

Helenium puberulum DC., ROSILLA. Annual to perennial herb, taprooted, rosetted, 1-stemmed at base, forming new flowering branches from the canopy downward, erect to ascending, in range 50–130 cm tall; shoots with basal leaves and cauline leaves, in range soft-pubescent (tomentose). **Stems:** cylindrical and also strongly winged, to 7 mm diameter, wings 2–4 mm wide decurrent in pairs from each leaf (becoming narrow approaching peduncle), green but deep purple or purple-striped at base, glabrous at base and above short-villous with crisped hairs. **Leaves:** helically alternate, simple, sessile, without stipules; blade oblanceolate (basal leaves) and oblong-elliptic to lanceolate (cauline leaves) or narrowly lanceolate (subtending flowering shoot), 40–135 × 5–20 mm, tapered at base, entire on margins, acute to long-acuminate at tip, pinnately veined with a pale green midrib raised on lower surface, glabrous to sparsely short-villous, lateral veins conspicuous on large leaves. **Inflorescence:** heads, in terminal, open, paniclelike arrays on long peduncles, the branches and peduncles ascending, head radiate, depressed spheric, 12–16.5 mm across, with (13–)14–20 ray flowers pointed downward next to peduncle and ± 500–600 disc flowers, bracteate, short-villous and sparsely glandular-puberulent with colorless hairs; peduncle in range 100–170 mm long, 1.5–2.5 mm wide approaching head, 8–10-ridged, having 1 or 2 widely spaced bracts, the lower bract leaflike but < cauline leaves (= future bract subtending a new peduncle), the upper bract approaching head (absent); bracts subtending involucre (calyculus) 11–13, fused at base for 0.5–1.8 mm, each narrowly triangular, 4–6.5 × 0.7–1.5 mm, slightly < upper bract on peduncle, pubescent or short-villous to tomentose on both surfaces but upper surface glabrous at base, with tips curved outward from peduncle, in bud calyculus and involucre (initially concealed by calyculus) ascending and enveloping head but at anthesis reflexed and inverted by development of receptacle and pressed against peduncle; **involucre** bracts in 2 whorls, each whorl with ca. 13–15 phyllaries, phyllaries narrowly triangular or narrowly lanceolate to linear, 1.5–4 × 0.2–0.4 mm, upper surface glabrous except on large phyllaries, lower surface pubescent; receptacle depressed-spheroid becoming more spheroidal and indented (invaginated) at base, lacking bractlets (paleas), glabrous but inconspicuously low-papillate where fruits attach, beneath receptacle with pithy interior. **Ray flower:** pistillate, bilateral, ca. 6 mm across; **calyx (pappus)** of 5–6 scales, ovate, 0.5–1 × 0.3–0.4 mm, translucent, jagged on margins, acuminate or longer scales with awn at tip, the awn to 0.4 mm long; **corolla** typically 3-toothed; tube ± 0.2 mm long; limb spreading at anthesis and folded lengthwise after pollination, narrowly obovate to wedge-shaped, 5–6 × 2–3 mm, brilliant yellow, lower surface 4-veined, spheric glandular-hairy and pubescent with short, thick hairs approaching teeth; **stamens** 4, ca. 1.5 mm long, with sterile, diminutive anthers; **pistil** 1, 3–3.5 mm long; ovary inferior, inversely conic and arching toward center of head, 1.3–1.5 mm long, light greenish yellow, ± 5-angled and 10-ribbed, with spheric glandular hairs, hairy along ribs with ascending hairs bulbous at reddish brown base; style 1.5–2 mm long, light yellow, bulbous (appearing nectar-producing) and pale greenish at base, 2-branched, the branches ± 0.5 mm long, dark yellow, glabrous, flat on inner face; stigmas 2, truncate and ± flared or thickly fan-shaped at papillate tip. **Disc flower:** bisexual, radial, 0.5–0.7 mm across; **calyx (pappus)** of 5(–6) scales, triangular to ovate, 0.4–1.2 mm long, translucent, jagged or sometimes irregularly and deeply cut on margins, acuminate at tip and typically short-awned; **corolla** (3–)4–5-lobed, tubular or narrowly funnel-shaped, in range 2–2.5 mm long, spheric glandular-hairy; tube ± 0.25 mm long, pale yellow; throat 1.6–1.8 mm long, light greenish yellow, abruptly

constricted at throat base; lobes triangular, greenish yellow, densely papillate-hairy on outer face with reddish purple hairs; **stamens** 5(–6), fused to top of corolla tube; filaments 1.1–1.3 mm long, mostly light greenish yellow but sometimes reddish purple just below anther; anthers fused in cylinder surrounding style, basifixed, dithecal, 1–1.2 mm long, orange-yellow, arrow-shaped at base, with acute appendages at tip, longitudinally and inwardly dehiscent; pollen bright yellow; **pistil** 1, 3–3.3 mm long; ovary inferior, obovoid to wedge-shaped but not arched, ca. 1.4 × 0.6 mm, light greenish yellow, ± 5-angled and 10-ribbed, spheric glandular-hairy, hairy along ribs with ascending hairs bulbous at reddish brown base; style ± 1.8 mm long, light yellow to yellowish green, bulbous at base, 2-branched, the branches ± 0.5 mm long; stigmas 2, ± truncate and slightly expanded to thickly fan-shaped at papillate tip. **Fruits:** cypselae, compressed wedge-shaped, in range 1.2–1.5 × 0.35–0.6 mm, dark amber brown, 4–10-ribbed, the conspicuous ribs short-strigose with upward-pointing hairs, faces and ribs with scattered resin droplets; pappus scales scarious, awned or without awns, 0.4–1.2 mm long, jagged to tattered on margin; corolla persistent or not. Early August–early October.

Native. Perennial herb growing on shady, wet faces of waterfalls and rocky creek banks on the Pacific side of SMM, e.g., in La Jolla Canyon. *Helenium puberulum* has stems with green wings decurrent from the leaves. This species is like no other Asteraceae in range in flower and fruit; it has a complete ball of disc flowers with the involucre concealed at the base and blocked from view by the limbs of the ray flowers.

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