

Holloran, M.J., R.C. Kaiser, W.A. Hubert. 2010. Yearling Greater Sage-Grouse Response to Energy Development in Wyoming. *Journal of Wildlife Management* 74: 65-72.

Abstract: Sagebrush (*Artemisia* spp.)-dominated habitats in the western United States have experienced extensive, rapid changes due to development of natural-gas fields, resulting in localized declines of greater sage-grouse (*Centrocercus urophasianus*) populations. It is unclear whether population declines in natural-gas fields are caused by avoidance or demographic impacts, or the age classes that are most affected. Land and wildlife management agencies need information on how energy developments affect sage-grouse populations to ensure informed land-use decisions are made, effective mitigation measures are identified, and appropriate monitoring programs are implemented (Sawyer et al. 2006). We used information from radio-equipped greater sage-grouse and lek counts to investigate natural-gas development influences on 1) the distribution of, and 2) the probability of recruiting yearling males and females into breeding populations in the Upper Green River Basin of southwestern Wyoming, USA. Yearling males avoided leks near the infrastructure of natural-gas fields when establishing breeding territories; yearling females avoided nesting within 950 m of the infrastructure of natural-gas fields. Additionally, both yearling males and yearling females reared in areas where infrastructure was present had lower annual survival, and yearling males established breeding territories less often, compared to yearlings reared in areas with no infrastructure. Our results supply mechanisms for population-level declines of sage-grouse documented in natural-gas fields, and suggest to land managers that current stipulations on development may not provide management solutions. Managing landscapes so that suitably sized and located regions remain undeveloped may be an effective strategy to sustain greater sage-grouse populations affected by energy developments.