Plant Propagation Protocol for *Sedum oreganum*
ESRM 412 – Native Plant Production
Protocol URL: https://courses.washington.edu/esrm412/protocols/*SEOR.pdf*

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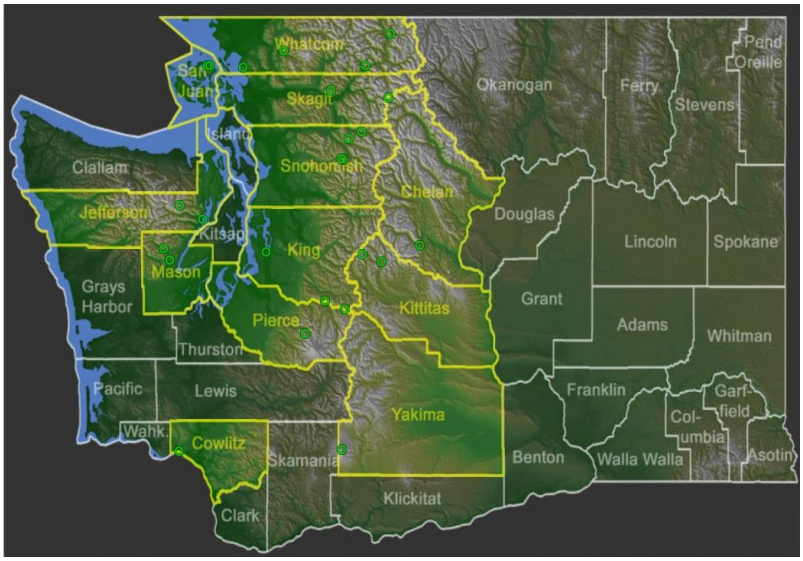
TAXONOMY	
Plant Family	
Scientific Name	Crassulaceae
Common Name	Stone crop
Species Scientific Name	
Scientific Name	*Sedum oreganum* (Nutt)
Varieties	
Sub-species	*Sedum oreganum ssp. oreganum* (Nutt) *Sedum oregaunm ssp. tenue* (R.T. Clausen)
Cultivar	
Common Synonym(s)	
Common Name(s)	Oregon stonecrop
Species Code (as per USDA Plants database)	SEOR
GENERAL INFORMATION	

Geographical range	 Source: USDA Plants Database  Source: Washington Territorial University Herbarium
Ecological distribution	Grows in rocky ledges and talus slopes that receive at least partial sun. Often found on sea cliffs and alpine talus slopes. [2,3,5,9]
Climate and elevation range	0-12,000ft, found in wet-winter, dry-summer climates, though also adaptable to alpine habitats that experience year-round precipitation. Tolerant of a wide diurnal temperature range; perfoms best in these conditions as uses temperature cues to regulate CAM photosynthesis pathways. [11]
Local habitat and abundance	Locally common in cliffs, gravel outcrops and talus fields at low to high elevations, from the coast to alpine environments. Occasionally found east of the Cascade crest. [2,5,9]

Plant strategy type / successional stage	Stress-tolerator. Adapted to wet winters but is extremely drought and heat tolerant. Also tolerates alkaline soils. [3,9]
Plant characteristics	Herbaceous, sprawling, evergreen succulent with yellow flowers and green and red foliage. Spatulate alternate leaves are in a crowded rosette, spirally arranged. Leaves distinctively shiny green suffused with red. Ascending inflorescences are held on a corymbose cyme and bear 3 to 16 yellow five-petaled flowers that turn pink with age. [5,9,10, 13] Fruits are 5 follicles with a small gland at the base and are held upright. [5, 10, 13] Plant is perennial and rhizomatous. [5,9,10,13]
PROPAGATION DETAILS (SEED) Note: No specific propagation information was found for *Sedum oreganum*, information is based off other Sedum spp. (primarily *Sedum lanceolatum)* Propagation methods for all *Sedum spp.* are very similar [9,11,12]	
Ecotype	
Propagation Goal	Seeds
Propagation Method	Seed
Product Type	Propagules (seeds, cuttings, poles, etc.)
Stock Type	160 mL conetainer
Time to Grow	6 months
Target Specifications	Firm plug in conetainer
Propagule Collection Instructions	Seeds can be collected in the late summer when the follicles turn tan and begin to split open. [6] Seed from high elevation populations are collected in late August though seeds from lower elevations will likely be ready for collection sooner. [6,7] It is recommended to store the complete inflorescence as the seed is miniscule and difficult to differentiate from desiccated carpel and petal fragments. [11]
Propagule Processing/Propagule Characteristics	Seed longevity and density are unknown.
Pre-Planting Propagule Treatments	Seeds do not require a stratification period and do not undergo dormancy. However, seeds from alpine environments can be stratified in cold moist stratification outdoors, or in a freezer set to 5°C with an 8 hour photo-period. Prior to cleaning, the seeds are stored in paper bags at room temperature. [6,11]To clean, the seed heads are crushed by hands to extract the small seeds- a screen can be helpful to separate the seed from other plant material. A hammermill and blower can be useful. [6,7]
Growing Area	Seeds are sown in flats, barely pressed into the medium and not

