Scientific Name: *Scirpus microcarpus* J.& C. Presl

Family: *Cyperaceae*

Common Names: small-fruited bulrush, panicled bulrush, barber-pole bulrush

Plant Description

Solitary, stout, triangular culms, leafy, 30 to 100 cm tall (1.5 m – Plants for a Future n.d.) from thick, stoloniferous caudex; linear leaves 1.2 to 0.5 cm wide, sheathes tinged red; inflorescence in a large compound umbel, rays spreading or ascending; leaf-like involucral bracts, mostly three, longest often exceeding inflorescence; spikelets ovoid, 3 to 4 mm long; ovate scales marked with green and black, whitish bristles (Moss 1983). Flowers have both male and female parts (Plants for a Future n.d.).

Seed: Whitish lens-shaped achene, obovate, around 1 mm long, apiculate (Moss 1983). Fruit is a pale, smooth achene (Seven Oaks Native Nursery n.d.) 0.7 to 1.6 × 0.8 to 1 mm in size (eFloras.org n.d., GoBotany n.d.).

***Scirpus microcarpus* in flower**

Habitat and Distribution

Found in marshy places (Moss 1983); obligate wetland species (GoBotany n.d., Prairie Moon Nursery n.d.). Forms extensive communities with deep-binding rhizomes that offer good bank and shoreline protection (Hale et al. 2005, Seven Oaks Native Nursery n.d.).

Scirpus microcarpus is found in fresh (<2 mS/cm) waters with seasonal saturation / moderate deep flowing / fluctuating water table (Alberta Environment 2008). In a survey of US Great Plains wetlands (Sletton and Larson 1964) *S. microcarpus* was found to occur in sites with slightly brackish water (mean 0.534 mS/cm with a range of 0.305 to 0.922) and a mean pH of 7.94.

Shade tolerant (Elliot 2003, Plants for a Future n.d.) or shade intolerant (GardenGuides.com n.d.).

Seral Stage: Found in communities at varying successional stages (Elliot 2003).

Soils: Wet soils (Lady Bird Johnson Wildflower Center 2007) with high water holding capacity (Elliot 2003).

Tolerant of a wide pH range (Plants for a Future n.d.); but not acid tolerant (Granite Seed and Erosion Control n.d.).

Distribution: Throughout Alberta. Southern Alaska, Yukon, southern District of Mackenzie, Hudson Bay to Newfoundland south to California, Arizona, New Mexico, Nebraska, Michigan, West Virginia (Moss 1983).

Phenology
Blooming in summer months May through July (Elliot 2003).

Pollination
Wind pollinated (Plants for a Future n.d.).

Seed Dispersal
No literature found.

Genetics
2n=66 (Moss 1983).

Symbiosis
No literature found.

Seed Processing
Collection: Collect in late summer to early fall (Elliot 2003). Seeds ripen June to July (Plants for a Future n.d.).
Seed Weight: 0.06 g/1,000 seeds (Prairie Moon Nursery n.d.).
0.10 g/1,000 seeds (Granite Seed and Erosion Control n.d.).
0.13 g/1,000 seeds (Royal Botanic Gardens Kew 2008).
0.16 g/1,000 seeds (Barner 2007).
Seed per Fruit: No literature found.
Harvest Dates: No literature found.
Cleaning: Barner (2007) used a Westrup Model LA-H laboratory brush machine, with a #20 mantel, at medium speed. Lot was then air-screened using an office Clipper, first with a top screen, 24x24 wire and a bottom screen, blank, medium speed, low air, lot was screened again with a top screen, 1/20 round and a bottom screen, blank, medium speed, low air.
Storage Behaviour: Orthodox (Royal Botanic Gardens Kew 2008).
Storage: Cold storage at 0.5 to 3.3 ^{o}C (Barner 2007).
Longevity: 5.64 years at -20 ^{o}C (Royal Botanic Gardens Kew 2008).

