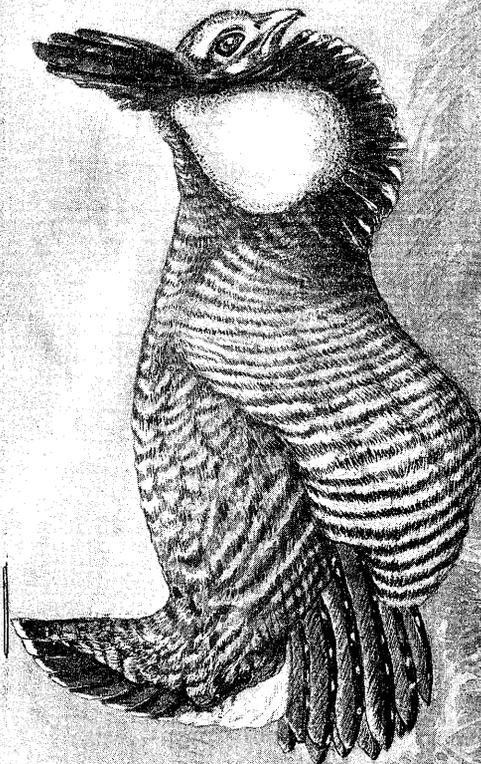


# The LESSER PRAIRIE CHICKEN and Its Management in Texas

by GEORGE W. LITTON, Regional Director, Wildlife, Region II



Published by:  
TEXAS PARKS & WILDLIFE DEPARTMENT  
4200 Smith School Road  
Austin, Texas 78744

PWD Booklet 7000-25  
April 1978

## INTRODUCTION

The lesser prairie chicken (*Tympanuchus pallidicinctus*), unlike the coyote, bobwhite quail or the white-tailed deer, has been unable to keep pace with man's means of civilization. Its population levels have decreased markedly since early-day settlement. The prairie chicken has rather rigid habitat requirements and cannot adjust to changing conditions. Thus, when its habitat is destroyed, this bird can no longer exist. During the past 40 to 50 years, most chicken habitat has been destroyed by the plow, chemical control of vegetation and severe overgrazing.

## PAST AND PRESENT HISTORY AND DISTRIBUTION

The range of the lesser prairie chicken in the United States is restricted to Texas, New Mexico, Colorado, Kansas and Oklahoma. In Texas, the bird occurs primarily in the Panhandle area. A remnant population of the Atwater's prairie chicken (*T. cupido atwateri*) is found along the Gulf Coast of Texas.

The historic range of the lesser prairie chicken in Texas extended over most of the grasslands of the High and Rolling Plains. Today there remain two separate populations: one in the Panhandle along the Texas-Oklahoma line, and the other along the Texas-New Mexico line from Andrews County to Cochran County. The populations are confined almost exclusively to sandy ranges containing brush associations of shinnery oak and/or sand sagebrush, along with wild plum and skunkbush sumac in association with tall grasses such as sand bluestem, little bluestem and switchgrass. Farming land is found adjacent to and interspersed within such ranges.

Records indicate there may have been as many as two million lesser prairie chickens in Texas prior to 1900, before exploitation by early-day sportsmen and market hunters. Around 1930,



*Booming grounds are essential to the prairie chicken. Display, courtship and mating occur in these areas, which must be relatively open and devoid of tall vegetation.*

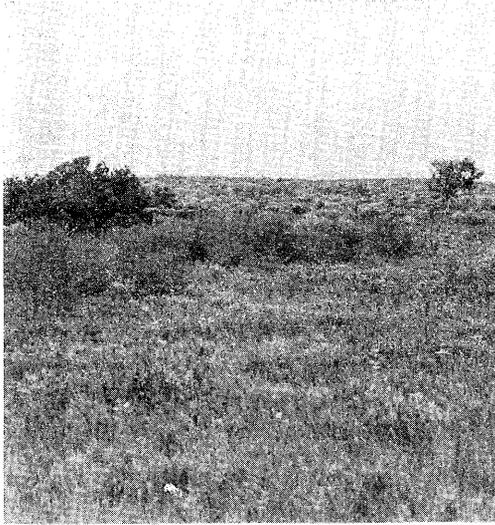
installation of large farms, intensive grazing of grasslands and a severe drought depressed their population to an all-time low. The Texas Legislature halted legal hunting in 1937.

