

Plant Propagation Protocol for *Gilia sinuata*

ESRM 412 – Native Plant Production

URL: <https://courses.washington.edu/esrm412/protocols/2026/GISI.pdf>



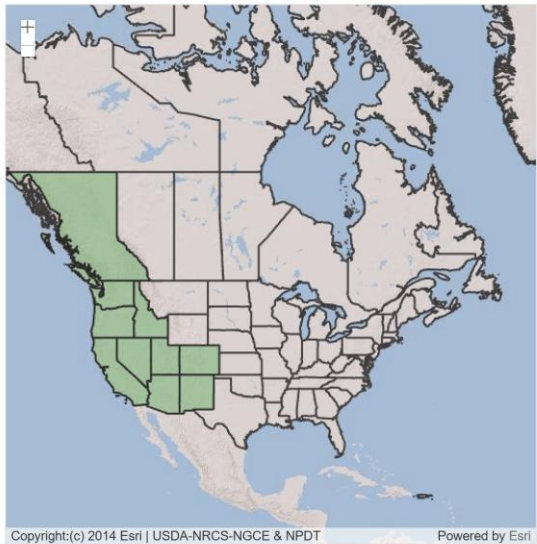
Gilia sinuata flower. Photo credit with permission: James M. Andre, 2006 [4]

TAXONOMY	
Plant Family	
Scientific Name	Polemoniaceae [8]
Common Name	Phlox family [8]
Species Scientific Name	
Scientific Name	<i>Gilia sinuata</i> Douglas ex Benth. [8]
Varieties	N/A
Sub-species	N/A
Cultivar	N/A
Common Synonym(s)	<i>Gilia sinuata</i> var. <i>sinuata</i> , <i>Gilia inconspicua</i> var. <i>sinuata</i> (Douglas ex Benth.) A. Gray [5]
Common Name(s)	rosy gilia, cinder gilia, shy gilia, sinuate gilia, rosy gilt-flower [2 & 3]
Species Code (as per USDA)	GISI. [8]

Plants database)	
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GENERAL INFORMATION

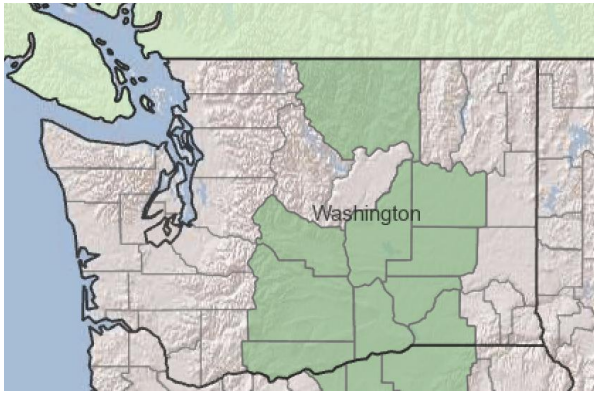
Geographical range



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Native, No County Data
 Introduced, No County Data
 Both, No County Data
 Exclude

[9]



They can be found in Washington, Oregon, Idaho, California, Nevada, Utah, Colorado, Arizona, and New Mexico. [8]

Ecological distribution



Gilia sinuata occurs in dryland communities in the Intermountain West and Great Basin. It is commonly found in open, sandy places and other open habitats including shrubland and woodland. It occurs across xeric, open-site communities including sagebrush-steppe, cold desert scrub, and dryland plains, favoring disturbed or sparsely vegetated soils with coarse to sandy texture. [8, 9]

Climate and elevation range

Open, sandy desert plains from 150 - 2750 m. [7]

Local habitat and abundance

Commonly occurs in dry, open, usually sandy places in the foothills and plains. [3]

Plant strategy type / successional stage	Early seral, open-site annual suited to disturbed or sparsely vegetated sandy habitats [3]. Flowers from late March to May in the southern parts of the range and at lower elevations, and from May to July in the north and at higher elevations. [6]
Plant characteristics	 <p data-bbox="625 338 1430 640">Shrub/Forb with small, lavender and white colored flowers [8]. 13 – 34 cm stem, with several branches spreading from the base. Leaves are basal, tufted-woolly-hairy, pinnate-lobed, toothed, and tapering at the tip. Flower calyx 3.5 -5 mm; purple corolla 7-12 mm, white-veined, throat yellow, lobes 2-3 mm, lavender, pink, or white; stamens reaching corolla lobe bases; white pollen. 9-27 seeds per capsule [7].</p>  <p data-bbox="1047 829 1430 934"><i>Gilia sinuata</i> flower. Photo credit: Robert L. Carr, 2009 [3]</p> <p data-bbox="479 1018 844 1050"><i>Gilia sinuata</i> whole plant [7]</p>

