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Factors Restricting Pronghorn Increase on the Jornada Experimental Range

AGRICULTURAL EXPERIMENT STATION RESEARCH REPORT 245

Contents

January 1973 Las Cruces, New Mexico

Factors Restricting Pronghorn Increase on the Jornada Experimental Range

Volney W. Howard, Jr., Charles T. Engelking, E. Dwain Glidwell, and John E. Wood[1]

The pronghorn (Antilocapra americana, Ord) is New Mexico's third most important game ungulate. In 1963, 90,000 big game hunters spent $16.6 million in New Mexico (26). Approximately $358,000 was spent in pursuit of pronghorns. These numbers may double by 1975 because of the expected increase in population and the increasing percentage of hunters. Because of these hunting increases and additional demands on all phases of outdoor recreation, wildlife managers will be forced to engage in more intensified game management programs. They must find ways to increase carrying capacity of game ranges and increase the production of game herds.

The objective of this study was to determine the factors that were restricting pronghorn increase on the Jornada Experimental Range. Even though hunting is not allowed on the area, the basic information gained could be used to improve management of pronghorns on similar areas of the Southwest. If habitat requirements are known, it might be possible to increase pronghorn habitat and numbers through habitat manipulation.

Review of Literature

History of Pronghorns in New Mexico

The historical range of pronghorns in New Mexico covered the entire state except for the high mountain areas and the rugged shrub-covered areas (31). The number of pronghorns in New Mexico in primitive times was estimated to be more than 100,000, but the present-day distribution of pronghorns in New Mexico is scattered. Pronghorns occur in greatest number in the eastern part of the state. Small herds occur in portions of the southwest, and a few herds are located in the northwest portion. The statewide population of pronghorns in New Mexico is between 20,000 and 25,000 animals (34).

Pronghorns were present on the Jornada del Muerto (the Jornada Plain) when the Spaniards crossed the plain to escape Indian attacks during the Indian Rebellion of 1680 (7). The Jornada Plain was occupied by pronghorns at least intermittently between the 16th and 20th centuries (16). In 1926, about 40 pronghorns occupied the entire Jornada Plain (27).

The Jornada Experimental Range was a refuge from 1926-1954. The area has been legally posted since 1954, and no hunting has been allowed. Pronghorns have been protected from 1926 to the present, except in 1946, when a buck-only hunt was held and five animals were harvested.

Fred Ares, superintendent of the Jornada Experimental Range from 1931-1968, stated (17):

[1]Assistant professor of wildlife science, former graduate assistants, and former professor of wildlife science, respectively, Department of Animal, Range, and Wildlife Sciences.

"The old-timers used to talk about the great herds of antelope that were in the area. In 1931, when I came here, I estimated that the antelope population was 75; and it was not uncommon at all to see antelope everywhere on the ranch. Then the drought of 1951-57 hit and their number seemed to go down. It seems to me that they have never recovered back up to their previous numbers. I would estimate the present population to be around 50-55 animals."

Ares said that in 1932 a trapper with a biological survey started trapping for predators, because of a rabies outbreak. Prior to this, no predator control work was done. From 1932 to 1951, trapping and cyanide guns were used each year for predator control. From 1951 to the present, eight to nine 1080 (sodium fluoroacetate) stations have been placed on the area each year to control predator populations.

Food Habits

A review of literature reveals that the most important food category, either forbs, grasses or browse, depended on both the locality of the study and the time of the year the study was conducted. The major food category that pronghorns were found to utilize in the Trans-Pecos area of Texas and Wichita Mountains of Oklahoma was forbs (4, 5 and 6). The pronghorns that inhabit the plains of Saskatchewan were found to utilize grasses heavily in April, change to forbs during summer (May-July), rely mainly on deciduous browse during autumn (August-October), and switch to evergreen browse in the winter (November-March) (15). Studies in California revealed browse to be the principal food category except during the fall, when forbs were the major food category (18 and 19). A study of food habits of the Hart Mountain pronghorn herd in Oregon showed that browse was the year-round staple food (28). Browse was found to be the most important food class for pronghorns during the fall in Carter County, Montana (12). Cole (10) determined that in central Montana pronghorns utilized browse, forbs, and grasses 63.0, 33.9 and 3.1 percent, respectfully, on a yearlong basis. Browse was most important from November through April, while forbs composed the major portion of pronghorns' diet during the remainder of the year.

