

LESSER PRAIRIE-CHICKEN (*TYMPANUCHUS PALLIDICINCTUS*)

Background and Identification of Interaction with Wind Development

Lesser prairie-chickens have been a candidate species to the U.S. Endangered Species Act (ESA) since 1998.¹ In December 2008, their listing priority number as a candidate species was changed from an 8 (moderate, imminent threat) to a 2 (high, imminent threat).¹ This change in status demonstrates increased concern for lesser prairie-chicken at the federal level.

Prairie grouse species such as lesser prairie-chicken rarely fly high enough to be at risk for collision with wind turbines; however, these prairie specialists are sensitive to habitat alteration and the presence of manmade vertical structures and noise in their habitat. Research has shown that lesser prairie-chicken locate their nest sites farther from buildings, transmission lines, and improved roads than would be expected at random. There is also some evidence that oil and gas wellheads negatively influence nest site selection and habitat use.^{2,3} In addition, researchers in Oklahoma used radio telemetry to demonstrate that both greater and lesser prairie-chickens avoided crossing beneath overhead powerlines.³ Finally, sharp-tailed grouse will abandon nests and leks if construction occurs while those areas are under active use by the birds.⁴

Prairie grouse require large blocks of grassland to meet all their requirements for breeding and foraging.^{5,6} Mating takes place at relatively open areas (e.g. low visual obstruction and low horizontal cover) of the prairies (called leks) where males congregate to perform a courtship dance. After mating, most females will make a nest within 1.9 miles (3.0 km)⁵ of the lek site. Appropriate nest sites have high visual obstruction and horizontal cover for brooding hens. Nesting cover is further improved by the presence of a moderately dense stand of native shrubs (e.g., sand sage). Once the chicks have hatched, they move into habitat with sparse residual grass cover, high amounts of bare ground, and abundant forbs. It is estimated that prairie-chickens require 4,942 or more acres (> 2000 ha) of unfragmented prairie to maintain one healthy breeding population.⁷ Habitat requirements in fragmented landscapes increase as does predation risk in such landscapes.⁸ The presence of vertical structure and sound can fragment large blocks of grassland, making them less suitable for prairie grouse.

State of the Science

Little research has been conducted on the effects of energy development on lesser prairie-chicken. Many of the conservation concerns and recommendations come from research on closely related species. However, research on the impacts of wind energy development on lesser prairie-chickens is ongoing; therefore, additional information will be available in the near future.

Best Management Practices

1. Conduct surveys in suitable habitat on the proposed development site and within a reasonable radius to determine presence of lesser prairie-chicken. Consult Colorado Division of Wildlife (CDOW) for appropriate survey methods. Current information on locations of lesser prairie-chicken may be obtained from CDOW and Colorado Natural Heritage Program.
2. Development of proposed wind generation projects within known current range of lesser prairie-chicken should be done in close consultation with CDOW and other appropriate wildlife agencies.

Avoid

“The Federal Advisory Committee Draft Recommendations for wind energy development recommend the following: “Avoid locating wind energy facilities in areas identified as having a demonstrated and unmitigatable high risk to birds...” (Chapter 3, page 44; Draft Recommendations 3/2010).⁹

- Placing wind energy development in the midst of grassland blocks occupied by lesser prairie-chicken should be avoided because of potential displacement of birds or depressed productivity within the project site.

Minimize

1. The Federal Advisory Committee Draft Recommendations for wind energy development recommend the following to avoid habitat fragmentation: “Consider alternative locations and development configurations to minimize fragmentation of habitat in communication with species experts, for all species of habitat fragmentation concern in the area of interest.” (Chapter 3, page 31; Draft Recommendations 3/2010)⁹
 - In Colorado, if occupied habitats cannot be avoided then an effort should be made to site the wind energy development at the edge of the habitat and away from core areas to keep fragmentation¹⁰ to a minimum.
2. Conducting site construction of wind development areas in proximity of leks outside of the breeding season (March - June) may reduce habitat abandonment, in conjunction with construction and maintenance timing determined in consultation with CDOW.⁵
3. “Instruct employees, contractors, and site visitors to avoid harassing or disturbing wildlife, particularly during reproductive season.” (Recommendation from the Federal Advisory Committee Draft Recommendations for wind energy development).⁹ Reducing disturbance during the lekking period (March - mid-May) can be accomplished by:
 - Educating operations and maintenance crews of leks in the project area.
4. Using a minimum amount of fencing will reduce the risk of collision-related mortality.
5. The Federal Advisory Committee Draft Recommendations for wind energy development recommend the following: “To reduce avian collisions, place low and medium voltage connecting power lines associated with the wind energy development underground to the extent possible, unless burial of the lines is prohibitively expensive (e.g., where shallow bedrock exists) or where greater adverse impacts to biological resources would result: a. Overhead lines may be acceptable if sited away from high bird crossing locations, to the extent practicable, such as between roosting and feeding areas or between lakes, rivers, prairie grouse and sage grouse leks, and nesting habitats...” (Chapter 3, page 44; Draft Recommendations 3/2010).⁹
 - Burying these power lines will reduce the incidence of mortality of lesser prairie-chicken related to raptor predation by reducing perch availability.

