

Plant Propagation Protocol for *Schoenoplectus pungens* (Vahl) Palla

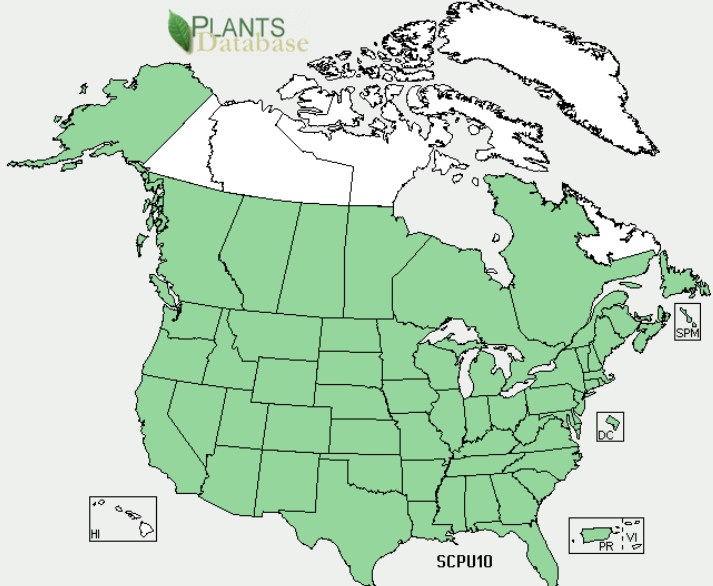

ESRM 412 – Native Plant Production

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Schoenoplectus pungens (Vahl) Palla, syn. *Cyperus pungens* (Vahl) Missbach & E.H.L.Krause, nom. ill.

TAXONOMY	
Plant Family	
Scientific Name	Cyperaceae
Common Name	Sedge
Species Scientific Name	
Scientific Name	<i>Schoenoplectus pungens</i>
Varieties	<i>pungens</i> (Vahl), <i>longispicatus</i> (Britt.)
Sub-species	
Cultivar	
Common Synonym(s)	<i>Scirpus americanus</i>
Common Name(s)	American Three-square, Sweetgrass, Basketry grass

Species Code (as per USDA Plants database)	SCPU10
GENERAL INFORMATION	
Geographical range	<p>Found throughout North America. It can also be found in South America, Europe, Australia and New Zealand ⁶</p> 
	 <p>Distribution in Washington State ⁵</p>
Ecological distribution	<p>Estuaries, freshwater and brackish marshes ² <i>S. pungens</i> is found in flood plains, ditches, streams and marshy areas and along margins of ponds and lakes ^{1,6}</p>
Climate and elevation range	<p>low elevations ^{3,6}</p>

Local habitat and abundance	Commonly associated with <i>Carex lyngbyei</i> (occurs at higher elevations than <i>S. pungens</i>) ³ It is usually found in standing water about 10 to 15 cm (4 to 6 in) deep, and will tolerate alkaline and saline conditions as well as freshwater. <i>S. pungens</i> can survive seasonal drought, when the water table is more than 1 m (3 ft) below the surface. It grows in fine silty clay loam to sandy loam soil. ⁶
Plant strategy type / successional stage	stress tolerator, both a late successional and initial community species ²
Plant characteristics	Graminoid ¹ , long-lived rhizomatous perennial grass-like herb. The stems are sharply triangular with the sides being slightly concave to slightly convex. The flowering stems can be 10 to 180 cm (4 in to 6 ft) tall. The leaves are basal, v-shaped and 5 to 75 cm (2 to 30 in) long. The inflorescence is a tight terminal cluster of 1 to 5 orange to brown spikelets subtended by a green leaf-like bract. Fruits are small, brown, lenticular achenes surrounded by four to six barbed bristles. ⁶
PROPAGATION DETAILS	
Ecotype	
Propagation Goal	Plants
Propagation Method	Seed
Product Type	container plug ⁶
Stock Type	
Time to Grow	
Target Specifications	large enough to compete with a root structure to hold plants in place
Propagule Collection Instructions	Collect seed at the end of summer season (July-August) Seeds persist in seed head for a couple of months if not disturbed. Seeds may be collected by hand or with a power seed harvester. ⁶
Propagule Processing/Propagule Characteristics	~216,000 seeds per pound ⁶

