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# BOBWHITE RESPONSE TO CATTLE GRAZING IN SOUTH TEXAS

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## ABSTRACT

Range management practices to improve habitat for wildlife by reducing brush and increasing herbaceous plants, coupled with reduced stocking rates, can lead to dense stands of dominant grasses, such as four-flower trichloris (*Trichloris pluriflora*). This monoculture of trichloris creates dense vegetation unsuitable for northern bobwhite (*Colinus virginianus*; hereafter, bobwhite), reduces plant species diversity, and alters ecosystem functions. The objectives of this study are to 1) evaluate the effects of a proper cattle grazing regime to improve bobwhite habitat and 2) develop a management guide documenting how cattle grazing can be used as a tool to reduce the density and cover of dominant grasses and thereby allow higher plant species richness. The study is taking place in Duval County, Texas, USA, between 2 pastures with a combined area of 2,500 ha. One pasture serves as the control (1,337 ha) while the other (1,109 ha) is grazed to maintain a stubble height of 30–40 cm. We placed 10 grazing exclosures and 10 25-m transects within each treatment to determine botanical composition and cover. Double sampling is conducted monthly to determine forage standing crop. Forage standing crop, plant species richness, total ground cover, and forage utilization will be estimated. We hypothesize that 1) the grazed pasture will contain more bobwhites than the nongrazed pasture, 2) plant species richness will be greater in the grazed pasture, and 3) grazing will reduce the cover of trichloris. In 2020, plant species richness varied among sampling periods and was recorded as 7.5 species/transect and 4.8 species/transect higher in the nongrazed control compared to the grazed pasture in June and August, respectively. After the end of the first year of grazing, however, there was no statistical difference in plant species richness between the 2 pastures, a result that does not coincide with our second hypothesis. Litter cover did not vary among sampling periods in the nongrazed pasture but changed in the grazed pasture. Litter cover was 9.4%, 14.3%, 14.6%, and 8.9% higher in the grazed pasture than in the nongrazed pasture in May, August, September, and December 2020, respectively. Bare ground cover changed throughout sampling periods in the nongrazed and grazed pastures. Bare ground cover was 22%, 18%, and 22% higher in the grazed pasture than in the nongrazed pasture in May, September, and December 2020, respectively. Trichloris cover did not change throughout the sampling period in the grazed pasture but varied in the nongrazed pasture. Trichloris cover was 31%, 20%, 37.5%, and 35.3% higher in the nongrazed pasture than in the grazed pasture in May, August, September, and December 2020, respectively; these results support our third hypothesis. We began the cattle grazing in May 2020 with a herd of 228 mother cows placed in the grazing treatment. After 109 days of grazing, the pasture reached the target stubble height and the herd was removed. In 2021 we began grazing in June with a herd of 337 stocker calves. Vegetation growth outpaced what the calves could eat, so we removed them after 56 days and added 300 bred cows. These mother cows grazed for another 96 days until the current utilization rate was

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met. We completed aerial surveys for both 2020 and 2021, and the results indicate that bobwhite density on the grazed pasture was about 80% higher in 2020 and 25% higher in 2021 compared to the nongrazed pasture. These findings are consistent with our first hypothesis. In theory, by reducing the trichloris cover and increasing bare ground, we are creating more usable space for bobwhites; consequently, we are recording more bobwhites in the grazed pasture. The results are preliminary, but our study has the potential to shed light on bobwhite responses to proper cattle grazing and in turn to inform decisions about managing bobwhite habitat across South Texas.

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**Key words:** *Colinus virginianus*, four-flower trichloris, grazing, habitat management, livestock, northern bobwhite, *Trichloris pluriflora*