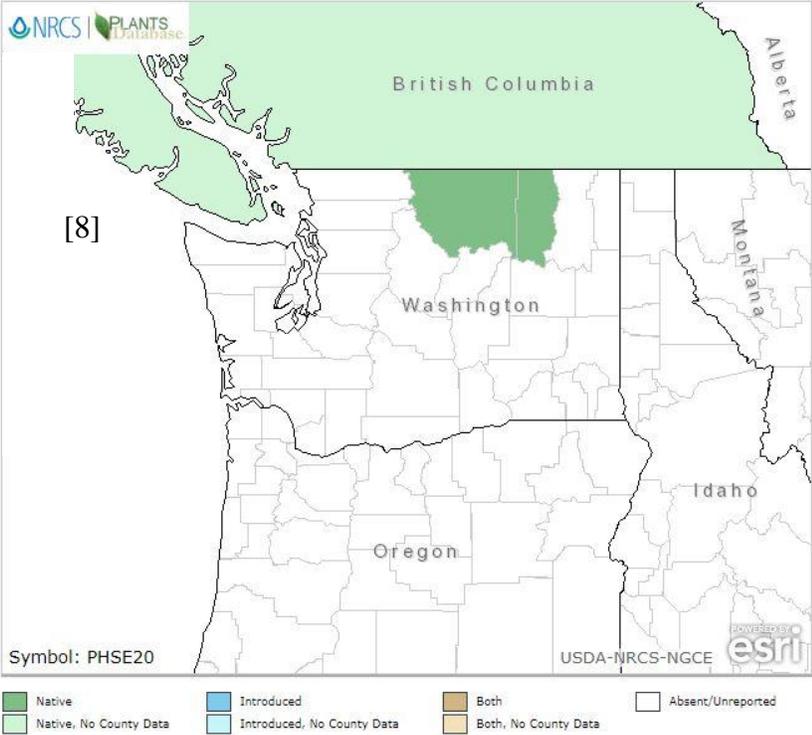


Plant Propagation Protocol for *Phemeranthus sediformis* (Poellnitz.) Kiger
 ESRM 412 – Native Plant Production
 Protocol URL: <https://courses.washington.edu/esrm412/protocols/PHSE20>



TAXONOMY	
Plant Family	
Scientific Name	<i>Montiaceae</i> [1, 2, 3, 4, 5, 6]
Common Name(s)	Montia family, Miner’s lettuce family [1, 2, 3, 4, 5, 6]
Species Scientific Name	
Scientific Name	<i>Phemeranthus sediformis</i> (Poellnitz.) Kiger [3, 4, 7, 8]
Varieties	None
Sub-species	None
Cultivar	None
Common Synonym(s)	<i>Talinum okanoganense</i> English <i>Talinum sediforme</i> Poellnitz <i>Talinum wayae</i> Eastwood [3, 4, 6, 7, 8, 9]
Common Name(s)	Okanogan fameflower [3, 4, 6, 7, 8, 9]
Species Code (as per USDA Plants database)	PHSE20 [8]

GENERAL INFORMATION

<p>Geographical range</p>	<p>Endemic to a small region of the inland northwest, ranging from south central B.C. to north central WA (only occurring east of the Cascades) [3, 4, 6, 7, 8, 9].</p>  <p>[8]</p>
<p>Ecological distribution</p>	<p>Dry, open ridges, slopes, and grasslands, especially if rocky. Occurs mostly in the steppe and lower montane zones [3, 4, 6, 7, 8, 9].</p>
<p>Climate and elevation range</p>	<p>Occurs in dry, rocky areas at elevations of 1000 to 2000 meters (3280 to 6560 ft), but is most often found at elevations between 1000 and 1500 meters (3280 to 4920 ft) [3, 4, 7, 8, 9].</p>
<p>Local habitat and abundance</p>	<p>Only a handful of populations have been verified, but it's suspected that more populations exist on rocky, difficult-to-reach ridges and outcroppings in scattered locations within the species' published geographic range. Furthermore, due to the plant's extremely small stature, it's possible that populations in already investigated areas have been overlooked [3, 6, 10, 11].</p> <p>Species commonly associated with <i>P. sediformis</i> include <i>Lewisia rediviva</i>, <i>Sedum lanceolatum</i>, <i>Selaginella wallacei</i>, <i>Juniperus scopulorum</i>, <i>Allium robinsonii</i>, and a variety of <i>Tortula</i> species. Also often found growing in rocky openings near stands of <i>Pinus ponderosa</i>, <i>Pseudotsuga menziesii</i>, and <i>Larix occidentalis</i>. [11]</p>

