Cattle Grazing

A Tool for Land Stewards to Promote Pronghorn Habitat

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Photo by Cullom Simpson

With proper management, cattle and pronghorns can share the same rangeland as seen here in the Marathon Basin of Far West Texas.

The western plains of North America have been home to pronghorns for approximately 19 million years, with a suggested 30 to 40 million individuals at the highest point throughout history. Unfortunately, currently there are only about 800,000 pronghorns in North America.

In Texas, the historical range of pronghorns is thought to have encompassed the western two-thirds of the state and numbered over 1 million. However, at the turn of the 20th century, pronghorn numbers drastically declined from unregulated hunting, changing land use practices and urbanization. Today, the distribution of pronghorns in Texas is restricted to the Panhandle and Trans-Pecos, with scattered remnant populations in the Rolling Plains and western Edwards Plateau ecoregions.

The westward expansion of settlers into pronghorn ranges brought a combination of negatives affecting pronghorns, such as overharvest, construction of fences which act as barriers to pronghorn movements, habitat loss from farming and urbanization, and habitat degradation through overgrazing livestock. Livestock mismanagement within pronghorn habitat can cause detrimental effects on habitat, such as poor forage quantity and quality, reduced fawning cover and brush encroachment. This in turn causes pronghorns to avoid this habitat. Habitat degradation and fragmentation is the primary factor affecting pronghorn populations.

For eons, pronghorns roamed the grasslands of North America among bison. American bison exhibited a natural, high-intensity/low-frequency grazing pattern where they would move into an area in high numbers and travel to a new range after a short time. Pronghorns evolved and adapted to coexist with bison.

The bison's grazing role in grassland ecosystems has been assumed by livestock, primarily cattle. Due to gaps in knowledge regarding pronghorns and livestock grazing relationships in the Trans-Pecos, and efforts to increase quality pronghorn habitat, it is important to study cattle grazing effects on pronghorn food sources.

The study's objective was to evaluating three cattle grazing regimes in relation

to forb production. To accomplish our objectives, we measured differences in forb biomass production, protein levels and energy values across continuous, rotational and non-grazed systems.

The study area was in Presidio County on the 10,849-acre Dixon Water Foundation's Mimms Ranch, north of Marfa, Texas. The continuously grazed pasture encompassed 2,121 acres, accommodating about 30 head of cattle year-round. The rotationally grazed portion of the ranch was composed of 34 pastures averaging 258 acres each; these pastures were grazed by 180–190 head of cattle for approximately two weeks, allowing pastures approximately 16 months of rest before being grazed again. Additionally, since 2008 the ranch maintained 16 non-grazed 1-acre pastures scattered randomly throughout the property within both the continuous and rotational pastures.

Desert grasslands in Texas receive most of their annual precipitation between the months of July and October from monsoonal rainfall events. Because of this, vegetation sampling was conducted in September during the peak of this warm-wet season when forb species richness and growth is highest.

Pronghorns primarily eat forbs, which provide about 84 percent of their diet; therefore, we focused this study on forbs exclusively. For monitoring the forb community, 520 random plots were used to determine differences in grazing systems for the two-year sampling period.

For pronghorns, the goal is to have an abundance of high-quality forbs. Results from our study have revealed a naturally occurring tradeoff between having many low-quality forbs and fewer high-quality forbs. We also found evidence that there are small average differences in quality and quantity of forbs amongst all grazing systems. Importantly, we found differences in how often high-quantity and high-quality forb plots occur between the three systems.

In 2018, the non-grazed system prevailed by producing the highest frequency of forbs with high nutrition and biomass. However, in 2019, the rotational system produced the highest frequency of quality forage for pronghorns. The continuous system produced the lowest frequency of high nutrition and biomass forbs in both years.

Photo by Paul Slocumb

Two pronghorns browse on the winter landscape near the small town of Valentine, Texas.

Rangelands are dynamic ecosystems that are affected by a wide variety of factors. Precipitation is one of the most important factors determining the type and productivity of vegetation in an area. In 2018 when the non-grazed system prevailed, the ranch received 8.76 inches of precipitation, with a majority occurring between May and September. In 2019 when the rotational system produced the most preferred pronghorn forage, the ranch received 10.33 inches of precipitation, which was received evenly throughout the year.

This could mean that during years of late and low rainfall, rest from grazing promotes forb production. By contrast, in years of higher rainfall when precipitation is received evenly throughout the year, rotational grazing could be a better option for forb production. Although continuous grazing does not seem detrimental to forb communities, under the environmental conditions and stocking rates during our study, continuous grazing showed to be less advantageous for forb production.

Overall, using proper grazing management, pronghorns and cattle can complement each other, like bison and pronghorns did many moons ago. These findings provide crucial information to landowners and biologists who are striving to improve pronghorn habitat through cattle grazing in the Trans-Pecos.

Based on our findings, we recommend caution when determining appropriate cattle stocking rates and grazing systems during dry years to increase the availability of pronghorn forage. Not only does this benefit pronghorn, but it assures the persistence of quality cattle forage through dry years. However, we also suggest that landowners should rotationally graze under similar stocking rates during good precipitation years in order to increase pronghorn food. Utilizing these recommendations can improve pronghorn habitat quality, while still allowing for cattle ranching.