

*Schoenoplectus acutus* (Bigel.) Å. Löve & D. Löve var. *occidentalis* (S. Watson) S. G. Smith. COMMON TULE. Aquatic perennial herb, emergent, with photosynthetic stems, clonal, in dense, mostly monospecific patches, rhizomatous, fibrous-rooted, unbranched from rhizome, ascending to arching, in range 150–400 cm tall; shoots with conspicuous photosynthetic stems and 2–5 sheathing basal leaves with upper 1–2 having a short green blade, glabrous; rhizome horizontal, mostly 40–100 mm depth, to 20 mm diameter, covered with black to brown or reddish brown, fibrous scales, the scales triangular, 5–20 mm long, acute to obtuse at tip, punctured by blackish nodal adventitious roots, flesh white with tannish core of vascular tissue. **Stems:** cylindric throughout or upper stem oval in  $\times$ -section, 6–10 mm diameter at widest part just above ground level, long-tapered from the widest part to tip, tough, dull bluish green, faintly finely striped having fibrous strips alternating with parallel strips of stomates; surface layer  $\pm$  tough, with whitish, spongy and airy internal tissue (aerenchyma). **Leaves:** alternate tristichous, sheath and without blade (cataphylls) to nearly bladeless; sheath closed, 10–400 mm long (increasing from the oldest to the youngest leaf), rupturing as stem expands leaving persistent fibers, dark brown at base and green on exposed surfaces aging tannish or brown, parallel-veined with conspicuous horizontal bridges forming rectangles, membranous on unruptured margins; ligule present on leaves with blade, membranous and continuous with sheath margins, rounded or truncate, < 0.5 mm long; blade opposite stem angle, appressed, acute-triangular, 4–40  $\times$  1.5–4 mm, short-scabrous. **Inflorescence:** panicle of sessile spikelets, terminal and actually appearing terminal when having an inconspicuous stemlike inflorescence bract or sometimes appearing lateral when inflorescence bract longer and erect, with 10–15 ascending to arching principal branches, principal branches unequal, 10–80 (–210) mm long, with 3+ orders of branching, successive branches progressively shorter, ultimate branchlet bearing 1 terminal spikelet often with 2–4 spikelets sessile or on very short ultimate branches forming a condensed cluster; inflorescence bract subtending panicle narrowly triangular, (10–)17–50(–80) mm long, bluish green like stem, striped and with brown-membranous, commonly with short-scabrous margins, upper groove grayish; bract subtending branch sheathlike, tannish, often ciliate, paired with prophyll in axis, the prophyll as long as bract, faintly 2-veined and 2-lobed; branchlet axes hemi-cylindric, 0.5–2 mm diameter, tough but flexible, sometimes slightly expanded below head, bright green, entire to scabrous on margin, glabrous; peduncle of spikelets absent. **Spikelet:** cylindric-ovoid, 4–17  $\times$  2–3.5 mm, with 20+ flowers, flowers and bracts helically alternate, bracts overlapping; bract subtending spikelet and bractlet subtending flower broadly ovate, 2.5–4  $\times$  2–2.6 mm, 1-veined, green but soon becoming straw-colored with orange to red markings or papillae, membranous and short-ciliate on margins with fine wavy hairs above midpoint, with notch 0.3–0.5 mm at tip and short-awned, the awn in notch extending from midvein, narrowly triangular, 0.5–1 mm long, straight to curved,  $\pm$  S-shaped, or twisted, papillate-pubescent with short orange-brown or reddish hairs. **Flower:** protogynous; **perianth** of (3–)5–7 bristles, 1.8–2 mm long, whitish to colorless, tapered from base to tip, 0.2 mm wide at flattened base and barbed on margins with downward pointed hairs,  $\pm$  persistent around developing fruit and  $\leq$  fruit, aging orange-brown; **stamens** 3, free, exserted; filaments linear and flat, 2.5–3 mm long, whitish to pale yellow, on bractlet side of ovary; anthers basifixed, dithecal, linear, ca. 1.7–2 mm long, light yellow, longitudinally dehiscent; pollen light yellow **pistil** 1, ca. 3 mm long; ovary

superior, hemi-obovoid with short knob and mostly flat on rachilla side, ca. 1 mm long, glossy green, 1-chambered with 1 ovule; style flat, red, 2-branched from base or midpoint or unequally 3-branched, the branches exerted and stigmatic. **Fruit:** achene, compressed-obovoid, in range  $2\text{--}2.2 \times 1.4\text{--}1.5$  mm (including persistent base of style 0.3 mm long),  $\pm$  glossy dark greenish brown and smooth to duller blackish and minutely beaded, biconvex to slightly convex on 1 face next to rachilla and convex on outer face with vertical groove or slight ridge. Late May–mid-August.

Native. Emergent aquatic perennial herb occurring at isolated localities, most notably at Malibu Lagoon in salt marsh but also in small patches inland where there is standing water or springs. *Schoenoplectus acutus* var. *occidentalis* typically has cylindrical stems and minute teeth along the branches and branchlets of the inflorescence. A definitive feature of this tule is that it typically has at least five perianth bristles, which are retrorsely barbed. Another feature that seems to be consistent is that the inflorescence bract is less than twenty millimeters long and which becomes brown, so that the inflorescence really appears to be terminal, whereas in *S. californicus* the inflorescence bract is erect and twenty to fifty millimeters long, so that the inflorescence appears to be lateral.

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