

APPENDIX K

Specific Management Recommendations for Pronghorn Antelope

Two of the most important characteristics of quality antelope habitat (more specifically, the vegetation structure) concern visibility and mobility. That is, the 2 most important mechanisms of self-defense for antelope are vision and speed. Anything that interferes with these abilities will, in the long-term, decrease their chances of survival. A third critical aspect concerning the vegetation component of antelope habitat is fawning cover. The primary



factor influencing the success or failure of an antelope herd is fawn survival (another very important factor is seasonal, long-distance movements to locate improved forage conditions). Nothing is more critical to fawn survival than adequate hiding cover (even more important than predator numbers). There are 2 factors that dictate whether fawns will have adequate hiding cover. The first factor, precipitation, is beyond the manager's control. The second factor is controlled directly by the manager and concerns cattle stocking rates and pasture deferment.

Food Habits

The majority of annual rainfall in the Trans-Pecos Region is received during late summer and fall (although annual precipitation fluctuates dramatically among years). During the good rainfall years, forb availability increases considerably during late summer and fall, and there is a corresponding increase in forb use by antelope. Forbs or broadleaf weeds are highly preferred by pronghorns, and they tend to consume them seasonally in proportion to their availability with heaviest use in the fall. Forbs are very palatable and are an excellent source of nutrients for pronghorns.

Browse species are second in importance in antelope diets and tend to be used most in spring and summer. However, woody plants can become especially important to pronghorn survival during dry seasons when forbs are not available. A few browse species, such as tarbush (*Flourensia cernua*), can be detrimental to antelope when taken in large quantities. Tarbush toxicity, combined with malnutrition, can be a problem on overgrazed ranges or during extended drought when other forage is limited.

Grasses are generally considered the least important forage category in antelope diets, as grasses only compose 6-7% of their annual diet. Although grasses represent only a

limited proportion of the annual diet, grasses can be extremely important to pronghorns on a seasonal basis. Lignin and cellulose increases in grasses as they mature (while most nutrients decline), and pronghorns have difficulty digesting mature grasses. Tender grass shoots, on the other hand, are highly palatable, nutritious, and low in lignin and cellulose. Perhaps just as important as the nutrients they contain, the timing of grass shoot emergence can be critical to pronghorn survival during some years. In most years, grasses will begin sprouting in March, prior to foliage growth on most woody plants and long before normal forb growth (stimulated by summer rainfall). The heaviest use of grasses by antelope is during March through May, with grasses representing up to 30% or more of the diet. Following a severe, dry winter, these succulent green shoots can provide a boost in nutrition that can save many antelope from starvation until woody plants grow new shoots or early rains result in forb growth. Although grasses are primarily used in spring, there is some use of sprouting cool-season grasses during late fall- early winter.

Several food habit studies were conducted in the Trans-Pecos Region to gain information about annual and seasonal pronghorn diets. The results indicated comparable annual diets, ranging from 65-70% forbs, 25-30% browse, and 5-8% grass. Heaviest use of forbs occurred during the fall, although forb use in winter was considerable (approximately 50% of diet). Browse received heaviest use in summer (60%), with considerable use in the spring (45%). Grasses were used more in the spring (20%) than any other season, with moderate use in winter (8%).

Pronghorn- Livestock Relationships

With moderate stocking rates, the degree of competition between antelope and cattle is minimal because the plants preferred by pronghorns are used very little by cattle. Cattle primarily eat grass and occasionally use forbs and browse. Pronghorns, on the other hand, prefer forbs and browse with very light use of grass species. Although grasses may represent up to 20% of the pronghorn diet in the spring, on a yearly basis grasses represent only 6 or 7% of the diet. On a range that is overgrazed by cattle, competition for forbs will increase as the quantity and quality of grasses decline.