Population surveys conducted in 1967 indicated a surplus of birds once again was available for harvest on the limited remaining chicken habitat. A two-day season was held in the eastern section, followed in 1970 by a like season in the western section. The eastern section, comprising some 800,000 acres of occupied range, has had a harvest of two to three percent of the estimated population. Approximately 343,000 acres of chicken habitat were found in the western portion and harvest rates in this more or less static population level have fluctuated from 10 to 21 percent annually. A total of 2,923 prairie chickens has been taken by hunters since hunting season began in 1967. Estimates during the spring of 1976 place the total lesser prairie chicken population at approximately 18,000 birds for its present range.

## FACTORS LIMITING DISTRIBUTION

### Habitat:

Habitat is the key to management of the lesser prairie chicken. Actual present-day prime habitat in Texas for this very specialized species is limited and the outlook for restoring historic habitat is dim.



*A prime habitat situation is depicted; native grassland in the foreground, edged by a thicket of wild plum and a mature stand of hackberry in the background.*

Historically, large blocks of native rangeland were inhabited by the prairie chicken. The High Plains portion, with limited rainfall and relatively flat topography, supported a good growth of short grasses on the heavier soils. Interspersed sandy soils supported shin oak, sage brush and a mixture of grasses. The rolling Plains climax association contained bunch grasses on the heavier soils, with shin oak associations on the sands. The High Plains portion of this habitat has given way to the

plow and cultivation and only sand-shinnery associations remain to maintain the prairie chicken on a year-round basis. Minimum acreage necessary to maintain prairie chicken populations is unknown but many examples may be cited in which there are numerous tracts of sand-shinnery associations of 50 to 250 acres interspersed within areas of cultivation, where prairie chickens no longer exist. For this reason, it may be concluded that large, solid blocks of native rangeland habitat are a prerequisite to maintaining chicken populations.



*Good habitat is the key to management of the lesser prairie chicken. Native rangeland is a must.*

### Grazing Pressure:

Extensive overgrazing has displaced desirable tall and mid-grass cover and forb food species occurring on extensive acreages of both the High and Rolling Plains. Although the sand-shin oak communities were undoubtedly the stronghold of the prairie chicken in the past, these other areas offered seasonal habitat for the birds in providing feeding and nesting range.



*Extensive overgrazing by domestic livestock eliminates necessary food and cover-type vegetation.*

Even today, when overgrazing by livestock occurs on large ranch units which may be considered prairie chicken habitat, the birds are no longer present or population levels are very low. Results of overgrazing on chicken populations include the marked decrease of desirable weed food plants and destruction of both nesting and escape cover.

#### **Food Supply:**

The food habits of the lesser prairie chicken are indeed very specialized, certainly more so than most other upland game birds. Food species found in quail crops collected on a yearly basis are too numerous to mention, while those foods found in chicken crops are relatively low in numbers of different species taken.

Studies indicate a large portion of the bird's diet consists of shin oak acorns. Insects, primarily grasshoppers, also are important throughout the warmer seasons.

Other plant species of primary importance are sixweek fescue and broom snakeweed leaves, and flatsedge seed in the fall. Leaves and flower buds of skunkbush sumac and leaves of sand sagebrush are important winter foods. During the winter, cultivated grain sorghums are readily taken as supplemental food when available. Important plant foods in spring are sixweek fescue, new annuals and skunkbush sumac. In summer, insects dominate the diet, but again fruits of skunkbush sumac are taken heavily along with leaves of dayflower, western ragweed and eveningprimrose. Other forb species of importance are queensdelight, hairy puccoon, wild sweetpea, prairie ragwort, beard-tongue and wild four o'clock.

Year-round availability of these narrow-range food items is essential to maintain the population. Many agricultural practices such as clean farming, burning of crop stubble, intensive livestock grazing and aerial application of herbicides tend to eliminate or reduce these necessary food sources.

#### **Chemical Brush Control:**

In recent years, aerial application of herbicides to control brush and weeds has affected prairie chicken habitat. When extensive habitat areas are treated and food species destroyed, if the birds are unable to relocate, a loss in numbers may be expected.

Eventually, and especially where annual or bi-annual herbicide programs are maintained, native weed species may be partially eliminated. As native rangeland becomes predominately a grassland, only nesting cover is left for the birds.

