

The Herb Society of America's Notable Native™ Herbal Shrub 2024 *Opuntia ficus-indica* (L.) Mill.



A large *Opuntia* in the center of a bed at the Sarah P. Duke Gardens in North Carolina.
©Katherine Schlosser

Family: Cactaceae
Latin Name: *Opuntia ficus-indica*
Common Name: Indian fig opuntia
Growth: Small to medium shrub; ground creeping
Hardiness: Zones 9-12
Light: Full sun
Soil: Well-drained; wide range of soil types
Water: Low moisture; tolerates drought

CONSERVATION STATUS: Unranked
See page 4 for list of Vulnerable, Im-
periled, and Critically Imperiled species

History

With common names of prickly pear, nopal prickly pear, nopal, beavertail, cactus pear, nopales (mature pads) or nopalitos (immature pads), and devil's-tongue, it quickly becomes clear that this is a genus of many species.

The genus name *Opuntia* is often claimed to have originated in first-century Greece from a cactus-like plant discovered near the ancient city of Opus. It could not have been a cactus, however, as they occur naturally in the Americas and would not likely have been available in Greece at that time. The Greek word for "fig juice" was "opos" and may have been applied to the fig-like fruits.^{1,2}

The Spanish word for the pads on *Opuntia* is "nopales," which means paddles and refers to the plant's pads.

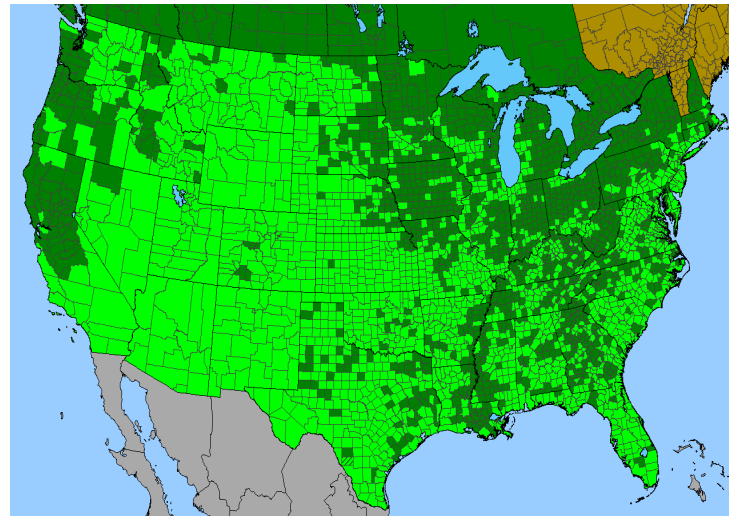
Humans have used *Opuntia* species for thousands of years for food and drink, including jams, candies, sweet drinks, vegetables, fruits, breads, and syrups.

Native American Indians poulticed peeled pads on wounds, applied the juice of fruits to warts, and drank pad tea for lung ailments.

The cochineal, a scale insect (*Dactylopius coccus*), feeds on a number of *Opuntia* species and has been harvested for centuries by indigenous people to produce a vibrant red dye for their textiles. Some American Indian cultures used the plants ceremonially and the spines to prick designs into the

skin for tattooing.

At least 34 *Opuntia* species are found in the Lower 48 states. Of those *O. ficus-indica* is by far the most widely used for culinary purposes. The truth of the usefulness is evidenced on the distribution map, as this is a species



Distribution map of *Opuntia* species in U.S. Updated in 2023, the map is courtesy of BONAP via J.T. Kartesz, Director. See references.



O. ficus-indica in bloom. Photo taken in New Mexico. ©K. Schlosser

native to Mexico, Central and South America that found the U.S. a suitable location once here. Other species have been and are used for food, medicine and various other purposes.³

Description

Fearful is an apt description, especially if you have already experienced an encounter with the sharp spines on cacti. Yet they are used in private landscapes as well as public gardens. They are prized for food, medicine and fiber.

“The Opuntoid are distinguished from other cacti by four characteristics. First, the stems grow in distinctly jointed segments. The elongation of joints is permanently terminated by the onset of the dry season; subsequent growth of the plant occurs by the initiation of new joints by branching from the areoles [spines]. Second, whether or not they have regular spines, opuntoid areoles bear glochids (usually small to minute, barbed spines that are very sharp and brittle, and very easily detached). Third, rudimentary leaves are present on new joints. Fourth, the seeds have a pale covering called an aril; most other cacti have shiny black seeds.”⁴

The plants broad pad (cladode) is a stem modified for photosynthesis that looks like a leaf. It is flat, increasing the surface area, thick for storing water, and green for photosynthesis.

