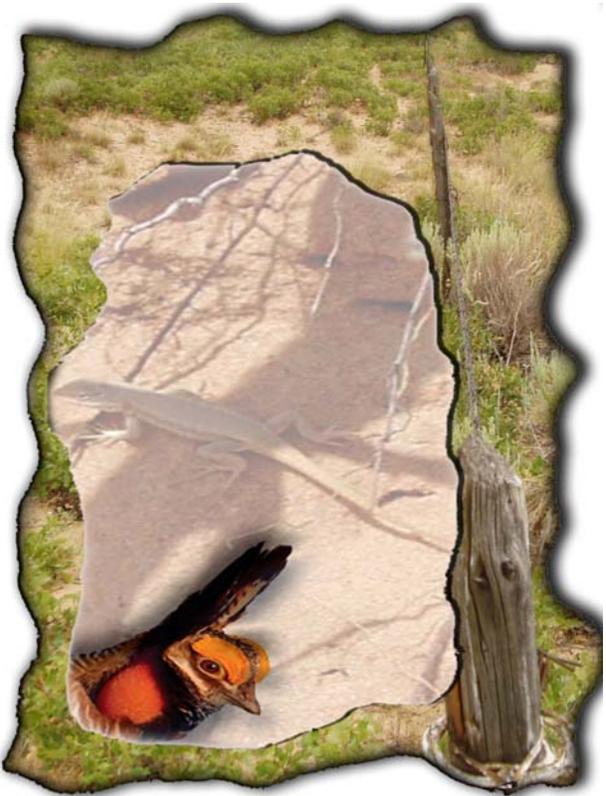


# Appendix 3



APPENDIX 3  
LESSER PRAIRIE-CHICKEN  
AREA OF CRITICAL ENVIRONMENTAL CONCERN  
NOMINATION

# **Lesser Prairie-Chicken (*Tympanuchus pallidicinctus*) Area of Critical Environmental Concern (ACEC)**

A petition to the New Mexico BLM



## *Petitioners*

Forest Guardians

Dr. Jim Bailey

Audubon New Mexico

New Mexico Audubon Council

Animal Protection of New Mexico

Chihuahuan Desert Conservation Alliance

REP Environmental Education Foundation

New Mexico Chapter of Republicans for Environmental Protections

Southwest Environmental Center

Defenders of Wildlife

T & E, Inc.

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Special thanks to T & E, Inc., without whom  
this petition would not have been possible.

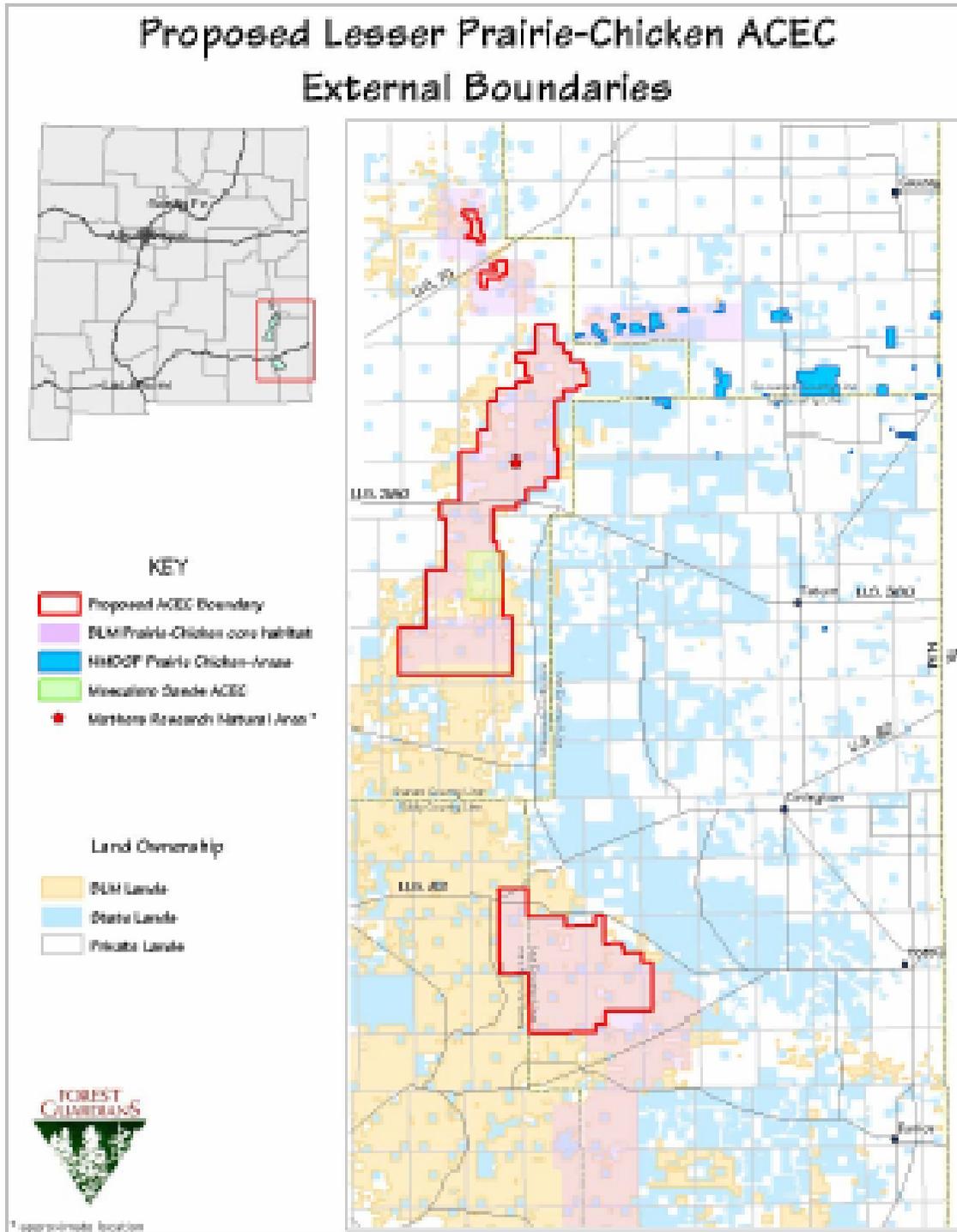
## LESSER PRAIRIE-CHICKEN AREA OF CRITICAL ENVIRONMENTAL CONCERN Justification for Nomination

### **Nomination**

Pursuant to the Federal Land and Policy Management Act (FLPMA) of 1972, 43 U.S.C. '1701, *et seq.*, petitioners hereby petitions the Bureau of Land Management (BLM) to designate the below described BLM administered public lands as an Area of Critical Environmental Concern (ACEC) for the critically imperiled Lesser Prairie-Chicken (*Tympanuchus pallidicinctus*). Petitioners respectfully submit this nomination as an interested party, pursuant to BLM Manual '1617.81B (2000) and section 553(e) and 555(e) of the Administrative Procedures Act, 5 U.S.C. §§ 553(e) *et seq.*, which grants members of the public the right to nominate areas of BLM-administered lands for ACEC designation. The petitioners have identified this area, which we refer to as the proposed Lesser Prairie-Chicken ACEC, as a potential ACEC based on the relevance and importance criteria as outlined in BLM manual 1613. As will be shown, the critically imperiled status of this species requires that the BLM authorize an amendment to the current programmatic land use plan to allow for the designation of the proposed Lesser Prairie-Chicken ACEC.

### **Introduction**

The Federal Land Policy and Management Act (FLPMA) mandates that the BLM manage public lands in a manner that protects environmental quality, including important wildlife habitat, water resources and other ecological values (43 U.S.C. '1701). FLPMA also mandates that, in developing and revising land use plans, the BLM must give priority to the designation and protection of ACECs (43 U.S.C. '1701). In the New Mexico BLM Standards for Livestock Grazing, finalized in January of 2000, the Lesser Prairie-Chicken was given priority as a special status species. In addition, in response to a 1995 petition to list the Lesser Prairie-Chicken under the Endangered Species Act (ESA) the U.S. Fish and Wildlife Service (USFWS) found that the species was warranted for listing as a threatened species under the ESA, but that the species listing was precluded by the need to list other higher-priority species. The "warranted, but precluded" finding established the Lesser Prairie-Chicken as a "candidate species" under the ESA. The USFWS has continued to find the Lesser Prairie-Chicken's listing to be warranted but precluded in every year since the 1998 petition finding. Additionally, in 1999 the director of the New Mexico Department of Game and Fish (NMDGF) made a recommendation to the New Mexico State Game Commission (NMSGC) to list the Lesser Prairie-Chicken as "threatened" under the New Mexico Wildlife Conservation Act. The director's recommendation was never acted upon. Finally, the U.S. Forest Service in Region II lists the Lesser Prairie-Chicken as "sensitive", and the species is listed as "threatened" by the Colorado Division of Wildlife. Therefore, designation of the proposed Lesser Prairie-Chicken ACEC would be a significant partial requirement toward fulfilling the BLM's mandate under FLPMA, as well as under the BLM's policy requirements (BLM Manual '6840.06) to conserve special status species.



**Figure 1. Exterior Boundaries of the proposed Lesser Prairie-Chicken ACEC.** The proposed Lesser Prairie-Chicken ACEC includes 935 km<sup>2</sup> of BLM lands within the indicated boundaries. The proposed ACEC correspond to BLM designated core habitat for the Prairie-Chicken, vegetation and habitat community types and known Prairie-Chicken populations.

## Location and Site Description

The proposed Lesser Prairie-Chicken ACEC is located in a series of adjacent parcels north and south of highway U.S. 82. The southern parcel is in an area administered by the BLM's Carlsbad Field Office and begins just below the 4th Standard Parallel (approximately 33° 24' N), straddling the Eddy and Lea county lines. This area encompasses approximately 388.5 km<sup>2</sup>, 87% of which is BLM Land, with an additional 48.6 km<sup>2</sup> of State and private land. The northern parcels are administered by the BLM's Roswell Field Office, extend northward to the 1st Standard Parallel (approximately 33° 48' N), and are contained entirely within Chaves County. The northern parcels consist of one large area bisected by U.S. 380 and two small areas to the north adjacent to U.S. 70. These areas together encompass approximately 740.6 km<sup>2</sup>, 74% of which is BLM land, with another 194.2 km<sup>2</sup> of State and private land. The proposed ACEC would consist only of the BLM Land within the boundaries (Figure 1).

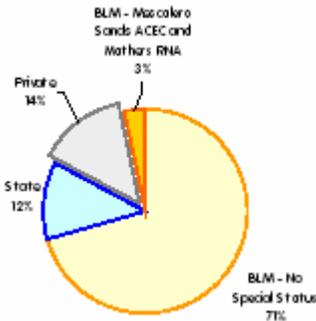
The boundaries of the proposed ACEC are delineated by BLM designated "Core Habitat Areas" for the Lesser Prairie-Chicken, known lek sites and vegetation and habitat composition. The sites are composed of a diversity of habitats required to support stable populations of Lesser Prairie-Chickens, including lekking grounds, nesting habitat, brood rearing habitat and wintering habitat. The principal community type occurring within the boundaries of the proposed ACEC is the shinnery-oak-grassland type, recognized by the U.S. Forest Service as "a rich wildlife habitat" compared to the surrounding vegetation communities, that is in need of study and protection due to the clearing of oak as a land management practice (Peterson and Boyd 1998). The northern parcels of the proposed Lesser Prairie-Chicken ACEC contain the relatively small Mescalero Sands ACEC, a 32 km<sup>2</sup> area characterized by the BLM as a "drifting sands, endemic plant and wildlife community" that itself contains 7.3 km<sup>2</sup> of State Lands and 1.3 km<sup>2</sup> of private land suitable for acquisition (BLM 1997: 2-80). The northern parcels also include the 1.0 km<sup>2</sup> Mathers Research Natural Area (RNA), an area managed so that only "natural ecological changes and limited management activities are allowed", Visual Resource Management (VRM) class I (BLM 1997: 2-66).

The northern parcels of the proposed Lesser Prairie-Chicken ACEC contain some of the highest densities of known active lek sites within New Mexico (Morrissey 1995, BLM 1997, Peterson and Boyd 1998). The northern parcels of the proposed Lesser Prairie-Chicken ACEC are within the core of the remaining Prairie-Chicken habitat in New Mexico (Bailey and Williams 2000, Bailey 2002). The southern parcel of the proposed ACEC contains the remaining majority of the species habitat on public land, as well as a large portion of historical lek sites on public lands in New Mexico (Morrissey 1995, BLM 1997, Peterson and Boyd 1998, Bailey 1999 and 2000). Extirpation within the southern portion of the Lesser Prairie-Chicken range, including the southern parcel of the proposed ACEC, is imminent (Johnson et al. 1999). Given these urgent circumstances, the BLM has an opportunity and a duty under FLPMA to conserve and restore the Lesser Prairie-Chicken within both of these parcels by immediate designation and protection of this habitat as an ACEC.

