

Predators, Predator Removal, and Sage-Grouse: A Review

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ABSTRACT: Populations of sage-grouse (*Centrocercus urophasianus*; i.e., sage-grouse) have been in a decline since the nineteenth century. We used our research, unpublished reports, and scientific literature to identify which predators kill greater sage-grouse and to assess whether lethal control of these predators benefited the species. We also asked state wildlife biologists and scientists if they had ever witnessed a predator kill sage-grouse. We identified 266 instances where the predator responsible for depredating nests or killing juvenile or adult sage-grouse could be ascertained. Most adult sage-grouse were killed by eagles (Accipitridae), owls (Strigiformes), or coyotes (*Canis latrans*), except where red foxes (*Vulpes vulpes*) were abundant. Based on nest-cameras, most depredated eggs are taken by common ravens (*Corvus corax*), badgers (*Taxidae taxus*), or coyotes. There are too few studies to conclude that predator removal increases survival rates of juvenile or adult sage-grouse. No study has been conducted to determine if badger removal increases nest success of sage-grouse, and the only study on coyote removal produced ambiguous results. Several studies reported that more sage-grouse nests are successful (i.e., ≥ 1 eggs hatched) in areas where common ravens were removed or in areas where raven densities were lower than in other areas. Populations of sage-grouse have been in a decline for over a century, and predators are unlikely to have played a role in the decline during most of this period, but increasing numbers of ravens since the 1970s may have contributed to the declining sage-grouse populations in recent decades.

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