

OPUNTIA CYMOCHILA ENG. & BIG. A Species Lost in the Shuffle

DAVID J. FERGUSON

6401 Coors SW, Albuquerque, NM 87105

Opuntia cymochila is one of the low growing prickly pear species which braves the cold winters to the north of our Southwestern deserts. This interesting species has usually been lost in synonymy under the name *Opuntia macrorhiza* Eng.; however, it is clearly distinct. In recent years few authors have recognized its existence, but Del Weniger described and illustrated it well in his 1970 "Cacti of the Southwest", and in his condensed 1984 version "Cacti of Texas". However, he underestimated its westward distribution, where in the Albuquerque area it was somehow confused with the local (often magenta-flowered) variety of *O. polyacantha* Haworth. Weniger's photo labelled "*O. rhodantha* var. *spinosior*" is a good illustration of a branch of the fairly robust long-spined form of *O. cymochila* which is common in the Rio Grande drainage in New Mexico.

This species was described from specimens collected during the 1853-'54 Pacific Railway Survey by John M. Bigelow, M.D. The eastern portion of the survey was primarily along the Canadian River Valley, and plants were found from near the Oklahoma-Texas border ("Comanche Plains") to near present day Santa Rosa, New Mexico. The species was first published in Engelmann's synopsis of the Cactaceae in the Proceedings of the American Academy, number 3 in 1856 (a preprint of the 1857 publication). L. Benson designated as a lectotype a specimen collected September 21, 1853 at Plaza Largo near what is now called Plaza Largo Creek south of the present town of Tucumcari, New Mexico. This specimen is housed at the Missouri Botanical Garden herbarium. The species still occurs abundantly at the type locality, where it fits Engelmann's original description nicely.

Opuntia cymochila is a low growing plant which commonly forms spiny clumps up to five or six feet across, rarely to a foot in height, with the joints rooting down where they touch the ground. The plants are a beautiful sight when covered by hundreds of large brilliant yellow flowers, and it is truly spec-

tacular when miles of thousands of these plants are in full bloom.

The plants grow in dry grasslands, usually in stable, fairly heavy soils, but westward, where it is drier, they often favor sandy soil.

The joints of this species are typically a deep, often dull green, shrivelling and turning purplish in winter dormancy, when they lie prostrate on the ground. They are most commonly rounded and about 2.5 to 4 inches (6-10cm) in length, but may grow much larger in favorable conditions. In western Kansas and adjacent Nebraska and Colorado joints are often very large and somewhat elongate. In the Rio Grande drainage plants also average large.

The joints typically have several spines per areoles, with 1-4, often flattened, main spines which mostly spread downward, but one or two of which may project upward or outward. There are one to several smaller, thin, short downward radiating spines. The spines are typically whitish, sometimes with yellowish or more often brownish bases. Occasionally (esp. in the Rio Grande valley) the spines may be mostly brown or even blackish. The glochids are yellow to reddish-brown. On young growth leaves are usually green, and mostly under 1/4 inch (7mm) long. The flowers are mostly 2.5 to 3 inches (6.5-8cm) across, with many ruffled yellow petals. Toward the base these may be somewhat orangey, or rarely bright orange or red. One plant with deep pink flowers was found in ne. Colorado; probably resulting from hybridization with *O. polyacantha*. The stigma lobes are typically rich dark green, but may vary to pale in some individuals. The fruit are mostly ovoid and narrowed below the apex. The areoles on the fruit are usually prominent with obvious glochids and often a few short fine spines. The fruit are usually a dull purplish-red (often almost brown), with the pulp juicy and purple. These are among the sweetest and tastiest of prickly pear fruits, but are rather small and most of the volume is taken up by the seeds. The seeds are mostly about 3/8 inch (5-6mm) in diameter, irregularly

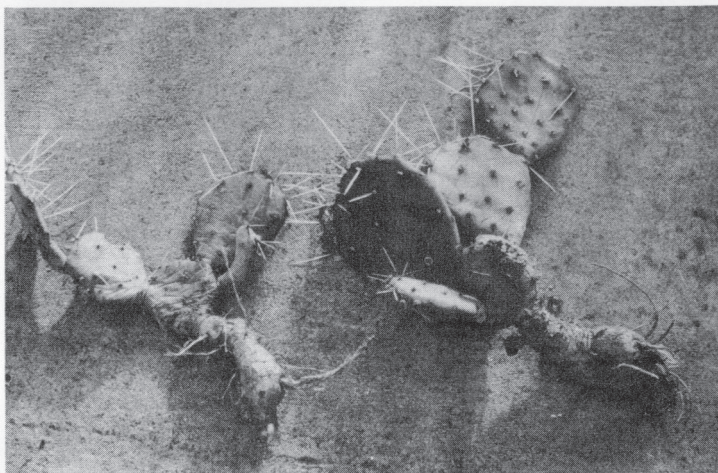


Fig. 1. *O. loomisii*, from Cocomino Co., AZ (showing fleshy taproot also typical of *O. pottsii*).

discoid, pale tan in color, with a broad prominent rim.