Hailey, Thomas and Robinson (22) discovered that major losses in pronghorn herds were occurring in their study area because of tarbush (Florensia cernua, DC.) toxicity. Buechner (5) listed tarbush as a fair food species for pronghorns, but it was unpalatable for livestock. However, Hailey, Thomas and Robinson (22) concluded that whenever tarbush composed 90 percent of the pronghorn's diet, the animals died.

Study Area

This study was conducted on the Jornada Experimental Range with cooperation of the Agricultural Research Service, U.S. Department of Agriculture. The area is located on the Jornada del Muerto Plain, approximately 23 miles north-northeast of Las Cruces, Dona Ana County, New Mexico. Merriam (30) described the Jornada Plain as being in the Lower Sonoran Life Zone, and it was classified as a Desert Plains Grassland by Bailey (1) and Clements (9). It is bordered on the east by the San Andres Mountains and on the west by the Rio Grande Valley. Elevation ranges from 3,900 to 4,500 feet. The topography consists of nearly level to gently rolling uplands interspersed with swales and dry lake beds. Average annual rainfall is 9.10 inches, of which 52 percent falls between July 1 and September 30. December is the least windy of all months and greatest wind movement occurs in April and May (32). Average annual evaporation is 92.6 inches, with the greatest amount occurring in June, when it often exceeds 13 inches. Rainfall records for the Jornada Range show there

is often an uneven distribution of precipitation around the area, and it is cyclic, occurring at 15- to 20-year intervals for maximum precipitation (32).

Vegetation

The principal grass species on the sandy uplands are black grama (Bouteloua eriopida, Torr.), mesa dropseed (Sporobolus flexuosus (Thurb.) Rydb.), and three-awns (Aristida spp.) (7). The main grasses occurring in the poorly-drained areas are tobosa (Hilaria mutica (Buckl.) Bonth.), vine mesquite (Panicum obtusum, H. B. K.), and burrograss (Scleropogon brevifolius, Phil.). The main browse plant is fourwing saltbush (Atriplex canescens (Pursh) Nutt.), which occurs with mesquite (Prosopis juliflora Torr.) Cock.), creosotebush (Larrea tridentata (DC.) Coville) and tarbush. Paulsen and Aeas (32) list plants which are common on the area.

History of Livestock Grazing

All the information cited in this section was taken from Buffington and Herbel (7). The U.S. Land Office, in 1858, conducted the first survey of the study area and the surrounding country. The only cattle grazing on the Jornada Plain belonged to farmers living in the Rio Grande Valley. Bancroft in 1889 stated (7) that the number of cattle in Socorro County, which then included a part of Sierra County that was just north of the study area, increased from 9,000 to 70,000 head between 1882 and 1884. In 1886, a syndicate started the Bar Cross Ranch on the western side of the study area and built up a herd of about 20,000 cattle.

Three wells were dug on the Jornada Experimental Range during 1903 and 1904. Charles T. Turney bought these wells and brought 3,000 head of cattle to the Jornada Plain. In 1912, by Executive Order, the study area became known as the Jornada Range Reserve and was fenced by Turney, who retained the grazing rights until 1925. An average of 4,632 head of livestock were on the study area from May, 1915 to May, 1916. From 1916 to 1920, the average number of animal units grazed was 2,340. Between 1928 and 1937, a reduction was made to include 1,272 animal units. From 1941 to 1947, the stocking was further reduced to 1,006 animal units.

A relationship can be seen between livestock increase on and around the Jornada Experimental Range and reduction of grassland. However, the amount of grassland continued to decrease after livestock numbers were reduced. Presently, all areas of the Jornada Experimental Range contain one or more woody species (figure 1).

Methods and Procedures

Classification of Vegetation

The boundaries of the major vegetational types on the Jornada Experimental Range were determined from visual reconnaissance and aerial photographs. The aerial photographs had the distribution of soil types on the study area as an overlay. Dr. Carlton Herbel, Jornada Experimental Range research scientist with the USDA's Agricultural Research Service, has conducted research since 1957 on the Jornada Experimental Range concerning soil types and the vegetation each supports. From 1957 to the present, Dr. Herbel has annually established and read line-intercept transects (8) on the various soil types and compiled a species composition list and average percent basal cover of five vegetational classes, ie., perennial grasses, annual grasses, perennial forbs, annual forbs, and shrubs. Line-intercept data for 1966, a random selection, were used in conjunction with other methods to aid in establishing boundaries of vegetational types. These boundaries were plotted on a map of the study area, and the number of acres in

