

Binational Conservation Grows from the Ground Up

by Tracy A. Scheffler



The star cactus produces a yellow flower, green to grayish-red fruits, and glossy dark brown seeds.

Photo by Charlie McDonald/USDA Forest Service

M.C. (Master en Ciencias) Jose Guadalupe Martínez Avalos, Universidad Autónoma de Tamaulipas, surveying for star cactus in Tamaulipas, Mexico. Through his leadership, botanists in Mexico and the United States are conducting binational surveys.

Photo by Chris Best/USFWS



As the survey team moves slowly through the brush, it appears to be stalking an imaginary lizard. Instead, its members are looking for the star cactus (*Astrophytum asterias*), an endangered plant found in the low elevation semi-arid thorn shrub of the lower Rio Grande valley in the United States and Mexico. Surveys for the star cactus are difficult; it is well camouflaged in its rocky surroundings by its small size, dull green color, and low growth form. Botanists from the U.S. and Mexico survey for the star cactus to gather information about the species' abundance, range and distribution, biology, ecology, and threats. They will use this information to determine appropriate management strategies for the species. In doing so, these botanists are fostering the beginning of a collaborative binational effort to recover the star cactus.

The star cactus is one in a diverse assemblage of species that spans the border between the U.S. and Mexico within the Tamaulipan biotic province. This cactus typically grows in gravelly clay or loam soils, partially shaded by other plants or rocks. Although historical records are scarce and somewhat controversial, most botanists agree that the species once occurred in Hidalgo, Starr, Zapata, and possibly Cameron counties in South Texas, and in the States of Nuevo Leon and Tamaulipas in northern Mexico. In 1993, when the species was listed as endangered, one population was known in Starr County, Texas, and one in Tamaulipas, Mexico. The federal listing, followed by the State of Texas listing in 1997, led to additional surveys that located several previously unknown populations in the

U.S. and Mexico. This species, however, is still considered rare and vulnerable to extinction.

In the wild, the star cactus is threatened by both too much and too little attention. Cactus smuggling is the most direct threat. According to Benito Trevino, a native plant expert in Starr County, star cactus specimens from the wild are worth \$500 to unscrupulous collectors in international markets, even though legal and inexpensive specimens are readily available from nurseries that grow the species from seed. Accidental collection by licensed peyote (*Lophophora williamsi*) harvesters also poses some danger to the star cactus due to the two species being somewhat similar in appearance. Another major concern is habitat modification. Root plowing, road construction, and oil and gas seismic exploration and pipeline construction can kill the cactus directly or fragment its populations. Trampling of star cactus by cattle may increase the risk of potentially lethal fungal infections, and competition with invasive exotic grasses planted for cattle forage may occur. In addition, the suppression of natural fire cycles has altered star cactus habitat by allowing encroachment by brushy vegetation.

Information sharing between the U.S. and Mexico is critical to an overall conservation strategy for borderland species like the star cactus. During the past decade, informal binational surveys by botanists in federal and state agencies, non-governmental organizations, and academic institutions have been conducted. Building on these efforts, rare plant experts from the Texas Parks and Wildlife Department, U.S. Fish and Wildlife Service, Nature Conservancy,



The star cactus is a greenish-brown, slightly dome-shaped, smooth, spineless plant that grows up to about 15 centimeters in diameter and up to 7 cm in height.

Photo by Chris Best/USFWS

Valley Land Fund, Native Plant Project, Valley Nature Center, Texas Department of Transportation, Texas A&M University, University of Texas, South Texas Community College, English Nature, Pronatura Noreste, Biotica A.C., Universidad Autonoma de Tamaulipas, Universidad Autónoma de Nuevo León, and Universidad Autónoma Agraria Antonio Narro attended a Lower Rio Grande plant conference in Brownsville, Texas, in 2002, to advance cross-border conservation efforts.

Meanwhile, Loretta Pressly of the Service has spent the past year and a half tackling a recovery plan for star cactus. When information on an endangered or threatened species is scarce, a recovery plan is crucial to synthesize information gaps about the species' biology, ecology, and threats; identify partners and stakeholders; mobilize funds and staff; guide consultations on federal projects within the species' range; inform the general public; and provide an initial recovery strategy. The plan will also provide a springboard for making the U.S./Mexico collaboration formal through the formation of what the Service plans to be a binational borderland plant recovery team that will focus on a variety of listed, candidate, and rare species.

For the star cactus, a multi-faceted approach to recovery is taking shape. While surveys and plans for a recovery team are advancing, progress will also be made developing seed banks and populations of star cactus in botanic gardens to provide security against extinction in the wild. These populations may also be used for genetic, population biology, and community ecology research, as well as for experimentation on transplantation and reintroduction methodologies. In both countries, promoting conservation on private land will be an important component of recovery. Misconceptions about the implications of the Endangered Species Act on private lands are slowly being reversed in southern Texas as state, federal, and non-governmental agency personnel work with landowners who value rare plants. Upgraded educational programs for interested landowners will include information on federal and state laws, species identification, and voluntary programs available to assist landowners in conserving listed species on their land. Increased local law enforcement to protect star cactus from illegal harvesting is also necessary. In Mexico, community projects that offer economic incentives to local residents may advance conservation on private land.

Recovery of an endangered species is a complex process, and the star cactus will not be an exception. Even if it were, there is still the simple biological reality that most members of the cactus family are known for their slow growth rates. This means that no matter what we do, star cactus recovery cannot happen overnight. Fortunately for this elusive little desert gem, there are partners on both sides of the border who are interested in star cactus conservation. For this species, binational collaboration is not just a fancy idea, it is a seed that has already been planted.

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