

*Scirpus microcarpus* J. Presl & C. Presl in C. B. Presl, PANICLED BULRUSH, SMALL-FRUITED BULRUSH. Aquatic perennial herb, emergent, clonal, rhizomatous, fibrous-rooted, with unbranched stem and  $\pm$  widely spaced shoots from rhizome,  $\pm$  erect, in range 70–110+ cm tall; shoots with many basal leaves and 3–12 V-folded cauline leaves, brittle when dry, glabrous, lacking axillary bulblets; rhizomes horizontal, covered with scales (reduced sheathing leaves) and fibers of degraded leaf sheaths, the scales with open sheaths, brown with dark reddish brown parallel veins, margins not overlapping, the bladelike portion appressed, ovate, 3–12 mm long, with central veins converging to an acute to acuminate or short-pointed at tip; adventitious roots not obviously nodal. **Stems (culms):** 3-sided with rounded edges, < 10 mm diameter; internode solid and white or hollow by splitting, in  $\times$ -section with a cylinder of many parallel air canals just beneath tough cover. **Leaves:** alternate tristichous, simple with sheath; sheath open (basal leaves) and closed (cauline leaves), when closed cylindric to  $\pm$  3-sided, typically < 70 mm long, tough, green or reddish; only basal leaves with a terminal, ligulelike projection (contraligule) opposite blade, contraligule on upper surface at blade base = a semicircular to semielliptic arc, protruding to 0.2 mm above blade surface, membranous brownish and sometimes minutely ciliate on slightly convex to concave free margin, sheath with conspicuous air chambers; blade linear, 230–900+  $\times$  5–15(–20) mm, the widest at base, V-folded changing to flat above midblade, minutely toothed on margins from base to tip, parallel-veined with conspicuous midrib slightly raised on lower surface, smooth and  $\pm$  glossy. **Inflorescence:** spikelets, in terminal, open, umbel-like, hemispheric to inversely conic arrays, array to 90  $\times$  140 mm, formed by a condensed, tristichous spiral of many umbel-like cymes and some simple cymes terminated by a tight cluster of spikelets, each spikelet 14–21-flowered, bracteate, glabrous; branches (rays) of 1–3(–4)-order, each subtended by a bract + a closed sheath (prophyll); bract subtending each primary ray leaflike, 45–220 mm long, those of inner rays progressively reduced to 2.5 mm long and similar in shape and form to spikelet scales, minutely scabrous on margins; prophyll 2.5–25 mm long, the longest on the outermost primary ray and the shortest on ultimate rays, 8–23-veined, with overlapping margins, truncate to rounded or acute at tip sometimes with short hairs; primary rays ascending to spreading, variable in length within same inflorescence, progressively shorter from the outermost cyme inward, 5–170 mm long, dark green, commonly arched outward on the longer ones, smooth at base and  $\pm$  hemicylindric changing to having 1–3 shallow grooves or  $\pm$  indented (sulcate) approaching tip, minutely scabrous on ridges, terminated by a single spikelet on a short ray or by a tight cluster of 10–15 spikelets subtended by 1–15 secondary rays; secondary rays repeating pattern of primary rays but reduced, 5–75 mm long, sulcate and minutely scabrous, the shorter ones commonly terminating in a single spikelet, others terminating in a dense cluster of 7–10 spikelets subtended by 0–7 3-order axes (tertiary rays); tertiary rays 10–25 mm long, terminated by 1–10 spikelets subtended by 0–1 4-order axes (quaternary rays). **Spikelet:** ovoid to lanceoloid, 2.5–5  $\times$  1.1–1.6 mm, with helically alternate flowers, bracteate, glabrous; bractlets (floral scales) overlapping and each cupped over flower, upper 1–3 bractlets commonly lacking flowers, bractlet broadly ovate, 1.3–1.9  $\times$  0.9–1.1 mm, membranous except for a green narrow-triangular area extending from base to tip, minutely purple-speckled above midpoint, inconspicuously fringed on margins above midpoint, sharply pointed at tip, deciduous. **Flower:** bisexual; **perianth** of (3–)4–6

bristles, somewhat appressed to ovary, threadlike and curled (straight), in range 0.7–1.3 mm long, white sometimes aging red-tipped, with downward-pointing barbs from base to tip, persistent; **stamens** 2, free; filaments flat, 1.3–1.5 × ca. 0.15 mm, whitish aging to light reddish brown; anthers exserted from bractlet or not, basifixed, dithecal, 0.8 × 0.25 mm, ± light yellow, longitudinally dehiscent; pollen translucent light yellow; **pistil** 1; ovary superior, ovate to obovate and somewhat lenticular, ca. 0.7 mm long, greenish, 1-chambered with 1 ovule; style exserted, reddish brown, 2(–3)-branched from below midpoint, the branches curved, papillate-hairy and stigmatic on all surfaces. **Fruit:** achene, falling free from bractlet, ovate to obovate in outline and lenticular to plano-convex, 0.7–1.3 × 0.8–1 mm, pale yellowish to pale tan or whitish, somewhat glossy and sometimes with minute blisters on surface, with persistent perianth bristles 1–1.3× length of fruit. Early August–late September.

Native. Robust perennial herb growing in small patches at several localities along creek bed and pond margin. *Scirpus microcarpus* is a tall sedge with numerous cauline leaves. The rhizome of this species is often described as having conspicuous nodes and internodes; close examination of our materials instead suggests that the horizontal axis is not one internode but instead a series of closely spaced nodes and internodes bearing scales that are short-lived, thus superficially resembling a long internode. Achenes of *S. microcarpus* are pale in comparison with most other sedges.

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