Plant Propagation Protocol for Ipomopsis *aggregata*
ESRM 412 – Native Plant Production
Protocol URL: https://courses.washington.edu/esrm412/protocols/*IPAG.pdf*


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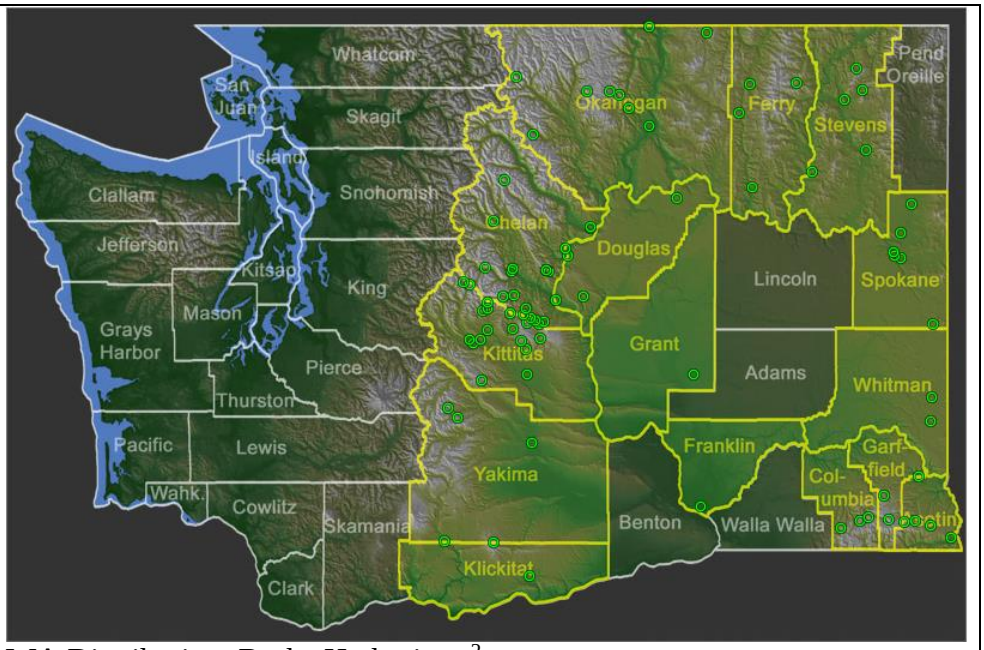
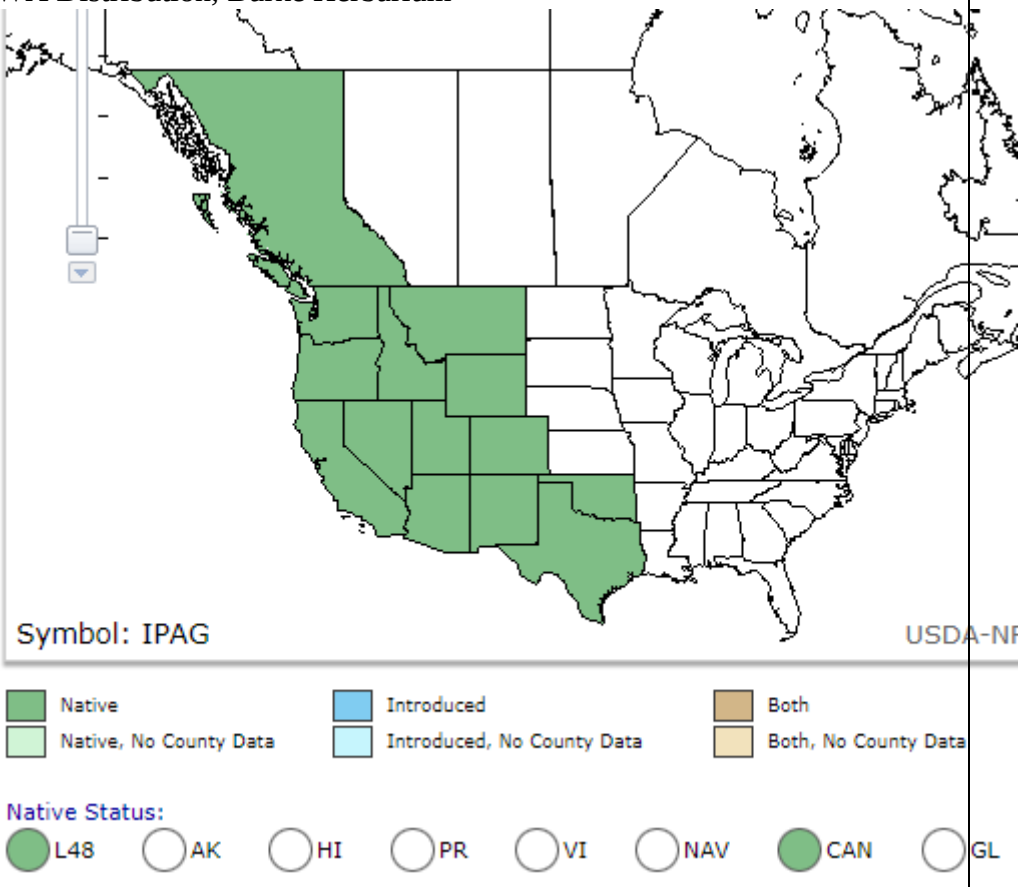
TAXONOMY	
Plant Family	
Scientific Name	Polemoniaceae [5]
Common Name	Phlox Family [5]
Species Scientific Name	
Scientific Name	Ipomopsis *aggregata* [6]
Varieties	Ipomopsis aggregata ssp. aggregate Ipomopsis aggregata ssp. Formosissima [6]
Sub-species	N/A
Cultivar	N/A
Common Synonym(s)	Gilia *aggregate* (In PNW) [5]
Common Name(s)	Scarlet gilia [2] Scarlet trumpet [2] Skyrocket [2]
Species Code (as per USDA Plants database)	IPAG [6]
GENERAL INFORMATION	
Geographical range	

