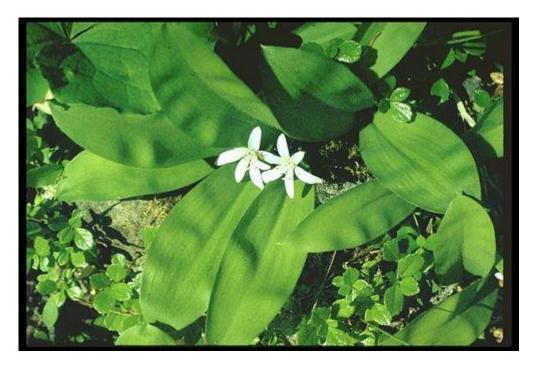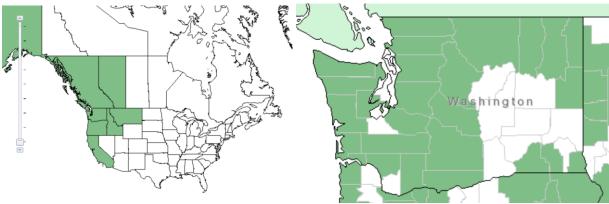# Plant Propagation Protocol for *[Clintonia uniflora]*
ESRM 412 – Native Plant Production
Protocol URL: https://courses.washington.edu/esrm412/protocols/*CLUN2.pdf*

TAXONOMY	
Plant Family	
Scientific Name	Liliaceae
Common Name	Lily
Species Scientific Name	
Scientific Name	*Clintonia uniflora* (Menzies ex Schult. & Schult. f.) Kunth
Varieties	

Sub-species	
Cultivar	
Common Synonym(s)	-*Smilacina borealis* (Aiton) Raf. var. *uniflora* Menzies ex Schult. & Schult. f. -*Smilacina borealis* (Aiton) Ker Gawl. var. *uniflora* Menzies ex Schultes -Smilacina uniflora (Menzies ex Schultes) Hooker
Common Name(s)	Bride's bonnet, Queen cup, Bead lily
Species Code (as per USDA Plants database)	CLUN2

GENERAL INFORMATION

Geographical range	Oregon, California, Washington, Idaho, Montana, Alaska, British Columbia, Alberta (Maps above)
Ecological distribution	It is commonly found in closed canopy coniferous forests and can be vigorous in old-growth stands.
Climate and elevation range	It typically prefers a cool moist climate at mid elevation. Average annual precipitation is 13.1-152.5 inches. (Calscape)
Local habitat and abundance	It is a common plant in Coastal, West-Side Forest, East-Side Forest habitats. It is commonly ssociated with Douglas-fir, Ponderosa pine, Western white pine, Fir-spruce, Hemlock-Sitka spruce, Larch and Lodgepole pine.
Plant strategy type / successional stage	Shade tolerant species that thrives in understory of coniferous forests. (Calscape)
Plant characteristics	It's a perennial herbaceous plant with an extensive rhizome system. Typical plant height is around 0-1ft. A single plant has 2-3 leaves than extend up from the base of the stem. These leaves are typically 1-2in wide and extend out in length 4-6in. Each plant typically has one flower but can produce up to 3. The flowers are white with 6 petals and have 6 stamens protruding out from the center. The seeds are found inside bright blue berries produced by the plant.(Turner Photographics) Each individual plant can live up to 30 years.

PROPAGATION DETAILS

Ecotype	
Propagation Goal	Plants
Propagation Method	Seed
Product Type	Container
Stock Type	
Time to Grow	Germination of the seeds takes about a year.
Target Specifications	Target plants produced should be 2-6 inches.
Propagule Collection	Collect fruit from plants between July and September. Plants typically have one fruit containing multiple seeds, typically between 6-7. The more

Instructions	mature the fruit is the higher the germination rate is for seeds, so it is better to collect closer to September. (USDA)
Propagule Processing/ Propagule Characteristics	The mean seed weight is 82.23 mg/fruit. (USDA)
Pre-Planting Propagule Treatments	Seeds will need to be removed from fleshy fruit. Put fruit in blender to remove the seeds. After blending rinse the fleshy fruit off of the seeds. Stratify seeds for 2-3
Growing Area Preparation / Annual Practices for Perennial Crops	4 inch container Seeds germinate best in moist sand. (USDA)
Establishment Phase Details	Place seeds in moist sand about 2cm down from surface
Length of Establishment Phase	Takes about a year for seeds to germinate.
Active Growth Phase	During the active growth phase they will grow between 2-6 inches
Length of Active Growth Phase	Seeds take about a year to germinate but will not flower from seedling until about 4 years. (TWC staff)
Hardening Phase	No information was found about hardening phase.
Length of Hardening Phase	No information was found about length of hardening phase.
Harvesting, Storage and Shipping	No information was found about harvesting, storage and shipping.
Length of Storage	No information was found about length of storage for this plant.
Guidelines for Outplanting / Performance on Typical Sites	
Other Comments	There is not a lot of information about propagation of this species. This species is a rhizome and it grows very well in nature but does not experience much sexual reproduction. Very little propagation information is available for seed germination.
Ecotype	No found experimentally derived protocols for vegetative propagation.
Propagation Goal	Plant
Propagation Method	Vegetative, rhizome division

