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THE LESSER PRAIRIE CHICKEN IN THE TEXAS PANHANDLE¹

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Abstract: Trends in populations of lesser prairie chickens (*Tympanuchus pallidicinctus*) in the Texas Panhandle were investigated by censusing drumming grounds annually on two study areas during a 10-year period, 1952-62, for comparison with data from a census of the same areas in 1942. Severe drops in populations came in 1952. The decline was triggered by onset of a major drouth lasting through 1956, but populations did not increase during a series of good rainfall years starting with 1957. Changing land-use practices are responsible for keeping lesser prairie chickens at low population levels in the Texas Panhandle. The more important of these are overgrazing of cattle range, particularly in dry weather, resulting in displacement of the tall grasses; accelerated programs of aerial spraying with herbicides for brush control; and combine harvesting of grain sorghum in place of storage by stacking and shocking in the field.

The range of the lesser prairie chicken has been mapped (Fig. 1) as extending over most of the grasslands of western Texas, north and east of a line from Loving and Pecos counties east to Sutton and Kimble counties, and thence northeast through Concho, Callahan, and Clay counties (Texas Game, Fish, and Oyster Commission, 1945. Principal game birds and mammals of Texas. 147pp.).

The exact limits of the original range of the lesser prairie chicken cannot be clearly defined, for few early records make a distinction between the lesser prairie chicken and the greater (*T. cupido pinnatus*), which was also a native of north and central Texas. Even during the time of wide distribution, the lesser prairie chicken may have been only a winter migrant in the southernmost part of its range in Texas. A number of the earliest settlers of Throckmorton and Young counties, when interviewed during the 1930's, were in agreement that the prairie chicken was confined to the sandy grasslands to the north during the breeding season. They knew the prairie chicken only as a winter migrant.

Sometime about the turn of the last century, the lesser prairie chicken is believed to have reached its greatest abundance in the Texas Panhandle. A patchwork of homesteader farms interrupted the continuity of the grasslands without any great amount of infringement on the area of the latter, and the introduction of dry-land grain sorghums provided a supplemental source of winter food for the prairie chicken. These years of greatest abundance were also years of unrestricted slaughter. Railways ran specials for sportsmen to such towns as Higgins in Lipscomb County and placed iced cars on sidings for preservation of the kill.

By 1930, cultivated land was encroaching on Panhandle grasslands to the point of restricting the prairie chicken range and blocking ancestral travel patterns. In the meantime, prairie chickens had established the habit of feeding on winter grain shocks, thus becoming more vulnerable to hunters and indignant farmers alike. Finally, the great drouth beginning in 1934 accented the plight of the prairie chicken by depressing the population to a scarcity level hitherto unknown. The Texas Legislature halted legal hunting in 1937 by passage of a 5-year closed season. There has been no

¹ A contribution from the Wildlife Restoration Division, Texas Game and Fish Commission, Federal Aid Projects W-11-D and W-45-R.

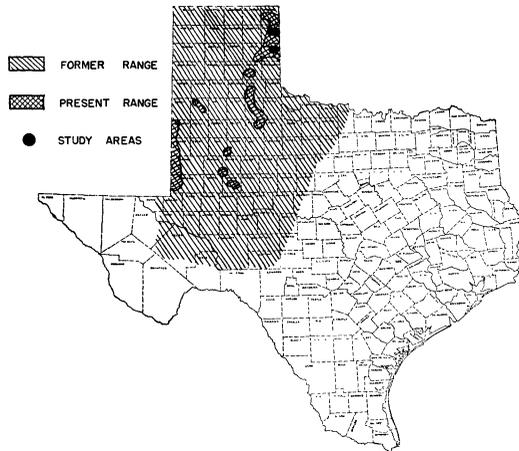


Fig. 1. The location of study areas and the distribution of lesser prairie chickens in Texas.

legal hunting of the prairie chicken in the Texas Panhandle since.

The lesser prairie chicken population of Texas is now localized in relatively small areas in northwest Texas. A few are found along the Texas–New Mexico line from Andrews to Lamb County, and others are in the Panhandle along the Texas–Oklahoma line. In the Panhandle, the largest population of prairie chickens occurs in Wheeler, Hemphill, and Lipscomb counties (Fig. 1). The purpose of this paper is to present results of the annual census of drumming grounds on two study areas for the period 1952–62 and compare them with results of a census of the same areas in 1942.

METHODS

Henika and Etheredge first mapped drumming grounds in Wheeler and Hemphill counties in 1942 (Henika, F. S., and O. F. Etheredge. 1942. Progress reports, Project No. W-11-D. Typescript. Texas Game and Fish Comm.). Maps were prepared showing all fences, pasture roads, windmills, and other landmarks of the study areas. The maps were subsequently

used as guides to early-morning reconnaissance of occupied ranges. Surveys were intensive enough to permit locating all drumming grounds by listening. Following mapping, the grounds were visited soon after daybreak, and the males were counted.

