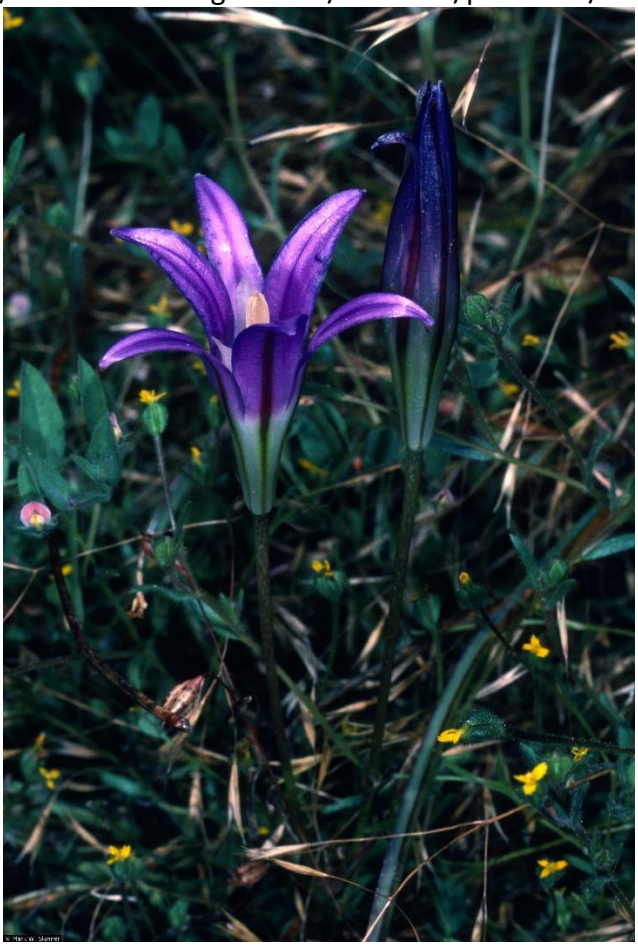
Plant Propagation Protocol for *Brodiaea elegans*

