

APPENDIX EE

The
Lesser
Prairie Chicken
and its Management
in Texas

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Table of Contents

Forward	2
Past and Present History and Distribution	2
Factors Limiting Distribution	4
Habitat	4
Grazing Pressure	6
Chemical Brush Control	6
‘Improved’ Pastures	8
Food Supply	8
Drought	12
Habitat Management Considerations	12
Habitat Preservation	12
Proper Grazing Practices	12
Food Plots	14
Cultivation Practices	14
Brush Control/Management Practices	14
Prescribed Burning	16
Strip Discing	18
Flash Grazing	20
Sources for Prairie Chicken Habitat Advice	20
Literature Cited	22

Forward

The lesser prairie chicken (*Tympanuchus pallidicinctus*), unlike the coyote, bobwhite quail, or white-tailed deer has not been able to keep pace with man's civilization. Population levels have decreased markedly since early-day settlement. The prairie chicken has rather rigid habitat requirements and does not adjust readily to changing conditions. During the past 60-70 years, much of the native prairie chicken habitat has been destroyed by the plow, chemical control of vegetation, and severe overgrazing.

The basic information contained in this brochure was derived from Pittman-Robertson Projects W-45-R, Panhandle Game Management Survey, and W-126-R, Statewide Small Game Program.

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 and South Plains areas. A remnant population of the related Attwater's prairie chicken (*Tympanuchus cupido attwateri*), a State and federally listed endangered species, 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 eastern and northeast Panhandle along the Texas-Oklahoma line, and the other in the South Plains along the Texas-New Mexico line from Andrews county to Bailey County. The populations are confined almost exclusively to sandy ridges containing 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, including lands seeded back into permanent grass cover through the Conservation Reserve Program. Records indicate there may have been as many as two million lesser prairie chickens in Texas prior to 1900. Around 1930, 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. Surveys conducted in 1967 indicated the prairie chicken population was of sufficient size to allow a



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limited harvest. A two-day season was held in the northeast section of the Panhandle. The South Plains section was included in the hunt area beginning in 1970. Currently, two-day seasons are provided for in both areas.

The eastern section is comprised of approximately 800,000 acres scattered through Donley, Gray, Hemphill, Collingsworth, Lipscomb, and Wheeler Counties. The western counties of Bailey, Cochran, Andrews, Gaines, Yoakum, Terry, and Hockley have an estimated 350,000 acres of prairie chicken range.

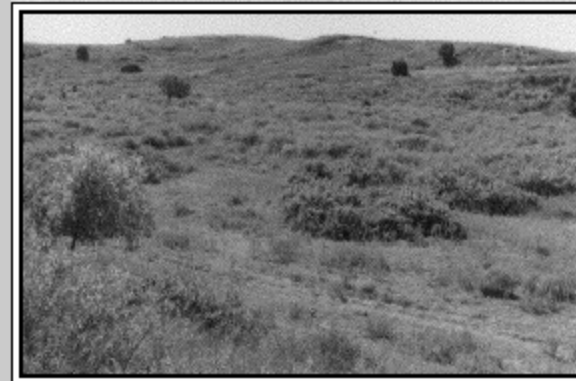
Factors Limiting Distribution

Habitat

Habitat is the key to management of the lesser prairie chicken. Presently, prime habitat in Texas for this very specialized species is limited and the outlook for restoring historic habitat is questionable. 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 hardland sites with clay loam soils. Interspersed sandy soils supported shinoak, sand sagebrush, and a mixture of warm season perennial bunch grasses. The Rolling Plains climax association contained bunch grasses on the sandy loam soils, with shinoak associations on the sands.

Much of the High Plains portion of this habitat has given way to the plow, 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 there are many examples of sand shinnery oak tracts 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 in excess of 250 acres are a prerequisite to maintaining viable chicken populations. This conclusion is further supported by telemetry studies of prairie chickens conducted by Texas Tech University. Similar, but less extensive habitat alteration has occurred in the Rolling Plains.

A potential for prairie chicken range rehabilitation occurred with the introduction of the Conservation Reserve Program (CRP), a part of the Food Security Act, in 1985. This is a ten-year, voluntary United States Department of Agriculture program designed to conserve and improve soil



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and water resources by removing highly-erodible lands from crop production. Most of the prairie chicken range is located in areas qualifying for this program. Some of the more than 3 million acres of Texas farm land converted to CRP grasses may provide the prairie chicken with increased feeding, nesting, and brood habitat, with the potential for expanding or increasing populations; however, the **optimum** CRP mixture would consist of **warm season perennial bunch grasses, native legumes, forbs, and woody shrub plantings**, and many acres of CRP have been planted in less desirable, non-native plant species.