If years of rest between application of herbicides are not provided, the occurrence of shin oak motts may be drastically reduced. These motts are not only important as mass producers of shin oak acorns, but also provide

necessary brood-rearing areas, resting and loafing cover and protection from extreme heat in summer or extreme cold of winter.

Two other woody plants of major importance which provide both food and cover to the prairie chicken are skunkbush sumac and sand sagebrush. These are most susceptible to aerial herbicide treatments and can be almost totally eliminated from rangeland situations through continued herbicide applications. Sumac is often eliminated during the first application.

**Drought:**

Drought cycles that occur periodically throughout the range of the prairie chicken place extreme stress on population numbers, and census records substantiate the fact that the population levels drop after these drought periods. Normally, there is considerable winter food available in the form of waste grain on stubble fields in or adjacent to occupied range. This is not the case in extremely dry years when food crops are short and even the most sketchy resources are used by cattle. Shortage of nesting cover at these times is a limiting factor to prairie chicken. This problem is often compounded when, during periods of extreme drought, livestock numbers are not reduced to proper carrying capacity, resulting in extreme overuse of the vegetation.

**Cultivation:**

Throughout present-day prairie chicken habitat, it has become common practice to plow native grasslands and reseed them with a monoculture grass type such as lovegrass. This practice presents yet another threat to inhabited prairie chicken range. Although these areas are undoubtedly used as nesting cover, they offer no available food and the grass stand is too thick to be desirable for bird use other than nesting. Again, very small blocks of these grasses may enhance nesting success but when large acreages are cultivated, another man-made

practice has served to reduce prairie chicken range.



*While fields planted to stands of monoculture grass types may provide nesting cover, desired foods no longer are available in these areas and grass stands often are too thick to be desirable to the birds.*

## HABITAT MANAGEMENT CONSIDERATIONS

**Habitat Preservation:**

Preservation of large units of native rangeland presently inhabited by prairie chickens is of vital importance to the existence of the game bird in this state. Without these large privately owned lands, the prairie chicken in Texas is doomed to extinction.

No great amount of vacant habitable range for the prairie chicken remains. Most that is suitable and now vacant within Texas is close to inhabited range and may reasonably be expected to restock naturally if prairie chickens

continue to increase. Little can be done to increase habitat size but through proper ranch management in existing habitat, population levels can be maintained and density levels possibly increased.

**Rotated Grazing Practices:**

Light to moderate cattle-grazing pressures in deferred rotation-type programs have proven beneficial not only to the prairie chicken but to cattlemen as well. By providing pasture rest periods for grass regrowth, prairie chicken food species and nesting cover are enhanced. Areas which in the past have been considered marginal habitat due to livestock overgrazing practices can be restored or greatly enhanced as grazing pressures decrease.

**Food plots:**

Small winter food plantings of less than five acres have been attempted but usually are not successful since rabbits, blackbirds, crows, starlings and sparrows denude these areas prior to the critical winter period.



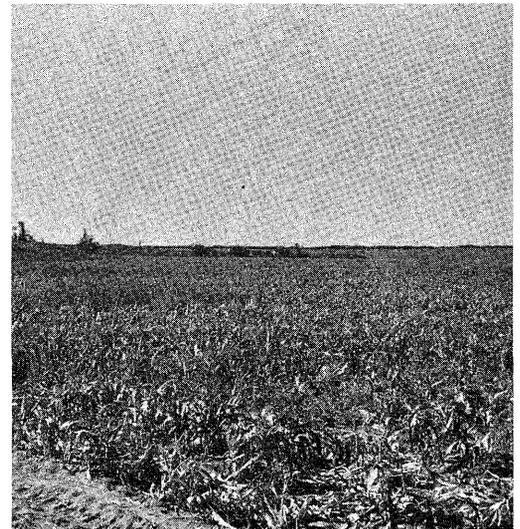
*Farming lands adjacent to large blocks of native rangeland to provide additional food supplies within range of escape cover.*

Present-day chicken ranges in Texas are surrounded for the most part by areas of intensive cultivation. In these areas, grain sorghum fields provide large quantities of supplemental feed during fall and winter. Cultivated areas of alfalfa, wheat and oats provide important green plant material. It should be pointed out that when native food sources have not been destroyed, this supplemental feed is not required, but in modern times the birds may become very dependent on these foods.

Now outmoded, storage of grain sorghum by stacking and shocking in the field once supplied prairie chickens with large quantities of supplemental feed in the Texas Panhandle.

