

*Juglans* L. WALNUT

*Juglans californica* S. Watson, SOUTHERN CALIFORNIA BLACK WALNUT. Tree (large shrub), winter-deciduous, with 1–several trunks, in range 4–15 m tall; monoecious; shoots with variable-sized glandular hairs, the hairs with broad heads and aging yellowish, strongly aromatic; bark brown, fissured into narrow plates. **Stems:** angled becoming cylindrical when woody, with rounded V-shaped leaf scars having 3 prominent traces. **Leaves:** helically alternate, odd-1-pinnately compound with 11–19 leaflets having lateral leaflets opposite or subopposite, petiolate, without stipules; petiole cylindrical, 15–40 mm long, with glandular and shaggy hairs; blade elliptic to oblanceolate in outline, 120–215 × 45–100 mm; rachis ± angular in ×-section, with glandular and branched shaggy hairs, the shaggy hairs light reddish brown with whitish, ± kinky rays; petiolules ± 1 mm long; blades of leaflets lanceolate or oblong (lateral leaflets) to elliptic (terminal leaflet), 12–75 × 5.5–25 mm with the longest leaflet midleaf, lateral leaflets asymmetric + oblique at base, serrate on margins, acute at tip, pinnately veined with principal veins raised on lower surface, dull (satiny when young), upper surface glabrous, lower surface glandular-hairy and when young with shaggy hairs along midrib. **Staminate inflorescence:** catkin (ament), racemelike, clustered, many-flowered, preformed during previous year and emerging before leaves from winter buds below new growth, shedding pollen several months later with mature leaves, lax and pendent, long-cylindrical, when fully expanded 35–100(–135) × 6.5–13 mm, with radiating, nodding flowers 9–10 per 10 mm on pedicel-like axes, with inconspicuous hairs, becoming mostly glabrate before anthesis; peduncle absent; pedicel-like axes spreading, ca. 2.5 mm long, at anthesis sparsely hairy; bractlet subtending pedicel broadly ovate to deltate, ± 0.8 mm long on swollen base, reddish, hairy, subtending 2 bracteoles, the bracteoles sepal-like and indistinguishable from sepals; pedicel 0.5–1 mm long, with scattered branched hairs. **Staminate flower:** 3.5–6 mm across; on green, dishlike receptacle; **calyx** 2–4(–5)-lobed or absent, fused at base to receptacle, green; lobes unequal, oblong or elliptic to ovate, mostly 1–2 mm long, curved inward cupping anthers; **stamens** 6–25(–35), attached to receptacle; filaments < 0.3 mm long, not extending beyond base of anther sacs; anthers exserted, basifixed, dithecal, 0.8–1.7 mm long, distinctly 4-lobed, greenish yellow, with light green on connective and at tip, sometimes sparsely short-hairy at tip, longitudinally dehiscent; pollen light yellow, copious, dry, wind-borne; **pistil** absent. **Pistillate inflorescence:** spike, terminal at tip of new shoot, 1–4-flowered, erect, 7–30 mm long at anthesis, bracteate; bracts subtending peduncle 1 or 2, miniature leaflike; peduncle 2–10 mm long or absent, glandular-pubescent; bract subtending “flower” present or absent, threadlike to fingerlike, 2–4 mm long, green, early-deciduous; **involucre** containing female flower, cuplike, formed by fusion of 1 bract and 2 bracteoles into a single uniform structure fused to and surrounding 3/4 to 7/8 of ovary, covered with umbrella-shaped hairs. **Pistillate flower:** **calyx** 4-lobed; tube fused with involucre and ovary wall, constricted at tip; lobes erect to spreading, ± linear-triangular, 1.5–2(–3) mm long, green, equal or sometimes with much smaller lobes between calyx lobes; **stamens** absent; **pistil** 1, within involucre; ovary inferior, subspheroid, 2–3 mm diameter, green, 2-chambered, each chamber with 1 ovule; styles 2, free or fused for < 0.5 mm, the branches exserted from involucre, ascending, 6–8 mm long, stigmatic for most of length in 5 or 6 ± longitudinal, bumpy, plumose crests, rose-colored.

**Fruit:** drupelike nut, 1–4 per cluster, indehiscent, 1–2-seeded, spheric, while attached to plant 24–37 mm, green and smooth, when shed becoming smaller, brown or blackish, and wrinkled; husk leathery, strongly aromatic, blackening fingers when handled; nut shell (endocarp) woody, extremely hard, tightly fused to husk, shallowly grooved with smooth surface between grooves. Late February–mid-May.

Native. A small deciduous tree occurring throughout the range, commonly in riparian and oak woodlands but also in any transitional zone where trees have become established.

*Juglans californica* has odd-pinnately compound leaves with paired lateral leaflets, and the leaves are strongly aromatic due to glandular hairs. Staminate inflorescences arise from summer buds of the previous year, during late winter when the tree is leafless and a couple months before pollen is shed. One to several pistillate flowers are formed at the tip of new spring growth, arising on each plant somewhat later than pollen is shed, so that cross pollination is encouraged. The walnut fruit actually consists of the former female flower almost totally concealed by a green, cup-shaped involucre from which the red, plumose stigmas are exerted, so the fleshy covering (husk) of the fruit is involucre tissue, which blackens and toughens human skin when handled.

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