Grazing Pressure

Extensive overgrazing has displaced desirable tall and mid-grass cover, sand shinnery oak, and forb food species on extensive acreages in the High and Rolling Plains. Sage/shinnery communities were undoubtedly the stronghold of the prairie chicken in the past; however, other areas offered seasonal feeding and nesting habitat for the birds.

Today, where overgrazing occurs on rangeland considered prairie chicken habitat, the birds have either disappeared or population levels are very low. Results of overgrazing on chicken habitat include the marked decrease of desirable food plants and destruction and modification of escape cover.

Chemical Brush Control

Application of herbicides to control brush and weeds has adversely affected prairie chicken habitat. When extensive habitat areas are treated and food species destroyed, a decline in populations may be expected. Where **large scale** annual or bi-annual herbicide programs are maintained, native food plants may be partially or totally eliminated. As native rangeland becomes predominately a grassland, feeding areas are reduced or eliminated and only nesting cover remains.

If years of rest between application of herbicides (such as tebuthiuron) **or mosaic patterns** are not provided, a drastic reduction in shinoak motts may occur. These motts are not only important as producers of acorns, but also provide necessary brood-rearing areas, resting and loafing cover, and protection from extreme heat in summer or cold in winter.

Skinkbush sumac and sand sagebrush provide important food and cover to prairie chickens. These are extremely susceptible to herbicide treatments and can be almost totally eliminated from rangeland through continued herbicide applications. Sumac is often eliminated during the first application.



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“Improved” Pastures

Throughout prairie chicken range, the common practice of plowing native grasslands and reseeded them with a monoculture of non-native grass such as lovegrass, presents yet another threat to prairie chicken habitat. Although these areas may be used as nesting cover, they offer little or no food and the grass stand is often too thick to be desirable for uses other than nesting or escape cover.

Lands to be reestablished in grass under the Conservation Reserve Program, or other similar programs in prairie chicken range, **should not** be planted to a monoculture of grasses. A selected mixture of native grasses, legumes and grain sorghum food plots is much more beneficial to all types of wildlife, especially prairie chickens. For example, an excellent mixture to seed on sandy loam sites (where most chicken range occurs) would be a combination of switchgrass, little bluestem, indiangrass, sideoats grama, plains bristlegass, Illinois bundleflower, and Maximilian sunflower. **Note that grass species are warm-season bunch varieties, deep-rooted, drought-resistant, and very responsive to management with grazing and prescribed fire.**

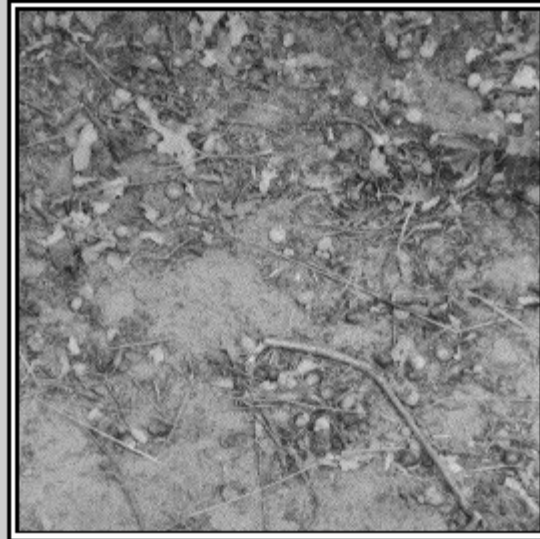
Food Supply

The food habits of the lesser prairie chicken are very specialized, certainly more so than most other game birds. Food species found in quail crops collected annually are almost too numerous to mention, while those foods found in chicken crops are relatively low in numbers.

Studies indicate a large portion of the bird's diet consists of shinoak acorns (Jackson and DeArment 1963, Cannon and Knopf 1981). Other plant species of primary importance in the fall are sixweek fescue leaves, broom snakeweed leaves, and flatsedge seed. Leaves and flower buds of skunkbush sumac, leaves of sand sagebrush, and cultivated grain sorghum (when available) are used during the winter.

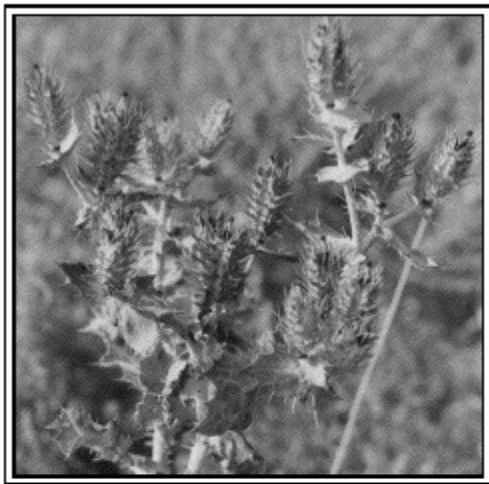
Important plants in the spring are sixweek fescue, new annual forbs, and skunkbush sumac. In summer, insects (especially grasshoppers) dominate the diet; but again fruits of skunkbush sumac are taken along with leaves of dayflower, western ragweed, and evening primrose. Other forb species of importance are queen's delight, hairy puccoon, wild sweetpea, prairie ragwort, beard-tongue, and wild four o'clock.