PROPAGATION DETAILS: FROM SEED

Ecotype	The propagation details described in this protocol are adapted primarily from a USDA NRCS Native Plant Network protocol for <i>Ipomopsis aggregata</i> (scarlet gilia, formerly <i>Gilia aggregata</i>), produced at the Pullman Plant Materials Center, Washington, from a Paradise Creek drainage ecotype. <i>I. aggregata</i> is a closely related Polemoniaceae congener that shares <i>G. sinuata</i> 's dryland habitat, occurring in dry, open areas from shrub-steppe to open, dry forests from British Columbia to northern California and east to Montana and New Mexico, with a mean annual precipitation range of 10–15 inches. [10]
Propagation Goal	Plants [10]
Propagation Method	Seed [10]
Product Type	Container (plug) [10]
Stock Type	10 cubic inch container [10]
Time to Grow	4 months [10]
Target Specifications	Tight root plug in container [10]

Propagule Collection Instructions	The plants flower indeterminately and the capsules dehisce forcefully upon ripening; collecting seed is difficult and time-consuming. ^[10] Collect seeds from spring to summer ^[9] .
Propagule Processing/Propagule Characteristics	Plant parts are discarded and the seed collected from the bottom of the bag or tarp. Small amounts are cleaned with an air column separator. Larger amounts are cleaned with air screen equipment. Clean seeds are stored in controlled conditions at 40 degrees Fahrenheit and 40% relative humidity. ^[10] The seed density is 3850 seeds/gram ^[9] or 1.75×10^6 seeds/lb.
Pre-Planting Propagule Treatments	For this ecotype, 45 days of cold moist stratification is required. The results showed that 5% emergence occurred without stratification. 45 days of cold, moist stratification resulted in 90% emergence. 90 or more days of cold, moist stratification did not increase emergence. Slightly higher emergence was obtained from plants grown outdoors under cool, fluctuating growing conditions but these plants were not ready to be transplanted to the field the same spring. ^[10]
Growing Area Preparation / Annual Practices for Perennial Crops	Seeds are sown in a fully controlled greenhouse. Seed is sown into 10 cubic inch containers filled with a standard soil mix and covered lightly. A thin layer of pea gravel or sand should be applied to the top of the planting soil to prevent seeds from floating during watering. Containers should be watered deeply and placed outside before being moved to the greenhouse in early to mid-January. ^[11] Seeds germinate at 18-27 °C. ^[1]
Establishment Phase Details	Containers are moved to the greenhouse in early to mid-January. Emergence usually begins in 4 days and is complete in 8 days. ^[11] Containers should be watered deeply. Medium is kept moist until germination. ^[11]
Length of Establishment Phase	2 weeks. ^[10]
Active Growth Phase	Plants are watered deeply every other day and fertilized once per week with a complete, water soluble fertilizer containing micro-nutrients. Plants may require water every day during the final part of the active growth period. ^[10]
Length of Active Growth Phase	3 months. ^[10]
Hardening Phase	Plants are moved to the cold frame in late March or early April, depending on weather conditions. They are watered every other day if the weather is cool, and every day during hot, dry spells. ^[10]
Length of Hardening Phase	2 – 4 weeks. ^[10]

Harvesting, Storage and Shipping	Plants are ready for harvest once target specifications are met and hardening is complete. Irrigate containers 1–2 days before lifting to allow plugs to drain to field capacity. As a non-dormant annual, plants should be shipped directly to the outplanting site in their containers and must be outplanted promptly to avoid problems with desiccation and overheating. During transport, protect plants from direct sun and wind, as desiccation of the root system was the most damaging factor. [12]
Length of Storage	Minimal. Nurseries located close to the project area may be able to lift plants and deliver them quickly to the outplant site with little or no storage. As the distance increases, some type of cooler storage facility is needed to preserve plant quality. The storage duration should be limited to a few days or weeks. [12]
Guidelines for Outplanting / Performance on Typical Sites	Outplant into open, well-drained, sandy to sandy-loam soils in full sun, within sagebrush-steppe, cold desert scrub, or open dryland plains communities matching the species' native habitat [7 & 8] As a dryland annual, it will self-sow if seed is allowed to mature on-site. [7]
Other Comments	<i>I. aggregata</i> is a biennial to short-lived perennial, while <i>G. sinuata</i> is a true annual; the 4-month Time to Grow may therefore be an overestimate for <i>G. sinuata</i> , which could reach outplanting readiness more quickly given its annual habit. [10] Pre-planting stratification requirements may also differ. Skinner (2007) found 45 days of cold, moist stratification necessary for <i>I. aggregata</i> , while Baskin & Baskin (2002) report smoke/charred wood extract as the primary dormancy-breaking mechanism for <i>G. sinuata</i> specifically. [10 & 1] Both treatments should be considered when working with <i>G. sinuata</i> seed of unknown after-ripening status.

