

A REEVALUATION OF THE HISTORY OF PRONGHORN ABUNDANCE IN WEST TEXAS

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Abstract: Historical documents concerning occurrence, distribution and abundance of pronghorn (*Antilocapra americana*) in West Texas are full of information pertinent to wildlife managers. These sources indicate the decline of pronghorn was directly caused by human settlement of antelope range. These data show that pre-settlement antelope populations in the Panhandle and Permian Basin were greater than those in the Trans-Pecos District. Development of surface water seems to have favored the reestablishment of populations in the Trans-Pecos, whereas intensive agriculture is limiting the return of antelope in the Panhandle and Permian Basin.

Proc. Annual Conf. S.E. Assoc. Fish & Wildlife Agencies 31:138-146

Though pronghorn occurred over a large portion of the state in pristine times, authorities generally agree that the largest concentrations were found in the dry, open grasslands of West Texas. The Trans-Pecos, region west of the Pecos River, has been described as containing the largest pronghorn populations in pre-settlement times (Nelson 1925 and Buechner 1950). The objective of this research was to determine the validity of those observations in light of a large sampling of historical data. The historical evidence indicates that other areas in West Texas, such as the High Plains and the western edge of the Edwards Plateau, supported larger concentrations of antelope than did the Trans-Pecos.

This paper is part of a larger study of man's impact on Texas pronghorn. The project was supported by the U.S. Forest Service Great Plains Research Unit and conducted in cooperation with this agency and the Department of Range and Wildlife Management, Texas Tech University. Our thanks are extended to Texas Parks and Wildlife Department personnel, landowners and local historians throughout the state who willingly gave information and much of their time to the project.

MATERIAL AND METHODS

The study area was divided into 3 regions that corresponded with the management districts delineated by the Texas Parks and Wildlife Department.

The Trans-Pecos is bordered on the east by the Pecos River and on the south and west by the Rio Grande. The Texas-New Mexico state line forms the northern boundary. This area contains mountain ranges which reach 2,670 m in height interspersed with desert lowlands of 1,070 m elevation. Higher elevations generally receive more precipitation than the low lying basins, with the average rainfall for the region being 254 to 305 mm a year. The Trans-Pecos has a few permanent streams and springs widely scattered throughout the area. The primary antelope habitat is the brush and short grass prairies of the intermontane lowlands and plateaus. A detailed description of this vegetation is given by Gould (1969). Most of the land in this area is still native rangeland with some irrigated farming in the valleys.

The Panhandle District is comprised of the High Plains and Rolling Plains vegetational area (Gould 1969). Antelope range includes both areas. The High Plains, a southwestern extension of the Great Plains, is a high plateau ranging in elevation from 905 to 1,370 m. The area is transected by 4 major river systems with many playa lakes that intermittently hold water. Rainfall averages 381 to 535 mm annually. The vegetation of the High Plains is classified as primarily short-grass prairie, with mixed and tall-grass prairie occurring in the more mesic locations (Gould 1969). Extensive farming occurs throughout the area.

The Rolling Plains are located in the eastern one-half of the Panhandle. This area contains rough broken country along the caprock and in the north along the Canadian River breaks, but is mostly gently rolling hills. Elevations vary from 245 to 915 m and the annual rainfall is between 560 and 760 mm. Grass types are classified as tall and mid-grass prairies by Gould (1969) who lists plant species in detail. Because of steep topography and the erosive nature of the soil, much of this area is still in native grassland.

The Permian Basin district has 3 vegetational areas including the High Plains, Rolling Plains and the western portion of the Edwards Plateau. The Rolling and High Plains are similar to those described for the Panhandle District. The antelope range on the Edwards Plateau consists of gently rolling hills with elevations ranging from 610 to 915 m. The average rainfall is 460 mm. Gould (1969) has described the vegetation but due to continued high grazing pressure by livestock the range condition is poor. The major portion of the region is still rangeland but also includes some farmland.

