

WHAT ABOUT OPUNTIA ORBICULATA SALM-DYCK EX PFEIFF?

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Introduction

Opuntia orbiculata is a large and attractive *Opuntia* found in southern Oklahoma, Texas, and Mexico westward to Nevada and perhaps the desert mountains of eastern-southern California (Figure 1). The original description was published 180 years ago (Salm-Dyck, 1837).



Figure 1: *Opuntia orbiculata* shrub, near Artesia, NM.

Description

Opuntia orbiculata may reach 7 ft tall, but mature plants are typically 3 ft tall (or less if sprawling). It is often noticeably wider than tall for a large plant. The cladodes are thick and may be up to 12 inches wide but are typically about 8–10 inches. Cladodes are most often orbiculate (circular), but they may be spatulate, broadly oval, obovate, or even obdeltoid (Figure 2). Often, plants have a bluish look to them, but this is not determinative and stressed plants may be yellowish-green. In clement growing conditions, the plants make close-branching shrubs. In drier locations the plants may be shorter, semi-prostrate, and spreading. Spines are variable, but are typically relatively short, slender, whitish, yellowish, or light orange-



Figure 2: Close-up of *Opuntia orbiculata* cladodes.



Figure 3: Herbarium specimen labelled *Opuntia engelmannii*, but which is actually *O. orbiculata*.

brown, and can be lightly curved. Spines are usually dorso-ventrally compressed or flattened and oval in cross section, varying to terete. *O. orbiculata* grows on rocky soils as well as deep soils of many types. It is seldom found on sand soils or exceedingly rocky areas. Often *O. orbiculata* is misidentified as *O. engelmannii* or *O. lindheimeri* because it is not well known and because it is the same general size as these plants. Many herbarium specimens identified as *O. engelmannii* are actually *O. orbiculata* (Figure 3). The features that distinguish *O. orbiculata* from *O. engelmannii* are listed in Table 1.

We have observed *O. orbiculata* in Coahuila, Chihuahua, Nuevo Leon, Tamaulipas, and Sonora, Mexico. We have also seen it in southern-central Oklahoma, south of Ardmore in the hills; throughout central and western Texas; in New Mexico north to Albuquerque; in most of the southwest half of Arizona; and even on Mt. Potosi in southern Nevada. The



Figure 4: *Opuntia orbiculata* shrub showing areole distribution.

plants grow from low elevations (less than 1000 ft) on the South Texas Plains to 4,500 ft on Mt. Potosi in Nevada or even 7,000 ft in the Sandia Mountains near Albuquerque, NM. An easy place to see *O. orbiculata* is at the Aguirre Springs Campground located 20 miles east of Las Cruces, NM off of US Highway 70 in the Aguirre Spring National Recreation Area. *O. orbiculata* is abundant in the area and is the largest species present. It is also the dominant species present in thickets at the main entrance to the Carlsbad Caverns in New Mexico.

As is typical of most *Opuntia* species, the plants are variable, and while many pads on many plants are nearly circular, this is not a totally diagnostic trait. Oval, obdeltoid, and even spatulate pads are common, but some individuals seem composed only of circular pads. Mature pads are thick and appear fleshy, more so than is usually the case in *O. engelmannii* or *O. lindheimeri*. Even though fleshy looking, the pads are usually rigidly woody, more so than in *O. lindheimeri* but not more so than in *O. engelmannii*. Very old plants may reach 6–10 ft across and have a strongly woody base 12 inches across from which branches arise.

O. orbiculata areoles are more even in size and distribution across a cladode than is the case in *O. engelmannii* (Figure 4). Also, glochids are arranged as in *O. phaeacantha*, with an adaxial tuft in older areoles. In contrast, glochids of *O. engelmannii* are scattered throughout the areoles.

As in several related species (including *O. engelmannii* and *O. lindheimeri*), seedlings of *O. orbiculata* produce a covering of hair-like spines for the first two or three years. These are typically more strongly developed in *O. orbiculata* than in most species.

