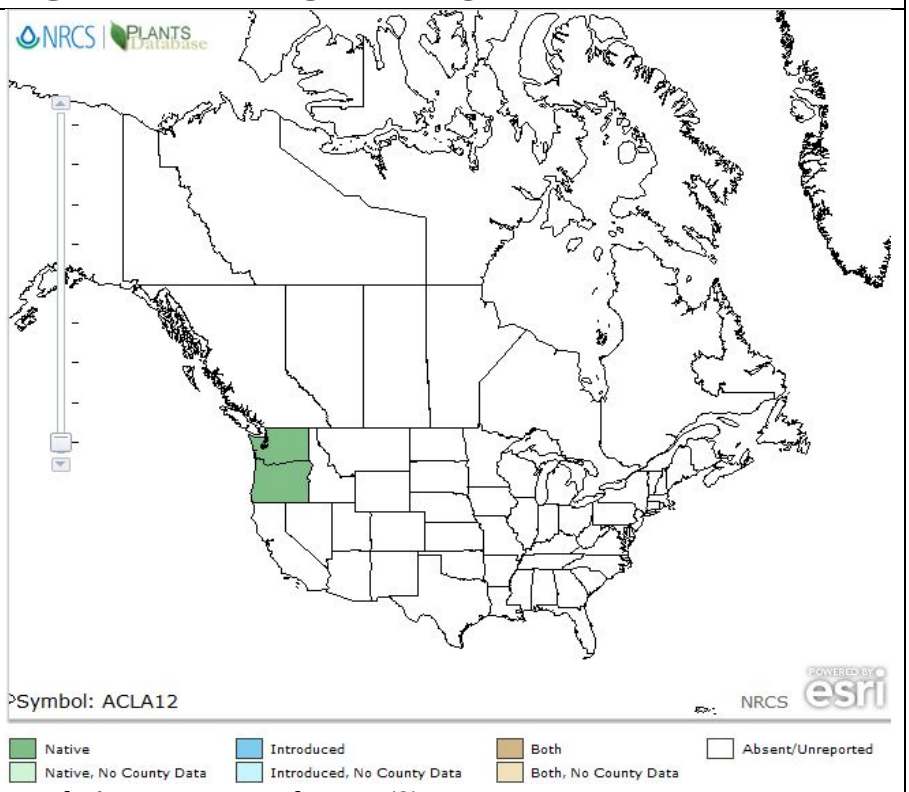
Plant Propagation Protocol for *Actaea laciniata*
ESRM 412 – Native Plant Production
Protocol URL: https://courses.washington.edu/esrm412/protocols/ACLA12.pdf

TAXONOMY	
Family Scientific Name	Ranunculaceae
Family Common Name	Buttercup Family
Scientific Name	*Actaea laciniata* (S. Watson) J. Compton
Varieties	N/A
Sub-species	N/A
Cultivar	N/A
Common Synonym	*Cimicifuga laciniata* S.Watson
Common Names	Mount Hood bugbane, cut-leaved bugbane
Species Code (as per USDA Plants database)	ACLA12
GENERAL INFORMATION	
Geographical range	 North American Distribution (9).

	 Distribution in WA and OR (8).
Ecological distribution	A facultative wet (FACW) wetland species in Western Mountains, Valleys, and Coast (only region it's located) (9). Moist, open woods, boggy flats, thickets near heads of drainages, streamsides, meadow margins, and lakesides (8).
Climate and elevation range	500-1800 meters elevation (8) Found in areas near the Columbia River Gorge associated with high annual precipitation but usually at low enough elevations where snowpack is not severe throughout winter.
Local habitat and abundance	Silver Star Mountain, Skamania County, Washington and the base of Mt. Hood, Oregon (3). Vegetation covered talus, moderate W & NW slope, semi-open, very wet at 3,360 feet above sea level (for sample collected on August 6, 1979 at WTU Herbarium) (3). Large population at collection site for approximately 3/4 mile (3). Sample found with *Abies amabilis, Alnus sitchensis, Rubus spectabilis, Ribes bracteosum* (3).
Plant strategy type / successional stage	Since it spreads through rhizomes and has been found in large patches it could probably qualify as a competitor once established. However, since its geographic range is so small and there are not many known locations of populations, it would likely not be considered a weedy/colonizer.
Plant characteristics	Herbaceous perennial from a woody rhizome, often with hollow stems (3). Leaves alternate, nearly tri-ternate, the leaflets are broadly lanceolate, acute to rounded at the base, coarsely serrate-dentate and irregularly lobed (3). Inflorescence is large, paniculate, loosely flowered; pedicles 2-10 mm. long, often exceeding the flowers; sepals 5, 4-5 mm. long, pale, early-deciduous; petals often present, 5 mm. long, cream-colored, acutely bi-lobed; stamens numerous, cream-colored, the outer 5