Culture & Habitat

Opuntia is a New World species, having originated in southern South America during the late Miocene, that spans the

Americas from the 56° latitude in the British Columbia and Alberta Provinces to below the 45° latitude in Argentina. It is endemic to arid to semi-arid habitat where the soil is sandy or rocky. *Opuntia* has a wide temperature range tolerance and is one of the most cold tolerant and moisture tolerant genera of the Cactaceae family. This has allowed it to acclimate to many garden situations where it can survive in humid environments as long as the site is well-drained. This has also allowed it to naturalize easily in the Eastern Hemisphere, and in some cases, it has become a noxious weed or an invasive species.^{5, 6, 7, 8}

Pollinators

The long flowering season, and long-tubed flowers attract a plethora of pollinators. Among the important pollinators of *Opuntia* species are medium to large bees (1.0 to 1.6 cm). Smaller bees (0.2–0.7 cm) pollinate the flowers of smaller prickly pear species, but sometimes act as pollen thieves (taking pollen without pollinating). Other bee species visit on occasion. Birds, especially hummingbirds, also act as pollinators. (see image from 1558)

Propagation

Opuntia species can be propagated by cuttings, division, and seed. Prickly pear forms large colonies, and the easiest method of propagation is to divide the colony. The divisions can be quite small, as little as one pad with a piece of the root. To propagate by cutting, cut a pad into two to three pieces. Allow the cut edges to dry before sticking the pad into a well-draining medium. Wait until there are signs of growth before watering and then water sparingly or the cuttings and divisions will rot. Both methods can be done anytime during the growing season.

For seed propagation, the fruit must be allowed to dry before harvesting the seeds as this is part of the seed maturation process. Once the fruit is dry, remove the seeds, rinse them, and then allow them to dry completely. Once dry, the seeds will need to be scarified or scratched, which can be done with a fine sandpaper. Then they need to undergo cold stratification for approximately one month or more before sowing. Sow the seeds shallowly, 1/8-1/4” below the surface, into a moist but not wet, well-draining medium, and



C. 1558. The ancient Mesoamerican agriculturists may have had knowledge of pollination biology, including hummingbirds. See Ref. 2.

supply bottom heat of 70° until you see the shoots emerge. Germination of *Opuntia* seeds tends to be inconsistent and it may take days to months for new growth to appear. The best time to sow seeds is in the spring.

Wear thick gloves when collecting and propagating prickly pear. The spines may be wicked, but the small glochids work their way under your skin and can be irritating for days.

Uses

If you plan to eat prickly pears, pads and/or fruits, you need to know about glochids, the short, thin spines on the plants that usually also have shorter, backward pointing spines that are the real culprits. The backward pointing parts enter the skin with the slightest brush. Once aware it is there, any attempt to remove it can cause pain, like a fish hook. They can cause complications such as inflammation, infection, toxin mediated reactions, allergic reactions lasting from a few days to months. They should be carefully removed before consuming.

The National Library of Medicine has high praise for the pads and fruits:

“Prickly pear is a rich source of vitamins C, B1, B2, A, and E, minerals such as calcium, potassium, magnesium, iron, and phosphorus, as well as bioactive substances, i.e., carotenoids, betalains, and phenolic compounds. Of these, the

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In Mexican cuisine, the pads are treated as a cooked or wood-fired vegetable and consumption generates significant reductions in serum glucose and insulin, indicating potential as a functional food candidate.¹¹

The University of Nevada, Reno has excellent instructions and a few recipes: <https://extension.unr.edu/publication.aspx?PubID=2157>



Nopales. Gary Stevens Wikipedia [CC BY 2.0](https://creativecommons.org/licenses/by/2.0/)

⁴ Wilson, M. F. October 2007. Medicinal Plant Fact Sheet: Opuntia: Prickly Pear Cactus. *A collaboration of the IUCN Medicinal Plant Specialist Group, PCA-Medicinal Plant Working Group, and North American Pollinator Protection Campaign*. Arlington, Virginia. Available online: <https://www.pollinator.org/pollinator.org/assets/generalFiles/Opuntia.draft.pdf>

⁵ Tenorio-Escandón P, Ramírez-Hernández A, Flores J, Juan-Vicedo J, Martínez-Falcón AP. A Systematic Review on Opuntia (Cactaceae; Opuntioideae) Flower-Visiting Insects in the World with Emphasis on Mexico: Implications for Biodiversity Conservation. *Plants (Basel)*. 2022 Jan 4;11(1):131. doi: [10.3390/plants11010131](https://doi.org/10.3390/plants11010131). PMID: 35009134; PMCID: PMC8747471. Accessed online 11-7-2023.