**Cultivation Practices:**

"Minimum or no-tillage" farming practices have also provided additional supplemental food supplies for the birds. After the grain is



*"Minimum or no-tillage" farming practices are beneficial in that a plentiful supply of wasted grain remains available for some time after the crop is harvested.*

LESSER PRAIRIE CHICKEN

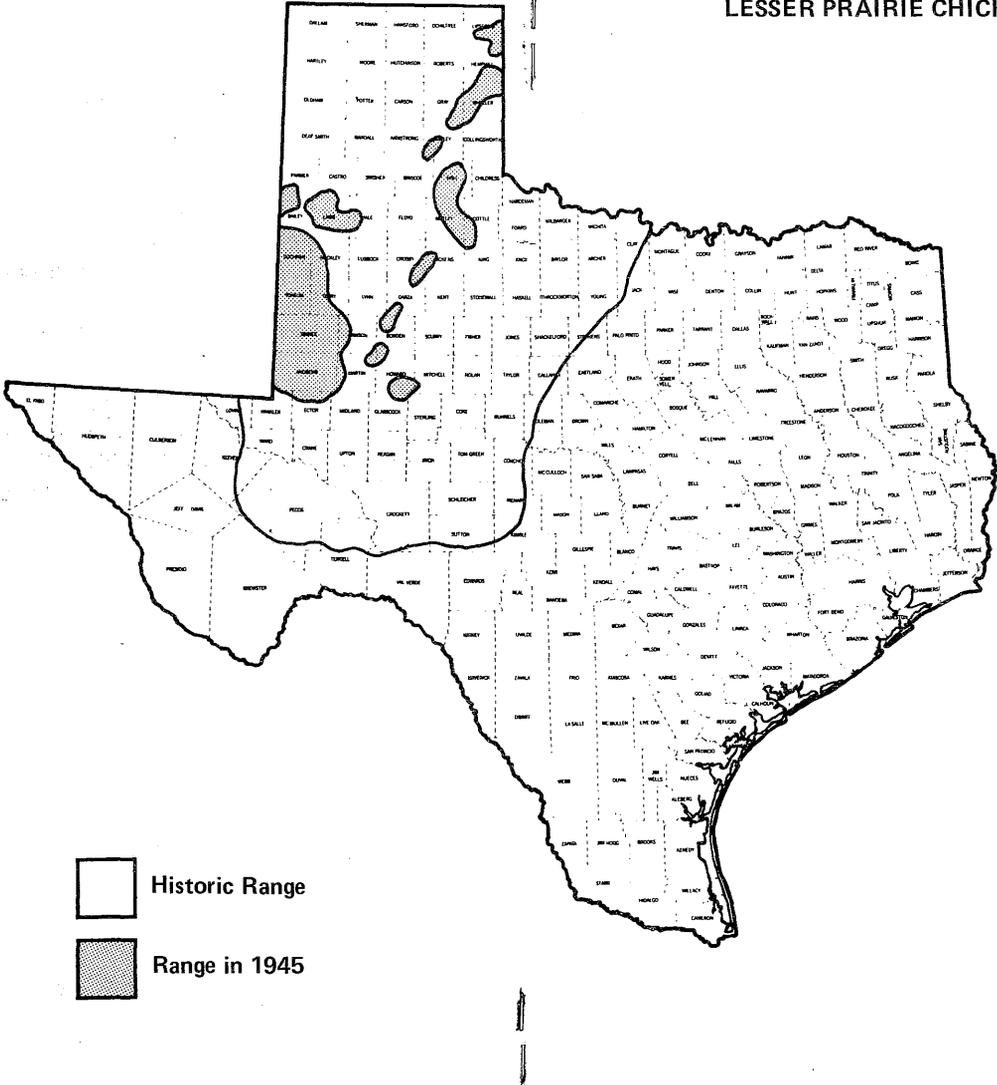


Figure 1

# LESSER PRAIRIE CHICKEN

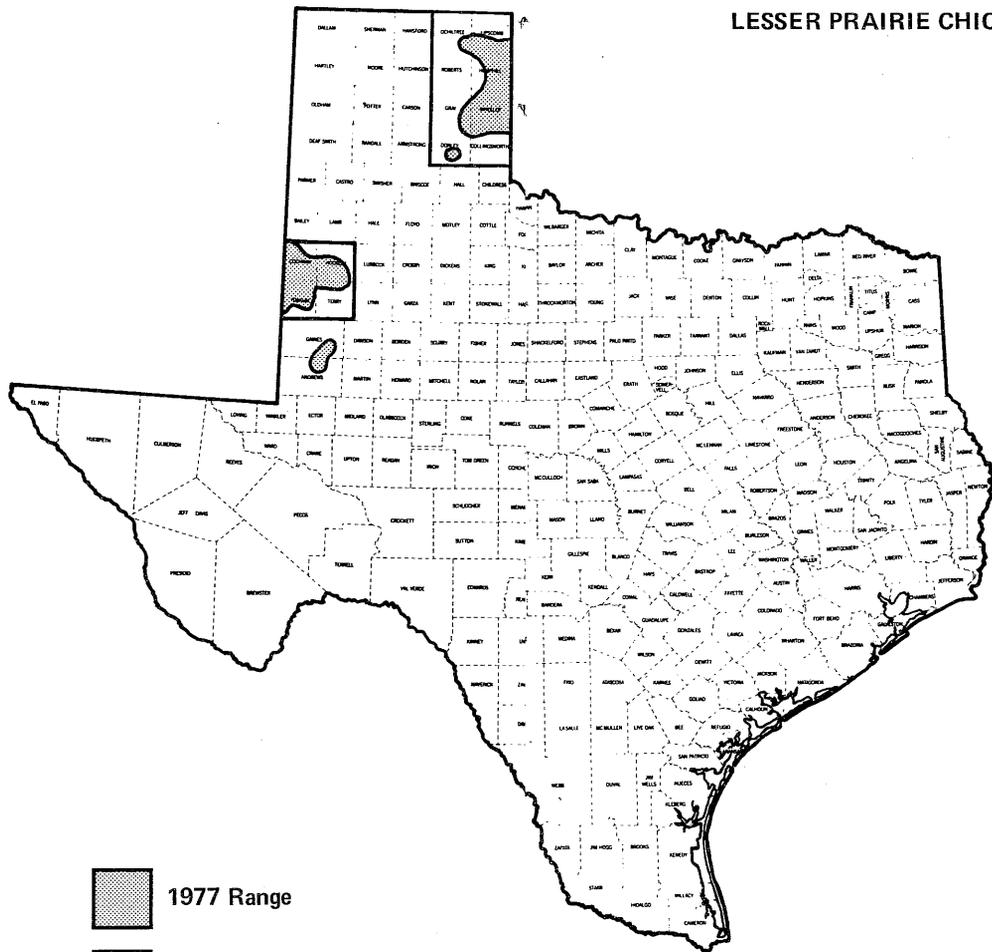
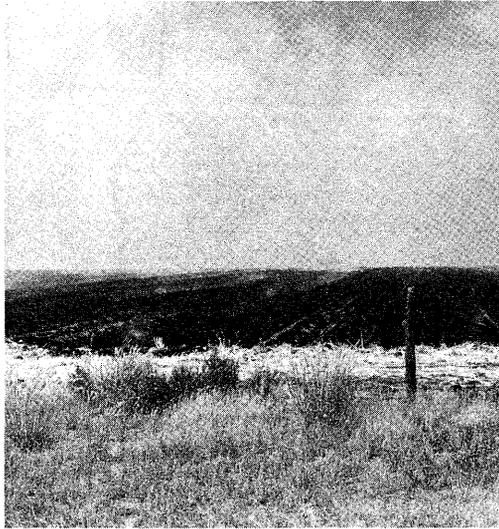


Figure 2

harvested, the stubble remains in the field and is not turned under until planting time the following spring. Birds have been observed feeding in the field through winter into spring. Grain which has been wasted during harvest time is allowed to remain on the surface. Blowing sands cover and then again uncover the grain, providing supplemental food in this period of agricultural inactivity.

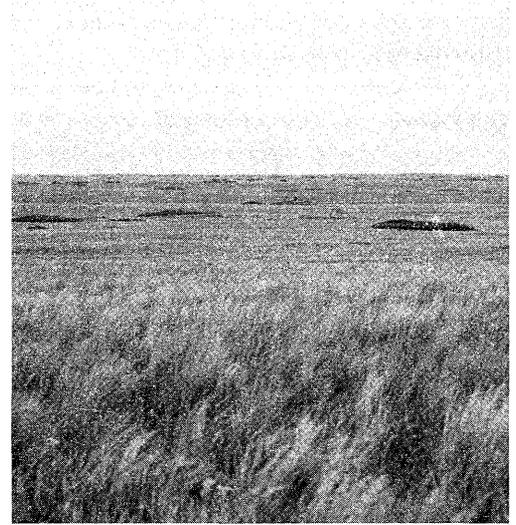
Plowing or burning these stubble fields is to be discouraged so as to provide this additional food source.