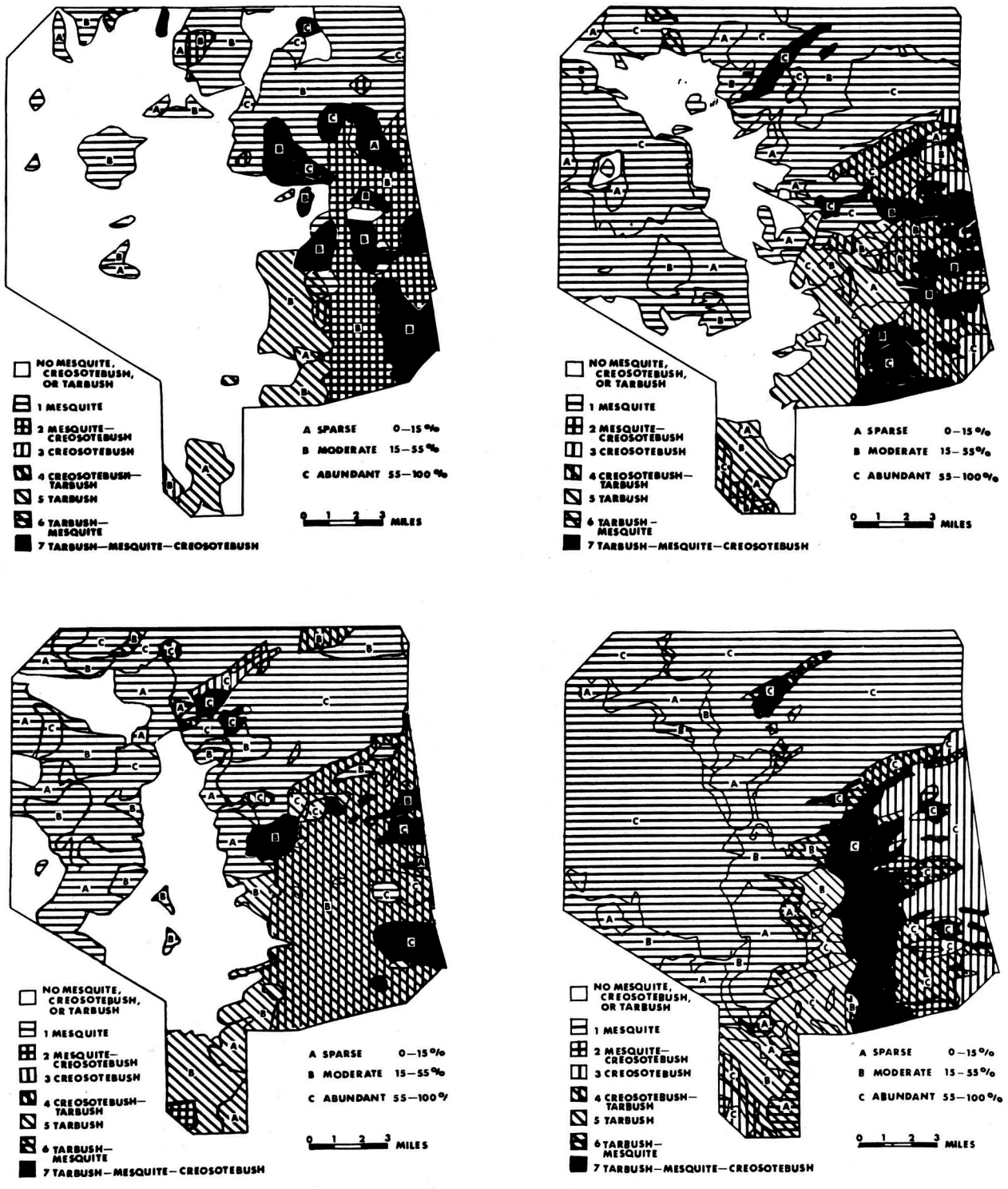

Fig. 1. Maps of United States General Land Office surveys taken 1858, 1915, 1928, and 1963, showing increase in woody species on the Jornada Experimental Range.

each type was determined by the use of a planimeter.

Determination of Pronghorn Food Species

Collecting animals for stomach analysis was not a feasible method for determining the food habits of pronghorns on the Jornada Experimental Range. The herd was too small to collect an adequate sample for stomach analysis without seriously depleting its size. Actual observations of feedings were not suitable, as identification of the species consumed was difficult or impossible from a distance. Cattle or rodents, which were quite numerous on the area (37) could have utilized the plants as readily as pronghorns. In addition, tracks of pronghorns in known feeding areas were followed to see if food species could be identified, but the problem of accurately determining fresh use on most plants prevented this method from being feasible.

