

Vascular Plants of Williamson County

Fuirena simplex var. *simplex* – PERENNIAL PORCUPINE SEDGE [Cyperaceae]

Fuirena simplex Vahl var. *simplex*, PERENNIAL PORCUPINE SEDGE. Perennial herb, rhizomatous, fibrous-rooted, several(–many)-stemmed at base, cespitose, not branched above ground level below inflorescence, principal shoots ascending, in range with shoots arising erect from rhizome then ascending to 40 cm tall; shoots with 1–2 basal leaves on emerging shoot from rhizome and to 9 cauline leaves, vegetative portion mostly glabrous but short-hairy on sheaths of basal leaves and in inflorescence, above ground level blades the shortest increasing upward; rhizomes condensed and erect below a cluster of several shoots horizontal to 6+ mm diameter and short-creeping 3–6 mm diameter, white, creeping rhizomes with internodes 1–5 mm long and having a triangular scale (cataphyll) to several mm long aging with reddish parallel veins converging at tip; adventitious roots formed at base of emergent shoots on rhizomes. **Stems:** cylindrical and white where covered by leaf sheaths, above the uppermost leaf sheath several-angled, conspicuously ridged, and green, to 3 mm diameter, aboveground internodes increasing upward, green stem (peduncle) with about 15 ridges descending from inflorescence, stem axis easily detached at each node but internodes tough, glabrous except with abundant short-hispid hairs approaching inflorescence; internodes solid; when sheath removed each cauline node having an ovate, flattened, white, axillary bud. **Leaves:** helically alternate, simple with sheath; sheath closed to top, tubular, low-ridged but the uppermost sheath angled and ridged, colorless membranous tissue with green veins, mostly glabrous but sometimes with some hispid hairs; ligule + contraligule united as an oblique ring below blade, membranous and sparsely short-ciliate, 0.8–2.5+ mm long; blade belowground diminutive, ± deltate, absent to 3 mm long, aboveground acuminate-triangular linear long-tapered to tip, in range < 30–140 × < 3–7 mm, entire or with minute hairs on margins, blunt at tip often brown and not scabrous, parallel-veined with principal veins somewhat sunken on upper surface, often short-ciliate on margins, glabrous or sparsely short-hairy. **Inflorescence:** spikelets, in terminal panicle having 1–2 condensed clusters at top of shoot, on robust shoot sometimes also having a cluster on an axillary shoot from the uppermost cauline leaf, cluster composed of 3–10 alternate sessile spikelets, cluster at maturity 15–25 mm across, each spikelet conelike appearing spinescent, of 30–60+ helically alternate bractlets hiding flowers, flowering from base upward, bracteate, each bractlet with an ascending later spreading and arching awnlike tips (cusps), short-hirsute with some longer hispid hairs, bractlets at tip often lacking flowers; peduncle = the uppermost stem of shoot; bract at the base of inflorescence (top of peduncle) leaflike lacking sheath, spreading, with a prophyll in axil surrounding axis, prophyll erect, closed ca. 1 mm, to 5 mm long, exposed surface whitish but blackish approaching tip, densely short-hairy longer hairs and raised veins, subtruncate to rounded and ciliate at tip, inner surface having to 15 parallel veins with low raised veins and glabrous; axis of 1 cluster short, of a second cluster axis to 80 mm long, ridged and green, hairy; above basal bract axis unequally 2-forked from node, the more slender and shorter to the subaxillary cluster of spikelets, the longer axis if present ridged and angular, to 80 mm long, green, short-hirsute or with some longer hairs especially approaching the terminal cluster; bract subtending upper cluster like inflorescence bract but with shorter blade with 3 veins. **Spikelet:** body ± broadly lanceoloid to narrowly ovoid, in range to 14 × 5 mm + ascending long-tapered linear, subterminal cusp, with sterile bracts

subtending spikelet usually 2 and distichous (glumes); rachis hidden by tightly overlapping bractlets; **glumes** unequal, lower portion somewhat inflated with raised veins, lower glume lower portion cupped-obovate, ca. 3 mm long, colorless tissue and green central zone aging blackish red, short-hairy, upper portion ascending, subterminal, bladelike, to 20 mm long, green, 3-veined or 5-veined, upper glume on inner side of spikelet lacking upper portion, lower portion mostly roundish and colorless at top and ciliate on margin; bractlet of fertile flowers (flower scale) appressed, lower portion cupped-obovate and somewhat keeled, ca. 3×2.5 mm (flattened; when cupped = 2 mm across), 11-veined, 13-veined, or 15-veined with veins raised on outer (lower) surface, initially mostly colorless with green stripes between the central 5 veins, after pollination aging with red pigment in cells above midpoint, cusp diverging ca. 0.15 mm from margin, ascending somewhat arching, long-tapered, ca 3 mm long, green with 3 raised whitish veins on lower surface (from the 3 central veins of lower portion) and flat on upper surface, the cusp 0.25–0.3 mm at base, scabrous on margin and glabrous; persistent. **Flower:** bisexual, radial, ca. 2 mm across; **sepals** 3 in whorl, ascending, bristlelike, at anthesis 1.5 mm long increasing to 2.8 mm long in fruit, colorless aging brownish above midpoint, backward-barbed above midpoint (retorse); **petals** 3 in whorl, ascending, clawed (stipitate), colorless, claw cylindric, an anthesis 0.6–0.7 mm long, limb broadly oblong-rectangular to slightly hourglass-shaped, at anthesis 0.8×0.5 mm, translucent, lower half thin with 3 raised veins diverging at base, upper half fleshy and bulbous forming 2 low lobes at top, from notch with erect bristle to 0.5 mm long backward-barbed; **stamens** 3, free, opposite bristles; filaments ascending, 4 mm long, colorless, 1-veined, flattened front-to-back and wider above midpoint; anthers exerted from top of bractlet, basifixed, dithecal, 0.9–1.2 mm long, pale yellow with colorless short point at top, longitudinally dehiscent; pollen yellowish; **nectary** absent; **pistil** 1, short-stalked (stipe), at anthesis 0.2 mm long increasing 2–3 \times in fruit; ovary superior, elliptic 3-sided weakly angled, at anthesis $\pm 0.5 \times 0.3$ mm, colorless faces and 3 greenish edges, glabrous, 1-chambered with 1 ovule; style with 1 mm exerted from bractlet, 3 mm long, 3-forked at midpoint, greenish at base and mostly colorless, exerted portion aging orange, lower portion somewhat swollen and minutely bumpy (vestigial papillate) and persistent (beak), the branches arising side-by-side from flattened axis, papillate. **Fruit:** achene, stalked (stipe), conspicuously 3-sided and 3-angled (trigonus) rhomboid with well-defined edges, ca. 0.7×0.6 mm, glossy reddish brown to light brown faces with paler edges, at top with a beak = a persistent portion of the minutely bumpy lower style; stipe to 0.6 mm long; dispersal unit firmly attached to 2 whorls of perianth segments ca. 2.7 mm long, outer whorl of 3 bristles (sepals) backward-barbed aging reddish brown, inner whorl of 3 ascending, clawed petals translucent with fleshy limbs above midpoint \pm rectangular short 2-lobed top having an erect, golden-brown bristle ca. 0.5 mm long from notch, limb 1–1.3 \times 0.5 mm.

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