Plant strategy type / successional stage	Stress-tolerator (Drought) [3, 4, 6, 7, 8, 9].
Plant characteristics	<p>A glabrous, semi-succulent herbaceous perennial with a branched crown and sessile, blue-green to red leaves. Small in stature (5 to 10 cm tall), forming small cushions or mats (usually less than 5 cm in diameter, but occasionally reaching 12 cm) [3, 4, 6, 7, 8, 9].</p> <p>Conspicuous white, pink, or yellow (usually white) flowers, borne on spreading, flat-topped terminal cymes. Blooms in midsummer. 3 to 9 flowers per cyme. Each flower has 2 sepals, 5 petals, 15 to 30 stamens, and 1 stigma. An individual flower usually lasts no longer than one day; the genus name <i>Phemeranthus</i> is reportedly derived from the Greek words “ephemeron” (meaning “dayfly”) and “anthos” (meaning “flower”), in reference to the short blooming time of its members. Fertilized flowers give rise to small capsules (about 3 mm long) [3, 4, 6, 7, 8, 9, 12].</p>
PROPAGATION DETAILS	
***** Note *****	
<p>An extensive search yielded little information on the propagation of <i>Phemeranthus sediformis</i>. Consequently, the following section is supplemented with information regarding the propagation of <i>Phemeranthus</i> species in general [13] and also includes some anecdotal but apparently thorough information that was published on a commercial website [16].</p>	
Ecotype	Information not available
Propagation Goal	Plants capable of overwintering and persisting in a natural setting [3, 4, 8, 13, 14]
Propagation Method	Seed [13, 14, 15, 16]
Product Type	Plug [13, 14, 15, 16, 17]
Stock Type	4 inch pot [13, 14, 15, 16]
Time to Grow	Approximately 10 months if sown indoors in winter, or approximately 8 months if sown outdoors in early spring [15, 16]. Sowing indoors in winter will end up lengthening the plant’s rapid growth phase, resulting in a plant that is better prepared for outplanting in the following winter or early spring [16, 17].
Target Specifications	Target plants will have a small but sturdy woody crown. Leaves will die back shortly before winter. [13, 14, 15, 16]

Propagule Collection Instructions	Collect capsules in late summer [3, 4, 6, 7, 8, 9].
Propagule Processing/Propagule Characteristics	Remove seeds from capsules by hand or by using a series of sieves [17]. Information regarding seed density for <i>P. sediformis</i> is not currently available. Information regarding seed longevity is not currently available for <i>P. sediformis</i> , but anecdotal evidence suggests that its seeds can remain viable for at least two years [16].
Pre-Planting Propagule Treatments	Store in a cool, dry location until sowing [17]. No pretreatment necessary (No scarification or stratification required) [13, 14, 15, 16].
Growing Area Preparation / Annual Practices for Perennial Crops	<i>P. sediformis</i> requires a sharply draining growing medium. Sand, rock, pumice, or perlite should be utilized [13, 14, 15, 16].
Establishment Phase Details	Seeds may be sown directly into four inch pots. Seeds germinate best in warm temperatures (about 70° F). [13, 14, 15, 16]
Length of Establishment Phase	1 to 3 weeks [15, 16]
Active Growth Phase	The most common issue with <i>P. sediformis</i> is overwatering, so water sparingly. <i>P. sediformis</i> also thrives in nutrient poor soils, so little to no fertilizer is required [13, 14, 15, 16].
Length of Active Growth Phase	Approximately 6 to 8 months [15, 16]
Hardening Phase	Do not water during the plant's hardening or dormant phases, as root rot and death will likely occur. Allow leaves to die back. [13, 14, 15, 16]
Length of Hardening Phase	Approximately 1 month [15, 16]
Harvesting, Storage and Shipping	Plants may be sold as plugs to be planted in either winter or early spring. Store plants in a dry location until outplanting in order to avoid root rot [13, 14, 15, 16, 17].
Length of Storage	Dormant plants may be stored until the following spring, at which point they will begin to bud out again. [3,4, 6, 14, 17]

