

Western Ecological Research Center

Publication Brief for Resource Managers

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Greater Sage-Grouse Nesting Ecology

The greater sage-grouse is currently being considered for listing under the Endangered Species Act. Sage-grouse populations and habitat have been severely reduced across their range, while the loss of nesting habitat is believed to be a factor in the population decline. USGS and University of Nevada, Reno researchers led an investigation into the nesting ecology of sage grouse in the Mono County region of California to better understand factors affecting sage grouse reproduction on the southwestern edge of their range. In addition to being considered for listing, sage-grouse in the Mono region have been identified as being genetically unique from grouse in other parts of their range. The Mono population has been petitioned for listing as a distinct population. Thus, research results from this study, published recently in the *Journal of Wildlife Management*, are important for grouse conservation at the both the local and range-wide scale.

The researchers studied habitat selection of nesting sage-grouse in Mono County from 2003 to 2005 by

Management Implications:

- Managers should consider that greater shrub cover and a diversity of shrub species within sagebrush habitats may be more important to sage-grouse nest success in the Mono County region than reported in other areas.

capturing and radio tracking females to identify nesting locations. They sampled vegetation at nest sites and at randomly selected sites to assess nest site selection. Nest sites were characterized by $42.4\% \pm 1.3$ ($\bar{x} \pm SE$) shrub canopy cover, $10.5\text{ cm} \pm 1.0\text{ cm}$ residual grass height, and $2.7\% \pm 1.0\%$ residual grass cover. Shrub cover was the only variable found to differentiate nest sites from randomly selected sites. Unlike some other studies, this study did not find understory vegetation to be important for selecting nest sites. Mean shrub cover was $38.7\% \pm 1.5\%$ at random sites within 200 m of nests and $33.6\% \pm 1.6\%$ at random sites at the approximate



Greater sage-grouse nest location in Mono County, California . USGS photo.



Greater sage-grouse nest bowl with eggs. USGS photo.

scale of home ranges, indicating that nesting females selected nesting areas that contained denser shrubs than their home range, and nest sites that contained greater shrub cover than the vicinity immediately surrounding nests. Study results suggest that managers should consider managing for greater shrub cover in Mono County than what is currently called for in other parts of sage-grouse range and that management for sage-grouse habitat may need to be tied more closely to local conditions.

The researchers also studied the factors influencing nest survival. Their nest survival estimate (assuming a 38-day exposure period) was 43.4 %, and percent cover of shrubs other than sagebrush was the variable most related to nest survival. Nest survival increased with increasing cover of shrubs other than sagebrush. Also, daily nest survival decreased with nest age, and there was considerable variation in nest survival among the five subareas. A diversity of shrub species within sagebrush habitats may be important to sage-grouse nest success in Mono County. Sage-grouse selected nest sites with greater shrub cover than was available at random. This result differs from some other parts of sage-grouse range where sagebrush may represent more than 90% of shrub cover. Selection of nest sites with greater shrub cover and the positive effect of other shrub cover

on nest success indicates that managers in Mono County should manage for greater cover of shrubs and greater diversity of shrubs than might be true in other portions of sage-grouse range. While the researchers caution that understory vegetation not be ignored, because such vegetation is important in other sage-grouse nesting areas, they recommend that shrub cover and diversity should receive a higher priority in Mono County when managing for sage-grouse.

This project was accomplished with the help of numerous contributing partners including the California Department of Fish and Game, the Bistate Sagegrouse Conservation Team, the Bureau of Land Management, the U.S. Forest Service, the U.S. Fish and Wildlife Service, Quail Unlimited, Los Angeles Department of Water and Power and the Mono Lake Committee.

Kolada, E.J., J. S. Sedinger, and M. L. Casazza. 2009. Nest site selection by greater sage-grouse in Mono County, California. Journal of Wildlife Management 73(8):1333–1340.

Kolada, E.J., M. L. Casazza, and J. S. Sedinger. 2009. Ecological factors influencing nest survival of greater sage-grouse in Mono County, California. Journal of Wildlife Management 73(8):1340–1347.
