

# Did the Pronghorn Cross the Road?

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**Despite their speed, pronghorn are reluctant to jump or even pass through fences. Researchers with the BRI investigated the effects of fences and other potential barriers on pronghorn genetics.**

**W**e have all heard the adage, “Why did the chicken (or the deer, or the Aggie) cross the road?” But for pronghorn, a more appropriate question would be: “Did the pronghorn cross the road?”

As habitats across Texas become more fragmented, landowners, hunters and scientists have been worrying about what effect smaller and disjunct habitats have on wildlife populations. Shopping centers, subdivisions, highways, and even fences can impact movements of wildlife. Compared to other regions of the state, it may be difficult

to imagine these barriers in the vastness of the West Texas landscape. However, the effects of fragmentation could have a tremendous impact on our struggling pronghorn populations.

Previous studies have documented that natural (e.g., mountains and canyons) and manmade obstacles

(e.g., fences, railroads, and roads) can curtail pronghorn movements and isolate populations. In fact, during a severe drought in the 1960s, net-wire fences in the Trans-Pecos prevented a pronghorn herd from moving into areas with available forage. That population subsequently experienced a 60 percent die off due to malnutrition.

Unlike deer, pronghorns are reluctant to jump over fences. Reluctance to maneuver through fences and highways makes pronghorns especially susceptible to fragmentation and isolation.

Genetic variation is considered an important factor in the long-term persistence of wildlife populations. If barriers can inhibit pronghorn from finding adequate food and water, could the limited movement among populations lead to inbreeding and loss of genetic diversity within populations? To evaluate the effects of barriers on pronghorn movements and genetic variability, the Borderlands Research Institute partnered with the Texas Parks and Wildlife Department (TPWD), the Caesar Kleberg Wildlife Research Institute, and West Texas landowners.

Based on studies in Arizona and other states, we predicted that highways (e.g., Hwy 90, I-10), fences and railways may inhibit pronghorns from moving to adjacent habitats. We further predicted that pronghorn populations in the Panhandle and the Trans-Pecos were genetically distinct because of various barriers and the sheer geographic distance between the two regions. We answered these questions using a suite of genetic markers and the aid of a cadre of dedicated sportsmen.





**Healthy grasslands produce healthy pronghorn herds. In this photo, four fawn and one yearling pronghorn settle in for a mid-day nap.**

We obtained 344 tissue samples from hunter-harvested pronghorns representing 10 management units across the Trans-Pecos, Panhandle and western Edwards Plateau during the 2007 and 2008 hunting seasons. Hunters provided tissue samples from harvested pronghorns and information on location and date of harvest. We extracted DNA from the tissue samples and analyzed heterozygosity (having two different alleles of the gene) and genetic similarity among sites. Management units and putative barriers were then evaluated based on the genetic data.

Contrary to our fears that pronghorn herds were being restricted by fences and other barriers, our genetic analysis detected no evidence of reduced genetic diversity among sampled pronghorn populations. Further, pronghorn populations were not strongly genetically differentiated, and all had moderate levels of genetic diversity. In fact, even the Texas pronghorn populations with the greatest geographic separation (southern Trans-Pecos vs. northeast Panhandle) were

genetically similar. This is likely a result of restoration efforts of yesteryear.

Dating back as early as 1939 and as recent as 1991, TPWD played an active role in restoring pronghorns to historic habitats. During 1939-1982, over 5,700 pronghorns were restored in the Trans-Pecos and Panhandle regions of Texas. The sources for many of the translocations were from the same locations resulting in the same genetic stock being redistributed among populations across the Trans-Pecos and Panhandle regions.

One location that did stand out as different among the 10 current pronghorn management units was the Culberson and Hudspeth counties of the Trans-Pecos. This region is separated from the rest of the Trans-Pecos pronghorn herds by several mountain ranges and Interstate 10 (a formidable barrier). Coincidentally, this region of Texas is also the most reputable region of the state for consistently producing trophy-quality pronghorn bucks.

Other than Interstate 10, we found no firm barriers to



**Based on our findings, pronghorn herds have retained high levels of genetic diversity. Previous restoration efforts or an occasional immigrant (like this young buck) have helped maintain the genetic integrity of pronghorn across the Trans-Pecos.**

movement within regional pronghorn herds. Within the Culberson-Hudspeth and Marfa-Alpine-Marathon regions of the Trans-Pecos, genetic similarity among populations was associated with geographic distance. This suggests that some movement occurs among local populations, sufficient to prevent loss of genetic diversity. Overall, the results of our study are very good news for pronghorns. More importantly, the timing of this study was serendipitous. Pronghorn populations in the Trans-Pecos have reached an all-time low – so low that landowners have begun conversations with TPWD about restoring pronghorns back to their historic ranges. Based on our findings that Panhandle and Trans-Pecos pronghorns are similar in genetic composition, restoration efforts will not be hampered by need to evaluate similarity of pronghorn genetics. 🐾

**In 2007, the USDA-NRCS established the Pronghorn EQIP program for the Trans-Pecos.**

The program was designed to cost share various management strategies to promote stewardship of pronghorn and their habitat. To date, the NRCS has enrolled 208,851 acres representing 17 ranches under contract. Over 39,000 acres of pronghorn habitat has been deferred from grazing, and an additional 9,500 acres have been improved with brush control. Ranchers have also replaced or modified more than 90 miles of fencing to help facilitate pronghorn movement.



**For eons, pronghorn herds have wandered across the grasslands of Texas. However, pronghorn populations have experienced drastic population declines. Habitat loss, fragmentation, and even inbreeding have been proposed as possible factors associated with their demise.**

**Sponsored by Trans-Pecos Pronghorn Working Group**

