Evaluating the Basis for Wilflie Habitat Preferences: A Cautionary Tale

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Understanding why wildlife species select particular habitats over others is critical for differentiating between habitats of different value for management. We assume habitat preferences to reflect where fitness components such as reproductive success are maximized. However, many studies conclude that habitat preferences are unrelated to reproductive success. In birds, for example, many studies report neutral or even negative relationships between preferred nesting habitats and nest success. One potential explanation for these mismatches may be due to a lack of a priori hypotheses about specific habitat attributes and why they should be important based on the ecology of the species. We tested two hypotheses for why microhabitat structure may influence rates of nest predation in a songbird species that breeds in Montana, the Brewer's Sparrow (*Spizella breweri*). Our spatially and temporally replicated data from natural nests as well as a microhabitat manipulation experiment show clear support for the hypothesis that nest predation is lower in areas where predators must search among a greater number of potential nest sites, and no support for the alternative hypothesis focusing on the total amount of foliage with nest patches. We emphasize the utility of specific, a priori hypotheses and experimental manipulations for uncovering why habitat attributes should influence fitness outcomes in studies of habitat selection.