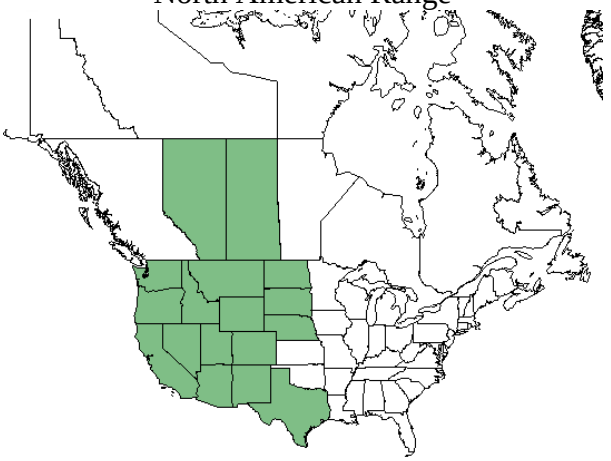
Plant Propagation Protocol for *Suaeda moquinii*
ESRM 412 – Native Plant Production
Protocol URL: https://courses.washington.edu/esrm412/protocols/SUMO

TAXONOMY	
Plant Family	
Scientific Name	Chenopodiaceae
Common Name	Goosefoot
Species Scientific Name	
Scientific Name	*Suaeda moquinii* (Torr.) Greene
Varieties	
Sub-species	
Cultivar	
Common Synonym(s)	*Dondia fruticosa* auct. non (Forssk.) Northrup *Suaeda fruticosa* auct. non Forssk. *Suaeda intermedia* S. Watson *Suaeda nigra* J.F. Macbr. *Suaeda ramosissima* (Standl.) I.M. Johnst. *Suaeda torreyana* S. Watson *Suaeda torreyana* S. Watson var. *ramosissima* (Standl.) Munz[9]
Common Name(s)	Mojave seablite, bush seepweed[6]
Species Code (as per USDA Plants database)	SUMO
GENERAL INFORMATION	
North American Range  Photo source: USDA Plants Database	Washington State Range  Photo source: USDA Plants Database
Ecological distribution	Grows well in areas of low shade and rainfall, likes moderately well-draining soil.[4]
Climate and elevation range	Mojave seablite thrives in salty and alkali soils where the water table is close to the surface.[5]
Local habitat and abundance	Found natively in only one county of Washington State, Mojave seablite is fairly

	common in Klickitat county on the Columbia river.[8]
Plant strategy type / successional stage	This plant is a drought stress tolerator as well as a weedy colonizer.[6]
Plant characteristics	The lance-shaped fleshy leaves of this forb can be hairy and have a thick, waxy cuticle to minimize water lost to evaporation in the hot, dry environments further south. It can be green to red to dark purple or even occasionally black.[2]
PROPAGATION DETAILS[1]	
Ecotype	Seeds used were gathered from sandy plains of Fresno County, California.
Propagation Goal	Plants
Propagation Method	Seed
Product Type	Bareroot
Stock Type	
Time to Grow	4-6 months
Target Specifications	10-15cm
Propagule Collection Instructions	Seed pods were collected by hand in mid-September through October when the seeds are black and shiny and their calyces are brown and crumbly.[3]
Propagule Processing/Propagule Characteristics	Raw plant material was broken down by a hammer mill before being put through a series of sieves to separate seed and attached calyces from remaining chaff. In the interest of time, attached calyces are left on the seeds.
Pre-Planting Propagule Treatments	After seeds were clean they were stored in a cool, dry place until January the following year before sowing them.
Growing Area Preparation / Annual Practices for Perennial Crops	A mix of local soil (Tranquillity clay) was tilled into series of mounded planting beds.
Establishment Phase Details	Irrigation is needed to trigger the establishment phase due to the dry soils and low drought tolerance entering the germination stage.
Length of Establishment Phase	3-4 months
Active Growth Phase	March-October
Length of Active Growth Phase	8 months
Hardening Phase	Plants drop their foliage and go dormant through the winter.
Length of Hardening Phase	3-5 weeks
Harvesting, Storage and Shipping	Seedlings were left in the mounds through the winter until the beginning of the following growing season when they’re dug up as a bare

	root plant for transplant.
Length of Storage	4-5 months
Guidelines for Outplanting / Performance on Typical Sites	Plants did significantly better at coming back the following year when they had been transplanted into the Ciervo clay of nearby restoration trails rather than left in the Tranquillity clay of the nursery. With both soils being very deep and on fan skirts, the big difference is that Tranquility soil has poor drainage while Ciervo soil has moderately well-drained soils.
Other Comments	When harvesting seeds be sure you have the correct species and not the very similar *Kochia californica*. The true *Suaeda moquinii* seeds are shiny black and smooth while the others are a dark brown and slightly hairy.[7]
INFORMATION SOURCES	
References	See Below
Other Sources Consulted	See Below
Protocol Author	Thomas Radon
Date Protocol Created or Updated	06/09/2016

References:

[1]Borders, B. "Sueada nigra (Raf.) J. F. Macbr. (formerly *Suaeda moquinii* (Torr.) Greene" CSU Stanislaus, Valley Flora Propagation Center Species Profiles. Web. Accessed 9, June 2016. Available at http://esrp.csustan.edu/vfpc/profiles/SUMO.pdf

[2]Grayson, Donald K., and Donald K. Grayson. *The Great Basin: A Natural Prehistory*. Berkeley: U of California, 2011. 153. Print

[3]Khan, M.A., B. Gul, and D.J. Weber. 2001. Germination of dimorphic seeds of *Suaeda moquinii* under high salinity stress. Australian Journal of Botany 49: 185-192.

[4]Lair, K., N. Ritter, and A. Howard. 2006. "Use of activated charcoal to protect native seeds from herbicides" (California). Ecological Restoration 24:122-124.

[5]Nicole of LaJolla, California. "Select Native Plants and Their Uses" Natural Treasure A brief guide to the natural history of the UCSD campus and its ecological reserves. Web. Accessed 9, June 2016. Available at http://naturaltreasureucsd.blogspot.com/2011/02/scripps-coastal-reserve-select-native.html

[6]Pojar, Jim, A. MacKinnon, and Paul B. Alaback. "Chenopodiaceae." *Plants of the Pacific Northwest Coast: Washington, Oregon, British Columbia & Alaska*. Revised ed. Redmond, WA: Lone Pine Pub., 2004. 226. Print

[7]Rhode, David. *Native Plants of Southern Nevada: An Ethnobotany*. Salt Lake City: U of Utah, 2002. 81-82. Print.

[8]Sullivan, S. "Bush seepweed *Suaeda nigra"* Wildflower Identification. Web. Accessed 9, June 2016. Available at http://www.wildflowersearch.com/search?oldstate=gloc%3Az%3Bbloom%3AIgnore%3Bname%3ASuaeda+nigra

[9] *"Suaeda moquinii* (Torr.) Greene. Mojave seablite" USDA Plants Database. Web. Accessed 9, June 2016. Available at http://plants.usda.gov/core/profile?symbol=SUMO

Other resources consulted:

[1]Moerman, Daniel E. "Common Names." Native American Food Plants: An Ethnobotanical Dictionary. Portland: Timber, 2010. 430. Print.

[2]Quattrocchi, Umberto. "Sueada." *CRC World Dictionary of Medicinal and Poisonous Plants: Common Names, Scientific Names, Eponyms, Synonyms, and Etymology*. Boca Raton, FL: CRC, 2012. 3611. *Google Ebooks*. Web. 9 June 2016.