Guidelines for Outplanting / Performance on Typical Sites	Only plant in sandy, rocky, or otherwise well-draining soils, as <i>P. sediformis</i> is very susceptible to root rot. Plants will remain very small for their entire lives (usually 5 to 10 cm tall), but may self-seed to produce small “mats” or colonies of conspecific individuals. [13, 14, 15, 16]
Other Comments	<p>Conservation Status of <i>Phemeranthus sediformis</i></p> <p>Global Rank: G4 (Apparently Secure) [9]</p> <p>WA State Rank: S3 (Rare, uncommon or threatened, but not immediately imperiled) [9]</p> <p>B.C. Rank: Yellow Listed (apparently secure and not at risk of extinction) [9]</p>
INFORMATION SOURCES	
References	<p>[1] Judd, W. S. (2007). <i>Plant systematics: A phylogenetic approach</i> (3rd ed.). Sunderland, MA: Sinauer Assoc.</p> <p>[2] Hershkovitz, M.A. (2019). Systematics, evolution, and phylogeography of Montiaceae (Portulacaceae). <i>Phytoneuron</i> 2019-27: 1–77. ISSN 2153 733X</p> <p>[3] Giblin, D.E. & B.S. Legler (eds.). 2003+. <i>Phemeranthus sediformis</i>. In: WTU Image Collection Web Site: Vascular Plants, MacroFungi, & Lichenized Fungi of Washington State. University of Washington Herbarium. http://biology.burke.washington.edu/herbarium/imagecollection.php</p> <p>[4] Pojar, J., MacKinnon, A., & Alaback, P. B. (2016). <i>Plants of the Pacific Northwest coast: Washington, Oregon, British Columbia & Alaska</i>. Auburn, WA, USA: Lone Pine.</p> <p>[5] Chambers, K.L. (2002). Portulacaceae - reconciling DNA with taxonomy, or vice versa. <i>Oregon Flora Newsletter</i>. Volume 8 Number 2. Oregon State University.</p> <p>[6] <i>Phemeranthus sediformis</i>. In: Klinkenberg, Brian. (Editor) 2018. E-Flora BC: Electronic Atlas of the Flora of British Columbia [eflora.bc.ca]. Lab for Advanced Spatial Analysis, Department of Geography, University of British Columbia, Vancouver.</p> <p>[7] eFloras (2008). Published on the Internet: http://www.efloras.org. Missouri Botanical Garden, St. Louis, MO & Harvard University Herbaria, Cambridge, MA.</p>

[8] USDA, NRCS. 2019. The PLANTS Database (<http://plants.usda.gov>, 1 May 2019). National Plant Data Team, Greensboro, NC 27401-4901 USA.

[9] NatureServe. 2019. NatureServe Explorer: An online encyclopedia of life [web application]. Version 7.1. NatureServe, Arlington, Virginia. Available <http://explorer.natureserve.org>

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[12] Online Virtual Flora of Wisconsin. 2019. <http://wisflora.herbarium.wisc.edu>

[13] Armitage, A. M. (2008). *Herbaceous perennial plants: A treatise on their identification, culture, and garden attributes*. Stipes Pub Llc.

[14] *Talinum okanoganense*. (2009). North American Rock Garden Society. <https://nargs.org/forum/talinum-okanoganense>

[15] Slaby, P. (2006) *Phemeranthus sediformis*. In: Rock Garden Plants Database. <http://flora.kadel.cz/e/kvCard.asp-Id=4353.htm>

[16] *Phemeranthus sediformis*. (2014). Rob's Plants. <http://www.robsplants.com/plants/PhemeSedif>

*** Please note that this source is both anecdotal and a commercial entity. Due to the source's apparent thoroughness and the overall limited amount of information available regarding the propagation of *Phemeranthus sediformis*, it was still utilized in making this protocol.

[17] Dumroese, R. K., & Landis, T. D. (2009). *Nursery manual for native plants: A guide for tribal nurseries*. Washington, D.C.: U.S. Dept. of Agriculture, Forest Service.

Other Sources Consulted	[18] Native Plant Network Propagation Protocol Database: https://npn.rngr.net/propagation [19] Rose, R., Chachulski, C. E., & Haase, D. L. (1998). <i>Propagation of Pacific Northwest native plants</i> . Corvallis: Oregon State University Press.
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