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LESSER PRAIRIE CHICKEN

by Walter A. Snyder

History and Current Status

Lesser prairie chicken (*Tympanuchus pallidicinctus*) formerly inhabited all of the sandhill country in eastern New Mexico from the Colorado line south to the Texas line and as far west as Buchanan in De Baca County. According to Ligon, in 1927 the occupied prairie chicken range comprised 17 percent of the range that was considered suitable (Fig. 20). Restoration of prairie chickens to the uninhabited ranges by trapping and transplanting wild birds was attempted from 1932 through 1934, from 1943 through 1945, and in 1947. During the 1930's, 396 birds were trapped and transplanted, and 301 birds were trapped and transplanted during the 1940's. Transplanting of prairie chickens was not successful. Ligon reported in 1961 that transplanted birds had a tendency to return to their home range.

Concern for the welfare of the prairie chickens was voiced in the early 1930's. No legal hunting was allowed from this time until 1948, when the population had built to a peak in the main habitat area in southern Roosevelt and northern Lea Counties. Public hunts were held in 1948 and 1949. A decline in prairie chicken numbers occurred in the early 1950's, and no legal hunting was allowed again until 1958.

In 1956, prairie chicken populations in New Mexico began to increase. A peak in the population occurred in 1959, and the population remained stable through 1964, with only minor fluctuations. During this peak of population, much of the former range in southeastern New Mexico was reoccupied (Fig. 20). The main concentration area is still confined to Roosevelt and northern Lea Counties. Prairie chicken observations in the years 1960 through 1964 indicate a light population in Lea, Eddy, Chaves, De Baca, Guadalupe, and Curry Counties. One or two years of adverse conditions could possibly eliminate prairie chickens from these marginal areas.