Conservation Offsets (Mitigation)

When considering options for protecting lesser prairie-chicken and its habitat, it is important to remember there are two avenues for conservation activities that have different outcomes. The first is to simply protect habitat that already exists through property purchases or conservation easements, etc. This is an important conservation tool because it protects already suitable habitat. However, if an impact occurs on a portion of suitable habitat and the only offset is to protect currently suitable habitat, there is a net loss of habitat even with the newly acquired property. A second avenue is true mitigation in which new habitat is created. In this situation, if an impact occurs on suitable habitat and the offset is to create habitat in the amount of the impacted habitat, there is no net loss of habitat. And, if habitat is created in an amount greater to the impact there is a net gain of suitable habitat. A suitable restoration and mitigation plan will include both avenues for offsetting impacts. In the case of lesser prairie-chicken, due to its possible listing on the Endangered Species List and because its decline is due to habitat loss and alteration, the best management practice is to improve degraded grassland habitat within lesser prairie-chicken range.

True Offsets (actions that increase habitat quantity):

There are many land uses that render otherwise useable habitat inhospitable to lesser prairie-chicken. Actions that counter the impacts:

1. Removal of non-native vegetation¹¹ is one option to restore and improve lesser prairie-chicken habitat. If non-native vegetation adjacent to occupied prairie is removed and maintained with fire, lesser prairie-chicken populations can be maintained.

2. CRP – Companies may work with landowners in adjacent blocks of occupied habitat to purchase easements, plant CRP-like native grasslands, and provide for continued maintenance.
3. CRP – Much existing CRP is low quality lesser prairie-chicken habitat because a sufficient diversity and abundance of forbs is not present. In many cases interseeding of native forbs and/or disturbance of decadent CRP may increase diversity. Plots receiving these treatments should also be secured indefinitely through an organization that specializes in land trusts or easements; on-going maintenance should be provided.
4. Work with landowners within occupied lesser prairie-chicken habitat to implement a more wildlife-friendly long-term management plan (i.e. >10 years) with a strategy to maintain the habitat in the long-term, potentially including an endowment. The plan should specify vegetation conditions desired and allow ranchers to utilize their expertise in adjusting stocking rates, grazing system, and fire frequency to meet those conditions. Most of the rangelands within lesser prairie-chicken range are poorly managed for this species; implementation of range management plans could substantially improve lesser prairie-chicken populations.
5. Degraded rangeland within lesser prairie-chicken range may be purchased and restored to suitable habitat equivalent to the amount that was disturbed by the wind energy development. During acquisition preference should be given to larger contiguous tracts and/or tracts that adjoin unfragmented habitats currently occupied by lesser prairie-chicken. An endowment should be created for each of these properties to provide the monetary resources required for regular management activities including tree removal, wildlife-friendly grazing, and periodic burning.

Mitigation and Other Offset Options:

Conservation easements may be created on already occupied grasslands or on land within the historic distribution of lesser prairie-chicken that could be restored to suitable habitat.

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Additional Information and Resources Consulted:

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9. U.S. Fish and Wildlife Service Wind Turbine Recommendations Advisory Committee. March 4, 2010.
10. Fragmentation: "Breaking up of a habitat or cover type into smaller, disconnected parcels."
Turner, M.G., R.H. Gardner, and R.V. O'Neill. 2001. *Landscape Ecology in Theory and Practice: Pattern and Process*. Springer-Verlag, New York City, New York.
11. Native species such as sand shinnery oak and sandsage are important components of Lesser Prairie-Chicken habitat.