The first phase in documenting past abundance of pronghorn entailed an extensive survey of the historical literature on the exploration and settlement of the region. The primary source was material in the Southwest Collection, Texas Tech University, a regional repository for historical information.

Since much of the research involved historical accounts that dealt with factors other than those of a scientific nature, certain criteria were established to evaluate the natural history content of any given source.

It was essential that the areas where antelope sightings were made could be ascertained relative to present-day locations. Known landmarks such as rivers and mountains were correlated with county maps prepared by the Texas Highway Department. Sources dealing with a specific geographic area were compared to other accounts of the area for the same time period.

A major consideration was the total amount of natural history information recorded by the observer. Those sources containing a large quantity of natural history data indicated an indepth awareness of the observer and were considered to be of greater value than those with sporadic observations. Furthermore, if wildlife species other than pronghorn were mentioned in detail, it was assumed that antelope were not reported because they were not prevalent in the area at that time.

Another important factor was the training and background of the observer. Observations of naturalists were considered to be more accurate than those of people with no scientific training. However, reports made by cowboys, were considered to be as accurate as those of trained naturalists, because their job demanded familiarity with the number and location of hundreds and sometimes thousands of range cattle. This was an important consideration in reports where actual counts of wildlife species, i.e., bison (*Bison bison*) or pronghorn were given.

In addition to the historical review, research was conducted in selected counties in West Texas. Interviews were held with landowners, game wardens, wildlife biologists, and other people who might have had some knowledge of the wildlife and history of the county. County newspapers and court records were also examined for pertinent information.

Pronghorn census data, hunting data, and progress reports for the West Texas region were examined from records maintained by Texas Parks and Wildlife Department.

RESULTS AND DISCUSSION

Pre-Settlement Abundance in Trans-Pecos

In the most comprehensive treatment of Texas pronghorn to date, Buechner (1950) reported enough evidence to indicate that the Texas pronghorn was extremely abundant in the Trans-Pecos Region prior to about 1880. To substantiate this observation, he quoted Baird (1859) who reported that "on the Plains lying between the Nueces and the Rio Grande, the great mustang range, and where the common deer is very abundant, but few antelopes are to be seen. It is not till west of the Pecos is reached that droves are observed dotting the most open and naked prairies, which it undoubtedly prefers and habitually inhabits; it is no rare occurrence, however, to find it in mountain valleys, from which it will sometimes take to the mountains, but usually from fright, not choice. . . . It is on Plains destitute of most forms of vegetation except grass that the largest herds of this animal are to be found." Baird's (1859) report suggested that pronghorn were in greater abundance in the Trans-Pecos Region than in South Texas on the Rio Grande Plain as reported by Bartlett (1854). Actual herd sizes of antelope prior to 1880 were not reported by Buechner, nor did he draw any comparisons of the relative abundance of pronghorn between the Trans-Pecos Region and the High Plains and Rolling Plains.

Bartlett (1854) noted pronghorn in the western part of Texas near the Concho and Pecos River. He observed large numbers of antelope just west of the Concho River and recorded seeing a single herd west of the Pecos River north of Horse Head Crossing (Fig. 1). Though he doesn't give numbers or herd sizes as he did for South Texas, his

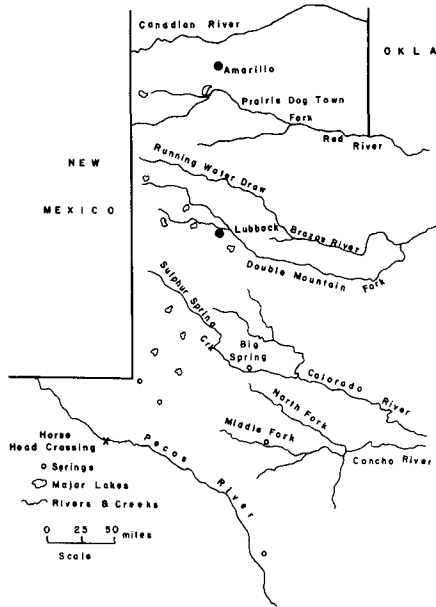


Fig. 1. Distribution of naturally occurring water available to pronghorn in the Texas Panhandle and Rolling Plains.