	often broad and petaloid; pistils 3-5 (3) Fruits: Follicles 10-14 mm. long, narrowed to a stipe, 4-6 mm. long (3). Flowers in summer (August-September) (8).
PROPAGATION DETAILS From sources on genera *Actaea* and *Cimicifuga*, not species specific	
Ecotype	N/A
Propagation Goal	Plants
Propagation Method	Seed
Product Type	Container (plugs)
Stock Type	6-pack containers would be adequate for establishment phase. Likely would need to move up to one gallon containers during active growth phase.
Time to Grow	One year between sowing seeds (if sown in fall) and developing first fruit and flowers (7).
Target Specifications	N/A
Propagule Collection Instructions	September when follicles begin to dry out. Seeds can be hand harvested.
Propagule Processing/Propagule Characteristics	No information on seed density. No information on seed longevity.
Pre-Planting Propagule Treatments	Follicles are dehiscent and can be left to dry and open naturally, but if sowing seeds in the fall follicles can be manually "cracked" open to collect seeds. Seeds have a winter dormancy period so seeds need to be sown in the autumn outside and allow frost to reach the containers (7). If sowing the seeds in the spring, chill for 40 days before sowing. Seeds stored overwinter and not put through stratification will not germinate (6).
Growing Area Preparation / Annual Practices for Perennial Crops	Medium should be high in organic content and kept at a uniform, moderate moisture level (4). Grow in shade or low light intensities (4). Fertilizer should only be applied in the spring (4). Water deeply at week to ten day intervals during dry periods (i.e. summer drought) (4).
Establishment Phase Details	No information, however if sown in fall seeds will not germinate until spring.
Length of Establishment Phase	During spring. No specific information on how long it takes for germination.

Active Growth Phase	Spring/summer
Length of Active Growth Phase	Roughly four months. This is based off of seeds germinating in spring and flowers and fruits being produced by August/September (7).
Hardening Phase	No documentation of specific hardening off phase. However, since *Actaea laciniata* is herbaceous and flowers in late summer (Aug/Sept) it is likely that flowering and fruiting would be the end of its active growth phase. The period thereafter would then qualify as a hardening off phase since *Actaea laciniata* grows in higher elevations associated with relatively cold (sub-freezing temperatures) winters and some snowpack.
Length of Hardening Phase	Uncertain.
Harvesting, Storage and Shipping	No information.
Length of Storage	N/A
Guidelines for Outplanting / Performance on Typical Sites	No guidelines, but since the range of *Actaea lanciniata* is very small and it occurs in fairly specific elevations ranges and climates it would be very important to try and find similar conditions (see general information section above) for outplanting sites.
Other Comments	Included on the list of endangered, threatened and sensitive plants of Washington (1981) (1). Historically *Actaea laciniata* had been collected only at Lost Lake on Mount Hood, Oregon. The discovery of many new sites in recent years has led to the removal of this species from state and federal lists of protected plants (8).
INFORMATION SOURCES	
References	See below
Other Sources Consulted	See below
Protocol Author	Dan Hintz
Date Protocol Created or Updated	05/20/15

References:

(1) *Actaea laciniata*. NatureServe Explorer: An Online Encyclopedia of Life. Available: http://explorer.natureserve.org/servlet/NatureServe?searchName=Actaea+laciniata [2015, May 19].

(2) *Actaea laciniata*, a member of baneberry**.** iNaturalist.org. Available: http://www.inaturalist.org/taxa/158003-Actaea-laciniata [2015, May 19].

(3) *Cimicifuga laciniata* Mt. Hood bugbane, cut-leaved bugbane. Burke Museum of Natural

History and Culture. Available: http://biology.burke.washington.edu/herbarium/imagecollection.php?SciName=Cimicifuga%20laciniata [2015, May 19].

(4) Everett, T. (1980). *The New York botanical garden illustrated – encyclopedia of horticulture*. Vol. 1 and 3. New York, NY: Routledge Taylor and Francis Group.

(5) Godefroid, S., Van de Vyer, A. and Vanderborght, T. 2009. Germination capacity and viability of threatened species collections in seed banks. *Biodiversity Conservation*, 19: 1365-1383.

(6) Kelly, J. (1996). *Growing plants from seed*. London, England: Ward Lock and Co.

(7) Lloyd, C. and Rice, G. (1991). *Garden flowers from seed*. New York, NY: Workman Publishing Company.

(8) Mount Hood bugbane, cut-leaved bugbane. Flora of North America: www.eFloras.org. Available: http://www.efloras.org/florataxon.aspx?flora_id=1&taxon_id=233500378 [2015, May 19].

(9) Plants Database: *Actaea laciniata* (S. Watson) J. Compton, Mt. Hood bugbane. United States Department of Agriculture Natural Resources Conservation Service. Available: http://plants.usda.gov/core/profile?symbol=ACLA12 [2015, May 19].

Not Pertinent for protocol:

(10) Baskin, Carol C.; Baskin, Jerry M. 2002. Propagation protocol for production of container *Actaea rubra*(Ait.) Willd. plants; University of Kentucky, Lexington, Kentucky. In: Native Plant Network. URL: http://www.nativeplantnetwork.org (accessed 19 May 2015). Moscow (ID): University of Idaho, College of Natural Resources, Forest Research Nursery.