This plant is widespread from the Front Range in northern Colorado eastward into western and southern Nebraska, and southward from there into central Texas and southern New Mexico. It ranges westward through much of New Mexico to near the Arizona border. I have also seen specimens from Santee, northeastern Nebraska, and the species might be expected in short grass areas across Nebraska, perhaps into southern South Dakota. Plants from the Rio Grande drainage are somewhat distinctive, and may deserve varietal status.

As already mentioned, this plant has often been lost in a taxonomic shuffle, and has been misnamed or wrongly synonymized. Britton and Rose included it (apparently with some more spiney *macrorhiza*) under the name *O. tortispina* Eng. & Big., which was described at the same time as *O. cymochila*, with a type locality near Borger, Texas. *Opuntia tortispina* is a member of the *O. phaeacantha* complex, and inhabits grasslands from the Canadian River drainage south and westward from w. Oklahoma and central Texas. It often grows with *O. cymochila*, and is quite distinct, but its relationship to *O. phaeacantha* is close and needs further investigation.

Opuntia macrorhiza is a taxon closely related to *O. cymochila*, under which *O. cymochila* and all of the other western members of the *O. compressa* group have

been commonly lumped. *O. macrorhiza* and *O. cymochila* overlap ranges over a large area, and often grow together or in close proximity. Occasional apparent hybrids occur (as is commonly the case with sympatric *Opuntia* species). These are few, and often turn out to be abnormally growing specimens of one species or the other.

Opuntia macrorhiza is a variable plant with a wide distribution. It prefers moister habitats, and usually grows in sandy soil in tall-grass prairie. It is cosmopolitan in much of its eastern range, but more limited to specific habitats westward and near the edge of its distribution. It is found from Texas and se. New Mexico northward into se. Wyoming, South Dakota, Minnesota, Wisconsin, and Michigan. Other scattered northwestward records exist, and it occurs sporadically across n. New Mexico to near Zuni and Durango, Colorado. It is very closely related to the eastern *O. compressa*, and may be a variety of it. It is commonly confused with *O. cymochila*, but it is distinguished as follows. The plants rarely grow as large. Joints are mostly 3-5 inches (8-13cm) long, and often somewhat elongate. They are usually richer, often yellowish-green, sometimes (esp. sw.) very glaucous bluish. The leaves are mostly over 1/4 (7mm) long and often glaucous bluish-green. The spines are fewer, usually with 1-3 main spines. One is usually flattened and deflexed, and one or two are usually terete and project upward. There are occasionally also one or two fine small deflexed spines. The spines are most typically limited to upper areoles, but not consistently. They are

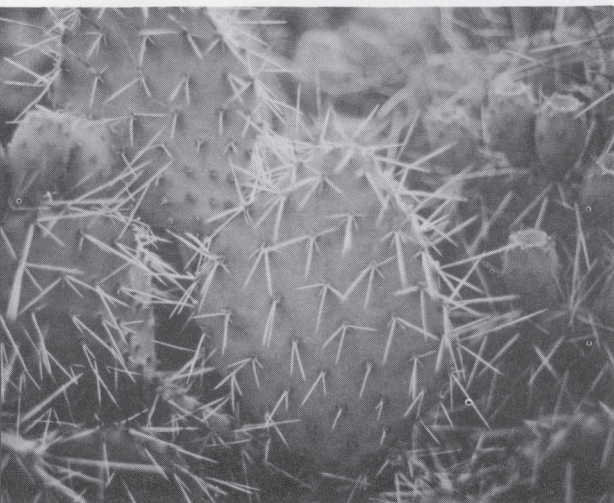


Fig. 2. *O. cymochila*, Albuquerque, NM.

mostly whitish or yellowish with yellowish or orangey bases, occasionally varying to reddish or brownish. Flowers are highly variable in size, usually have comparatively fewer petals, and are yellow, often with orange or red centers (one red-flowered specimen has been seen). The stigma lobes are usually pale whitish or yellowish. The fruit is variable in shape, and mostly fairly smooth (areoles not prominent) with glochids not so noticeable and spines mostly absent. The fruit varies tremendously in color from greenish through orange to purplish-red. It is usually quite sour in taste. Seeds typically (though not consistently) have very thin rims. Roots are produced along pad edges as in *O. cymochila*, but more often form tubers, especially in loose sandy soil.

Fig. 3. *O. macrorhiza*, Chaves Co., NM.



Fig. 4. *O. compressa*, from Monkton, MD.



Fig. 5 (above). *O. pottsii*, from Cochise Co., AZ. Fig. 6 (below). *O. loomisii*, Grant Co., NM.





Fig. 7. *Opuntia cymochila*, Prowers Co., Colorado.