## Land Ownership Percentages within exterior boundaries of Proposed Lesser Prairie-Chicken ACEC

Northern Parcels

Southern Parcel



**Figure 2. Land ownership of the proposed Lesser Prairie-Chicken ACEC.** The majority of BLM Lands within the core of Lesser Prairie-Chicken habitat currently have no special protections. Within the proposed ACEC's northern parcels only 3% of BLM lands have any special status, and management prescriptions remain contrary to the requirements of Prairie-Chickens. Within the proposed ACEC's southern parcel, no special status lands have been designated. While there are private and state lands within the exterior boundary of the ACEC, only BLM land would be included in the ACEC designation.

### Petitioners

Primary petitioner Forest Guardians is a non-profit conservation organization located in the southwestern United States. Forest Guardians seeks to preserve and restore native wildlands and wildlife in the American Southwest through fundamental reform of public policies and practices. The organization has approximately 2,000 members, most of who reside in New Mexico and Arizona.

Members engage in wildlife viewing, outdoor recreation, and other activities throughout the Southwest and are particularly concerned with the management of public lands that are essential to the recovery of the Lesser Prairie-Chicken. The health and integrity of ecosystems throughout Western public lands is an important to these members' aesthetic, scientific, and recreational enjoyment of public lands. Forest Guardians and its members are particularly concerned with the conservation of the Lesser Prairie-Chicken and the native ecosystems that it depends upon for survival.

Petition author Jon-Paul Oliva is a conservation biologist and graduate (M.S. Evolution & Ecology, 2001) of the University of New Mexico, Albuquerque and has expertise in plant and community ecology. Jon-Paul has over four years of professional experience in researching and studying a variety of threatened, endangered and sensitive plant and animal species. Jon-Paul is also a Geographic Information Systems (GIS) analyst and uses this tool to model habitat and understand landscape level phenomena affecting endangered, threatened and sensitive species.

Jim Bailey, Ph.D. – Jim Bailey is a private citizen and expert biologist on Lesser Prairie-

Chickens with an interest in promoting the conservation and recovery of New Mexico's populations of Lesser Prairie-Chickens.

New Mexico Audubon Council - The New Mexico Audubon Council is an independent non-profit organization representing five local Chapters of the National Audubon Society in New Mexico whose mission is to conserve and restore natural ecosystems, focusing on birds, other wildlife, and their habitats. The New Mexico Audubon Council represents more than 4,000 members in New Mexico. In 1997, the New Mexico Audubon Council led the effort to petition the New Mexico State Department of Game and Fish to study the status of the Lesser Prairie-chicken for possible listing under the New Mexico Wildlife conservation Act. That study resulted in a recommendation that the State Game Commission list the Lesser Prairie-chicken as threatened in New Mexico.

Audubon New Mexico- Audubon New Mexico currently represents 4500 members and 4 local chapters in New Mexico. The mission of Audubon New Mexico is to promote the conservation and restoration of ecosystems, focusing on birds and other wildlife through advocacy, education, stewardship and Chapter support, for the benefit of New Mexico citizens of today and tomorrow. Audubon New Mexico is organized to be a State Field Office of the National Audubon Society in New Mexico. Audubon New Mexico is an organization of members that use education and advocacy to further our interest in providing wildlife conservation in New Mexico. For over 18 years we have worked with Federal, State and Local resource agencies and councils to further our interest in providing protection and conservation of New Mexico's rich wildlife heritage.

Animal Protection of New Mexico - Animal Protection of New Mexico, Inc. (APNM) is a statewide nonprofit organization that advocates the rights of animals by affecting systemic change that results in their humane treatment.

Chihuahuan Desert Conservation Alliance – The Chihuahuan Desert Conservation Alliance (CDCA) was originally started in 1986 as the Carlsbad Concerned Citizens for Responsible Land Management and the name was changed to CDCA in 1995. CDCA is involved in a wide variety of activities including outdoor and public education, treeplanting and soil conservation projects, construction of nesting platforms for herons, monitoring of wild populations of birds and other animals, bird-banding activities, and other conservation activities. CDCA also takes a stand and gets involved on a wide variety of environmental and environmental justice issues.

New Mexico Chapter of Republicans for Environmental Protection (NM-REPAmerica) – NM-REPAmerica consists of New Mexicans from across the state who are committed to restoring the Republican Party to its proud heritage of conservation and care for the environment.

Republicans for Environmental Protections Environmental Education Foundation – The REP Foundation is a tax-exempt charitable institution dedicated to educating and building a conservative constituency for environmental protection.

Southwest Environmental Center - The Southwest Environmental Center is a non-profit organization dedicated to protecting the environment in southern New Mexico and neighboring areas through grassroots education and activism. SWEC's mission is to foster understanding and

concern for the Southwest's natural heritage, and promote action for its protection and restoration.

Defenders of Wildlife - Defenders of Wildlife is dedicated to the protection of all native wild animals and plants in their natural communities. Defenders programs' focus on what scientists consider two of the most serious environmental threats to the planet: the accelerating rate of extinction of species and the associated loss of biological diversity, and habitat alteration and destruction.

T & E, Inc. – T & E, Inc. is a not for profit, private foundation dedicated to the appreciation and preservation of our native flora and fauna. T & E, Inc. has funded in the past and continues to fund research projects devoted to the Lesser Prairie-Chicken and believes there are many other valuable resources that will also benefit from ACEC designation.

## **Biology of the Lesser Prairie-Chicken**

### Habitat and Habitat Use

Current habitat of Lesser Prairie-Chickens in New Mexico is almost entirely contained within the shinnery-oak-grassland community type. This community type is characterized by the shinnery-oak (*Quercus havardii*), which can co-dominate with sand sagebrush (*Artemisia filifolia*) and is mixed with mid and tall grasses that are usually taller than the shinnery-oak itself (Peterson and Boyd 1998). Within the community type the major sub-types in New Mexico consist of; 1) shinnery-oak with sand bluestem and little bluestem, 2) Shinnery-oak lacking bluestem but rich in gramas, dropseed and threeawn grasses and, 3) sandhills, dominated by shinnery-oak with sparse grass cover (Peterson and Boyd 1998). The shinnery-oak communities of eastern New Mexico are found in sandy soils with low amounts of clay, a high soil permeability and very low rates of water erosion. Shinnery-oak is rarely taller than 2 ft. high, but has a disproportionately large underground stem system that serves a vital function in sand and soil stabilization (Peterson and Boyd 1998). The root system of shinnery-oak are usually horizontal within a few feet of the surface, but roots have been reported up to 30 ft. deep where shifting dunes have repeatedly buried and exposed plants, forcing the formation of new roots and shoots (Peterson and Boyd 1998). Shinnery-oak is also a long-lived species, with individual shoots having lifespans of 5-12 years and clones reaching sizes of up to 7,000 m<sup>2</sup>. Shinnery-oak commonly attain ages of hundreds and probably thousands of years (Peterson and Boyd 1998). The longevity of individual clones of shinnery-oak help explain its slow means of reproduction. Plants are almost never known to reproduce by seed, instead relying almost entirely on clonal reproduction. The lateral movement of shinnery-oak into adjacent areas is exceedingly slow, with plants failing to encroach on old fields surrounded by shinnery-oak and left fallow for over 50 years. In the rare cases of shinnery-oak expansion into abandoned fields, the rate of expansion is slow, up to 30 ft. over a period of 50 years (Peterson and Boyd 1998). Although the shinnery-oaks do not reproduce sexually, they do produce large acorn crops. The buds of the shinnery-oak swell in early to late March and the leaves open in April and May. If drought conditions are severe, plants may fail to leaf out in the spring, but may leaf out later in the season if moisture becomes available (Peterson and Boyd 1998). Shinnery oak produce acorn crops approximately every 3 out of 10 years locally, with crops occurring somewhere every year but not more than twice in

five years in a given location (Peterson and Boyd 1998).

Habitat of the Lesser Prairie-Chicken consists of four seasonally used components: lek sites (late February- early May), nesting sites (late April- mid June), brood rearing sites (late May-late July) and wintering sites (Taylor and Guthery 1980b, Davis 1981, Riley et al.1993b, Riley and Davis 1993, USFWS 1998, Giesen 1998, Bailey and Klingel 1998, Applegate and Riley 1998, NRCS 1999).

Lek sites are traditional and are used annually, although sites can be occasionally relocated in response to disturbances such as fire or conversion to agricultural areas (Giesen 1998). Lek sites are used for display purposes and as such are typically found on a locally high area such as a hill or ridge, or a grass flat , Copelin 1963, Taylor and Guthery 1980b, USFWS 1998, Giesen 1998). Lek sites are characterized by a limited amount of low, sparse vegetation, usually grasses (Davis et al. 1981). Probably because of these characteristics, Lesser Prairie-Chicken leks are known to be associated with prairie dog towns, as well as other disturbed areas such as roads or abandoned oil and gas well pads (Davis et al. 1981, Morrissey 1995). Habitat surveys have shown that good Lesser Prairie-Chicken habitat can support approximately 1-2 lek sites per square mile (Morrissey 1995, Bailey 1999).

Males gather on lek sites in early spring, typically in the early morning and at dusk, with display activity peaking in early April (Giesen 1998, USFWS 1998). Males are also known to gather on lek sites during the fall, usually in lower density than during the spring, and breeding has not been reported (Taylor and Guthery 1980b, Giesen 1998). Males utilize vocalizations, called “booming” and posturing to attract females, who may visit lek sites 2-3 days prior to the initiation of mating (Giesen 1998). Food sources during this period of time are primarily plant based and include seeds, leaves, flowers and buds with shinnery-oak leaf galls, catkins leaves and acorns provide 60-70% of the food supply for the birds (Davis et al. 1980, Taylor and Guthery 1980b, Riley et al. 1992, Giesen 1998, Peterson and Boyd 1998, USFWS 1998).

The shinnery-oak-grassland community characterizes nesting habitat within New Mexico, and studies have repeatedly shown that female Lesser Prairie-Chickens prefer nesting habitat where rangeland health is excellent (Copelin 1963, Davis et al. 1979, USFWS 1998, Bailey 1999, Bailey et al. 2000). Successful nests are usually within bluestem clumps, primarily where residual vegetation cover is dense and where bluestem comprises greater than 25% of the vegetative cover (Davis et al. 1981, Giesen 1994). Vegetation height also strongly influences nesting success, with the most successful nests having a range of cover heights of 43-81 cm. with an average of 67 cm. (Riley et al. 1992, Giesen 1994, USFWS 1998). Vegetation density is always greater at nesting sites than in the surrounding rangeland, and is always greater at successful nests than at unsuccessful nests (Riley et al. 1992, Giesen 1994). The basal area of bluestem clumps is also important to nesting success, with successful nests having thicker and wider basal areas than unsuccessful nests (Riley et al. 1992). The regular distribution of suitable bluestem clumps is also important, as isolated patches of suitable nesting habitat provide a reliable target for predators and are correlated with decreasing nest success (USFWS 1998). Additionally, when grass cover is less abundant, Prairie-Chickens may become more dependent on shrub and forb cover for nest sites, resulting in decreased nesting success (Morrissey 1995).

Lesser Prairie-Chickens select a nesting site within approximately 1.8 miles of the lek site (Giesen 1994). Because nesting occurs in early spring before the seasonal growth of bluestem, Prairie-Chickens are highly dependent on the persistence of residual grasses from the previous years for nesting cover and protection from predators (Davis et al. 1979 and 1981, Taylor and Guthery 1980b, Riley et al. 1992, USFWS 1998). Once a nesting site is selected, hens lay an average clutch of 10-12 eggs and the incubation period lasts from 24-26 days after the last egg is laid (Giesen 1998). Food sources during nesting are again primarily seeds, leaves, flowers and buds with shinnery-oak leaf galls, catkins, leaves and acorns providing the majority of the bird's food supply (Davis et al. 1980, Taylor and Guthery 1980b, Riley et al. 1992, Giesen 1998, Peterson and Boyd 1998, USFWS 1998).