*The practice of burning crop stubble completely eliminates wasted grain which is utilized by the birds when left after harvest.*

#### **Brush Control Practices:**

When aerial spraying with herbicides is considered necessary to thin dense stands of shin oak or other brush species, care should be taken to leave untreated areas of sufficient size to support prairie chicken. A good rule is to treat only 50 percent of the total area the first year and remaining acreage the next.



*Native woody or brush species have been controlled in this pasture by aerial herbicide applications. Care was taken to protect sufficient shin oak motts to maintain a resident prairie chicken population.*

Under certain conditions, extremely dense stands of low-growing shinnery oak may retard grass as well as forb growth and production can be increased by opening up this dense canopy.

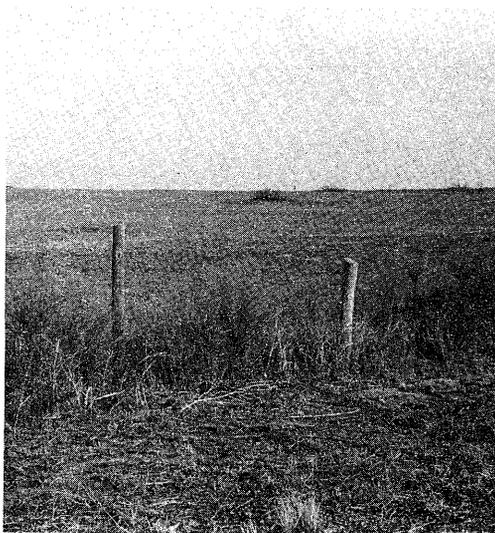
Aerial spraying may enhance nesting cover by increasing grass production and retarding brush growth, but the existing food supply (acorns, weed seeds, skunkbush sumac fruit) is destroyed for at least two years. Adjacent nonsprayed pastures or cultivated food sources then become necessary to furnish required foods.

If prairie chickens are to be considered in a brush control program, there are several alternatives:

(a) Never spray the same areas in yearly repetition. A maintenance program, spraying at three to four-year intervals, will allow forb and brush regrowth to provide necessary food and

cover for the birds and at the same time retard brush increase to an acceptable level.

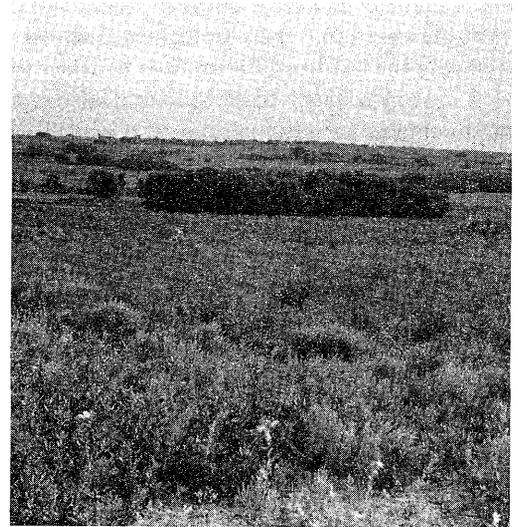
(b) Contour or strip spraying of large areas is desirable, leaving unsprayed strips wide enough to prevent drift-kill on the unsprayed area. This method provides for control of brush but leaves areas of desirable food production and cover in adjacent untreated areas.



*Aerial application of herbicides may completely remove brush and weed species necessary for cover and food. Spraying should be done in strip patterns or on a rotation-type system.*

(c) On large ranch units, a rotation method of chemical brush control can be used similar to that of rotation grazing. A system may be established to spray different pastures each year and yet maintain a nonspray interval of three to four years for the various treated pastures.

(d) It is most desirable to leave mature, tall-growth forms of shin oak motts. Although this requires considerable manipulation on the part of the spray-plane pilot, these motts are of utmost importance to prairie chickens and many other wildlife species.



