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COYOTES: A POTENTIAL ROLE IN DEER HERD MANAGEMENT?

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Abstract: White-tailed deer (*Odocoileus virginianus*) herd control is one of the principal problems faced by private lands game managers. Private landowners unwilling to permit adequate numbers of sport hunters on their lands force deer managers to exercise other harvest strategies, one of which is natural population control by protecting the coyote (*Canis latrans*). I describe an ongoing case study in South Texas where predation by coyotes may be considered a positive tool in deer population management.

Predation by coyotes on white-tailed deer in South Texas is recognized as one of the major contributing factors to deer mortality. The combined impact of disease and predation represents the major causes of fawn mortality, with losses exceeding 50% of the fawn crops in some years (Cook et.al. 1971).

Population studies conducted on the Welder Wildlife Refuge in South Texas indicated that fawn mortality is the major factor stabilizing this dense and generally healthy herd (Knowlton, 1964).

Beasom (1974) demonstrated that deer populations in South Texas could be increased with a very intensive predator control program. Since coyotes represent the primary predator of deer (excluding man) in South Texas, and many deer herds are increasing uncontrollably, it may be wise to consider the coyote as a management tool instead of a hindrance, particularly on large land tracts The following is my personal view of the coyote and the role it plays in the intensive deer management program conducted on the Harrison Piloncillo Ranch.

Study area

An intensive deer management program was established on the Harrison Piloncillo Ranch in 1983. The objective of this program was to enhance and sustain the quality of deer on the ranch in conjunction with generating some income from deer hunting

The 107,000-acre ranch is located approximately 4 miles south of Catarina, Texas and lies at the junction of Dimmit, Webb, and LaSalle counties. The ranch is not high-fenced; however, it is divided into 2 management units: (a) the core area and (b) the peripheral unit, which takes in portions of both sides of U.S. Hwy. 83. The peripheral unit is leased or package-hunted commercially in order to serve as a buffer zone protecting the core area from external hunting pressure

Vegetation is dominated by a woody brush overstory with a diverse herbaceous association dependent upon seasonal precipitation. Associations of cenizo, guajillo, blackbrush, Texas kidney wood, and brazil occur on upland shallow, sandy loam soils. Upland areas with deep soils are characterized by honey mesquite (*Prosopis glandulosa*), prickly pear (*Opuntia* spp.), Texas hog-plum (*Colubrina texensis*), and desert youpon (*Schaefferia cuneifolia*). Woody species such as honey mesquite, whitebrush (*Aloysia gratissima*), granjeno (*Celtis pallida*), Mexican persimmon (*Diospyros texana*), and huisache (*Acacia smallii*) occur on the deep loamy, bottomland sites.

Topography varies from areas with little relief to gently rolling terrain interspersed with drainages. The dominant soil type is fine sandy loam. Average annual rainfall is 22 inches for this region.

No supplemental feeding for the deer is conducted, however, a total of 206 acres (36 plots) are planted to oats annually. These planted food plots represent a substantial amount of highly-digestible forage during the critical "late-winter" period when bucks are recovering nutritionally from the rut. The food plots also enhance selectively harvesting of deer. For example, the efficient harvest of older bucks exhibiting undesirable antler qualities, and the prevention of harvesting buck fawns during our doe harvests, are facilitated simply by allowing hunters adequate time to adequately judge their target.

Roller-chopping along roadways is conducted

on an annual basis Approximately 10 miles of roadsides are chopped annually, with widths varying from 50 to 150 feet By reversing the successional stage of plant growth by roller-chopping, an additional source of high-quality forage is made available to all game species Roads are chopped on a three-year rotation.

Prescribed fire is also part of the program; however, the acreage burned is dependent on the fuel load. These fuel loads are dependent on the climate, which can vary dramatically on an annual basis.

White-tail deer are the only big game animals on the ranch. Coyotes are abundant and protected They represent a significant impact on both fawn survival and post-rut mortality in bucks

Cattle grazing (by steers) occurs, but never exceeds one animal unit per 40 acres Grazing is lightest to non-existent within the center of the core area. Depredation of cattle by coyotes has not been observed.

Deer population management

Since 1983, a total of 345 bucks has been harvested from the core area The harvest of mature bucks ranges from one adult per 1,666 acres to one adult per 4,230 acres The buck harvest is controlled at a low rate in an attempt to increase the number of bucks reaching the older age classes of 6 years or older, at which time our harvest data indicates the largest antlers are developed.

Since 1983, a total of 1,325 does has been removed from the core area. Lactation data are collected from all females harvested Percent lactation of 1 5-year-old-plus does ranged from a low of 9% in 1992 to a high of 62% in 1985.

Problems in attaining an adequate doe harvest on private land can be numerous First, the private landowner must be convinced of the necessity of a female deer harvest Second, large numbers of hunters are normally required to accomplish an adequate doe harvest on large landholdings. The problem here lies in the fact that few landowners are willing to open their gates for a large number of outsiders Thus, the manager must design the harvest to fit the landowner's goals and personal feelings By protecting the coyote, I feel that the number of doe hunters can be reduced, and the ultimate goal of herd reduction accomplished .

A genuine concern when protecting coyotes in order to enhance herd control is the indiscreet manner in which they kill Obviously, most deer managers prefer to select which animal (at least sex) that is harvested. The coyote is a non-selective predator and will kill adult post-rutting bucks as well as doe and buck fawns However, for those landholdings closed to sport hunting, the coyote may be the only population control factor (other than the climate) and thus must be understood and utilized

Population estimates are based on aerial helicopter surveys conducted on 15,000 acres (27%) of the core area Since 1982, 1 year prior to the initial doe harvest, the sex ratio has ranged from 2.4 does per buck in 1982 to 0 8 does per buck in 1986.

With the combination of a sport doe harvest, predation by a high population of coyotes, and a low harvest rate of bucks, the sex ratio was reduced to favor bucks from 1986 through 1989 As a result of the altered ratio, natural mortality, particularly post-rut mortality, increased in the bucks. For example, 3 pairs of bucks were discovered in the antler-locked position in 1987. The low probability of this occurring, combined with the even lower probability of discovering the animals on such a large land mass, forced us (by request of the landowner) to reduce our doe harvest in the core area beginning in 1990. As a result, doe numbers rebounded to 1.5 does per buck by 1994

Buck numbers continued to rise from 187 bucks counted in 1985 to 457 in 1994, based on aerial helicopter surveys Overall deer density increased from 1 adult per 36 acres in 1985, 2 years following the intensive doe harvest, to 1 adult per 13 acres in 1994.

Food for thought

Based on this information, our harvest scheme, which included coyotes as a harvesting mechanism, impacted the herd dynamics initially, i.e., doe numbers decreased and buck numbers increased However, once the doe harvest was reduced in 1990, it became obvious that coyotes alone could not hold this population at a static level

In conclusion, it is my opinion that predation by

coyotes, in conjunction with low intensity doe harvests (typical in this area), can control deer numbers on large (non high-fenced) management areas Thus, on land tracts owned by individuals unwilling to allow adequate hunters on the land to reduce doe numbers, the coyote represents a viable tool in deer harvest management

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