narrative indicates that he was more impressed by the abundance of antelope between the Concho and Pecos River than the numbers occurring west of the Pecos. However, Kennerly (1857) a naturalist who accompanied Baird on the Emory Expedition, reported large concentrations of pronghorn in the Trans-Pecos region: . . . "On several occasions we have traveled over the road between San Antonio, Texas and El Paso, on the Rio Grande, but we never have observed the antelope in that country until after crossing the Pecos River, and from that stream as far as the Rio Grande found it always the most common of the larger species of quadrupeds. On the immense Plains and wide valleys stretching out from the Limpia Mountains in all directions large herds are often seen. The number of individuals composing a herd vary from eight or ten to several hundred. We have often seen more than a hundred together, and perhaps sometimes as many as three hundred" (Emory 1857:52).

Additional information that indicates that pronghorn were common in Trans-Pecos includes a map made by the United States Army Engineers in 1857 that shows a water point labeled "Ojo De Berrendo" (antelope wells or antelope springs) located in East-Central Presidio County (Fig. 2). Antelope apparently were common in Presidio County during the 1870's with herds containing several hundred animals (Madison 1968). Mearns (1907), on a trip across the Trans-Pecos east of El Paso, reported from 1 to 30 antelope were seen daily. He also reported finding antelope near Fort Davis in August of the same year.

There can be little doubt that pronghorn were common in the Trans-Pecos in pre-settlement times, but large herds containing thousands of animals apparently did not exist. Although there were a number of factors limiting pronghorn populations in this area, water was probably the most over-riding limitation. From the earliest Spanish records in the sixteenth century and from reports written by members of the United States Army in the Mid-1800's, the single greatest hardship mentioned was the lack of water. An early exploration of the Pecos River and Trans-Pecos region by Espejo in 1582-1583 mentions the dry, arid terrain. Even along the Pecos River, finding good water was a problem. Espejo found the tracks of buffalo along the river along with numerous bones, but saw no live buffalo or antelope (Perez De Lujon 1929). Another expedition led by the Spaniard De Sosa in 1590 recorded the following description of the area north of

the junction of the Pecos and Rio Grande River: . . . "The lack of water was by this time causing suffering among both men and beasts, so that the Lieutenant deemed it best after trying by all means to reach the Salado (Pecos), to return to the Laxas Devils Kiver" (Hull 1916:313).

Clark, who accompanied the Emory boundary survey, described the area in the Trans-Pecos where the party encountered antelope: . . . "When it is considered that such prairies cover an extent of fifty or even one hundred miles in some directions without water, its (antelope) adaptability to the region inhabited is manifest" (Emory 1857:51). Clark also observed that the absence of water and luxuriant grass in the antelope range might have accounted for the absence of deer.

As more and more exploration parties crossed the Trans-Pecos region, maps were made depicting the few available springs and wells (Fig. 2). One such party that crossed the northern portion of the area in the summer of 1849 found water at only 2 places after leaving the Pecos River. One of these was the spring at the base of Guadalupe Peak which held pure cold water with excellent grasses for the livestock nearby (United States Secretary of War 1850). The other source of water was the Hueco Tanks approximately 30 miles east of El Paso. These tanks were natural depressions in a rock formation which filled with rain water and due to their non-porous nature, retained the water for long periods of time. The tanks provided virtually the only water in this part of Trans-Pecos during pre-settlement days (Baker et al. 1973). In the central and southern portion of the region other springs were available though widely distributed (Fig. 2).



Fig. 2. Distribution of naturally occurring water available to pronghorn in the Trans-Pecos Region of Texas.

