

PREDATOR CONTROL AND DEER MANAGEMENT: AN EAST TEXAS PERSPECTIVE

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Abstract: Some east Texas hunting leases use fortuitous hunter harvest and limited trapping in an attempt to control coyote (*Canis latrans*) populations. However, the level of control actually experienced (approximately 1 coyote/500 acres) likely has little long-term effect on predator populations. Habitat and harvest management appear to be overriding factors in improving the number and quality of deer (*Odocoileus virginianus*) available to hunters.

Many hunters in east Texas generally perceive an abundance of coyotes (*Canis latrans*) as an important factor in white-tailed deer (*Odocoileus virginianus*) management. A common perception seems to be that coyotes are a major predator of deer fawns and possibly even predate adult animals, thereby limiting the number of animals and affecting the quality of their hunting experience. Not unlike other areas of the country, many east Texas hunters have a “shoot on sight philosophy” about coyotes as long as they feel the disturbance would not have a negative effect on the outcome of their deer hunt. While this practice may give the hunter a temporary feeling of accomplishment, in reality recreational shooting likely falls short in removing the number of animals necessary to effectively curtail coyote populations (Connolly 1995).

Additionally, some hunting leases occasionally employ professional trappers to control coyote and bobcat (*Lynx rufus*) populations after the annual deer season is closed. However, trapping typically is not an annual effort and normally comes at the

urging of the hunting lease members when they hear a number of coyotes howling or see what they feel is abundant coyote sign that year. Typical trapping success rate is about 1 coyote/500 acres (D. Dietz, Temple, personal communication). Without knowing the coyote density before trapping, it is difficult to infer the percentage of the population that may have been removed. However, this trapping rate appears low compared to control efforts in research studies in other areas of Texas (Beasom 1974, Guthery and Beasom 1977, Kie et al. 1979, Henke and Bryant 1999). Also, data to confirm any effects of this predator control effort on survival of neonate or adult deer the following year or on subsequent hunter success remains lacking.

In contrast, interviews with professional wildlife biologists actively involved in deer management in east Texas leads to the speculation that coyote control probably is a moot point in most circumstances. While predation likely acts in concert with weather, hunting, diseases, and habitat changes to affect deer populations, predation is considered the

least important concern. Other factors of habitat and deer herd management appear to far outweigh predation effects (C. Wolf, Texas Parks and Wildlife Department, personal communication).

A number of factors probably account for the low ranking of predator control as an effective deer management technique. Typically, the youngest age classes in any ungulate population experience the most mortality. The majority of those mortalities usually occur shortly after birth or during late winter when the animals are commonly in the poorest condition for the year. Severe drought or extreme winter conditions theoretically can place deer more at risk for predation through less fawning cover, poor nutrition and lack of alternate prey species. Therefore, year-to-year differences in predation effects may be occurring. However, because the east Texas deer herd probably is at or very near carrying capacity in most locations, losses to predation likely would be of little consequence in determining the long-term population size. At carrying capacity, mortality factors tend to be compensatory. In other words, mortality factors are inclined to replace each other so total mortality remains relatively constant even though causative factors may change. If predation is reduced or removed, other mortality factors likely will replace it.

Unfortunately, little about coyotes and deer management in east Texas can be stated with scientific certainty. Unlike other areas of the state, coyote numbers and their effects on wildlife populations have not been well researched in east Texas. While mostly conjecture, I feel it is reasonable to assume that coyotes and deer act much in accordance with the way they

have been found to interact in other areas. However, the abundant physical cover provided by east Texas forests and the dynamic habitat caused by standard forestry practices may play a role in the deer-predator relationship not found in other areas of the state.

However, we do know that the deer herd on a particular lease can be fundamentally improved by addressing the deer management concerns deemed the most important for east Texas — habitat and harvest management. The following case studies are leases on industrial forest property. Therefore, most habitat manipulation was limited to best management practices for production of forest products with timber as the primary product. However, hunting lease members typically have management control over deer harvest and planting of supplemental forages.

The first example is the Fountain Creek Hunting Club located in Trinity County. This club leases approximately 6000 acres of timber company land planted primarily in pine (*Pinus* sp.) plantations of varying ages. Soils in the region are typically considered of poor quality. No agricultural crops were available, so the only supplemental nutrition the animals received were food plots grown by club members. Deer density in this area would be considered moderate, but antler quality and body weights typically are very low. Mean dressed body weight of bucks harvested prior to implementing their management strategy was about 105 pounds (Table 1). This was the impetus for the club members to try to improve the quality of the animals in their herd. They simply were tired of harvesting small animals.

After the first season of keeping adequate harvest records, their deer herd had the following characteristics: mean age of bucks was 2.5 years old with the oldest buck being 4.5; 56% of the does harvested were 2.5 years old or less; mean age of does was 3.5 years old with oldest doe being 7.5; adult sex ratio showed 3.6 does per buck and the fawn crop was 31% (Table 1).

