**Plant Propagation Protocol for *Erythranthe breweri***

ESRM 412 – Native Plant Production

URL: https://courses.washington.edu/esrm412/protocols/*2025*/*MIBR5.pdf*

| **TAXONOMY** | |
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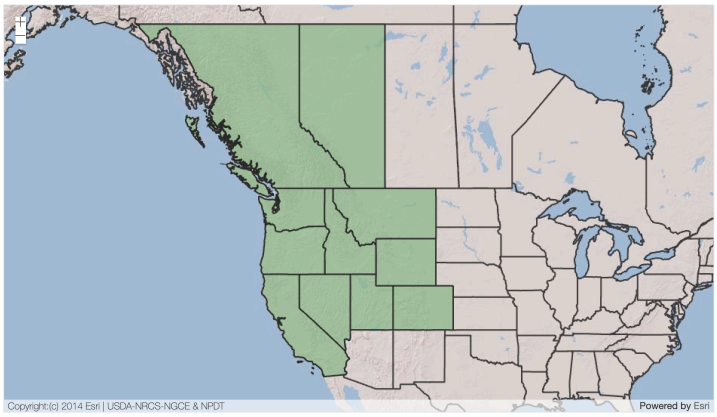
| Plant Family | |
| Scientific Name | Phrymaceae[1] |
| Common Name | Lopseed Family[1] |
| Species Scientific Name | |
| Scientific Name | *Erythranthe breweri* (Greene) G.L. Nesom & N.S. Fraga[2] |
| Varieties | N/A |
| Sub-species | N/A |
| Cultivar | N/A |
| Common Synonym(s) | *Mimulus breweri* (Greene) Coville;<br>*Eunanus breweri* Greene;<br>*Mimulus rubellus* A. Gray var. *breweri* (Greene) Jeps.[1] |
| Common Name(s) | Brewer's Monkeyflower[1] |
| Species Code (as per USDA Plants database) | MIBR5[3] |
| **GENERAL INFORMATION** | |
| Geographical range | North American Range [3]:<br>  <br> |

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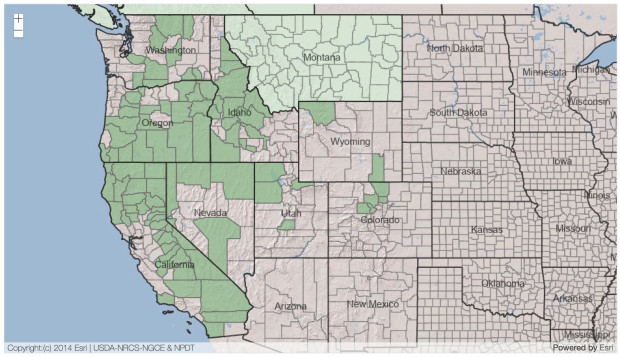
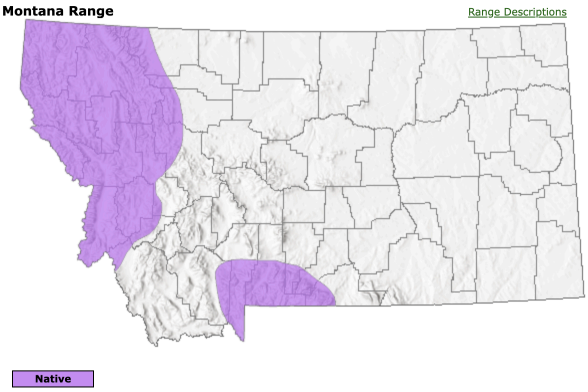
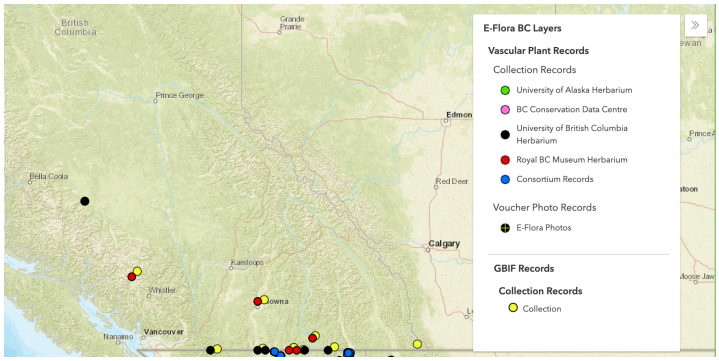
| | U.S. County-Level Range (Excluding Montana)[3]:<br>  <br><br>Montana County-Level Range[4]:<br>  <br><br>Canadian Distribution[5]:<br>  <br><br>*Erythranthe breweri* occurs in lower montane and coastal areas from southern British Columbia to southern California[5,6]. This range extends east into Colorado[3]. |
| Ecological distribution | Found in a variety of ecosystems, including montane forests and meadows with moist to mesic soils[7,8]. |
| Climate and elevation range | E. breweri is found from foothills to lower montane zones, at elevations of 440 to 3210 m[6]. |
| Local habitat and abundance | Seeps, moist forests, and rocky slopes near water constitute the preferred habitat. E. breweri can |