After these methods failed to produce acceptable data, a final method was tried. This method consisted of comparing plant species cited in the literature as food items with a list of the plants that actually occurred on the Jornada Experimental Range. The authors believed the results of this comparison could possibly tell why pronghorns used certain areas and did not use others. Literature from Oregon, Montana, California, Utah, Oklahoma, Texas, and New Mexico was reviewed (3, 4, 5, 6, 10, 18, 19, 28, 29, 34 and 35) to determine what plant species are known food items for pronghorns. A list of all plant species occurring on the Jornada Experimental Range was obtained from Dr. Herbel's transect data. Further investigation of these data revealed the distribution of these species by vegetational type. After a list of food species was compiled for the Jornada Experimental Range, Dr. Carlton Herbel and Prof. K.A. Valentine, associate professor of range science, NMSU, reviewed the list and deleted those species which did not commonly occur on the study area.

Estimation of Pronghorn Numbers

The number of pronghorns on the Jornada Plain was determined by actual count with the aid of binoculars or a 20X spotting scope. The largest number of pronghorns counted on one day, with no duplications in the count, was considered to be the population. Many attempts to make a total count of the pronghorns were made intermittently throughout the study, as it was quite difficult to observe all the animals on any given day.

The classification count method was used for determining population characteristics (13). In this method, sex and age classes must be separated accurately and a representative sample of the population must be taken. A three-category count was made for numbers of bucks, does and kids. Except for the total herd counts, total numbers of animals seen were replications of the same animals throughout the study, and were not numbers of different animals.

Results and Discussion

Vegetation

The Jornada Experimental Range, included within the study area, consists of 105,700 acres. The grassland type of vegetation covers approximately 31,816 acres. The mesquite dune, the largest vegetation type, occupies 48,094 acres. Creosote-tarbush and creosote types occupy 21,246 and 4,545 acres, respectively. Total acres dominated by the brushy species is 73,884 acres. Therefore, the grassland comprises 30.1 percent, and the brushy species make up 69.9 percent of the study area. A comparison of the area of grassland depicted in figure 2 with the area of grassland illustrated by the survey map of 1858 (figure 1) shows a definite reduction in size.

Figure 3 illustrates the amount of vegetation present on the study area by vegetation classes. The amounts depicted are expressed