Year-round availability of this narrow range of food items is essential to maintaining chicken populations. Many agricultural practices such as clean farming, burning of crop stubble, intensive livestock grazing, and application of herbicides tend to eliminate these food sources, resulting in the reduction **or elimination** of chicken populations.



Heavy shinoak acorn crops serve as valuable food for prairie chickens, deer, wild turkeys, and other wildlife.

Native Food Items



Bluestem pricklypoppy

Sandlilly



Snow-on-the-
mountain



Western
ragweed



Drought

Drought cycles that occur periodically throughout prairie chicken range place extreme stress on populations. Census data indicate that population levels drop during these drought periods. Normally, some waste grain in cultivated fields may be available as winter food throughout occupied chicken range; however, this is not the case in extremely dry years when crops are poor and the limited forage is used by cattle, **or when interspersed farm lands in prairie chicken range have been seeded to grass monocultures with little or no diversity.** A shortage of nesting cover at these times on rangelands is often compounded when livestock numbers are not reduced and extreme overgrazing occurs.

Habitat Management Considerations

Habitat Preservation

No great amount of vacant prairie chicken habitat remains. Even where apparently suitable range is located adjacent to occupied range, prairie chickens have been slow to repopulate.

Restocking attempts with wild-trapped prairie chickens, in Texas and in other states, have at best met with limited success. At present, proper management and preservation of occupied native rangeland is the best hope for maintaining or perhaps increasing populations.

Proper Grazing Practices

Light to moderate cattle grazing in deferred rotation programs have proven beneficial to cattlemen and prairie chickens. By providing pasture rest periods for vegetational response, prairie chicken food species (forbs or **weeds**) and nesting cover (mid-tall grasses) are enhanced. Areas considered marginal habitat because of livestock overgrazing can be restored or greatly enhanced as grazing pressures decrease.

Researchers (Canon and Knopf, 1981) noted a positive correlation between density of displaying males and percent grass cover in shinnery oak rangelands in western Oklahoma. Recent research in Cochran and Yoakum Counties (Haukos and Smith, 1988) showed that in herbicide-treated areas,



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nesting hens selected sites in residual grasses within **lightly grazed sand shinnery oak habitat** that had greater than 75% vertical screening cover in the first foot above ground level and 50% overhead cover present. For lesser prairie chickens, a grazing schedule and stocking rate should allow for **at least** these amounts of cover to remain on both **treated and untreated** sand shinnery oak rangelands to provide nest sites.

Food Plots

Much of the prairie chicken range in Texas is surrounded or interspersed 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.

When native food sources have not been destroyed, this supplemental feed is not necessarily required; however, when available, birds often become very dependent on these foods. Small winter food plots of less than five acres may be beneficial to prairie chickens in certain situations.

Cultivation Practices

Minimum tillage farming practices have provided additional supplemental food supplies for prairie chickens. After the grain is harvested, the stubble and waste grain remains in the field and is not plowed under until planting time the following spring. Birds have been observed feeding in such fields throughout the winter. Plowing or burning these stubble fields during the fall and winter should be discouraged.

Brush Control/Management Practices

When applying herbicides in order to thin dense stands of shinoak or other brush species, care should be taken to leave untreated areas to support prairie chickens. Consideration must be given to brush acreage size, areas of mid-tall grasses, availability of native foods, and arrangement (or **interspersion**) of these habitat components. **Adjacent land use** must be included in evaluation and planning if careful patterns of brush control are incorporated in land management to benefit prairie chickens. **Landowners are encouraged to consult with Department biologists for technical assistance prior to conducting brush control work.**

Under certain conditions, extremely dense stands of low-growing shinoak may retard grass and forb growth. Production of desired plants often can be increased by opening this dense canopy. **Mechanical treatment** is advan-



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tageous in that it stimulates forb growth; however, use of this technique should be carefully considered on an individual site basis, depending on topography and soil type.

Recent research in West Texas (Olawsky and Smith, 1991) shows that herbicide treatment of sand shinnery oak rangeland with tebuthiuron may enhance nesting cover by increasing mid-tall grass production and retarding brush growth, but most of the existing food supply for prairie chickens (acorns, forbs, and skunkbush fruit) is destroyed for at least 2 years. Adjacent untreated pastures or cultivated food sources then become necessary to furnish required foods, with forbs finally increasing in treated areas within 3-6 years.

