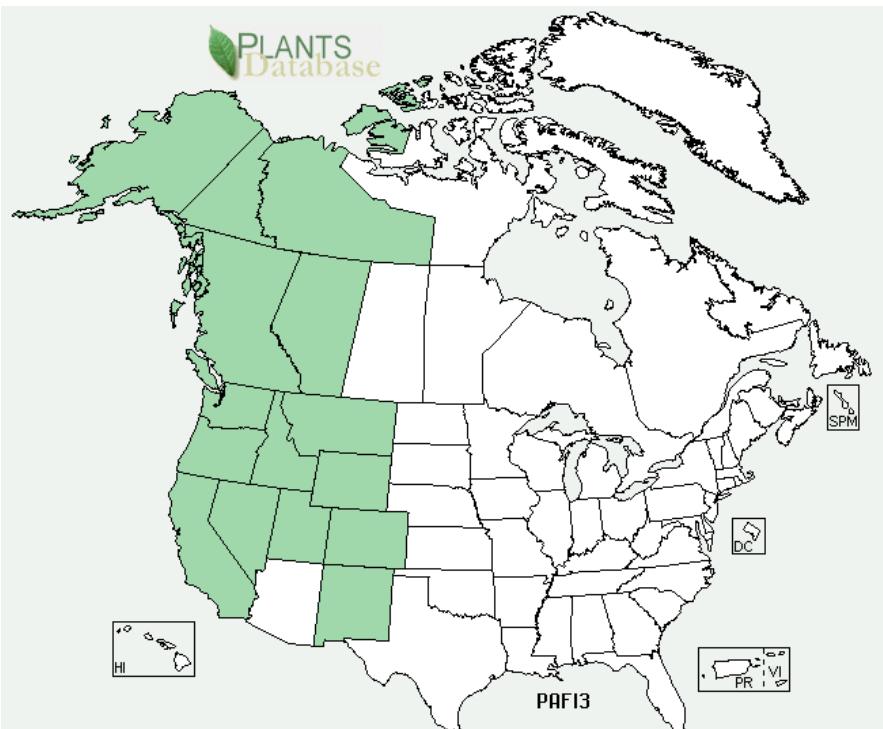
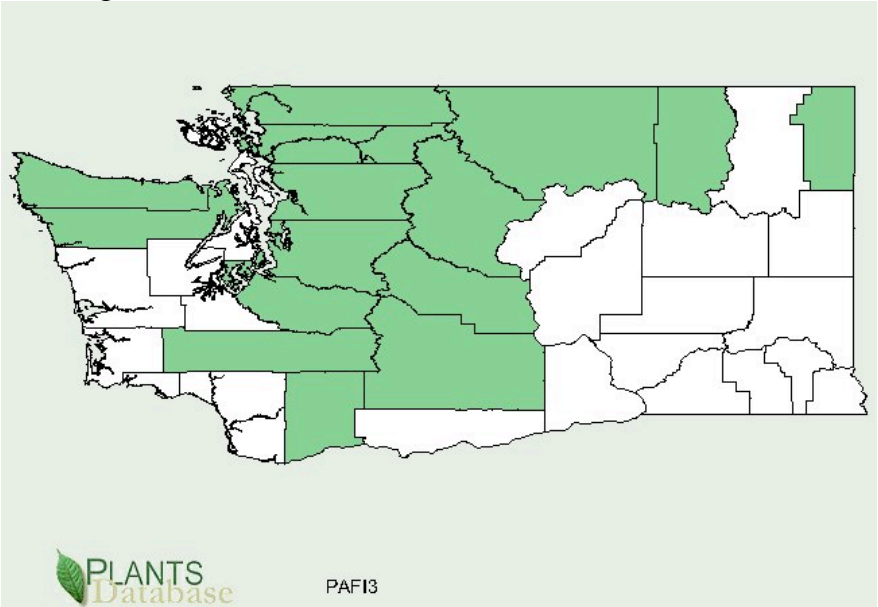