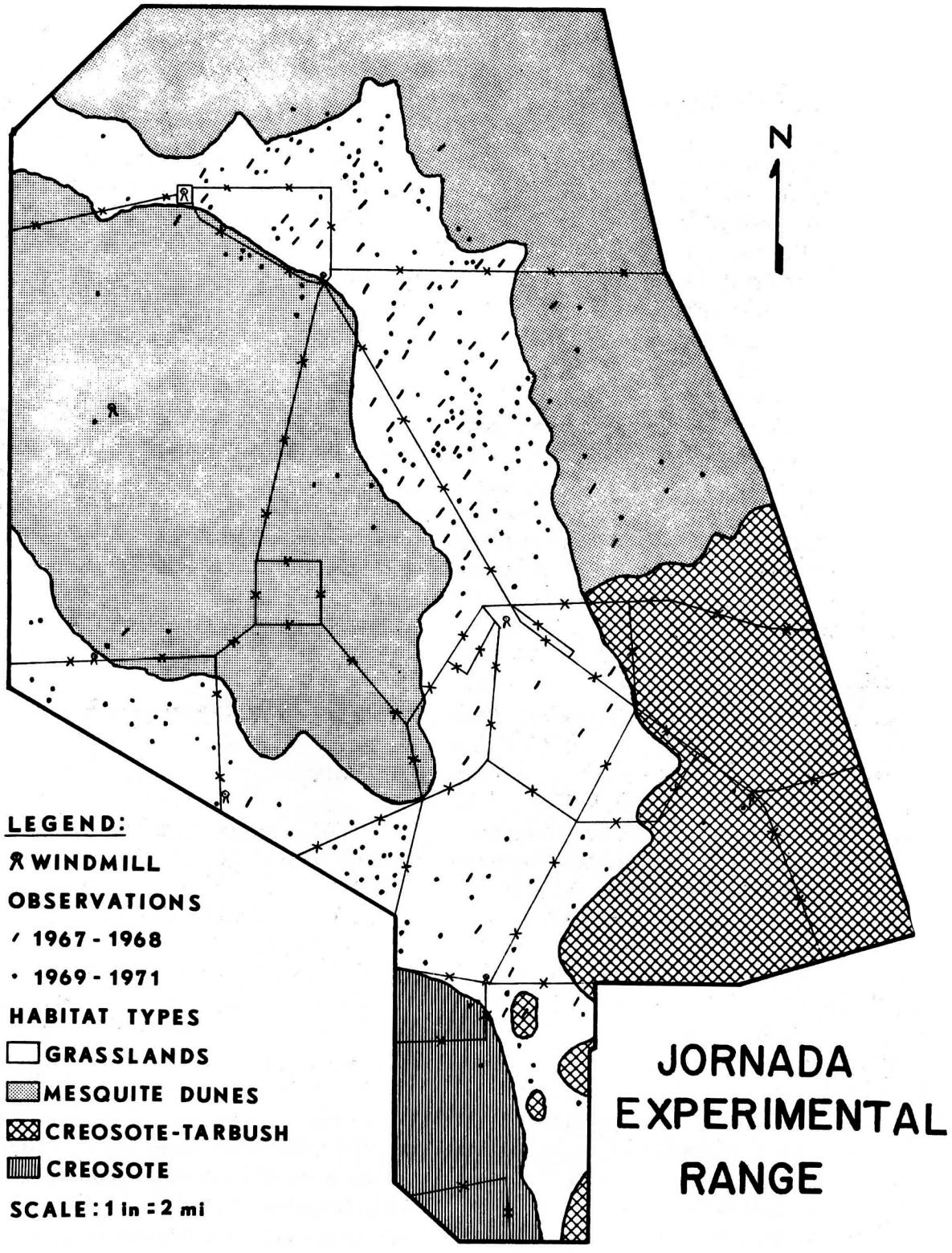

Fig. 2. Sightings of pronghorns within habitat types from 1967 to 1971.

as 0.01 percent of the line-intercept and represent an average of a seven-year period. The cover of grass constitutes 0.41 percent of the total line-intercept, and shrubs and forbs make up 0.13 and 0.07 percent, respectively. Bare ground, rock and litter constituted 99.39 percent of the total.

Food Species

Fifty-four species of known food items of pronghorns occur on the Jornada Experimental Range. These include five grasses, 35 forbs, and 14 shrubs. The majority of these species, 76.9 percent, are commonly found in the grassland type. The mesquite dune, creosote-tarbush and creosote types contain 29.6, 31.3 and 31.3 percent of the food plants, respectively (table 1). Due to the variation in annual rainfall and differences in patterns of rainfall on the study area, not all species are available to pronghorns for the entire year. Some of the annual species may not be available at all during certain years because of amount and period of rainfall.[2]

Fig. 3. Average percent vegetational cover of total line-intercept from 1962-1968 for the Grasslands type.

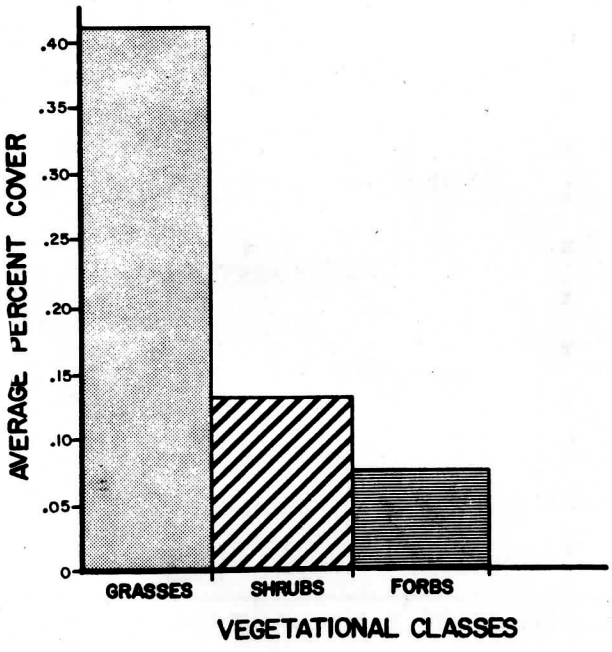

Table 1 shows that a moderate variety of forbs known as food for pronghorns were present on the study area. However, data from figure 3 indicate the average percent cover of forbs in the grasslands type to be extremely low (0.07 percent). In addition, many forbs are available only for a few weeks following seasonal rains. They soon weather and are no longer available as a source of food. There is a small variety of shrubs for food species on the study area, and the average percent cover is low (0.13 percent), but noticeably higher than that for forbs. Again, there is only a small amount of food available for pronghorns from these species.

