

*Packera breweri* (Burt Davy) W. A. Weber & Á. Löve, BREWER'S RAGWORT. Perennial herb (biennial herb), rosetted, fibrous-rooted on an erect caudex, 1-stemmed at base, with ascending branches above midplant, erect, to 125 cm tall; shoots with basal leaves and cauline leaves, lower leaves congested increasingly spaced upward, mostly glabrous but woolly in axils of leaves, branches, and inflorescence branches and some parts cobwebby-tomentose, the hairs weak and white to pale tawny; caudex short and stout, ca. 12 × 7 mm; roots relatively thickish. **Stems:** ridged, to 7.5 mm diameter, with 5 ridges descending from each leaf, striped with purplish pink to reddish purple ridges and greenish furrows, becoming purplish red at base; hollow. **Leaves:** helically alternate, deeply pinnately lobed with (0)1–16 lateral lobes per side and having a large terminal lobe, petiolate with base expanded and partially clasping stem (basal and lower cauline leaves) and sessile (upper cauline leaves), without stipules; petiole ridged and channeled most of length, 45–220 mm long, base overlapping other petiole base (lower plant), in  $\times$ -section above the base  $\pm$  heart-shaped, 5–9-veined and typically 5-ridged with 1 prominent ridge on lower angle, 1 ridge on each side, and 1 ridge on each edge along channel, narrowly winged approaching and grading into blade; blade of lower leaves spoon-shaped (spatulate) to oblanceolate or obovate in outline, 65–150 × 40–55(–70) mm; rachis channeled, 20–100 mm long, winged between lobes and continuous with lobes, cobwebby in basal portion of channel, in  $\times$ -section  $\pm$  heart-shaped to rhombic or  $\pm$  star-shaped with long and narrow arms (adaxial rachis wings) bordering channel having a long and broad lower arm and shallow lateral arms; lateral lobes alternate to opposite, unevenly spaced, the smaller lobes as  $\pm$  flaplike outgrowths of rachis wing, the larger lobes symmetric to asymmetric and obovate to rhombic in outline, 8–31 × 3.5–30 mm, tapered to long-tapered at base or nearly forming a petiolule, 3-toothed or 2–4-lobed (the larger lobes with sublobes), generally having a tooth on each side of a lobe, pinnately veined having 3 veins from base and principal veins raised on lower surface, green but slightly paler on lower surface, mostly glabrous but sparsely cobwebby-hairy; terminal lobe broadly ovate in outline with 0–8 lobes, 15–55 × 16–47 mm, cordate at base or half-cordate with 1 side broadly lobed and the other side rounded, wavy-crenate (sinuate) to dentate or irregularly cut on margins, if lobed then with deep sinuses and dentate on margins; blade of upper cauline leaves oblanceolate in outline, 45–115 × 15–45 mm, with 7–16 alternate to opposite lateral lobes per side; rachis channeled and winged, to 9 mm wide at base tapering (including wings) to 1 mm wide approaching terminal lobe, densely woolly at base, cobwebby-hairy in channel, wings along rachis 0.2–3 mm wide, cobwebby-hairy; lateral lobes ascending to spreading, oblanceolate to obovate or sometimes lanceolate to ovate, 7–27 × 0.8–18 mm, often divided having to 7 sublobes with tooth having a point at tip (mucronate) and sometimes with tooth on side of each sublobe; terminal lobe ovate, 25–37 × 11–30 mm, with 3–9 sublobes, short-mucronate at tips and sometimes with a pointed tooth on sides. **Inflorescence:** heads, in terminal, paniclelike or flat-topped, cymelike arrays (corymbiform) with 3–5+ heads, terminal and afterwards with an array forming downward from each leaf axil, array 55–105 mm long, with ascending branches, head radiate, 12–30 mm across, in range of (4–)6–8 ray flowers and 24–46 disc flowers, bracteate; bract subtending peduncle awl-shaped, 2.5–5 × 1.2–1.5 mm, entire or minutely toothed on margins (large bracts), acuminate, hairy to villous at tip and hairy on marginal teeth; peduncle cylindric, 5–25 mm long, expanded approaching involucre, glabrous, sometimes

