

*Bituminaria bituminosa* (L.) C. H. Stirt., ARABIAN PEA. Shrub, much-branched but canopy having ascending, unbranched new shoots with inflorescences, to 130 cm tall; shoots short-strigose with white hairs and strigose with longer red hairs, sometimes with 2 leaf sizes (diminutive leaves arising on shaded internal stems). **Stems:** low-ridged, having  $\pm 15$  ridges with 9 ridges descending from each leaf, tough, densely white short-strigose, sparsely red-strigose on new growth with some hairs persisting around nodes; solid. **Leaves:** helically alternate, pinnately 3-foliolate with terminal leaflet on rachis, petiolate with pulvinus, with stipules; stipules 2, attached to stem and base of petiole below pulvinus, acuminate, 6–8 mm long, with white and red hairs, persistent; petiole typically ascending, pulvinus on standard leaf short barrel-shaped, ca.  $1.2 \times 1.5$  mm, above pulvinus channeled with narrow groove, to 65 mm long, ridged on sides, white short-strigose; rachis channeled like petiole, to 15 mm long; petiolules 1.5–2 mm long; blades of leaflets elliptic (lateral leaflets), (5–)25–52  $\times$  (3–)12–22 mm, and ovate (elliptic), (8–)30–65  $\times$  (4–)15–24 mm (terminal leaflet), somewhat rounded at base, entire, acute at tip, pinnately veined with midrib slightly sunken on upper surface and conspicuously raised on lower surface, sparsely short-strigose with denser hairs along lower midrib (small leaves more hairy and with a shorter rachis). **Inflorescence:** condensed raceme, axillary, >> leaf, headlike, 11–16-flowered, flowering nodes alternate, at lower 2 or 3 nodes with 2-flowered or 3-flowered clusters decreasing upward, internodes short, bracteate, strigose and short-strigose; peduncle low-ridged, ascending, at flowering 90–120  $\times$  1 mm not increasing in fruit, tough, white short-strigose becoming increasingly red-strigose approaching involucre; **involucre** discontinuous of 2 distichous bracts, each bract subtending 2 or 3 flowers, typically unequally 3(–5)-lobed (typically 1 lobe per flower), 6–7  $\times$  7–10 mm, acuminate at tip, externally with red and white hairs aging mostly red in fruit, ciliate on lobe margins, internally with short hairs above midpoint of lobes; axis with mixed red and white hairs; bractlet subtending 2-flowered cluster 2-lobed or unlobed, if unlobed obovate with acuminate tip, bractlet subtending single flower 1 or absent, the uppermost bractlet linear, 6–7 mm long; pedicel 1–1.5 mm long, with mixed red and white hairs. **Flower:** bisexual, bilateral, pealike (papilionaceous), (3.5–)5–5.5 mm across, erect; **nectary chamber** around nectar-producing receptacle beneath ovary, bell-shaped base below stalk of ovary, 0.5 mm long, green aging whitish; **calyx** 5-lobed,  $\pm 15$  mm long, translucent with green veins, strigose with mixed long and short white hairs and long red hairs; tube bell-shaped,  $\pm 6$  mm long, slightly enlarged on upper side, 10-veined, expanding in fruit; lobes unequal, long-tapered, 5–10 mm long for each flower, lower lobe the longest, keel-like and 3-ridged, appressed to and  $>$  keel, other lobes appressed to back of banner, of 2 lengths, 1-ridged; **petals** 5, clawed; banner folded in bud then spreading wide,  $\pm$  oblanceolate, 15–16  $\times$  6 mm, claw narrowly wedge-shaped, ca. 6 mm long, whitish, limb whitish at base grading to pale lavender in center and rose-lavender at tip with paler radiating nectar lines, having a pair of basal swellings matching sinuses of wings; wings 2, ca. 13.5 mm long,  $<$  banner, claws narrowly linear, ca. 6 mm long, white, limbs not locked with keel but basal portion of wings and keel adhering, oblong, to 3 mm wide, mostly white grading to pale lavender at tip, with backward-pointing basal lobe 3 mm long, tip rounded, faintly veined; keel of 2 petals weakly fused only below tip on lower edge for several mm, ca. 12 mm long,  $<$  wings, claws narrowly linear, ca. 6 mm long, white, limbs mostly white but internally dark purple-red approaching tip (appearing much paler externally), pigmented

portion expanded outward, keel and margins glabrous; **stamens** 10, diadelphous (9 filaments fused and 1 free); filament sheet partially sheathing ovary, lanceoloid compressed side-to-side, 11–12 mm long, greenish white, sharply curved upward approaching tip, free portions with 5 filaments alternating with 4 shorter filaments, 0.5–1.3 mm long per flower, the free filament < fused stamens, not adherent to fused filaments; anthers basifixed, dithecal, plump, 0.7–0.8 mm long, yellowish, longitudinally dehiscent; pollen whitish, copious, sticky, discharged while in bud; **pistil** 1, 11–12 mm long, stalked (stipe), stipe < 0.2 mm long; ovary superior, ovoid strongly flattened side-to-side from below midpoint, green, sericeous on basal portion, short-hairy on flattened, acuminate upper portion, 1-chambered with 1 ovule attached to upper side; style straight then thickened where bent strongly upward, white, glabrous, with short hairs in ring beneath stigma; stigma capitate, 0.3 mm diameter, dark green. **Fruit:** pod (legume), indehiscent, 1-seeded, tadpolelike with seed chamber broadly ellipsoid and flat, 14–16 mm long, straight, knifelike upper portion to 9 mm long; seed chamber expanded and tightly covering mature seed, red-pubescent and white-pubescent, with several–15 bristles approaching top, the bristles to 3.5 mm long, lower bristles not elongated and appearing like black blisters; seedless portion erect in calyx at maturity with protruding tip, flat narrowly triangular, 8–9 mm long, short-hairy. **Seed:** essentially inseparable from fruit wall when dry, kidney-shaped, 5–6.5 × 3.2–3.5 mm, dark olive-brown; lacking an aril. Early May–late June.

Naturalized. Shrub known from Griffith Park in Cedar Grove, presumably arising as an escape from a nearby, former plant nursery, now thriving in shade beneath planted *Cedrus deodora*, growing with other nursery escapes. *Bituminaria bituminosa*, a native of the Mediterranean Region, has pinnately three-foliolate leaves and upward-pointing appressed hairs; the shorter hairs are white (mostly < half a millimeter long) and the longer ones are red (as in *Astragalus* spp.). The inflorescence is a condensed raceme produced on an ascending peduncle that is much longer than the subtending leaf. The involucre consists of a pair of distichous, three-lobed bracts (appearing opposite), each subtending a cluster of three flowers at those nodes. The third node may have three or two flowers, and clusters are reduced to single flowers at the tip. Red hairs are conspicuous in the inflorescence. The erect, one-seeded fruits are intriguing because they resemble tadpoles with the tail (beak) protruding slightly from the calyx teeth, and with bristles formed near the top of the seed chamber.

B. A. Prigge & A. C. Gibson