The Name

Britton and Rose (page 176) discussed this large plant and described a mystery. The original description indicated the plant was from South America (Chile or Brazil), but Britton and Rose knew that no plant of that type was present in South America. They studied live material from botanic gardens in Europe and concluded that *O. orbiculata* was the same as *O. crinifera* Salm-Dyck ex Pfeiffer and also *O. lanigera* Salm-Dyck. They also

Table 1. Comparison of *Opuntia engelmannii* and *O. orbiculata*.

concluded that the given type location was in error and must actually be northern Mexico.

If, for some reason, the name *orbiculata* (along with *lanigera* and *crinifera*) is discarded, the species could be referred to as *O. dillei*. Griffiths described a spineless variant of the taxon as *O. dillei* (1909) thinking it represented a spineless species (Figure 5). There is no ambiguity about this name. The qualification, of course, is that spinelessness is not a universal characteristic of *O. orbiculata*.

In the Garden

O. orbiculata is a standout in any garden due to its size, but it needs space. It will bloom when smaller (2–3 ft across), but it wants to be a large plant with a lot of room for roots. It has pleasing yellow flowers with bright green

<i>Opuntia engelmannii</i>	<i>Opuntia orbiculata</i>
Has larger areoles arranged further apart on pads so there are fewer areoles.	Has smaller areoles arranged closer together so there are more areoles
Glochids are usually of mixed sizes, and they are scattered throughout the areoles.	Glochids are usually neatly arranged in concentric rings of even sizes.
There is a lower number of areoles on fruits.	There is a higher number of areoles on fruits.
Pads are mostly longer than wide (often obovate), seldom wider below the middle, and almost never pointed.	Pads are often nearly orbicular, sometimes wider below middle, sometimes somewhat pointed.
Pads are of “normal” thickness.	Pads are thicker seeming.
Spines are typically stouter.	Spines are more slender.
Spines are more often flattened and may be up to 5-6/areole.	Spines are less strongly or not flattened, usually fewer per areole.
Spines may have yellowish, reddish, or warm hues.	Spines are commonly clearly yellow or white with dark bases.
Spines are often chalky seeming.	Spines may be or not be chalky.
The shape of the fruits is less defined over a plant fruits have fewer areoles.	The shape of fruits is generally more “defined” and with more areoles.
Fruit is variable but often broadly pear shaped, but does not have a pronounced narrow base—overall the shape is rounded.	Fruits are generally more barrel-shaped (with a more distinct top rim), and almost always longer than wide, but they are not narrow.
Plants may be as tall as wide, or taller, seldom mostly on the ground.	Plants are often wider than tall, sometimes mostly on the ground.
Seeds are small (like <i>O. lindheimeri</i>) and all of the same size within a fruit.	Seeds are commonly in two size classes within the same fruit--both tiny and small (either somewhat larger or distinctly smaller than those of <i>O. engelmannii</i>).



Figure 5: Spineless *Opuntia orbiculata* (e.g., *O. dillei* Griffiths).

stigmas surrounded by yellow stamens. Spineless forms (*O. dillei* types) are not in the garden trade but are worth growing if you can find them; however they may make a few spines in gardens under well-watered conditions. The plants often have a bluish look when well grown and a large plant of *O. orbiculata* will make a focal point for any garden or large flower bed. Some individuals have flowers that change from yellow to orange or even red before closing. These present a pleasing colour combination, often with flowers of different hues open at the same time on the same plant. Fruits are juicy and usually of a pleasing sweet flavour (Figure 6).

It will grow in most garden soils but dryer and less fertile soils mimic natural conditions better and help plants retain a natural look. Plants are tolerant of too much water, and forms from northern areas or high altitudes are very cold hardy—perhaps to -20°F (-20°C).



Figure 6: *Opuntia orbiculata* fruit.

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