It has been well established in the literature that antelope are dependent on water. A study in Wyoming's Red Desert revealed a close relationship between antelope distribution and water locations. Ninety-five percent of 12,465 antelope censused by air were within a 3- to 4-mile radius of a water source (Sundstrom 1968). In the Trans-Pecos region, water must be present either in the same pasture as pronghorn or in adjacent and accessible pastures (Buechner 1950). Apparently antelope prefer not to walk long distances for water and refrain from using areas remote from water (Buechner 1950). In one instance, antelope stopped using an area when a nearby windmill broke down

(Buechner 1950). Hailey (1975) found that during periods of dry weather antelope in the Trans-Pecos were centered around windmills, stock tanks and other sources of water.

Since windmills and stock tanks were not present on the range before the mid-1880's, antelope in the Trans-Pecos region had a very limited number of natural water sources. Population sizes probably were not ever very high and fluctuated radically with the local weather conditions.

Changes in Abundance in Trans-Pecos

Buechner (1950) indicated that by 1880 antelope were scarce in the Trans-Pecos Region. He based this on the observations of an individual who had lived in the area from 1880-1882 and traveled extensively throughout the area. Though little reliable information has been uncovered concerning the actual numbers of antelope during the 1880's and 1890's, a definite decrease occurred during this period. Mearns (1907) stated that antelope were scarce in areas of West Texas where 25 years previously they had occurred by the thousands. By the 1920's the Trans-Pecos antelope population numbered approximately 700 animals (Nelson 1925). Buechner (1950) attributed this drastic decline primarily to overhunting.

In addition to the excessive hunting that occurred, habitat deterioration by domestic livestock contributed to the antelope decline (Utely 1966) reported that a land rush to the Trans-Pecos Region took place between 1880 and 1885. By 1885 the area had become densely populated with cattle and shortly thereafter was crisscrossed by barbed-wire fences. The first fence in the Trans-Pecos was erected in 1888 after the bad drought of 1885-1886 (Madison 1968). During this drought, between 20 and 40 percent of the cattle in the Trans-Pecos perished (Utely 1966). There are no mentions of the number of antelope that died during this period.

From the low population densities of the 1920's (Nelson 1925), pronghorn numbers in the Trans-Pecos have increased and stable populations exist today (Uzell 1973; Hailey 1975). However, severe population fluctuations are still evident in this portion of the state. As recently as 1973 a total of 13,500 antelope were counted in Trans-Pecos (Fig. 3), but by the following year only 5,700 animals were counted (Texas Parks and Wildlife Dept. Rec.). Buechner (1961), in discussing the changes of antelope populations stated that droughts can reduce pronghorn numbers 50 to 60 percent in the the Trans-Pecos Region.

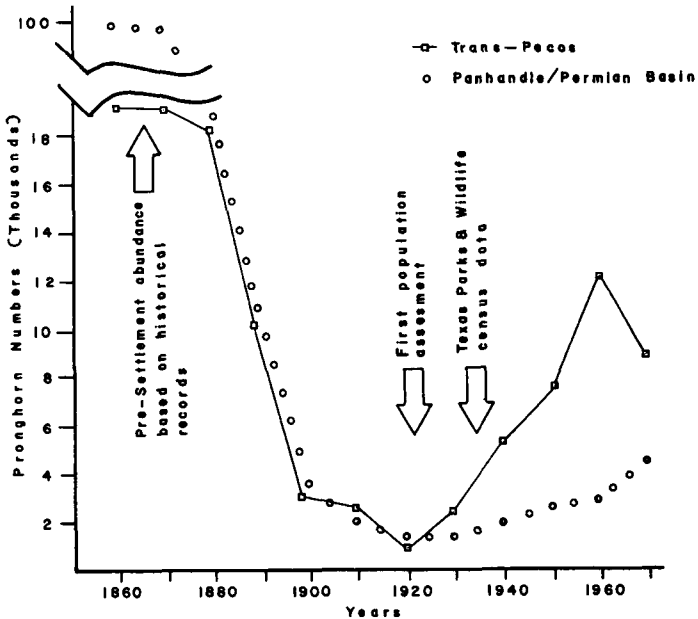


Fig. 3. Estimated changes in relative abundance of pronghorn in West Texas as indicated by historical records and more recent population census data.

