

Cyperus odoratus L., RUSTY FLATSEGE. Annual (short-lived perennial herb), rhizomatous, fibrous-rooted with adventitious roots at base of each shoot, rosetted, several-stemmed at base, shoots unbranched, ascending to erect with terminal inflorescence, in range 6–70 cm tall; shoots with several (–5) basal leaves and typically 5–9 leaflike inflorescence bracts subtending principal branches (primary rays), leaves and inflorescence bracts minutely scabrous with short upward-pointing teeth; rhizomes short and stout; adventitious roots ensheathed in a loose, ± papery layer, not reddish. **Stems (culms):** 3-sided with rounded edges, to 8 mm diameter, tough, green, ± concave and smooth on faces; solid and lacking wide air canals, with many fibrous vascular bundles. **Leaves:** alternate tristichous, simple with sheath; sheath closed and membranous across throat, 25–150 mm long (increasing upward), becoming scarious and straw-colored with brownish, slightly raised parallel veins; ligule (contraligule) absent; blade sharply keeled base to tip (opposite stem edge) and mostly inversely *W*-pleated (*V*-folded), strap-shaped and linear, (15–)70–350+ × 5–10 mm, short on first leaf increasing upward, the widest at base, minutely toothed and finely scabrous on margins, parallel-veined, semi-glossy, with widely spaced teeth along several principal veins. **Inflorescence:** leafy paniclelike and umbel-like arrays, terminal, with radiating spikelets at ends of axes, array appearing like a compound umbel with (4–)5–9(–10) ascending, axillary primary rays, each primary ray subtended by a leaflike inflorescence bract and also a closed sheathing bract (prophyll), at tip of primary ray bearing an umbel-like array 15–20 mm across, at top of array with 5–10 lateral, spikelike branches, the spikelike branches 7–9 mm across, cylindric in outline and bottlebrushlike with a rachis visible and spikelets radiating at 75–90°, glabrous; inflorescence bracts alternate tristichous twisting slightly, mostly spreading but ascending in center, unequal, leaflike but sheathless and fused to axis, linear, 30–600+ × < 15 mm, the widest at base, successively reduced and narrower from base to tip of array, each bract 1–4× > ray, at least the 3 longest bracts >> reproductive canopy, mostly inversely *W*-pleated, scabrous on margins and along principal veins; primary prophyll = a closed sheath above pulvinus, to 25 mm long, << ray length, green aging scarious, 1–2-keeled to above midpoint with 2 erect, acuminate teeth, 1–2-winged above midpoint, many-veined, becoming reddish or purplish above pulvinus; primary ray axis (including rachis) with pulvinus at base, compressed front-to-back forming lateral edges, to 95 mm long, the pulvinus bulbous and white; bract subtending secondary ray resembling inflorescence bract and leaflike but reduced, lanceolate-linear to linear, to 27 mm long but some noticeably > spikelets, successively reduced and narrower from base to tip of 2-order units, minutely toothed; secondary prophyll = closed sheath 2–4 mm long, 1-keeled, ribbed on each side and 2-toothed on inner side; secondary ray axis (including rachis) 3–7 mm long, irregularly ridged and grooved; axis of ultimate branchlet ± circular to semicircular or elliptic in ×-section, 12–35 mm long, with white pulvinus; ultimate branchlet (third-order) with furrowed rachis, having (5–)20–60 alternate, spreading and neatly radiating spikelets (not crowded). **Spikelet:** 4-order, 5–10-flowered, ± cylindric, in range 7–12 × 0.7–1.2 mm, with sessile flowers, sterile and pointed at tip; **glumes** 2 (bracts subtending spikelet), lower glume long-acuminate lanceolate upward broadly elliptic and reduced, 1–2 mm long, upper glume broader and sheathing axis, membranous, strongly keeled; rachilla with colorless pulvinus at base on upper side, internodes ± 1.3 mm long, winged with wing enveloping flower, becoming jointed; bractlets (floral scales) alternate distichous,

appressed, overlapping, and sheathing flower, ovate, 2–2.5 mm long, green aging brownish on central area and membranous on margins, obtuse or minutely pointed at tip, ca. 8-veined with veins aging more pronounced, glabrous, persistent. **Flower:** bisexual; **perianth** absent; **stamens** 3, free, exserted; filaments threadlike and delicate, 1.5–2.5 mm long, translucent; anthers basifixed, dithecal, 0.3–0.5 mm long, light yellow, longitudinally dehiscent; pollen light yellow; **pistil** 1; ovary superior, unequally 3-sided obovoid, \pm 1 mm long, greenish, 1-chambered with 1 ovule; style \pm 1.7 mm long, 3-branched, the branches exserted, unequal, threadlike and irregularly spreading, ca. 1 mm long. **Fruit:** achene, released by spikelet breaking at nodes into dispersal unit of rachis internode + fruit + bractlet of next node, segment with thickened base and subtending bractlet attached and sheathing; achene 3-sided obovoid, (1.2–)1.5–1.9 mm long, light brown, edges rounded, with the flattest face next to axis. Mid-July–mid-October.

Naturalized. Annual sedge occurring occasionally in disturbed habitats throughout the range. *Cyperus odoratus* has a set of basal vegetative leaves and typically five to nine inflorescence bracts without sheaths subtending the primary rays of the terminal inflorescence. This species has markedly flattened branchlets with spreading, cylindrical spikelets. Rusty flatsedge is distinctive among all sedges in range in that the spikelet breaks into dispersal units (the rachis internode and achene plus the bractlet of the next node), a condition referred to as jointed or articulated, reminiscent of the dispersal strategies of certain grasses (*Aegilops cylindrica* and *Parapholis incurva*).

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