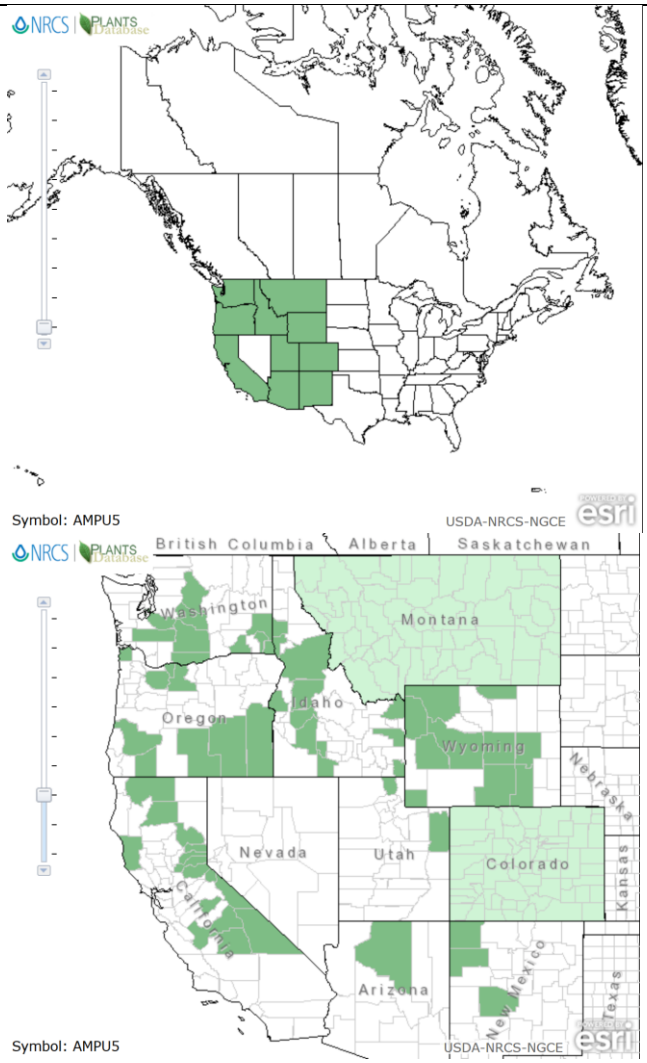
Plant Propagation Protocol for *Amelanchier pumila*
ESRM 412 – Native Plant Production
Protocol URL: https://courses.washington.edu/esrm412/protocols/AMPU5.pdf



(photos by Robert Potts and Barry Breckling, CalFlora)

TAXONOMY	
Plant Family	
Scientific Name	Rosaceae
Common Name	Rose family
Species Scientific Name	
Scientific Name	*Amelanchier pumila* (Torr. & A. Gray) Nutt. ex M. Roem.
Varieties	*Amelanchier alnifolia* (Nutt.) Nutt. ex M. Roem. var. *pumila* (Torr. & A. Gray) C.K. Schneid
Sub-species	none
Cultivar	none
Common Synonym(s)	*Amelanchier alnifolia* (Nutt.) Nutt. ex M. Roem. var. *pumila* (Torr. & A. Gray) C.K. Schneid *Amelanchier basalticola* Piper *Amelanchier cuneata* Piper *Amelanchier glabra* Greene *Amelanchier polycarpa* Greene
Common Name(s)	Dwarf serviceberry Dwarf shadbush
Species Code (as per USDA Plants database)	AMPU5
GENERAL INFORMATION	

Geographical range	 (USDA)
Ecological distribution	Open, often moist scrub; mountain slopes (Campbell)
Climate and elevation range	1,400-2,600m (Campbell)
Local habitat and abundance	Grows well in full sun, disturbed habitats and woodland margins (Campbell et al.). Open scrub and mountain slopes (Campbell). Tolerant of wide range of soils, prefers moist, well-drained loams (Missouri Botanical Garden).
Plant strategy type / successional stage	Hybridization is common (Campbell et al.). Adapted to alpine conditions (Missouri Botanical Garden).
Plant characteristics	Small deciduous perennial shrub, typically 3 ft in height but can reach up to 12 feet. Perfect white flowers in terminal clusters bloom in early spring. Fruits are berrylike pomes, dark purple or black when ripe. Each fruit contains 4-10 small seeds, fertile seeds are dark brown with leathery seed coat. Fruits are a very important food source for birds and mammals. Can be used as a hedge in landscaping (Young & Young, 1986; Lady Bird Johnson Wildflower Center; Campbell et al.; Missouri Botanical Garden).
PROPAGATION DETAILS **Seed Propagation**	
Ecotype	n/a
Propagation Goal	Seedling