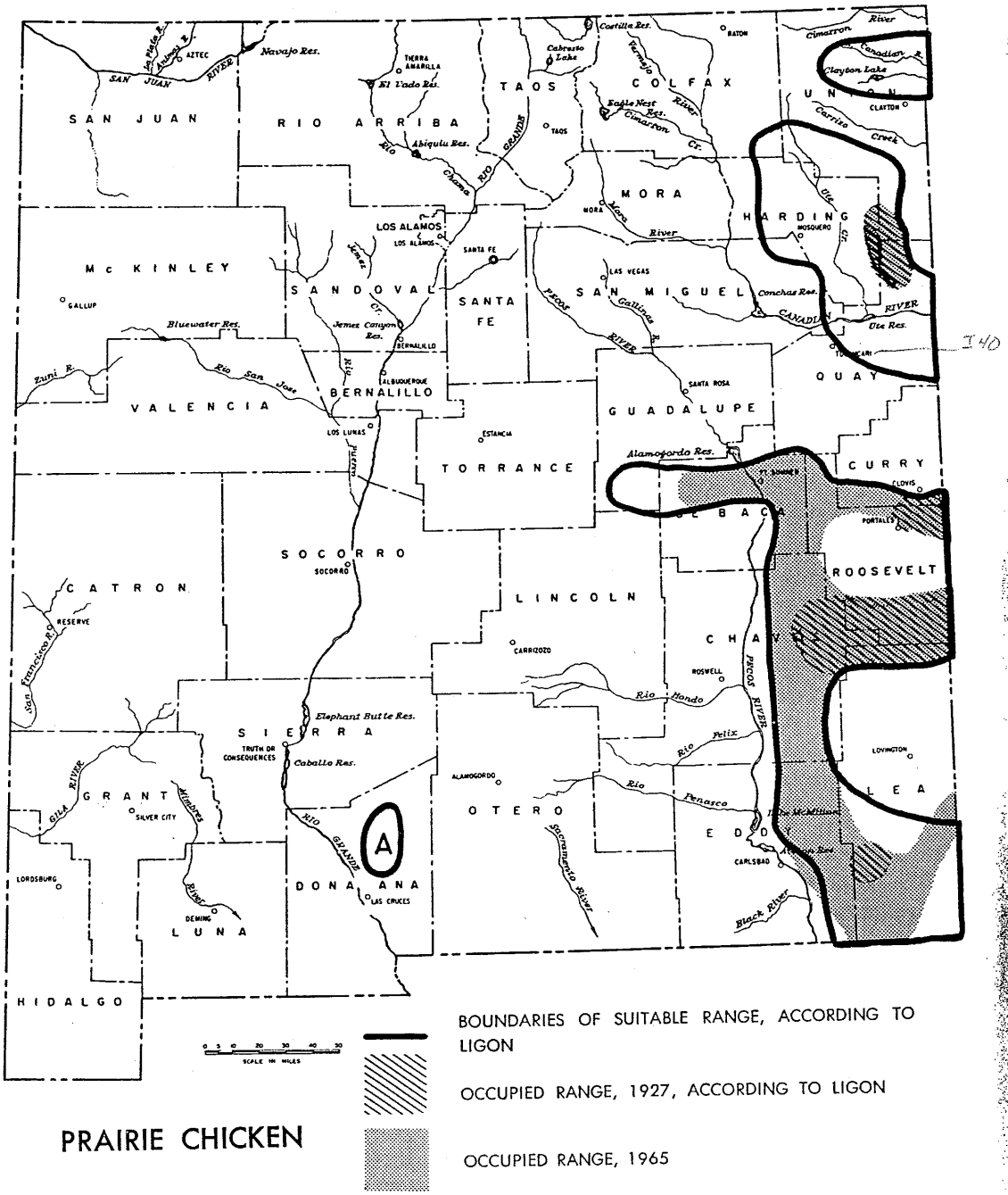


FIG. 20. Prairie chicken range in New Mexico. In the 1930's, prairie chickens were released in Area A, but no populations were established. The area lacks the shinnery oak typical of present occupied range.

Habitat Requirements

Habitat type in the main prairie chicken concentration area is sandhill country with a good vegetative cover of shinnery oak (*Quercus havardi*), interspersed with agricultural land. Much of the currently occupied range that is considered marginal lacks interspersion of agricultural lands. From October through February, prairie chickens use waste grain heavily, particularly sorghum in the main concentration areas.

Ladd Frary, a biologist formerly with the New Mexico Game Department, conducted a study of prairie chicken food habits in New Mexico in 1955 and 1956. He reported that plant material makes up the bulk of the diet in winter and early spring, and insect material makes up the bulk of the diet in late summer and early fall. Major food items reported were oak mast, grain sorghum, grass leaves, grasshoppers, and beetles. Adequate samples for determining year-round food habits were not available. Information collected, however, indicated that the food habits of prairie chickens in New Mexico are similar to the seasonal food habits reported by Edminster (1954). He reported that grain, seeds, and mast make up the bulk of prairie chicken diet in late fall, winter, and early spring, and that insects and green plant material make up the bulk of the diet in late spring, summer, and early fall.

Prairie chickens do not appear to be dependent upon free water in their ranges in New Mexico. Studies in New Mexico showed that prairie chickens utilized watering units established in main concentration areas, primarily during the summer; however, they can apparently exist without free water. Much of their water comes from insects, succulent vegetation, and dew. If free water were important, it would not be a limiting factor since water developments for domestic livestock are abundant throughout the prairie chicken range.

Prairie chickens in New Mexico appear to prefer rangeland dominated by shinnery oak with good grass cover. During the hot summer months, they normally spend the day in the denser cover around large stabilized sand dunes. Roosting cover varies during the year. In the breeding season, males normally roost on or near the booming grounds where cover is low and sparse, while the females roost in the adjacent rangeland where cover is denser. During cool or windy weather, the birds roost in depressions or in the shelter of sand dunes.