In an effort to counteract the effects of the periodic droughts in this area, landowners have taken measures to increase the amount of available water. The first windmill in the area was installed in 1885 and after the drought of 1886 the first stock tanks were dug and soon dotted the region (Madison 1968). Presently, water wells, both wind and electric powered, are widely distributed throughout the Trans-Pecos but are concentrated near the few towns of the area (Littleton and Audsley 1957; Davis 1961; Muse 1966; Davis and Gordon 1970). Though all wells drilled in the area are not reported, the Texas Water Development Board currently has over 2,000 water wells recorded for the 9 counties of the Trans-Pecos Region (Board records) (Fig. 2).

While it is difficult, if not impossible, to ascertain pre-settlement numbers of pronghorn in the Trans-Pecos Region, the historical citations consistently mention herds of 300 in some places down to 1 to 3 animals in other areas. Given these densities and the scarcity of water that existed, it is doubtful that antelope numbers in the Trans-Pecos were ever larger or even as large as those occurring in other parts of West Texas. Apparently antelope distribution in Trans-Pecos is more extensive now than it was in pre-settlement days due to water development (T. L. Hailey, personal communication). Our present research supports Hailey and suggests that present day Trans-Pecos population numbers approach those that existed in pre-settlement times (Fig. 3).

Pre-Settlement Abundance in the Panhandle and Permian Basin

In 1819, a journalist with the Long Expedition described the antelope encountered along the Canadian River in the Texas Panhandle: . . . "The cabric, wild goat, or as it is more frequently called the antelope, is common. They are numerous, and with the buffalo are the most common occupants of the Plains, from which they retire only in the quest of water" (Thwaites 1904-1907:146). A man traveling across the Texas Panhandle in the spring of 1849 as a member of a mule pack train bound for California noted that the party could constantly see antelope and elk (*Cervus canadensis*) on the open Plain (Wright 1969). Michler (1849:8), reporting on the country west of Big Spring, states: . . . "It seemed destitute of all growth of any kind, and nothing to be seen upon it excepting the antelope and wolf and prairie dog town." Marcy (1852), encountered herds of antelope near the Prairie Dog Town Fork of the Red River feeding in among some mesquite trees.

Following the Civil War more and more people moved into West Texas as evidenced by the increase of historical writings describing the land and wildlife. In 1877, Hornecker went on a buffalo hunt just south of the Red River on the Rolling Plains where he observed a great many antelope (Hornecker 1929). Also during 1877, Williams (1939) reported a large number of antelope and buffalo drinking at some springs near the present town of Lubbock on the High Plains. One rancher observed that in 1878 the cattle had to compete with deer, antelope, buffalo, and mustangs for open range (Smith 1938).

Additional evidence of large numbers of wildlife on the High Plains is offered by Haley (1929) in his description of an 1879 prairie fire: ". . . before it fled and swarmed countless thousands of antelope, turkeys, hundreds of deer and a sprinkling of cattle and horses." Ella Dumont, who went onto the Texas High Plains to hunt buffalo during this time period, described the deer and antelope as being plentiful (Lee 1964).

The decade of the 1880's was one of much change on the Texas Plains. Large ranches, such as the Spurs, the Pitchfork, and the Matador were established. Elliot (1945) wrote that deer and antelope were so numerous on the Pitchfork during the 1880's and 1890's that on occasion they became pests destroying the farm crops. On the Spur Ranch, located east of Running Water Draw, a cowboy reported riding through many hundreds of antelope that had bedded down behind a hill during a blizzard (Elliot 1939).

