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Effects of Supplemental Feeding and Deer Density on Vegetation in Southern Texas

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By Eric Grahmann

Supplemental feeding is a popular practice for increasing antler sizes, body weights, and fecundity of white-tailed deer in southern Texas but little is known about how this practice impacts vegetation. Popular thought has suggested that providing feed to white tailed deer results in less foraging pressure on vegetation. In addition, justifying increases in deer densities by providing feed has become an increasingly common recommendation in recent years. We initiated a study in 2004 to discern impacts feeding and increased deer densities may have on vegetation. Important questions include 1) does feeding deer result in decreased abundance of the most palatable plants, i. e., those plants that are the most nutritious and that deer eat in preference to others 2) does increasing deer density cause reduction in abundance of the most palatable plants relative to the least palatable, and 3) does a combination of high deer density and feeding result in decreased abundance of the most palatable plants more than low deer density and no feeding.

Background and Objectives

Vegetation canopy cover and species richness, the total number of different plant species, was estimated annually on 2 ranches in the western Rio Grande plains during 2004-2007. Both ranches had 6 enclosures including a pair of low density (1 deer/20 acre), medium (1 deer/8 acre), and high (1 deer/5 acre) target deer densities. One of each density pair was provided a pelleted supplement free choice for the duration of the study. Water was also provided free choice in all enclosures.

Results

Based on our findings, providing pelleted feed to white-tailed deer results in an increase in plants that are less palatable to white-tailed deer; whereas, percent canopy cover of more palatable plants does not appear to change when feed is provided to deer. The unpalatable plants that increased in fed enclosures included woody plants such as mesquite and whitebrush. Less palatable plants possibly increased in fed enclosures because deer avoided eating them, while the deer that did not have access to feed relied on less palatable plants as part of their diet. There appeared to be a trend for greater canopy cover of unpalatable forbs, suffutescents, and woody plants and species richness of unpalatable forbs in fed enclosures.

Differing deer densities had no effect vegetation canopy cover, species richness, or biomass. This was not expected because reduced plant species richness and a loss of palatable forbs and shrubs resulting from high deer densities have been documented in other studies. However, most studies focusing on effects of deer density on vegetation have occurred in more mesic environments. Our study took place in western south Texas which experiences extreme

seasonal and annual fluctuation in precipitation. Dry conditions are more common than moist conditions in the region. The normal precipitation deficit in the area is -28 to -32 inches, about 4 inches lower than the Chihuahuan desert in western Texas. During my study there were two extremely wet years and one of the driest years recorded for the area. This annual variation in rainfall appeared to cause greater variation in canopy cover of vegetation than did the effect of different deer densities.

In 2009 it was estimated that 57% of hunting leases in southern Texas allocated money towards supplemental feeding programs with a vast majority of these for white-tailed deer. Managers should be cautious in assuming that providing feed to deer will alleviate foraging pressure on vegetation. Diverse rangelands are necessary for deer to maintain maximum productivity in southern Texas because they increase the likelihood of particular forages being available at all times of the year and should be an important goal of habitat managers in semi-arid environments. Over the long term, it is possible that providing pelleted feeds may favor shifts in plant community composition toward increased amounts of unpalatable woody plants and succulents regardless of deer density. Long term research is needed to document whether or not this is the case.

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