

Fig. 22. A robust cholla, *Opuntia echinocarpa* var. *Wolfii*, in the Colorado Desert near Mountain Springs, westernmost Imperial County. The joints are much stouter than in var. *echinocarpa*.

Fig. 21. (Opposite.) Silver cholla or golden cholla, *Opuntia echinocarpa* var. *echinocarpa*. Above, left and right, young and old joints, the young ones with leaves. Middle, older branch with fruits just maturing, and in this species becoming dry. Below, six views of the mature, dry fruits. Photographs by David Griffiths.

3b. *Opuntia echinocarpa* var. *Wolfii* L. Benson

Simply branched robust plants; joints 4 to 10 inches long, $1\frac{1}{4}$ to $1\frac{1}{2}$ inches in diameter; tubercles up to $\frac{3}{4}$ inch long and $\frac{3}{8}$ inch broad and high; flower $1\frac{1}{2}$ to 2 inches in diameter; fruits 1 to $1\frac{1}{4}$ inches long, strongly tuberculate.

Sand or gravel or rocky hillsides in or sometimes above the desert; 1,000 to 4,000 feet elevation. Western edge of the Colorado Desert. California in San Diego and Imperial counties. Mexico probably in adjacent Baja California.

Opuntia echinocarpa Engelm. & Bigelow var. *Wolfii* L. Benson. Mountain Springs Grade, Imperial County.

FIG. 22; DISTRIBUTION MAP, p. 90.

4. *Opuntia acanthocarpa* Engelm. & Bigelow BUCKHORN CHOLLA

Shrub or arborescent plant or small tree; trunk usually much less than one-fifth the height of the plant, up to 4 or 6 inches in diameter; joints 6 to 12(24) inches long, $(\frac{5}{8})\frac{3}{4}$ to $1\frac{1}{4}$ ($1\frac{1}{2}$) inches in diameter; tubercles conspicuous, sharply raised and compressed from side to side, 3 to several times as long as broad, $\frac{3}{4}$ to 1(2) inches long; spines tan to reddish-tan or straw-colored or whitish, turning to brown, then to black in age (the sheaths conspicuous, papery, and straw-colored or rarely silvery), 7(20) to 25 per areole, $\frac{1}{2}$ to 1($1\frac{1}{2}$) inches long, $\frac{1}{32}$ to $\frac{1}{20}$ inch broad, flattened, not strongly barbed; flower $1\frac{1}{2}$ to $2\frac{1}{4}$ inches in diameter; petaloid perianth parts variable in color, usually purplish or red or yellow; fruit turning to tan or brown, dry at maturity, with numerous spreading spines except at the very base, obovoid-turbinate, 1 to $1\frac{1}{2}$ inches long; seeds pale tan, less than $\frac{1}{4}$ inch long.

