

Plant Propagation Protocol for *Townsendia hookeri* Beaman
 ESRM 412 – Native Plant Production

TAXONOMY	
Plant Family	
Scientific Name	Asteraceae
Common Name	Daisy
Species Scientific Name	
Scientific Name	<i>Townsendia hookeri</i> Beaman
Varieties	No information available.
Sub-species	No information available.
Cultivar	No information available.
Common Synonym(s)	<i>Townsendia nuttallii</i> Dorn ²
Common Name(s)	Hooker's Townsend daisy
Species Code (as per USDA Plants database)	TOHO
GENERAL INFORMATION	
Geographical range	Rocky Mountain region, specifically: <ul style="list-style-type: none"> • Canada: Yukon, British Columbia, Alberta, Saskatchewan¹ • United States: Alaska, Idaho, Montana, Wyoming, North and South Dakota, Nebraska, Colorado, and Utah¹

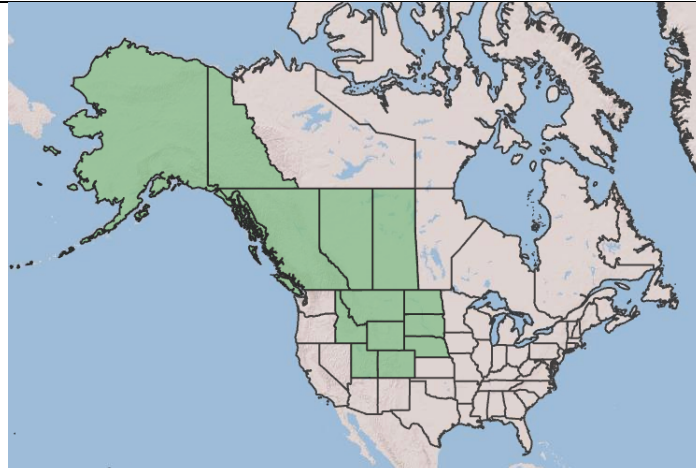


Image Source: USDA Plants Database

Ecological distribution	Thrives in well-drained, open habitats: mountain slopes, disturbed areas like road cuts and talus slopes, and sandy slopes. ²
Climate and elevation range	700-1800m above sea level ⁵
Local habitat and abundance	This species occurs in sandy slopes, gravelly benches, or dry embankments of grasslands or short grass prairie, sagebrush steppe, and woodlands. ³
Plant strategy type / successional stage	Drought tolerant ⁶
Plant characteristics	Perennial forb/herb. ⁷ Leaves: Densely strigose. Linear to oblanceolate in shape, 5-30 mm long. Flowers: The involucre is 7-12 mm high. Involucral bracts have ciliate margins and are tipped with a tuft of hairs (cilia). Ray florets have white to pink petals. ⁴
PROPAGATION DETAILS: SEED	
Ecotype	Ecotype data for <i>T. hookeri</i> is not available. For reference, <i>T. florifer</i> was collected from the Owyhee Front, Idaho, at an elevation of 2,540 ft. ¹
Propagation Goal	Plants

Propagation Method	Seed
Product Type	Container (plug) ¹
Stock Type	160 mL containers ¹
Time to Grow	Approximately 6 months from seeding to out planting readiness. ¹
Target Specifications	<p>Height: 3–4 cm⁸</p> <p>Leaf Count: 6–10 true leaves⁸</p> <p>Root System: Firm plug-in container⁸</p>
Propagule Collection Instructions	<p>Timing: Late August, when achenes turn gray and are easily removed from the disc.</p> <p>Method: Hand collection into paper bags.</p> <p>Post-Collection: Store in a well-ventilated drying shed prior to cleaning.¹</p>
Propagule Processing/Propagule Characteristics	<p>Seed Cleaning: Hand cleaned using screens¹</p> <p>Seed Longevity: Estimated at 5–7 years at 3–5°C in sealed containers¹</p> <p>Seed Dormancy: Non-deep physiological dormancy¹</p> <p>Seeds per Kg: Approximately 1,200,000¹</p> <p>Purity: 100%¹</p> <p>Germination Rate: 10–50%¹</p>

