Conserving Cacti in México

by Ariel Rojo and
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Some of the most attractive plants in the world are the cacti. These plants are associated mainly with deserts, though they can also be found in temperate forests and even in tropical zones. Their adaptations have caught the attention of many naturalists and scientists all around the world, and collectors appreciate enormously the great variety in their forms and flowers. The family Cactaceae, endemic to the Western Hemisphere, contains about 1,800 species. Although its origins may be in the Caribbean, diversification of cactus taxa has reached a peak in México, where 48 genera (73 percent endemic) and 850 species (85 percent endemic) are found.

One of the most amazing places where cacti have diversified is in the north of the country in the Chihuahuan Desert, the largest desert in North America, of which 80 percent is in México and 20 percent is in the United States. This ecoregion is considered one of the most biologically rich and diverse deserts in the world, with 3,500 plant species, many of them endemic.

The boojum* (Fouquieria columnaris) *has an appearance that fires the imagination. For most of the year it is leafless and looks like a giant upturned carrot. Its common name was coined by the explorer Godfrey Sykes, who found it in 1922 and said "It must be a boojum!" He was referring of the strange and mythical creature that the author Lewis Carroll called a boojum in his children's book, The Hunting of the Snark. The Spanish common name for this plant is* cirio*, referring to its candle-like appearance. It is not a cactus but a stem succulent.
Photo by Michael Bender

Threats

The cactus family is faced with growing environmental threats, including urban sprawl, expansion of the agricultural frontier, introduction of exotic species, overgrazing by cattle, uncontrolled tourism, and poaching driven by the demand of exotic plant markets. All of these threats are particularly harmful to cactus species because many of them have small populations, making them very vulnerable to extinction. Many of the genera are included on CITES (Convention on International Trade in Endangered Species) Appendix 1, and the entire family is on Appendix 2. Also, 34 percent of the species are included in the Plant Red List from IUCN (International Union for Conservation of Nature and Natural Resources). The IUCN includes 286 species and the Méxican Government includes 257 species in the NOM-ECOL-059 (México's endangered species law).

Conservation

This risky situation has prompted conservation actions at the federal, state, and local levels. Perhaps the most favorable action was the recognition of Natural Protected Areas, of which many exist in México. Along the México-U.S. border, the Pinacate and Altar Desert Biosphere Reserve, a marvelous volcanic region adjacent to Arizona, and the Cañon de Santa Elena in Chihuahua and Maderas del Carmen in Coahuila, both of them in neighboring Texas, are designated as Flora and Fauna Protection

Areas. Within interior regions we can find some other examples of protected areas with cacti relevance: the Vizcaíno Biosphere Reserve in Baja California Sur; the Colorado River Delta and Upper Gulf of California; and the Valley of the Cirios, one of the best-conserved natural treasures on Earth (with one of the most fascinating plants in the world, the Cirio or Boojum Tree) in Baja California. Near México City, the Tehuacán-Cuicatlán Biosphere Reserve in the states of Puebla and Oaxaca contains a great diversity of columnar cacti.

These actions seem to be the best approach because they encourage *in-situ* conservation. However, they do not include all the places a conservationist would like, and many endangered species do not inhabit these protected regions. Therefore, the Méxican government has been promoting, since about five years ago, the System of Units for Conservation and Management of Wildlife, known as UMAs. These units intend to revalue the wildlife–mainly its use, management, and sustainable appropriation of the resources. They are based on a management plan that incorporates activities such as censuses of the populations and demographic research about particular species. The underlying idea is to conserve the natural habitat and, at the same time, obtain some rewards from doing it. This scheme operates very well with regard to creating opportunities for hunting mule deer, turkeys, pigeons, and other game. The UMAs are focused on animals, but as an added value they conserve cacti and other species. By the year 2000, the UMAs strategy had incorporated almost 3,200 units that represent about 28 million acres (11,330,000 ha), mainly in the north of the country.

Hopefully, the increasing conservation efforts will be able to withstand the environmental degradation that the deserts in México have been suffering, and reduce the threats to their long-term sustainability.

Uses

Because of their unusual morphology and their attractive flowers, cacti are very attractive and many species have been commercialized intensively. In addition to their ornamental value, species have other uses, depending on places and cultures. Based on archaeological evidence–fossilized feces–it has been shown that cacti were consumed by humans at least 9,000 years ago. Even today, people use them as food in a great variety of dishes and presentations, for forage and fodder, as construction material to build fences, for medicinal purposes, and even in religious rituals.

There are some very specific uses for cacti. For instance, the Aztecs prized the rich red color extracted from the dried bodies of insects that were raised on cladodes (leaf-like branches) of many species of prickly-pear cacti. The cochineal dye of the Aztecs became highly prized in Europe. In the sixteenth century, Cortés was instructed to send as much of the pigment as possible back to Spain.

Future

In México, there is an increasing need to take urgent actions to protect cacti and their environments. Federal and state governments, research institutions, conservation groups, conscientious private-sector leaders, and ecotourism operators have been contributing to growing appreciation of the environment and recognizing the need for concrete conservation action. The challenge is to concentrate these efforts into real, long-standing sustainability.

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Species in the cactus genus* Ariocarpus *are often called "living rocks" for their inconspicuous appearance. Most are endemic to México, but* A. fissuratus *(above) extends northward from México into parts of southwestern Texas.
Photo by Michael Bender