Brood rearing habitat within New Mexico is also within the shinnery-oak-grassland community (Davis et al. 1979, Taylor and Guthery 1980b, Giesen 1998, Peterson and Boyd 1998). Brood rearing habitat is characterized by a greater cover of shinnery-oak and forbs than the surrounding areas. Areas of bare ground that provide enough space for the chicks to move freely are essential for successful brood rearing. Hens prefer areas of taller shrub cover than do birds without broods, and the density of grasses is lower and the height of grasses shorter than at nesting sites (Davis et al. 1979, Riley et al. 1992, Riley and Davis 1993). Active sand dunes with shinnery-oak cover are common in brood habitat (Bailey 2000). Prairie-Chickens are more tolerant of mild to moderate disturbance levels, such as fire and grazing, within brood habitat than within nesting habitat (Davis et al. 1979). Good quality brood habitat also provides an abundant supply of insects, which are the main food source for chicks during the summer season (Davis et al. 1980, Taylor and Guthery 1980b, Riley and Davis 1993). The insects consumed by Prairie-Chicken broods are primarily grasshoppers (Acrididae and Tettigoniidae) and treehoppers (Membracidae) which comprise up 60-90% and 30% of the diet, respectively (Davis et al. 1980, Riley and Davis 1993). For adults, insect utilization can approach 55% (Davis et al. 1980). The reliance on green vegetation as a food source decreases during this period to approximately 23%, but the relative proportion of shinnery-oak acorns increases to approximately 21% (Davis et al. 1980).

Autumn and winter habitat within New Mexico is also within the shinnery-oak grassland community, with agricultural fields supplementing the habitat (Giesen 1998, Bailey 1999). Beginning in the autumn, birds of different broods assemble into flocks where they roost in the shinnery-oak-grassland communities (Taylor and Guthery 1980a). Bailey (1999) speculated that although Prairie-Chickens are known to utilize waste grain fields as a supplemental food source, fields far from shinnery-oak cover might attract predators and enhance predation during the autumn-winter season. Reliance on shinnery-oak as a food source is high during this period, with leaves, catkins acorns and insect galls providing the primary constituents of the diet. In the autumn, use of shinnery-oak constitutes between 36-50% of the Prairie-Chicken diet, primarily acorns and insect galls (Crawford and Bolen 1976, Riley et al. 1993). The primary animal component of the Lesser Prairie-Chicken's autumn diet consists of short-horned grasshoppers (Acrididae), which makes up approximately 15% of the food source (Riley et al. 1993). Importantly, Crawford and Bolen's study found that even though waste grain fields were present, autumn food utilization was still primarily shinnery-oak acorns and insect galls, suggesting that Prairie-Chicken utilization of waste grains is minimal, except in the absence of suitable shinnery-oak grassland communities (Crawford and Bolen 1976).

The winter diet of the Lesser Prairie-Chicken is characterized by a decreased utilization of insect food sources and an increased reliance on vegetative food stuffs. Use of shinnery-oak acorns increases dramatically, with one study reporting that acorns comprised 69% of the winter diet (Davis et al. 1979, Riley et al. 1993). Prairie-Chickens also rely on wild buckwheat (*Eriogonum annuum*) as a food source during the winter season, with Riley et al. (1993b) reporting that the grain comprised 15% of the bird's winter diet.

The Lesser Prairie-Chicken relies on a mosaic of varied landscape and community subtypes within the shinnery-oak grassland community as habitat throughout the year (Riley et al. 1993, Bailey 1999). The bird's close association with the shinnery-oak-grassland community type in New Mexico is because this vegetation is critical for both food and cover. The lekking behavior of the Prairie-Chicken is dependent upon the exposed knolls and ridges that characterize lek sites. Nesting and brood rearing phases of Lesser Prairie Chicken reproduction are particularly sensitive to plant community composition, with nesting success being highly correlated with the density and height of bluestem (*Andropogon* spp.) for nest concealment, and brood rearing success with the health of shinnery-oak dominated areas for concealment and as a source of insect food stuffs. It should be noted that Prairie-Chickens are not dependent on free water during any phase of the life cycle, but instead appear to meet their moisture requirements from insects, vegetation and dew formation (Morrissey 1995, Giesen 1998).

## **Geographic Distribution and Abundance**

### Historical

Historical reports suggest that Lesser Prairie-Chickens were locally abundant throughout eastern New-Mexico, the Texas panhandle, western Oklahoma, southwestern Kansas and southeastern Colorado, with small populations possibly existing in northeastern Colorado and extreme northwestern Nebraska (Colvin 1914, Ligon 1927, Bailey 1928, Taylor and Guthery 1980b, USFWS 1998). The approximate total area of this historic distribution was reported to be 358,000 km<sup>2</sup> (Taylor and Guthery 1980b, USFWS 1998).

The historic distribution of the Lesser Prairie-Chicken in eastern New Mexico was widespread and included all or parts of Union, Colfax, Harding, Quay, Guadalupe, De Baca, Curry, Roosevelt, Lea, Chaves and Eddy Counties (Ligon 1927, Bailey 1928). Ligon (1961) reported an 'ancestral' distribution lying east of the Pecos River Valley in a north-south band approximately 75 miles wide. The approximate total area of this historic distribution was reported to be 9864 mi<sup>2</sup> (Bailey and Williams 2000).

The pre-twentieth century abundance of Lesser Prairie-Chickens within their historical range is not precisely known. Estimates varied widely, with one estimate of over two million birds in Texas alone (Litton 1978, U.S.F.W.S. 1995). Bailey and Williams (2000) estimate, perhaps more reliably, that during an undefined period when the maximum historic range was occupied, the total population was roughly 125,000 birds.

While these numbers range widely, the general consensus in the literature is that pre-twentieth century abundance was relatively high but declined considerably after 1920 (Taylor and Guthery

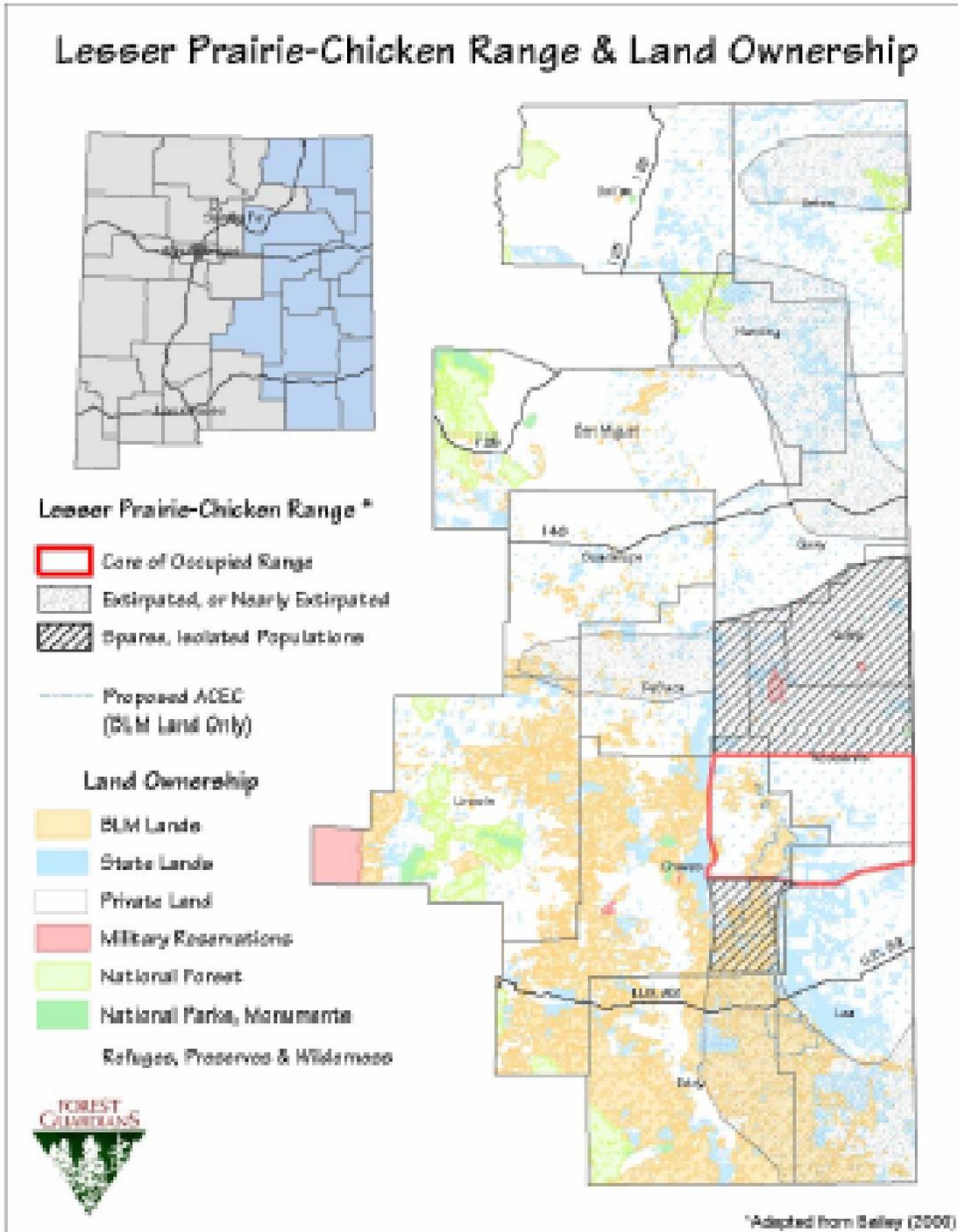
1980b, Applegate and Riley 1998, Giesen 1998, Peterson and Boyd 1998, USFWS 1998, Bailey 1999, Bailey and Williams 1999, NRCS 1999, Giesen 2000, Sullivan et al. 2000, among others). Within New Mexico, population estimates for the years 1949 and 1961 were approximately 40-50,000 birds, and had declined to 8,000-10,000 birds by 1968 (Sands 1968, USFWS 1998). Crawford (1980) estimated the New Mexico population of Lesser Prairie-Chickens in 1979 to be approximately 10,000 birds.

### Current

The distribution of Lesser Prairie-Chickens has been greatly reduced since about 1920, and recent estimates suggest that the species occupies only 8-10% (28,640-35,800 km<sup>2</sup>) of its historic range (Taylor and Guthery 1980b, USFWS 1998, Bailey and Williams 1999, Bailey 2002). Lesser Prairie-Chickens exist today in southeastern Colorado, southcentral Kansas, western Oklahoma, southeastern New Mexico and the Texas panhandle (USFWS 1998). In Colorado, Lesser Prairie-Chickens have been extirpated from three of the six counties that they are once thought to have inhabited, and today are found only in Baca, Prowers and Kiowa Counties. In Kansas, Lesser Prairie-Chickens once occupied 38 counties and today occupy 34. In Oklahoma, Lesser Prairie-Chickens once occupied an estimated range of 10,143 km<sup>2</sup> and today occupy approximately 1,162 km<sup>2</sup>, corresponding to an 89% decrease from historic range size. In Texas, Lesser Prairie-Chickens once occupied an estimated 13,663 km<sup>2</sup> and today occupy approximately 5,732 km<sup>2</sup>, corresponding to a 58% decrease from historic range size (USFWS 1998).

Within New Mexico, Lesser Prairie-Chickens once occupied an estimated 38,085 km<sup>2</sup> and today occupy approximately 16,757 km<sup>2</sup>, corresponding to a 56% decrease from its historic range size (Bailey and Williams 2000). The species is widely considered to be extirpated from the northeastern portion of its historic range, including all of Union, Harding and Quay Counties (USFWS 1998, Bailey and Williams 2000, Bailey 2002). The last confirmed sightings in these areas were from a NMDGF employee in 1993, and a 1998 NMDGF and U.S. Forest Service (USFS) survey of 190 miles of public road in Union County detected no active Prairie-Chicken leks (Bailey 2000). The most recent survey in this area was conducted by the USFS in 2002, with negative results (J. Bailey, personal communication).

The central portion of the Lesser Prairie-Chicken's historic range is home to the remaining "core" populations of Prairie-Chickens in the state (Figure 3). The first comprehensive survey of these areas was conducted in 1998 and 1999 by NMDGF biologists over 17,716 km<sup>2</sup>, with 5,618 km<sup>2</sup> of historic range excluded because of either unsuitable habitat, a lack of basic habitat characteristics or a lack of access (Bailey and Williams 2000). The survey results showed that Prairie-Chicken leks were not detected on 14 of 28 route-transects, in either year (Bailey and Williams 2002). Thirteen of these routes were above 34° N, suggesting these populations in DeBaca and Guadalupe counties are probably nearing extirpation (Bailey and Williams 2000). In contrast, survey data collected by NMDGF north of Highway 380 but south of 34° N have yielded stable numbers in recent years, with 9 out of 11 routes surveyed having at least one active lek in both 2000 and 2001. This area contains the "core" of present day Lesser Prairie-Chicken populations, and corresponds to just 16% of its historical range (Bailey 2002).



**Figure 3. Historic and current range of the Lesser Prairie-Chicken.** Once abundant throughout their range in eastern New Mexico, the Lesser Prairie-Chicken is extirpated from 56% of its former range and persists only as sparse and scattered populations in another 28% of that range. The core of the remaining populations is only 16% of its former range (Bailey and Williams 2000, Bailey 2002).