Life Sketch

Bailey (1928) describes the lesser prairie chicken as follows: "*Male*: Wing 8.2-8.3 inches, tail 4-4.2. *Female*: Wing 8-8.2 inches, tail 3.5-4. Legs scantily feathered to toes, in front and on sides; *sides of neck with erectile tufts* of elongated feathers, 2.5 inches or more in length. *Adult male*: Head with a slight soft crest, neck with inflatable air-sacs, yellow in breeding season; upperparts pale brownish, *back barred in sets of threes*, a wide brown bar enclosed by two narrow dusky bars, underparts, similarly barred. *Adult female*: Similar but

neck tufts rudimentary. *Young*: Underparts yellowish-brown, feathers with conspicuous white shaft streaks and large black blotches; underparts yellowish-white, with grayish brown bars."

There is some controversy as to whether the lesser prairie chicken is a species distinct from the greater prairie chicken. The distinguishing characteristics differ in degree only.

The breeding cycle of prairie chickens in New Mexico begins in late February when cock birds begin to appear on the booming grounds. From late February to late March, they establish territories on the booming ground, and the number of cocks using each ground becomes relatively stable. Some of the more favorable grounds have been used consistently for years. In less favorable areas, locations of the grounds tend to shift over the years. In years of peak populations, new grounds are established, but they cease to be used when population numbers decrease. Breeding activities continue through most of the month of April, reaching a peak about midmonth. The cock birds remain active on the grounds through late May or early June.

During September and October, cock birds again frequent booming grounds and go through courtship displays, though much less intense displays than during the spring breeding period. Large concentrations of cocks and hens are observed during this period also. By trapping birds from these flocks, we find these groups are made up primarily of young-of-the-year and adult hens. Juvenile cocks are found in these large flocks, as well as on the booming grounds with older cocks. This may be the beginning of the build-up of large flocks that feed in grainfields in the winter.

The peak of nesting activity probably occurs near mid-April in New Mexico. Bailey (1928) describes the nest as "a slight excavation in the open or among grass or weeds, sparingly or thickly lined, according to abundance of material at hand, with grasses and a few feathers. *Eggs*: Usually 11 to 14, grayish olive, or buffy, plain, or spotted with fine pin points of reddish brown." Incubation period is 23 to 24 days (Trippensee, 1948). Edminster (1954) reported that renesting is common when the first nest is broken up early in the incubation period or before incubation starts, and second nests are seldom started when the loss of the first nest occurs late in the incubation period. He also reports a 50 percent loss of broods. Most of this loss occurs during the brooding period and is attributed to weather conditions and accidents. Late-summer losses are low and are mostly from predation.

Predation is not a major factor in limiting prairie chickens in New Mexico; however, the effects of predation are not well defined. Mammal predation is probably confined to nest destruction and the taking of nesting hens and young. Avian predation on prairie chickens is very limited. A study conducted in Wisconsin by Berger and the Hamerstroms revealed only three prairie chickens killed in the course of 1,379 encounters between raptors and prairie chickens on booming grounds, observed over a 21-year period. Large concentrations of white-necked ravens in the prairie chicken areas of New Mexico may be responsible for some nest destruction.

Banding prairie chickens. Reports of banded birds retrapped, taken in hunts, or found dead give information on birds' survival and travels, information vital to improving management of prairie chickens.

Only one lethal disease, blackhead, has been reported in prairie chickens (Edminster, 1954), but no evidence of disease in prairie chickens has been reported in New Mexico. Of 17 prairie chickens examined for parasites in New Mexico, four birds from the Portales area were found to harbor cestodes, and the remaining birds were free of parasites.

Prairie Chicken Management

In 1940, the New Mexico Department of Game and Fish began to purchase land in the major prairie chicken concentration areas in an attempt to improve habitat and restore the population. Eighteen tracts of land, comprising 23,824 acres, were purchased or leased and were established as refuges. Development for improving prairie chicken habitat included fencing to exclude livestock, establishing watering units, feeders, and brush shelters, and planting food

plots. Maintenance of brush shelters and feeders and planting of food plots were discontinued as evaluation indicated they were not being utilized by prairie chickens. The watering units are currently being maintained. The restoration areas were reclassified from refuges to public hunting areas when it was evident that the prairie chicken population was maintaining itself. These areas have been important in prairie chicken harvest since much of the other habitat is privately owned land.