## Plant Propagation Protocol for *Parnassia Fimbriata* (Revised)

ESRM 412 – Native Plant Production

Protocol URL: <https://courses.washington.edu/esrm412/protocols/PAF13.pdf>

TAXONOMY <sup>6</sup>	
Plant Family	
Scientific Name	Saxifragaceae
Common Name	Saxifrage family
Species Scientific Name	
Scientific Name	<i>Parnassia fimbriata</i> K.D. Koenig
Varieties	<i>Parnassia fimbriata</i> K.D. Koenig var. <i>fimbriata</i> <i>Parnassia fimbriata</i> K.D. Koenig var. <i>hoodiana</i> C.L. Hitchc. <i>Parnassia fimbriata</i> K.D. Koenig var. <i>intermedia</i> (Rydb.) C.L. Hitchc.
Sub-species	N/A
Cultivar	N/A
Common Synonym(s)	N/A
Common Name(s)	fringed grass of Parnassus
Species Code (as per USDA Plants database)	PAF13
GENERAL INFORMATION	
Geographical range	<p>North America Distribution</p>  <p>PAF13</p>

	<p>Washington Distribution</p>  <p>Source: USDA PLANTS Database <sup>6</sup></p>
Ecological distribution	Bogs, wet meadows, and stream banks <sup>3</sup>
Climate and elevation range	<p>Elevations ranging from lowland to alpine <sup>7</sup></p> <p>Requires precipitation of 10-18 inches, and soil pH of 6-8. <sup>1</sup></p> <p>Minimum temperature for growth ranges from -34.4°C to -28.9°C</p> <p>Maximum temperature tolerance unknown <sup>4</sup></p>
Local habitat and abundance	Most local <i>P. fimbriata</i> are located in Western Washington, specifically in the Cascades and Olympic Peninsula, due to high elevation ranges and close proximity to water. <sup>5</sup>
Plant strategy type / successional stage	Unable to find clear information on this topic.
Plant characteristics	<p><i>P. fimbriata</i> is a small, hairless forb with broad kidney-shaped leaves around the base. The flowering stem ranges in size from 15-30 cm on average, and has a single white flower at the tip. The flower has five petals alternating with five fertile stamens. <sup>5</sup></p> <p>Ovoid capsules are ~1 cm long, containing several seeds. <sup>3</sup></p> <p>Longevity is not know in detail, but is estimated to be moderately the same as an average forb. <sup>1</sup></p>
<b>PROPAGATION DETAILS <sup>2</sup></b>	
Ecotype	N/A
Propagation Goal	Plants
Propagation Method	Seed
Product Type	Container
Stock Type	490 mL containers

Time to Grow	2 years
Target Specifications	3 cm tall, with 6-10 true leaves
Propagule Collection Instructions	Seeds are collected when light tan in color (sign of maturity), and can be readily shaken from the capsules. Seeds are stored in paper bags in a ventilated shed until they are cleaned.
Propagule Processing/Propagule Characteristics	Seed longevity: unknown Seed dormancy: physiological Seed density: unknown Purity: 100%
Pre-Planting Propagule Treatments	Seeds are hand-cleaned before germination. Seeds then undergo 5-month outdoor germination with fluctuating temperatures. Germination was reported to be highest in the presence of light, indicating the seeds should be surface sown.
Growing Area Preparation / Annual Practices for Perennial Crops	Area: outdoor nursery Seeds are surface sown. Growing media: 6:1:1 milled sphagnum peat/perlite/vermiculite, with Osmocote controlled release fertilizer (8-9 month release rate), and Micromax fertilizer. 1 gram of Osmocote and 0.20 grams of Micromax were used for each 172 mL conetainer.  Conetainers were sown in late fall and irrigated before winter stratification. The seeds are expected to germinate in spring under full sun exposure, and are automatically irrigated in the early mornings. The average growing season is late April to mid-October.
Establishment Phase Details	The media is always kept moist during germination. Germination occurs uniformly after several days that were 21°C or warmer.
Length of Establishment Phase	4 weeks
Active Growth Phase	Roots and shoots develop slowly after germination. 2-4 true leaves develop 6 weeks after germination. Plants were not root tight after the first growing season, during which, they were fertilized with 13-13-13 liquid NPK fertilizer.
Length of Active Growth Phase	12 weeks
Hardening Phase	Fall: fertilized with 10-20-20 liquid NPK Irrigation is gradually reduced in September and October. Pre-winter: plants are flushed with clean water
Length of Hardening Phase	4 weeks
Harvesting, Storage and Shipping	Total harvest time: 2 years Harvest date: June