Buechner (5) stated that forbs and shrubs were scarce on his study area, but results from his study showed pronghorns subsisted almost entirely on these two vegetational classes. Ferrel and Leach (19) and Mason (28) found that browse was either the major food category year-round or for most of the year. Forbs constituted a major portion of the food during the summer in Saskatchewan, Canada, while deciduous browse was important during autumn (15).

Pronghorn Numbers

The abundance of pronghorns was quite pronounced in the early history of the Jornada del Muerto as indicated by travelers of the Camino Real, the historic travel route between Mexico and Santa Fe. Oldtimers that have resided in the area say the same thing. Ares stated that the oldtimers he knew when he first came to the Jornada Experimental Range in 1931 "used to talk about the great herds of pronghorns that were in the area" (17).

Present-day pronghorn numbers on the Jornada Plain are 60-70 head (table 2). The

[2]Personal communication from Dr. Carlton Herbel.

Table 1. Known food species for pronghorns and their distribution, by vegetational types, Jornada Experimental Range

Species*	Grasslands	Mesquite Dunes	Creosote-Tarbush	Creosote
GRASSES				
Aristida divaricata - Humb. and Bonpl.	x			
A. purpurea - Nutt.	x			
Bouteloua eripoda - Torr.	x			
Hilaria mutica - (Bukl.) Benth.	x		x	
Panicum obtusum - H. B. K.	x			
FORBS				
Acanthochiton wrightii - Wats.		x		
Aplopappus spinulosus var. scabrellus - (Pursh) DC.	x			
Asclepiodora decumbens - (Nutt.) Gray	x			
Bahia absinthifolia var. dealbata - Gray	x	x	x	x
Berlandiera lyrata - Benth.	x			
Chamaesaracha coronopus - (Dunal) Gray	x			
Cirsium ochrocentrum - Gray				
Croton corymbulosus - Engelm.	x		x	x
Cucurbita foetidissima - H. B. K.			x	
Eriogonum abertianum - Torr.	x		x	x
E. jamesii - Benth.	x			x
E. rotundifolium - Benth.	x		x	x
Euphorbia albomarginata - Torr. and Gray	x	x		x
Evolvulus pilosus - Nutt.	x			
Gaillardia pinnatifida - Torr.	x		x	
Gaura coccinea - Nutt.	x			
Gutierrezia spaaerocephala - (DC.) Gray	x			
Helianthus ciliaris - DC.	x			
Hoffmannseggia densiflora - Benth.	x		x	
H. jamesii - Torr. and Gray	x			
Lepidium lasiocarpum - Nutt	x	x		
Lesquerella fendleri (Gray) Wats.	x	x		
Melampodium leucanthum - Torr. and Gray	x			

Table 1. (continued)

Species*	Grasslands	Mesquite Dunes	Creosote-Tarbush	Creosote
Nana hispidum - Gray	x			
Pectis papposa Harv. and Gray	x	x		x
Portulaca oleracea - L.	x			x
P. pilosa - L.	x			x
Psilostrophe tagetinae - (Nutt.) Greene	x			
Salsoli kali var. tenuifolia - L.	x	x		
Senecio longilobus - Benth.			x	x
Solanum elaeagnifolium - Cav.	x	x	x	
Sphaeralcea coccinea - (Pursh) Rydb.	x	x	x	x
Tribulus terrestris - L.	x			
Verbena wrightii - Gray			x	
Zinnia grandiflora - Nutt.	x	x		x
SHRUBS AND TREES				
Artemisia filifolia - Torr.		x		
Atriplex canescens - (Pursh) Nutt.		x		
Condalia lycoides - (Gray) Weberb.			x	x
Dalea formosa - Torr.	x			
Ephedra torreyana - Wats.	x			
E. trifurca - Torr.	x			
Eurotia lanata - (Pursh) Moq.		x		
Flourensia cernua - DC.			x	x
Gutierrezia sarothrae (Pursh) Britt. and Rusby	x	x		
Koeberlinia spinosa - Zucc.			x	
Krameria secundiflora - DC.	x			x
Prosopis juliflora var. glandulosa (Torr.) and Cock.	x	x	x	x
Rhus microphylla - Engelm.			x	x
Yucca elata - Engelm.	x	x		
Percent of total	79.6	29.6	31.3	31.3

*Kearney, T. A. and R. H. Peebles. 1960. Arizona Flora, Univ. of Calif. Press. 1085 pp.

population numbers given for 1965, 1966, and 1967 are believed to be decidedly lower than the true population numbers for those years. These estimates are believed to be low because no concentrated effort was made to count the entire population in one day. Pronghorn numbers for 1968, 1969, and 1970 are considered to be representative of the true population numbers. These numbers are based on frequent periodic field work conducted by the authors. Nevertheless, pronghorn numbers have definitely decreased on the Jornada Plain in the past century. A slight increase is indicated since 1926, when Ligon (24) estimated the herd to number 40 animals.