A Federal Aid research study, initiated in 1954, included population inventories, evaluation of development practices and of supplemental feeding, and investigations of life history and food habits. This was a three-year study, and at its conclusion, a new project was set up for prairie chicken population inventories and collection of harvest information. In 1961, a trapping and banding study was initiated to determine movement and mortality.

Population inventories are conducted by counting prairie chickens on booming grounds in the main concentration areas in the spring. Records have been maintained since 1954, and the information is used to determine trends in breeding populations. Data on brood production and on the previous year's harvest are used as bases for setting seasons and bag limits on prairie chickens.

Table 12 presents seasons, bag limits, and harvests for the past six years. Harvest information is collected both from hunter checking stations and from a card survey. The latter provides more accurate data on a hunter's total harvest. The checking stations are open two days; frequently a hunter is checked both days and considered as two individual hunters.

Contrary to expectations, hunter harvest does not fluctuate in relation to yearly population (Fig. 21). Harvest information, therefore, is not an indication of population growth. Harvest is, however, dependent upon the feeding pattern of the birds during the hunting season. Most birds are taken around grainfields in the early morning and late evening as they come into the fields to feed. Their coming to the fields depends upon availability of food in the native habitat or the stage of maturity of grain crops. In 1961, birds were feeding in fields extensively in late October, and in 1964, there was only limited feeding in the fields in late November.

Another point of interest in the harvest data is a comparison of juvenile harvest over the past years. Normally, sex ratios in grouse populations indicate a preponderance of males over females, as in the 1960 and 1961 figures of Table 12. A trapping and banding study on lesser prairie chickens in Oklahoma, in which 83 young birds were banded, indicated the sex ratio of young birds to be one female to 1.96 males. The harvest in New Mexico from 1962 through 1964 indicates a preponderance of juvenile hens over juvenile cocks. This indicates an inadequate or biased sample or a change in the population structure. It is doubtful that the sample is inadequate since the procedure for collection of data through the years has been consistent. If there has been a change in the population structure, it has not shown up in the adult female class in subsequent years. Additional information will have to be collected to explain the preponderance of juvenile females over juvenile males in the kill.

Table 12. Prairie chicken hunting in New Mexico, 1960 through 1965.

Year	Season	Bag and Possession Limits	Information from Field Checks									Information from Card Survey		
			Hunters Checked	Birds Harvested						Ratio of Adult F to Juveniles	Birds per Hunter	Hunters Afield	Total Harvest	Birds per Hunter
				Mature		Juvenile		Uncl.	Total					
				M	F	M	F							
1960	Oct. 22-23	2 per day 2 in possession	397	97	34	92	66	12	301	1:4.65	.76	940	940	1.0
1961	Oct. 21-23	3 per day 6 in possession	798	204	94	166	153	269	886	1:3.39	1.11	1,944	2,918	1.5
1962	Oct. 20-22	3 per day 6 in possession	601	89	74	29	73	0	265	1:1.38	.44	2,000	1,606	.8
1963	Oct. 19-21	3 per day 6 in possession	533	42	22	56	84	36	240	1:6.36	.45	1,856	1,552	.8
1964	Nov. 28-30	3 per day 6 in possession	449	95	41	36	45	5	222	1:1.98	.49	1,639	1,233	.8
1965	Dec. 4-5	2 per day 4 in possession	351	45	16	22	43	7	133	1:4.06	.38	985	645	.6

