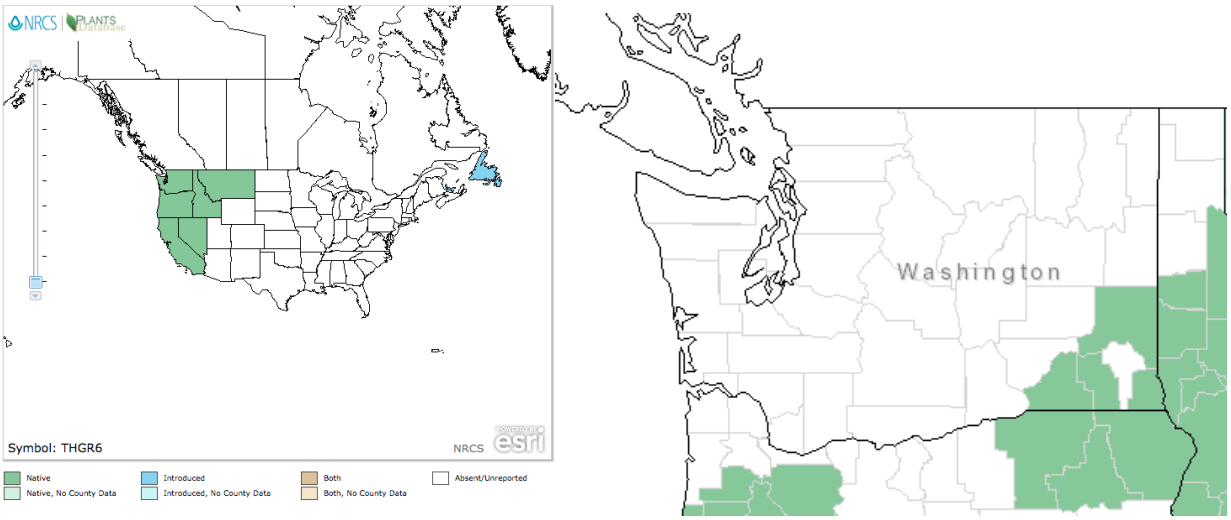
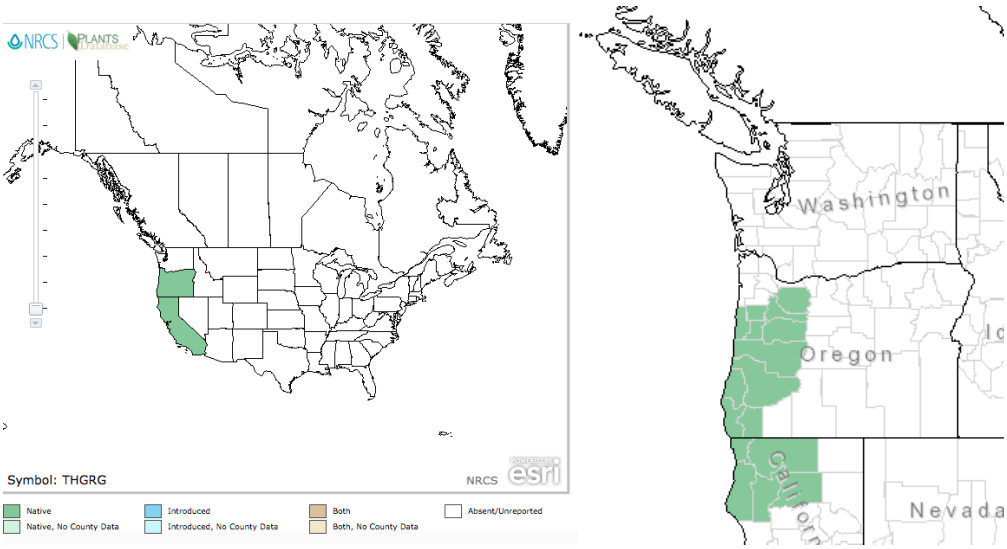
Plant Propagation Protocol for *Thermopsis gracilis*
ESRM 412 – Native Plant Production
Spring 2015

