

The Great Cacti: Ethnobotany & Biogeography

David Yetman

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As a cactophile, with a shelf load of books by Edward Anderson, Lyman Benson, Britton and Rose, and Park S. Nobel, I have complained for years that a book was needed on the giant columnar cacti. I even knew who should write it – David Yetman. He has written extensively and engagingly on the plants and peoples of the arid southwest and Mexico. Here, finally, is the book. It is worth the wait. From our ethnocentric viewpoint, Americans think of the saguaro (*Carnegiea gigantea*) as being the large cactus par excellence. This is the cactus that defines the southwestern United States. The reality is that armies of equally large cactus species march to the south of the U.S. border. In the southern part of the Sonoran Desert, in Mexico, stands of saguaros fade away to be replaced by the cardón, or sahuero (*Pachycereus pringlei*). These are probably the tallest columnars. Growing up to 25 tons weight, they easily outweigh the saguaro. Further south in Mexico are the equally large *P. grandis* and *P. weberi*, or chico. South America hosts the towering *Trichocereus* and other genera of large cacti.

This is a book about ethnobotany rather than botany per se. Among their many uses, the large cacti are seasonally major food sources in the arid regions in which they are distributed. Cultures such as the Tohono O'odham not only ate the fruit, but fermented it into an alcohol beverage. Cactus wood is frequently employed in construction. The cacti themselves are used for living fences, advantage being taken of the ability of many cacti to root readily from cuttings.

Many plants have large, palatable fruit. A few months ago, in La Paz, I had an ice cream of pitaya dulce, the fruit of *Stenocereus thurberi*, or the organ pipe cactus. It was delicious, and of a rich, deep red color speckled with black seeds. Yetman talks of the succulent fruit of the Peruvian cactus, *C. hildmannianus*. Although my cultivated Peruvian cactus in Tucson must have produced thousands of fruits over the years, I never got to taste one, as the birds, less discriminating as regards ripeness, always got them first. The woodpeckers were needed to split the tough-skinned but delicately rose-colored fruits. Then the other birds would pile in, the smaller passerines ultimately disappearing inside the large fruits, which would surprise visitors by shaking around apparently unaided.

One message of the book is how humans have shaped the evolution and distribution of cacti; the anthropogenics of cacti, if you will. It has been suggested that the dense stands of tetechos (*Neobuxbaumia tetetzo*) in areas of Puebla is due to centuries of relentless use of rodents as food sources by native peoples, such use suppressing predation of vulnerable

seedling cacti. This recruitment of young tetechos in now being reversed in heavily grazed areas. Some years ago, I heard Yetman give a talk on columnar cacti in which he discussed the impressive stands of certain species found near villages in central Mexico. As I remember the talk, he speculated that historically residents consumed the fruit of individual highly desirable cacti and defecated the seeds near the villages with the inadvertent results of both selecting and propagating the species. Modern technology prevented a similar fate for the seeds of *S. thurberi* ingested in my ice cream in La Paz. Yetman suggests that the Seris may have gone further, and intentionally planted seeds of individual cacti known to produce better fruits.

The cactus pitaya agria (*Stenocereus gummosus*) is another example cited of humans modifying plant distribution. This cactus has one of the tastiest of all fruits. Pitaya agria grows primarily in Baja California, but is also found on Tiburón Island in the Sea of Cortez, concentrated along trails formerly used by the Seri Indians, and around Seri habitations on the mainland. Yetman surmises that the Seris brought this important fall food source from Baja California to the mainland. He also suggests that the Seris introduced the sahuero (*P. pringlei*) to Sonora. The historic range of these Indians coincides with the Sonoran distribution of this species, which used to be the Seris most important plant. Human influences are not limited to these species. Yetman argues that many of the large cacti in both Mexico and South America are semi-domesticated. Some species, such as the baboso (*P. hollianus*) in Puebla, are so integrated into local culture that the existence of unequivocally wild specimens is problematic. He points out that the cactus-rich Valle de Tehuacán in Mexico has been inhabited for more than 7,000 years. After plants and animals have been exploited for such a period, determining how vegetation occurs "naturally" is all but impossible.

Humans, now, however, have changed from being beneficent to malign influences on these autochthonous American species. By acts of commission, cactus forests are being cleared for agriculture and cattle pasture. By acts of omission, peoples who used to look after and revere cacti as food sources now neglect them for canned food and Coca Cola from the market.

It is painful to read of the destruction of these magnificent plants in the pursuit of marginal agriculture. Often, the visually most impressive stands are the ones most disturbing to those concerned with the future of these plants, the absence of young cacti indicating a population that is not being replenished. Trampling hoofs and the removal of nursery trees that provide shade and protection for seedling cacti are inimical to propagation. Cattle, goats and cacti comprise an inharmonious trio. However, it is not only the consumption of hamburger that leads to the destruction of large cacti. The deliberate introduction of exotic fuel-providing plant species such as buffelgrass (*Pennisetum ciliare*) is altering the ecology of cactogenic landscapes, rendering the plants vulnerable to wildfire.

Benign neglect is all these plants need to survive. One of the heaviest stands of saguaros is near Casa Grande, Arizona,

in an area that was a military base and therefore protected from cattle grazing and human impacts. Small islands in the Gulf of California, free of introduced animals and neglected by humans, may contain sahueso densities of 8,000 plants per hectare (3200 per acre).

Yetman comments that cactus landscapes can be eerily otherworldly. To a northerner, these are exotic, and exotically armored, plants. Spines in some species can be a foot long. The reader is seduced by the poetry of names, alluring in their alien sounds: facheiro azul, chende, chicha, jotilla, sinaaqui and tepamo. To the residents, however, large cacti are simply part of the scenery. How much longer they will remain so is problematic, as cultures desert their own ethnobotanies for the cheap attractions of the market economy. Peoples in the Andes use to purify water by dropping in bits of *Armatocereus*. Now they purchase bottled water, with all the associated environmental costs of transport, manufacture of plastic from petrochemicals and disposal the empty bottles. When the bottled water goes, what then?

Much remains to be learned of these fascinating species. Evolutionary and phylogenetic relationships need to be worked out. How many large species are there? Yetman talks of numerous undescribed species of *Stenocereus* and other cacti, and suggests a need for taxonomic revisions. The saguaro, *C. gigantea*, for example, may one day be reclassified as a *Neobuxbaumia*. The creation of a monotypic

genus, *Carnegiea*, had more to do with buttering up the wealthy Andrew Carnegie than with botany. Yetman calls it political taxonomy.

This is not just a book about cactus. It is a book to make the reader think about the relationship between humans and the world they so heedlessly despoil for short-term profit and immediate transitory satisfactions. Thoughtful readers may end learning as much about themselves as about these sentinels of the desert.

The book is organized into three sections. The first section covers general topics such as ecology, ethnobotany, origins and taxonomy. The second section is a species-by-species description. A third, short section discusses “the hot spots”, or where the great cacti are found. The book has an enormous number of photographs, over 300, excellent in themselves but lacking resolution in their reproduction. The numerous distribution maps are superb – clear, informative, and elegantly drafted. They are works of art. This is a handsomely produced book.

Ryan J. Huxtable
Professor Emeritus
University of Arizona Health Sciences Center

Port Townsend WA 98368
huxtable@olympus.net