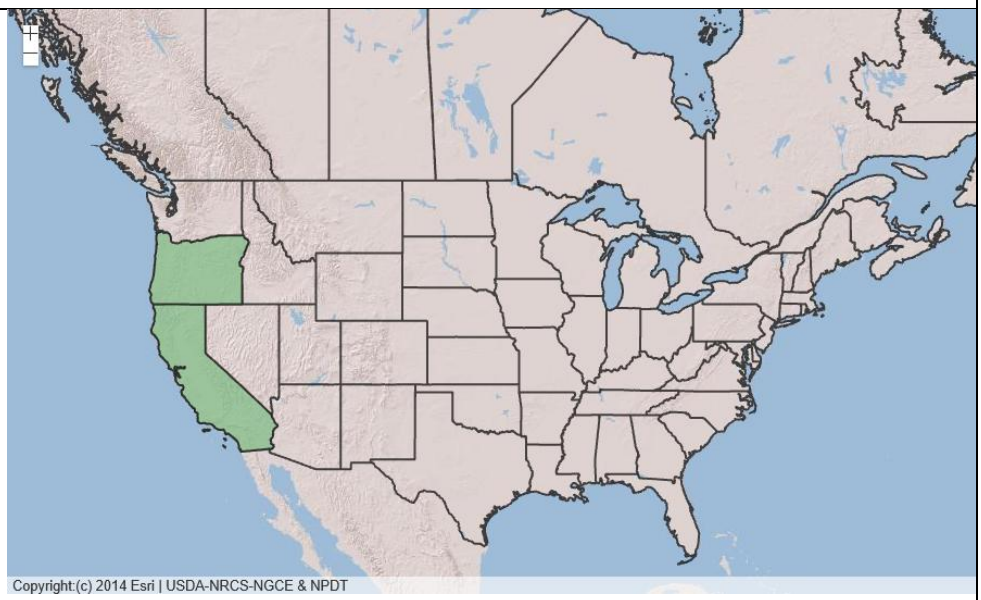
ESRM 412 – Native Plant Production

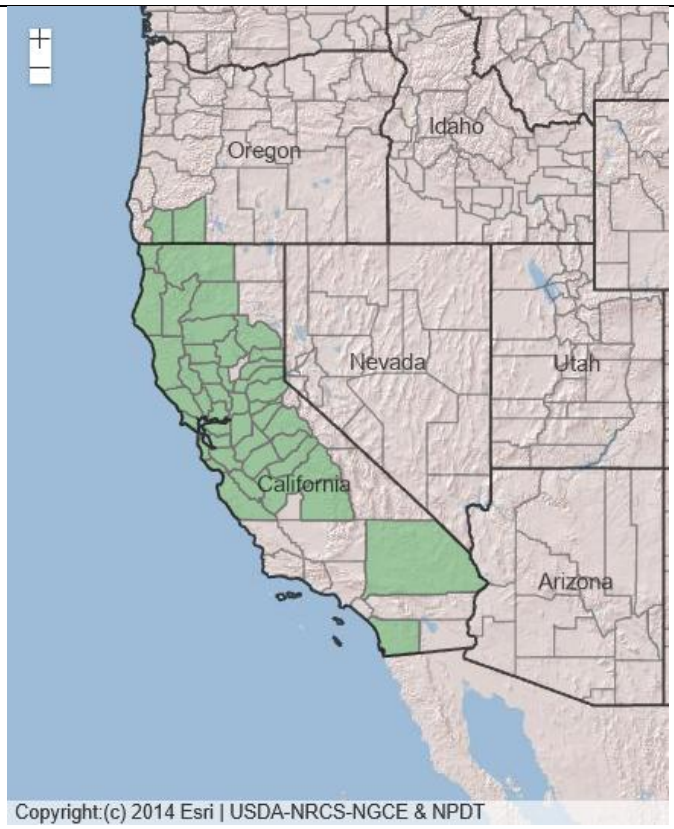
URL: https://courses.washington.edu/esrm412/protocols/*2025*/BREL.pdf



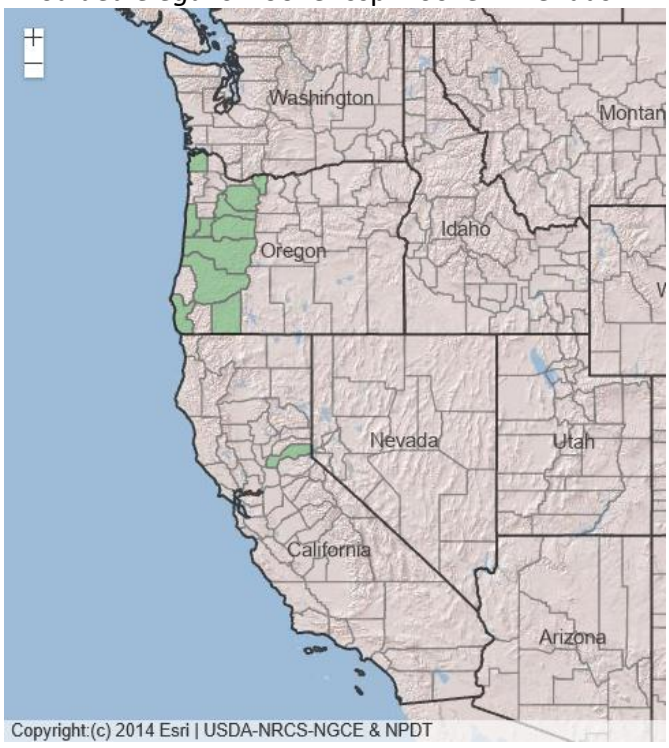
https://plants.sc.egov.usda.gov/ImageLibrary/original/brel_004_pvp.jpg

TAXONOMY	
Plant Family	
Scientific Name	Liliaceae Juss.
Common Name	Lily family
Species Scientific Name	
Scientific Name	*Brodiaea elegans* Hoover
Varieties	
Sub-species	Brodiaea elegans Hoover ssp. elegans - harvest brodiaea Brodiaea elegans Hoover ssp. hooveri Niehaus - Hoover's brodiaea
Cultivar	
Common Synonym(s)	
Common Name(s)	Harvest Brodiaea, Elegant Cluster-lily

Species Code (as per USDA Plants database)	BREL
GENERAL INFORMATION	
Geographical range)	 https://plants.usda.gov/plant-profile/BREL County level distributions for: *Brodiaea elegans Hoover ssp. Elegans*



Brodiaea elegans Hoover ssp. *hooveri* Niehaus



Ecological distribution	Open or wooded plains or foothills
Climate and elevation range	Elevation 0 to 2570 m Annual precipitation 38 to 302 cm Temperature range -5 to 16°C (23 to 61 °F) Hardiness zones 7a to 10b (calflora.org)
Local habitat and abundance	Most Brodiaeas choose habitats where their tall, wiry flowering stems can be supported by other tall herbs. Though B. elegans has a stouter scape than other Brodiaeas, it will flop about if planted free of surrounding plants. (wildflower.org) Occurs on slopes. Communities include yellow pine forest, foothill woodland, and valley grassland (calflora.org)
Plant strategy type / successional stage	
Plant characteristics	Scape 10–50 cm, stout. Flowers 24–38 mm; perianth bluish purple to violet, tube funnelform, 8–19 mm, opaque, not splitting in fruit, lobes ascending, recurved distally, 15–30 mm; filaments 4–6 mm, base not triangular; anthers linear, 4–10 mm, apex rounded; staminodia erect or slightly recurved distally, distant from stamens, white to pale lilac, broad, equaling stamens, 6–9 mm, margins planate or 1/4 involute, apex rounded; ovary 9–15 mm; style 7–15 mm; pedicel 5–10 cm. (efloras.org)
PROPAGATION DETAILS: FROM SEED	
Ecotype	Seed collected from The Nature Conservancy's Dye Creek and Vina Plains Preserves in Tehama County, California
Propagation Goal	bulbs
Propagation Method	Seed
Product Type	Container (plug)
Stock Type	Potted nursery stock
Time to Grow	6-8 months for bulb Flowers in 2-3 years
Target Specifications	First year bulb, typically ranging from 3-8mm in diameter (Leigh et al. 2006)
Propagule Collection Instructions	Seed may be collected from May through June (July). Whole fruits can be collected from heads immediately prior to or after ripening (i.e. browning and splitting of capsules). Seed can be retained on the heads well into summer, depending on the year. Approximately 400-600 seeds

