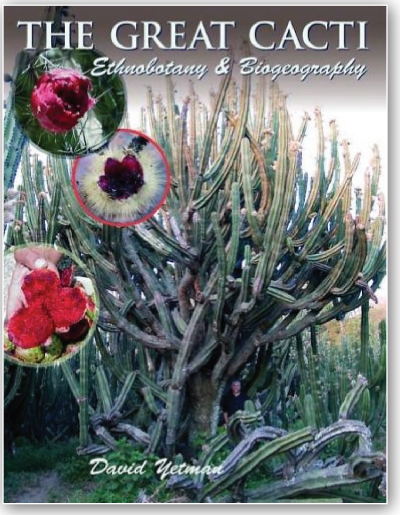
ROOT GORELICK

The Great Cacti: Ethnobotany and Biogeography
by David Yetman. 2007. University of Arizona Press: Tucson. ISBN 0816524319. 320 pp.

Humans have, for millennia, depended on columnar cacti for their fruit and lumber, and David Yetmen hypothesizes that current distributions of the tree cacti can be traced back to these human–cactus associations. Not only were many of these columnar cacti intentionally planted by people (beautifully evidenced by *Echinopsis atacamensis* lining an ancient irrigation ditch in Argentina), but many are apparently volunteers along the sides of roadways, the products of emergency roadside stops of humans who ate the fruits of these great plants. Many anecdotes support his hypothesis, but Yetman also includes the exceptions that prove the rule: columnar cacti whose fruits are not particularly tasty and therefore have narrow distributions.



Over half of this book covers the largely Mexican tribe Pachycereeae—*Pachycereus* (including *Mitrocereus* and *Backebergia*), *Stenocereus*, *Neobuxbaumia*, *Carnegiea*, *Cephalocereus*, *Myrtillocactus*, *Isolatocereus*, and *Escontria*—in a *tour de force* of detail and elegance. Yetman clearly grasps the deep links between these cacti and their human commensals, and his eye-opening photos highlight the diversity and shear magnitude of these plants. The descriptive text is just as illuminating: *Oreocereus celsianus* plants that are almost 6 meters tall, *Cephalocereus nizandensis* growing in areas with over 1.2 meters of rain per year, a fast-growing *Pachycereus pringlei* cultivated over a septic tank.

Yetman does a particularly nice job of comparing uses of cactus wood for building construction, furniture, and fuel. I wish that he would have also correlated these uses with what we now know of cactus wood anatomy, such as that provided by Jim Mauseth or Art Gibson. For example, what explains the friable wood of *Isolatocereus dumortieri*, the hard wood of *Pachycereus pringlei*, or the differences in wood between the closely related *Echinopsis* (*Trichocereus*) *terscheckii* and *E. atacamensis*?

There is much to commend this book, but there are also serious problems, notably in the maps. Distribution maps help somewhat to bolster the hypothesized link between the ethnobotany and biogeography of columnar cacti, but often too many species are included on each map, and errors are easy to spot. For instance, the text correctly states that *Stenocereus thurberi* can be found in Chihuahua, but this is not reflected on the map. Despite adequate space on the *Pachycereus* map, *P. pecten-aboriginum* is left off Baja California Sur, where it occurs everywhere south of La Paz, a huge portion of its range. Similarly, *P. schottii* is erroneously shown to occur along only a tiny sliver of Baja near Guerrero Negro. Since the range maps bear errors for three of the most common and well-known species, I must doubt veracity in the other maps, as well. Inconsistencies in political annotations on the range maps, including in denotation of state capitals, and in one case a missing border between Chile and Bolivia, further degrade credibility.

It is not altogether obvious that Atacaman columnar cacti, such as the eulychnias and *Browningia candelaris*, are especially well adapted to their extremely arid environments, as Yetman claims. Instead, they may just be better at hanging on after climate change. Geographic ranges of cacti are fluid, as well documented by Tom VanDevender, Julio Betancourt, Paul Martin, and others working with packrat middens. So in this regard, the book is too adaptationist. An adaptationist perspective may be commonplace and acceptable for an ethnobotanist or social scientist, but is anathema to contemporary organismal biologists.

And finally, the book lacks adequate synthesis. By the end, readers will be left with, at best, only a vague notion that columnar cactus distributions really are due to human activity. The book begs for an epilogue tying together the evidence linking ethnobotany and biogeography. Interestingly, contemporary cactus growers tend to eschew columnar cacti in favor of the more precious pot-friendly types, while Yetman argues that columnar cacti have traditionally held far more imporatnce in (New World) human endeavors, and that human interest in them influenced the range of these wonderful plants. We should revel in this marvelous and ironic change in perspective.