

Vascular Plants of Williamson County

Maclura pomifera – OSAGE-ORANGE, HORSE-APPLE [Moraceae]

Maclura pomifera (Raf.) C. K. Schneid., OSAGE-ORANGE, HORSE-APPLE. Small tree, spinescent, with long shoot-short shoot organization, in range to 7 m tall; dioecious; shoots with only cauline leaves on long shoots and short shoots (spur branches), blades lustrous dark green, on vigorous long shoots forming woody spine in axil = determinate short shoot \perp stem, 7–15 mm long, lacking nodes above base, sharp-tipped and reddish at tip, having an axillary bud on 1 side at the spine base; latex milky; bark shallowly furrowed often peeling in stiff strips, dark orange-brown to lighter brown or weathered grayish brown. **Stems:** initially with 3 “ridges” descending from each leaf aging cylindrical, soon woody, on rapidly elongating long shoots conspicuously zigzagged, internodes < 15–50 mm long; short shoots with bud scales at base. **Leaves:** helically alternate, simple, petiolate, with stipules; prophyll of cauline leaf papery, \pm triangular 2 mm long, reddish, flared at base, 2-veined, short-ciliate on margins, short-hairy on lower surface; stipules 1, fused to leaf base, 2-lobed = 2 stipules fused above midpoint, splitting downward, 3–4.5 mm long, 2-keeled connected by membranous tissue, keels green, short-villous; petiole narrowly and deeply channeled, < 30–50 mm long, tough, short-villous on upper side; blade ovate to broadly ovate, < 60–130 \times 25–80 mm, broadly tapered to subtruncate at base, entire and short-ciliate with upward-curved hairs on margins, acuminate to acute at tip, pinnately veined with principal veins slightly sunken on upper surface and raised on lower surface, upper surface smooth, glabrous to glabrate with short-villous hairs along veins and surface initially with minute glandular hairs, lower surface and margins short-villous. **Staminate inflorescence:** headlike or condensed racemes, to 5 per short shoot (spur branches) in early spring after several new leaves, raceme or racemelike panicle, subspheroid to spheroid at top of peduncle, to 15 mm across, 30–60+-flowered, overall pale greenish yellow to pale green, essentially lacking bracts, short-villous; bract subtending peduncle = bud scale; peduncle cylindrical, to 30 mm long, densely short-hairy; rachis flaring wider than peduncle, 5–12 mm long, densely short-hairy; pedicel spreading to ascending, in a cluster often having 1–several branchlets each with 2–3 pedicels, to 5 mm long, whitish, short-hairy, with some fine-stalked glandular hairs. **Staminate flower:** radial, 4–5 mm across; receptacle with tuft of nonglandular hairs; **calyx** deeply (3–)4-lobed; tube short, indistinct from receptacle; lobes at anthesis ascending later spreading, cupped-ovate, 1–1.2 mm long, pale green, short-hairy on outer (lower) surface; **petals** absent; **stamens** (3–)4, free, exserted; filaments ascending, tapered base-to-tip, ca. 3 mm long, translucent, inner (upper) side banded; anthers in bud each cupped by calyx lobe, dorsifixed, dithecal, 0.6–0.8 mm long, pale greenish yellow, longitudinally dehiscent; pollen yellowish; **pistil** absent. **Pistillate inflorescence:** ball-like head of subsessile flowers having a solid spheroidal core, solitary from an axillary bud on a robust, upright, long shoot (branch), on the new shoot arising at ca. 8 nodes from the base of the branch on a stout peduncle subtended by a normal leaf, the peduncle ca. 5 mm long, bracteate; head at anthesis spheric, 20–23 mm + a confusing array of exserted, stigmatic styles, the body consisting of a latex-rich, spheroidal core 12–13 mm completely hidden by hundreds of tightly packed, radiating pistillate flowers 4–4.5 mm long; receptacle with several short hairs between flowers; bractlet subtending flower narrowly ovate and thin pressed between flowers, ca. 1 \times 0.3 mm,

membranous aging brownish. **Pistillate flower:** irregular, 1.5–3 mm across; **sepals** (2–)3–4 not in a whorl, fleshy, mostly wedge-shaped or club-shaped but a narrow tepal sometimes columnar, $4\text{--}4.5 \times 1\text{--}1.5 \times < 1\text{--}1.5$ mm, 1 face (upper surface) concave with membranous margins, glossy light yellow-green changing to whitish at base, puberulent on a edge at top, rounded to truncate on exposed outer face, tepals releasing latex when crushed; **petals** absent; **stamens** absent; **pistil** 1, short-stalked at base of sepals; ovary superior, circular flattened side-to-side, ca. $0.9 \times 0.8 \times 0.25$ mm, whitish, 1-chambered; style 1 conspicuous and 1 vestigial (absent), arising from top of ovary compressed by sepals (not stigmatic 3 mm) and exerted (cylindric and completely stigmatic), exerted portion green and conspicuously papillate, 12–16 mm long, curved or somewhat twisted (never straight); vestigial style appressed to base of fertile style, appearing needlelike, to 1.5 mm long, greenish. **Fruit:** achenes stalked and deeply embedded in fleshy multiple fruit (syncarp), syncarp of hundreds of unfertilized flowers and many flowers with 1-seeded achenes, with copious white latex becoming extremely sticky and adherent to foreign surfaces (waterproof and difficult to dissolve); syncarp spheroid, $90\text{--}110 \times 85\text{--}110$ mm, outer surface brainlike (convoluted) and yellowish green, at maturity having a dry, red-purple, papillate style emergent from center of each fertile flower, floral units irregularly polygonal in outline to 8 mm across, tightly appressed, convolution = fleshy, yellow-green tips of club-shaped sepals and bractlets; outer pulp = calyx, 20–25 mm long, whitish to above midpoint changing to yellow-green approaching tips of sepals, appearing to have cartilaginous partitions; fleshy central core (“receptacle”) spheroid, 45–60 mm across, whitish with, copious latex; stalk of achene flattened, ca. 2 mm wide, whitish with 1 prominent vein; achene somewhat ellipsoid with 1 convex surface and 1 flattish surface or 2 convex surfaces, $8.5\text{--}11.5 \times 4\text{--}5.2 \times 2.5\text{--}3.3$ mm, yellow-orange, oblique at short basal lobes, grooved on 1 edge and low-winged from midpoint on other edge continuous with triangular flaps at top, often shallowly notched at base of style; wall hard, with large embryo and thin seed coat.

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