***Thermopolis gracilis* Howell (THGR6)**



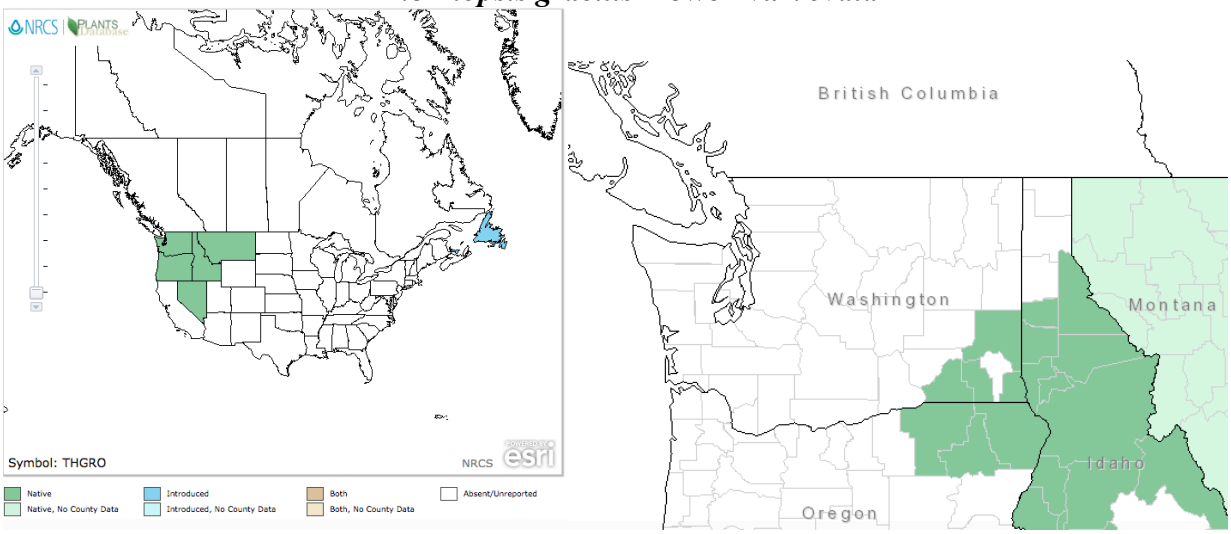
(PLANTS)

Thermopsis gracilis* Howell var. *gracilis



(PLANTS)

Thermopsis gracilis* Howell var. *ovata



(PLANTS)

TAXONOMY	
Plant Family	
Scientific Name	Fabaceae
Common Name	Legume
Species Scientific Name	
Scientific Name	*Thermopsis gracilis* Howell
Varieties	*Thermopsis gracilis* Howell var. *gracilis* (THGRG) *Thermopsis gracilis* Howell var. *ovata* (THGRO) *Thermopsis gracilis* Howell var. *venosa* (THGRV) (PLANTS)
Sub-species	
Cultivar	
Common Synonym(s)	Slender False Lupine; Big Leaf Thermopolis; Golden Pea (*Thermopsis gracilis* var. *ovata);* Mountain Goldenbanner (*Thermopsis Montana* var. *ovata)* (ITIS)
Common Name(s)	Slender Goldenbanner
Species Code (as per USDA Plants database)	THGR6
GENERAL INFORMATION	
Geographical range (distribution maps for North America and Washington state)	Native to the West Coast of North America. Specifically Klamath Mountain ranges, North Coast Mountain ranges, Cascade Mountain range and Western Oregon. See above for range maps.
Ecological distribution	Roadsides, chaparral, cismontane woodland, lower montane coniferous forest, meadows and seeps, North Coast coniferous forest (CNPS)

