

FEATURE ARTICLES

DOES BODY SIZE AFFECT A BIRD'S SENSITIVITY TO PATCH SIZE AND LANDSCAPE STRUCTURE?

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Abstract. Larger birds are generally more strongly affected by habitat loss and fragmentation than are smaller ones because they require more resources and thus larger habitat patches. Consequently, conservation actions often favor the creation or protection of larger over smaller patches. However, in grassland systems the boundaries between a patch and the surrounding landscape, and thus the perceived size of a patch, can be indistinct. We investigated whether eight grassland bird species with different body sizes perceived variation in patch size and landscape structure in a consistent manner. Data were collected from surveys conducted in 44 patches of northern tallgrass prairie during 1998–2001. The response to patch size was very similar among species regardless of body size (density was little affected by patch size), except in the Greater Prairie-Chicken (*Tympanuchus cupido*), which showed a threshold effect and was not found in patches smaller than 140 ha. In landscapes containing 0%–30% woody vegetation, smaller species responded more negatively to increases in the percentage of woody vegetation than larger species, but above an apparent threshold of 30%, larger species were not detected. Further analyses revealed that the observed variation in responses to patch size and landscape structure among species was not solely due to body size per se, but to other differences among species. These results indicate that a stringent application of concepts requiring larger habitat patches for larger species appears to limit the number of grassland habitats that can be protected and may not always be the most effective conservation strategy.

Key words: body size, conservation, grassland bird, landscape, patch size, umbrella species.