Preparation / Annual Practices for Perennial Crops	covered. [12] Growing medium used is 50% 6:1:1 milled spaghnum peat, perlite, and vermiculite and 50% sand with Osmocote controlled release fertilizer (13N:13P2O5:13K2O; 8 to 9 month release rate at 21C) and Micromax fertilizer (12%S, 0.1%B, 0.5%Cu, 12%Fe, 2.5%Mn, 0.05%Mo, 1%Zn) at the rate of 1 gram of Osmocote and 0.20 gram of Micromax per conetainer 3, [6]. Require at least 8 hours of light per 24 hour period of germination [4] In general, *Sedum spp.* take well to most mediums though most commonly used and recommended is sand or loamy compost mixed with coarse gravel and fine sand. [9,11,12]
Establishment Phase Details	Germination occurs in the early spring. True leaves are put on within 10 days of germination. [3,6]
Length of Establishment Phase	4 weeks [6]
Active Growth Phase	Once seedlings are established, plants develop rapid shoot and root growth 2 to 4 weeks following germination. Plants have several true leaves by 3 weeks after germination. Plants are fertilized with 20-20-20 liquid NPK at 100 ppm bi-weekly during the growing season. [6]
Length of Active Growth Phase	6 weeks [6]
Hardening Phase	Prior to winter plants are irrigated fully once more and then not irrigated again until the spring. [6]
Length of Hardening Phase	4 weeks[6]
Harvesting, Storage and Shipping	
Length of Storage	
Guidelines for Outplanting / Performance on Typical Sites	Plants can tolerate wet winters but must be planted on well-drained soil, preferably in full-sun. [3,9] However, in extremely prolonged drought conditions, plants can decline due to sun-scalding. [9] It is important to use a well-drained medium and allow seedlings to dry down between irrigations. [3,6]
Other Comments	Few people tend to grow *Sedum spp*. from seed because seed is very miniscule and *Sedum spp.* propagate very easily via cuttings (see below) *Sedum spp.* , including *Sedum oreganum* are becoming very popular for use in "green roof" gardens [9]
PROPAGATION DETAILS (Vegetative)	
Ecotype	
Propagation Goals	Plants
Propagation Method	Vegetative

Product type	Container (plug)
Stock type	490 mL Containers
Time to Grow	3-5 months [7]
Target Specifications	
Propagule Collection Instructions	For stem cuttings cut 2-3 inches from the tips of the stems and allow the cuttings to callus over the wounds for a day. Cuttings should be taken from stems that have ripened and lost juvenile color. [8,9,11,12]
Propagule Processing/ Characteristics	Cuttings should be stuck in rooting medium immediately after collection [7,8]
Pre-Planting Propagule Treatments	Can be treated with 1000ppm Hormex rooting powder (or other rooting hormone) to encourage rooting, though roots successfully without it. [7,8]
Growing Area Preparation/Annual Practices for Perennial Crops	A well aerated rooting medium should be used such as 50% perlite and 50% sand. 50% fine grit and 50% Gritty cactus mix can also be used.[8] Cutings will root most readily during late spring and early summer [7,8,9]
Establishment Phase Details	Cuttings will root in two to four weeks. [3,7,8,9] For *Sedum roseum*, 100% rooting success reported. [7] Drench cuttings with a fine mist each week until they have rooted. [11]
Length of Establishment Phase	4 weeks [7]
Active Growth Phase	12 weeks[7]
Length of Active Growth Phase	12 weeks[7]
Hardening Phase	Plants given one final irrigation prior to winterization. [7]
Length of Hardening Phase	4 weeks [7]
Harvesting, Storage and Shipping	Plants can be left outside to overwinter or can be placed under insulating foam cover and snow. [7]
Length of Storage	5 months[7]
Guidelines for Outplanting/ Performance on Typical Sites	Plants can tolerate wet winters but must be planted on well-drained soil, preferably in full-sun. [3,9] However, in extremely prolonged drought conditions, plants can decline due to sun-scalding. [9]
Other Comments	Can also be propagated by leaf cuttings. A healthy leaf should be eased slowly from the stem so it comes off with the axillary bud attached. Firm fleshy leaves should be taken and allowed to callus for a few days in a warm, dry place. [7, 11, 12] The base of each leaf can be pushed into a gritty soil mix so that the leaf can stand up. Cuttings should be spaced ½ inch apart. Leaf cuttings will start to root in 2-4 weeks, resulting plantlets will arise in four weeks and can then be treated as stem cuttings. [3,9] Leaf cuttings can also be rooted on damp newspaper by folding a sheet of newspaper and placing it in the bottom of a seed tray. The leaves can be laid on top and kept in a bright place, sprayed with

