


Plant Propagation Protocol for *Torreya californica* TOCA
ESRM 412 – Native Plant Production



California nutmeg arils. Image by Robert Potts © 2001 California Academy of Sciences.

TAXONOMY	
Plant Family	Yews
Scientific Name	<i>Taxaceae</i>
Common Name	California Nutmeg
Species Scientific Name	<i>Torreya californica</i>
Scientific Name	<i>Torreya californica</i> Torr.
Varieties	There are no species varieties (8)
Sub-species	There are no sub-species (8)
Cultivar	
Common Synonym(s)	Tumion californicum (Torr.) Greene
Common Name(s)	California nutmeg, California torreya, stinking cedar, stinking nutmeg, stinking yew. (8)
Species Code	TOCA

GENERAL INFORMATION

Geographical range	 <p style="text-align: right;">(8)</p> <p>It is found on the souther Oregon coast and two distint areas in California, on the Coast and in the Cascade Serra Nevada. (3)</p>
Ecological distribution	Has a variety of sites it grows in such as streambanks, shady, slopes, hot dry canyons, canyon floors, and lowland flats. (4) It is mostly seen on cool, humid slopes. (9)
Climate and elevation range	It thrives in a Mediterranean climate and is found in elevations between 3,000 and 7,000 ft. (8)
Local habitat and abundance	<p>Even though it is not rare it is not very abundant and its presence is found scattered about its range (3).</p> <p>Plant associations: tanoak (<i>Lithocarpus densiflora</i>), Oregon ash (<i>Fraxinus latifolia</i>), California bay (<i>Umbellularia californica</i>), bigleaf maple (<i>Acer macrophyllum</i>), white alder (<i>Alnus rhombifolia</i>), and bishop pine (<i>Pinus muricata</i>). Understory associates include cascara (<i>Rhamnus purshiana</i>), ceanothus (<i>Ceanothus</i> spp.), manzanita (<i>Arctostaphylos</i> spp.), Pacific rhododendron (<i>Rhododendron macrophyllum</i>), California huckleberry (<i>Vaccinium ovatum</i>), California red huckleberry (<i>V. parvifolium</i>), and Pacific bayberry (<i>Myrica californica</i>) (8)</p>
Plant strategy type / successional stage	It is found in late seral and climax communities. (4) It is also found to sprout first after fire disturbances. (5)

Plant characteristics	Dioecious evergreen tree that grows to be 5-30m tall and 20-51 cm in diameter. It has large seeds that are covered in a drupelike casing. It has thin bark and its crown varies from pyramidal to irregular. (8)
PROPAGATION DETAILS	
Ecotype	Seeds should be collected from environments similar to the out-planting site. (7)
Propagation Goal	Collect and sow seeds to be grown into seedlings.
Propagation Method	Seed
Product Type	Container Plug, grown from seed
Stock Type	Plug
Time to Grow	No information was found on the germination to seedling phase and more research needs to be done but it is known that it is a slow growing species. (8)
Target Specifications	
Propagule Collection Instructions	Seeds take 2 years to mature (6) Collection should be done between September and November(7) Sow in the Summer (11) Due to predation of seeds bagging of seedy branches can help reduce predation(2). One person observed that branches exposed to the sun produced the seeds. (1).
Propagule Processing/Propagule Characteristics	There are about 140 seeds per pound. (7)
Pre-Planting Propagule Treatments	Seeds should be extracted from the fruit. Macerate the fruit carefully as to not damage the seeds. One method is to put in a food processor with water after soaking. Make sure to use blades coated in rubber. The flesh will separate from the seeds and the seeds float to the top making it easy to remove (7). The seeds produced are orthodox seeds can be stored for long periods of time. Usually 5-6 years if dried immediately after extraction (2) They need a 9-12 month stratification period. but 3 month cold-stratification in sand @ 40 F (11) and an additional 9 months in a greenhouse to germinate. The study that did 3 month stratification in addition to nine months in the green house had a 92% germination rate. (7)
Growing Area Preparation / Annual Practices for Perennial Crops	No information was found on the following sections.
Establishment Phase Details	
Length of Establishment Phase	
Active Growth Phase	
Length of Active Growth Phase	
Hardening Phase	

Length of Hardening Phase	
Harvesting, Storage and Shipping	
Length of Storage	
Guidelines for Outplanting / Performance on Typical Sites	
Other Comments	It is known that other nutmegs can propagate through vegetative means but no information is known for <i>Torreya californica</i> yet. (4)
INFORMATION SOURCES	
References	<ol style="list-style-type: none"> 1. Barlow, C. (n.d.). <i>Torreya californica</i>, California Torreya, California nutmeg. Torreya guardians . http://www.torreyaguardians.org/california.html. 2. Bonner, F. T., & Karrfalt, R. P. (2008). In <i>The woody plant seed manual</i> (pp. 1092–1098). essay, U.S. Dept. of Agriculture, Forest Service. 3. Griffin, James R.; Critchfield, William B. 1972. The distribution of forest trees in California. Res. Pap. PSW-82. Berkeley, CA: U.S. Department of Agriculture, Forest Service, Pacific Southwest Forest and Range Experiment Station. 118 p. 4. J. G. Burke. (1975). Human Use of the California Nutmeg Tree, <i>Torreya californica</i>, and of Other Members of the Genus. <i>Economic Botany</i>, 29(2), 127-139. Retrieved May 4, 2021, from http://www.jstor.org/stable/4253582 5. Little, Elbert L., Jr. 1979. Checklist of United States trees (native and naturalized). Agric. Handb. 541. Washington, DC: U.S. Department of Agriculture, Forest Service. 375 p. 6. Preston, Richard J., Jr. 1948. North American trees. Ames, IA: The Iowa State College Press. 371 p. [1913] 7. Mirov, N.T.; Kraebel, C.J. 1937. Collecting and propagating the seeds of California wild plants. Res. Note 18. Berkeley, CA: U.S. Department of Agriculture, Forest Service, California Forest and Range Experiment Station. 27 p. 8. Species: <i>Torreya californica</i>. (n.d.). Retrieved May 05, 2021, from https://www.fs.fed.us/database/feis/plants/tree/torcal/all.html#10 9. <i>Torreya californica</i> Torr. (n.d.). Retrieved May 04, 2021, from https://plants.sc.egov.usda.gov/home/plantProfile?symbol=TOCA 10. <i>Torreya californica</i> - Torr. Pfaf Plant Search. (n.d.). https://pfaf.org/user/Plant.aspx?LatinName=Torreya%2Bcalifornica 11. University of Florida Environmental Horticulture . (n.d.). <i>Torreya californica</i>. Torreya californica Landscape Plant Propagation Information Plant Information Databases Environmental Horticulture Department College of Agricultural and Life Sciences UF/IFAS. https://hort.ifas.ufl.edu/database/lppi/sp382.shtml.

Other Sources Consulted	Potts, R. (2001). <i>California nutmeg arils</i> [Photograph]. California Academy of Sciences.
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