	per gram, depending on individual, population, year and cleanliness of seed. (Leigh et al. 2006)
Propagule Processing/Propagule Characteristics	Seed may be shaken from capsules which have split, but capsules which have not opened may need to be mechanically split (dry heat or repeated drying and cooling may encourage capsules to split). If necessary, large numbers of dry fruits may be shattered rapidly by very brief blending (dry in a blender). Blending typically does not damage the very hard viable seed, but may increase overall viability of seed lots by destroying unviable seed. After blending, seed may be cleaned by sifting and/or blowing (e.g. with a thrift store blow-drier) off chaff. (Leigh et al. 2006)
Pre-Planting Propagule Treatments	8 wk stratification at 3°C (37°F)[1] (Hartman et al. 2018) None if sowing in fall (Leigh et al. 2006)
Growing Area Preparation / Annual Practices for Perennial Crops	Seed was directly sown into 1.5" deep flats containing a potting mixture of approximately 1:1:1:2 sand:pumice:peat moss:fir bark mixture. Flats were placed in an outdoor cold frame from late-fall though spring. Most seedlings were transplanted into various sized pots ranging form D-pots to 3x4" plastic containers (some seedlings were not transplanted) using the same potting mixture. The active growth phase can be somewhat extended by misting plants after the last spring rains, but care must be taken not to encourage rot. (Leigh et al. 2006) ~100 seeds per 4”. Cover seeds with 1/8” of vermiculite. Fertilize mid-winter w/ fish emulsion.[1] (Clements et al. 2024)
Establishment Phase Details	Initial germination within 2 weeks. Germination rates between 45% and 95% depending on sowing conditions and collection location. (Leigh et al. 2006) Seedlings are highly susceptible to damping off[1] (Powell 1995)
Length of Establishment Phase	3-4 weeks (Leigh et al. 2006)
Active Growth Phase	Active growth was observed following the onset of autumn rains (seed swelling) until drying down (die-back and dormancy) occurred in late spring/early summer. The length of the active growth phase can be somewhat controlled with irrigation, but this species requires summer dormancy. (Leigh et al. 2006)
Length of Active Growth Phase	6-8 months
Hardening Phase	Hardening is not necessary as the active growth phase starts with the onset of fall rains and plants senesce around the end of spring or beginning of summer. (Leigh et al. 2006)

Length of Hardening Phase	
Harvesting, Storage and Shipping	Individuals go dormant following spring-summer dry down and die back to the root. Dormant individuals were placed in dry storage at 60-70 degrees Farenheit. (Leigh et al. 2006)
Length of Storage	3-5 months
Guidelines for Outplanting / Performance on Typical Sites	
Other Comments	[1]General propagation for similar Brodiaea species e.g. Brodiaea californica
INFORMATION SOURCES	
References	Lady Bird Johnson Wildflower Center - The University of Texas at Austin. (2018). Wildflower.org. URL: https://www.wildflower.org/plants/result.php?id_plant=BREL (accessed 2025/05/23) *Brodiaea elegans Calflora*. (2019). Calflora.org. https://www.calflora.org/app/taxon?crn=1174 Brodiaea elegans in Flora of North America @ efloras.org. (2025). Efloras.org. http://www.efloras.org/florataxon.aspx?flora_id=1&taxon_id=242101437 Leigh, Mark; Pushnik, James C.; Boul, Rachelle D.; Brown, Matthew R.; Hunt, John W.; Koenig, David A.. 2006. Propagation protocol for production of Container (plug) *Brodiaea elegans* bulbs Potted nursery stock; University of California - Chico Chico, California. In: Native Plant Network. URL: https://NativePlantNetwork.org (accessed 2025/05/21). US Department of Agriculture, Forest Service, National Center for Reforestation, Nurseries, and Genetic Resources. Clements, Julie; Morton, Alex. 2024. Propagation Protocols 2025: SacValley CNPS Native Plant Nursery Robin Rietz protocols started in 2007. https://www.sacvalleycnps.org/wp-content/uploads/2025/02/Nursery-protocol-by-species-24-25-PDF.pdf Toogood, Alan R, et al. *Plant Propagation*. New York, Dk Pub, 1999. Hartmann, Hudson T, et al. Hartmann & Kester's Plant Propagation: Principles and Practices. Ny, Ny, Pearson, 2018.

	Powell, Eileen. *From Seed to Bloom*. Storey Publishing, 1995, p. 65.
Other Sources Consulted	
Protocol Author	Alexander Montelione
Date Protocol Created or Updated (MM/DD/YY)	05/23/2025