



■ Resident black bear populations reported in 2005
■ Added reports since 2006

Previous distribution maps were generated based on observations and best guesses. In 2005, during the first Mexican Black Bear Workshop field biologists constructed an updated map based on their observations of females with cubs, which indicates resident populations. Mexico's black bear population appears to be increasing and expanding. In the background, black bear habitat is diverse in Mexico, and includes tropical areas, deserts, and mountains.

El Oso Returns

THE BLACK BEAR IN MEXICO



An old pickup truck plods along a dry, dusty road in the mountains of northern Mexico. Teetering and clanging in the back are two barrels of diesel, stacked cardboard boxes carrying groceries for a month (with the eggs on top) and a couple of well-worn but recently repaired saddles hanging off the side racks. Three hours from the closest town, the truck finally arrives at the first gate, with only 33 of the darned things left to go. The driver gets out, takes off his hat to wipe his brow, and looks up to the high country with cooler thoughts in mind. Not another person in sight—just miles and miles of mountains. On the other side of the gate he sees fat cattle grazing in native grass pastures below limestone cliffs and oak-covered hillsides. The water tank is sloshing, and a big wet trail drapes across the side. The tracks of “el oso,” the black bear (*Ursus americanus*), lead off into the brush. The float valve bobs up and down, disconnected from its metal rods, and water sprays uncontrollably up into the air. The cowboy sighs—that’s the fourth float valve this month.

He’ll be to headquarters in just a few hours. He carefully thumbs through a clinking mass of keys attached to a metal ring and an old, red ear tag. They can be a nuisance, these locked gates. But they are a major factor in *el oso’s* remarkable recovery in Mexico.

Back from the Brink

When I was young, my Mexican grandfather told me tales of seeing grizzly bears (*Ursus arctos*) and black bears in the Sierra Madre Occidental in 1917 while he was working on the post-revolution railroad. Land reform, uncontrolled hunting, and the use of poisons, however, took their toll on many wildlife populations. By the 1950s when Starker Leopold, son of Aldo, first arrived on the scene to write his book, *Wildlife of Mexico*, things looked grim. The black bear in Texas had been eradicated by the 1940s. The Mexican grizzly was close behind and, for the most part, would disappear from Mexico by the late 1960s. Maybe it was remorse—perhaps mixed with a pinch of panic—but soon after, some folks began

to realize that something needed to be done to keep another flagship of Mexico’s natural heritage from going out the door. Ranchers’ subsequent use of keys and locked gates made all the difference in *el oso’s* resurgence

by allowing the persistence of isolated black bear populations on remote ranches throughout northern Mexico. Remarkably, these source populations would serve as the springboard for what we are now seeing as a rapid expansion and probable recovery of the black bear population in Mexico and west Texas.

By Diana Doan-Crider

Department of Ecosystem Science and Management
at Texas A&M University

Photos provided by the author

Wanderers in a Vast Landscape

Historically the black bear inhabited a wide range throughout most of northern and central Mexico, wherever food and water were available. We know very little about the habitat requirements of bears in Mexico. However, we do know that these animals are highly adaptable and occupy areas from low-lying deserts to high mountains and can even coexist with jaguars and monkeys in the northern fringes of the tropical jungle. Today, Mexico’s landscape is more fragmented than ever, yet this animal has been able to find its way back into mountain ranges that hadn’t seen bears in decades. They somehow managed to cross super-highways and deserts, finding their way to what biologists call “semi-isolated biogeographic islands.” Not bothering with immigration permits, they crossed the Rio Grande and re-established themselves in the Big Bend region of

OLDER FEMALE BLACK BEAR Reproductive rates for Mexican black bears can be high, with averages above 3.25 cubs per female during non-drought years.





NOTES FROM THE FIELD The cattle industry has helped create an infrastructure that protects large, contiguous areas of bear habitat, and provide permanent water for wildlife in areas susceptible to drought. Ranchers in northern Mexico must sometimes take extra measures to keep bears from getting into trouble. Below, is an “escape log” used to keep bears from drowning in a water tank. Below left is a young Mexican black bear.



