GREATER SAGE-GROUSE RESPONSE TO BENTONITE MINING

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The greater sage-grouse has undergone range contraction and population decline because of anthropogenic land surface disturbances; yet, there is little information on the effects of mining on sage-grouse populations. In the Bighorn Basin of Montana and Wyoming, bentonite mining is a growing source of surface disturbance that contributes to loss of sagebrush habitat. We evaluated the response of sage-grouse to active and reclaimed bentonite mining, relative to nesting, brood-rearing, adult breeding, and adult winter habitat, through resource selection and habitat-specific mortality risk analyses, based on female sage-grouse monitored with telemetry from 2011-2015. A greater proportion of our monitored sample was exposed to mining disturbance during winter (65%) than during other seasons (range = 25%-34%). We observed avoidance of all mining disturbance for selection of nesting habitat, adult breeding habitat, and adult winter habitat. Evidence was inconclusive for avoidance of mining for brood-rearing habitat. We also observed increased adult breeding season mortality risk associated with active mining disturbance but observed no effect on nest success. Evidence was inconclusive for increased mortality risk associated with broods and adults during winter. Stakeholders in the Bighorn Basin should be flexible and proactive to minimize the negative effects of bentonite mining on sage-grouse habitat use and demographic rates. Stakeholders should prioritize the conservation of winter habitats because of the influence on a greater proportion of the population and they should strive to perfect mining reclamation to return disturbed sites back to pre-disturbance conditions to minimize long-term effects.