].
Pre-Planting Propagule Treatments	
Growing Area Preparation / Annual Practices for Perennial Crops	The marsh bellflower is not able to be propagated by container or cuttings.
Establishment Phase Details	Seeds germinate easily with 70°F as the best temperature for rapid germination.
Length of Establishment Phase	
Active Growth Phase	Spring and Sumer [5]
Length of Active Growth Phase	The above indicated active growth phase is seasonal and lasts about 3 months as these plants have a short lifespan.
Hardening Phase	The marsh bellflower can withstand cold temperatures and has a particular hardiness per zone, Washington has zones 4a-9a ranging from -30 degrees Fahrenheit to 25 degrees Fahrenheit in which this plant should be able to withstand and prepare for winter [6]. Hardiness: USDA Zone 4a: -30 to -25 °F USDA Zone 4b: -25 to -20 °F USDA Zone 5a: -20 to -15 °F USDA Zone 5b: -15 to -10 °F USDA Zone 6a: -10 to -5 °F USDA Zone 6b: -5 to 0 °F USDA Zone 7a: 0-5 °F USDA Zone 7b: 5-10 °F USDA Zone 8a: 10-15 °F USDA Zone 8b: 15-20 °F USDA Zone 9a: 20-25 °F USDA Zone 9b: 2530 °F
Length of Hardening	

Phase	
Harvesting, Storage and Shipping	
Length of Storage	
Guidelines for Outplanting / Performance on Typical Sites	Suggested spacing for these plants is about 6-9 inches.
Other Comments	
INFORMATION SOURCES	
References	1. "Campanula aparinoides Pursh." *Denison University Herbarium - DEN*. Web. 24 May 2014. <http://dcollections.oberlin.edu/cdm/ref/collection/p15963coll43/id/70>. 2. "Campanula aparinoides Pursh." *Go Botany*. New England Wildflower Society, 1 Jan. 2013. Web. 24 May 2014. <https://gobotany.newenglandwild.org/species/campanula/aparinoides/?key=dichotomous>. 3. *Contributions from the United States National Herbarium*. Washington: Smithsonian Institution Press, 1890. Web. 24 May 2014. 4. Middleton, Beth. "Cattle Grazing and Its Long-term Effects on Sedge Meadows." . U.S. Geological Survey, 1 Jan. 2007. Web. 24 May 2014. <http://walrus.wr.usgs.gov/infobank/programs/html/factsheets/pdfs/2004_3027.pdf>. 5. "Plants Profile for Campanula aparinoides (Marsh bellflower)." *USDA, NRCS*. National Plant Data Team, Greensboro, NC 27401-4901 USA. 1 Jan. 2014. Web. 24 May 2014. <http://plants.usda.gov/core/profile?symbol=CAAP2>. 6. "United States Department of Agriculture." *USDA Plant Hardiness Zone Map*. PRISM Climate Group - Oregon State University, n.d. Web. 24 May 2014. <http://planthardiness.ars.usda.gov/PHZMWeb/#>.
Other Sources Consulted	
Protocol Author	Aimee Rozier
Date Protocol Created or Updated	05/21/14