The southern portion of the Rolling Plains in the Permian Basin district and the western edge of the Edwards Plateau also supported large antelope populations. In 1864, the country around the Concho River was described as being filled with wildlife: ". . . Great flocks of turkey, antelope and deer in droves of thousands, and in the fall, buffalo" (Bitner 1943:99). An early settler in the Big Spring vicinity reported antelope as being "as thick as jackrabbits" (Hutto 1932). Herds containing several hundred antelope were reported to be common sights along the Colorado River in 1879 (Cane 1946). The largest herds in the Permian Basin district were reported by Robert Maudslay, a sheepman who settled in the Big Lake area (Kupper 1951). In 1886, he reported that herds of 100 to 300 pronghorn were not unusual sights and recalled once seeing a herd of at least 2,000 animals (Kupper 1951:32). As late as 1892 antelope were present in considerable numbers in the area between the Concho and Colorado Rivers (Texas Game, Fish and Oyster Commission 1945).

Changes in Abundance in the Panhandle and Permian Basin

As in the Trans-Pecos, antelope populations in the Panhandle and Permian Basin suffered a decline from about 1890 to 1920 (Nelson 1925). One of the primary factors was hunting. Glazner (1951) reported that for about 20 or 30 years antelope meat was an important item on West Texas tables and was sold commercially by the train carloads in eastern markets. The use of antelope meat by the settlers of West Texas is reflected in the recollections of Robert Maudslay: "We took advantage of the presence of antelope to fill our larder . . . at one time we had a wagon bed full of dried meat. I don't know how many animals had to give their lives for this, but they were easy to get" (Kupper 1951:52). Murray (1932) felt that hunting antelope from automobiles and using high powered rifles was the direct cause of antelope decline in parts of the Permian Basin.

The livestock industry also contributed to the decline in antelope abundance. Sheep on the Edwards Plateau and cattle on the Plains were responsible for severe overgrazing by the turn of the century. In the late 1860's the range in West Texas was in excellent condition and was stocked with cattle at rates up to 300 head per section. Thirty years later the same range could barely support 50 head of cattle per section (Bentley 1898).

With domestic livestock also came barbed-wire fences. The full impact of fences on antelope during this period probably will never be known. During the year 1882, a 60 mi drift fence was built east of Amarillo by Charles Goodnight. The first autumn after its completion, a blizzard drifted herds of antelope into a pocket in the fence, and the settlers from the nearby town of Clarendon killed 1,500 antelope (Hailey 1936). A census by Nelson (1925) recorded less than 1,500 antelope remaining in the Panhandle and Permian Basin areas combined.

Antelope populations in the Panhandle area began to increase after an intensive management and transplanting program was implemented in the late 1940's and early 1950's. However, growth has been slow and the present day population size is only approximately 2,000 animals (Jack Parsons, personal communications). Conversion of rangeland to row crops started in the early 1900's, and by 1965 it was estimated that approximately 75 percent of former antelope range was under cultivation (DeArment 1965). This may be a significant factor limiting population increase. The Permian Basin herds have also increased at a slow rate and appear to be static at this time (Fig. 3).

Historical information indicates that at one time large populations of antelope occurred on the High and Rolling Plains of the Panhandle and western Edwards Plateau (Fig. 3). Abundant vegetation covered the area and compared to the Trans-Pecos, surface water was plentiful. Hixson (1940) stated that the High Plains had a number of lakes that were lower than ground water level and formed either a spring or seep that contained water the year round. The dry lakes (or playas) that held rain water were also important sources of water on the Texas Plains (Hixson 1940). Emory (1844), on a map of West Texas and eastern New Mexico, had written across the western Plains area of Texas, "According to Arrowsmith this tract of country was explored by LeGrand in 1833 and is naturally fertile, well wooded, and with a fair proportion of water."

Antelope abundance in the Trans-Pecos area certainly did change abruptly at the end of the last century and the beginning of the 1900's. However, the largest, most radical changes in pronghorn numbers probably occurred in the Panhandle and Permian Basin. The Trans-Pecos herds have built back up to a stable population with periodic fluctuations, whereas, populations in the Panhandle and Permian Basin are lower now than during pristine times, and their present success has been limited primarily by major changes in land use patterns.

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