Other species in the *O. compressa* group include *O. compressa* (Salisb.) which is eastern, replacing *O. macrorhiza* to the east of the tall-grass prairies. It is a small, mostly dark green, thick-padded plant. It is usually nearly spineless, with the few spines short and whitish to brown. The flowers and fruit are much as in *O. macrorhiza*. *Opuntia pottsii* Salm-Dyck is a plant of desert grassland from se. New Mexico to s. central Arizona, southward into n. Mexico. It grows small clumps of bluish pads from a large thickened taproot, has numerous tubers on lateral roots, few slender spines, and small (about 2 inches (5cm) in diameter) flowers which vary from red (most common east) to yellow (most common west), and have pale stigma lobes. The ovaries and fruit are very slender and mostly ripen greenish, only slightly reddish. The seeds are mostly very thick with narrow rims and often quite large (often over 1/4 inch (7mm) in diameter). A plant called *O. loomisii* Peebles (T.L.: Prescott, Arizona) is common in the mountains, mostly north of *O. pottsii*, through most of New Mexico (perhaps in the Texas panhandle) westward to the Prescott and Kaibab Plateau areas in Arizona and extreme s. Utah. It grows much like *O. pottsii* and further study may show the two to be conspecific (in which case the proper name for this would become *O. pottsii* var. *montana* (Eng. & Big.), (an unpub-

lished comb. nov., T.L.: Sandia Mtns., Bernalillo Co., NM). It has larger flowers than *O. pottsii*, yellow often with red centers, and often with greenish stigma lobes. It has fruit and seed similar to those of *O. cymochila*, but with the fruit usually pale pinkish or orangey. Another species, unnamed, occurs in sandy areas in n. Arizona. It is much like *O. macrorhiza* in most respects, but often has its mostly yellowish spines in most areoles, and has flowers and seeds more like *O. cymochila*. The fruit are orange to bright red. It is also similar to some of the plants in mountains from the Kingman, Arizona area west into s. California, which are included in the hodge-podge most commonly called *piercei* Fosberg and *martiniana* L. Benson, (this also includes plants of the *O. phaeacantha* group). I have seen all these species (except the last "hodge-podge") growing with at least one other of the species in the group, and have often seen as many as three together, always recognizable and distinct. Areas of integration between *O. pottsii* and *O. loomisii* need to be hunted to see if they exist. The northeastern Arizona type also needs further study to see how it relates to *O. cymochila*, *macrorhiza*, and *martiniana*.

Opuntia cymochila is an easily grown species, and is very cold hardy, but likes somewhat drier conditions than *O. macrorhiza* or *compressa*. Plants are easily propagated from both seeds and cuttings. Cuttings are best planted in Spring, on edge, with the cut surface out of the soil.

Key to the U. S. species of the *Opuntia compressa* group:

The traits in the key must be taken in combination and it should be remembered that they are not always completely reliable, as environment and individual variation can cause tremendous abnormalities. When used in the field with populations of plants, and over a period of time (in order to see all the various stages), this article and key should be helpful in recognizing and beginning to understand these interesting plants.

Low growing plants of North America; pad flattened, firmly attached; when dormant, shrivelling and lying prostrate; fruit juicy when ripe.....*Opuntia compressa* group

- 1a. Plants made up of clusters of pads from a fleshy, strongly thickened and elongate taproot; not forming adventitious roots along branches (unless taproot is destroyed) 2
- 1b. Plants made up of spreading branches which normally form many adventitious roots where they lie on the ground; with taproot often present, but normal 3
- 2a. Flowers fairly small (mostly 2.25 in. across), with ovary and fruit very slender (mostly at least 3X as long as thick); flowers commonly red. Plants of desert grassland (W. Texas to SE. Ariz. into Mexico) *Opuntia pottsii*
- 2b. Flowers larger, (always?) yellow, with ovary and fruit broader. Plants mostly of woodland in mountainous terrain.....*Opuntia loomisii*
 - 3a. From west of New Mexico 4
 - 3b. From east of Arizona (perhaps in E. Apache Co. Az), but not east of the tall-grass prairies 5
 - 3c. From east of the tall-grass prairies. Small plants, mostly spineless, or nearly so.....*Opuntia compressa*
 - 4a. Mountains in and surrounding the Mojave Desert *Opuntia piercei-martiniana*
 - 4b. Found mostly in sandy grassland and brush areas in N. Arizona and adjacent Utah (esp. between Kayenta and Fredonia) *Opuntia* sp. nov.
 - 5a. Plants mostly with several spines per areole in most areoles; flowers yellow, rarely with red centers, with stigma lobes usually rich green. Mostly in short grassland on the Great Plains and west across New Mexico.....*Opuntia cymochila*
 - 5b. Plants mostly with few spines per areole in few areoles; flowers yellow, but often red centers, with stigma lobes pale whitish or yellowish. Mostly in tall-grass prairie (esp. sandy areas) from Texas and the Midwest to the Rocky Mountains, and west across N. New Mexico and into SW. Colorado.....*Opuntia macrorhiza*

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