⁶ Majure L.C., Puente R. 2014. Phylogenetic relationships and morphological evolution in Opuntia s. str. and closely related members of tribe Opuntieae. *Succ. Plant Res.* 2014;8:9–30.

⁷ Freeman, Daiv. Notes for the Genus: Opuntia. <https://cactiguide.com/cactus/?genus=opuntia>

⁸ Pinkava, Donald J. Opuntia Miller, Gard. Dict. Abr., ed. 4. vol. 2. 1754. Flora of North America. http://www.efloras.org/florataxon.aspx?flora_id=1&taxon_id=123045

⁹ Garcia, Rachel. 2022. Prickly Pear Cactus Propagation Pointers. Epic Gardening. Accessed 11-7-2023. <https://www.epicgardening.com/prickly-pear-cactus-propagation/>

¹⁰ Oniszczyk A, Wójtowicz A, Oniszczyk T, Matwijczuk A, Dib A, Markut-Miotła E. Opuntia Fruits as Food Enriching Ingredient, the First Step towards New Functional Food Products. *Molecules*. 2020 Feb 18;25(4):916. doi: [10.3390/molecules25040916](https://doi.org/10.3390/molecules25040916). PMID: 32085649; PMCID: P <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7070420/>

¹¹ Zeratsky, Katherine, R.D. 2023. I've seen prickly pear cactus promoted as a superfood. What's behind the hype?, *Consumer Health*, Mayo Foundation for Medical Education and Research. Accessed 10-18-2023. <https://www.mayoclinic.org/healthy-lifestyle/consumer-health/expert-answers/prickly-pear-cactus/faq-20057771>

1 clove garlic, minced
1/2 small onion, chopped
4 eggs, well beaten
Fresh cilantro, washed and chopped
corn or flour tortillas
Salt and pepper to taste

Using a small paring knife, clean the cactus pads by scraping thorns or spines from both sides. Trim off the edges and any blemished or discolored areas. Wash well with cold water.

Cut the pad lengthwise into half-inch thick strips and then cut crosswise into 1 to 1 1/2-inch lengths.

In a saucepot over medium heat, combine garlic, about 1 teaspoon of salt, and enough water to cover nopales. Bring to a boil.

Add nopales and cook for about 20 to 25 minutes or until nopales have changed color and are tender yet crisp.

Drain nopales and rinse well under very cold water. Rinse again as needed to get rid of mucilage.

In a skillet over medium heat, heat oil. Add onions and garlic and cook until softened.

Add nopales and cook for about 2 to 3 minutes.

Add eggs and cook, stirring regularly, until eggs are set. Season with salt and pepper to taste.

Remove from heat, garnish with cilantro and serve with warm tortillas.

Adapted slightly from: <https://www.onionringsandthings.com/nopalitos-con-huevos/>

References

¹ Maarten H.J. van der Meer. 2023. Opuntia. Dictionary of Cactus Names. Retrieved from <https://www.cactusnames.org/opuntia> Accessed 10-16-2023.

² Griffith, M. Patrick, 2004. The Origins of an Important Cactus Crop, *Opuntia ficus-indica* (Cactaceae): New Molecular Evidence. *American Journal of Botany*, Vol. 9, No. 11, pp 1915-1921. Available online: <https://bsapubs.onlinelibrary.wiley.com/doi/full/10.3732/ajb.91.11.1915> DOI: [10.3732/ajb.91.11.1915](https://doi.org/10.3732/ajb.91.11.1915) Accessed 09-14-2023.