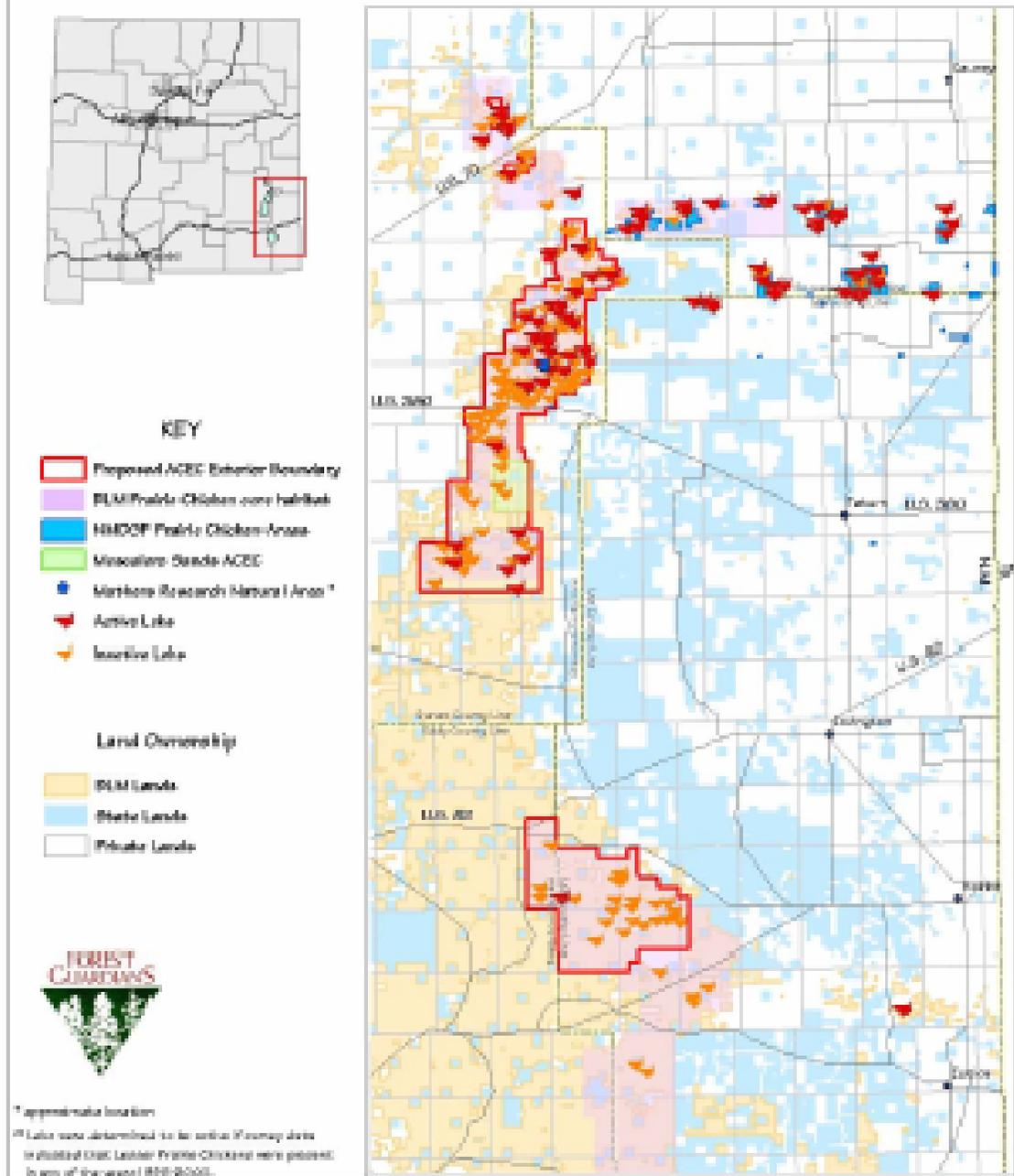
NMDGF survey data indicate that Lesser Prairie-Chickens are nearing extirpation south of Highway 380 in southeast Chaves County. Of the two routes in this area, no leks were detected in 2000 and only one lek on one route was detected in 2001 (Bailey 2002). Similarly, Best (2001) detected no leks in this region on ten routes in 2000 and 2001. BLM surveys of historical lek sites south of Highway 380 have yielded qualitatively similar data, with only 18% of leks surveyed categorized as active, versus 27% active leks north of Highway 380 (Bailey 2002). These data support the conclusion of Bailey and Williams (2000) that Lesser Prairie-Chickens are nearing extirpation south of highway 380 in southeast Chaves County (Bailey 2002).

A significant portion of the unoccupied range lies below 33<sup>0</sup> N latitude, in the extreme southeastern portion of New Mexico including the Querecho Plains. The Carlsbad Field Office of the BLM has approximately 30 historical leks within the Plains. The 1998 NMDGF survey located only one active Prairie-Chicken lek and a subsequent New Mexico Natural Heritage Program (NMNHP) survey found no active leks, as did a 2001 survey (Bailey 1999, Best 2001, Bailey 2002). These populations of the Lesser Prairie-Chicken south of 33<sup>0</sup> N are very close to being extirpated entirely from their historic range (Johnson et al. 1998, Bailey 1999 and 2002).

Today, the Lesser Prairie-Chicken survives in relative abundance in only 16% of its former range in New Mexico (Bailey and Williams 2000). Small and scattered populations persist south of Highway 380 and in parts of DeBaca and Guadalupe counties and comprise another 28% of the species former range (Bailey and Williams 2000). The Lesser Prairie-Chicken is gone from 56% of its historical range in New Mexico (Bailey and Williams 2000). Prairie-Chicken populations of southeastern Chaves County have become sparsely distributed, and may also be in danger of extirpation, as may be the populations above 34<sup>0</sup> N in DeBaca and Guadalupe counties (Bailey 2002). The current distribution of the “core” Lesser Prairie-Chicken population is concentrated in southern Roosevelt, northern Lea and east-central Chaves counties (Figure 3, Bailey 2002).

The New Mexico populations of Lesser Prairie-Chickens are thought to have increased in numbers during the 1980s, before declining to all time lows in the 1990s (Bailey 1998, Bailey and Williams 2000). The NMDGF surveyed hunters to estimate the numbers of birds harvested from 1983-1993 and found that the number of harvested birds declined sharply from a high of 4000 in 1988 to a low of 244 birds in 1993 (Morrissey 1995, Bailey and Williams 2000). Survey results from the BLM Caprock Wildlife Area by both BLM and NMNHP biologists have shown that Prairie-Chicken numbers in this management area have declined from population counts recorded in the 1971-1981 period. Morrissey reported that the estimated population within the Caprock Wildlife Area declined from 2600 in 1983 to 935 by 1995 (Morrissey 1995). Recent data collected within the Caprock Wildlife Area north of Highway 380 indicate that the populations in this area may have stabilized, with active leks/lek site visited being 0.18 in 2000, 0.25 in 2001 and 0.26 in 2002 (J. Bailey, personal communication). Data from the Roswell field office for 2002 also supports this conclusion. BLM personnel surveyed 34 active leks with an estimated 365 birds, with the number of active leks in the period 1999-2002 increasing from 16-34 (Davis 2002). This trend of population stabilization is encouraging, but the numbers are still far below the population levels of the 1970's, a period with comparable moisture.

## Active and Inactive Lesser Prairie-Chicken Lek Sites 1998-2000\*



**Figure 4. Active and Inactive Lek Sites, 1998-2000.** The number of active lek sites in east-central and southeastern New Mexico has declined throughout the 1990s to all-time lows, particularly in the areassouth of U.S. 380.

Additional survey data from BLM biologists collected in west-central Lea County on lands managed by the Carlsbad Field Office (CFO) during the period 1985-1998 have shown even more dramatic declines in Prairie-Chicken populations. These surveys reported a high of 160 birds on 20 leks in 1987, a figure which by 1998 had declined to only six birds on one active lek (Figure 5) and by 2001 had declined to only two birds on one active lek (Bailey 2002). CFO personnel reported one active lek in 2002 with seven males, northeast of Eunice (Davis 2002). The CFO personnel also audibly detected Lesser Prairie-Chickens near an historic lek site in 2002 (Davis 2002).

Data reporting reproductive success supports the conclusions of survey data suggesting that Lesser Prairie-Chicken population trends are declining. Age ratios (juveniles/hen) for the period 1958-1968 averaged 3.7 juveniles/hen, but had declined to an average of 0.65 juveniles/hen in 1989 and 0.59 juveniles/hen in 1995 (Bailey 1999).

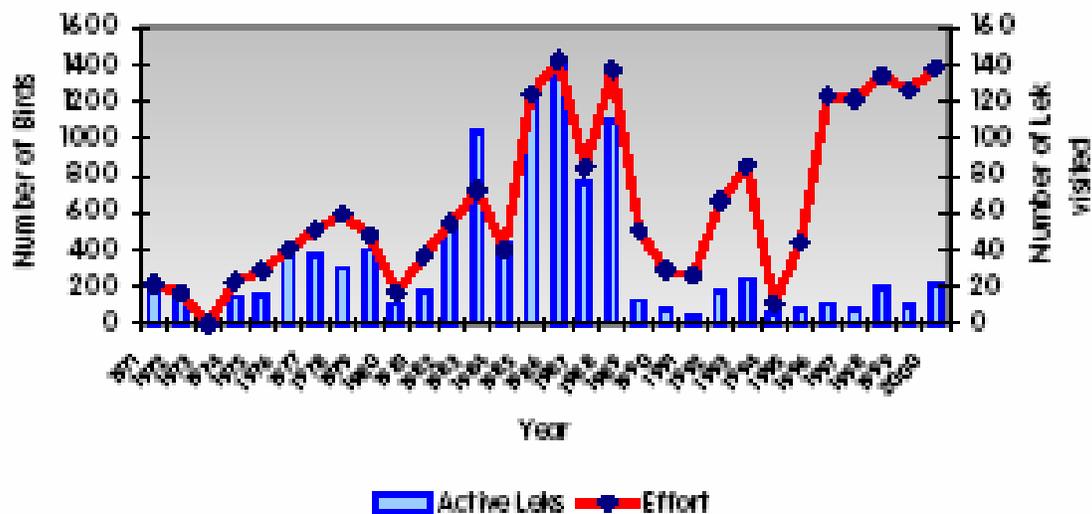
Current data indicate that Prairie-Chicken abundance is most stable on Prairie-Chicken Areas (PCAs) managed by the NMDGF. Surveys of 10 of these sites have reported low but stable or increasing population numbers for the years 1996-1998. Active numbers of leks in these areas increased from 11 in 1996 to 32 in 1998, as did the estimated number of birds (29 in 1996 and 181 in 1998) (Johnson et al. 1998). The most recent data from the PCAs show this trend continuing. Survey data from 2002 found a total of 132 active leks, with an estimated 533 birds (Davis 2002). In contrast, NMDGF surveys on randomly located roadside routes in east-central New Mexico during 1998-2002 suggest declining overall populations, although the trend is not statistically significant (Davis 2002). This evidence suggests the effectiveness of grazing exclosures in affecting the recovery of Lesser Prairie-Chicken populations. However, the PCAs in this area are small and isolated patches of habitat totaling just 87.9 km<sup>2</sup> (figure 1).

Based on these data, Lesser Prairie-Chickens have been extirpated from their historic range in northern New Mexico and nearly extirpated from their historic range south of 33<sup>o</sup> N. They persist in sparse and isolated populations in Curry and north Roosevelt County and in southeast Chaves County. Thus the remaining “core” populations of Lesser Prairie-Chickens in New Mexico occupy only 16% of the species historic range, and are found within south Roosevelt and north Lea counties as well as east-central Chaves County, on private lands, BLM lands including part of the Caprock Wildlife Area, and NMDGF PCAs (Bailey 2002).

