

SHARP-TAILED GROUSE (*TYMPANUCHUS PHASIANELLUS*)

Background and Identification of Interaction with Wind Development

Sharp-tailed grouse are a widespread species that is found from Alaska south to Colorado and east to the Great Lakes.¹ These once widespread birds are currently experiencing population declines throughout much of their range due to habitat loss from human disturbance.^{1,2} Little research has been conducted on the response of sharp-tailed grouse to energy development; much of the information is extrapolated from other closely related grouse species.² The sharp-tailed grouse is a member of the subfamily Tetraoninae. For purposes of this BMP, all species in this subfamily are assumed to serve as reasonable proxies for each other.

Prairie grouse species such as the sharp-tailed grouse rarely fly high enough to be at risk for collision with wind turbines; however, these prairie grouse are sensitive to habitat alteration, the presence of manmade vertical structures, and noise in their habitat. Research has shown that lesser prairie-chickens locate their nest sites further 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.^{3,4} Researchers in Oklahoma used radio telemetry to demonstrate that both greater and lesser prairie-chickens avoided crossing beneath overhead powerlines.⁵ Finally, the sharp-tailed grouse will abandon nests and leks if construction occurs while those areas are under active use by the birds.⁶

Prairie grouse require large blocks of grassland to meet all of their requirements for breeding and foraging.^{1,7,8} In Colorado, sharp-tailed grouse are found mostly on conservation reserve program (CRP) grasslands. Mating takes place at relatively open areas (e.g., low visual obstruction and low horizontal cover) of the grasslands (called leks) where males congregate to perform a courtship dance. After mating, females will make a nest within 2 miles (3.2 km) of the lek site.¹ In Colorado, the average home range is 254.5 acres; with a range of 37.1 to 1,003 acres (103 ha; range 15 - 406 ha).¹ Appropriate nest sites have high visual obstruction and horizontal cover for concealing brooding hens. Once the chicks have hatched, they move to another part of the grassland with high amounts of bare ground and high prevalence of broad-leafed plants for foraging, but with some residual cover for hiding from predators. Winter habitat requirements are different from other times of the year. In winter, sharp-tailed grouse require areas with high food potential including areas with seeds, residual vegetation, and waste grain. Management guidelines for lesser prairie-chickens recommend maintaining large continuous blocks of grassland for breeding habitat (4,942 acres or $\geq 2,000$ ha).⁷ It is estimated that greater prairie-chickens require 10,000 to 20,000 acres of unfragmented grassland to maintain one healthy breeding population.⁸ Management guidelines for reintroduction of sharp-tailed grouse require an 8,154.4 acre area (30 km²), 33% of which must be undisturbed native habitat.¹ The presence of vertical structures and noise can fragment large blocks of grassland, making them less suitable for the sharp-tailed grouse.

State of the Science

No research has been conducted on the effects of energy development on sharp-tailed grouse. Many of the conservation concerns and recommendations come from research on related grouse species, such as greater and lesser prairie-chickens. However, given the uniformity of response by all grouse species to human disturbance in grouse habitat, the best available information suggests assessments of the effects of wind energy development on sharp-tailed grouse are appropriate.

Best Management Practices

Conduct surveys in suitable habitat on the proposed development site and within a 1-mile radius to determine the presence of sharp-tailed grouse.^{2,9}

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 sharp-tailed grouse 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
 - If occupied habitats cannot be avoided, then an effort should be made to site the wind energy development at the edge of the habitat to keep fragmentation¹⁰ to a minimum.
2. Placing wind turbines or other associated infrastructure greater than 0.4 mile (0.6 km) from a lek will reduce habitat abandonment.^{6,11}
3. Conducting site construction of wind development areas outside of the breeding season (March to June) in areas within 0.4 mile (0.6 km) of a lek will reduce habitat abandonment.^{2,6,11}
4. If within 0.4 mile (0.6 km) of a lek, “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 by educating operations and maintenance crews of leks located within 0.4 mile (0.6 km) of a turbine.^{6,11}
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 sharp-tailed grouse related to raptor predation by reducing perch availability.

Conservation Offsets (Mitigation)

True Offsets (actions that create habitat quantity):

There are many phenomena and land uses that render otherwise useable habitat inhospitable to prairie grouse. Actions that counter the impacts of these phenomena include the following:

1. CRP – Companies may work with landowners adjacent to blocks of occupied habitat to purchase easements, plant CRP-like grasslands with native grasses, and provide for continued maintenance.
2. CRP – Much existing CRP is low quality sharp-tailed grouse habitat because a sufficient diversity and abundance of forbs is not present. In many cases, interseeding native forbs and/or disturbance of decadent CRP may increase diversity. Plots receiving these treatments also should be secured indefinitely through an organization that specializes in easements or is a land trust; ongoing maintenance should be provided.
3. Work with landowners within occupied sharp-tailed grouse habitat to implement a more wildlife-friendly long-term management plan (i.e., greater than 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 use their expertise in adjusting stocking rates, grazing system, and fire frequency to meet those conditions. Most of the rangelands within sharp-tailed

grouse range are poorly managed for this species; implementation of range management plans could substantially improve sharp-tailed grouse populations.

4. Degraded rangeland within sharp-tailed grouse range may be purchased and restored to suitable habitat equivalent to the amount 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 sharp-tailed grouse. 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 sharp-tailed grouse that could be restored to suitable habitat.

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