Competition between pronghorns and sheep or goats is more significant and may result in a population decline of pronghorns due to abandonment of an area, or more often, the decline is related to malnutrition of a pronghorn herd that is confined by sheep-proof fencing. Forbs, which represent more than 60% of the annual diet of pronghorns, are also highly preferred by sheep and goats. The overlap in feeding habits can eliminate the forbs that are necessary for antelope survival. Sheep and goats can be and often are maintained on an overgrazed range through supplemental feeding, an advantage that the pronghorn must normally survive without. Under light grazing pressure, the problems just mentioned would be substantially reduced. Currently, this competition issue has considerably less relevance considering the dramatic reduction in sheep and goat numbers over the past several decades.

In average rainfall years and with timely supplementation, the local stocking rate

recommended by the Natural Resources Conservation Service provides adequate animal performance and generally does not damage forage plants. However, precipitation during most years is below average and recommended stocking rates result in a high percentage of forage utilization. When considering critical needs of pronghorns such as hiding cover for fawns, a stocking rate at about 80% of the recommended level may be more appropriate. A deferred rotation grazing system (allows antelope to select among rested pastures and allows regrowth of desirable plants, if it rains) is usually preferable to continuous grazing of all pastures. Grazing deferment also allows the manager to provide additional rest to pastures containing critical fawning grounds. Under extended drought conditions, reducing the stocking rate is the best means of allowing antelope to survive nutritionally and reproductively.

Water Availability

Pronghorn water requirements and water consumption will vary seasonally and from day-to-day depending on precipitation, temperature, humidity, and availability of green, succulent vegetation. Daily water consumption rates for adults can range from almost no intake of free water in April and May to more than a gallon per day in August. However, a close relationship exists between pronghorn distribution and the location of available water. The vast majority of antelope herds (95%) are found within 5 miles of a water source.

The majority of antelope range in Texas is well watered because of widespread watering systems for livestock. Therefore, water availability on antelope range is often taken for granted. However, situations regarding water do arise in ranching operations that can impact the pronghorn herd. For example, when livestock are removed from pastures for marketing or pasture management reasons, watering sites should be maintained so that the antelope have access to water on a daily basis.

Antelope prefer to drink from ground-level water sources such as stock tanks or windmill overflows, but they will use most water facilities designed for livestock, especially during very dry periods. The trough height (~18") and water level should be sufficient to allow weaned fawns access to water. Extremely cold weather can freeze water troughs and prevent antelope from using them. Under normal conditions, a ranching operation will break the ice in the troughs on a daily basis to keep water available for livestock. But if the livestock have been removed from a pasture, these frozen water sites may be neglected. Extended periods of extreme cold weather can severely stress a pronghorn herd, especially if they are deprived of drinking water.

Herd Movements

In the northern extremes of their range (Wyoming, Montana), pronghorns sometimes migrate up to 200 miles to avoid deep winter snows. The Texas antelope herds are not migratory; however, they do move on a limited basis in response to seasonal availability of forage. A movement of only 5 or 10 miles may be critical during dry periods when forb production has failed and woody browse plants on an adjacent range become

necessary for survival.

Ranch managers should consider the yearly movement patterns of antelope and eliminate any restrictions on these movements. Ranchers sharing the same antelope herd on an annual basis should cooperate in providing freedom of movement for the animals, which could prove beneficial to all those involved. For example, the seasonal movement of antelope from one ranch to another can improve nutrition and increase production in the herd.

The free movement of an antelope herd during all seasons is a key factor in maintaining a healthy and productive herd. Moving to a new vegetation type is the only means available to pronghorns for dealing with seasonal and weather-related changes in forage conditions. The most common barrier that restricts free movement of pronghorns is fencing. Because antelope tend to negotiate fences by diving under or going between wires, a net-wire fence or a sheep-proof, barbed-wire fence can be a serious barrier to pronghorn movements. Where such conditions exist, the ranch manager should take immediate steps to provide access through these fences. This can be done by: 1) folding up the bottom of a net-wire fence in 100-yard stretches every half mile, leaving a 16-18" gap between the fence and the ground, 2) replacing net-wire water gaps with barbed-wire, once again leaving at least 16" of space between the bottom wire and the ground, and 3) replacing 100-yard sections of sheep-proof fencing with barbed-wire fencing with the appropriate spacing between the bottom wire and the ground. These steps will improve conditions for pronghorn movements and forage selection, while still maintaining a cattle-proof fence.