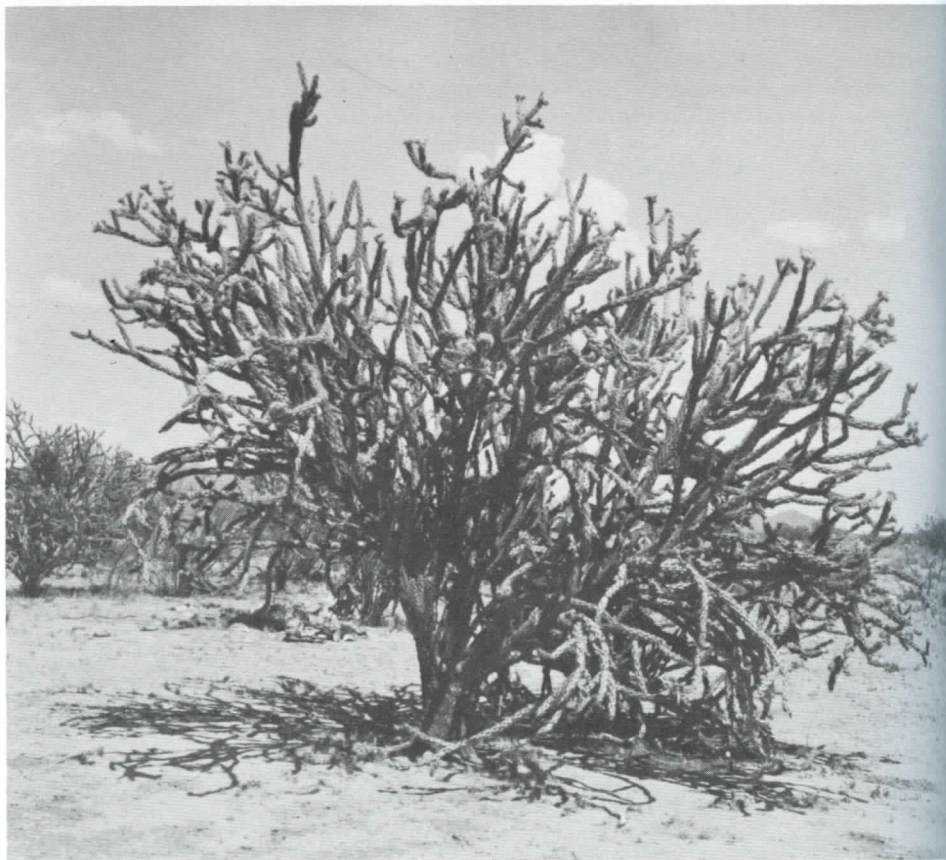


Fig. 24. Buckhorn cholla in three stages of maturity and (left) an immature dry, and they resemble Photograph by David

Fig. 23. (Opposite.) *coloradensis*; in the so This species tends to h



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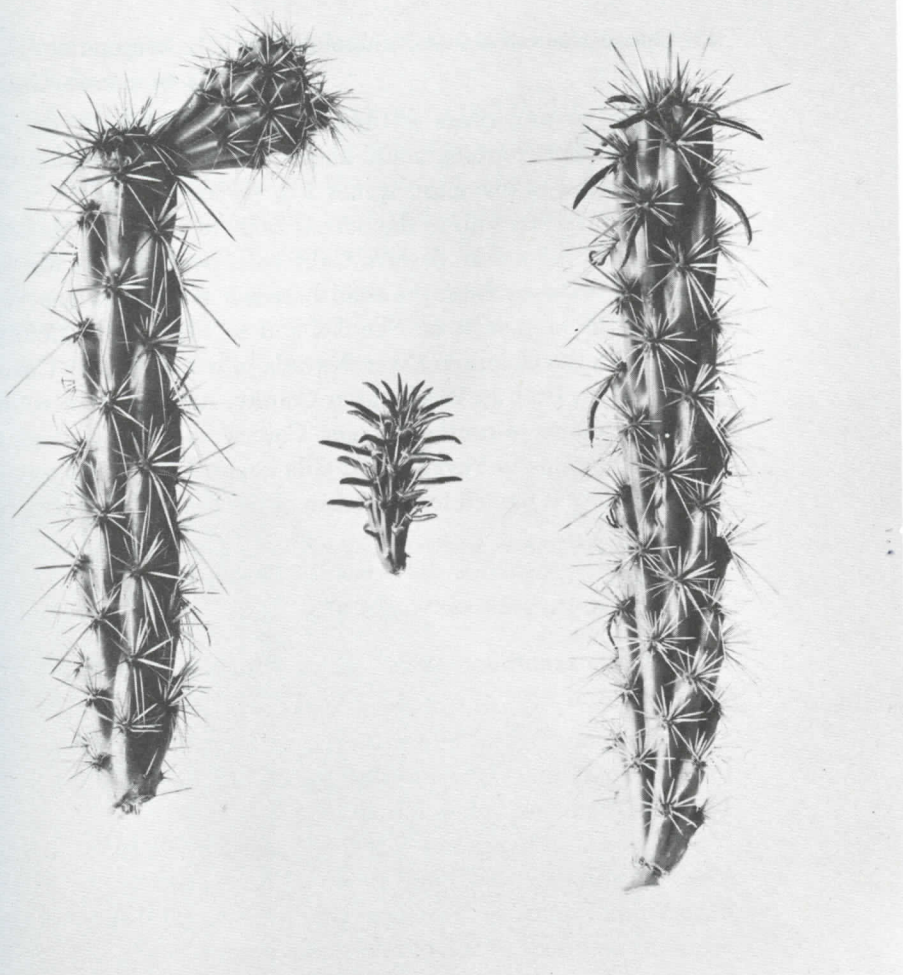


Fig. 24. Buckhorn cholla, *Opuntia acanthocarpa* var. *coloradensis*. Joints in three stages of maturity, showing the ephemeral character of the leaves and (left) an immature fruit that is still green and fleshy. Mature fruits are dry, and they resemble those of *O. echinocarpa* (Fig. 21, lower photograph). Photograph by David Griffiths.

Fig. 23. (Opposite.) Buckhorn cholla, *Opuntia acanthocarpa* var. *coloradensis*; in the southeasternmost Mojavean Desert near Aguila, Arizona. This species tends to become arborescent and up to about 9 feet high.