	 WA Distribution, Burke Herbarium [2]  US Distribution, USDA[6]
Ecological distribution	Ipomopsis *aggregata* occurs in a wide range of ecosystems from open woodlands, to subalpine rock fields.[7] Also occurs on semi-desert, sagebrush fields [8]

	Plant is an herbaceous biennial or short-lived perennial that dies after flowering. [6]
Climate and elevation range	Prefers dryer, sunny ecosystems, ranging from low to high elevation. Thrives in rocky, sandy soil. [5]
Local habitat and abundance	Mostly occurs on east side of the Cascade Mountains in Washington State but does occur on higher elevations in southern borders. [6] Status is abundant [2]
Plant strategy type / successional stage	Early successional as it becomes out-shaded by conifers once they grow tall.
Plant characteristics	See images at top of the pdf. Produces attractive trumpet-shaped flowers ranging from bright red to pale pink. Same plant may produce different colored flowers, with red flowers drawing hummingbirds and bees during the day, and pale flowers drawing moth during the evenings to pollinate. [1] Leaves are narrow and adapted to drought conditions. Mature plant is 1-5 feet tall. Taller plants are correlated to higher elevation. Produces 3 ovules per capsule, with several seeds but only 1-2 matures. [2] seeds angled and winged. [7]
PROPAGATION DETAILS	
Ecotype	Most information found on Paradise Creek ecotype near Pullman, WA
Propagation Goal	Plant
Propagation Method	Seed[8]
Product Type	Propagule
Stock Type	Container, 1 gallon pots or cone plugs
Time to Grow	Late summer to fall
Target Specifications	Target plant should look vigor, with well-developed root system that fills the pot.
Propagule Collection Instructions	Flower blooms May – August.[2] Flower heads could be collected into a paper bag post-bloom. Allow flower heads to dry completely before gently crushing to expose seeds. Seeds are light brown colored. Seeds must be collected before capsules burst and release seeds. [7]
Propagule Processing/Propagule Characteristics	357,000 seeds/lb [4] 6-8 Pure Live Seeds (PLS) lbs/acre [4] 362,416 seeds/ lb for Paradise Creek ecotype[8]
Pre-Planting Propagule Treatments	for best germination rate, stratify in cold-moist peat moss for 30-45 days prior to sowing.[8] germination rate is 90% when stratified. [6] Seeds could be sown right away, but germination rate is poor for some ecotype.[8] Montane Oregon ecotype germinant poorly with or without stratification. [6]
Growing Area Preparation / Annual Practices for Perennial	Grows in a wide range of medium that drains well. Perlite could be mixed in potting medium to improve drainage. Top surface of growing container with sand to prevent seeds being washed away when watering.[6]

