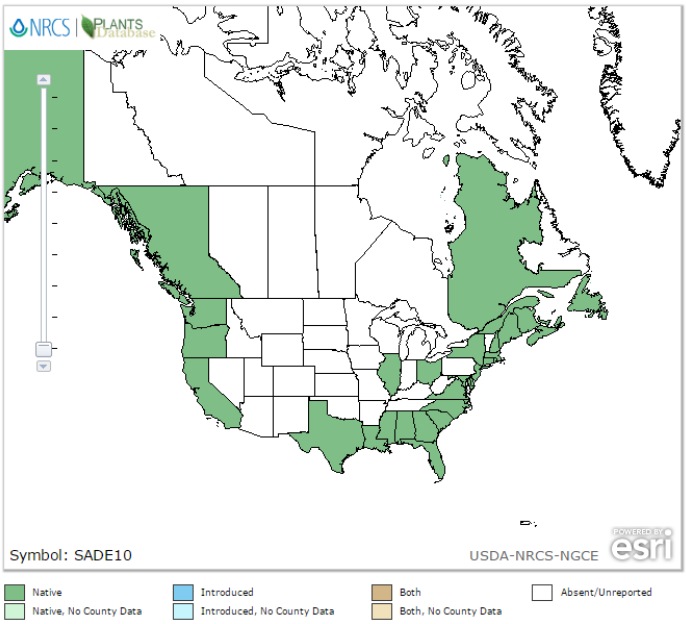
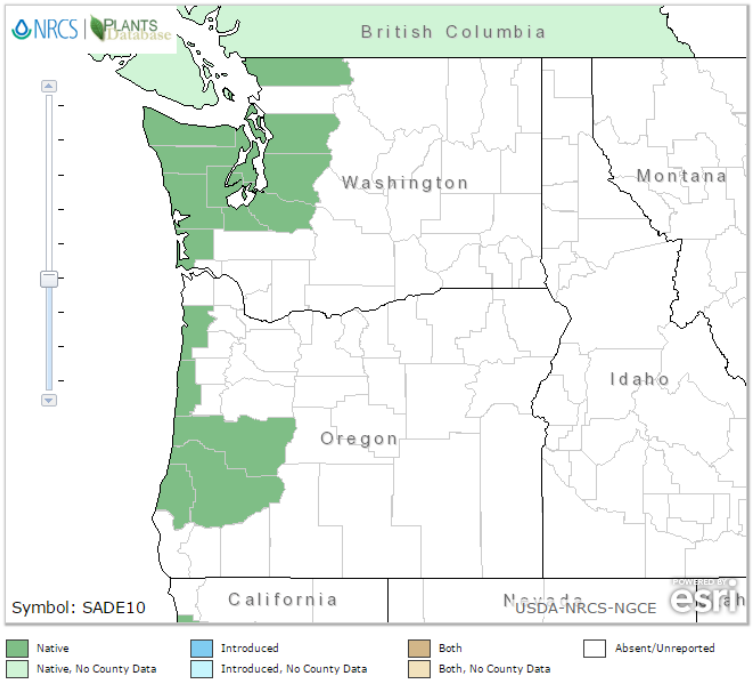
Plant Propagation Protocol for *Salicornia depressa*
ESRM 412 – Native Plant Production
Protocol URL: https://courses.washington.edu/esrm412/protocols/SADE10.pdf


Larry Allain @ USDA-NRCS PLANTS Database

TAXONOMY	
Plant Family	
Scientific Name	Chenopodiaceae
Common Name	Goosefoot family
Species Scientific Name	
Scientific Name	*Salicornia depressa* Standl.
Varieties	
Sub-species	
Cultivar	
Common Synonym(s)	*Salicornia* europaea L. var. *pachystachya* (W.D.J. Koch) Fernald *Salicornia europaea* L. var. *simplex* (Pursh) Fernald *Salicornia europaea* sensu Wolff & Jefferies, non L. *Salicornia maritima* auct. non Wolff & Jefferies *Salicornia virginica* L. Inbreeding and phenotypic plasticity has cause taxonomic difficulties for Salicornia spp and it is frequently impossible to assign published information specifically to taxa within Salicornia (Davy, 2001).
Common Name(s)	Virginia glasswort, pickleweed, sea pickles
Species Code	SADE10

GENERAL INFORMATION	
Geographical range	North American Distribution  Pacific Northwest Distribution 
Ecological distribution	Tends to grow in marshes and wet places, like wetlands, riparian corridors, mudflats, beaches, coastal sands and salt marshes, often near low tide mark (EDC-URI; PFAF; CNPS).
Climate and elevation range	Elevations from 0-3000ft (CNPS).

