

Lesser Prairie-Chicken (*Tympanuchus pallidicinctus*)

NMPIF level: Species Conservation Concern, Level 1 (SC1)

NMPIF assessment score: 25

NM stewardship responsibility: Very high

National PIF status: Watch List

New Mexico BCRs: 18

Primary breeding habitat(s): Plains-Mesa Sand Shrub

Summary of Concern

Lesser Prairie-Chicken is a highly imperiled prairie grouse species of the southern Great Plains. New Mexico holds a significant percentage of the remaining population, which is threatened by habitat loss, degradation and fragmentation. Currently this species is on the candidate list for federal listing.

Associated Species

Scaled Quail (SC2), Swainson's Hawk (SC2), Burrowing Owl, Scissor-tailed Flycatcher, Loggerhead Shrike (SC2), Cassin's Sparrow (Stewardship), Lark Sparrow

Distribution

The range of the Lesser Prairie-Chicken has been reduced by about 92% over the past century (Crawford 1980). Current distribution is disjunctive, with a distinct gap between the southeast Colorado, southwest Kansas, western Oklahoma, eastern Texas panhandle population and the eastern New Mexico, western Texas population. The species is estimated to occupy less than 50% of its historical range in New Mexico (Bailey and Williams 2000). It has not been observed in the northeastern portion of the state (north of Interstate 40) since 1993 (Smith et al. 1998, Bailey and Williams 2000). The primary populations occur in north Lea, south Roosevelt and northeast Chaves Counties. Sparse and scattered populations occur in portions of north Roosevelt and Curry Counties, and small portions of east De Baca and south Quay Counties. In Eddy and south Lea Counties, the species is considered nearly extirpated; in 2005 a single known lek was reported in this area.

Ecology and Habitat Requirements

Lesser Prairie-Chickens occupy native shrublands of the southern Great Plains. In New Mexico, Lesser Prairie-Chicken habitat occurs in sand shinnery communities dominated by shin-oak and several species of bluestem, grama, and dropseed grasses. In ungrazed or lightly grazed areas, native tallgrass species such as sand bluestem may grow higher than the relatively low (1-3 ft.) shin-oak canopy. In spring, Lesser Prairie-Chickens congregate at gobbling grounds or lek sites, where males gather in groups and perform mating displays for females. Prairie-Chickens require several distinct habitat types, including open areas for display and mating, dense vegetative cover for nesting, and areas with suitable resources and cover for brood-rearing and winter feeding (Giesen 1998).

The supply of safe nest sites is thought to be a primary factor limiting populations. Studies in Chaves County have shown that over large areas containing multiple types of vegetation, Lesser Prairie-Chickens exhibit strong preferences for nesting in shin oak-tallgrass habitat in general, for patches containing the most sand bluestem in the 10-foot diameter area around the nest, and for sand bluestem clumps as nesting cover. Lesser Prairie-Chickens avoid nesting in mesquite and shortgrass-dominated areas where sand bluestem is absent (Davis et al. 1979, Riley et al. 1992).

While tall grasses are crucial for nesting cover, shrub cover is also a crucial component of good nesting habitat in New Mexico. Where present, shin-oak may provide a vital part of the annual food supply and is important for shade and escape cover. Successful nests in Chaves County were located in patches in which the vegetation was roughly 65% grasses and 30% shin-oak (Davis et al. 1979, Riley et al. 1992).

Lesser Prairie-Chickens are vulnerable to habitat fragmentation, and actively avoid nesting in proximity to areas of human activity, roads and structures (Robel et al. 2004). Recent studies in Oklahoma and New Mexico noted a correlation between various indices of landscape change or fragmentation and declining Lesser Prairie-Chicken populations; population declines occurred particularly in areas where shrubs had been removed (Woodward et al. 2001, Fuhlendorf et al. 2002).

Conservation Status

Species Assessment

DISTRIBUTION	5
THREATS	5
GLOBAL POPULATION SIZE	5
LOCAL POPULATION TREND	5
IMPORTANCE OF NEW MEXICO TO BREEDING	5

COMBINED SCORE	25
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By the scoring system employed by NMPIF, Lesser Prairie-Chicken is the most highly imperiled bird species in New Mexico. It receives a maximum score of 5 in all 5 five categories of vulnerability. Lesser Prairie-Chicken is a national PIF Watch List Species. It is currently a candidate species for federal listing. Lesser Prairie-Chicken is a U.S. Fish and Wildlife Service (2002a) Bird of Conservation Concern.

Population Size

PIF estimates a species population of 32,000. The total size of the New Mexico population is unknown, as not all areas where leks are present have been adequately surveyed. See further discussion under Population Trend, below.

Population Trend

It is likely that Lesser Prairie-Chicken populations in New Mexico have experienced significant fluctuations over much of the 20th century. While formal survey data are lacking, anecdotal accounts from biologists, game managers and land users indicate that restriction of at least the majority of the New Mexico population to the central portion of the range may have occurred during drought periods of the early 1930s and early 1950s (Ligon 1953, Massey 2001). Greater abundance and more widespread distributions were reported in the late 1950s and early 1960s and again in the 1980s (Snyder 1967, Massey 2001).

