Theodore Roosevelt Conservation Partnership's

THE SPORTING SCIENCE

Science supporting our hunting and fishing heritage

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Impacts of Energy Development on Sage-Grouse

Background and Importance:

Sagebrush ecosystems are critically important to numerous species of wildlife, including those pursued by sportsmen such as mule deer, pronghorn, and the greater sage-grouse. The extent and quality of sagebrush ecosystems are declining across the western U.S.[1] Wildfire, invasive species such as cheat grass, and energy development all threaten sagebrush and species like the sage-grouse. Because of these and other threats, sage-grouse numbers have declined dramatically in recent decades.

Why should sportsmen care? Consider the fact that a once abundant, widely distributed and harvested game bird is now at population levels low enough to consider for listing as threatened or endangered. This should be of major concern to sportsmen whether they hunt sage-grouse or not because it is clear that sagebrush ecosystems and the species that depend on them are vulnerable and at risk.

Here, our focus is on energy development and sage-grouse.

A drilling rig in Wyoming about ½ mile from a once active sage grouse lek, now abandoned since the onset of energy development in the area. (photo by Matt Holloran)

Greater sage grouse lek in Wyoming. (photo by Matt Holloran)

Key Scientific Findings:

- **Yearling male sage-grouse avoid leks near infrastructure of natural-gas fields when establishing breeding territories.[2]**
- **Rate of lek loss increases from 2-5x when densities of wells exceeds 40 wells every 12 ½ square miles, a level of development commonly permitted on public lands (e.g., 80 ac well spacing).[3]**
- **Leks become inactive relative to infrastructure placed on the landscape from 2–10 years after development, suggesting a lag effect in overall impact.[2, 4]**
- **Declines in the number of displaying males are positively correlated with increased levels of development surrounding leks and increased traffic volumes within 1.9 miles of leks.[5]**
- **Nesting females avoid areas with high densities of producing wells, and brooding females avoided producing wells.[5]**
- **Yearling females avoid nesting within about ½ mile of infrastructure in gas fields.[2]**

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Key Scientific Findings - continued:

- Visual well density is negatively correlated with female sage-grouse occurrence during nesting and early brood-rearing within about a ½ mile square area of disturbance. The addition of 1 visible well within 0.4 miles decreased the probability of nest occurrence by approximately 35%.[6]
- Light traffic disturbance (1-12 vehicles/day) during the sage-grouse breeding season may reduce nest-initiation rates and increase distances moved from leks during nest-site selection.[7]
- Sage-grouse avoid natural gas development in otherwise suitable winter habitat; sage-grouse were 1.3 times more likely to occupy sagebrush habitats that lacked gas wells within a 2.5 square mile area, compared to those that had the maximum density of 12.3 wells per 2.5 square miles allowed on federal lands.[8]
- Current lease stipulations prohibiting development only within ¼ mile of sage-grouse leks on federal lands are inadequate to ensure lek persistence and may result in impacts to populations over larger areas.[3, 9]
- Seasonal restrictions on drilling and construction do not address impacts caused by loss of sagebrush and incursion of infrastructure that can affect populations over long periods of time.[9]
- Hunting opportunities for sage-grouse have been reduced dramatically. In Wyoming, for example, hunting season closures were established in 2000 for NW and SE Wyoming, shortened seasons with reduced bag limits were instituted in 2002, expansion of the SE Wyoming closure occurred in 2007, and more restrictions were recommended in 2008.[10]

Sage brush ecosystem in the Shirley Basin, Wyoming. (photo by Ed Arnett)

Sportsmen should be concerned about sustainable harvest of sage groused in the future. (photo by Ed Arnett)

What can be done?

- The simplest and most cost effective first step in conservation is to stop large-scale actions that further reduce or eliminate the largest populations in the best remaining habitats.[3]
- We must manage landscapes so that suitably sized and located regions remain undeveloped to sustain greater sage-grouse populations affected by energy development and other factors.[1]
- Regulatory agencies may need to increase spatial restrictions on development; industry may need to rapidly implement more effective mitigation measures, or both, to reduce impacts of energy development on sage-grouse populations.[8]
- Policies to reduce impacts should include all aspects of the mitigation hierarchy (avoid, minimize, restore and offset).[3]
- Biodiversity offsets are a necessary part of conservation after preceding steps in the mitigation hierarchy have been exhausted. Offsets represent a partnership between industry and conservation and provide a proactive solution for accommodating development of domestic energy resources.[3]
- Agencies and energy developers should work to include sportsmen in policy and management decision making processes to ensure our hunting heritage is preserved.

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