Precipitaion. Many researchers (23, 14, 24, and 5) believe that a possible correlation exists between precipitation levels and productivity. Though a longer period of study is needed to definitely correlate productivity with precipitation, a high kid production in 1968 on the Jornada Experimental Range occurred along with above average precipitation. Conversely, low kid production occurred in 1970 and 1971 after two years of below-average rainfall (Jornada Experimental Range rainfall records). Deming (14) believed that climate and range conditions were possible reasons for low antelope productivity on marginal ranges, with noticeable increases during wetter years. Hinman (24) stated that

Table 2. Numbers of pronghorns on the Jornada Plain from 1965 through 1970

Year	Fall Population
1965	20
1966	25
1967	31
1968	50
1969	67
1970	69

desert areas of Utah were marginal ranges, especially in their present over-grazed condition, and that forage may be of too poor quality in drought years to support a healthy pronghorn herd. Buechner (5) attributed pronghorn increases to particularly abundant rainfall during the pre-breeding season. In opposition to these views, Holloran and Glass (23) found that during dry years, especially if the normally wet month of May was at or below average, more kids seemed to survive. They further found when rainfall was above average for May, kid survival was poor, and that the best pronghorn country recieved an annual rainfall of 15 to 20 inches. The Jornada Experimental Range does not normally receive heavy May rains, which would limit kid survival. It also does not receive the required 15-20 inches annual rainfall which Holloran and Glass (23) claimed was necessary for excellent pronghorn ranges.

Predation. It is well known that bobcats (Felis rufa), coyotes (Canis latrans), and golden eagles (Aquila chrysaetos), sometimes prey on pronghorns (16, 31 and 36), but the authors believe that these predators cannot assume all blame for a population's decrease or static condition. Predators, if too abundant, may be an important factor in retarding increases of small pronghorn herds, but other factors such as pricipitation, abundance of forage, poaching, and herd composition should be investigated more thoroughly before conclusions are drawn. Thompson (36) found that degree of predation on pronghorns varied widely between herds and years.

Several researchers (11, 31, 16, and 2) concluded that predation was rarely a limiting factor to pronghorn increases. Murie (31) found that pronghorns represented only 0.54 percent of the total bulk of coyotes' diets and that rodents were the major food items from April-November, when the pronghorn should have appeared in larger quantities in stomach analyses if preferred by the coyote. Rogers (33) analyzed stomach contents of coyotes taken on the Jornada Plain and found that

pronghorns composed 1.2 percent of the total volume and 1.9 percent occurrence in 52 coyote stomachs. In addition, he determined that the coyote population was stable and relatively low in density (contact index 0.4 per mile) for the area.

During this study (1965-1971), no increases of coyotes were observed on or around the kidding grounds prior to, during, or after the kidding seasons. There were eight or nine 1080 stations each year on the Jornada Experimental Range to keep the coyote population at relatively low level. In addition, coyote numbers on the College Ranch, which lies west-southwest of the Jornada Experimental Range, were kept down by periodic application of 1080 stations and by local sportsmen who practice predator-calling. The authors believe that predation was not a limiting factor in pronghorn increase during the study.

Pronghorn Distribution

The pronghorn population on the Jornada Experimental Range moved over wide expanses in both their daily and seasonal movements. Seasonal movements were as far as 20 miles. Daily movements of 2-4 miles were observed without any visible disturbances to the pronghorns. Einearsen (16) stated that pronghorns ranged widely in their daily activities, and only herd patriarchs restricted themselves to narrow confines.

The Jornada pronghorn population was comprised of two herds during the winter, but these herds broke into small groups for the remainder of the year. The southern herd wintered in the same area during 1966, 1967 and 1969. They left their wintering grounds in June, shortly after the first summer rains. In 1968, this wintering area was not occupied, and it was not until March, 1969, that animals appeared, remaining until April. In 1970, this herd did not appear at all. The northern herd did not exhibit any movement from 1966-1969, and remained in the same area throughout the year. However, the animals showed a definite dispersal to the west and north of the study area during early summer of 1970. These changes in movements and distribution were probably influenced by food shortages as a result of low rainfall (3.48 inches for 1970).

