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## PREDATION OF BIG GAME AND LIVESTOCK IN THE TEXAS TRANS-PECOS

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**Abstract:** Predation of livestock and big game remains a matter of concern for ranch managers and operators in the Trans-Pecos. Current evidence indicates that mountain lions (*Felis concolor*), bobcats (*Lynx rufus*), and coyotes (*Canis latrans*) are the primary predators involved, although little information is available on bobcats. A gradual shift from sheep to cattle management has resulted in a corresponding decrease in the intensity of predator control efforts for livestock protection. However, potential lease hunting income has renewed predator control efforts for protection of the 3 primary big game species, pronghorn antelope (*Antilocapra americana*), mule deer (*Odocoileus hemionus*), and desert bighorn sheep (*Ovis canadensis mexicana*). Available information suggests that predator management efforts can be beneficial to big game populations, especially if conducted in a timely and specific manner. Predator populations do not appear to have been negatively affected overall by recent predator management efforts in the Trans-Pecos.

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**Key words:** *Antilocapra americana*, *Canis latrans*, desert bighorn sheep, *Felis concolor*, *Felis rufus*, mountain lion, mule deer, *Odocoileus hemionus*, *Ovis canadensis mexicana*, predation, pronghorn sheep, Texas, Trans-Pecos region.

Predation of livestock or big game in the Trans-Pecos region of Texas can result in significant losses of ranch income. Predator management can reduce these losses without harming predator populations. The purpose of this paper is to compile information currently available on individual prey species and major predators involved.

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### REGION AND HISTORY

The Trans-Pecos is that region of Texas located west of the Pecos River and south of the New Mexico state line. Most of the Trans-Pecos is part of the Chihuahuan Desert and as such, is a semi-arid region of connected or isolated mountain ranges with broad expanses of rolling to flat, semi-desert grass and shrublands. Annual precipitation averages 30.5 cm (12 in) but can be highly variable with drought conditions common.

Historically, predators in the Trans-Pecos have been unwelcome visitors for livestock producers and game managers alike. Early attitudes of predator eradication were in place throughout most of this century and implemented by all conventional methods. Shooting of golden eagles (*Aquila chrysaetos*) from aircraft was practiced until laws protecting raptors made it illegal. Although these early attitudes may still be present on some individual ranches, most producers and managers have developed a more tolerant attitude based on real versus perceived losses. The ADC has gradually shifted to a policy of controlling those animals causing losses, rather than

indiscriminate control of all predators.

### LIVESTOCK

Livestock predation in the Trans-Pecos has changed somewhat in recent decades, primarily because of a change in the type of livestock raised in this region. Historically, sheep ranching was common throughout the Trans-Pecos because sheep were more able to utilize some of the rugged terrain, and because markets for mutton and wool were fairly stable. Because sheep were susceptible to predation, predator control was a normal management practice.

Cattle, however, have gradually replaced sheep as the primary livestock species to the point that a very small percentage of the Trans-Pecos is utilized for sheep ranching today. The reasons for this change include the realization by ranchers that certain breeds of cattle perform relatively well in this rough, semi-arid region and that cattle in general are much less susceptible to predation. Goats are practically non-existent in the Trans-Pecos at the producer level, but are used quite extensively further east in the Edwards Plateau region.

Where sheep ranching is currently practiced in the Trans-Pecos, problems with predation still occur. Although coyotes (*Canis latrans*) were once considered one of the major predators of sheep in much of the Trans-Pecos, sheep ranches are now confined to the eastern region where coyotes are not as numerous as in the west. Mountain lions (*Felis concolor*) and bobcats (*Felis rufus*) are now considered the major predators of sheep in those areas where sheep are raised.

As recently as 15 to 20 years ago, there were believed to be relatively few lions in the Trans-Pecos because of control efforts. However, the decline in sheep ranching resulted in a concomitant decline in lion control. By around 1970, sheep ranching in the Trans-Pecos had declined to the area east of, and including, the Glass Mountains. Within the last 2 decades,

the western limit of sheep ranching has shifted another 30 to 40 miles to the east.