M—Male
F—Female

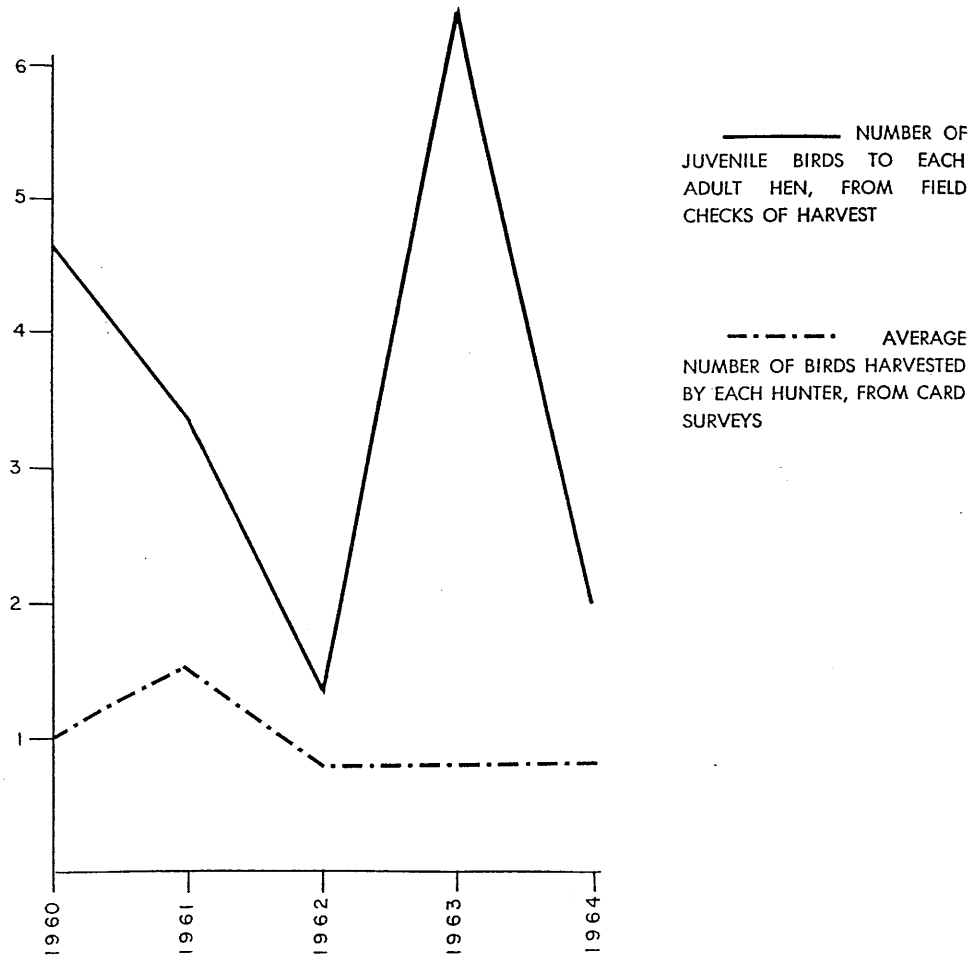
