

Do sage grouse *Centrocercus urophasianus* exhibit metapopulations in northcentral Washington, USA?

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Metapopulations can be considered populations of subpopulations, each with characteristic patterns of gene flow, extinction, and recolonization. Increased understanding of metapopulations is essential if wildlife managers are to maintain populations in altered environments. Management of sage grouse *Centrocercus urophasianus* has often been conducted with the tacit objective of managing subpopulations; this objective typically includes the delineation of high priority habitats within a defined proximity of known lek locations. This procedure has been defended by research and conjecture: 1) most females nest close to leks; 2) most females visit only one lek; and 3) each lek appears to represent a distinct population of females. Between 1992 and 1995 the possible existence of metapopulations was examined by observing 110 radio-marked sage grouse in northcentral Washington, USA. The 2,000 km² study area consisted of a variety of altered

habitats, configured in a highly fragmented landscape. The results indicate that the sage grouse in this area comprise a single population, not several subpopulations: 1) distances between nest locations and lek locations are large; 2) visits by females to more than one lek are common; 3) movements by birds within the population indicate that genetic transfer throughout the region is unhindered by distance, geography, and habitat. The lack of distinct subpopulations in northcentral Washington indicates that this sage grouse population should be managed as a single unit. Nevertheless, it is possible that the lack of evidence for subpopulations may reflect the scale of these observations; sage grouse may exist in a metapopulation at a larger scale, perhaps consisting of northcentral and southcentral Washington subpopulations.

Key words: *Centrocercus urophasianus*, management, metapopulation, sage grouse, Washington

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