In the areas where sheep ranching is still practiced, predator control efforts are fairly intensive. Control of mountain lions is conducted through trapping and hunting with hounds by private individuals and the ADC. Bobcat control is practiced as well, primarily for the protection of lambs. On 1 ranch east of Sanderson, Texas, over 30 bobcats were taken between January and May (1995) alone. In the area surrounding Sanderson, over 100 bobcats were taken in the same time period (B. Russ, TPWD, pers. commun.). Coyotes are controlled, but in much of the rugged terrain coyotes are not as prevalent as cats.

Predator control for protection of cattle (primarily calves) is ongoing in the remainder of the Trans-Pecos, but is primarily confined to individual ranches where problem animals cause losses. Losses of cattle to mountain lions are not commonly reported in this region, unlike Arizona, where lions are more commonly controlled to protect cattle herds.

Overall, predator control for protection of livestock in the Trans-Pecos has declined fairly dramatically since the sheep ranching days. However, many ranchers and managers have taken up predator control again for protection of income from big game species. As hunting of these species has become more important economically, ranchers in the Trans-Pecos have become more concerned about big game populations. Currently, prices for trophy pronghorn (*Antilocapra americana*) and mule deer (*Odocoileus hemionus*) range from \$1,000 to \$3,000 and thus provide a significant incentive for protection.

### PRONGHORN

The Trans-Pecos has historically been a stronghold for the pronghorn antelope in Texas. In the late 19th and early 20th centuries, pronghorn populations suffered severe declines or elimination in other parts of Texas. However, the Trans-Pecos herds were stable or grew, primarily as a result of protection from hunting by individual ranchers and predator control (Hailey 1986). In the past 2 to 3 years, Trans-Pecos pronghorn populations have declined substantially from combined effects of drought and predation. The 1994 TPWD census revealed a decline of approximately 30% from the previous year's population in the Trans-Pecos. It is believed that the 1995 census may prove to be the worst since the annual census of pronghorn began in the mid-1960's.

In the past, coyotes and golden eagles were considered to be the major predators of pronghorn, primarily fawns. However, results from a study conducted in Hudspeth County of the western Trans-Pecos showed that coyotes are by far the primary cause of fawn predation (Canon 1993). It appears that, barring extreme drought, Trans-Pecos pronghorn surviving beyond the first 6 months can live a relatively long life. Adult mortality in the study was relatively low over the 3-year period (15% overall) with minor amounts of predation from mountain lions (3%) and low mortality from other causes. Few if any diseases or parasites seriously affect pronghorn populations in the dry climate of the Trans-Pecos (Hailey 1986), and

predators simply cannot catch the adults in most situations.

Pronghorn fawns, however, are extremely susceptible to predation, especially by coyotes. In the Hudspeth County study, 80% of 101 fawns were taken by predators over 3 years. Of these, 66 were taken by coyotes and the remainder by bobcats, golden eagles, and lions. Results of the study indicate that in declining populations or in populations below carrying capacity, intensive coyote control, especially prior to fawning season, can significantly increase fawn survival, and thus more rapidly restore populations to desirable levels.

### MULE DEER

Relatively little information is available on the effects of predation on Trans-Pecos mule deer populations. Mule deer are considered to be the primary prey species for sympatric mountain lions in most areas of the Trans-Pecos. A recent study in Big Bend National Park (Wade 1990) found that mule deer were the primary prey species and javelina (*Tayassu tajacu*) the primary buffer species when deer were not as available. However, studies of Trans-Pecos mountain lions have not been conducted in areas where livestock provide a source of prey. It is unknown whether javelinas or livestock would provide the primary buffer species in these areas. Reports of lions killing as many as 20 sheep in 1 night are not uncommon in those areas where sheep still occur.

Results from a study conducted on the Elephant Mountain Wildlife Management Area in central Brewster County of the Trans-Pecos showed that lion predation was a primary cause of juvenile and adult mule deer mortality on the area (D. Lawrence, TPWD, pers. commun.). Up to 10% of mortality in each of these 2 age groups resulted from lion predation. Although no information is available on loss of fawns less than 8 months of age, it is believed that at least 20-25% of this age group may be lost to predation annually.

Little is known about mule deer losses to coyotes and bobcats in the Trans-Pecos. However, it is assumed that the primary impacts of these 2 predators is on fawns. In many areas of the Trans-Pecos, parturient mule deer dams move to lower elevations where coyotes are more commonly found, thereby increasing the probability of coyote predation on fawns. Some biologists in the Trans-Pecos believe that fawn losses to bobcats are high, but no supportive data is available.