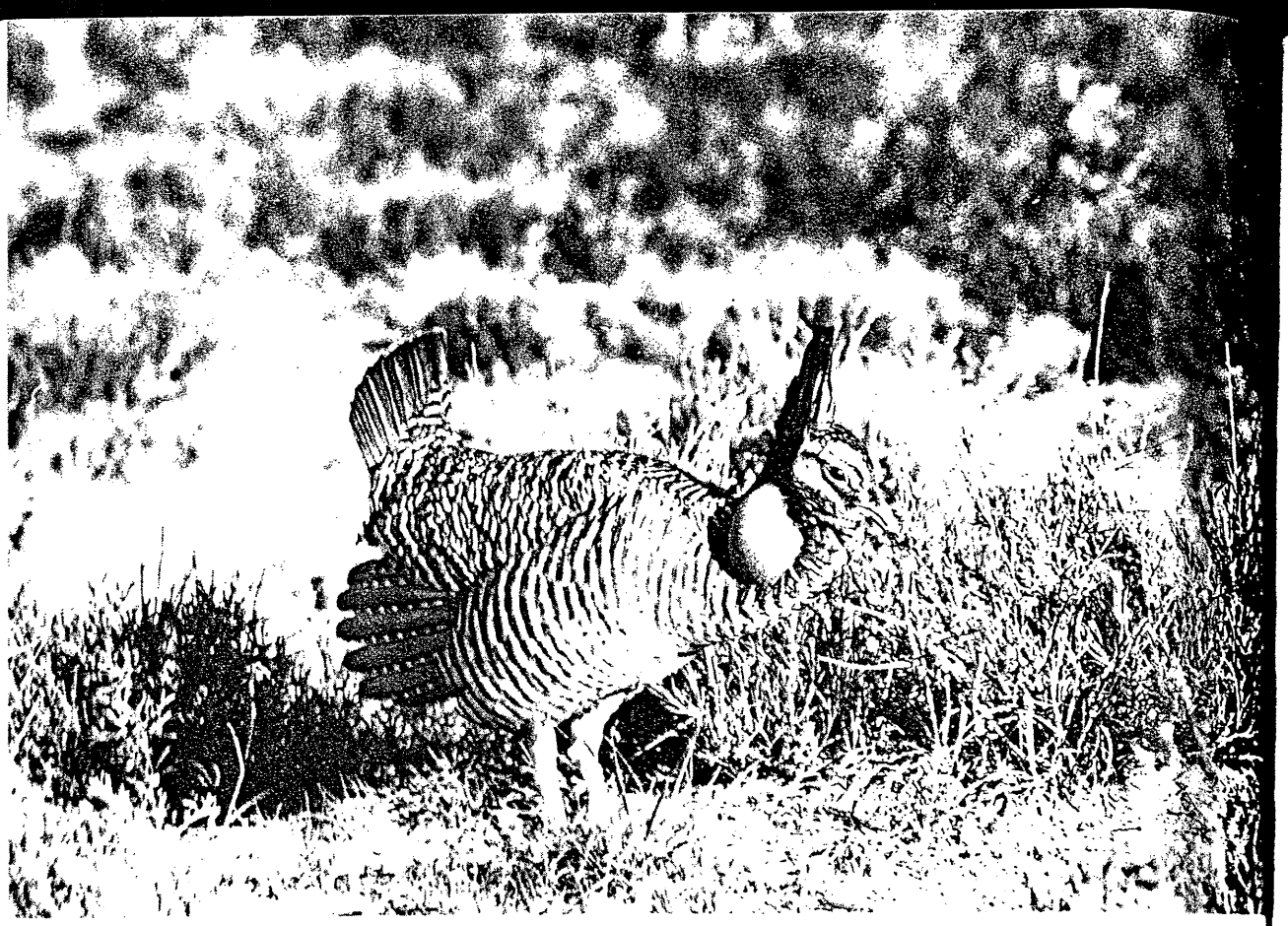