Propagation Method	Seed
Product Type	Propagules - seeds
Stock Type	Seed
Time to Grow	n/a
Target Specifications	Seedlings
Propagule Collection Instructions	For *Amelanchier* spp.: Collect seeds as soon as ripe, before lost to mammals and birds (Young & Young, 1986). Seed crop produced annually. Fruits can be collected early and allowed to ripen for a few days in open container at room temperature. Fruits ripen from late June to late July (Kock).
Propagule Processing/Propagule Characteristics	For *Amelanchier* spp.: Healthy ripe seeds are plump and dark brown; aborted seeds will be thin and light brown (Kock). For *Amelanchier alnifolia*: Cleaned, dry seeds can be stored in a sealed container at 5˚C for a maximum of 5 years (Rose, Chachulski & Haase)
Pre-Planting Propagule Treatments	For *Amelanchier* spp.: Immediately extract seed from fruit by macerating fruits in water. Sorting between viable and aborted seeds can be done in water with a few drops of liquid detergent to break surface tension, the viable seeds will sink. Wash over screens. Once pulp is removed, allow seeds to dry. Cleaned seeds can be sown right away. Dormancy can be overcome with cold-moist stratification. (Young & Young, 1986; Kock). Dried whole fruits can be stored; dry by spreading over newspaper until no longer fleshy then place in dry, cold storage for stratification. Extract seeds from dried berries by crushing fruit with rubber mallet and hand sorting or soak in room temperature water for 24 hours and clean in grit bag. Place cleaned seeds in cold stratification 35-39˚F for 120 days; at 90 days, check weekly for emergence of radicle. Plant seeds upon radicle emergence or after 120 days of cold stratification (Kock). For *Amelanchier laevis*: overcome dormancy via acid scarification with concentrated H_2SO_4. Cold moist stratification for 2-6 months at 41˚F (Young & Young, 1986).
Growing Area Preparation / Annual Practices for Perennial Crops	For *Amelanchier* spp.: Space seeds about 1/8” to 1/3” apart in seed frame or clay pot. If sowing in summer, cover seeds with leaf mulch through winter, remove mulch by mid-April. Stratified seeds sown in spring should be kept moist (Kock). Sow seeds in fall or stratified seeds in the spring (Young & Young, 1986). Sow seeds in drill rows with 80-85 seeds per linear foot, cover with 0.5 cm of soil (Young & Young, 1992).
Establishment Phase Details	Keep beds mulched until germination. Protect seedlings from predation by rabbits, mice and birds (Kock).
Length of Establishment Phase	For *Amelanchier* spp.: Germination is rapid in warm conditions (Kock).
Active Growth Phase	Protect seedlings from herbivory by rabbits, mice and deer (Kock).
Length of Active Growth Phase	n/a
Hardening Phase	n/a
Length of Hardening Phase	n/a

Harvesting, Storage and Shipping	Can be transplanted during winter dormancy before buds swell (Toogood).
Length of Storage	n/a
Guidelines for Outplanting / Performance on Typical Sites	For *Amelanchier alnifolia*: Easy to cultivate on sunny site with well-drained soil (Pettinger & Costanzo).
Other Comments	For *Amelanchier* spp.: These species hybridize readily, so careful monitoring of potential source plants should be employed to ensure true seed (Toogood).
PROPAGATION DETAILS **Vegetative Cutting Propagation**	
Ecotype	n/a
Propagation Goal	Cuttings
Propagation Method	Vegetative
Product Type	Propagule – softwood cutting
Stock Type	n/a
Time to Grow	n/a
Target Specifications	New roots begin to form at bottom of cutting.
Propagule Collection Instructions	For *Amelanchier* spp.: Take softwood cutting in late spring while new growth is less than 4”/10cm long (Toogood). Ensure cuttings are taken before source material matures to semi-hardwood, this will decrease rooting success (Melcher). For *Amelanchier alnifolia*: Mid-June is optimal timing (Melcher). For *Amelanchier laevis*: Late-May to mid-June is optimal timing (Melcher).
Propagule Processing/Propagule Characteristics	n/a
Pre-Planting Propagule Treatments	For *Amelanchier spicata*: Wound the stem cuttings and treat with at least 5,000 $mg \cdot L^{-1}$ K-IBA to promote increased rooting percentage and quality (Melcher). For *Amelanchier* spp.: “Talc and quick-dips of IBA from 1,000 to 10,000 ppm enhance rooting. At 40˚N latitude, softwood to semi-hardwood cutting of *A. laevis* taken in mid-May to mid-June root best with K-IBA of 2,500 ppm or greater” (Hartmann, Kester, Davies Jr & Geneve).
Growing Area Preparation / Annual Practices for Perennial Crops	n/a
Establishment Phase Details	For *Amelanchier* spp.: Vulnerable to desiccation, placement within overhead misting environment is recommended (Melcher).
Length of Establishment Phase	n/a
Active Growth Phase	n/a
Length of Active Growth Phase	n/a
Hardening Phase	n/a
Length of Hardening Phase	n/a
Harvesting, Storage and Shipping	n/a
Length of Storage	n/a
Guidelines for Outplanting / Performance on Typical Sites	n/a
Other Comments	n/a

INFORMATION SOURCES	
References	See list below
Other Sources Consulted	See list below
Protocol Author	Summer Swallow
Date Protocol Created	May 28, 2019

This propagation protocol template was modified by J.D. Bakker from that available at: http://www.nativeplantnetwork.org/network/SampleBlankForm.asp

References:

CalFlora: Information on California plants for education, research and conservation, with data contributed by public and private institutions and individuals, including the Consortium of California Herbaria. [web application]. 2019. Berkeley, California: The CalFlora Database [a non-profit organization]. Available: https://www.calflora.org/ (Accessed: May 20, 2019).