Texas. They've recently invaded metropolitan areas such as Monterrey, Mexico's third largest city, which experienced more than 40 bear observations around and within the city's perimeter during the summer of 2008. Now bears are being reported in areas of south and central Texas, where, for decades, the only talk of bears had been in reference to the places named after them: Bear Hollow, Oso Bay, Bear Creek, and Bear Canyon. The story appears simple enough. Once the uncontrolled killing ended, bear populations in Mexico began on their own to reproduce, re-establish, and expand into historic ranges.

Reconnecting through Research

Inspired during the early 1980s by Starker Leopold's work in Mexico, I had a burr under my saddle to return to my mother's homeland to study *el oso*. Call it serendipity, but somehow I fell in with the right people and was invited to conduct the first intensive black bear study in Mexico in the remote mountains of northern Coahuila. I was given my first gate key and like a smitten girl, I wore it around my neck on a chain as if it were an engagement ring. Pretty soon, I had my own

bulging key ring, which gave me access to more than 19 working cattle ranches comprising about 2,000 square miles of bear habitat.

Having just finished my undergraduate degree at the University of Montana, I saw my mission as heading south to save the bears of Mexico. At this time, very little was published about the black bear south of the border. I just assumed that meant that very little was known, but I was wrong.

The ranchers who had been coexisting with bears told me that female bears went into their dens in late December and came out in April with either three or four cubs. They said that bear numbers were increasing, and in one day, you would see more bears than people. One rancher said that sometimes all of the bears were at his ranch, and other times, they all seemed to be at his neighbor's ranch, which was 1,500 feet higher in elevation. They told me that the bears' diet included grasses, yuccas, prickly pear fruits, and most important, acorns. When the acorn crop was poor,

the bears ate more yuccas. When the acorn crop failed, everything would go haywire. Because rainfall was patchy, sometimes one ranch would have acorns while others did not. The cowboys told me that in times of drought, bears killed calves in brushy areas, especially when cows left their calves to go look for something to eat.

Through 15 years of study, I learned that the ranchers were right. Our estimates of bear numbers during that period found some of the highest densities documented in the literature for *Ursus americanus*. Denning dates, approximately 127 days, were the shortest on record. Reproduction was indeed high at an average of 3.25 cubs per female. Cattle predation was taking place during drought, and yes, bears learned to take advantage of cover and killed calves 75 percent of the time in brushy rather than open areas.

Ranchers held the key to black bear conservation, and this involved a great deal more than tiny pieces of metal for opening locked gates. These folks were constantly learning, and they taught me how to learn as well. Daily radio chatter among the many ranches revealed deep interest in the research, with everyone wanting to know about any new developments. I even found one rancher planting a “bear-scat garden” to see what would grow, in an effort to determine if this was influencing brush encroachment. The ranchers became an integral part of my research team, helping to trap, radio-monitor, and observe. Ranchers flew us around in their planes, which they had adapted to carry telemetry gear. They accompanied us and also sent cowboys to help us do our den work. Together, we learned that the population dynamics of bears in desert ecosystems can be quite complex, and of course, rarely predictable. We found that their habitat, and how they use it, ebbs and flows in accordance with rainfall patterns and food production. Habitat conditions vary dramatically from one tree, one hillside, one valley, one mountain, or one mountain range to the next. We learned that counting bears in deserts is like counting butterflies in a hurricane, because they follow food production that fluctuates from hillside to mountain range in response to environmental conditions.

We learned that because bears follow food, we should spend more time studying acorns. We also learned that social dynamics ebb and flow with rainfall and food production, dramatically affecting variables such as reproduction, cub survival, and even adult female survival. As food patches and water sources shrink during drought, bears are concentrated in these small areas, increasing stress and competition. Much like prey at an African watering hole, female black bears with cubs find themselves crossing a gauntlet of adult males as they try to find food and water, often resulting in higher mortality rates. In this particular mountain range, cub survival rates went from 80 percent during good rainfall years down to 20 percent during drought. Evidence of intra-specific predation was high as we observed aggressive behavior between bears, and found cub remains in bear scats. Three of our radio-collared adult females were killed and eaten by large males during the study, for which we had no rhyme nor reason.

