



Sage grouse use of burned, non-burned, and seeded vegetation communities on the Idaho National Engineering Laboratory, Idaho
by Carolyn Anne Sime

A thesis submitted in partial fulfillment of the requirements for the degree of Master of Science in Fish and Wildlife Management
Montana State University
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Abstract:

Sage grouse (*Centrocercus urophasianus*) depend on sagebrush (*Artemisia* spp.) communities to meet their life history requirements throughout the year. Alteration of sagebrush communities by chemical, mechanical, or biological means affects sage grouse distribution and abundance. From March 1988 through September 1989, a study was conducted on the Idaho National Engineering Laboratory to investigate sage grouse response during spring and summer to a sagebrush community altered by fire and artificial seeding of crested wheatgrass (*Agropyron cristatum*). Relative seasonal use of burned, non-burned, and seeded areas was investigated using radio telemetry, roadside counts, and pellet census techniques. In 1988, a drought year, telemetry efforts focused on males utilizing the seeding for strutting activities. Males left the study area at the conclusion of the breeding season. In 1989, a year of normal precipitation, females which bred on these same areas were radio-tracked to evaluate brood-rearing potential. Telemetered females remained in the study area, attempting to nest and raise broods. In both years, sage grouse were observed during roadside counts through early-September. Due to inherent biases in data collection techniques and variable conditions between years, telemetry, route counts, and pellet census results revealed slightly different movement and relative use patterns. However, all data indicated that sage grouse took advantage of the variety of vegetation types available. Non-burned areas provided essential sagebrush cover and food for wintering and nesting sage grouse. Burned areas provided open overhead canopies attractive to young grouse seeking palatable forbs. The artificial seeding will maintain an opening in the sagebrush canopy for strutting grounds. On this study area, alteration of the sagebrush community did not appear to discourage sage grouse use.

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ABSTRACT

Sage grouse (Centrocercus urophasianus) depend on sagebrush (Artemisia spp.) communities to meet their life history requirements throughout the year. Alteration of sagebrush communities by chemical, mechanical, or biological means affects sage grouse distribution and abundance. From March 1988 through September 1989, a study was conducted on the Idaho National Engineering Laboratory to investigate sage grouse response during spring and summer to a sagebrush community altered by fire and artificial seeding of crested wheatgrass (Agropyron cristatum). Relative seasonal use of burned, non-burned, and seeded areas was investigated using radio telemetry, roadside counts, and pellet census techniques. In 1988, a drought year, telemetry efforts focused on males utilizing the seeding for strutting activities. Males left the study area at the conclusion of the breeding season. In 1989, a year of normal precipitation, females which bred on these same arenas were radio-tracked to evaluate brood-rearing potential. Telemetered females remained in the study area, attempting to nest and raise broods. In both years, sage grouse were observed during roadside counts through early-September. Due to inherent biases in data collection techniques and variable conditions between years, telemetry, route counts, and pellet census results revealed slightly different movement and relative use patterns. However, all data indicated that sage grouse took advantage of the variety of vegetation types available. Non-burned areas provided essential sagebrush cover and food for wintering and nesting sage grouse. Burned areas provided open overhead canopies attractive to young grouse seeking palatable forbs. The artificial seeding will maintain an opening in the sagebrush canopy for strutting grounds. On this study area, alteration of the sagebrush community did not appear to discourage sage grouse use.

INTRODUCTION

Because sage grouse depend on sagebrush communities, their distribution in western states reflects the distribution of sagebrush (Artemisia spp.) (Wallestad 1975) (Fig. 1). Sage grouse populations have declined from historical levels, disappearing altogether from areas where sagebrush has been extensively removed (Call and Maser 1985).

Much of the land area dominated by sagebrush within the intermountain west has been altered mechanically, chemically, and/or biologically. Sagebrush reduction was historically conducted to "improve depleted range" and removal was followed by grass seedings to accommodate agricultural interests (Braun et al. 1976). Swenson et al. (1987) documented declining sage grouse populations as a result of mechanical alteration of sagebrush stands. Reduced wintering, breeding, nesting, and brood rearing activities by sage grouse have been reported following chemical treatment (Klebenow 1970, Martin 1970, Pyrah 1972, Wallestad 1975). As of 1974, 627,500 ha of U. S. Forest Service and Bureau of Land Management (BLM) lands in Idaho had been subjected to sagebrush control projects (Vale 1974).

