

Sage-Grouse: Fine-Scale Specialist or Shrub-Steppe Generalist?

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Sage-grouse (*Centrocercus* spp.) are driving rapidly-evolving land management policy in the western United States. Management objectives for fine-scale vegetation characteristics have been widely adopted by land management agencies based on resource selection or relationships with fitness proxies reported among numerous habitat studies. However, some managers have questioned the appropriateness of these objectives. Moreover, it remains untested whether habitat-fitness relationships documented at fine scales (i.e., among individual nests within a study area) also apply at scales of management units (e.g., pastures or grazing allotments), which are many orders of magnitude larger. We employ meta-analyses to help resolve the role of fine-scale vegetation structure in nest site selection and nest success across the geographic range of greater sage-grouse (*C. urophasianus*) and evaluate the validity of established habitat management objectives. Importantly, our approach tests habitat relationships at a range-wide extent and a grain size closely matching scales at which agencies make management decisions. We found moderate, but context-dependent, effects of shrub characteristics and weak effects of herbaceous vegetation on nest site selection. None of the tested vegetation characteristics were related to variation in nest success, suggesting nesting habitat-fitness relationships have been inappropriately extrapolated in developing range-wide habitat management objectives. Our findings reveal surprising flexibility in fine-scale habitat use for a species often depicted as having very particular fine-scale habitat requirements and cast doubt on the practice of adopting precise management objectives for vegetation structure based on findings of individual small-scale field studies.