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| | commonly be found in Yellow Pine Forest, Lodgepole Forest, Red Fir Forest, and Subalpine Forest [6,7]. |
| Plant strategy type / successional stage | N/A |
| Plant characteristics | An annual forb that blooms from August to May and produce capsules where seeds mature[6,8].<br><br>The growing season is approximately six months, in which time the plant may reach up to 21 cm in height[1].<br><br>E. breweri have slender stems with few branches, and are covered in stalked glands. The flower structure includes a 5-lobed calyx, generally shorter than the pedicels at 3.5-9mm, and a pink to lavender colored corolla, with 4 stamens[1,8]. |
| **PROPAGATION DETAILS: FROM SEED**<br>**Information extrapolated from protocols for *Mimulus cardinalis* Dougl. ex Benth., *Mimulus guttatus* Fisch. ex DC, *Mimulus lewisii* Pursh.** | |
| Ecotype | N/A |
| Propagation Goal | Plants |
| Propagation Method | Seed |
| Product Type | Container (plug) |
| Stock Type | SC10 Ray Leach Super Cell conetainers[9] |
| Time to Grow | 3 months[1] |
| Target Specifications | Plants should be firm plugs with shoot growth of at least 8cm, and 3 above-ground nodes[8,10] |
| Propagule Collection Instructions | Capsules can be collected directly from plants September-October into paper bags [1,11,12] |
| Propagule Processing/Propagule Characteristics | There are approximately 4,000,000 seeds per pound, which are very small in size[9]. |
| Pre-Planting Propagule Treatments | Capsules can be shaken or crushed to collect seeds. Seeds from crushed capsules should be further cleaned via an air column separator[9]. |
| Growing Area Preparation / Annual Practices for Perennial Crops | Fully Controlled greenhouse, Transfer outdoors for Hardening<br><br>Seeds should be sown directly into Sunshine Mix #4 Aggregate Plus in the SC10 Ray Leach Super Cell containers, and given a thin layer of topper before watering deeply[9,12].<br><br>Seeds should be sown late March-April[6] |

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| Establishment Phase Details | Media should be kept consistently moist throughout the germination period, with automatic irrigation set to apply daily overhead misting[11,12]. Plants should be placed in full sunlight, and fertilized with 13-13-13 NPK controlled release fertilizer[10,11]. |
| Length of Establishment Phase | 2-3 weeks[9,10] |
| Active Growth Phase | Soil should continue to be kept moist throughout active growth phase and additional 13-13-13 NPK Liquid fertilizer can be applied[9,11] |
| Length of Active Growth Phase | 4 weeks |
| Hardening Phase | Plants should be moved outdoors during the hardening phase, and the frequency of watering should be gradually reduced[9,11].<br><br>Media should remain moist[1,6,9]. |
| Length of Hardening Phase | 3 weeks |
| Harvesting, Storage and Shipping | Harvesting should occurring late June, with immediate transfer from containers to outplanting site[1,6]. |
| Length of Storage | 0 weeks |
| Guidelines for Outplanting / Performance on Typical Sites | Outplanting should occur in late June or early July, and plants should continue to flower through August[1,6]. |
| Other Comments | N/A |
| **INFORMATION SOURCES** | |
| References | 1. Fraga, N. S. (2018). *Erythranthe breweri*. In Jepson Flora Project (Eds.), *Jepson eFlora* (Rev. 6). University of California. Retrieved June 7, 2025, from https://ucjeps.berkeley.edu/eflora/eflora_display.php?tid=99101<br>2. Barker, W. R., Nesom, G. L., Beardsley, P. M., & Fraga, N. S. (2012). *A taxonomic conspectus of Phrymaceae: A narrowed circumscription for Mimulus, new and resurrected genera, and new names and combinations* (Phytoneuron No. 2012–39, pp. 1–60) [PDF]. *Phytoneuron*. Retrieved June 7, 2025, from https://www.phytoneuron.net/2012Phytoneuron/39PhytoN-Mimulus.pdf<br>3. Natural Resources Conservation Service. (2025). *Mimulus breweri* (Greene) Coville. PLANTS Database. United States Department of Agriculture. Retrieved June 7, 2025, from |