Local habitat and abundance	Common along coast, Puget Sound, Duwamish River (Legler & Giblin, 2017).
Plant strategy type / successional stage	Perennial halophyte. Principal succession species and usually first to colonize bare areas in high salinity salt marshes (Ungar, 1974; URI-EDC).
Plant characteristics	Salt tolerant and fibrous root system. Stores water in succulent stems, so requires little water. In same order as cacti (URI-EDC). Flowers in groups of three (WoS).
PROPAGATION DETAILS	
Ecotype	No data found
Propagation Goal	Plants
Propagation Method	Seed
Product Type	Plant
Stock Type	Container
Time to Grow	No data found.
Target Specifications	4 to 20 inches tall (URI-EDC).
Propagule Collection Instructions	Blooms late August through October/November (PFAF & WoS). Sowing the seed as soon as it is ripe is suggested (PFAF).
Propagule Processing/Propagule Characteristics	No species specific data found. Likely similar to *Salicornia europa*: The large median flowers of a nodal segment have a single large seed with a mean air-dry weight of 0.78 + 0.10 mg and a mean length of 1.8 + 0.10 mm; lateral flowers are smaller and contain a single seed with a mean air-dry weight of 0.24 + 0.04 mg and a mean length of 1.1 + 0.10 mm. The large seeds are more salt tolerant than the small and yield higher germination percentages at all tested salinities (Ungar, 1979). Division might be possible in the spring (PFAF).
Pre-Planting Propagule Treatments	No species specific data found. Likely similar to *Salicornia europaea*: Maximum germination occurred in distilled water at 25°C. Lowest germination percentages for all salinities were at 10°C. Despite salt-tolerance, high salinity stress is inhibitory to seed germination regardless of temperature. Treatments with 1 × 10−3 M gibberellic acid (GA3) stimulated germination in salinities with up to 5.0% NaCl concentrations; germination increased from 5.0% in the control to 42.0% in the growth regulator treatment. Kinetin did not stimulate germination of *S. europaea* seeds (Ungar, 1977).
Growing Area Preparation / Annual Practices for Perennial	If unable to immediately sow seed when ripened, then sow in spring, in a greenhouse in a light sandy compost (PFAF). Information for growing of *Salicornia europaea* (WoS): Full sun Water with saline solution

Crops	Medium to warm temperatures (50 degrees F/10 degrees C) Semi-dormant in winter Light sandy soil or well-drained soil with ample nitrogen Increasing molybdate levels in the growth medium supplemented with nitrate or ammonium may play an important role in facilitating yield accumulation (Ventura et al., 2010).
Establishment Phase Details	Seeds in the laboratory germinated in 40-60 days, probably reflecting sporadic germination pattern in the field (Ungar, 1979).
Length of Establishment Phase	No data found
Active Growth Phase	No data found
Length of Active Growth Phase	No data found
Hardening Phase	No data found
Length of Hardening Phase	No data found
Harvesting, Storage and Shipping	No data found
Length of Storage	No data found
Guidelines for Outplanting / Performance on Typical Sites	When seedlings are large enough to handle, put the seedlings out into individual pots and plant them out in the summer (PFAF).
Other Comments	Difficult to grow in cultivation and rarely cultivated. May require periodic inundation by salty water to grow well (WoS).
INFORMATION SOURCES	
References	Davy, A.J. & G.F. Bishop (2001). *Salicorni*a L. (*Salicornia pusilla* J. Woods, *S. ramosissima* J. Woods, *S. europaea* L., *S. obscura* P.W. Ball & Tutin, *S. nitens* P.W. Ball & Tutin, *S. fragilis* P.W. Ball & Tutin and *S. dolichostachya* Moss). Journal of Ecology. 89:4 p681-707. "How to Grow and Care for Glasswort." World of Succulents (WoS). Web. 23 May 2017. Available at: http://worldofsucculents.com/how-to-grow-and-care-for-glasswort/

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Other Sources Consulted	Khan M., Gul B. (2006) Halophyte seed germination. In: Khan M., Weber D. (eds) Ecophysiology of High Salinity Tolerant Plants. Tasks for Vegetation Science, vol 40. Springer, Dordrecht. Langlois, J. (1966). Etude compare de l'aptitude a germer de graines de *Salicornia stricta* Dumort., *Salicornia disarticulata* Moss. and *Salicornia radicans* Moss. Rev. Gen. Bot. 73: 25–39. Rivers, W.G. & Weber, D.J. (1971). The influence of salinity and temperature on seed germination in *Salicornia bigelovii*. Physiologia Plantarum, 24: 73–75.

	Ungar, I.A. (1978). Halophyte Seed Germination. Botanical Review, 44:2, 233-264.
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