

Opuntia littoralis (Engelm.) Cockerell (for convenience, here including hybrids with *O. oricola*), COASTAL PRICKLY PEAR. Shrub, stem succulent, clonal and in dense colonies on slopes, reproducing via rooted stem segments as well as sexually reproducing, spinescent and with irritating, deciduous spines, diffuse-rooted and fibrous-rooted, several-stemmed at base, green-stemmed (photosynthetic), irregularly branched, with spreading to ascending principal branches, in range mostly 85–150 cm tall, clumps to 900 cm across; shoot = a series of flattened stem segments (cladodes, also called pads or joints), narrowly constricted between segments, cladodes mostly erect to ascending, not breaking apart and most branches persistent, with clusters of radiating leaf spines at nodes on the stem surface (areoles), areoles 25–40 mm apart; major branches woody; adventitious roots produced on cladodes touching ground. **Stems (cladodes):** obovate to circular in outline, 150–280 × 90–190 mm, typically ca. 15 mm thick at midpoint, with helically arranged tubercles (≈ modified leaf bases) and associated spine-bearing areoles in the axils, the tubercles raised on new cladode and increasingly so at maturity, green, glabrous; flesh (cortex and pith) watery and mucilaginous; areoles initially circular aging obovate, ca. 3 mm across, initially with light orangish brown hairs aging darker; areoles except at base of cladode with permanent radial spines. **Leaves:** helically alternate, simple, sessile, without stipules, dimorphic; photosynthetic cauline leaves short-lived on newly emerging shoots, lanceoloid, 4–6 × 1.3–1.5 mm, fleshy, green tinged purplish, ascending, abscising during shoot expansion, narrow-pointed at tip; leaf spines on areoles (= modified leaf), of two types, persistent radial spines and deciduous glochids, not photosynthetic; radial spines to 11, principal spines (> 10 mm long) 2–6 of different lengths, linear, to 37 mm long, the longest slightly flattened on upper side, the others cylindrical, sharp-tipped, whitish but yellowish at base and tip, lacking spine sheath; deciduous spines (glochids) barbed at tip, irritating in skin, formed in a dense, erect, crescent-shaped cluster on upper areole, in range typically 2–4 mm long, orangish brown. **Inflorescence:** flowers solitary (areole dies after flowering), sessile, ovary covered with stem tissue = having tubercles and spine-bearing areoles initially with the short-lived, lanceoloid cauline leaves. **Flower:** bisexual, radial, with perianth generally ascending to spreading, 70–80 mm across; **perianth** of 20–24 segments, segments free, helically arranged, overlapping, unequal in a graded series, the outermost ca. 9 segments short and ± greenish, succulent, hemi-ovoid grading to broadly ovoid and flatter to obovate and somewhat petal-like, 10–18 mm long, the innermost 9–10 petal-like and the largest, obovate, 37–43 × 29–34 mm, bright yellow or tinged purplish red and also aging mostly reddish, jagged and often with central notch on upper margin; perianth abscising as a unit with stamens from developing fruit top; **stamens** > 200, free, formed on a shallowly sloped axis; filaments erect and initially separated from style, linear, 14–16 mm long (the outermost stamens) to 10–13 mm (the innermost stamens) but not in obvious graded series, light green at base changing to greenish yellow and then yellow, abruptly slender at anther; anthers dorsifixed, dithecal, 2.2–3.3 mm long, white, longitudinally dehiscent; pollen light yellow; **pistil** 1; ovary inferior and embedded in receptacle (stem tissue), inversely narrowly pyramidal, at anthesis 40–45 × ± 25 mm, with to 36 low, helically alternate tubercles, initially bearing ephemeral lanceoloid leaves like stems, areoles ± round and sharply raised, with whitish hairs around edge aging brownish, glochids, and short radial spines, 1-chambered, with hundreds of ovules attached to ovary wall, the chamber narrowly obovoid, ca. 14 × 7 mm, ovary wall thick and mucilaginous;

style inversely club-shaped, 27–28 × 9–9.5 mm, narrow (4 mm) and whitish at base, changing to light or dark pink especially above midpoint; **nectary chamber** on top of ovary, = decurrent bases of filaments, with copious nectar; stigmas 8–10, together 7–8 mm across, exerted above central anthers, fleshy and fingerlike, ± 6 × 1.8– 2 mm, green, curved inward, papillate. **Fruit:** berry, many-seeded, with watery pulp, obovoid with a slightly depressed, periderm-covered top, 35–55 × 30–35 mm, purplish red; tubercles with elevated circular areoles, ± 3 mm, with a dense tuft of light brown hairs and glochids to 4 mm long, with or without weakly developed radial spines; chamber shape same as fruit shape; pulp purplish red. **Seed:** irregular kidney-shaped, 3–4.5 mm long with girdlelike aril, bony, grayish; protruding ca. 0.5 mm, golden brown. FLOWERING—late July.

Naturalized. Stem succulent shrub forming dense colonies on coastal slopes and also in inland locations (Wildwood Regional Park, SH), where it probably has hybrid origin. Pure *Opuntia littoralis*, which probably only occurs below 160 meters elevation, is hard to distinguish from other named shrubby taxa, such as *Opuntia ×vaseyi*, of which *O. littoralis* is one of the presumed parents, but one can assume that any dense colony in range is probably mostly *O. littoralis* but having some introgressive hybridization with *O. oricola*. For certain there are hybrid swarms of the two species, for simplicity often called *O. littoralis*, at Leo Carillo State Beach and on the westernmost border of the range along Highway 101 in Conejo Grade. For identification of vegetative plants, experts will want to use size and shape of cladodes, height and growth habit of plant, how easily the cladodes break off, and areole features including number of color of radial spines. If in flower, for our “*O. littoralis*” in range, observe that the style is pink with a white base and at least nine millimeters wide, and the petalloid perianth is predominantly yellow (not orange or pink as in *Opuntia ×vaseyi*); if in fruit, the seeds are typically just three to four millimeters long and wide.

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