

Vascular Plants of Williamson County
Carex frankii – FRANK SEDGE [Cyperaceae]

Carex frankii Kunth, FRANK SEDGE. Perennial herb, rhizomatous, fibrous-rooted, many-stemmed at base from rhizome, densely cespitose, in range 40–80 cm tall with inflorescence partially concealed by leaves within the canopy; monoecious; shoots with basal leaves and several cauline leaves, foliage tough and scabrous, glabrous; rhizomes shallow (to 5 cm deep), horizontal, short-creeping, cylindrical, to 7 mm diameter, off-white but covered by cataphylls purple-red aging black, the cataphylls acute at tip, < 6–15+ mm long, veins red and tissues aging blackish with raised veins, decomposing with fibrous veins persistent, older rhizome yellowish with minute red flecks (= individual, elongate surface cells having red pigment), nodes conspicuously wavy around axis and internodes mostly 8–12 mm long, internal tissues white having a cortex splitting into air chambers surrounding the solid central stele with many vascular bundles; adventitious roots mostly from nodes at base of each emerging shoot. **Stems (culms):** conspicuously 3-sided with rounded edges, internodes to 6 mm diameter (faintly constricted at nodes), smooth, lower stem whitish and upper stem green; internodes solid, with long air canals just beneath the epidermis. **Leaves:** alternate tristichous, simple with sheath; sheath closed at top by membranous tissue truncate (slanted) and to 6 mm across, closed portion to 120 mm long, membranous tissue (sheath front) triangular to 25 mm long; ligule low-roundish, moundlike or membranous 0.5–1 mm long and minutely jagged on margin; blade folded somewhat upward from midrib (immature blades V-shaped in \times -section and wide leaves aging inversely W-shaped), strap-shaped long-tapered to tip, < 200–720 \times 7–13 mm (wider if flattened), the shortest leaves associated with inflorescence, tough (fibrous), minutely toothed on margins (especially above midblade) and with teeth upward-pointing along several principal veins of upper surface and midrib on lower surface approaching tip, parallel-veined with veins somewhat sunken on upper surface and midrib conspicuously raised on lower surface, stomates between veins on lower surface. **Inflorescence:** spikes with unisexual flowers, in a terminal, racemelike panicle, pistillate spikes in range (2–)4–6 stalked and lateral + commonly 1 stalked staminate spike terminal at the top (sometimes the nearest lateral spike also only staminate), each lateral spike commonly having at least several flowers of the opposite sex + sterile flowers, in range lateral spikes mostly pistillate but often with ca. 25 staminate-like flowers crowded on the uppermost 3 mm of the rachis but sometimes upper half of spike = staminate (gynecandrous), bracteate, somewhat scabrous and glabrous (no hairs on any part of the shoot); bract subtending peduncle of diminutive long-acuminate leaflike tapered from base-to-tip, with short sheath, of the lowest spike blade \gg panicle, of successive lateral spikes $>$ panicle decreasing upward and with fewer veins, of the staminate spike slender, linear, 1-veined, and also $>$ peduncle + spike, minutely scabrous on margins; peduncle with closed, membranous prophyll tightly appressed, to 17 mm long decreasing upward, weakly 2-ribbed (never keeled) scarcely 2-lobed with shallow notch top and having a V-shaped sinus ca. 3 mm deep on other side; peduncle ascending (never drooping), of the lowest spike to compressed, 62 \times 1.5 \times 0.6 mm but mostly < 25 mm long, green, smooth. **Staminate inflorescence:** spike, cylindrical, \pm 30 \times 5–6 mm, mostly 100+-flowered, flowers helically alternate densely overlapping in tight gyres (short, ridged internodes) and partially hidden by scales (“bractlets”), at base of spike several scales at sterile nodes to 20 mm long including the lower portion 4–5 mm

long with membranous wings to 1.2 mm wide along a green axis, upper portion flattened-slender and awnlike with scabrous margins, subtending fertile flowers ascending, mostly 5–10 mm long with winged lower portion > slender upper portion, during flowering with spreading and ascending exerted anthers; perigynium absent. **Staminate flower:** **perianth** absent; **stamens** 3, free, conspicuously exerted from scale; filaments 5–7 mm long, colorless, glabrous; anthers fully exerted and often divergent from spike, basifixed, dithecal, linear, 2.5–3.1 mm long, pale yellow, longitudinally dehiscent; pollen whitish to pale yellow aging red; **pistil** absent. **Pistillate inflorescence:** spike (lateral), to 200-flowered, cylindric-ellipsoid at flowering with ascending awns (spreading in fruit), in range mostly 25–35 × 11–13 mm including awns, flowers helically alternate with radiating-spreading sacs containing pistillate flowers (perigynia, each perigynium = a modified prophyll containing 1 flower) closely packed, bracteate; lowest bract approaching spike clasping peduncle, acuminate-ovate, to 6 × 3 mm, green portion parallel-veined with wide membranous margins + tip lacking veins; scales overall slender, variable in length, at sterile lower nodes mostly 11–16 mm long, lower portion green tissue with a pair of colorless wings to 4.5 × 1 mm, green axis flat and 3-veined, above wings upper portion flat and narrowed to 1(–2)-veined green awn scabrous on colorless margins and with stomates on lower (outer) surface of green tissue, at fertile nodes scales 1–8 mm > perigynium, variable and not graded along spike, lower portion < upper portion, at upper nodes scales erect and 5 mm long decreasing to 3 mm long at tip of rachis and not scabrous or weakly so; perigynium in range mostly 4.5–6 mm long included inflated lower portion and narrow upper portion (“beak”), lower portion top-shaped (obovoid but compressed on outer face), < 2.5–3 × to 2.5 mm, light green with faint parallel veins, upper portion short-flared at base and slender above tapered to extremely narrow orifice, 1.4–2.2 mm long, light green, having a pair of colorless ascending teeth 0.2–0.45 mm long at tip through which stigmatic style branches exerted. **Pistillate flower:** **perianth** absent; **stamens** absent; **pistil** 1, short-stalked; ovary superior, obovate in outline and 3-sided (trigonous), ca. 0.5 × 0.4 mm, greenish, 1-chambered with 1 ovule; style straight, 3 mm long, pale green, not enlarged at base, 3-branched near top, the papillate branches exerted above perigynium and white-papillate aging red. **Fruit:** achene fully enclosed within perigynium, perigynium = dispersal unit; perigynium obovoid and aging inflated, in range sac ca. 2.5 × 2.5 mm and pale green, ± smooth, the upper portion 2.5 mm long with 2 slender teeth at top; achene short-stalked, trigonous with concave faces, 1.4–2 × 1–1.4 mm, brown; lacking style.

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