with appressed to suberect bracts along axis, the bracts linear-oblong,  $2.5\text{--}3.5 \times 0.5\text{--}0.9$  mm, short-hairy at acute tip; bracts subtending head 2–3 (calyculus), appressed, resembling bracts along peduncle; **involucre** urn-shaped,  $8\text{--}12 \times 5.8\text{--}12$  mm, phyllaries in range 13–18 in 1 series, linear to oblong, 6.5–8 mm long, alternately narrow and wide with the narrower phyllaries overlapping the membranous wing margins of the inner phyllaries and interlocked, medial portion of each phyllary fleshy and green, green portion of the narrower phyllaries 0.7–1 mm wide and having membranous wings ca. 0.25 mm wide, of the wider phyllaries 0.7–1.5 mm wide and having spreading membranous margins 0.4–0.8 mm wide, glabrous except for a tuft of short, club-shaped hairs at acute tip; receptacle flat, without bractlets (paleae), hollow beneath receptacle. **Ray flower:** pistillate, bilateral, 2.2–4 mm across; **calyx (pappus)** of numerous capillary bristles, 2.5–5 mm long, thin, silky white, with minute ascending barbs (visible at 30 $\times$ ); **corolla** entire and narrowly rounded or 2–3-toothed, sometimes 1–2 ray flowers 2-lipped with a linear inside limb to  $5 \times 0.5$  mm; tube cylindric,  $3.7\text{--}7 \times 0.4\text{--}0.5$  mm, light green at base changing to yellow-orange above; limb elliptic to oblanceolate, in range 7–12 mm long, yellow-orange with 4–6 darker veins, aging strongly coiled; **stamens** absent; **pistil** 1; ovary inferior, lanceoloid, ca. 2 mm long, green, glabrous, 1-chambered with 1 ovule; style 5–7 mm long, 2-branched, the stigmatic branches exerted, 1 mm long, tapered to tip. **Disc flower:** bisexual, radial, 1–1.8 mm across, extending slightly beyond phyllaries; **calyx (pappus)** of numerous capillary bristles, 2.7–5.7 mm long, thin, silky white, with minute ascending barbs (visible at 30 $\times$ ); **corolla** 5-lobed, 5.7–7.5 mm long, glabrous; tube narrowly cylindric,  $2.3\text{--}3.6 \times 0.3\text{--}0.4$  mm, light green; throat cylindric and wider than tube,  $2.9\text{--}3.2 \times 0.7\text{--}1$  mm, yellow-orange, 5-veined with 1 vein to each sinus; lobes erect or spreading, triangular,  $0.7\text{--}0.9 \times 0.5\text{--}0.6$  mm, yellow-orange; **stamens** 5, fused to base of corolla throat; filaments ca. 1 mm long, yellowish; anthers fused into cylinder surrounding style, basifixed, dithecal, ca. 3 mm long with appendages, yellowish tan, basal appendages ovate-triangular, appendages at tip triangular and whitish, longitudinally dehiscent; pollen vivid yellow; **pistil** 1; ovary inferior, lanceoloid, 1.5–2 mm long, glabrous, 1-chambered with 1 ovule; style 5.5–6 mm long, 2-branched, green and glabrous below fork, the stigmatic branches exerted and spreading, yellow-orange, glabrous but papillate-hairy on truncate tips. **Fruits:** cypselae,  $\pm$  monomorphic, with pappus; cypselae  $\pm$  oblanceoloid and straight (disc flowers) or of ray flowers arched or slightly S-shaped,  $3.5\text{--}4.3 \times 1.2\text{--}1.5$  mm, 5–6-ribbed (winged) and with a central vein on each face between ribs or wings, golden buff or light to dark bronze-orange and greenish tinged on ribs or wings, narrowed and star-shaped at base with 1 arm per rib or wing, narrowed at top to an undulate rim composed of pappus bases; pappus of ca. 150 minutely barbed, capillary bristles, 4.5–6.2 mm long, silky white, early-deciduous. Late April–early June.

Native. Short-lived perennial herb, possibly functionally biennial, occurring locally in small, isolated, shady and mesic sites bordering southern oak woodland, growing with low shrubs (e.g., *Lupinus*, *Salvia*) and other native herbaceous perennials (e.g., *Castilleja*). *Packera breweri* was formerly treated as a species of *Senecio*, and is related to species that inhabit meadows and woodlands throughout the country, and in California more typical of mesic montane habitats. Brewer's ragwort is near its southern limit in our range.

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