

## COMMON THREESQUARE *Schoenoplectus pungens* (Vahl) Palla

Plant Symbol = SCPU10

Contributed by: USDA NRCS Idaho Plant Materials Program



Common threesquare. Photo by Derek Tilley. NRCS, Idaho.

### Alternate Names

*Common Alternate Names:* chair-maker's rush, beach grass, sweet grass, basket grass

*Scientific Alternate Names:* *Scirpus pungens*

### Uses

#### Ethnobotany

The soft, spongy stems of common threesquare are used for basket weaving. The triangular stems are commonly used for the bottom and ribs of baskets. The stems are harvested in August. After collecting stems, they are carefully bundled so that they will not bend, then carried home and laid out to dry. Once dried, they are sorted according to length and bundled for storage.

The pithy, cylindrical stalks were used to weave matting, as well as for bedding and roofing material. As thatching material, common threesquare was spread out in bundles, tied together, then secured in place with poles.

Various indigenous peoples of Canada ate the fleshy rootstocks and rhizomes (Kunlein and Turner 1991). The Kwakiutl used the stalks and oil on a child's head to make the hair grow long and thick (Moerman 1998).

#### Conservation:

Common threesquare is especially good for stabilizing or restoring disturbed or degraded areas, for erosion and slope control, and for wildlife food and cover. Its dense root mass makes this species resistant to soil compaction and erosion making it an excellent choice for soil stabilization in wetland and riparian sites.

#### Wildlife:

The seed is used by wetland birds including: baldpate, bufflehead, mallard, pintail, shoveler, blue-winged teal, cinnamon teal, greater scaup, lesser scaup, avocet, marbled godwit, clapper rail, Virginia rail, sora rail, long-billed dowager, and tricolored blackbird (Martin et al. 1951). The stems provide nesting habitat for blackbirds and marsh wrens. Snow geese are known to utilize common threesquare on the Skagit Delta and Bowerman Basin on their migratory flights (Ewing 1982).

#### Status

Please consult the PLANTS Web site and your State Department of Natural Resources for this plant's current status (e.g., threatened or endangered species, state noxious status, and wetland indicator values).

#### Description

*General:* Sedge Family (Cyperaceae). Common threesquare is a 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 (Welsh et al. 2003).

The taxonomic history of common threesquare can be quite confusing. The "*Scirpus americanus* complex" contains three closely related and morphologically similar species, *Schoenoplectus americanus*, *S. pungens*, and *S. deltarum*. *Schoenoplectus pungens* differs from *S. americanus* by having a deeper notch in the spikelet

scale, 0.5 to 1.0 mm (0.02 to 0.04 in) versus 0.1 to 0.4 mm (0.004 to 0.016 in), and by having slightly concave to flat stem edges versus deeply concave. Common threesquare differs from *S. deltarum* by having on average 1 to 5 spikelets per culm versus 3 to 35 spikelets per culm (Smith 2003).

#### *Distribution:*

Common threesquare is found throughout North America. It can also be found in South America, Europe, Australia and New Zealand (Smith, 2003). For current distribution, please consult the Plant Profile page for this species on the PLANTS Web site.

#### *Habitat:*

Common threesquare is found in flood plains, ditches, streams and marshy areas and along margins of ponds and lakes (Welsh et al. 2003).

#### **Adaptation**

Common threesquare occurs in a variety of wetland and riparian plant communities under 2,000 m (6,500) elevation. 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. Common threesquare 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.

#### **Establishment**

When wild plants are collected for transplanting,, no more than 1 ft<sup>2</sup> x 6 in deep should be removed from any 1 yd<sup>2</sup> 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.

Planting plugs (either from the greenhouse or wild transplants) is the surest 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. Common threesquare can tolerate 5-8 cm (2 to 3 in) of standing water during the first growing season. Fluctuating water levels during the establishment period will increase the rate of spread. Water levels can be managed to both enhance expansion of the clone and to control weeds.

Common threesquare can tolerate up to 30 to 45 cm (12 to 18 in) of standing water if the water level is fluctuated during the growing season. This species can tolerate periods of drought and total inundation and can tolerate both brackish water and diurnal tidal inundation. In non-tidal situations, water levels can be managed to either enhance or reduce spread as well as to control terrestrial weeds.

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 *Schoenoplectus* remnants were already growing (Dublanica pers. comm. 1999) .

#### **Management**

Common threesquare is managed for ethnobotanic uses by reducing the density between plants to stimulate shoot production. Fire was used historically to manage *Schoenoplectus* 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. Common threesquare populations are declining due to loss of habitat and commercial use.

#### **Pests and Potential Problems**

Insects have not been a problem with common threesquare. Aphids will feed on the stems, but will not kill the plant. If problems from an insect, herbivore (such as small mammals), or disease should emerge, treat as you would for any other plant species.

#### **Environmental Concerns**

Common threesquare is native to western North America. It can spread under favorable conditions but does not pose any environmental concern to native plant communities.

#### **Seed and Plant Production**

*Propagation by Seed:* Germination of this species is difficult. Seeds ripen from late July through August. Seeds are held in the seed head for a couple of months, if not disturbed by high winds, high tides, or inundation. Seeds may be collected by hand stripping them from the plant or by clipping the seed heads with a pair of hand shears. A power seed harvester may also be used. (St John et al. 2010).

A hammer mill can be used to break up large debris and knock the seeds loose from the stem. To clean seed by hand, run your thumbnail along the stem, and then twist the seeds away from the larger chaff. Cleaning can be accomplished using a seed cleaner with a No. 7 screen top screen and a 1/20 in bottom screen. Screens should be sized so desired seeds will fall through and debris and weed seeds are removed. Air velocity should be adjusted so chaff is blown away. Air flow and screen size may require adjustment to optimize the cleaning process for the given situation. There are approximately 216,000 seeds per pound (USDA NRCS, 2012).



Common threesquare seed. Photo by Derek Tilley, NRCS, Idaho.

Seed germination is difficult in this species. Wide differences in germination may occur between sites and between different years. When collecting seed heads, make sure the spikelets feel “full” and that the seeds 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 2°C (36° F) for 30 days. After pre-chilling, place the seeds on 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 dried out, and will either fail to germinate or die as young seedlings. The greenhouse should be kept hot, 32 to 38°C (90 to 100° F). Germination should begin within a few weeks. Maintain moisture until plants are to be transplanted (Hoag et al. 2011).

#### **Cultivars, Improved, and Selected Materials (and area of origin)**

There are no cultivars, improved, or selected materials of Nebraska sedge. Common wildland collected seed is available from commercial sources (Native Seed Network).

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