



Predicting for the Return of West Texas Black Bears

Identifying Potential Black Bear Corridors & Recolonization Scenarios

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Photo by **JONAS DELGADILLO VILLALOBOS**, CEMEX

BLACK BEARS WERE SO NUMEROUS IN WEST TEXAS that hunting teams would set out in the upper mountains and harvest as many as four to five bears a day. Those days are not too far in our past. In fact, in the late 1930s, over 200 black bears were reported to occur in the Davis Mountains, alone.

Black bears historically inhabited the Davis, Del Norte, Glass, Santiago, Chinati, Guadalupe, Chisos, and Vieja mountain ranges. Since that time, black bears in West Texas have all but disappeared and receded into neighboring mountain ranges in northern Mexico. However, black bears have been staging a comeback since the 1990s and now have a breeding population in Big Bend National Park (BBNP).

To better understand if, how, when and where black bears will return to their historic habitats, we used computer models to evaluate recolonization scenarios for the Trans-Pecos region.

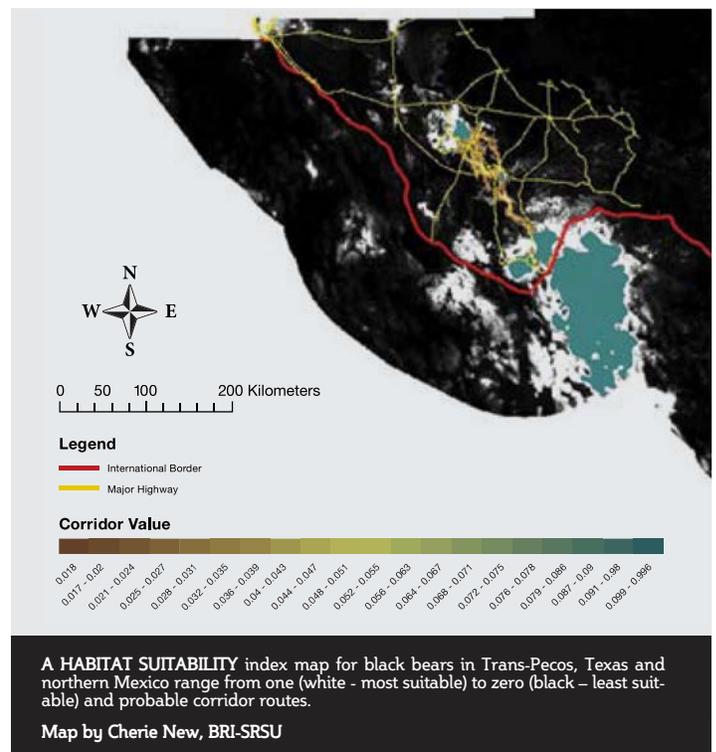
Using telemetry data from black bears in the BBNP and Black Gap Wildlife Management area, we used ecological niche modeling to create a habitat suitability map by identifying habitats (e.g., elevation, vegetation types) similar to those used by our radioed bears.

Because suitable habitat occurred in isolated patches (upper elevations of prominent mountain ranges), we identified potential corridors connecting the suitable habitats. We used circuit theory to analyze resistance and predict the most likely routes that black bears would move between suitable habitat patches. The most important corridor identified for black bears runs from the mountains in Mexico into the Big Bend. Since Mexico is the source population for our Texas black bears, this connection is critical to their persistence. We also identified corridors linking black bears in Black Gap Wildlife Management Area, Big Bend National Park and the Davis Mountains. Based on our analysis and high resistance values, dispersal between Guadalupe Mountains State Park (the northern most suitable black bear habitat in the Trans-Pecos) and the Davis Mountains is unlikely.

We then assessed dispersal scenarios based on black bear population dynamics. Based on our model, one of the most critical elements was the presence of female black bears and their ability

to disperse. Although black bears may occur in various mountain ranges across the Trans-Pecos, most of those sightings have been of males that typically disperse at much larger distances than females. Populations are not viable without sustaining reproduction, which obviously requires litter-producing females.

The importance of female black bears in population recovery can be best demonstrated with the population in BBNP. In BBNP, genetic analysis revealed that the recolonization of black bears to the Chisos Mountains in the 1990s could be tied back to a single pioneering female black bear. That matriarchal female produced several litters of cubs (including other females) and was the basis of the population growth that occurred there. The current black



bear population in BBNP is also thought to be a result of that matriarchal female.

We estimated the number of black bears each population path could sustain based on habitat suitability. We estimated mast production based on past precipitation and drought events. Because we know little about black bear dispersal in the Trans-Pecos, we used the model to evaluate different dispersal scenarios to estimate time to recolonization of suitable habitat patches. According to our model, regardless of the dispersal scenario used, recolonization will be slow due to low reproduction rates and the prevalence of low rainfall and drought events.

Ongoing research at the Institute will focus on gathering better information on dispersal and movements by black bears, as well as better estimates of mast production, which is a critical food element for black bears in the Trans-Pecos.

Although we do not anticipate black bear populations ever reaching their former distribution and abundance throughout the Trans-Pecos, our understanding of their demographics, movements and habitat relationships will allow landowners and resource managers of West Texas to prepare for the return of the black bear. 🐻



REPRODUCING FEMALE BLACK BEARS appear to be the limiting factor for expanding black bear populations in the Trans-Pecos. Because females do not disperse at the great distances as do male black bears, the likelihood of black bears recolonizing historic habitats is hindered.



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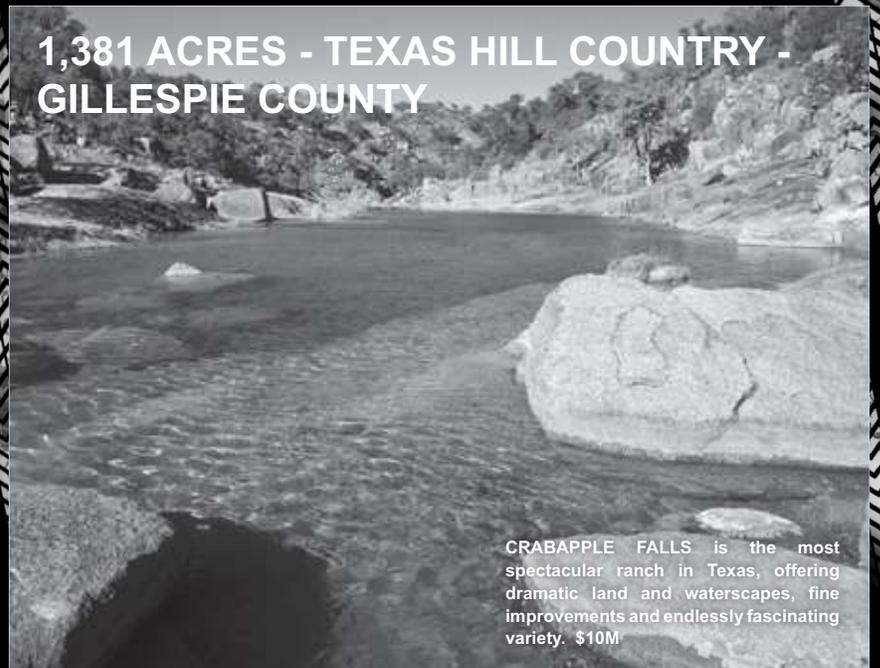


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