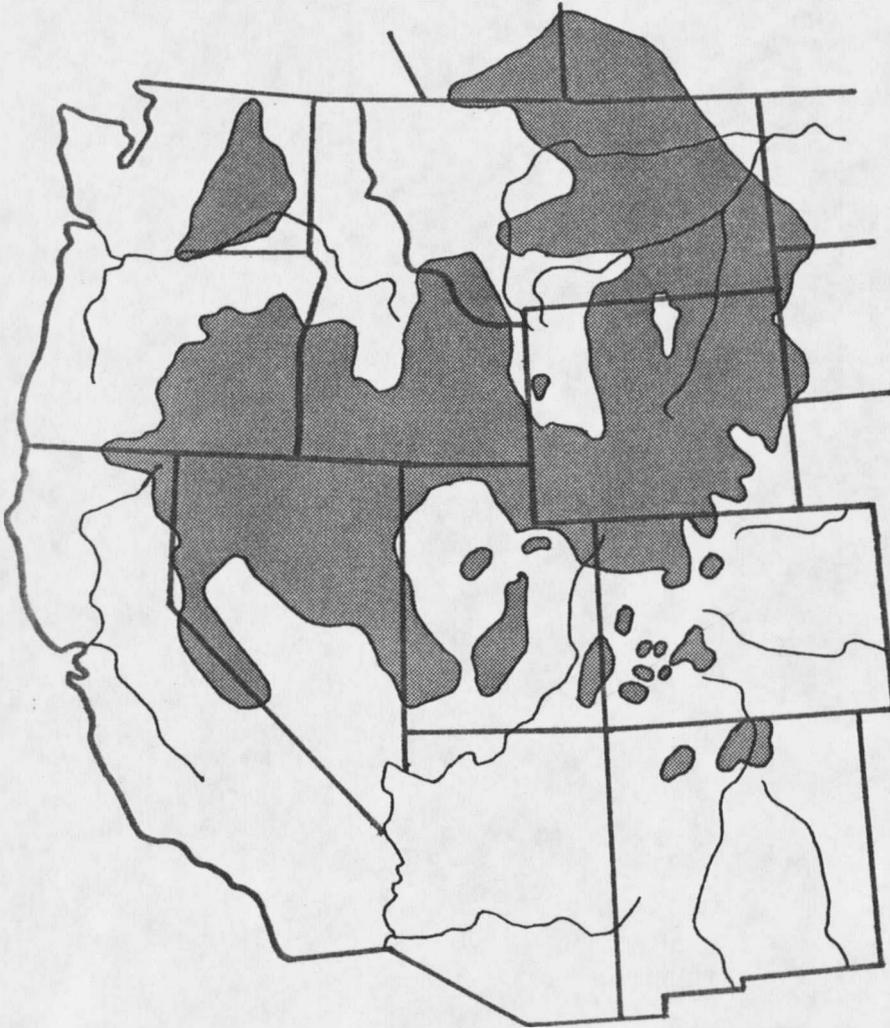


Figure 1. Sage grouse distribution in 1975, taken from Wallestad (1975).

Drought and livestock overgrazing have also altered sagebrush communities and may have contributed to grouse declines. Patterson (1952) pointed out that the decline in sage grouse populations coincided with the maximum livestock utilization of range resources between 1900 and 1915. Woody species dominated pre-grazing vegetation in the intermountain west while grasses and forbs were less conspicuous (Vale 1974). Under heavy, unregulated grazing regimes, perennial forbs decreased the most while woody species increased (Vale 1974). Although increased densities of sagebrush may have enhanced sage grouse winter range, spring and summer ranges deteriorated significantly. With the regulation of grazing provided by the Taylor Grazing Act of 1934, grouse declines reversed; populations increased but did not reach historical levels (Klebenow 1972).

Sage grouse/livestock interactions have not been extensively studied. Although Patterson (1952) believed that moderate use by sheep did not impair sage grouse occupancy of an area, he reported considerable nest desertion when bedgrounds were in the vicinity of grouse nesting activity.

Fire has historically been an important source of disturbance in sagebrush-grass communities (Gates 1983, Anderson and Shumar 1989). Fire may be beneficial or detrimental to sage grouse, depending on the particular