Campbell, C. 2012. *Amelanchier alnifolia var. pumila,* in Jepson Flora Project (eds.) *Jepson eFlora*, http://ucjeps.berkeley.edu/eflora/eflora_display.php?tid=53896, accessed on May 28, 2019.

Campbell, C., Burgess, M., Cushman, K., Doucette, E., Dibble, A. & Frye, C. 2015. *Amelanchier* Medikus. *Flora of North America, vol 9*. Retrieved from http://www.efloras.org/florataxon.aspx?flora_id=1&taxon_id=101333

Hartmann, H., Kester, D., Davies Jr, F. & Geneve, R. 2011. *Hartmann & Kester's plant propagation: Principles and practices*, 8th ed. Upper Saddle River, NJ: Pearson Education Inc. p.762, 778

Kock, H. 2008. *Growing trees from seed: A practical guide to growing native trees, vines and shrubs.* Buffalo, NY: Firefly Books, Inc. p.85-88 & 266-267

Lady Bird Johnson Wildflower Center. 2017. *Amelanchier pumila,* in the Plant Database (https://www.wildflower.org/plants/result.php?id_plant=AMPU5, 26 May 2019). Austin, TX: The University of Texas at Austin.

Leigh, M. 1999. *Grow your own native landscape*. Olympia, WA: WSU Cooperative Extension-Thurston County. p.24

Mahlstede, J. & Haber, E. 1957. *Plant propagation.* New York, NY: John Wiley & Sons, Inc. p.388

Melcher, G. 2016. *Propagation and container production of the Amelanchier spicata complex*. Electronic Theses and Dissertations, 2490. Retrieved from http://digitalcommons.library.umaine.edu/etd/24

Missouri Botanical Garden. n.d. *Amelanchier alnifolia* var. *pumila*, in Plant Finder (http://www.missouribotanicalgarden.org/PlantFinder/PlantFinderDetails.aspx?kempercode=i700, 28 May 2019). St. Louis, MO: Missouri Botanical Garden.

Pettinger, A. & Costanzo, B. 2002. *Native plants in the coastal garden: A guide for gardeners in the Pacific Northwest.* Portland, OR: Timber Press, Inc.

Rose, R., Chachulski, C. & Haase, D. 1998. *Propagation of Pacific Northwest native plants.* Corvallis, OR: Oregon State University Press. p. 94-95.

Toogood, A. (Eds.) 1999. *The American Horticultural Society: Plant propagation.* New York, NY: DK Publishing, Inc. p.52 & 118 (page 103 referenced for seed prop.)

USDA, NRCS. 2019. *Amelanchier pumila*, in the PLANTS Database (https://plants.usda.gov/java/reference?symbol=AMPU5, 20 May 2019). Greensboro, NC: National Plant Data Team.

Young, J. & Young, C. 1986. *Collecting, processing and germinating seeds of wildland plants*. Portland, OR: Timber Press. p.104-105

Young, J. & Young, C. 1992. *Seeds of woody plants in North America.* Portland, OR: Dioscorides Press. p.28-30.

Consulted Resources:

Brinkman, K. & Strong, T. 2008. *Amelanchier* Medik. In Bonner, F. & Karrfalt, R. (Eds.), *The woody plant seed manual* (p.245-249). Washington, DC: USDA, Forest Service.

King County. 1994. *Northwest native plants: Identification and propagation for revegetation and restoration projects*. King County, WA: King County Surface Water Management.

Kruckeberg, A. 1982. *Gardening with native plants of the Pacific Northwest: An illustrated guide.* Seattle, WA: University of Washington Press.

Macdonald, B. 1986. *Practical woody plant propagation for nursery growers.* Portland, OR: Timber Press.

Robson, K., Richter, A. & Filbert, M. 2008. Encyclopedia of Northwest native plants for gardens and landscapes. Portland, OR: Timber Press, Inc.

Thompson, P. 1993. *The Propagator's Handbook*. North Pomfret, VT: Trafalgar Square Publishing.

Webster, M. 1994. *Amelanchier alnifolia.* In Hamilton, C. & Kruckeberg, A. (Eds.), *Woody northwestern native plants for urban landscapes: Ornament and restoration in the native idiom* (p.154-157). Seattle, WA: University of Washington, Center for Urban Horticulture.