	Storage: overwinter in outdoor nursery with insulating foam cover
Length of Storage	5 months
Guidelines for Outplanting / Performance on Typical Sites	None available
Other Comments	N/A
<b>INFORMATION SOURCES</b>	
References	<p>1. Compare Plants Database. <i>Plants Database Reference. Distribution, Growth Requirements, Taxonomy, and More</i>. N.p., n.d. Web. 19 Apr. 2014. &lt;<a href="http://plants.findthedata.org/1/251/Parnassia-fimbriata">http://plants.findthedata.org/1/251/Parnassia-fimbriata</a>&gt;.</p> <p>2. Evans, Jeff; Luna, Tara.; Wick, Dale. 2001. Propagation protocol for production of container <i>Parnassia fimbriata</i> König. plants (490 ml containers); USDI NPS - Glacier National Park, West Glacier, Montana. In: Native Plant Network. URL: <a href="http://www.nativeplantnetwork.org">http://www.nativeplantnetwork.org</a> (accessed 20 April 2014). Moscow (ID): University of Idaho, College of Natural Resources, Forest Research Nursery.</p> <p>3. Fringed Grass-of-Parnassus - Parnassia Fimbriata. <i>Fringed Grass-of-Parnassus - Parnassia Fimbriata</i>. Web. 20 Apr. 2014. &lt;<a href="http://plant-life.org/Saxifragaceae/parna_fimb.htm">http://plant-life.org/Saxifragaceae/parna_fimb.htm</a>&gt;.</p> <p>4. Global Species : Parnassia Fimbriata. <i>Global Species : Parnassia Fimbriata (fringed Grass-of-Parnassus; Rocky Mountain Parnassia; Fringed Grass of Parnassus)</i>. Web. 18 Apr. 2014. &lt;<a href="http://globalspecies.org/ntaxa/852562#cite_1">http://globalspecies.org/ntaxa/852562#cite_1</a>&gt;.</p> <p>5. Parnassia Fimbriata. <i>Western Washington Flora</i>. Puget Sound. Web. 20 Apr. 2014. &lt;<a href="http://digitalcollections.pugetsound.edu/cdm/ref/collection/wwaflora/id/126">http://digitalcollections.pugetsound.edu/cdm/ref/collection/wwaflora/id/126</a>&gt;.</p> <p>6. PLANTS Database. United States Department of Agriculture, Natural Resources Conservation Service. 12 Apr. 2006. &lt;<a href="http://plants.nrcs.usda.gov">http://plants.nrcs.usda.gov</a>&gt;.</p> <p>7. The University of British Columbia. <i>Parnassia Fimbriata</i>. Web. 19 Apr. 2014. &lt;<a href="http://www.botanicalgarden.ubc.ca/potd/2011/01/parnassia_fimbriata.php">http://www.botanicalgarden.ubc.ca/potd/2011/01/parnassia_fimbriata.php</a>&gt;.</p>
Other Sources Consulted	Enari, L. (1956). Plants of the Pacific Northwest: 663 selected Northwest wild flowers, shrubs, trees, and weeds. Portland, Or: Binfords & Mort.