Crops	Growing area should be sunny and open.
Establishment Phase Details	Sown November to early December in greenhouse after stratifying seeds that were collected in the same summer. Germination should occur 4-8 days after sowing. [8]
Length of Establishment Phase	2 weeks[8]
Active Growth Phase	Allow seedlings to access full sun, water every other day on cooler weather, every day on dry, hot weather. [8] Fertilizer should be applied weekly.[6]
Length of Active Growth Phase	3-4 months [6,8]
Hardening Phase	Late March to April [8]
Length of Hardening Phase	2-4 weeks[8]
Harvesting, Storage and Shipping	Seeds stored at 40 degrees Fahrenheit and 40% relative humidity.
Length of Storage	N/A
Guidelines for Outplanting / Performance on Typical Sites	Since restoration sites tends to be rocky, electric drills are needed to open holes to insert the plugs. [8]
Other Comments	First recorded specimen collected by Lewis & Clark on Lolo Trail, northern Idaho in 1806. [10]
INFORMATION SOURCES	
References	See Below
Other Sources Consulted	Washington Native Plant Society: Photograph of Ipomopsis aggregata. (n.d.). Retrieved from http://www.wnps.org/plants/ipomopsis_aggregata.html
Protocol Author	Original Protocol by: Alaine Sommargren 2006 Revised by: Aileen Liu 2018
Date Protocol Created or Updated	Updated: 05/15/2018

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upBy=ungrouped&SortBy=Year&SortOrder=DESC&SearchAllHerbaria=Y&QueryCount=1&Genus1=Ipomopsis&Species1=aggregata&IncludeSynonyms1=Y&Zoom=4&Lat=55&Lng=-135&PolygonCount=0

Appendix
Original Protocol:

Ipomopsis aggregata

(syn. *Gilia aggregata*)
Scarlet Gilia, Skyrocket


Photos courtesy of: © Judd Patterson and W.D. Bransford

Range

Grows in most of the western United States, from British Columbia south to California and Texas. (1,2)

Map courtesy of: USDA PLANTS Database

Climate, elevation
Grows at high elevations south of southern Washington and at most elevations east of the Cascades. Prefers warm, dry climate. (3, 4)

Local occurrence
Very common and widespread east of the Cascades. (2, 3)

Habitat preferences
Dry, rocky slopes; lightly wooded areas; grasslands, and open forests. (1,3,4)

Plant strategy type/successional stage
Often follows disturbance; mid-seral species.

Associated species
Eastern Cascades: common gaillardia (*Gaillardia aristata*), white sweet-clover (*Melilotus alba*), least bladdery milk-vetch (*Astragalus microcystis*), ponderosa pine (*Pinusponderosa*).

May be collected as
Seed only, collect in summer. (1)

Collection restrictions or guidelines
No collection restrictions.

Seed germination
Requires no treatment. (1)

Seed life
No information available

Recommended seed storage conditions
No information available

Propagation recommendations
Propagate by seed into flats, covering the seeds lightly with soil. Seeds will germinate best if flats are kept at 70°F. Keep the soil moist until plants are well established. (1,7)

Soil or medium requirements

Will grow in a range of soil textures, but prefers well-drained medium; pH range of 7.0 to 8.5. (2)

Installation form

Direct seeding highly recommended; may also be installed as transplants. Must be grown in full or part sun. (6)

Recommended planting density

10,000 to 25,000 plants per acre (2)

Care requirements after installed

Whether direct seeding or transplanting, water regularly until plants become established. (1)

Normal rate of growth or spread; lifespan

Rapidly growing biennial or short-lived perennial; up to one meter tall and 0.3 meters wide. Scarlet gilia usually dies after flowering. (2,3,5,6)

Sources cited

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Data compiled by
Alaine Sommargren, 24 April 2006