The current status of the Lesser Prairie-Chicken in New Mexico is the result of a significant decline beginning after the population increases of the 1980s. Bureau of Land Management (BLM) survey data for the Caprock Wildlife Area in Chaves and Roosevelt counties showed increases through the mid to late 1980s, followed by an abrupt decline in 1989 (Johnson and Smith 1999).

Threats

The major threats to prairie-chickens are conversion of native shrubland to cropland, herbicide-caused conversion of shrubland to grassland, excessive livestock grazing, and drought (Giesen 1998).

Degradation of seasonal habitat.

Livestock grazing is the predominant land use across the species' range in New Mexico and thus plays a major role in determining habitat quality. Grazing that results in insufficient residual grass cover for successful nesting or otherwise lowers recruitment by reducing the availability of good nesting and brood-rearing habitat is considered a threat and may cause population declines (Taylor and Guthery 1980, Applegate and Riley 1998, U.S. Fish and Wildlife Service 1998, Leslie et al. 1999, Mote et al. 1999,

Bidwell et al. 2001, Jamison et al. 2002). In some areas, the spread of mesquite or other drought-tolerant shrubs has altered or reduced the sandsage - grassland or sand shinnery habitats preferred by Lesser Prairie-Chicken. Improper or excessive use of herbicides to control shin oak and improve livestock forage may result in the loss of an important source of food and protective cover and can make treated areas unsuitable for occupancy by Lesser Prairie-Chickens (Giesen 1998, Bidwell et al. 2001).

Habitat Loss and Fragmentation.

Across the range of the species, cropland conversion is the primary factor responsible for the large reductions in population size and habitat area since the 1800s (Crawford 1980, Taylor and Guthrie 1980). Where cropland conversion is occurring, the area of habitat effectively lost may be far greater than the area actually plowed. Landscapes in which more than 37 percent of native rangeland has been lost may be incapable of supporting Lesser Prairie-Chickens, and populations have declined in areas with only 20 percent rangeland conversion (U.S. Fish and Wildlife Service 1998). In Kansas, the species avoided nesting within 300-400 yards of fields with center-pivot irrigation, effectively increasing the impact footprint of agricultural lands (Robel et. al 2004).

Recent declines in the southern portion of the species' range in New Mexico have led to concern over the effects of fragmentation caused by oil exploration and drilling (U.S. Fish and Wildlife Service 2002b). While it is often difficult to describe cause-and-effect linkages between specific sources of fragmentation and eventual population responses, recent studies have found population declines in Oklahoma and New Mexico to be associated with several measures of overall habitat fragmentation, including patch size, edge density, and total rate of landscape change (Woodward et al. 2001, Fuhlendorf et al. 2002). A growing body of evidence suggests that Lesser Prairie-Chickens actively avoid areas of human activity, noise, and proximity to vertical elements (such as trees or power poles) particularly during nesting. A recent study in Kansas showed that Lesser Prairie-Chickens seldom nest within 200 yards of oil or gas wellheads, 400 yards of power lines, 860 yards of improved roads, and 1,370 yards of large structures. The authors calculated that nesting avoidance at these distances would effectively eliminate a large percentage of available habitat over a three-county area (Robel et al. 2004). Because of their avoidance of tall structures, Lesser Prairie-Chickens may also be highly vulnerable to wind power development.

Studies are currently underway to determine if noise from oil drilling may have played a role in the recent abandonment of a number of historically active lek sites in the Carlsbad area. Preliminary data over two years show that inactive lek sites are exposed to higher ambient sound levels than active sites (Hunt and Best 2002). The same study also reports a significantly higher number of operating wells within one mile of inactive than active lek sites.

Direct Disturbance and Mortality.

A number of different influences may result in increased mortality of Lesser Prairie-Chickens or reduced breeding success. Predation on nests, chicks, and adult birds is by far the largest source of mortality for this species. Numerous studies have found higher rates of nest predation on different bird species in fragmented landscapes containing more edge and smaller patch sizes. The introduction of trees, power

lines, or other vertical structures into prairie habitats provides hunting perches for raptors and may indirectly increase raptor predation on Lesser Prairie-Chickens (Bidwell et al. 2001). Fences and power lines may also be a significant cause of direct mortality by collision (Bidwell et al. 2001).

Management Issues and Recommendations

Primary management recommendations include (LPC/SDL Working Group 2005, NMPIF):

- Encourage light, deferred, or rotational grazing systems designed to leave interspersed areas of early and late-stage plant succession, and to meet vegetative standards for grass cover.
- Restrict use of herbicides on shin-oak in Lesser Prairie-Chicken habitat.
- Limit new mineral leasing and development based on mapping and habitat analysis. Key recommendations include deferment of new leases within 1.5 miles of all active lek sites and in adjacent regions of suitable habitat in the species' primary population area.
- Keep wind turbine grids away from existing prairie-chicken populations and potential restoration areas.

Species Conservation Objectives

PIF Objectives

The PIF North American Landbird Conservation Plan places Lesser Prairie-Chicken in the conservation action category Immediate Management Action. It sets a population objective of doubling the current, reduced population over the next 30 years.

NMPIF Objectives

- Increase and/or reestablish populations where possible throughout the historic range.
- Achieve an average 50 leks in the Caprock Wildlife Habitat Management Area with an average 10 booming males per lek.
- Reestablish 10 active leks in Eddy and south Lea counties by 2009.

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