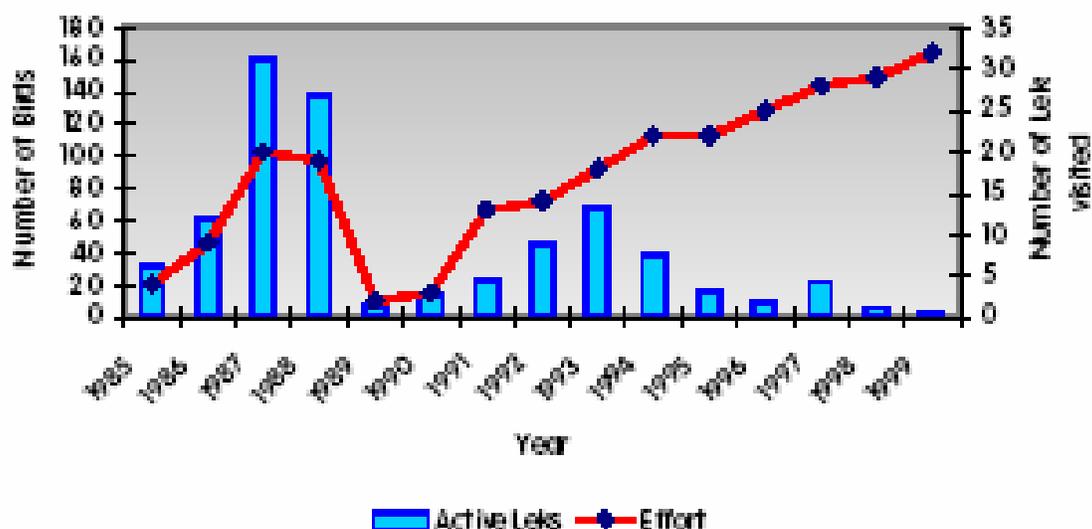
## **Threats**

The Lesser Prairie-Chicken populations in east-central and southeastern New Mexico face a variety of both natural and human caused threats. The major threats to Prairie-Chicken populations include drought, degradation of habitat caused by livestock grazing, habitat loss and habitat fragmentation, oil and gas development, control of shinnery oak through the use of herbicides, rangeland conversion for other uses, and a lack of adequate protections. The majority of the threats to the Lesser Prairie-Chicken intensify as the local populations become smaller and more isolated. Likewise, the effects of drought are multiplicative when occurring simultaneously with those of livestock grazing and other habitat degradation. The following narrative will outline the major impacts of these threats, as well as their interactive effects, on Lesser Prairie-Chicken populations.

### Roswell Resource Area Prairie-Chicken Population Summary



### Carlsbad Resource Area Prairie-Chicken Population Summary



**Figure 5. Population trends of BLM Lesser Prairie-Chickens.** Populations of Lesser Prairie-Chickens, as estimated by lek surveys, have been steadily declining. Populations of both the Roswell and Carlsbad Resource areas have hit unprecedented lows in the 1990s and early 2000s, despite the fact that survey effort was higher than ever. From Smith et al. 1998.

## Drought

Drought is a recurring phenomenon within the geographic range of the Lesser Prairie-Chicken in New Mexico. Even normal precipitation events are sporadic and typically localized. Periods of below average precipitation can have even more severe impacts when interacting with the effects of livestock grazing and other human disturbances. There have been periods of major drought recorded in these areas during the 1930s, 1950s and 1990s (Merchant 1982, Morrissey 1995, Bailey 1999). Bailey (1999) summarized the effects of the most recent drought of the 1990s on the prognosis for survival of the Lesser Prairie-Chickens. Using data from precipitation records, he concluded that the 1990s droughts were not as severe as those of the earlier twentieth century. The dramatic declines seen in Prairie-Chicken population numbers were the result of an interaction of drought with other factors, primarily habitat fragmentation, habitat degradation and livestock grazing. In east-central and southeastern New Mexico, within the current range of the Lesser Prairie-Chicken, forage demand is high, and grazing pressure continues to be high, even during periods of drought. As habitat fragmentation and population isolation increases, the impact of stochastic events like drought on the survival of Lesser Prairie-Chickens becomes more severe (Merchant 1982). Such negative interactive phenomena are well known from population biology studies of wide-ranging organisms (Brussard and Gilpin 1989, Soule et al. 1992, Bolger et al. 1997). Since drought affects the growth of vegetation, and spring and summer droughts can reduce the amount of grass cover, drought has the potential to result in decreased nesting success and increased predation on Lesser Prairie-Chickens. Because Prairie-Chickens depend on residual vegetative cover for nesting habitat, the effects of drought will be most severe in the following year to two years, during the nesting period. In fact, Bailey (1999) reported a weak correlation between precipitation occurring 16-28 months prior to nesting surveys and measured Prairie-Chicken abundance (lek surveys), as did Smith and Johnson (1998). Merchant (1982) also found similar depressive effects of drought on factors affecting Lesser Prairie-Chicken survival, including decreased number of nesting attempts, decreased nesting success, lower brood sizes and greatly reduced spring-summer survival rates of adult female Lesser Prairie-Chickens.

## Livestock grazing

When periods of drought coincide with intense livestock grazing, grass cover may be reduced substantially for a period of years, resulting in increased predation and mortality, and decreased nesting success as compared to the effects of drought alone (Merchant 1982). In addition, grazing results in the decrease of Prairie-Chicken food plants and modification of the plant communities away from grasses and towards forbs and shrubs and short grass rangeland pioneering communities (Litton et al. 1994). Lesser Prairie-Chickens have either disappeared or have been reduced severely in numbers where Prairie-Chicken habitat has been excessively grazed (USFWS 1998). Jackson and DeArment (1963) found that the interactive effect of drought and livestock grazing was the single most important factor affecting the recovery of Lesser Prairie-Chicken populations in west Texas following periods of drought. The dependence of Lesser Prairie-Chickens on the narrowly occurring shinnery-oak-grassland community makes the species particularly sensitive to over utilization of the grass component of the community by livestock (USFWS 1998). Effects of grazing intensity on the soil permeability and soil moisture content have been documented (Crawley 1997, Taddese et al. 2002). Soil productivity is

inversely related to grazing pressure in arid ecosystems, with ungrazed areas retaining soil moisture longer, resulting in higher grass production than in heavily grazed areas (Crawley 1997, Brown and Archer 1999). This effect is expected to intensify during periods of drought when grazing pressure remains constant (USFWS 1998). In addition, the over-utilization of grass cover by livestock reduces both grass height and the homogeneity of clump distribution on the landscape, factors which have been repeatedly shown to affect nesting success, presumably through increased predation (Taylor and Guthery 1980b, Riley et al. 1992, USFWS 1998, Bailey 1999). Recent research on grazed pasture areas in Lesser Prairie-Chicken habitat has documented the absence of senescent grasses that provide optimal nest sites (Johnson et al. 1998). The importance of these findings cannot be understated. The reliance of Lesser Prairie-Chickens on residual tall grasses for quality nesting cover means that grasses grown in July through mid-September need to survive ungrazed and untrampled for 9-10 months to provide the necessary quality nesting habitat. Grazing during this period, even relatively light intensity grazing, is likely to adversely affect the Lesser Prairie-Chicken's nesting success and should be avoided wherever Prairie-Chickens are important fauna (J. Bailey, personal communication). The 1997 Roswell Resource Area Proposed Management Plan/Final Environmental Impact Statement, approved in the October 1997 Record of Decision, while expressly authorizing livestock grazing within the Mescalero Sands ACEC, recognizes that "this (livestock grazing) could negatively influence or impair natural ecological processes meant to be protected..." (BLM 1997). In addition, the NRCS continues to subsidize fence and water development costs on private lands in the adjacent areas to promote livestock grazing. This practice results in the degradation of Lesser Prairie-Chicken habitat on private lands, and increases the importance of BLM Land as a habitat refuge for the Lesser Prairie-Chicken (J. Bailey, personal communication).

#### Habitat Loss and Landscape fragmentation

Several factors have contributed to loss of Prairie-Chicken habitat and habitat fragmentation, including conversion of rangeland to agricultural fields, loss of open rangeland to land development and oil and gas exploration and drilling activities, livestock grazing and tebuthiuron application. The initial conversion of rangeland to crop lands in the later nineteenth and early twentieth centuries did not apparently negatively impact Lesser Prairie-Chicken population numbers, and the widely spaced fields were a small enough component of the habitat that they actually increased food supplies for the species (Crawford 1980, Bailey 1999). After this early period, continuing conversion of rangeland to other uses began to detrimentally affect Prairie-Chicken populations (Copelin 1963, Jackson and DeArment 1963, Crawford 1974, Crawford and Bolen 1976). Today, Prairie-Chickens are entirely gone from areas where more than 37% of the rangeland has been converted to other uses, and have declined from areas where more than 20% of the land has been converted (Copelin 1963, Crawford 1974). While much of the rangeland within the historic range of the Lesser Prairie-Chicken in New Mexico has not been converted to cropland, these figures are important because 59% of the historic Prairie-Chicken range is privately owned and, as such, has little or no federal or state protections (Bailey 1999).

The BLM reported on the amount of habitat disturbed or lost solely to right-of-way activities, primarily roads, within five townships managed by the Carlsbad Field Office. The minimum loss of habitat was 1.2 km<sup>2</sup> over a total of 99.4 km and the maximum was 3.75 km<sup>2</sup> over a total of 322.5 km., with an average of 2.5 km<sup>2</sup> of habitat lost over an average 220.5 km. per township

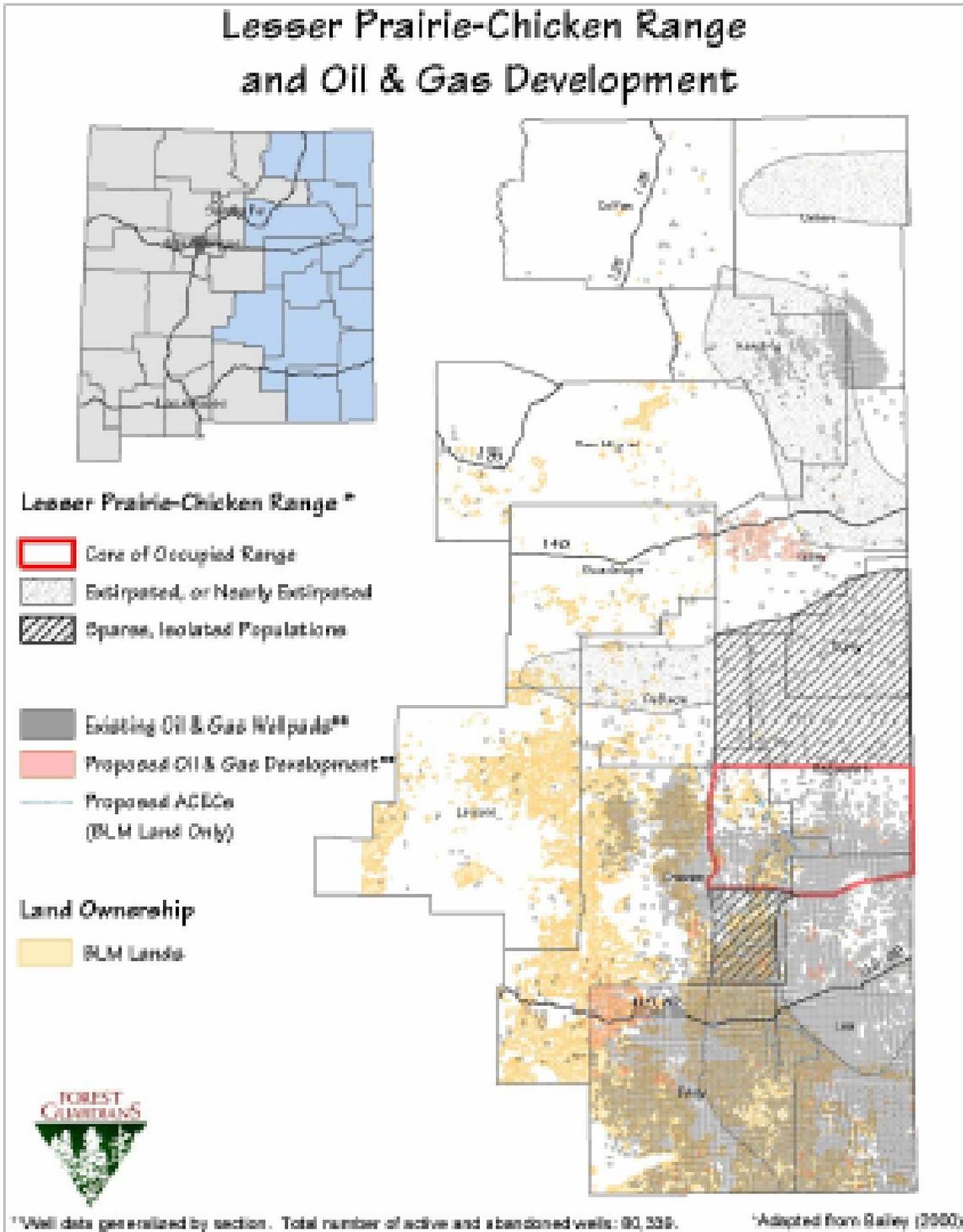
(BLM 1994: 3-31). It is important to note that this average loss of almost 3% of the remaining habitat includes only 5 of the approximately 30 townships that contain the BLM's "core Prairie-Chicken habitat", and *does not* include habitat loss due to oil and gas well pads, land conversion, use of tebuthiuron or livestock grazing. The report concluded:

"The cumulative loss of habitat within occupied Lesser Prairie-Chicken range is a major limiting factor in the management of the population and to their overall population dynamics..." (BLM 1994: 3-31).