Wartime dislocations of personnel terminated the prairie chicken project, and it was not possible to resume the drumming-ground census until 1952, when it was included as part of a study of game trends under the Panhandle Regulatory Survey Project. Since then, the census has been carried out annually.

Drumming-ground counts are conducted during April, when courtship activities reach a peak. It has been found that the number of males using a ground at that time is relatively stable from day to day, and repeat counts are seldom necessary.

DESCRIPTION OF STUDY AREAS

The study areas, as established in 1941, are designated as Sites I and II and are located respectively in Hemphill and Wheeler counties. Site I is a 100,000-acre block of grassland lying north of the Canadian River. Along the southern edge, the area consists of deep, sandy soils in a stabilized dune-type terrain. Northward, it levels to firmer soils of the sage-grassland type. Woody species, in addition to the dominant sand sagebrush (*Artemisia filifolia*), are Chickasaw plum (*Prunus angustifolia*) and fragrant sumac (*Rhus aromatica*). Plum and sumac are a conspicuous part of the association on stabilized dunes.

Site II, a 6,560-acre block of shinnery-grassland, is located near the town of Allison in Wheeler County. It was selected because of near-homogeneity of vegetation and because it was holding at the time what appeared to be the greatest density

of prairie chickens in the Texas Panhandle. Woody vegetation of Site II is comprised of shin oak (*Quercus havardii*), sand sagebrush, and fragrant sumac. Shin oak dominates the aspect, occurring as a nearly continuous cover of grass-high plants interspersed at regular intervals with circular *motts* or little groves of tree-like oaks of the same species. Adult and young prairie chickens use the shade of these little groves to escape summer heat.

Sites I and II have similar herbaceous vegetation. The grass association includes sand bluestem (*Andropogon hallii*), little bluestem (*Andropogon scoparius*), sand lovegrass (*Eragrostis trichodes*), sand dropseed (*Sporobolus cryptandrus*), fringeleaf paspalum (*Paspalum ciliatifolium*), switchgrass (*Panicum virgatum*), and Indiangrass (*Sorghastrum nutans*). Other grasses more typical of the shortgrass plains are found in dune bottoms and on small areas of tighter soils. These include bluegrama (*Bouteloua gracilis*) and buffalograss (*Buchloe dactyloides*).

A wide variety of forbs occurs on the study areas. Prominent in the association are these species which provide fall and winter food for bobwhite quail (*Colinus virginianus*) and prairie chickens: Texas croton (*Croton texensis*), queensdelight stillingia (*Stillingia sylvatica*), western ragweed (*Ambrosia psilostachya*), and erect dayflower (*Commelina erecta*). Small wildbean (*Strophostyles pauciflora*) is generally an inconspicuous legume which increases during the wetter years.

RESULTS

Site II, the shin oak study area in Wheeler County, was incompletely censused in 1952, and the data for that year are not available for comparison with the census of the area carried out 10 years earlier. As a starting point, it may be as-

sumed that the 1942 population of both areas was high only in respect to the numbers which had been resident during the critically dry 1930's. The drouth had been broken by adequate rainfall during the fall months of 1939, and by 1941, annual moisture had increased to the point of establishing records which still stand over most of the region. During 1942, most species of upland game made rapid increases. Bobwhite quail were phenomenally abundant that year (Jackson, A. S. 1947. A bobwhite quail irruption in northwest Texas lower plains terminated by predation. Trans. N. Am. Wildl. Conf. 12:511-519).

Resumption of censuses on the study areas in 1952 concurred with the advent of another major drouth. The early effects of this one were first apparent in the shin oak grassland study area in Wheeler County. It was to prove a serious limiting factor to all upland game for the next several years. The onset and duration of this drouth are reflected in the graphs of drumming-ground counts (Figs. 2 and 3). The dry period reached a low point in rainfall during 1956, when only 10.76 inches were measured at Canadian, Hemphill County. The next year, there was a reversal in the moisture trend, and most species of upland game birds increased greatly. However, as will be apparent from Figs. 2 and 3, the population of lesser prairie chickens remained at a relatively stable and low level. Although the population of Site II showed a slight increase in 1956 and maintained its gain thereafter, on neither area did numbers approach 1942 levels. The 1962 census of Site I showed a 63 percent decline from the 1942 counts, and the Site II census revealed a decline of 55 percent from the 1942 counts.

The ending of drouth did not bring respite from climate to the prairie chicken

range. Twice, winter storms caused heavy losses to upland game and livestock. On March 23, 1956, the most severe blizzard to occur in 35 years touched the northern edge of the Panhandle. Gales and driving snow caused heavy losses among cattle, pronghorn (*Antilocapra americana*), and nongame birds and mammals. The effects on prairie chickens were not determined. However, it may be significant that, in the census carried out the following month, counts were down from the preceding year's on the open range of Site I, while counts showed an increase over the previous year's in the shin oak range of Site II.