Lesser prairie chickens may benefit from a **mosaic pattern** of both increased tall grass production from herbicide treatment and stands of untreated shinoak. Therefore several alternatives should be considered in a brush management program. They are:

- Never treat the same areas with herbicide in yearly repetition. A maintained program, treating periodically, will allow forb and brush regrowth to provide necessary food and cover for birds and also retard brush increase to a desired level.
- Contour or strip treatment of large areas is desirable. Untreated strips should be left wide enough to provide areas of desirable food production and cover next to treated areas.
- On large ranch units, a rotation method of brush management can be used. Portions of different pastures may be treated each year, maintaining an interval of 6-8 years for various untreated pastures.
- It is most desirable to leave mature, tall-growth forms of shinoak motts. Although this may require some extra care and skill on the part of the applicator, these motts are of utmost importance to prairie chickens and many other wildlife species. Also, destruction of motts on deep sand sites encourages severe wind erosion or "blowouts". Generally, such sites will not support any vegetation for sustained periods.

Prescribed Burning

Prescribed burning is a management tool which may be used to enhance native grass nesting cover and forb (weed) foods. A certain degree of risk is involved, because this technique must be followed by rainfall to encourage



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plant growth. Care should be taken not to burn areas of deep sands, since severe wind erosion could occur.

Prescribed burning should be implemented in the spring around the time of last frost (late March - early April), just as grasses begin to green, with adequate soil moisture present. **Optimum forb production** for desired foods may be realized by earlier burning (February - March) using "back-firing" for cooler temperatures; however, this should only be used with ideal conditions and a high probability of moisture (rainfall) predicted to follow. **Landowners are recommended to have a prescribed fire plan prepared in advance, and always consult with the Texas Natural Resource Conservation Commission, formally the Texas Air Control Board, prior to conducting controlled burns.**

On ranches grazing cattle, usually small blocks are burned because of forage considerations and pasture rotations, but this can be planned for in advance. A 3-4 year burn rotation through all pastures in small blocks is optimum for enhancement of prairie chicken habitat and increasing palatability and % crude protein of livestock forage. Contact the Texas Parks and Wildlife Department, USDA Soil Conservation Service, or Texas Agricultural Extension Service for technical assistance in getting started with a prescribed burning program.

Strip Discing

A practical method of stimulating growth of native foods for the lesser prairie chicken is the "**fallow discing**" of strips through native rangeland. The types of plants produced will vary with soil types, rainfall patterns, and past history of land use. As a rule, upland sandy loam soils, when disturbed, produce successions of western ragweed, trailing wild bean, pigweed (caressweed), partridge pea, groundcherry, lambsquarter, and crotons (doveweed). Clay loam upland soils will produce the same species, but in different percentages. All of these native seeds are eaten by prairie chickens when they are available.

Discing for native food management may be done at any time during the dormant season (first to last frost). However, late March is generally best because soil disturbance at this time of year destroys a minimum of existing food and cover. **If soil moisture is available**, vegetative growth will soon cover the disced area, reducing any danger of erosion.

Special cautions include discing on the contour (**on flat ground to no greater than 3% slope**) with narrow strips not to exceed 15', at a depth of 3" to 6" (just enough to create soil disturbance, **not a clean seed bed**



Small winter food plots of less than five acres may be beneficial to prairie chickens in certain situations.

for planting). This is best accomplished with an offset disc. Four to five strips across a section of land will furnish considerable amounts of native foods. Good judgement must be exercised when using this technique so as not to create a wind or water erosion problem.

Flash Grazing

Production of native foods can also be achieved by employing the "flash grazing" technique. It basically mimics the soil disturbance effect of fallow discing, but is done with cattle hoof action. Often in the spring, a noticeable lush growth of native forbs occurs where livestock have been repeatedly fed during winter months. These feed grounds have been stimulated sufficiently by the cattle, and native forb species respond during the growing season.

A landowner may simply "hot wire" areas of 1-2 acres in size on upland clay loam sites (tight ground) during the February-March period and concentrate cattle heavily in these areas **for a short duration**, depending on the site, moisture conditions, and how long before noticeable soil disturbance occurs. Again this technique calls for careful management on a site-specific basis. Upland clay loam sites will generally require higher numbers of cattle for slightly longer periods as compared to sandy loam sites. Native foods produced in these areas will be as previously described.

Sources for Prairie Chicken Habitat Advice

Department wildlife biologists are available to provide habitat and population management advice for prairie chickens and other species through the **Private Lands Enhancement Program**. This service is provided free of charge to interested landowners, and landowner compliance with verbal or written recommendations is strictly voluntary. Contact the Wildlife Branch Region I Office in San Angelo at 915/651-4748.



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