Habitat fragmentation is a result of the same processes that produce habitat loss, but is accompanied by a separate set of effects on native species. Habitat fragmentation leads to the isolation of populations, a factor that limits genetic dispersal and increases the sensitivity of small populations to stochastic events such as drought and fire (Brussard and Gilpin 1989, Soule et al. 1992, Bolger et al. 1997). Small and isolated populations may suffer from inbreeding depression and genetic drift as a result of reduced genetic variability (Westemeier et al. 1998). In a related phenomenon, fragmentation of habitat also creates barriers to population dispersion and colonization, as well as restricting males' abilities to find mates, leading to a loss of reproductive potential (Morrissey 1995). Habitat fragmentation can also lead to the partitioning of habitat patches that are too small to contain an individual's home range (USFWS 1998). Such small patches may not contain the full range of habitat sub-types necessary to support Lesser Prairie-Chicken mating, nesting, brood rearing and over-wintering requirements. Based on Crawford and Bolen (1976) and Copelin (1963), Bailey (1999) reported that a minimum area of 31 km<sup>2</sup>, with at least 63% rangeland is necessary to support a stable Lesser Prairie-Chicken population. Average individual female non-nesting home range size is 2.31 km<sup>2</sup>, and the average individual female nesting home range size is 0.92 km<sup>2</sup> (Riley et al. 1994).

### Oil & Gas Development

One widespread land conversion phenomenon that has been taking place on public lands since the second half of the nineteenth century is the conversion of rangeland for oil and gas well pads and associated facilities, roads and pipelines (Figure 5). Bailey reported an average of 16,187 m<sup>2</sup> of land required for an oil or gas well pad, although the number varied widely (1999). The roads created for oil and gas activities are known to attract off road vehicle users, a factor which may lead to further habitat degradation (Bailey 1999). An extensive network of above ground power lines and other support structures has also been erected to provide power to the well pad machinery (Figure 5). The effect of this infrastructure development has been to provide nesting, roosting and foraging sites to ravens (nest predators) and other predatory birds (e.g. Red-tailed Hawk, Great Horned Owl) that would not commonly occur in the shinnery-oak-grassland community (Smith, personal communication). In addition to the effect of oil and gas development on habitat loss and predator populations, there is strong anecdotal evidence that the noise from these activities disrupts Prairie-Chicken lekking behavior, further affecting reproduction success and decreasing usable habitat (Smith et al. 1998). In one study, in the extreme southeastern portion of the historic New Mexico range, only one of 29 historic leks was found to be active, with oil pump noise being moderate to high at 45% of the sites and low at 28% of the sites (Smith et al. 1998). The authors concluded that significant noise pollution from oil and gas well pad operations may be playing a role in extirpating the Lesser Prairie-Chickens



**Figure 6. Distribution of Oil and Gas well pads and infrastructure.** Lesser Prairie-Chicken habitat in the east-central and south-eastern portions of the bird's range in New Mexico has been disturbed by over 80,000 oil and gas well pads and accompanying infrastructure.

from areas south of 33° N through interference with the male vocalizations and attraction of mates during the lekking season. A recent report by researcher Best (2001) recommended the removal of restrictions on oil and gas development in the Carlsbad Resource Area, in part based on the misconception that Lesser Prairie-Chickens never consistently occupied the area south of highway 380. The report contains a number of faulty assumptions too lengthy to review here, but the purpose of the report is clearly to endorse the position of the petroleum industry, that areas where Lesser Prairie-Chickens have been extirpated should be opened to oil and gas activities. This critique has been supported by a number of independent reviewers, including reviewers from the New Mexico Natural Heritage Program and the Wildlife Management Institute (Johnson 2001 unpublished, Carpenter and Riley 2001 unpublished). The study fails to recommend sound habitat management procedures that would allow for the recovery and re-colonization of birds back into areas of historical occupancy. A few important critiques of the document include; 1) a failure to review the majority of Lesser Prairie-Chicken grey literature, a significant source of information for this species, 2) a failure to consult recognized historical reports from widely cited ornithologists, including F.M. Bailey and J. Ligon 3) an erroneous assertion that Prairie-Chickens never permanently occupied areas south of highway 380 and, 4) incorrect reporting on historical lek activity, including the number of active leks south of highway 380 discovered by BLM biologists in the years 1998-2001, historical lek records between US 82 and the Eddy-Chaves County line, and historical lek records south of US 62-180 (Johnson 2001, unpublished). In recognition of the negative impacts of oil and gas development on the Lesser Prairie-Chicken, the BLM does not currently allow new drilling within 200 m. of a lek site, with certain exceptions. However, the Fish and Wildlife Service (2001) has reported that current restrictions on new oil and gas drilling within 200 m. of a lek site are inadequate to protect the species nesting habitat, because Prairie-Chickens are known to nest within a 3 km. radius of leks.

### Applications of Tebuthiuron

In addition to the detrimental effects of grazing noted above, a significant additional adverse effect is the application of tebuthiuron to remove shinnery-oak (Morrissey 1995, Peterson and Boyd 1998, Bailey 1999). This form of land conversion has been widely used by the livestock industry, as well as federal and state land managers to convert shinnery-oak rangelands to grasslands for use by cattle. Jackson and DeArment (1963) found that the application of herbicides was a primary factor limiting the recovery of Prairie-Chicken populations. The authors documented a decrease in Prairie-Chicken numbers the year following application of herbicides, concomitant with a 25% decrease in shinnery-oak cover and a total cessation of acorn production for two years following the application. The importance of shinnery-oak for cover and as a food source has already been described in detail above. In addition, the sandy soils in which Shinnery-oak are found are subject to very high rates of wind erosion. The soil stabilization characteristics of shinnery-oak make it important in natural erosion control, a factor that alone should preclude its widespread removal (R. Peterson, personal communication). Shinnery-oak rarely reproduces sexually, relying primarily on vegetative reproduction to persist (Peterson and Boyd 1998). Historical reports document the failure of shinnery-oak to expand into old fields, even after fifty years and even when the fields are surrounded by mature stands of shinnery-oak (Peterson and Boyd 1998). Therefore, the application of tebuthiuron in shinnery-oak-grassland communities is particularly detrimental to Prairie-Chickens because shinnery-oak

removal is virtually permanent (Peterson and Boyd 1998). Peterson reported that the BLM has applied tebuthiuron to over 404.7 km<sup>2</sup> in east-central and south-eastern New Mexico. Although the BLM halted application of herbicides on the Caprock Management Area beginning at its inception in the 1960s, brush control with tebuthiuron resumed prior to 1984, despite the fact that the BLM's Roswell Area Biologist expressed concern that the use of tebuthiuron may be harming Lesser Prairie-Chicken populations (Morrissey 1995).

A recent BLM proposal to use Tebuthiuron on the Bogle-Vest Camp Allotment in Chaves County, ostensibly for the benefit of the Lesser Prairie-Chicken, shows that the BLM still fails to acknowledge the detrimental effects of Tebuthiuron application on the shinnery-oak-grassland community and the Lesser Prairie-Chicken. The proposed Tebuthiuron application would impact 18.6 km<sup>2</sup> of the total 40.5 km<sup>2</sup> of shinnery (46%) within the allotment. Thus, almost half of the existing community will be affected. The application area is based on the existing BLM guidelines that call for tebuthiuron treatment in areas where the relative density of shinnery oak is greater than 40%, a methodology that is flawed. Because the absolute density of oak is not specified, an area may have very little vegetation at all, but if oak comprises greater than 40% of the relative density of the vegetation, tebuthiuron may be applied (Bailey 1999). The effect of even 'light' tebuthiuron application in halting acorn production in subsequent years has already been addressed. The Environmental Assessment (EA) for the proposed project takes for granted that the proposed action is needed to enhance wildlife habitat, but fails to demonstrate how the proposed action will do so.

### Predation

Prairie-chickens are known to have a variety of natural predators within their range in New Mexico. Known Prairie-Chicken predators include coyote, fox, raccoon, snakes and raptors. Because of their large clutch sizes and ground nesting habits, Prairie-Chickens are especially vulnerable to nest predation. The impacts of predators upon Lesser Prairie-Chicken numbers depend on the predator / prey ratio and also on the quality of Prairie-Chicken habitat as it relates to escape cover (Bailey 1999). As habitat becomes degraded by factors such as grazing and brush eradication with tebuthiuron, escape cover quality is also degraded and Prairie-Chickens become more susceptible to predation.

### Lack of Adequate Protections

Within New Mexico, the Lesser Prairie-Chicken has state protected status in name only. The Lesser Prairie-Chicken is listed in the state Game Code as a 'protected species' and currently the hunting season on the bird is closed. U.S. Forest Service managed land in New Mexico does not afford the Lesser Prairie-Chicken any special protective status (Morrissey 1995). The U.S. Fish and Wildlife Service has declined statutory protection of this species under the ESA, although the agency admits it warrants listing (USFWS 1998). The New Mexico State Land Office (SLO) holds 21% of the historic range lands of the Lesser Prairie-Chicken. Although the SLO is currently undergoing an internal restructuring to allow for the integration of land management for native flora and fauna, its primary mandate is to generate revenue for state beneficiary institutions (Bailey 1999). As such, the SLO provides no current protections for the Lesser Prairie-Chicken. The New Mexico Department of Game and Fish manages over 85 km<sup>2</sup> on 29

PCAs in Roosevelt, De Baca and Lea Counties. Bailey reported that habitat on at least two of the PCAs has been degraded by careless oil and gas development, and that several of the areas are not completely fenced to exclude livestock and trespass cattle and fence repair continues to be a problem (1999, J. Bailey, personal communication). Additionally, these small managed areas are probably not adequate to maintain diverse populations of Lesser Prairie-Chickens in the face of the continued threats to the species throughout its range.

The BLM in New Mexico has done extensive monitoring of Lesser Prairie-Chickens in recent decades (Bailey 1999). The BLM's response to threats facing the Lesser Prairie-Chicken cannot be underestimated, as it controls 19% of the overall historic range and 53% of the historic range of the species in southeastern New Mexico (Bailey 1999). The BLM Roswell Field Office Management Plan / EIS (RMP) restricts oil and gas activities during the mating season in recognition of the probable detrimental effects of oil and gas noise on Prairie-Chicken mating success (RMP AP3-5). Additionally, the BLM will not allow new drilling within 200 m. of a lek site, with certain exceptions. However, the Fish and Wildlife Service (2001) has reported that current restrictions on new oil and gas drilling within 200 m. of a lek are inadequate to protect the species nesting habitat, because Prairie-Chickens are known to nest within a 3 km. radius of leks.

The RMP also commits to avoiding core Prairie-Chicken areas when locating rights-of-way and recognizes Prairie-Chicken needs in defining the BLM's objectives for shinnery-oak-dune communities, RMP 2-71 and RMP 2-47, respectively (Bailey 1999). Unfortunately, BLM guidelines for application of tebuthiuron are still inadequate. The RMP calls for chemical control of shinnery-oak only in areas where oak is greater than 40% of the vegetative community. However, the minimum size area that may be measured for treatment is not specified and neither is the absolute density of oak having greater than 40% of the vegetative composition. Therefore, an area may have very little vegetation at all, but if oak comprises greater than 40% of the relative density of the vegetation, tebuthiuron may be applied (Bailey 1999).

In 1979 the BLM committed to constructing 21 exclosures of 0.08-0.6 km<sup>2</sup> each to provide nesting habitat for the Lesser Prairie-Chicken, a commitment that was never acted upon and finally rescinded in 1984 (Bailey 1999). The BLM also supported the treatment of 404.7 km<sup>2</sup> of shinnery-oak with tebuthiuron during the period 1984-1993 despite objections raised by the NMDGF. Finally, the BLM was to have initiated a study of Prairie-Chicken populations in 1995, but the study was canceled due to budget cuts (Morrissey 1995). The BLM established standards for livestock grazing in January of 2000 and a final Record of Decision was released in 2001, listing the Lesser Prairie-Chicken as a special status species and outlining the prescription for management. However, the management prescription does not recognize the necessity of residual vegetation as wildlife cover, or as nesting cover for the Lesser Prairie-Chicken (BLM 2000, BLM 2001).

Importantly, re-introductions of Prairie-Chickens have been tried over a dozen times, with no success (Giesen 1998 and 2000). Wild Lesser Prairie-Chickens have been translocated in New Mexico and Colorado to areas of the species' historical range where it had been extirpated. Although the normal movements of birds are confined to 3-4 km. of lek sites, with occasional reports of flocks traveling as far as 40 km., translocated birds have traveled hundreds of km. to

return to their points of capture (Taylor and Guthery 1980a).

