Plant Propagation Protocol for *Trifolium thompsonii*
ESRM 412 – Native Plant Production
URL: https://courses.washington.edu/esrm412/protocols/2023/[TRTH2.pdf]

Source: Burke Herbarium Image Collection

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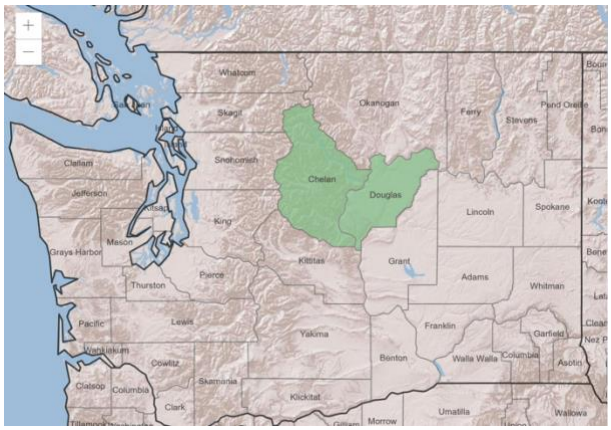
Source: DNR

TAXONOMY	
Plant Family	
Scientific Name	Fabaceae[6]
Common Name	Pea Family[6]
Species Scientific Name	
Scientific Name	*Trifolium thompsonii* C.V. Morton[7]
Varieties	N/A
Sub-species	N/A
Cultivar	N/A
Common Synonym(s)	N/A
Common Name(s)	Thompson's clover[6]
Species Code (as per USDA Plants database)	TRTH2[8]

GENERAL INFORMATION	
Geographical range	 Source: USDA Endemic to Chelan and Douglas counties in Washington, primarily found west of the Columbia River[6]
Ecological distribution	Low mountain slopes and ridges in grasslands. Also found on alluvial fans and canyon bottoms[6] Conservation status: WA state threatened species, federal species of concern[6] Occurs in forest patches, steppe-like parklands, and semiarid shrub steppe[4]
Climate and elevation range	Found in elevations ranging from 1,140-3,760 ft[6] Found primarily in microsites that are intermediate between well exposed, dry, south-facing slopes and shaded, mesic, and highly vegetated sites[2] Nearest climate station in Wenatchee, WA has a mean January temperature of -3 C and mean July temperature of 22 C; annual precipitation is approximately 220 mm (mostly as snow)[4]
Local habitat and abundance	Inhabits low mountain slopes and ridges in grasslands dominated by bunchgrasses and herbs; also found in adjacent open Ponderosa Pine and Douglas-fir woodlands[6] Common on dry, grassy hillsides directly below Ponderosa Pine woodlands[1] Associated species include Mountain Big Sagebrush, Serviceberry, Bluebunch Wheatgrass, and Idaho Fescue[6]

	Greatest density of *T. thompsonii* found in shrub-steppe communities, individuals found in Douglas-fir/pinegrass communities are larger and have more flower heads[5]
Plant strategy type / successional stage	Nitrogen-fixing species; able to form a symbiotic relationship with nitrogen-fixing bacteria in the soil[2] Early successional species: wildfires play an important role in maintaining suitable habitat[2] Grows vigorously in recently fire-disturbed sites; as tree or shrub canopy cover increases, vigor is reduced[4]
Plant characteristics	Forb/herb[2] Perennial[8] Several grayish-hairy erect stems, 20-70 cm tall. Palmately compound leaves; 5-8 leaflets, linear to lanceolate, with a pointed tip and sharply toothed margins[6] Floral characteristics: terminal heads; 30-100 flowers per head, bright lavender to magenta in color[6]
PROPAGATION DETAILS *No propagation information was found for *Trifolium thompsonii*; this propagation information is based on *Trifolium willdenovi*, a species of clover endemic to California that inhabits a similar environment*	
Ecotype	Catalina Island, California[3]
Propagation Goal	Plants[3]
Propagation Method	Seed[3]
Product Type	Container (plug)[3]
Stock Type	Deepot 40 (40 cubic inch[3]
Time to Grow	4 months[3]
Target Specifications	Root system: firm root plug in container[3]
Propagule Collection Instructions	Seeds collected in May and June[3]
Propagule Processing/Propagule Characteristics	Clover heads are left to dry in paper bags in a warm, dry room; seeds are then cleaned by running material through a ¼ inch screen to release seeds. Material is then sifted several times to remove debris[3] After cleaning, seeds are stored under refrigeration in air-tight glass containers at 40 F and 40% RH[3] Seeds average 0.13 grams per 100 seeds[3]

