Plant Propagation Protocol for *Ceanothus cuneatus*

ESRM 412 – Native Plant Production
Spring 2017

Source: http://www.laspilitas.com/images/grid24_24/5674/s/images/plants/142/Ceanothus_cuneatus-2.jpg

TAXONOMY	
Plant Family	
Scientific Name	Rhamnaceae
Common Name	Buckthorn
Species Scientific Name	
Scientific Name	*Ceanothus cuneatus* (Hook.) Nutt.
Varieties	*cuneatus, dubius* J.T. Howell*, submontanus* (Rose) McMinn
Sub-species	
Cultivar	
Common Synonym(s)	CECUD *Ceanothus cuneatus* (Hook.) Nutt. var. dubius J.T. Howell CECUS *Ceanothus cuneatus* (Hook.) Nutt. var. submontanus (Rose) McMinn CERA *Ceanothus ramulosus* (Greene) McMinn
Common Name(s)	Buckbrush, buckbrush ceanothus, blue brush, cuneate ceanothus, wedgeleaf ceanothus
Species Code (as per USDA Plants database)	CECU
GENERAL INFORMATION	
Geographical range	The buckbrush is commonly seen throughout California, Oregon, and as south as Mexico.
Ecological distribution	The buckbrush is found dominating within chaparral ecosystems. Buckbrush is commonly found in dry, rocky slopes or ridges. Buckbrush is also found growing in woodland habitats and coastal areas. (DeSiervo)
Climate and elevation range	They tend to grow under 6000 feet in elevation to as low as the coastal line.

	They have grown to withstand the Mediterranean climate zone and annual droughts. (DeSiervo)
Local habitat and abundance	They tend to grow alongside *Adenostoma fasciculatum* and *Arctostaphylos viscida,* but are also often found dominating other shrubs causing them to form dense thickets. When found in pine forest and oak woodland forests, they're prominent understory shrubs. Along the coastal areas, buckbrush is found alongside the dominant species of *Artemisia californica* (DeSiervo)
Plant strategy type / successional stage	They're found growing alongside other shrubs, however they can become dominant over others and establish a dense thicket of just buckbrush shrubs. Buckbrush are fire tolerant and need it in order to crack the cuticle of their buried seeds. They have a high germination rate post fires.
Plant characteristics	The buckbrush is a perennial, evergreen shrub that has the characteristics of Californian lilacs. Just like lilacs, the buckbrush as unique, angular, ridged branches that branch off unevenly. The branches are hairless with a gray color to them. The leaves that come off of the branches are elongated ovals, which have smooth texture to them. The leaves range from 0.25 – 0.5 inches in length and they have the thickness of most evergreen shrubs. During the March – May period, inflorescences are displayed in clusters. These flowers are quite fragrant and are only roughly 1 inch in size. The flowers are shades of blue and lavender. Fruits that are formed which are also as small as the petals at 0.25 – 0.5 inches in size and have small crest-like ridges along the ends. Each fruit contains two to three seeds. (DeSiervo)
PROPAGATION DETAILS	
Propagation Goal	Plants
Propagation Method	Seed
Product Type	Container
Stock Type	
Time to Grow	The best time to sow the seeds is once they become ripe in a cold frame. Once they're big enough to handle, they can be transferred to single pot containers, 1 to 2 feet in height. Total germination time takes 1-2 months. (DeSiervo)
Target Specifications	Target specification is to reach between 1 to 2 feet in height. Leaves should be apparent as well as flowers blooming. (DeSiervo)
Propagule Collection Instructions	Seeds should be collected straight from the fruit of the shrub. They can be individually picked, roughly 2-3 seeds per fruit. Collected from small lot, 0.88 pounds, and can be collected in a brown bag. (Barner)
Propagule Processing/Propagule Characteristics	Seeds should be collecting when the fruit on the shrub is ripe and is approaching wintertime. Research has shown that seeds taken and stored in airtight containers for 15 years at 1 – 5 degrees Celsius proved to have extensive longevity. Seeds that have been stored have seen greater results in germination. (DeSiervo) Cleaning method that was found and proved to be successful: "Seed capsules broken open by hand. Lot was then air-screened using an office Clipper, with a top screen, #10 triangle and a bottom screen, blank, high speed, low air. Number of Seeds per Pound: 87,900, Purity: 99%, X-Ray 100 Seeds: 81% Filled" (Barner)
Pre-Planting Propagule Treatments	Stored seeds need to be pre-soaked in warm water for about 12 hours, and then stratified at 1 degree Celsius for 1-3 months. Better propagation was found when seeds were given the boiling treatment for 4-5 minutes before soaking them in the warm water prior to sowing. (Calscape)
Growing Area Preparation / Annual Practices for Perennial Crops	Seeds are sown just under dry or slightly moist soil with light soil content. The soil should have low lime content. Root disturbances are disliked, so ideally the plant should be placed in areas where they're going to grow unless they