Pre-Planting Propagule Treatments	Dry storage of seeds for 5 months. ¹
Growing Area Preparation / Annual Practices for Perennial Crops	<p>Environment: Greenhouse with a 22°C/13°C day/night temperature cycle¹</p> <p>Sowing Method: Direct seeding; lightly cover seeds with medium¹</p> <p>Growing Medium: 6:1:1 mix of milled sphagnum peat, perlite, and vermiculite¹</p> <p>Fertilization:</p> <ul style="list-style-type: none"> • Osmocote controlled-release fertilizer (13N:13P₂O₅:13K₂O; 8–9 month release rate at 21°C)¹ • Micromax micronutrient fertilizer (12% S, 0.1% B, 0.5% Cu, 12% Fe, 2.5% Mn, 0.05% Mo, 1% Zn)¹ • Apply 1 gram of Osmocote and 0.20 gram of Micromax per 172 ml container¹
Establishment Phase Details	<p>Conditions: Keep medium slightly moist during germination⁵</p> <p>Germination Temperature: 22°C or above during the day⁵</p> <p>Germination Time: Approximately 2 weeks⁵</p> <p>Duration: 4 weeks⁵</p> <p>Conditions: Root and shoot development occur rapidly following germination¹</p> <p>Fertilization: Occasional feeding with 20-10-20 liquid NPK fertilizer at 100 ppm¹</p> <p>Watering: Avoid overwatering seedlings¹</p>
Length of Establishment Phase	16 weeks ¹

Active Growth Phase	No available information.
Length of Active Growth Phase	No available information.
Hardening Phase	Gradually reduce irrigation in September and October. Leach with clear water. Fertilize with 10-20-20 liquid NPK fertilizer at 200 ppm. Duration: 4 weeks. ¹
Length of Hardening Phase	No available information.
Harvesting, Storage and Shipping	Harvest Time: September ¹ Storage Conditions: Overwinter in outdoor nursery under insulating foam cover and snow ¹
Length of Storage	5 months ¹
Guidelines for Outplanting / Performance on Typical Sites	No available information.
Other Comments	Protocol is based on related <i>Townsendia</i> species, specific data for <i>T. hookeri</i> is limited
INFORMATION SOURCES	
References	<p>¹<i>Asteraceae (Townsendia)</i>. RNGR. (n.d.). https://rngr.net/npn/propagation/protocols/asteraceae-townsendia-</p> <p>²Beaman, & Strother, J. L. (n.d.). <i>Townsendia hookeri</i>. <i>Townsendia hookeri</i> - FNA. https://floranorthamerica.org/Townsendia_hookeri</p> <p>³<i>Townsendia hookeri</i>. BC Conservation Data Centre: Species Summary. (n.d.). https://a100.gov.bc.ca/pub/eswp/speciesSummary.do;jsessionid=F4F92104F44BFECBEE5D64A505D72247?id=17428</p>

	<p>⁴Program, M. N. H. (2025, May 21). <i>Hooker's Townsend-daisy - Townsendia hookeri</i>. Montana Field Guide. https://fieldguide.mt.gov/speciesDetail.aspx?elcode=pdast9c0c0</p> <p>⁵Slabý, RNDr. P. (n.d.). <i>Townsendia Hookeri Beaman</i>. Rock Garden Plants. https://flora.kadel.cz/cl/kvCard4378.html</p> <p>⁶<i>Townsendia hookeri</i>. Seeds (12 seeds) (Hooker's Townsend Daisy, Low Townsendia) - Plant World Seeds. (n.d.). https://www.plant-world-seeds.com/store/view_seed_item/4172/townsendia-hookeri-seeds?srsltid=AfmBOoqrHMduxAIm0kDlxMq5r0kGDRVmj7cZtqPkWeb2Mkp3SAqHnnas</p> <p>⁷USDA plants database. (n.d.). https://plants.usda.gov/plant-profile/TOHO</p> <p>⁸Klinkenberg, B. (Ed.). (2020). <i>Townsendia hookeri Beaman</i>. -Flora BC: Electronic Atlas of the Plants of British Columbia. https://linnet.geog.ubc.ca/Atlas/Atlas.aspx?sciname=Townsendia%2Bhookeri</p>
Other Sources Consulted	<p><i>Townsendia hookeri</i>. NatureServe Explorer 2.0. (n.d.). https://explorer.natureserve.org/Taxon/ELEMENT_GLOBAL.2.1279077/Townsendia_hookeri</p> <p><i>Townsend Daisies (7)</i>. Townsend Daisies : Townsendia spp. (n.d.). https://rockymountainsflora.com/details/White%20Simple/Townsend%20Daisy.htm</p>
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