Winter kill of upland game birds occurred again during January and February of 1960, when a deep, uniform cover of snow and near-zero temperatures prevailed for 10 days. During this time, an estimated 80 percent of the quail population in the north Panhandle perished, and several prairie chickens were picked up dead or too weak to fly.

DISCUSSION

Climatic influences, while undoubtedly affecting prairie chicken numbers, are by no means the only, or even the most important, factors preventing increase of the lesser prairie chicken in the Texas Panhandle. Trends in land use and agricultural economics are decidedly adverse to the future of the species. The more important of these trends are (1) the increased graz-

ing loads placed on cattle ranges since World War II, resulting in displacement of tallgrasses in the plant community by shorter species, (2) the accelerating program of brush and weed control by aerial application of herbicides, and (3) a change-over to combine harvesting from the former practice of stacking or shocking grain sorghums in the field for winter livestock feed. This has done away with a source of prairie chicken food which in the past compensated, at least in part, for the losses to prairie chicken habitat caused by heavy grazing and treatment for brush control.

During 1950-51, Site I, the dune and sand sagebrush-type study area in Hemphill County, was treated with the herbicide 2,4-D for the purpose of eliminating Chickasaw plum, sand sagebrush, and fragrant sumac. The immediate effects were to ruin the habitat for that season, for both bobwhite quail and prairie chickens. Traditional courtship grounds were abandoned, and the males established new ones in marginal unsprayed areas. Although the area has never recovered its original quality as prairie chicken or bobwhite quail habitat, several pastures now show re-infestation with brush, and prairie chickens are again resident.

More recently, in the spring months of 1957, the 6,560-acre Site II study area in Wheeler County was subjected to an aerial application of the hormone-type chemical

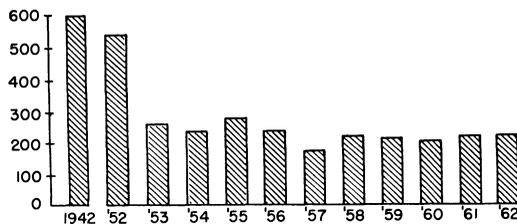


Fig. 2. Censuses of male lesser prairie chickens in Hemphill County, Site I.

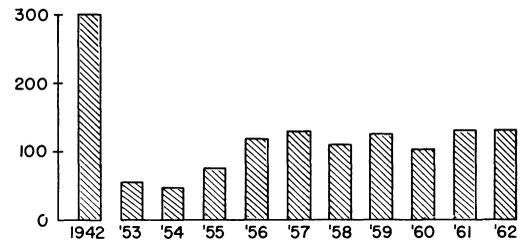


Fig. 3. Censuses of male lesser prairie chickens in Wheeler County, Site II.

2,4,5-T. The objective was to control or eliminate brush and weeds. Although only a 25 percent kill was accomplished, acorn production was prevented for 2 years. The loss of a key supply of winter food could not have been other than an adverse influence on prairie chickens. Its effects were apparent in a lower count in the 1958 census.

Large-scale brush-control programs are being put in operation at an accelerating rate. The elimination of sand sagebrush, shin oak, and other woody cover, if concurrent with or followed by heavy grazing, results in plant communities to which the lesser prairie chicken does not readily adjust.

Nearly all of the cultivated fields in ranch country are being retired to grassland. A considerable acreage has been placed under the Soil Bank program of the U. S. Department of Agriculture. Many of these areas have produced good stands of tallgrasses within the recent wet years and provide good nesting cover for prairie chickens. They provide a bright spot in an otherwise not very promising picture.

We believe that the present population of lesser prairie chickens in the Texas Panhandle is not much greater than 3,000 birds. Whether this relic number can increase or even survive in the fast-changing environment seems doubtful.

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WINTER SURVEYS OF NEBRASKA PRAIRIE CHICKENS AND MANAGEMENT IMPLICATIONS

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Abstract: Fall and winter counts of prairie chickens (*Tympanuchus cupido pinnatus*) showed that individual flocks on local home ranges contained more chickens in late fall than earlier, suggesting the practicability of winter population surveys. Chickens remained in winter mainly at areas where corn on small general farms provided food, and adjacent extensive grasslands on cattle ranches provided suitable roosting cover. It is suggested that additional winter habitat could be developed by combining corn-growing and controlled grazing in selected areas.

Fall and winter counts of prairie chicken flocks at two home ranges in Chase County, Nebraska, in 1940 (Mohler, L. L. 1952. Fall and winter habits of prairie chickens in southwest Nebraska. J. Wildl. Mgmt. 16(1):9-23) showed that flocks on both home ranges contained more chickens in late fall than earlier. A similar trend was found in 1941-42, when flock counts were begun in October and continued into March on a study area along Whitetail

Creek in Township 15 N, Range 38 W, just northwest of Keystone, Keith County, Nebraska. The latter counts are summarized in Table 1.

These flock counts in Chase and Keith counties suggested that population surveys in Nebraska can be most efficiently conducted in the winter, when efforts can be directed towards areas where concentrations of chickens occur.

During the period of the 1941-42 flock