Product Type	Container
Stock Type	
Time to grow	Rhizomes are fast growing and should take less time than seedling germination although no specific lengths of time were found.
Target Specifications	Target plants produced should be 2-6 inches.
Propagule Collection Instructions	Collect plant from salvage areas. Plants collected for root division should be taken in the spring. (TWC staff)
Propagule Processing/ Propagule Characteristics	Separate rhizomes and pot individually
Pre-Planting Propagule Treatments	
Growing Area Preparation / Annual Practices for Perennial Crops	Separated rhizomes can be placed in individual 4in containers
Establishment Phase Details	Rhizomes should be kept in moist well drained soil.
Length of Establishment Phase	No information found on length of establishment phase, but rhizomes are fast growing.
Active Growth Phase	Active growth stage depends on size of separated rhizome. During the active growth phase, they should grow between 2-6 inches in height.
Length of Active Growth Phase	No information found on length of active growth phase, but rhizomes are fast growing.
Hardening Phase	During hardening phase plants can tolerate a little bit of moisture stress.
Length of Hardening Phase	No information found on length of hardening phase found, but rhizomes are fast growing.
Harvesting, Storage and Shipping	No information was found about harvesting, storage and shipping.
Length of Storage	No information was found about length of storage for this plant.

Guidelines for Outplanting / Performance on Typical Sites	
Other Comments	There is not a lot of information about propagation of this species. This species is a rhizome and it grows very well in nature but there is not a lot of documented propagation information for rhizome division.

INFORMATION SOURCES

References	"Clintonia Uniflora | Queen-Cup | Wildflowers of the Pacific Northwest." *Turner Photographics*, www.pnwflowers.com/flower/clintonia-uniflora. "Clintonia Uniflora (Menzies Ex Schult. & Schult. f.) Kunth Show All Bride's Bonnet." Plants Profile for Clintonia Uniflora (Bride's Bonnet), USDA, plants.usda.gov/core/profile?symbol=CLUN2. - TWC Staff. "Plant Database." *Lady Bird Johnson Wildflower Center*, The University of Texas at Austin, 21 June 2013, www.wildflower.org/plants/result.php?id_plant=CLUN2. "Bride's Bonnet, Clintonia Uniflora." *California Native Plant Society*, calscape.org/Clintonia-uniflora-(). "FLORA OF EASTERN WASHINGTON AND ADJACENT IDAHO." Flora of Eastern Washington and Adjacent Idaho, web.ewu.edu/ewflora/index.html. "Fire Effects Information System (FEIS)." Species: Clintonia Uniflora, USDA, www.fs.fed.us/database/feis/plants/forb/cliuni/all.html. - Lutz, James A. "Clintonia Uniflora Queencup, Bride's Bonnet (Liliaceae)." Propagation Protocols for Pacific Northwest Plants, University of Washington, 2006, depts.washington.edu/propplnt/Plants/Clintonia_uniflora.htm.
Other Sources Consulted	"Search Results - 0 Items Matching Your Search Terms." *Reforestation, Nurseries and Genetics Resources*, npn.rngr.net/search?SearchableText=clintonia%2Buniflora. "Bead Lily, Bride's Bonnet, Queen's Cup." Bead Lily, Bride's Bonnet, Queen's Cup: Clintonia Uniflora (Synonyms: Smilacina Borealis Var. Uniflora, Smilacina Uniflora), science.halleyhosting.com/nature/basin/3petal/lily/clintonia/queen.htm. - Aiello, Anthony S., and Michael S. Dosmann. "The quest for the Hardy Cedar-of-lebanon." *Arnoldia: The magazine of the Arnold Arboretum* 65.1 (2007): 26-35.

Protocol Author	Jake Henry
Date Protocol Created or Updated	04/24/18

Click link below for original propagation protocol compiled by James A. Lutz in 2006.

http://depts.washington.edu/propplnt/Plants/Clintonia_uniflora.htm