INFORMATION SOURCES

References	<ol style="list-style-type: none"> 1. Baskin, Jerry M., and Carol C. Baskin. "Propagation Protocol for Production of Container (Plug) <i>Gilia Capitata</i> Sims Plants University of Kentucky Lexington, Kentucky." <i>Native Plant Network</i>, 2002, npn.rngr.net/renderNPNProtocolDetails?selectedProtocolIds=polemoniaceae-gilia-2064. Accessed 28 Apr. 2026. 2. "Calflora - Taxon Report." <i>The Calflora Database, a Non-Profit Organization</i>, 2026, www.calflora.org/app/taxon?crn=3885. Accessed 28 Apr. 2026. 3. Don, Knoke, and David Giblin. "Gilia Sinuata - Burke Herbarium Image Collection." <i>Burke Herbarium</i>, 2024, burkeherbarium.org/imagecollection/taxon.php?Taxon=Gilia+sinuata. Accessed 28 Apr. 2026. 4. "Gilia Sinuata." <i>Berkeley.edu</i>, 2026, calphotos.berkeley.edu/cgi/img_query?query_src=ucjeps&wh
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	<p>ere-genre=Plant&where-taxon=Gilia%20sinuata&title_tag=Gilia%20sinuata. Accessed 28 Apr. 2026.</p> <ol style="list-style-type: none"> 5. "Gilia Sinuata Douglas Ex Benth." <i>Oregon Flora</i>, oregonflora.org/taxa/index.php?taxon=5365. Accessed 28 Apr. 2026. 6. Grant, Alva, and Verne Grant. "Genetic and Taxonomic Studies in Gilia: VIII. The Cobwebby Gilias." <i>Aliso: A Journal of Systematic and Floristic Botany</i>, vol. 3, no. 3, 1956, scholarship.claremont.edu/aliso/vol3/iss3/2. Accessed 27 Apr. 2026. 7. Porter, J. Mark. "Gilia Sinuata." <i>Jepson Flora Project</i>, Jepson eFlora, 2023, ucjeps.berkeley.edu/eflora/eflora_display.php?tid=26926&utm_. Accessed 28 Apr. 2026. 8. USDA. "Gilia Sinuata Douglas Ex Benth." <i>USDA Natural Resources Conservation Service</i>, plants.sc.egov.usda.gov/plant-profile/GISI. Accessed 28 Apr. 2026. 9. Young, Betty. "Propagation Protocol for Production of Container (Plug) Gilia Capitata (Greene) v. Grant Plants San Francisco, California." <i>Native Plant Network</i>, 2001, https://nnp.rngr.net/renderNPNProtocolDetails?selectedProtocolIds=polemoniaceae-gilia-611. Accessed 28 Apr. 2026. 10. Skinner, David M. "Propagation Protocol for Production of Container (Plug) <i>Ipomopsis aggregata</i> (Pursh) V. Grant Plants 10 cu. in." <i>Native Plant Network</i>, USDA NRCS – Pullman Plant Materials Center, 2007, nnp.rngr.net/renderNPNProtocolDetails?selectedProtocolIds=polemoniaceae-ipomopsis-3359. Accessed 8 June 2026. 11. Tilley, D., T. Pickett, C. Bernau, and A. Fund. "Plant Guide for Scarlet Gilia (<i>Ipomopsis aggregata</i>)." <i>USDA Natural Resources Conservation Service, Idaho and Nevada Plant Materials Programs, Aberdeen, ID</i>, 2017, plants.usda.gov/DocumentLibrary/plantguide/pdf/pg_ipag.pdf. Accessed 8 June 2026. 12. Landis, Thomas D., and Tara Luna. "Harvesting, Storing, and Shipping." <i>Nursery Manual for Native Plants: A Guide for Tribal Nurseries — Volume 1: Nursery Management</i>, edited by R. Kasten Dumroese, Tara Luna, and Thomas D. Landis, U.S. Department of Agriculture, Forest Service, 2009, pp. 229–245. <i>Agriculture Handbook 730</i>. Accessed 8 June 2026.
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Protocol Author	Naseem Manshadi
Date Protocol Created or Updated	06/08/26