

*Bromus carinatus* Hooker & Arnott var. *carinatus*, CALIFORNIA BROME. Perennial herb, rhizomatous (highly condensed and inconspicuous), fibrous-rooted, many-stemmed at base, clump with mostly ascending but also with arching shoots when in fruit, in range 50–130 cm tall; shoots typically with basal leaves and ca. 3 cauline leaves, conspicuously pilose on sheaths to 15 mm from ground and mostly glabrous above. **Stems (culms):** cylindrical (somewhat compressed at plant base), in range 2–4 mm diameter, smooth and mostly glabrous with appressed short hairs at nodes (lower stem) or many-ridged and glabrous above, internodes often 150+ mm long; internodes hollow. **Leaves:** alternate distichous, simple with sheath; prophyll closed for several mm, 2-keeled, 6–34 mm long, aging dark brown, acute to notched at tip, keels mostly glabrous but with some short hairs approaching tip, with several raised, parallel veins between keel and margin, inconspicuously pubescent with mostly appressed hairs; sheath closed, of cauline leaves closed at least to midpoint, ridged and extremely so when dried, often keeled and with raised midvein approaching blade, throat narrowly membranous, with straight hairs on and near margins, without lobes (auricles) at top; ligule translucent-membranous, jagged-obtuse, in range 2–4 mm long, aging split, glabrous to pilose-hairy on hidden surface with upward-pointing hairs; blade linear, in range 40–270 × 3–10 mm, the widest near base, flat, minutely toothed on margins, parallel-veined with veins slightly sunken on upper surface and midrib raised on lower surface, glabrous and minutely scabrous or lower surface and sometimes sparsely pilose or short-pilose below midblade. **Inflorescence:** spikelets, in terminal, open panicles, panicle with widely spaced nodes, in range to 300 mm long, branching nodes alternate distichous, at each node with 1–5 ascending to spreading branches on slender, flexible stalks, branches to 110 mm long, with 1–2(–5) spikelets, spikelet with 5–9 florets, most florets fertile but terminal floret typically sterile, the subterminal floret with reduced lemma and palea and small anthers, the uppermost floret with diminutive lemma only, awned; sheath of flag leaf sometimes to the lowest node; rachis flat or ridged above branches at each node, internodes glabrous, bract subtending each node oblique, ledgeline, with short hairs; axes of branches wiry and lax, glabrous; axis to first fork ridged, to 65 mm long, minutely scabrous, often with axillary pulvinus. **Spikelet:** ± narrowly oblong to lanceolate in outline, strongly flattened, with lemmas tightly arranged at anthesis and in fruit, in range mostly 30–42 mm long (including awns), breaking above glumes and between fertile florets; **glumes** 2, unequal, lanceolate and strongly keeled, lower glume in range 8–10 mm long and 3-veined or 5-veined, upper glume 11–12 mm long mm and 5-veined or 7-veined, lower glume < upper glume, glumes to 1/3 spikelet (including awns) and << lower lemma, lateral veins not converging at tip, green with membranous margins aging straw-colored in fruit (typically not purple), keel scabrous mostly above midpoint and ending in a sharp tip sometimes tip of upper glume like a short awn < 2 mm long; rachilla pale green, segments 2–2.8 mm long, finely hairy on convex face and glabrous on flat face; **lemma** awned, lanceolate keeled above midpoint, in range 12–16 mm long on fertile floret, 7-veined or 9-veined (on sterile florets shorter and having fewer veins), with principal veins slightly raised at least above midpoint, tip scarcely lobed next to awn base, green where exposed and light green below and whitish membranous and toothed on margins (especially conspicuous below midpoint) and minutely scabrous on exposed surface and scabrous along veins; the awn attached at lemma tip, in range 7.5–11+ mm long, tan aging red; **palea** on only fertile florets, elliptic,

8.5–11.8 mm long, 3–5 mm < lemma, 2-veined, strongly 2-keeled folded flat along keels, concave between keels, with 2 short teeth at tip, mostly membranous with keel veins green and ascending short-ciliate, glabrous or patches of surface with minute teeth. **Flower:** bisexual; **perianth (lodicules)** 2, elliptic, 0.6–0.7 × 0.3 mm (floret with short anthers enclosed in palea) and at anthesis lacking bulbous base or lanceolate and to 1.2 mm long with bulbous base (floret with large anthers), translucent, minutely jagged, persistent; **stamens** 3, included; filaments threadlike, 2+ mm long, translucent-white; anthers basifixed, dithecal, 0.6 mm long or 1.5–4 mm long, light yellow, longitudinally dehiscent; pollen light yellow; **pistil** 1, at anthesis 2–3 mm long; ovary superior, 3-sided top-shaped, 1–1.2 mm long, colorless, with ascending hairs above midpoint, with 2 sterile, colorless flaps extending beyond tip, 1 flap elliptic, the longer flap notched, flaps persistent and increasing in fruit, 1-chambered with 1 ovule; styles 2, arising separately from near top of ovary (subapical); 1–2 mm long, colorless to white, with numerous branchlets (plumose), the branchlets twisted, wavy, and often intertwined. **Fruit:** achene (caryopsis), dispersed as floret tightly enclosed within adherent palea and awned lemma + a rachilla segment, awned dispersal unit commonly 22–27 mm long; achene narrowly ellipsoid not compressed, 6.5–8 × 1.2–1.4 × 1.2–1.4 mm, grayish brown or with purplish tinge, deeply longitudinally grooved on side facing palea, with whitish flap 0.5 mm long and tuft of short hairs on tip; lemma with scabrous veins sometimes slightly raised above midpoint, surface mostly straw-colored, minutely scabrous between veins (tiny whitish bumps), and scarious; palea short-ciliate along keels, scarious, often trapped within groove of achene, surfaces appearing glabrous; rachilla segment appressed, flattened front-to-back, 2–3.1 mm long; anthers retained within floret, long anthers typically exposed above midpoint of lemma pushed upward by developed fruit; the uppermost fertile floret retaining rachilla and sterile floret. Late April–early June.

Native. Perennial herb occurring occasionally in disturbed grassland, e.g., at Reagan Ranch of Malibu Creek State Park (SMM), growing in full sun to shade surrounded by introduced annual grasses. *Bromus carinatus* var. *carinatus* forms tufts of basal leaves, and the sheaths of those leaves are distinctly pilose. This is typically a perennial brome that has awns about ten millimeters long, although another variety, potentially in range, has awns as short as four millimeter.

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