## **ACEC Criteria**

To be nominated, potential ACECs must meet relevance and importance criteria as outlined in BLM manual 1613. The following narrative will detail the relevance and importance of the proposed Lesser Prairie-Chicken ACEC.

### Relevance

The proposed Lesser Prairie-Chicken ACEC meets, at a minimum, three of the relevance criteria as outlined in the BLM Manual 1613 (Criteria 1, 2, and 3). First, the area contains “a significant historical, cultural or scenic value” (Criterion 1). The proposed Lesser Prairie-Chicken ACEC contains a significant historical value in that it is home to a once wide-ranging bird species that has co-evolved with the shinnery-oak grassland ecosystem of eastern New Mexico. Ample historical evidence exists to document the impact of these once abundant birds and their habitat on the historical communities of east-central and southeastern New Mexico (Ligon 1927, Colvin 1914, Ligon 1927, Peterson and Boyd 1998). Colvin (1914) reported that “flocks of 500 or more” birds gathered to feed on the waste grains of the earliest agricultural fields that were converted from the native shrub-grasslands. Writing of the shinnery-oak-grassland community type, Josiah Gregg remarked in 1844:

There was not a drop of water to be found... An immense sand-plain... being entirely barren of vegetation in some places, while others were completely converted with a extraordinary diminutive growth which has been called *shin-oak*... heavily laden with acorns... (from Peterson and Boyd 1998).

Today, both the once ubiquitous Lesser Prairie-Chicken and the shinnery-oak grasslands they inhabit are dwindling due to land conversion, brush control, livestock grazing and oil and gas development (Copelin 1963, Jackson and DeArment 1963, Crawford 1974, Crawford and Bolen 1976, Taylor and Guthery 1980b, Riley et al. 1992, USFWS 1998, Bailey 1999). The establishment of the proposed Lesser Prairie-Chicken ACEC would help to ensure the preservation of this historical and culturally valuable component of the short-grass prairie of east-central and southeastern New Mexico.

Second, the proposed Lesser Prairie-Chicken ACEC is “a fish and wildlife resource” (Criterion 2). The area includes habitat for many threatened, endangered and sensitive species of wildlife including the Black-tailed Prairie Dog and the Sand Dune Lizard, each of which currently merit listing under the ESA (Table 1). A complete list of shinnery-oak grassland community associates is included in Appendix A.

**Table 1. Sensitive species, in addition to the Lesser Prairie-Chicken, within the proposed ACEC.**  
Source: NMENHP NHIS database.

Species	Federal Listing?	State Listing?	ABI State Rank?	ABI Global Rank?	Sensitive?
Baird's Sparrow ( <i>Ammodramus bairdi</i> )	N	Threatened	S2N	G4	FWS
Ferruginous Hawk ( <i>Buteo regalis</i> )	N	N	S2B,S4N	G4	FWS
Western Burrowing Owl ( <i>Athene cunicularia hyzaron</i> )	N	N	S4B,S4N	G4TU	FWS
Sweet Fox ( <i>Palpeus selen</i> )	N	N	S2	G3	USFS
Arizona Black-Tailed Prairie Dog ( <i>Cynomys ludovicianus arizonensis</i> ) <sup>a</sup>	Candidate	N	S2	G4	N
Sand Dune Lizard ( <i>Sceloporus arizonae</i> )	Candidate	Threatened	S1	G2	FWS USFS
Texas Horned Lizard ( <i>Phrynosoma cornutum</i> )	N	N	S4	G-05	FWS
White-tailed Deer <i>Odocoileus virginianus texana</i>	N	Sensitive	S4	G5	N

<sup>a</sup> Some question still exists about the possible subspecific status of certain populations, especially that in the Tularosa Basin of southern New Mexico (Hubbard 1992). However, the full species is itself a candidate for ESA listing (57 Fed. Reg. 40637-40679 (June 13, 1992)).

**Baird's Sparrow** – The Baird's Sparrow is an endemic species of the northern Great Plains that winters in southern New Mexico, south-eastern Arizona, western Texas and Northern Mexico (<http://mountain-prairie.fws.gov/bairdssparrow/facts.htm>). The Baird's Sparrow prefers taller to mixed grass prairie habitat. The bird exhibits little site fidelity from season to season, being found primarily where rangeland conditions are very good to excellent. Baird's sparrow populations have declined throughout the species range due to habitat loss from livestock grazing of grasslands and the conversion of native prairie and grasslands to agricultural lands (<http://mountainprairie.fws.gov/bairdssparrow/facts.htm>). The nomadic nature of the Baird's Sparrow suggests that the species will become increasingly more rare in southeastern New Mexico as long as the shinnery-oak-grassland community continues to be degraded by livestock grazing and conversion to other uses.

**Ferruginous Hawk** – The ferruginous hawk is found in open habitats such as grasslands, shrubsteppes, shrublands, deserts, and the outer edges of pinyon-pine forests throughout western North America (<http://arnica.csustan.edu/esrpp/fh.htm>). The birds are common in New Mexico, including the shinnery-oak-grassland community of south-central and southeastern New Mexico throughout the winter months. Ferruginous hawks depend on only a few prey species, including cottontails, black-tailed jackrabbit, ground squirrels, and pocket gophers (<http://arnica.csustan.edu/esrpp/fh.htm>). Ferruginous hawk populations continue to decline throughout the species range, principally due to habitat loss through conversion to agriculture and other land uses, livestock grazing of rangelands and population control of the small mammals that serve as the species food source (<http://arnica.csustan.edu/esrpp/fh.htm>).

**Western Burrowing Owl** – The burrowing owl is found in the open desert grasslands and shrublands of the American west from Canada to Mexico (<http://arnica.csustan.edu/esrpp/burowl.htm>). The burrowing owl is capable of digging its own nest sites, but often nests within the abandoned dens of other animals, including prairie dogs. The burrowing owl is an opportunistic feeder, and the many insects of the shinnery-oak-grasslands make up a large part of its diet, as do small ground dwelling mammals such as mice, rats, gophers and squirrels (<http://arnica.csustan.edu/esrpp/burowl.htm>).

**Swift Fox** – The Swift Fox occurs within widely scattered and isolated pockets of remnant short and mid-grass prairie throughout the western United States. Swift Fox utilize dens throughout the year, either digging their own or enlarging the burrows of other animals (USFWS 2000). The Swift Fox are opportunistic feeders, and will eat small mammals, birds, insects, fruits and carrion. The Swift Fox has decreased southward from its historical distribution, which was once from Canada to Mexico. Today the species is extirpated from Canada, Montana and the Dakotas, and is found in smaller numbers in Wyoming, eastern Colorado and Kansas, but is found throughout most of its historic range in Oklahoma and New Mexico (USFWS 2000). Swift Fox populations are threatened primarily by conversion of rangeland for agricultural purposes, hunting and the widespread use of strychnine used to kill wolves and coyotes (USFWS 2000).

**Arizona Black-tailed Prairie Dog** – Prairie dogs are not commonly found within the shinnery-oak-grassland community type and are not found at all in areas where tall grasses are abundant (Peterson and Boyd 1998). Evidence suggests that the presence of prairie dogs in the shinnery-oak-grasslands is the result of livestock grazing of tall grasses, and the destruction of prairie dog predators (Peterson and Boyd 1998). Despite their historical absence from the shinnery-oak-grassland community, prairie dogs have played an important role in the ecology of Lesser Prairie-Chickens in recent times, as their colonies have been known to be associated with lek sites (Davis et al. 1981, Morrissey 1995, Bailey 1999).

**Sand Dune Lizard** – The sand dune lizard is the only reptile species restricted to the shinnery-oak-grassland community, and within New Mexico the lizard is limited to the south-eastern portion of the state (Peterson and Boyd 1998). The sand dune lizard occurs mainly in deep sand areas, but forages under the shinnery oak and is usually found within 4-6 ft. of an oak (Peterson and Boyd 1998). Treatment of shinnery oak with tebuthiuron is prohibited within the known habitat of the sand dune lizard, but continued livestock grazing as well as oil and gas

development threatens the long term survival of the species (Bailey and Painter 1994).

**Texas Horned Lizard** – The Texas horned lizard is found throughout large parts of Texas, Oklahoma, Kansas and New Mexico in the arid and semi-arid grassland and shrubland communities. The lizards live primarily in sparsely vegetated, sandy areas with nearby colonies of harvester (*Pogonomyrmex* spp.) ants (<http://www.tpwd.state.tx.us/nature/wild/reptiles/thlizard.htm>). The lizards are ant specialist feeders and eat primarily harvester ants, but will feed on other insects such as grasshoppers, isopods and beetles ([http://animaldiversity.ummz.umich.edu/accounts/phrynosoma/p.\\_cornutum\\$narrative.html](http://animaldiversity.ummz.umich.edu/accounts/phrynosoma/p._cornutum$narrative.html)). Texas horned lizard populations have declined recently, principally due to the invasion of the imported fire ant, *Solenopsis invicta*, loss of habitat through land conversion processes, and the use of pesticides on harvester ants ([http://animaldiversity.ummz.umich.edu/accounts/phrynosoma/p.\\_cornutum\\$narrative.html](http://animaldiversity.ummz.umich.edu/accounts/phrynosoma/p._cornutum$narrative.html)).

**White-tailed Deer** - The white-tailed deer is thought to be restricted to the shinnery-oak-grasslands within New Mexico, and the shinnery-oak-grassland is the principal community type that harbors this subspecies throughout its range in the southern Great Plains (Peterson and Boyd 1998). The acorns of shinnery oak are a principal food source for the White-tailed Deer, along with forbs and other plants of the shinnery-oakgrasslands. There is some confusion as to the subspecies present in the shinnery-oakgrasslands of New Mexico. Bailey (1905) and Ligon (1927) ascribed the white-tailed deer to its own separate subspecies, while modern sources typically describe the species as a member of the subspecies *texanus* (NMNHP database, unpublished).

The continuing degradation of the shinnery-oak-grassland community type, considered together with the fact that the New Mexico BLM controls almost 75% of the remaining Prairie-Chicken habitat in public ownership makes the proposed Lesser Prairie-Chicken ACEC invaluable for maintaining biodiversity within the shinnery-oak-grassland ecosystem of east-central and southeastern New Mexico and in promoting the recovery and continued existence of the Lesser Prairie-Chicken as well as the additional sensitive species described above.

Finally, the proposed Lesser Prairie-Chicken ACEC is important as “a natural process or ecosystem” (Criterion 3). The area contains the majority of the remaining shinnery-oak-grassland habitat on public lands that the Lesser Prairie-Chicken requires for survival within its range in New Mexico. This habitat is becoming increasingly degraded through brush control, land conversion, livestock grazing and oil and gas development (Bailey 2000, USFWS 1998, Riley et al. 1992, Taylor and Guthery 1980b, Copelin 1963, Jackson and DeArment 1963, Crawford and Bolen 1976, Crawford 1974). Because the vast majority of this ecosystem exists on private lands that are largely unregulated, the proposed Lesser Prairie-Chicken ACEC is critical in maintaining and restoring the historical quality and health of the shinnery-oak-grassland ecosystem, and preserving this habitat for both the survival of the Lesser Prairie-Chicken and as a reservoir of biodiversity for this threatened ecosystem.

## Importance

The proposed Lesser Prairie-Chicken ACEC meets, at a minimum, two of the importance criteria as outlined in the BLM Manual 1613 (Criteria 1 and 2). First, the area contains “more than locally significant qualities which give it special worth, consequence, meaning, distinctiveness, or cause for concern, especially compared to any similar resource” (Criterion 1). The Lesser Prairie-Chicken’s original range encompassed 358,000 km<sup>2</sup> throughout eastern New-Mexico, the Texas panhandle, western Oklahoma, southwestern Kansas and southeastern Colorado, with small populations possibly existing in northeastern Colorado and extreme northwestern Nebraska (Colvin 1914, Ligon 1927, Bailey 1928, Taylor and Guthery 1980b, Morrissey 1995). Today, its known range has been reduced by 92%, and of the species remaining range, only 5% remains in public ownership. Significantly, of the remaining lands in public ownership, the New Mexico BLM controls almost 75%, thereby making the proposed Lesser Prairie-Chicken ACEC regionally important as both a habitat reserve and “genetic bank” vital to the survival and recovery of the species over its entire current and former range (Taylor and Guthery 1980b). Additionally, the continued degradation of this public rangeland through livestock grazing, brush control, oil and gas development and land conversion makes the area an immediate cause for concern. Finally, as the remaining BLM lands represent the majority of Prairie-Chicken habitat on public lands, the proposed Lesser Prairie-Chicken ACEC clearly has special worth compared to similar resources, the majority of which exist on private lands. The area is already, and continues to be of major interest to birdwatchers worldwide, who visit the Caprock Wildlife Area from around the world (Dr. Kris Johnson, personal communication).