Pre-Planting Propagule Treatments	Clean and process seeds removing chaff. This can be done mechanically by rubbing seed heads to remove outer protective sheath. A hammer mill can be used to knock the seeds from the stem. Cleaning seed can be done by hand or with a No. 7 screen top screen and a 1/20 bottom screen. Blow chaff away. 6 Seed germination is difficult. When collecting seeds make sure spikelets feel “full” and have developed. The germination rate may be enhanced by light scarification and wet pre-chilling the seeds in a mixture of water and sphagnum moss at 2C for 30 days.6
Growing Area Preparation / Annual Practices for Perennial Crops	After pre-chilling, place seeds in the soil surface in containers or flats and provide light, moisture and heat for germination. Press seed into soil surface very lightly and do not cover seed. Plants will desiccate if the soil dries out, and will fail to germinate. 6
Establishment Phase Details	Germination should begin in a few weeks. Maintain moisture. 6
Length of Establishment Phase	2-3 weeks 6
Active Growth Phase	early spring to mid summer
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	Planting plugs (either from the greenhouse or wild transplants) is the easiest way to establish a new stand of this species. Plug spacing of 30 to 45 cm (12 to 18 in) will fill in within one growing season. Soil should be kept saturated.

Other Comments	<p>When wild plants are collected for transplanting, no more than 1 ft² x 6 in deep should be removed from any 1 yd² area. The hole will fill back in within one growing season. Care should be taken not to collect plants from weedy areas as these weeds can be relocated to the transplant site. In addition, the hole left at the collection site may fill in with undesirable species.</p> <p>Case Study: The Skokomish Tribe uses a modified clam gun to gather wild transplants from Bowerman Basin, Washington. The clam gun consists of a piece of automotive tailpipe with a T-handle and a siphon hole drilled on the top (Dublanica pers. comm. 1999). The edges are sharpened and make a clean cut with the tube approximately 30 cm (1 ft) long and 8 cm (3 in) in diameter. Three to twelve tillers are recovered per plug extraction. Transplant success was highest in borrow pits within the diked complex at the Skokomish River where <i>Schoenoplectus</i> remnants were already growing ⁶ <i>S. pungens</i> is managed for ethnobotanic uses by reducing the density between plants to stimulate shoot production. Fire was used historically to manage <i>Schoenoplectus</i> dominated wetlands in some areas. Due to the loss of estuarine wetland habitat throughout the United States, it is rarely appropriate to harvest wild plants in those areas. Wild plant collecting should be restricted to salvage sites with appropriate approvals or permits. <i>S. pungens</i> populations are declining due to loss of habitat and commercial use. ⁶</p>
INFORMATION SOURCES	
References	See Below
Other Sources Consulted	See Below
Protocol Author	Alexandra Harwell
Date Protocol Created or Updated	05/15/2014

References

1. Albert, Dennis A., Lemein, Todd, and Yoon, Hyun-Doug. Characterization of *Schoenoplectus pungens* in a Great Lakes Coastal Wetland and a Pacific Northwest Estuary. *Wetlands* 33: 445-458. 2013.
2. Ewing, Kern. Environmental Controls in Pacific Northwest Intertidal Marsh Plant Communities. *Can. J. Bot* **61**: 1106-1116. 1983.
3. Ewing, Kern. Plant Growth and Productivity Along Complex Gradients in a Pacific Northwest Brackish Intertidal Marsh. *Estuaries*. Vol 9, No 1, p. 49-62. March 1986.
4. Poor, Allison, Chad Hershock, Kristin Rosella and Deborah E. Goldberg. Physiological Integration and Soil Heterogeneity Influence the Colonial Growth of *Schoenoplectus pungens*? *Plant Ecology*, Vol. 181, No. 1 (2005), pp.45-56.
5. USDA Plant Database. *Schoenoplectus pungens*. Natural Resources Conservation Service. <http://plants.usda.gov/core/profile?symbol=scpu10>
6. USDA. Plant Guide: Common Three Square. http://plants.usda.gov/plantguide/pdf/pg_scpu10.pdf

Other Sources Consulted

7. California Native Plant Link Exchange. <http://www.cnplx.info/nplx/species?taxon=Scirpus+americanus>
8. Crandell, Caren. Is Sweetgrass (*Schoenoplectus pungens*, Formerly *Scirpus americanus*) on the Decline? University of Washington. 2012. Poster http://depts.washington.edu/hortlib/student_research/2012/Crandell_SweetgrassDecline_2012.pdf
9. Native Plant Center. *Schoenoplectus pungens* var. *pungens*. <http://www.nativeplantcenter.net/?q=plants/791>
10. Robert W. Freckmann Herbarium. University of Wisconsin. <http://wisplants.uwsp.edu/scripts/detail.asp?SpCode=SCHPUN>