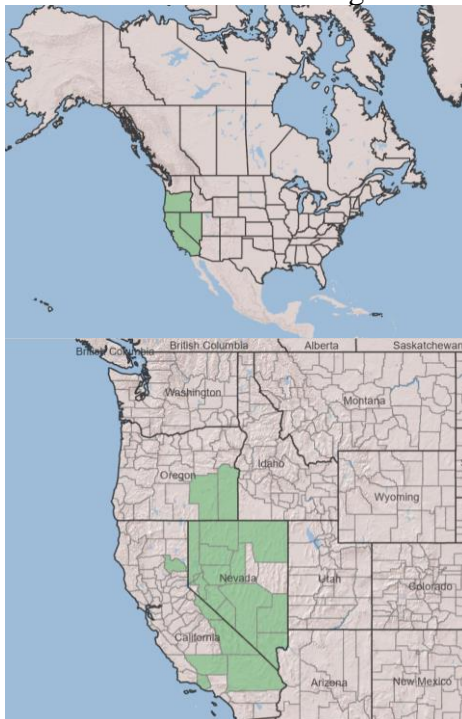


Plant Propagation Protocol for *Abronia turbinata*

ESRM 412 – Native Plant Production

URL: <https://courses.washington.edu/esrm412/protocols/2022/ABTU.pdf>

TAXONOMY	
Plant Family	
Scientific Name	Nyctaginaceae
Common Name	Four O'clock Family
Species Scientific Name	
Scientific Name	<i>Abronia turbinata</i> Torr ex S. Watson
Varieties	None listed
Sub-species	None listed
Cultivar	None listed
Common Synonym(s)	<i>Abronia exalata</i> Standl., <i>Abronia orbiculata</i> Standl.
Common Name(s)	Transmontane Sand Verbena
Species Code (as per USDA Plants database)	ABTU
GENERAL INFORMATION	
Geographical range	<p>Eastern California and Oregon and western Nevada²</p>  <p>Photos courtesy of USDA website³</p>
Ecological distribution	Desert, Plateau Scrub

Climate and elevation range	900-2500m ²
Local habitat and abundance	Found in Pinyon-Juniper Woodland, Sagebrush Scrub and Creosote Bush Scrub. ⁷
Plant strategy type / successional stage	No information available
Plant characteristics	Forb/Herb ³ , Annual, 35 white to pink flowers arise from the stem on peduncles. The herb typically approaches 50 cm in maximum stem height and produces thick green leaves that are oval-shaped to round. Each flower in the cluster has a fused corolla tube, reaching 2 cm long and leads to a lobed corolla. The fruit has hollow, inflated wings. ⁸
PROPAGATION DETAILS	
Ecotype	No information available
Propagation Goal	Plants
Propagation Method	Seed
Product Type	Container (plug) Pots of sandy soil in greenhouse
Stock Type	Deepot 16
Time to Grow	Growing season takes up to 6 months. ⁸ Sow Autumn or early Spring and ready to outplant in early Summer. ⁸
Target Specifications	No information available
Propagule Collection Instructions	No information available
Propagule Processing/Propagule Characteristics	Seeds weigh 0.0025g; 181,436 seeds per pound. ⁷ No information on seed longevity.
Pre-Planting Propagule Treatments	Germination testing done by California Botanic Garden from samples collected in Mono County. Results had 0% germination from 10 tested seeds. In this test, seeds were grown in 0.5% agar solution and were pre-treated with alternative warm-cold-warm stratification, which occurred for 14-90 days and vinegar soaking. These seeds were also tested in a germination chamber with 20C days and 12C night. ⁶ To speed up germination, peel off the outer skin and pre-soak the seed for 24 hours in warm water. ⁹
Growing Area Preparation / Annual Practices for Perennial Crops	Grow in shallow pots of sandy soil in a fully controlled greenhouse. ⁹
Establishment Phase Details	No information available

Length of Establishment Phase	Germination occurs in 15-20 days (Powell book)
Active Growth Phase	No information available
Length of Active Growth Phase	No information available
Hardening Phase	No information available
Length of Hardening Phase	No information available
Harvesting, Storage and Shipping	No information available
Length of Storage	No information available
Guidelines for Outplanting / Performance on Typical Sites	<p>Plant seedlings outdoors after last frost, giving 12"-15" of space between plants.⁵</p> <p>One study found that in Oregon, <i>Abronia turbinata</i> species range in Oregon is limited to areas around the Alvord Desert. <i>A. turbinata</i> does not grow in more shaded areas of the forest.⁴</p> <p>Plant after last frost, with spacing plants 12-15 inches. Plant in location with full sun and soil with light, sandy soil. Plant can tolerate dry conditions.⁵</p>
Other Comments	
INFORMATION SOURCES	
References	<ol style="list-style-type: none"> 1. <i>Abronia turbinata</i>. Calflora. (n.d.). Retrieved May 3, 2022, from https://www.calflora.org/app/taxon?crn=17 2. <i>Abronia turbinata</i>. Plants For A Future. (n.d.). Retrieved May 3, 2022, from https://pfaf.org/user/Plant.aspx?LatinName=Abronia%2Bturbinata 3. <i>Abronia turbinata</i> Torr. ex S. Watson. USDA plants database. (n.d.). Retrieved May 3, 2022, from https://plants.usda.gov/home/plantProfile?symbol=ABTU 4. Newton, R.E., R.T. Massatti, A.S. Thorpe, and M. Mancuso. 2010. Assessing the status of <i>Abronia turbinata</i> in southeastern Oregon. Institute for Applied Ecology, Corvallis, Oregon and USDI Bureau of Land Management, Vale District. iv + 10 pp. 5. Powell, Eileen. From Seed to Bloom: How to Grow over 500 Annuals, Perennials & Herbs. Storey Publishing, LLC, 1995. 6. <i>Seed conservation</i>. California Botanic Garden. (n.d.). Retrieved May 3, 2022, from https://www.calbg.org/conservation/seed-conservation

	<p>7. Temperate Plants Database, Ken Fern. temperate.theferns.info. 2022-05-03. <temperate.theferns.info/plant/Abronia+turbinata></p> <p>8. <i>Transmontane Sand-verbena, Abronia Turbinata</i>. California Native Plant Society. (n.d.). Retrieved May 3, 2022, from https://calscape.org/Abronia-turbinata-()</p> <p>9. Wilson, Ruth C. (1972) "Abronia: I. Distribution, Ecology and Habit of Nine Species of Abronia Found in California," <i>Aliso: A Journal of Systematic and Evolutionary Botany</i>: Vol. 7: Iss. 4, Article 7.</p>
Other Sources Consulted	<p>10. Andy Murdock 2012, <i>Abronia turbinata</i>, in Jepson Flora Project (eds.) <i>Jepson eFlora</i>, https://ucjeps.berkeley.edu/eflora/eflora_display.php?tid=11561, accessed on May 03, 2022.</p> <p>11. Southwest, T. A. (n.d.). <i>Abronia turbinata, transmontane sand verbena</i>. The American Southwest. Retrieved May 3, 2022, from https://www.americansouthwest.net/plants/wildflowers/abronia-turbinata.html</p>
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