https://plants.sc.egov.usda.gov/plant-profile/MIBR5
4. Montana Natural Heritage Program. (n.d.). *Brewer's monkeyflower — Mimulus breweri*. Montana Field Guide. Retrieved June 7, 2025, from https://FieldGuide.mt.gov/speciesDetail.aspx?elcode=PDSCR1B0N0
5. Fraga, N. S. (2018). *Phrymaceae*. In Jepson Flora Project (Eds.), *Jepson eFlora* (Rev. 6). University of California. Retrieved June 7, 2025, from https://ucjeps.berkeley.edu/eflora/eflora_display.php?tid=93790
6. Calflora. (2025). *Erythranthe breweri*. In *Calflora: Information on California plants for education, research and conservation* [web application]. The Calflora Database. Retrieved June 7, 2025, from https://www.calflora.org/
7. Klinkenberg, B. (Ed.). (2020). *E-Flora BC: Electronic Atlas of the Plants of British Columbia*. Lab for Advanced Spatial Analysis, Department of Geography, University of British Columbia. Retrieved June 7, 2025, from https://eflora.bc.ca
8. Giblin, D. (n.d.). *Erythranthe breweri*. Burke Museum Herbarium, University of Washington. Retrieved June 7, 2025, from https://burkeherbarium.org/imagecollection/taxon.php?Taxon=Erythranthe%20breweri
9. Skinner, D. M. (2003). *Propagation protocol for production of container (plug) Mimulus guttatus DC plants: USDA NRCS – Pullman Plant Materials Center, Pullman, Washington*. In Native Plant Network. U.S. Department of Agriculture, Forest Service, National Center for Reforestation, Nurseries, and Genetic Resources. Retrieved June 8, 2025, from https://NativePlantNetwork.org
10. Young, B. (2002). *Propagation protocol for production of container (plug) Mimulus guttatus Fisch. ex DC plants: Deepot 40; San Francisco, California*. In Native Plant Network. U.S. Department of Agriculture, Forest Service, National Center for Reforestation, Nurseries,

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| | and Genetic Resources. Retrieved June 8, 2025, from https://NativePlantNetwork.org<br>11. Luna, T., Evans, J., Wick, D., & Hosokawa, J. (2008). *Propagation protocol for production of container (plug) Mimulus lewisii Pursh. plants: 800 ml containers; USDI NPS – Glacier National Park, West Glacier, Montana*. In Native Plant Network. U.S. Department of Agriculture, Forest Service, National Center for Reforestation, Nurseries, and Genetic Resources. Retrieved June 8, 2025, from https://NativePlantNetwork.org<br>12. Young, B. (2002). *Propagation protocol for production of container (plug) Mimulus cardinalis Dougl. ex Benth. plants: Deepot 40; San Francisco, California*. In Native Plant Network. U.S. Department of Agriculture, Forest Service, National Center for Reforestation, Nurseries, and Genetic Resources. Retrieved June 8, 2025, from https://NativePlantNetwork.org |
| Other Sources Consulted | California Native Plant Society. (2019). *Fire Recovery Guide* [PDF]. California Native Plant Society. Retrieved June 7, 2025, from https://www.cnps.org/wp-content/uploads/2019/08/cnps-fire-recovery-guide-2019.pdf |
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| Date Protocol Created or Updated | 06/07/25 |