	water occasionally. When roots form, plants should be potted as described above. [3]
INFORMATION SOURCES	
References	[1] *Plants Profile for Sedum oreganum (Oregon stonecrop)*. N.p., n.d. Web. 17 May 2017. <https://plants.usda.gov/core/profile?symbol=SEOR>. [2]Turner, Mark, and Phyllis Gustafson. *Wildflowers of the Pacific Northwest*. Portland, Or.: Timber Press, 2006. Print. [3]Robson, Kathleen A., Alice Richter, and Marianne Filbert. *Encyclopedia of northwest native plants for gardens and landscapes*. Portland, Or.: Timber Press, 2008. Print. [4]Young, James A., Raymond A. Evans, Burgess L. Kay, Richard E. Owen, and Jerome D. Budy. *Collecting, processing, and germinating seeds of western wildland plants*. Oakland, CA: Agricultural Research (Western Region), Science and Education Administration, U.S. Dept. of Agriculture, 1981. Print. [5]Knoke, Don, David Giblin, and Walter Siegmund. "Sedum oreganum." *WTU Herbarium Image Collection - Burke Museum*. N.p., n.d. Web. 19 May 2017. <http://biology.burke.washington.edu/herbarium/imagecollection.php?Genus=Sedum&Species=oreganum>. [6]**Luna, Tara; Evans, Jeff; Wick, Dale. 2008. Propagation protocol for production of Container (plug) *Sedum lanceolatum* Torr. plants 160 ml conetainers; USDI NPS - Glacier National Park West Glacier, Montana. In: Native Plant Network. URL: https://npn.rngr.net/renderNPNProtocolDetails?selectedProtocolIds=crassulaceae-sedum-1544 (accessed 2017/05/18). US Department of Agriculture, Forest Service, National Center for Reforestation, Nurseries, and Genetic Resources [7]**Evans, Jeff. 2008. Propagation protocol for production of Container (plug) *Sedum roseum* (L.)Scop. plants 490 ml containers; USDI NPS - Glacier National Park West Glacier, Montana. In: Native Plant Network. URL: https://npn.rngr.net/renderNPNProtocolDetails?selectedProtocolIds=crassulaceae-sedum-64(accessed 2017/05/19). US Department of Agriculture, Forest Service, National Center for Reforestation, Nurseries, and Genetic Resources. [8]Anderson, Peter, and Alan R. Toogood. *Plant propagation*. Toronto:

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Date Protocol Created or Updated	06/05/2017

Plant Data Sheet


Ben Legler

Oregon Stonecrop

Sedum oreganum (Nutt)

Range

Alaska to Northern California, from the coast to the Cascades.

Climate, elevation

Lowlands to 7000 feet. Maritime, coastal climate.

Local occurrence (where, how common)
Commonly found in Western Washington along coast to Cascades.

Habitat preferences

Mesic to dry conditions. Rocky areas, must have excellent drainage. Full or part shade.

Plant strategy type
Some tendency to out-compete other low groundcovers. Drought tolerant once established.

Associated species
Include Tsuga mertensiana, Pinus contorta, Pseudotsuga menziesii, Mahonia nervosa, Symphoricarpos albus, Asarum caudatum, and Achillea millefolium.

May be collected as: (seed, layered, divisions, etc.)
Division and stem and leaf cuttings are best.

Collection restrictions or guidelines
Best collected as cuttings and division.

Seed germination
Sow at 20ºC (68ºF), germination slow do not cover, needs light
Seed life (can be stored, short shelf-life, long shelf-life)

Propagation recommendations (plant seeds, vegetative parts, cuttings, etc.)
Seed sowing should be done in spring in a greenhouse. Plant out in summer if well-grown, otherwise keep them in a greenhouse or cold frame during the first winter and plant early summer the next year. Division should be done in spring or early summer. Short stems root easily in soil.

Soil or medium requirements (inoculum necessary?)
Soil should not dry out.

Installation form (form, potential for successful outcomes, cost)
Plants

Recommended planting density
Spacing should be between 6-12 inches.

Care requirements after installed (water weekly, water once etc.)
Water weekly until established if soil is porous.

Normal rate of growth or spread; lifespan
Spreads quickly

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WAE-Flora BC: Electronic Atlas of the Plants of British Columbia: http://www.eflora.bc.ca/
Jepson Horticultural Database http://ucjeps.berkeley.edu/jepson_flora_project.html
Rainyside Gardens: http://www.rainyside.com
Paghat's Garden: http://www.paghat.com
Manual of Oregon Actual Vegetation: http://bctma.mhcc.edu/students/wilcox/Lifestyles/GAPveg_250.pdf
Tom Clothier's Garden Walk and Talk: http://tomclothier.hort.net
Plants for a Future http://www.pfaf.org

Ground Covers for Mountain Communities:
http://www.ext.colostate.edu/pubs/garden/07413.html
Burke Museum:
http://www.washington.edu/burkemuseum/collections/herbarium/index.php
Data compiled by (student name and date)
Lorraine Brooks
April 13, 2006