Example of red tingeing at base of *Scirpus microcarpus* stem

Propagation
Natural Regeneration: Rhizomatous.
Germination: 87% to 100% germination (Royal Botanic Gardens Kew 2008).
Germinate in a cold frame with 3 cm of standing water (Plants for a Future n.d.).
Pre-treatment: Cold stratification for 2 to 3 months under moist conditions (Elliot 2003).
Direct Seeding: Can be direct seeded.
Seed Rate: Seed at 1.1 to 2.2 kg PLS/ha (Granite Seed and Erosion Control n.d.).
Planting Density: 4,250 to 12,000/ha (GardenGuides.com n.d.). Oregon Department of Environmental Quality (n.d.) recommends mass plantings (large clumps) of plugs with a minimum size of 15 cm.
Plant in fall 2.5 to 5.0 cm deep (Hansen 2012). GardenGuides.com (n.d.) recommends minimum planting soil depth of 30 cm. Soil should be kept saturated with no more than 15 cm of standing water

until plants are rooted and over 38 cm tall (North Fork Native Plants n.d.).
A sod containing *S. microcarpus* can be planted in water depths up to 25 cm and can tolerate depths up to 30 cm after the first growing season (North Fork Native Plants n.d.).
Rhizome cuttings should be planted 30 to 45 cm apart (Elliot 2003).
Vegetative Propagation: Collect rhizomes while plant is dormant in winter (Elliot 2003).
Micro-propagation: No literature found.
Greenhouse: Sow seed in a cold frame as soon as it is ripe in a pot standing in 3cm of water. Only just cover the seed with soil. The seed usually germinates fairly quickly. Prick out the plants when large enough to handle and plant out in their permanent positions in early summer. Division in spring is easy; larger divisions can be planted out direct into their permanent positions. Pot up the smaller divisions and grow them on in a lightly shaded position in a cold frame, planting them out once they are well established in the summer (Plants for a Future n.d.).

Aboriginal/Food Uses

Food: Roots and stem are rich in starch and can be eaten raw or cooked. The pollen is rich in protein and can be added to flour when making bread (Plants for a Future n.d.).
Medicinal: Poultice of roots was applied to abscesses (Mechling 1959, Plants for a Future n.d.).
Other: Fresh green rushes were woven into mats, mattresses and baskets (Hansen 2012, Marles et al. 2000).

Wildlife/Forage Usage

Wildlife: Birds frequent stands and muskrats and amphibians seek refuge in the dense growth (Hansen 2012). Provides food and cover for fish, waterbirds, song birds, small mammals and ungulates (North Fork Native Plants n.d.).
Livestock: Valuable forage for livestock (Hale et al. 2005). When healthy, these plant communities can provide tonnes of forage per hectare compared to kilograms per hectare in nearby upland areas (Hale et al. 2005).
Grazing Response: Decreases under heavy grazing (Hale et al. 2005).

Reclamation Potential

Rhizomatous habit makes *Scirpus microcarpus* good for soil stabilisation in reclaimed pond areas (Lady Bird Johnson Wildflower Center 2007). Can re-establish quickly when disturbance is removed (Hale et al. 2005). Considered invasive – once established can outcompete, displace or overrun other species (Jepson Herbarium n.d.).
Olds College (n.d.) has planted *S. microcarpus*, along with *S. acutus* and *S. validus*, in one of three demonstration wetland polishing ponds.

Commercial Resources

Availability: Seed is widely available.
Cultivars: No literature found.
Uses: No literature found.

Notes

Synonyms *S. microcarpus* J. Presl & C. Presl var. *longispicatus* M. Peck, *S. microcarpus* J. Presl & C. Presl var. *rubrotinctus* (Fernald) M.E. Jones, *S. rubrotinctus* Fernald (USDA NRCS n.d.).
S. microcarpus is listed as 90% intact (less occurrences than expected) in the Alberta oil sands region (Alberta Biodiversity Monitoring Institute 2014).
Leaves are sharp – plant was called "cut-grass" by some First Nations groups (Hansen 2012).

Photo Credits

Photo 1: Wikimedia commons [Accessed August 20, 2012].
Photo 2: Matt Lavin 2007.

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