

Vascular Plants of Williamson County

Ratibida columnifera – MEXICAN HATS, UPRIGHT PRAIRIE CONEFLOWER, WRIGHT PRAIRIE CONEFLOWER [Asteraceae]

Ratibida columnifera (Nutt.) Wooton & Standl., MEXICAN HATS, UPRIGHT PRAIRIE CONEFLOWER, WRIGHT PRAIRIE CONEFLOWER. Perennial herb, with vertical caudex, taprooted and fibrous-rooted, rosetted, (1–)several–many-stemmed at base arising from caudex, in canopy with ascending axillary short often with only 1 leaf and a head on a long peduncle, in range in flower 30–135 cm tall; shoots with basal wintertime leaves and cauline leaves, to 170 mm long, terminal lobe the largest, short-strigose and with sessile glandular hairs mostly in pits, with colorless heads; caudex erect, to 5 mm diameter, woody, with axillary buds of future shoots. **Stems:** ridged, mostly to 5–9 mm diameter, with 3 ridges descending from each leaf, tough, green, internodes to 85 mm long, short-strigose to sparsely short-strigose with upward pointing hairs; solid; lower stem woody, with scars of basal leaves and periderm. **Leaves:** helically alternate, deeply odd-1–2-pinnately lobed having to 14 primary lobes, lower leaves sometimes inconspicuous and often withered, petiolate to sessile (upper cauline leaves), without stipules; petiole of basal leaves broadly flared at base and broadly and shallowly channeled, 15–130 mm long, of cauline leaves decreasing upward, midvein whitish, margins narrow and green, short-strigose with upward-pointing hairs; blade obovate to ovate in outline, to 120 mm long, axis channeled and white having ascending, narrow green edges with lateral lobes arising along edges, with 0–13 lateral lobes mostly paired and subopposite (opposite) to alternate, lobes and sublobes narrowly elliptic or elliptic-linear to ovate in outline, terminal lobe to 75 mm long often with several lobes, principal lobes 1–20 mm wide, straight to sickle-shaped, and lesser lobes to $< 5 \times < 0.5$ mm, acute at tip, lateral lobes asymmetric with trailing edge decurrent and leading edge with white at base of sinus, sublobes to midpoint, pinnately veined often with 2 veins per lateral lobe with the leader vein more prominent, midveins sunken on upper surface and raised on lower surface, surfaces with glandular hairs sunken in pits and short-strigose with upward-pointing hairs, basal leaves not gland-dotted. **Inflorescence:** heads, solitary terminal on canopy branch, radiate, of 5 showy, neuter ray flowers in 1 series and 200+ bisexual disc flowers, flowers helically alternate, tightly packed and \perp in a conspicuous, vertical disc, disc initially conelike increasing to cylindrical, to 30×8.5 –11 mm, head with ray corollas reflexed 15–25 mm across, bracteate; peduncle conspicuously ridged, < 90 –225 \times 1.5 mm, tough, green, short-strigose and with sessile glandular hairs in deep furrows, ridges at top descending from outer phyllaries of involucre; involucre of phyllaries in 2 dimorphic series, green, persistent, outer phyllaries 5, ascending, deltate at base ca. 2.5 mm with acuminate tip ca. 4×1 mm and 1-veined, lower surface short-strigose and with scattered glandular hairs, upper surface glabrous, inner phyllaries subtending ray flowers and mostly concealed, tightly appressed, fan-shaped with thick base, lobes 0.5 – 0.8×0.5 – 1.1 mm and central lobes narrower than lateral lobes, 0.8 – 3×2 – 2.5 mm, short-hairy on exposed surfaces; receptacle cylindrical, 2 mm diameter, tough aging woody, glabrous, with bractlet (palea) subtending each disc flower, paleae separating ovaries, pocketlike, keeled and folded upward over ovary, 3×1.3 mm, lateral faces concealing vertically flattened ovary, short-ciliate on margins, each face with a dark purple-red, oblanceolate (elliptic) resin gland $\pm 1.2 \times 0.35$ mm, outer portion fleshy,

densely covered with whitish and yellow short hairs on top tightly pressing flowers together. **Ray flower:** bilateral, 7–14 mm across (corolla limb); **calyx (pappus)** absent; **corolla** 2–3-lobed (toothed); tube cylindric, 1 × 0.5 mm, white covered with yellow to golden yellow short hairs and at top of tube with a ring of hairs; limb reflexed, ovate to broadly elliptic with V-notched at tip, (7–)12–33 × (4–)8–16 mm, within a population bright yellow and solid, bi-colored with scarlet-crimson at base and bright yellow above midpoint, and mostly crimson-burgundy with margins golden yellow and at tip (dark forms appearing red-brown), ± truncate at base, parallel-veined with to 12-veined at base, upper surface lacking hairs, lower surface short-hairy with nonglandular, upward-leaning hairs denser along veins, the hairs bright yellow (yellow limb) to golden yellow (red limb), with scattered glandular hairs; **stamens** absent; **pistil** 1, apparently sterile; ovary inferior, strongly 3-sided and 3-angled (trigonous), 2 × 1 mm, white, with tufts of hairs along edges above midpoint and on top, 1-chambered; style absent. **Disc flower:** radial, 1–1.5 mm across (corolla lobes), with ovary flattened side-to-side with edges vertically oriented; **calyx (pappus)** of short rim and 2 unequal “awns,” the longer triangular to 0.4 mm long at end of upper edge of ovary, minutely scabrous, the shorter < 0.2 mm long or vestigial; **corolla** 5-lobed; tube 0.25–0.3 mm long, white; throat cylindric, ca. 1.5 × 0.8–0.9 mm, green with greenish panels and 5 purple-red veins to sinuses, glabrous; lobes initially spreading later recurved, triangular cupped downward, green with colorless short hairs or green with purple-red hairs; **stamens** 5, attached at top of corolla tube; filaments 0.5–0.6 mm long, white; anthers exerted, fused into cylinder surrounding style, basifixed, dithecal, 1.5 mm long including appendages, purple-red to burgundy at tip, longitudinally dehiscent; pollen golden; **pistil** 1; ovary inferior, at anthesis truncate broadly oblong strongly flattened, 1 × 1 × 0.4 mm, white, minutely notched at base, short-ciliate on upper edge (adaxial margin), 1-chambered with 1 ovule; style initially included later exerted, 2-branched, ca. 2 mm long and white to fork, the branches widely spreading, 1.1–1.4 mm long, red-purple, flared and papillate at tip. **Fruits:** cypselae (achenes) of disc flowers, abscising with palea, typically with 2 unequal pappus awns, of ray flowers presumed infertile; cypselae body ± biconvex, usually with flat wing on 1 edge (adaxial) short-ciliate, the wing demarcated by short notch at base, 2–2.5 mm long, glossy black but not smooth, lacking wing 1.1–1.4 mm wide, with wing 1.7–2.1 mm wide, with short-ciliate rim at top; longer awn mostly 0.35–0.4 mm long at top of wing; cypselae of ray flower 3-sided, ca. 2 mm long, streaked black and light.

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