Pre-Planting Propagule Treatments	5% bleach solution to surface sterilize seed coats priot to testing/sowing[3] Seeds are scarified by placing them in a 2-hour hot water soak, then placed into a 4-week cold, moist stratification at 40 F[3] Germination rates ranged from 29% to 57%; higher rate of germination with non-stratified seeds[3]
Growing Area Preparation / Annual Practices for Perennial Crops	Flats filled with a 1-inch layer of special seed germination mix of 1:1 Sunshine Professional Growing Mix and sand on top of a 4:1:1 mix of peat, perlite and organic compost[3]
Establishment Phase Details	Seeds are germinated during late winter and early spring in a shadehouse, where they remain for several weeks[3] Seeds are directly sown into flats; seeded flats are watered with an overhead emitter system as needed; germinate 2-4 weeks after sowing[3]
Length of Establishment Phase	1 month[3]
Active Growth Phase	After seedlings are well established and have at least 2t true leaves, they are transplanted into Deepot 40 containers filled with a growing medium of 4:1:1 peat, perlite and organic compost[3] Osmocote time release fertilizer (9-month release rate; 14-14-14) is incorporated into the medium at the rate of 1 cup per .75 cubic yards of medium[3]
Length of Active Growth Phase	3 months[3]
Hardening Phase	N/A
Length of Hardening Phase	N/A
Harvesting, Storage and Shipping	N/A
Length of Storage	N/A
Guidelines for Outplanting / Performance on Typical Sites	N/A
Other Comments	N/A
INFORMATION SOURCES	

References	[1] Giblin, David. "Trifolium Thompsonii Thompson's Clover." *Burke Herbarium Image Collection*, burkeherbarium.org/imagecollection/taxon.php?Taxon=Trifolium+thompsonii. Accessed 20 May 2023. [2] Guerrant, Edward. "CPC National Collection Plant Profile - Trifolium Thompsonii." *Center for Plant Conservation*, 11 May 2023, www.centerforplantconservation.org/Collection/CPC_ViewProfile.asp?CPCNum=4332. [3] Herrera, Michael. "Native Plant Network Propagation Protocol Database." *RNGR — Reforestation, Nurseries and Genetics Resources*, npn.rngr.net/renderNPNProtocolDetails?selectedProtocolIds=fabaceae-trifolium-3202. Accessed 21 May 2023. [4] Scherer, George, et al. "Habitat Characteristics and Morphological Differences of Trifolium Thompsonii Populations." *Department of Natural Resource Sciences*, file.dnr.wa.gov/publications/amp_nh_fieldguide_list.pdf. Accessed 21 May 2023. [5] Thompson Clover Research Natural Area." *Pacific Northwest Interagency Natural Areas Network*, www.fsl.orst.edu/rna/sites/Thompson_Clover.html. Accessed 20 May 2023. [6] "Trifolium Thompsonii C.V. Morton." *Washington Department of Natural Resources*, www.dnr.wa.gov/publications/amp_nh_trth2.pdf. Accessed 21 May 2023. [7] "Trifolium Thompsonii C.V. Morton." *ITIS: Integrated Taxonomic Information System - Report*, www.itis.gov/servlet/SingleRpt/SingleRpt?search_topic=TSN&search_value=26323#null. Accessed 20 May 2023. [8] "Trifolium Thompsonii Morton." *USDA Plants Database*, plants.sc.egov.usda.gov/home/plantProfile?symbol=TRTH2. Accessed 20 May 2023.
Other Sources Consulted	[1] "Thompson's Clover (Trifolium Thompsonii)." *ECOS*, ecos.fws.gov/ecp/species/6465. Accessed 20 May 2023.

	[2] "Trifolium Thompsonii Thompson's Clover." *NatureServe Explorer 2.0*, 5 May 2023, explorer.natureserve.org/Taxon/ELEMENT_GLOBAL.2.148240/Trifolium_thompsonii.
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