

Castilleja Mutis INDIAN PAINTBRUSH

Castilleja foliolosa Hooker & Arnott, WOOLLY INDIAN PAINTBRUSH. Perennial herb, photosynthetic root parasite (hemiparasite), many-stemmed at base, \pm erect, in range 12–30 cm tall; shoots leafy with only cauline leaves and immature leaves of unexpanded shoot clustered in every axil, gray, woolly with branched hairs (dendritic; sometimes floccose on older stems), surface not oily. **Stems:** ridged, to 3 mm diameter, with 2 ridges descending from each leaf but concealed by white wool, internodes 1–11 mm long. **Leaves:** helically alternate, simple and unlobed to several-lobed below inflorescence, \pm sessile and not clasping, without stipules; petiole essentially absent; blade typically spreading, linear to linear-lanceolate (immature leaves in axils oblong to oblanceolate), 6–38(–45) \times 1–6 mm, somewhat cupped upward, entire, rounded at tip, pinnately veined with midrib sunken on upper surface and raised and conspicuous on lower surface, surfaces somewhat visible through tomentum. **Inflorescence:** leafy spike, terminal, dense, cylindric, to 150 mm long in fruit, with many helically arranged, erect, \pm sessile flowers, bracteate, tomentose with dendritic hairs, not glandular; axis strongly ridged like stem, reddish; bractlet subtending flower leaflike, in range 15–20 mm long, typically 3-lobed or 5-lobed, broadly tapered at base, strongly 3-veined with 1 vein branching into opposite basal lobes, green purplish to light green or more commonly greenish below and pale to vivid red or brilliant orange-red (light yellow) above inflorescence midpoint including lobes, the basal lobes diverging, oblanceolate, 8–11 mm long, pale to brilliant orange-red to vivid red (light yellow) above midpoint; the next lateral lobes opposite, tonguelike to oblanceolate, 1.5–5 \times 1.3–2 mm, the terminal lobe \pm oblong to lanceolate, 2–6 \times 3–4 mm, rounded to notched at tip, the tips not shriveling after pollination or breaking off, not inrolled around flower, spreading in fruit. **Flower:** bisexual, strongly bilateral, 3–5 mm across; **calyx** 2-lipped side-to-side and tubular, in range 11.5–16 mm long, divided slightly deeper on lower than upper side; tube cylindric, 7–12 mm long, \gg lip, externally woolly with dendritic hairs, not glandular, not pleated, not saclike at base, principally 4-veined and having several minor veins; each lip \pm trapeziform, 4–5 mm long, pale green to green above with narrow yellowish transition to brilliant vivid red or orange-red (light yellow) tips, with rounded lobes; **corolla** 2-lipped, in range 16–21 mm long, pale greenish yellow tinged or not tinged pink on exposed surface; tube $<$ 1/2 length of corolla, 2.5–3 mm wide at orifice; lower lip spreading, 3-lobed, 1.3–3 mm long, glabrous, with linear, inward-bulging between lobes and partially down the throat, the lobes greenish, rounded or pointed with middle lobe shorter than lateral lobes; upper lip beaklike, broadly obtuse at tip, thickened with a greenish rib along 1 (dorsal) edge, finely pubescent along upper edge, otherwise glabrous, membranous on lower edges; **stamens** 4, fused to corolla \pm equally near the base of lower lip; filaments 10–12 mm long, yellowish; anthers positioned within tip of upper corolla lip or sometimes with 1 pair slightly exerted, dorsifixed but connective extending to tip, obliquely dithecal (especially in lower pair) and unequal, compressed-ellipsoid, 1.5–3 mm long, light orange-yellow, glabrous, longitudinally dehiscent; pollen orange-yellow; **nectary disc** fused to ovary base, semicircular to ringlike on lower side of ovary or \pm lobed on lateral sides of ovary, dark green; **pistil** 1; ovary superior, asymmetrically narrowly ovoid, 3–4 mm long, green, glabrous, 2-chambered, each chamber with many ovules attached to center; style exerted

1–4 mm, straight, yellowish white or greenish where exposed, slightly notched at tip; stigmas 2, short-papillate. **Fruit:** capsule, loculicidal, 2-valved, many-seeded, narrowly ovoid, 10–15 × 6.5–7 mm, asymmetric at base; beak ca. 2 mm long. **Seed:** typically conic, 1.7–2.2 × 1–1.4 mm, light tan, honeycombed. Late February–early May.

Native. A soft-woolly perennial herb occasionally encountered on open, rocky areas in chaparral, where it responds robustly the year after a fire, as at Palo Comado (SH) in 2006 and Corral Canyon (SMM) in 2009. *Castilleja foliolosa* from a distance appears gray, due to elaborate, dendritic hairs covering green surfaces. In late winter and spring it forms spectacular spikes of flowers with vivid red to brilliant orange-red bractlets and calyx, although in 2010 a light yellow form totally lacking red pigmentation was observed. This species lacks glandular hairs.

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