	<p>Foster, H. Lincoln. Rock Gardening. A guide to Growing Alpines and Other Wildflowers in the American Garden. New York: Bonanza Books, 1968.</p> <p>Rose, R., Chachulski, C. E. C., &amp; Haase, D. L. (1998). Propagation of Pacific Northwest native plants. Corvallis: Oregon State University Press.</p> <p>Rydberg, P. A. Phytogeographical Notes on the Rocky Mountain Region. VII. Formations in the Subalpine Zone. <i>Bulletin of the Torrey Botanical Club</i>, Vol. 44, No. 9 (Sep., 1917), pp. 431-454.</p> <p>Taylor, Ronald J, and George W. Douglas. Mountain Wild Flowers of the Pacific Northwest. Portland, Or: Binford &amp; Mort, 1975. Print.</p> <p>Vance, N. C., &amp; Pacific Northwest Research Station (Portland, Or.). (2010). Evaluation of native plant seeds and seeding in the east-side central Cascades ponderosa pine zone. Portland, OR: U.S. Dept of Agriculture, Pacific Northwest Research Station.</p>
Protocol Author	Leslie Hirata
Date Protocol Created or Updated	4/22/14

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

Previous *P. fimbriata* Protocol (2006):

Plant Data Sheet



1



2

Species (common name, Latin name)

(Fringed grass of parnassus, *Parnassia fimbriata*, *Parnassia fimbriata* KOENIG)

Range

*P. fimbriata* is widespread in the western United States from south Alaska to California, the southwest and east to the Rockies in Canada and the south.

Climate, elevation

*P. fimbriata* occurs in middle to alpine elevation zones, but at sea level in Alaska.

Local occurrence (where, how common)

Fairly common in both the Olympics, Cascades and higher regions of Washington.

Habitat preferences

Found in bogs, wet open areas and meadows, near streambanks, and forested seepage areas. Wetland

Indicator status: FACW,OBL.

Plant strategy type/successional stage (stress-tolerator, competitor, weedy/colonizer, seral, late successional)

Unknown

Associated species

Unknown

May be collected as: (seed, layered, divisions, etc.)

Produces abundant seeds in the fall. Larger clumps are easily divided in the spring.

Collection restrictions or guidelines

If collecting seeds or plants in national parks or forest, please refer to their guidelines for gathering and removing plant materials.

Seed germination (needs dormancy breaking?)

Seeds show characteristics of physiological dormancy. This may be broken by sowing seeds outdoors in the fall and

allowing them to break their dormancy naturally or to use stratification techniques similar to outdoor conditions. It is recommended that seeds are surface sown outdoors soon after ripening in the fall.

Seed life (can be stored, short shelf-life, long shelf-life)  
The shelf-life is not known.

Recommended seed storage conditions

It is recommended to not store the seeds, but to sow them soon after harvesting and ripening them.

Propagation recommendations (plant seeds, vegetative parts, cuttings, etc.)

Parnassia does well both from seeds or from divisions.

Soil or medium requirements (inoculum necessary?)

This plant grows best in saturated peat or heavy, wet fertile soil. Recommended Ph level is between 6.0 and 8.0.

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

Does well in cultivation if given enough water. Cost is reasonable due to abundance of seeds produced by plants.

Recommended planting density

This information not available, and it is assumed that there are no special preferences for this plant.

Care requirements after installed (water weekly, water once etc.)

Keep constantly moist. Some sources recommend growing in moving water after germination.

Normal rate of growth or spread; lifespan

*P. fimbriata* grows rather slowly from seeds, reaching a transplantable size in 2 years time.

Photo sources

1 <http://www.nawwal.org/~mrgoff/photojournal/2000/sum/sitka/8-10grassparnas.html>

2 <http://www.rootcellar.us/wildflowers/parnass.htm>

Sources cited

Foster, H. Lincoln. Rock Gardening. A guide to Growing Alpines and Other Wildflowers in the American Garden. New York: Bonanza Books, 1968.

Native Plants Propagation Protocol Database. 12 April 2006. <[http://www.nativeplantnetwork.org/network/view.asp?protocol\\_id=209](http://www.nativeplantnetwork.org/network/view.asp?protocol_id=209)>.

PLANTS Database. United States Department of Agriculture, Natural Resources Conservation Service. 12 April, 2006. <<http://plants.nrcs.usda.gov>>.

Data compiled by (student name and date)  
Molly Deardorff 4/12/06