An additional problem with net-wire fences is that they can increase the susceptibility of antelope to predation. Coyotes have been observed on numerous occasions chasing antelope for several miles. In a vast expanse of mixed short-grass prairie, the antelope will almost always emerge as the victor in this every day "contest." However, when a fleeing antelope is turned by a net-wire fence (or hung up or injured as they attempt to run through it), this provides the pursuing predator with a considerably greater advantage. Several accounts have been documented of coyotes using net-wire fence corners to hem up a fleeing antelope.

Predation

Predation is only one of many factors that influence pronghorn populations. Several studies across the United States have shown that predator management is not always the answer for increasing pronghorn numbers. However, predation has proven to be more significant on marginal pronghorn ranges and in areas where predator numbers are high in relation to antelope numbers. Both of these situations exist for many of the pronghorn herds in the Trans-Pecos because of frequent droughts and high coyote populations across most of the region. Therefore, predation may be a much more important limiting factor among many Trans-Pecos herds than for pronghorn herds in other states.

In Texas the primary predator on antelope is the coyote, with considerably less predation by golden eagles, mountain lions, and bobcats. Most of the fawns are killed during their first month of life, although both coyotes and eagles have been observed attacking adults. Small, isolated herds are more vulnerable to the effects of predation due to the small number of fawns that are born. Several studies in Texas have shown that intensive (aerial) and timely coyote control (March-May) can allow greater fawn survival and at least temporarily increase pronghorn numbers. Whether the herd can be sustained at this higher level will be dictated by the quality of the habitat and the presence of other limiting factors such as an extended drought. In some situations, predation may serve as a means of herd stabilization, keeping pronghorn numbers below carrying capacity and preventing severe die-offs during droughts.

When considering predator management as a means of increasing pronghorn numbers, remember the following facts:

- 1) Predators do kill pronghorns, especially fawns, but predation is only one of many factors that influence pronghorn populations.
- 2) Timely and intensive coyote control has resulted in significantly greater fawn survival in some situations.
- 3) Predator control is not the answer for every situation where pronghorn numbers are low.
- 4) Pronghorns evolved with and survived with predators for thousands of years.
- 5) Habitat quantity and quality is the overriding influence on all factors harmful to pronghorns, including predation.

Herd Management

Successful herd management of pronghorns requires knowledge of key factors, such as 1) the number of animals present, 2) sex and age composition of the herd, 3) sources of mortality, and 4) changes in forage conditions. The harvest of surplus antelope through controlled hunting is the primary tool used in the management of pronghorn herds. The harvest of mature bucks can produce trophies for hunters, be a source of income for landowners, and help in maintaining a healthy herd. Only on rare occasions are permits issued for doe antelope, and these usually involve situations where animal numbers need to be reduced to avoid long-term damage to forage resources.

Landowners interested in managing their pronghorn herd should have some specific objectives and develop a management plan. If quality or trophy-class bucks are desired, then a relatively large number of bucks will need to be maintained in the herd to allow the animals to reach a mature age. This generally requires a minimum buck to doe ratio of 1:3 but may exceed a ratio of 1:2. For pronghorn herds recovering from drought and for those with exceptionally low fawn survival, a post-harvest ratio of 1:4 may be more appropriate. In order for the bucks to develop horns in excess of 14" in length, the majority of the bucks should reach at least the 4-year age class. For hunters that are satisfied with smaller horns, then a greater number of bucks can be harvested, as long as it is within the permit issuance rate.

Although your pronghorn harvest management may be somewhat limited by permit issuance, there are a number of other management practices that can be implemented on your property to ensure the continued health and productivity of the pronghorn herd. These include grazing management, improving water availability, eliminating barriers to herd movements, and predator management.