The Importance of Drought

Drought likely plays a critical role in how desert bear populations regulate themselves, and how they expand and re-establish in semi-isolated mountain ranges. Studies have

since illustrated that Mexican black bear populations are indeed the reproductive reservoirs for populations across the border, especially in west Texas. But because females don't usually leave their natal ranges, there must be some driving mechanism that causes females to emigrate across deserts into neighboring mountain ranges and re-establish new populations. Drought and food production likely play some role.

Drought also plays a critical role in human-bear conflict. Because bears are opportunists, they quickly adapt to human food sources when natural foods become scarce. When acorns fail to show up on oak branches in the early summer, ranchers know it's going to be a rough year for bears and cattlemen alike. The forecast is for increased sightings around houses, cattle herds, and fruit orchards as bears search for enough nourishment to build up their winter fat reserves.

Another important variable may be whether the availability of drinking water has a direct influence on how bears use the landscape. It's possible that as natural water sources dry up, bears, along with many other animals, are funneled into the many stock waterers, or “pilas,” that ranchers have installed throughout the mountain range. Calving mother cows usually camp around these stock tanks and when food is scarce, a buffet of tasty newborn calves may be just a little too much for a bear to pass up. Normally, mother cows are excellent defenders against bears, especially when in groups with their horns still intact. We documented a bear that was killed when a cow defended her calf and punctured the bear's lung. In addition, we made several observations where groups of cattle “mobbed” bears that were attacking calves. Drought, however, can cause even the best mothers to pay less attention to their calves and more attention to finding food in areas other than open pastures. In our studies, bears appeared to use brush and fences as approach and escape cover to attack and drag calves away from mother cows that were caught off guard. In one drought year, over 60 calves in two herds were lost to bears in less than 30 days. Most of the predation took place during the first month of calving. If I hadn't seen it with my own eyes, I probably would have blamed the carnage on “Chupacabra,” the mysterious livestock-killing beast of lore in this region. However, we conducted full-time herd monitoring, and counted several bears simultaneously skulking around the herds on a number of occasions.

Horse Sense for Bear Managers

While I was busy calculating fancy models

on bear predation, my husband, a horse trainer, told me something well known in his profession: “Make the right thing easy, and make the wrong thing difficult.” Apparently, the current scenario was literally an open invitation for bears to get into trouble. We developed some basic recommendations to reduce bear predation during sensitive periods: 1) Keep extra water troughs open or build additional wildlife watering areas throughout the area. 2) Calving areas should be maintained in open pastures for the first month until calves are able to accompany their mothers to forage. 3) Hire an extra cowboy to supervise the herd at night for that first critical month; this is a lot cheaper than losing a calf. 4) If possible, leave horns on cows and keep them in large groups. Applying these recommendations wasn't always simple, but it gave everyone a better understanding of the problem and resulted in saving a bunch of calves.

In Mexico, drought is simply a part of life, and based on some of the new climate change models, it may worsen. As the Mexican bear population expands and likely recuperates throughout northern Mexico, management will be a key component of any conservation strategy if bears are to remain welcome on the landscape. Management requires data and the ability to predict trends and responses. Our challenge in Mexico is trying to measure the population dynamics of bears that act more like butterflies, and to understand how they use landscapes that are constantly changing. My focus is now on developing predictive models that will help managers and landowners understand how food production and perhaps water availability might affect the overall stability of populations, and how these models can be used to help us understand where the bears will go and what they will do next.

One thing we know for sure. Bears have been given the environment that they need to grow and expand in Mexico, and it didn't happen because of anything more complicated than a willingness to maintain and deal with the inconvenience of locked gates. If I've learned anything about being a bear biologist in Mexico, it's how to listen. ■

DIANA DOAN-CRIDER conducts her research through the Department of Ecosystem Science and Management at Texas A&M University, focusing on bears in desert landscapes and on private lands. She is the Mexico coordinator and a member of the Human-Bear Conflict Expert Team for the International Union for Conservation of Nature Bear Specialist Group. Diana lives in the Texas hill country with her husband, Cody, a cutting horse trainer. Her early research on bears was assisted by a Boone and Crockett conservation grant received in 1991.