According to TPWD census information, mule deer populations have been declining steadily for the past several years. The reasons for the decline are largely unknown but most biologists and ranchers believe the primary cause is lion predation. Recent census information from 2 ranches in the Sanderson area revealed a substantial decline in the buck portion of the population specifically (B. Russ, TPWD, pers. commun.). Bucks are apparently most susceptible to lion predation in the period during rut when they are preoccupied with mating, and immediately following rut when physical condition is poor.

### DESERT BIGHORN SHEEP

Native Texas bighorn (*Ovis canadensis mexicana*) populations were extirpated by the mid-1950's through a com-

bination of over-hunting, predation, and livestock-related causes (disease, competition). Since that time, a restocking effort by the TPWD, with help from the Desert Bighorn Society and cooperating western states (Arizona, Nevada), has been ongoing to restore populations to selected historic range.

The first restocking effort to the Black Gap Wildlife Management Area in the late 1950's was eventually unsuccessful due to predation by lions. Other efforts have been more successful but lion predation has been substantial. In the Van Horn Mountains, 60% of translocated bighorn were lost to mountain lions, but the population is now relatively stable as a result of consistent lion control efforts by ADC. The Sierra Diablo Wildlife Management Area and facility, and the neighboring Beach Mountains Ranch have received considerable attention for successful restocking of bighorn. Although mountain lions are not as common in this area, any lions found are removed as rapidly as possible.

The most recent bighorn restocking attempt was in November, 1994, at, once again, the Black Gap Wildlife Management Area. Although problem lions are removed as quickly as possible, 7 of 25 relocated, radio-collared bighorn were killed by lions within 5 months of release (J. Kilpatrick, TPWD, pers. commun.). Predator control efforts are ongoing to aid in the reestablishment of the Black Gap population.

## PREDATORS

It is difficult to assess the impacts of these predator management efforts on predator populations. Population density is notoriously difficult to estimate due to the secretive and highly mobile nature of these predators. Essentially no information is available on population trends of bobcats and coyotes in the region. Mountain lions were suggested as a candidate for the Texas Endangered Species list by the Sierra Club in 1992. In 1993, groups concerned about Texas mountain lion populations attempted to have the species upgraded to "game animal" status in Texas. Both attempts failed but the efforts prompted a series of studies and more intensive attempts at estimating population trends in the state. Recent and long-term data from TPWD seem to contradict any predictions of the demise of the mountain lion in Texas.

Because of the difficulty in actually counting mountain lions, efforts have concentrated on records of confirmed mountain lion sightings and reported mortalities, statewide and by county. Mountain lion sightings have increased substantially since this effort was initiated in 1984. The number of confirmed sightings statewide in 1994 was 363, the highest

since records have been kept (B. Russ, TPWD, pers. commun.).

Lion distribution appears to be expanding as well, as indicated by continued increases in the number of counties where lions are seen. Sightings have been confirmed from east Texas to the Red River and into the Texas panhandle, in many areas where these animals have not been seen for decades. Mountain lion mortalities show similar trends with the number of confirmed mortalities, primarily from trapping and hunting, increasing as well. Corresponding increases in the number of new counties with reported mortalities have also occurred.

Mortality and sighting data indicate that the Trans-Pecos holds the highest lion populations in Texas. However, other ecological regions such as the Cross Timbers and Prairies, South Texas Plains, Post-Oak Savannah, Edwards Plateau, Pineywoods, and Gulf Coast Prairies and Marshes indicate increasing trends as well. Apparently Texas mountain lion populations are stable, but more likely are increasing throughout the state.

## CONCLUSIONS

Predation by mountain lions, bobcats, and coyotes in the Texas Trans-Pecos continues to be a significant factor affecting big game and livestock, and thus rancher incomes and local economies. Although the type of livestock has changed over the years, reducing the necessity of predator control for livestock protection, landowner concern for big game populations has increased as a result of increased emphasis on hunting as a source of income.

Timely predator control can increase livestock and big game production but is not as important as timely precipitation. Although no evidence indicates that predator control is harming predator populations, continued emphasis on specific depredating individuals is the best strategy, both economically and ethically. Predator management efforts should therefore be concentrated on critical seasons (i.e., fawning, lambing, calving), and those predators causing the most damage.

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