Climate and elevation range	510-1150 m (Calflora)
Local habitat and abundance	Colonizes open sites. Considered rare; rare plant program ranking of 4.3 (CNPS).
Plant strategy type / successional stage	Rhizomatous, drought tolerant, plant is attractive to bees, butterflies, and pollen-consuming birds (Dave's Garden).
Plant characteristics	Perennial herb (Calflora) Green herb with leaflets 3-7 cm long and inflorescence 12-20 cm long. Flowers 1-2 per node, fruit is straight and spreading with seeds inside fruit pod (Jepson Flora Project).
PROPAGATION DETAILS	
Ecotype	
Propagation Goal	Plants
Propagation Method	Seed
Product Type	Seed
Stock Type	
Time to Grow	Time to germinate: 2-4 weeks (Ravenscroft), 4 months to out plant (Skinner).
Target Specifications	
Propagule Collection Instructions	Collect seeds when pods being to split in July and August (Skinner). Allow seed pods to dry on plants and break open pods to collect seeds (Dave's Garden).
Propagule Processing/Propagule Characteristics	30,600 seeds per pound with 99% purity, 96% filled (Barner).
Pre-Planting Propagule Treatments	**Storage:** Cold storage, 33-38 F. **Cleaning:** Seed cleaning is required since seeds are in a pod. Hand crushing, or threshing in a hammer mill, can free the seed from the pod and then will need to be cleaned in an air column separator; in general seeds are large and easy to clean (Skinner). **Stratification and Scarification:** Need to stratify if sowing indoors (Dave's Garden). For example, plants in the *Thermopsis* have been known to germinate successfully after irritating the seed coat and soaking in warm water for a day (Ravenscroft). For *Thermopsis montana,* a closely related species, scarification has been known to increase germination rates. Seed scarification in 180 F-210 F water has high success rates (93%). Since no information is found on *T. gracilis* propagation methods, this same process can be applied.
Growing Area Preparation / Annual Practices for Perennial Crops	Before planting, soak plants in hot water and allow cooling. Cover peat pots with a thin layer pea gravel to prevent seeds from floating, keep greenhouse at 70 F (Ravenscroft and Skinner).
Establishment Phase Details	Germination occurs within one month, keep soil moist

	until germination occurs. (Skinner).
Length of Establishment Phase	1 month (Skinner)
Active Growth Phase	Plants heavily watered every other day and apply a soluble micronutrient fertilizer once a week (Skinner).
Length of Active Growth Phase	2 months
Hardening Phase	Move plants to cold frame in late march or early April, plants are to be watered every other day, and depending on weather conditions, every day. USDA Zone 4a: to -34.4 °C (-30 °F) USDA Zone 4b: to -31.6 °C (-25 °F) USDA Zone 5a: to -28.8 °C (-20 °F) USDA Zone 5b: to -26.1 °C (-15 °F) USDA Zone 6a: to -23.3 °C (-10 °F) USDA Zone 6b: to -20.5 °C (-5 °F) USDA Zone 7a: to -17.7 °C (0 °F) USDA Zone 7b: to -14.9 °C (5 °F) USDA Zone 8a: to -12.2 °C (10 °F) USDA Zone 8b: to -9.4 °C (15 °F) USDA Zone 9a: to -6.6 °C (20 °F) USDA Zone 9b: to -3.8 °C (25 °F) (Dave's Garden).
Length of Hardening Phase	2-4 weeks
Harvesting, Storage and Shipping	
Length of Storage	
Guidelines for Outplanting / Performance on Typical Sites	For sowing seeds directly outside, sow in the fall or winter but sow in vented containers in a cold frame or unheated greenhouse. When out planting, space individuals 18-24 in. apart and 33 cm deep (Dave's Garden and Jepson Flora Project). Plants in the *Thermopsis* genus prefer sun to partial shade and a soil pH from neutral (6.6)-alkaline (8.5) (Dave's Garden). Remove flowering stalks to promote second bloom and cut back in autumn. The long taproots of this plant make it difficult to transplant so can propagate by division in the spring (Ravenscroft). Blooming occurs years after the plants are out planted in the in late winter/early-mid spring (Dave's Garden).
Other Comments	
INFORMATION SOURCES	
References	See below
Other Sources Consulted	
Protocol Author	Deni Murray
Date Protocol Created or Updated	May 20th, 2015

References

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