

Washingtonia robusta H. Wendl., MEXICAN FAN PALM, SONORAN FAN PALM. Tree, evergreen, large-leaved, fibrous-rooted, with 1 trunk, unbranched, erect, in range < 16 m tall (old cultivated specimens > 30 m tall); shoot with crown of green leaves on upper 2 m of axis, with a skirt of pendent and \pm persistent dead leaves eventually blown off by strong winds and leaving ringlike scars, or with persistent, split leaf sheaths; trunk very gradually tapered toward crown and somewhat expanded at base, where exposed dark gray, with shallow, vertical fissures, at base when old having dead remnants of adventitious roots.

Stems: cylindric; solid, fibrous; in \times -section with hundreds of scattered vascular bundles.

Leaves: helically alternate, regularly pleated from a short, stout rachis (costapalmate), deeply palmately split, long-petiolate with an encircling leaf sheath; sheath to 550 mm wide (= stem circumference when leaf developed), reddish brown, fibrous, tapered to petiole, blade splitting from midpoint of base upward, mostly persistent; petiole to 1500+ mm long, > blade, scaling in length and width with blade size, tough, stiff, broadly triangular in \times -section, spinose on margins, the marginal teeth from base to tip (on juvenile plants) or restricted to basal 1/3 (adult plants), widely spaced, red to orange, hard, upward-curved or backward-curved; blade initially tomentose-pubescent on margins, with patches of persistent, shaggy hairs on lower surface (especially approaching blade) and remaining on margins; flaps of tissue along rachis at upper and lower surface of blade base (hastula) narrowly triangular on larger leaves, to 60 mm long, scarious and winglike on upper flap margins, tomentose on lower flap; blade \pm round in outline, (200–)600–1350 mm, glabrescent, beige to reddish tomentose on folds before unfolding, conspicuously parallel-veined with midvein of each segment keeled on lower surface, splitting from tip backward toward rachis along the upward-facing folds (ridges), split nearly to the rachis on basal folds, decreasing to about 1/3 split on the centermost folds, the segments single-folded and V-shaped, ascending on juvenile plants, drooping on adult plants, initially forked at tips, with long, straw-colored fibers on margins (intersegmental fibers) and on tattered tips.

Inflorescence: compound panicle with 5–6 orders of branching, axillary and arising among fully expanded leaves, ascending and arching, to 3600 mm long, often persisting for several years, conspicuously bracteate, with several–7 secondary branches; bracts all tough and fibrous, with basal portion of bract persistent, initially densely tomentose aging glabrescent with some persisting patches of hair; rachis \pm 3-sided in \times -section most of internode length, elliptic at and just below nodes, to 25 mm thick; rachis bract subtending each secondary branch, > internode length, closed-sheathed at base, in \times -section biconvex, split on side of secondary branch, flattened to \pm swordlike above, becoming split and aging tattered at tip; secondary branches to 1800 mm long, initially drooping, each with 3–8 paniclelike third-order branches separated by long internodes; lowest bract of each secondary branch axillary (prophyll), 2-keeled, ca. 450 mm long, split on upper 1/3, aging tattered at tip; bracts along rachis of secondary branches and subtending third-order branches ca. 500 mm long, lacking keel, closed and sheathing in lower 1/2 to 2/3, aging tattered at tip; third-order branches at anthesis 120–350 mm long, decreasing to tip, at anthesis with fourth-order branches to 200 mm long. Ultimate branches = many-flowered racemes; raceme in bud tassel-like, 5–6 mm wide, lax when fully open, to 100 mm long, 20–50+-flowered, the flowers helically alternate and maturing base to tip, the raceme axis (rachilla) at anthesis \pm straight and slender with descending ridges from pedicels, aging crooked, stiff, and ridged; bractlet subtending pedicel cupped, ca. 1 mm long, deeply 2–3-

lobed, whitish, with scarious, jagged margin; pedicel stout, at anthesis 0.5 mm long increasing to 1.3 mm long in fruit, forming persistent, ascending, conic knobs on axes after flower abscises. **Flower:** bisexual, radial, 8–11 mm across, sweetly fruity, protandrous; **calyx** tubular bell-shaped, 3-lobed, persistent in fruit but then often split; tube 2.5–3 × 1.8–2 mm, creamy white, fibrous, constricted at base and forming 3 short, downward-projecting sacs; lobes overlapping, erect, 1–1.3 mm long, irregularly jagged and tattered and sometimes 2-toothed on upper margin; **corolla** 3-lobed; tube funnel-shaped, 2–2.5 mm long, cream, persistent around immature fruit base; lobes initially ascending during pollination becoming spreading or recurved, ± narrowly ovate, 6–6.8 × 1.5–2 mm, white, thick at base (= tube thickness) and thinner on spreading part, acute at tip, parallel-veined; **stamens** 6, fused to corolla tube; filaments 3.5–4 mm long, white aging pale yellow, dimorphic, the 3 filaments alternate with petal lobes fused along rim of corolla tube, ± flattened and tapered to tip, the 3 filaments opposite petal lobes fused to petal bases for 0.5–1 mm, slightly longer than other filaments, abruptly flared and thickened at base; anthers exerted but discharging pollen while in bud, versatile, dithecal, 3.2–4.4 mm long, the anther sacs free for 0.8–1 mm at base and for 0.3–0.6 mm at tip, cream aging light yellow, longitudinally dehiscent; pollen off-white; **pistil** 1, 6–7 mm long; ovaries 3, superior, free at bases and fused just beneath style, together obovoid, 1 × 0.7 mm, greenish, each chamber with 1 ovule but only 1 chamber (occasionally 2) developing as fruit; style exerted ca. 3 mm, linear, 5–6 mm long, translucent, 3-grooved, barely 3-branched, the branches erect, < 0.5 mm long; stigma minute-capitate, colorless. **Fruit:** berry, 1-seeded, obovoid, 4.5–6 × 2.2–3 mm (more narrow and spreading if 2 present), dark brown, commonly with a persistent style and 2 dried and flattened aborted ovaries attached by style at tip; pulp somewhat dry, separating easily from seed; fruit falling with calyx. **Seed:** ellipsoid, ca. 2.5 × 1.3 mm. Early June–mid-July.

Naturalized. A widely planted palm tree now becoming established along roadsides and in several canyons from bird-dispersed fleshy fruits. *Washingtonia robusta* is a fan palm in which the leaf blades increase as the plant ages from 200 millimeters across on first-year plants to a meter or more across on mature specimens. Currently, most specimens found in the wild are too young to form inflorescences, because only when the stem has exceeded twelve meters does this plant forms its axillary inflorescences, spreading laterally among the leaves. It is possible that other fan palms have escaped, so absolute identification requires the use of reproductive structures, when plants are old enough. The strongly scented flowers of Mexican fan palm attract bees and other arthropods, but less than 1% of the flowers form fruits, probably because pollen from unopened flowers likely is seldom transferred to receptive stigmas of fully expanded flowers. High in the canopy one can occasionally observe a panicle with a double fruit. Eventually, fruits abscise and drop or are dispersed by birds. For several years, the old, tattered inflorescences can remain attached to the trunk as a skirt of old leaves.

B. A. Prigge & A. C. Gibson