

Centaurea calcitrapa L., PURPLE STAR-THISTLE. Biennial herb (annual), spinescent in inflorescence, taprooted, rosetted, generally several-stemmed at base, with ascending branches above, erect, in range 25–100 cm tall; shoots with basal leaves and cauline leaves, basal leaves withered at flowering, loosely gray-tomentose to villous, dotted with subsessile glandular hairs, the nonglandular hairs kinky, the glandular hairs with colorless heads containing resin. **Stems:** conspicuously ridged, to 7 mm diameter, ridges ca. 6, with ridge descending from each leaf or bract surrounding head, tough, sparsely tomentose and dotted with glandular hairs. **Leaves:** helically alternate, deeply pinnately lobed to pinnately dissected, petiolate (basal leaves) and sessile (cauline leaves), lacking stipules; petiole winged, to 35 mm long, indistinct from blade; blade of basal leaves obovate to elliptic in outline, in range to 100 × 30 mm, principal sinuses deep and nearly to midrib, lateral lobes in several pairs but pairs generally not opposite, acute-triangular to oblong, terminal lobe narrowly ovate to elliptic, low-serrate, teeth spine-tipped with colorless, hard point, pinnately veined with principal veins raised on lower surface, lower surface densely woolly along midrib; blade of sessile cauline leaves ovate in outline (lower cauline leaves) to narrowly dissected (upper cauline leaves), to 70 mm long, 2–3 mm wide between lobes, lobes linear, to 25 × 1–2 mm, long-acuminate at tip. **Inflorescence:** heads solitary or several heads in cymelike arrays, terminal and axillary, head disciform, 15–25 mm across when fully open, spinescent with 5–8 sterile peripheral flowers and 25–30 bisexual central flowers, sterile flowers initially erect later ascending and then spreading, bracteate, villous and glandular-dotted; peduncle short–10 mm long, generally with 3(–4) bracts along axis with 1(–2) subtending involucre, bracts along peduncle acuminate-lanceolate, to 35 × 2.5–5 mm, entire, often folded upward from midrib, villous and glandular-hairy; **involucre** ovoid, constricted around exerted flowers, in range 12–14 × 6–8 mm, essentially glabrous, phyllaries many in several graded series, lower phyllaries appressed and cupping, lower portion of outer phyllaries broadly ovate to rounded grading to oblong of inner phyllaries, green aging paler and parallel-veined, scarious on margins, upper portion of phyllaries extremely hard and straw-colored, expanded at base and tapered above to form a rigid, terminal spine in range 9 × 18 mm long, on certain middle phyllaries the base with 4–8 lateral spines usually paired, 0.7–3.5 mm long, the innermost phyllaries truncate and spineless; receptacle flat, without bractlets (paleae), densely covered with whitish capillary bristles 4.5–12 mm long. **Peripheral flower:** neuter, ± radial, 5–6 mm across; **calyx (pappus)** absent; **corolla** 5-lobed, 21–23 mm long, with scattered glandular hairs; tube cylindric, 14–16 × 0.5–0.8 mm, transparent-white to pale lavender at top; throat lacking; lobes spreading, unequal, 3.5–6.5 × 0.7–0.9 mm, lavender to pale purple at tips; **stamens** absent; **pistil** absent. **Central flower:** bisexual, radial, 2–2.5 mm across; **calyx (pappus)** absent; **corolla** 5-lobed, length = length of sterile flowers; tube cylindric, ± 10 mm long, transparent-white to pale lavender at top; throat narrowly funnel-shaped, 6–7 × 1.1–1.3 mm, pale lavender; lobes ascending, unequal, 3.3–4.5 mm long, lavender purple to light purple but darkest at tip; **stamens** 5, fused to base of throat, 10–11 mm long; filaments ± 2.5 mm long, white; anthers fused into cylinder surrounding style, basifixed, dithecal, ca. 6–8 mm long, lavender purple to reddish purple with white connective, arrow-shaped at base, with sterile appendages, the appendages fused on lower 2/3, ± 3 mm long, firm, and same color as anther, longitudinally dehiscent; pollen white; **pistil** 1; ovary inferior, obovoid, ± 1.3 × 1.3 mm, white, glabrous, 1-chambered with 1 ovule; style ± 21 mm long,

terminated by a ring of glandular hairs, pale lavender below ring of hairs; stigmas long-exserted, 2.2–2.5 mm long above ring of hairs, dull lavender purple to pale purple, shortly 2-lobed at tip (< 0.5 mm long), short-papillate base-to-tip. **Fruits:** cypselae, lacking pappus, compressed-obovoid with short cylindric beak, 3.1–3.5 mm long, whitish with brown streaks, beak ca. 0.2 mm long, glabrous. Mid-June–August.

Naturalized. Biennial herb, perhaps annual locally, first observed in range in 2006 by Tarja Sagar growing on one slope of recently burned chaparral in upper Las Virgenes Canyon. *Centaurea calcitrapa* is a noxious, spinescent thistle introduced to North America, probably from southern Europe, and is considered undesirable for grazing livestock. An initial attempt was made to eradicate the plants of *C. calcitrapa* found locally, but this species likely will reoccur because it is firmly established elsewhere in western North America and would be expected to be reintroduced.

B. A. Prigge & A. C. Gibson