³ Genus *Opuntia* (incl. *Cylindropuntia*, *Grusonia*, and *Corynopuntia*), Arizona-Sonora Desert Museum, Tucson, AZ. Material accessed 10-16-2023 at https://www.desertmuseum.org/books/nhsd_cactus2.php

Recipe to Try

Nopalitos con Huevos

A classic Mexican dish.
2 nopales pads
1 tablespoon vegetable oil



Nopale, prickly pear pad or leaf.
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Conservation Status of *Opuntia* species:

(list from NatureServe.org <https://explorer.natureserve.org/Search#q>)

Vulnerable (NatureServe rank of G3 or the like)

- Golden prickly pear (*O. aurea*). Arizona, Utah.
- Chisos Mountain prickly pear (*O. chisosensis*). Texas, probably adjacent Mexico.
- Cactus-apple (*O. engelmannii* var. *flavispina*). Arizona.
- *Brittle prickly pear (*O. fragilis* var. *brachyarthra*). Arizona, Colorado, New Mexico, Utah.
- *Violet prickly pear (*O. gosseliniana*). Arizona and Sonora, Mexico.
- Purple prickly pear (*O. macrocentra* var. *macrocentra*). Arizona, New Mexico, Texas, Mexico.
- Chaparral prickly pear (*O. oricola*). California, Mexico.
- *New Mexico prickly pear (*O. phaeacantha* var. *camanchica*). Colorado, New Mexico, Oklahoma, Texas.
- *New Mexico prickly pear (*O. phaeacantha* var. *laevis*). Arizona.
- *New Mexico prickly pear (*O. phaeacantha* var. *wootonii*).
- New Mexico Bullrush Canyon prickly pear (*O. pinkavae*). Arizona, Utah.
- *Panhandle prickly pear (*O. polyacantha* var. *juniperina*). Arizona, Colorado, New Mexico, Utah, Wyoming.
- Big Pine Key prickly pear (*O. triacantha*). Florida, Caribbean.
- *San Antonio prickly pear (*O. valida*). New Mexico, Texas.

Imperiled (NatureServe rank of G2 or the like)

- *Sand prickly pear (*O. arenaria*). New Mexico, western Texas, and adjacent Mexico.
- *Beavertail prickly pear (*O. basilaris* var. *heilii*). Utah.
- Utah Beavertail prickly pear (*O. basilaris* var. *longiareolata*). Arizona, Utah.
- Bakersfield cactus, Kern beavertail prickly pear, or Trelease's beavertail prickly pear (*O. basilaris* var. *treleasei*). California.
- *Old-man prickly pear (*O. erinacea* var. *ursina*). Arizona, California, Nevada, Utah.
- *Heacock's prickly pear (*O. heacockiae*). Colorado, Arkansas.
- *Coastal prickly pear (*O. littoralis* var. *austrocalifornica*). California.
- Coastal prickly pear (*O. littoralis* var. *littoralis*). California.

Critically Imperiled (NatureServe rank of G1 or the like)

- Golden-spined prickly pear (*O. aureispina*). Texas.
- Short joint beavertail (*O. basilaris* var. *brachyclada*). California.
- *Big Bend prickly pear (*O. densispina*). Texas.
- Few-spined marble-fruited prickly pear (*O. engelmannii* var. *flexispina*). Texas.
- Cow-tongue prickly pear (*O. engelmannii* var. *linguiformis*). Texas.
- *Coastal prickly pear (*O. littoralis* var. *piercei*). California.
- *Coastal prickly pear (*O. littoralis* var. *vaseyi*). California.
- *Seashore cactus (*O. martiniana*). Arizona.

The following *Opuntia* species of the United States are considered as being vulnerable or imperiled (NatureServe 2007). Some may be listed under different names or not considered as having valid taxonomic status by some authorities and there may be disagreement over their conservation status. *Opuntia superbospina*, listed as "possibly extinct" on the NatureServe website is listed in Pinkava's work (2003) as a synonym of *O. phaeacantha*. For a number of taxa in the genus *Opuntia*, Pinkava states that "morphologic and genetic analyses of the populations are needed before correct names can be assigned to many of these plants with confidence." Putative hybrids are not listed here. Taxa that are not listed as valid in Pinkava (2003) are denoted with a *.



Opuntia in the home landscape. North Carolina suburban neighborhood. ©K. Schlosser

By the Native Herb Conservation Committee, The Herb Society of America, Inc., October 2023, with the assistance of Susan Betz, Debra Knapke, Elizabeth Kennel, Maryann Readal, Judy Semroc, and Kathy Schlosser.

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