Second, the area “has qualities or circumstances that make it fragile, sensitive, rare, irreplaceable, exemplary, unique, endangered, threatened, or vulnerable to adverse change” (Criterion 2). The Fish and Wildlife Service, in reviewing the 1995 petition to list the Lesser Prairie-Chicken as endangered or threatened, gave the petition a “warranted, but precluded” ruling, and continues to find the species imperiled, acknowledging:

“based on all currently available information, we find that the threats to the Lesser Prairie-Chicken, as outlined in the 12-month finding, remain unchanged and Lesser Prairie-Chickens continue to warrant federal listing as threatened” (Fish and Wildlife Service 2001).

The proposed Lesser Prairie-Chicken ACEC contains the majority of the remaining shinnery-oak-grassland habitat on public lands that the species requires for survival within its range in New Mexico. This habitat is increasingly subject to eradication through the use of tebuthiuron for conversion to grasslands for cattle grazing, both on public and private lands. The continued degradation of this area through brush control, livestock grazing and oil and gas development clearly makes it both “fragile” and “vulnerable to adverse change”, as has been repeatedly documented (Copelin 1963, Jackson and DeArment 1963, Crawford 1974, Crawford and Bolen 1976, Taylor and Guthery 1980b, Riley et al. 1992, USFWS 1998). Finally, the well-documented failure of shinnery-oak to revegetate areas that have been converted to other land uses clearly makes the shinnery-oak-grassland habitat within the proposed Lesser Prairie-Chicken ACEC “irreplaceable” (Peterson and Boyd 1998).



## Suggestions for Special Management

The petitioners propose the following management recommendations for the proposed Lesser Prairie-Chicken ACEC. The petitioners believe that in order to ensure proper management, a committee of state, federal and academic wildlife specialists should be convened to draft a comprehensive adaptive management plan for the shinnery-oak grassland ecosystem and Lesser Prairie-Chicken habitat within the proposed Lesser Prairie-Chicken ACEC. The primary and overriding purpose of all management actions undertaken by this committee or by the agency within the ACEC boundaries must be to recover and sustain Lesser Prairie-Chicken populations. The committee should also reconvene on a regular basis to systematically review the results of the management plan and implement any necessary changes.

The petitioners propose that the committee should develop and implement an adaptive management strategy for the Lesser Prairie-Chicken ACEC, with the following guidelines. In light of the continuing decline of Prairie-Chicken population numbers and habitat conditions, the petitioners have delineated areas of critical importance, where populations are sparse and disconnected and/or extirpation is imminent (Moritorium Areas, Figure 7). These areas include the populations south of highway 380 and north of 33<sup>0</sup>N, the Querecho Plains populations and adjacent historic habitat, and the isolated northern populations adjacent to U.S. 70. Within these areas, the petitioners propose a 5-year moratorium on livestock grazing, as well as new oil and gas activity to allow for an emergency habitat recovery period. Monitoring of habitat conditions and Lesser Prairie-Chicken leks should be used to test the hypothesis that conditions for the species will improve during the 5-year moratorium.

The remaining portion of the proposed Lesser Prairie-Chicken ACEC contains the “core” populations of the Lesser Prairie-Chicken, and consists mainly of the Caprock Wildlife Area (Figure 7). Lesser Prairie-Chicken populations in this area are more stable and in less imminent danger, therefore the petitioners propose that this area be used to test adaptive management methodologies for enhancing and sustaining Lesser Prairie-Chicken habitat. These methodologies may include conservative livestock grazing, as well as herbicide applications, so long as the activities promote the recovery and stability of Lesser Prairie-Chicken populations. All management strategies implemented by the committee within the Adaptive Management Area should be applied with rigorous experimental design. It is the belief of the petitioners that this Adaptive Management Area can be used to develop sound criteria for recovering Lesser Prairie-Chickens, and that these criteria can then be applied to the other parts of the proposed Lesser Prairie-Chicken ACEC, once the emergency moratorium has ended. The Petitioners respectfully furnish the following list of suggestions for testing within the Adaptive Management Area based on eliminating the previously mentioned threats to the Lesser Prairie-Chicken:

1. Experimental reductions in livestock grazing within the Adaptive Management Area of the proposed Lesser Prairie-Chicken ACEC. Active lek sites should be used as experimental unit; with treatments applied to randomly selected, geographically independent lek sites. A minimum of five lek sites should be used for each grazing treatment. Treatments should include no grazing on at least 2.6 km<sup>2</sup> within 2.4 km. of lek sites and light intensity grazing (after June 30) on at least 2.6 km<sup>2</sup> within 2.4 km. of lek sites.

2. A permanent ban on the use of Tebuthiuron. The lethality of the herbicide tebuthiuron on shinnery oak precludes its safe application. If herbicides are deemed useful by the management team to retard growth of shinnery oak and promote grass cover, other less lethal herbicides should be used in place of tebuthiuron.
3. An expansion of the restrictions on certain oil and gas related activities during the lekking season. Based on the USFWS 2001 report, current restrictions on new oil and gas drilling within 200 m. of a lek are inadequate to protect the species, which is known to nest within 3 km. of a lek. These restrictions should be extended to areas within a minimum of 1.5 km. of an active lek.
4. Special management of the corridor areas that link the known east-central and southeast populations of Lesser Prairie-Chicken to facilitate migration and genetic exchange between these increasingly fragmented populations.
5. Encourage the use of the Conservation Reserve Program for any qualifying adjacent state and private lands within the external boundaries of the proposed Lesser Prairie-Chicken ACEC, to facilitate recovery of healthy shinnery-oak grassland community conditions on non-public land.
6. Pursue the acquisition of private lands from willing sellers, as well as land exchanges with the New Mexico State Land Office within the boundaries of the proposed Lesser Prairie-Chicken ACEC.

The Adaptive Management Area also contains a number of large, tebuthiuron treated pastures where high concentrations of the herbicide were applied (Figure 7). These areas have been treated to enhance conditions for livestock grazing and surveyors have repeatedly failed to locate birds nesting or raising broods within the treated pastures (K. Johnson, personal communication). Therefore, the petitioners suggest that these areas be exempt from the livestock management recommendations discussed here, and that livestock grazing simply comply with all applicable federal law in these areas.

In addition to the recommendations above, the petitioners also respectfully submit the following recommendations to apply to BLM lands within the whole of the proposed Lesser Prairie-Chicken ACEC:

1. All of the area within the proposed Lesser Prairie-Chicken ACEC should be withdrawn from “locatable mineral” entry, non-energy mineral leasing and salable mineral entry.
2. Collection of plant material should be prohibited unless authorized by special permit, and then only for educational or scientific applications.
3. Vehicular traffic should be restricted to “designated” roads only, all other roads should be closed to all but administrative uses.
4. Recreational activity and access to the proposed Lesser Prairie-Chicken ACEC should be limited during the lekking season by special permit.
5. Management for recreational purposes should be limited to primitive recreational opportunities only.
6. No authorizations for new rights of way within 1.5 km of an active lek should be allowed.
7. The intentional introduction of any exotic plants or animals should be prohibited.

## Conclusion

The protection of habitat on a large enough scale to protect ecosystem processes and allow for the continuation of stable community structures with a minimum of outside intervention is increasingly recognized as critical for the long-term survival of at-risk species (Soule and Simberloff 1986, Soule et al. 1992). The Lesser Prairie-Chicken populations of east-central and southeastern New Mexico occupy the largest remaining area of relatively intact shinnery-oak-grassland habitat on public lands (USFWS 1998, Bailey 1999). The majority of existing Prairie-Chicken habitat occurs on private land. Due to the limited feasibility of regulating activities on private lands, the prospects for recovering the species in these areas are less hopeful than on public land. This further elevates the relative importance of public lands for recovering the species. The New Mexico BLM controls almost 75% of the species' remaining habitat that is in public ownership, making the proposed Lesser Prairie-Chicken ACEC one essential component to the recovery of the species over its entire current and former range (Taylor and Guthery 1980b). The petitioners believe that the proposed Lesser Prairie-Chicken ACEC is on a scale large enough to provide for the recovery and maintenance of stable Lesser Prairie-Chicken populations in a fully functioning ecosystem. The unique combination of factors affecting the survival of the Lesser Prairie-Chicken presents an outstanding opportunity for the BLM to take the lead in conserving and recovering this species and for protecting the shinnery-oak-grassland ecosystem it inhabits.

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**Appendix A. Wildlife Species of Chaves, Eddy and Lea Counties, NM;  
Shinneryoak-  
grassland associates**

Source: Biota Information System of NM (<http://fwie.fw.vt.edu/states/nm.htm>)

<b>Species Common Name</b>	<b>Species Scientific Name</b>
Tiger Salamander	<i>Ambystoma tigrinum</i>
Couch's Spadefoot	<i>Scaphiopus couchii</i>
Plains Spadefoot	<i>Spea bombifrons</i>
New Mexico Spadefoot	<i>Spea multiplicata</i>
Ornate Box Turtle	<i>Terrapene ornata</i>
Collared Lizard	<i>Crotaphytus collaris</i>
Longnose Leopard Lizard	<i>Gambelia wislizenii</i>
Greater Earless Lizard	<i>Cophosaurus texanus</i>
Lesser Earless Lizard	<i>Holbrookia maculata</i>
Texas Horned Lizard	<i>Phrynosoma cornutum</i>
Roundtail Horned Lizard	<i>Phrynosoma modestum</i>
Sand Dune Lizard	<i>Sceloporus arenicolus</i>
Eastern Fence Lizard	<i>Sceloporus undulatus</i>
Side-blotched Lizard	<i>Uta stansburiana</i>
Chihuahuan Spotted Whiptail	<i>Cnemidophorus exsanguis</i>
Prairie Racerunner	<i>Cnemidophorus sexlineatus viridis</i>
Great Plains Skink	<i>Eumeces obsoletus</i>
Texas Blind Snake	<i>Leptotyphlops dulcis dissectus</i>
Glossy Snake	<i>Arizona elegans</i>
Ringneck Snake	<i>Diadophis punctatus</i>
W. Hognose Snake	<i>Heterodon nasicus</i>
Night Snake	<i>Hypsiglena torquata</i>
Desert Kingsnake	<i>Lampropeltis getula splendida</i>
Milk Snake	<i>Lampropeltis triangulum</i>
Coachwhip	<i>Masticophis flagellum</i>
Gopher Snake	<i>Pituophis melanoleucus</i>
Texas Longnose Snake	<i>Rhinocheilus lecontei</i>
Ground Snake	<i>Sonora semiannulata</i>
Plains Blackhead Snake	<i>Tantilla nigriceps</i>
W. Diamondback Rattlesnake	<i>Crotalus atrox</i>
Western Rattlesnake	<i>Crotalus viridis</i>
Desert Massasauga	<i>Sistrurus catenatus edwardsii</i>
Turkey Vulture	<i>Cathartes aura</i>
Swainson's Hawk	<i>Buteo swainsoni</i>
Red-tailed Hawk	<i>Buteo jamaicensis</i>
Ferruginous Hawk	<i>Buteo regalis</i>
Golden Eagle	<i>Aquila chrysaetos canadensis</i>
Merlin	<i>Falco columbarius</i>
Lesser Prairie-Chicken	<i>Tympanuchus pallidicinctus</i>
Great-horned Owl	<i>Bubo virginianus</i>

Northern Flicker

*Colaptes auratus*

**Appendix A.** Wildlife Species of Chaves, Eddy and Lea Counties, NM; Shinnery-oakgrassland associates. Source: Biota Information System of NM (<http://fwie.fw.vt.edu/states/nm.htm>)

<b>Species Common Name</b>	<b>Species Scientific Name</b>
Scissor-tailed Flycatcher	<i>Tyrannus forficatus</i>
Dark-eyed Junco	<i>Junco hyemalis</i>
Brown-headed Cowbird	<i>Molothrus ater</i>
Desert Cottontail Rabbit	<i>Sylvilagus audubonii</i>
Thirteen-lined Ground Squirrel	<i>Spermophilus tridecemlineatus</i>
Ord's Kangaroo Rat	<i>Dipodomys ordii</i>
N. Grasshopper Mouse	<i>Onychomys leucogaster</i>
Coyote	<i>Canis latrans</i>
Kit Fox	<i>Vulpes macrotis</i>
Swift Fox	<i>Vulpes velox</i>
Common Gray Fox	<i>Urocyon cinereoargenteus scottii</i>
American Badger	<i>Taxidea taxus berlandieri</i>
Mule Deer	<i>Odocoileus hemionus</i>
White-tailed Deer	<i>Odocoileus virginianus texana</i>
Jerusalem Cricket	<i>Stenopelmatus mescaleroensis</i>