	will be transferred from the pot elsewhere. Transferring should occur once they're big enough to handle. Germination occurs between 1-2 months at 20 degrees Celsius. (DeSiervo)
Establishment Phase Details	Germination occurs mostly in the wintertime at 20 degrees Celsius. (Calscape)
Length of Establishment Phase	1-2 months
Active Growth Phase	Buckbrush is a quick growing plant. After germination occurs, the plant is actively growing. Stems can grow and flowering starts when they're young. Plants should not be fertilized and only given heavy water until roots are established. Once roots have established, minimal water is required for continuing growth. (DeSiervo)
Length of Active Growth Phase	Flowering can occur within the first year of growth. Sprouts can continue to grow up to 8 years.
Hardening Phase	Hardening phase occurs once the buckbrush is finished developing it's initial set of sprouts, usually the second year (Practical Plants)
Length of Hardening Phase	Up to 2 – 3 years before sprouts produce seeds.
Harvesting, Storage and Shipping	Seeds can be plucked from fruits and stored in air-tight containers. Seeds can live for years in air-tight containers as long as they're kept around 1 – 5 degrees Celsius. They should be harvested before the winter time sets in. (Barner)
Length of Storage	15+ years
Guidelines for Outplanting / Performance on Typical Sites	
Other Comments	
INFORMATION SOURCES	
References	Barner, Jim. "Rhamnaceae (Ceanothus) — Reforestation, Nurseries and Genetics Resources." Accessed May 23, 2017. https://rngr.net/npn/propagation/protocols/rhamnaceae-ceanothus-3415. Calscape. "Buck Brush, Ceanothus Cuneatus." *Calscape*. Accessed May 23, 2017. http://calscape.org/Ceanothus-cuneatus-(Buck-Brush). "Ceanothus Cuneatus (Buckbrush) - Practical Plants." *Practical Plants*. Accessed June 5, 2017. http://practicalplants.org/wiki/Ceanothus_cuneatus. DeSiervo, M. 2011. Plant Guide for Buckbrush (Ceanothus cuneatus). USDA-Natural Resources Conservation Service, Lockeford Plant Materials Center, Lockeford, CA 95237 Keegan, Patrick. "Plant Data Sheet." Accessed June 5, 2017. http://depts.washington.edu/propplnt/Plants/Ceanothus%20cuneatus.htm. PFAF. "Ceanothus Cuneatus Buckbrush, Sedgeleaf Buckbrush, Monterey Ceanothus PFAF Plant Database." *Plants For A Future*. Accessed May 23, 2017. http://www.pfaf.org/User/Plant.aspx?LatinName=Ceanothus+cuneatus. Plants for a Future. "Medicinal Herbs: BUCKBRUSH - Ceanothus Cuneatus." *Herbs*. Accessed June 5, 2017. http://www.naturalmedicinalherbs.net/herbs/c/ceanothus-cuneatus=buckbrush.php.
Other Sources Consulted	Baskin, Jerry M.; Baskin, Carol J.. 2002. Propagation protocol for production of Container (plug) *Ceanothus cuneatus* (Hook.) Nutt. plants University of Kentucky Lexington, Kentucky. In: Native Plant Network. URL:

	http://NativePlantNetwork.org (accessed 2017/05/23). US Department of Agriculture, Forest Service, National Center for Reforestation, Nurseries, and Genetic Resources.
Protocol Author	Ahmed Rizvi
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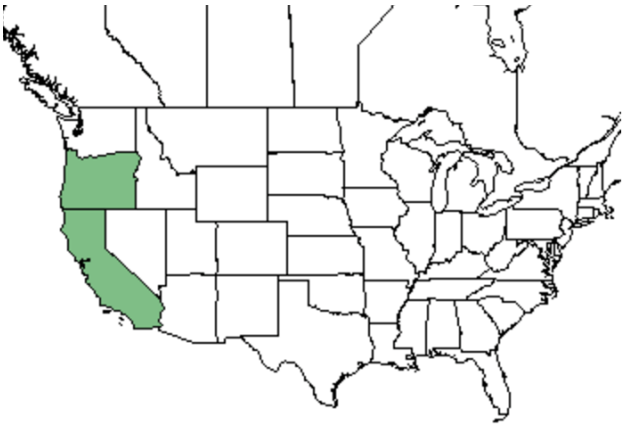
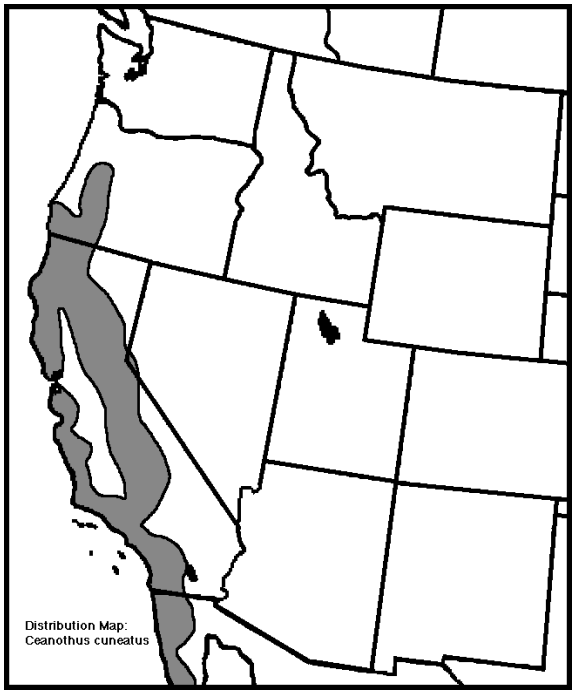


Source: USDA PLANTS Database



Source: http://www.swsbm.com/Maps/Ceanothus_cuneatus.gif