Because pine plantations provide an abundance of cover, but sparingly little to eat during most of their growth cycle, we felt nutrition probably was a limiting factor that needed to be addressed. With encouragement the club began planting about 3% of the area in supplemental food plots. About 60% of the planting areas were used for warm season varieties and the rest were planted to cool season species. Previous research has shown planting at least 2% of the area in high quality supplemental forages can have a demonstrable effect on resident deer herds (Higginbotham and Kroll 1991).

In terms of harvest, club members already had recognized the need to lessen the harvest of young bucks to increase the age and antler quality of the bucks available in the herd. On their own accord they had enacted an antler spread restriction to control the number and size of bucks harvested. However, many of the lease members were reluctant to harvest does to control the population. Therefore, doe harvest had been very low in the past. This was evident from their buck:doe ratio of 3.6 does for each buck. The high buck:doe ratio and very low fawn crop prompted a recommendation to increase the harvest of does. By the end of the third year the buck:doe ratio was down to 1.93 does per buck and the fawn crop had

increased to 59%. Mean age of bucks in the harvest had increased to 3.1 years old with a 6-pound increase in body size. After 7 years in the management program the mean age of bucks in the harvest had increased to 3.4 years old with the oldest buck in the harvest that year being 6.5 years old; mean age of does had decreased to 3.1 years old and the fawn crop had increased to 92.4%. Adult sex ratio was 1.33 does per buck and the mean body weight of bucks was 11 pounds heavier than when they began (Table 1). Without predator control, management of the habitat and harvest had completely changed the character of the deer herd.

For another example, let's consider the Mill Creek Hunting Club in Polk County. This club leases about 3000 acres of timber company land planted primarily in pine plantations of varying ages. There is some bottomland with hardwood tree species typical of the region. To bolster the nutritional quality of the habitat, the club members began planting about 2% of their lease area to both warm and cool season supplemental forages.

At the beginning of their management program the mean dressed body weight of bucks was just over 80 pounds, although the mean age was 3.5 years old. The fawn crop was 39% and the buck:doe ratio indicated 4.1 does for each buck (Table 1).

To further lessen the harvest of young bucks, the club initiated an 8-point rule with an emphasis on only harvesting older deer with this minimum antler configuration. To control the total population and improve the ratio of bucks to does, they decided also to increase their harvest of females. Harvest of females

increased each year for 4 years and then essentially remained static the last 3 years.

After 7 years their increased attention to deer management resulted in a mean dressed body weight for bucks of nearly 120 pounds; adult sex ratio had decreased to 1.9 does per buck and the fawn crop was 89 % — all indices of a high quality deer management program for east Texas. In addition, both example leases are currently harvesting more deer than when they entered their management programs (Table 1).

These and many other examples exist where the deer management principles of habitat and harvest management were used to improve the number and quality of the deer on particular properties in east Texas without the need for controlling predator populations (B. Koerth and J. Kroll, Stephen F. Austin State University, unpublished data). These data indicate that predators probably are not a persistent limiting factor in east Texas as long as the deer herd is well established, has adequate nutrition, is actively reproducing and has ample cover so that fawns and adults are not exposed to excessive mortality through predation.

LITERATURE CITED

Beasom, S. L. 1974. Relationships between predator removal and white-tailed deer net productivity. *Journal of Wildlife Management* 38:854-859.

Connolly, G. E. 1995. The effects of control on coyote populations: another look. Pages 23-29 *in* D. Rollins, C. Richardson, T. Blankenship, K. Cannon, and S. E. Henke, editors. *Coyotes in the*

southwest: a compendium of our knowledge. Texas Parks and Wildlife Department, Austin, Texas.

Guthery, F. S., and S. L. Beasom. 1977. Responses of game and nongame wildlife to predator control in south Texas. *Journal of Range Management* 30:404-409.

Higginbotham, B. J., and J. C. Kroll. 1991. Supplemental forage management for east Texas white-tailed deer. *Texas Agricultural Extension Service L-2457.*

Henke, S. E., and F. C. Bryant. 1999. Effects of coyote removal on the faunal community in western Texas. *Journal of Wildlife Management* 63:1066-1081.

Kie, J. G., M. White, and F. F. Knowlton. 1979. Effects of coyote predation on population dynamics of white-tailed deer. *Welder Wildlife Foundation Symposium*. 1:65-82.

Table 1. Deer quality indices following habitat and harvest management improvement on 2 example leases in east Texas from 1992 through 1999 compared to the mean of similar leases ($n = 61$) in the region during the same time frame.

Index	Fountain Creek		Mill Creek		Regional
	Begin	Current	Begin	Current	Mean
Mean age of buck (yrs)	2.5	3.4	3.5	3.7	2.7
DBW ^a	105.1	116.0	84.0	119.9	106.8
Buck:doe	3.6	1.3	4.1	1.9	3.3
Fawn crop (%)	31.0	92.4	39.0	88.8	31.3
Acres/deer harvested	148.6	124.3	213.0	159.8	225.2

^aDBW = Dressed body weight of bucks in pounds