FIG. 21. Prairie chicken hunts, 1960-1964. Comparison of hunter success to population growth (as indicated by ratio of juvenile birds to adult hens). The curves do not match. When hunters take home fewer birds, something other than a drop in prairie chicken populations could well be the reason. Timing of seasons and feeding pattern of birds during hunts are more likely causes.

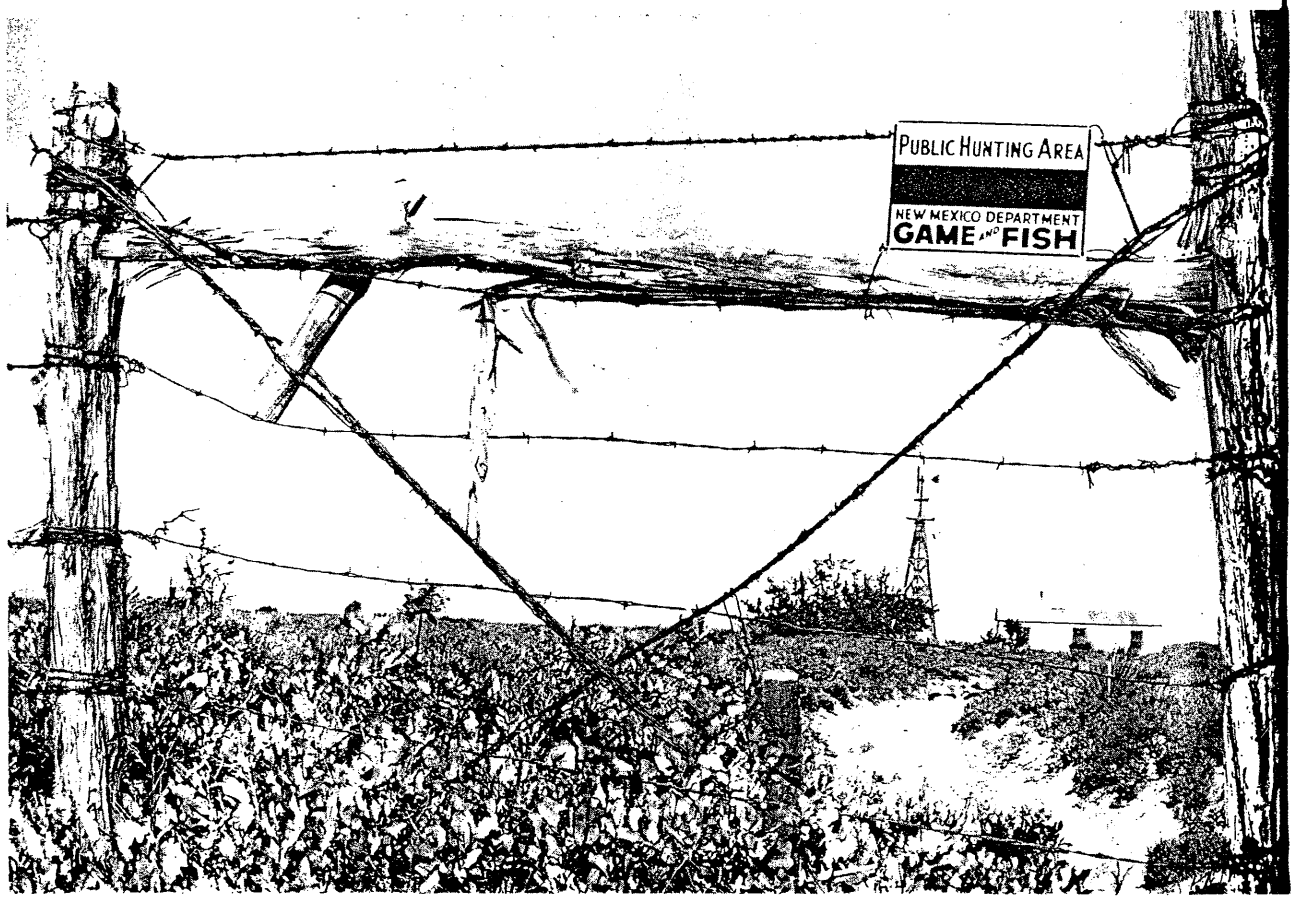
Outlook for the Future

The future outlook for prairie chickens in New Mexico appears good. It is doubtful that there will be any large extension of range or that they will continue to maintain populations in marginal range now occupied. Populations in the main concentration areas, however, have remained fairly stable and have afforded good hunting. Range conditions have somewhat improved with better land-use practices by ranchers in the prairie chicken area. If agriculture in the area continues to produce sufficient waste grain for winter feed, a huntable population will probably be maintained.



Prairie dancer

Department property at Gallina Wells, managed for both prairie chickens and prairie chicken hunters



Noreen Walsh

NEW MEXICO WILDLIFE MANAGEMENT

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