**Using Ecological Site Condition to Evaluate Habitat Selection by Sharp-Tailed Grouse Broods

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Brood survival, an important vital rate affecting population viability of sharp-tailed grouse, is largely determined by the selection of brood-rearing habitats by females. The abundance and quality of brood-rearing habitat is often influenced by land management decisions. Thus, improper rangeland management may lead to habitat degradation and impair sharp-tailed grouse populations. Many rangeland management decisions affecting brood habitats (e.g., livestock grazing, prescribed burning) are based on the type and condition of ecological sites in rangelands. However, associations between brood habitat use and ecological site condition have not been evaluated. We examined habitat selection of brood-rearing females in eastern Montana using radio-marked hens. We stratified our field sampling based on pre-existing ecological site maps prepared by the USDA-NRCS. We assessed the condition of each ecological site polygon by comparing the current plant community composition to the historic climax plant community composition (i.e., similarity index) across our study area. We then evaluated selection ratios of radio-marked brood hens in relation to ecological sites and their similarity index. We found that when selecting a home range, the interaction between ecological site type and similarity index was important. When selecting habitat within their home ranges, females selected for sites with a lower similarity index. We found little evidence that ecological site type was a driver of habitat selection once females had selected a home range. Our results provide useful information on brood habitat selection relative to habitat assessment frameworks used by rangeland managers and have implications for the management of sharp-tailed grouse brood habitats.