*Shin oak motts are of prime importance to the prairie chicken in that they provide food, brood-rearing areas, escape cover and protection from severe weather conditions.*

Destruction of these motts on very deep sand sites also is undesirable from another conservation standpoint. Once the motts are eradicated, these deep sands are susceptible to blowing and will not support any vegetation for sustained periods.

#### **Burning for Brush Control:**

Controlled burning is a management tool which may be used to control brush and will also encourage weed and forb growth. A certain degree of risk is involved, because this technique must be followed by rainfall to encourage grass and weed growth. When burning areas containing deep sand sites, blowouts may occur if sufficient rainfall is not received in time to produce adequate vegetational cover necessary to stabilize these loose sands.

Normally, controlled burning should be implemented in the spring immediately following the last frost. Care should be taken to burn in strip or block patterns so that adequate cover remains for nesting prior to regrowth of grass and forbs species.

Care should be taken to burn as late in spring as possible because of the damage that can be done by high winds of January, February and March. It should be accomplished just as grasses first begin to green in the spring. Also, burning following a rain or heavy dew is desirable in that the burn is not as severe and very little root damage is done.

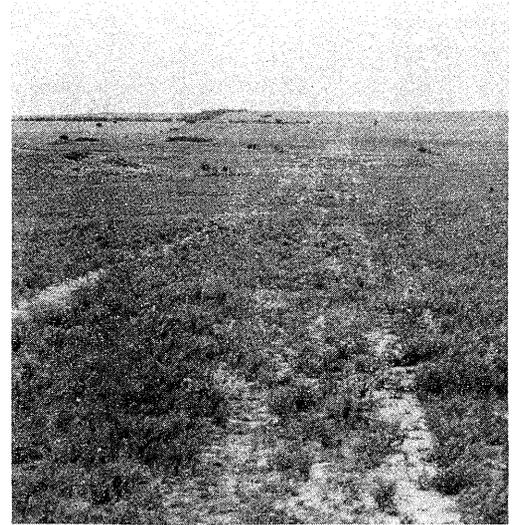
On ranches where cattle are being grazed, only small blocks usually are burned because of the necessity to provide forage for cattle on the remaining acreage. Under these conditions, it is recommended that burning be conducted annually, possibly one portion one year, another a second and a third the next.

If a landowner is inexperienced in the use of controlled burning, it is strongly recommended that he contact either another rancher who has used this practice or a member of this department, for advice on proper burning techniques and necessary safeguards.

#### **Strip Discing:**

A practical method of stimulating growth of native foods for the lesser prairie chicken is the discing of strips through native pasture lands. The types of plants resulting will depend somewhat on soil types and past history of land use. As a rule, upland sandy soils, when disturbed, give rise to successions of western ragweed, wild bean, pigweed, partridge pea, ground cherry, crotons and others. Somewhat tighter upland soils will give rise to approximately the same plant species but in different percentages. All of the above-listed

native seeds are taken by prairie chicken when they are available.



*Soil disturbance along this pipeline right-of-way has produced an abundant food supply in the form of weedy plants. Prairie chicken, quail and mourning doves were observed using this area. Spring discing will produce the same effect.*

The discing for food management may be done at any time during the dormant season. However, late March is generally the best time because such soil disturbance at this time of year destroys a minimum of existing food and cover and, if moisture is available, vegetative growth will soon cover the disced area, reducing the risk of heavy wind erosion. The depth of discing may be from three to six inches with the shallower depth preferable if the soil can be thoroughly stirred. Discing should not be done after spring growth starts or after seeds begin germination. The strips disturbed could be as little as five feet in width and should ordinarily be no more than 10 feet in width. The number of such strips will depend upon the

circumstances, but ordinarily four to five such strips across a section of land will furnish considerable food. Discing should never be done in such patterns as to cause severe water erosion.



*Spring discing in irregular patterns adjacent to stands of woody vegetation encourages weed production and is perhaps the easiest and most economical technique of providing additional food for both quail and prairie chicken.*

## **SOURCES FOR PRAIRIE CHICKEN MANAGEMENT ADVICE**

A wildlife extension specialist is stationed in each of the four administrative regions, with wildlife biologists located throughout each region who are available to work with landowners in helping to plan and apply sound wildlife programs. They will welcome the opportunity to assist you.



*Male lesser prairie chicken in display on booming ground.*

*Male lesser prairie chicken. (Front Cover)*

The basic information contained in this brochure was derived from Pittman Robertson Project W-45-R, Panhandle Game Management Survey.