Generally, pronghorns on the Jornada Experimental Range preferred the grassland type of vegetation rather than the three shrub types. Approximately 85 percent of all herd sightings from 1967 through June 1971 were made in the grasslands type (figure 2). Thirteen of the remaining 15 percent were made in the mesquite dunes type. Pronghorns seen in the shrub types usually appeared to be traveling through them and did not appear to be feeding heavily in these types. Since most of the study area was accessible by vehicle or visible to the observers from strategic vantage points, these data are believed to be an accurate representation of pronghorn distribution on the Jornada Experimental Range.

Suitable Range. The review of literature revealed no studies that describe the characteristics of a good pronghorn range. Gordon (20) stated that the gradual invasion of mesquite, creosotebush, and juniper (Juniperus spp.) into pronghorn range in southwestern New Mexico was certainly the principal factor in the continued deterioration of pronghorn range. He further postulated that the invasion of vast areas by these shrubs has prevented pronghorns from moving into what was once good range. Einearsen (16) stated that pronghorns distribution is possibly influenced by the type of terrain. He stated that eroded grounds or "badlands" apparently act as a barrier as effectively as heavy timber stands. He found that pronghorns would not penetrate a heavily-eroded area to reach usable habitat to the north, but followed its fringe and occupied inferior ranges farther south. On the Jornada Plain, there are expanses of mesquite-sand dunes which could serve as an effective barrier to pronghorn movements and utilization of these areas.

Einearsen (16) states that suitable terrain

and proper vegetative height determines the choice of kidding grounds. A vegetative stand usually 9-18 inches in height is most desired, and the ground is a basin type surrounded by a low ridge of hills. Gregg (21) notes that after morning feeding period, pronghorns move to an area where they can rest and be provided with unobstructed visibility. This need for large, open areas for kidding grounds and resting areas could possibly explain why pronghorns did not utilize mesquite-dunes, creosote-tarbush and tarbush types on the Jornada Experimental Range. Their vision was restricted by the dunes and/or vegetation.

Water. The distribution, movements, and abundance of pronghorns might be influenced by water distribution. Buechner (5) stated that pronghorns can survive without taking water directly as long as succulent plants such as cacti are present. In this study, data showed that pronghorns were always in the vicinity (two to three miles) of water. Permanent water was available in livestock watering troughs from windmills at several locations on the area (figure 2). Pronghorns were never seen drinking from mental or concrete watering troughs. Pronghorns will drink from these structures, stated Buechner (5), but he did not include any information concerning their heights. On several occasions pronghorns were seen watering at troughs which had overflowed onto the ground, which is in agreement with Hoover, Till and Ogilvie (25), who stated that pronghorns will drink from overflowed stock tanks, but otherwise are reluctant to drink from them. Seasonal water was available on most of the area during the summer and fall from earthen stock tanks which collected run-off.

Summary and Conclusions

Historically, the Jornada del Muerto was a large grassland and supported numerous pronghorns. With the westward movement of man during the latter one-half of the 19th century and the early 20th century, livestock were introduced into the area. After permanent water was provided the numbers of these animals increased while the amount of grasslands and numbers of pronghorns decreased. The amount of grasslands on the Jornada Experimental Range continued to decrease through 1963 even though livestock numbers were being reduced on the area. Numbers of pronghorns have increased slowly from 1926 to the present.

This study was initiated to determine the factors that were limiting the pronghorn population on the Jornada Experimental Range. Data presented here indicate that pronghorns on the Jornada were quite mobile and utilized most of the available grasslands. They were observed to utilize the grassland type more (85 percent) than all other vegetational types. In addition, 76.9 percent of all known species of food for pronghorns occurred in the grassland type. The grassland type only encompasses approximately 32,000 acres of the Jornada Experimental Range. However, the average percent cover of forbs and shrubs, the major food classes for pronghorns, on the Jornada Experimental Range were low prior to and during the study.

Neither availability of water nor predator populations appeared to be major limiting factors for pronghorns. Precipitation is not a limiting factor during the kidding-season, as rainfall during May is generally not heavy enough to cause high mortality of young pronghorns that have become wet, chilled and die. The low annual rainfall (9.10 inches) may be a limiting factor in that more precipitation would produce more succulent vegetation and, therefore, a more suitable habitat for pronghorns.

These data lead the authors to believe that the Jornada Experimental Range, in its present condition, is not to be considered as good pronghorn habitat and that the limited amount of suitable habitat and the low density of shrubs and forbs are the major factors controlling pronghorn numbers on the area.

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