

## Vascular Plants of Williamson County

### *Eleocharis quadrangulata* – SQUARE-STEMMED SPIKE-RUSH [Cyperaceae]

*Eleocharis quadrangulata* (Michx.) Roemer & Schult., SQUARE-STEMMED SPIKE-RUSH. Perennial herb, emergent aquatic, clonal, rhizomatous, fibrous-rooted, overall appearing cespitose, 1–several erect (leaning when flooded) shoots for each rhizome node, in range 40–90 cm tall (including submersed portion); shoots with prophyll and 2 basal leaves, glabrous, not glaucous; rhizomes horizontal, 2–3 mm diameter, white, internodes to 90 mm long, ensheathed by a firmly attached scale at each node = closed sheath, the scales alternate distichous, 6–11 mm long, white but with purple above midpoint and along split, with slender point at tip; adventitious roots several from base of each aerial shoot. **Stems (culms):** submersed cylindric to rounded 3-sided, to 4 mm diameter, above water green and upper portion 3-sided (sterile shoot) or 4-sided (fertile shoot), internally spongy having a network of large air spaces (aerenchyma) with interrupted septa. **Leaves:** alternate, = bladeless sheath; prophyll nearly open and sheathing, triangular, < 70 mm long, white often with purplish red veins; sheaths closed, the lowest sheath to 90 mm long, free portion appearing acuminate-ovate to 7 mm long, white with purple veins, second sheath to 300–350 mm long, with many longitudinal veins and with vein bridges between them, white below water and greenish above water. **Inflorescence:** spikelet, solitary and terminal, splitting through leaf sheath, cylindric, > 20–40 × 2.5–3 mm, 40+-flowered, bracteate, bractlets (floral scales) helically alternate and shinglelike, the lowest 1–3 bractlets without flower, above each bractlet subtending a sessile flower, glabrous; peduncle = shoot length, green, approaching spike trapezoidal in ×-section with 2 ridges and channeled to bract tip; bract subtending spikelet (involucral bract), continuous with stem and not attached to rachis, nearly or completely sheathing, obtuse, to 2 mm long, thickly herbaceous and green with membranous margins, having many fine parallel veins on herbaceous portion, membranous margins to 1 mm wide, orangish between membranous margin and herbaceous base, obtuse at tip; first bractlet subtending aborted flower (lacking flower), to 4.5 mm long, ca. 15-veined; bractlet of fertile flower at least 1/2-encircling rachis, tightly appressed, ovate and cupping flower, 5–5.5 × 4 mm, light green in center, orangish between membranous margins and green tissue, vein not raised, obtuse to rounded at tip. **Flower:** bisexual, ± radial, sessile, mostly concealed by bractlet; **perianth** of 6–7 bristles fused in ring at base, unequal, 1–3 mm long some > fruit, colorless aging orangish, ascending and wavy, with backward-pointing short barbs and minute hook at tip, persistent during fruit development; **stamens** 3, free, included; filaments 0.6–0.8 mm long, white; anthers basifixed, dithecal, linear, 1.7–2.5 mm long, in range pale yellow (straw-colored), with appendage 0.2 mm long at tip, longitudinally dehiscent; pollen pale yellow; **pistil** 1; ovary superior, narrowly fusiform to ellipsoid, ± 0.6 mm long, green, 1-chambered with 1 ovule; style to 13 mm long, narrowly conic at base (0.3 mm) and distinct with a constriction above ovary aging as a tubercle, above tubercle unbranched ca. 4 mm long then (2–)3-branched, the branches with spreading short papillate hairs along entire length, stigmatic, ascending and mostly exerted from bractlet, slender, to 8 mm long, white. **Fruit:** achene having persistent tubercle (stylar) at top, 1-seeded, fruit body obovoid, ± 2.2 × 1.5 mm, glossy brown, minutely pebbly on surface with pits (collapsed cells) in longitudinal rows; tubercle ca. 0.5 × 0.4–0.5 mm, brown, ± wrinkled.

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