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PATCH SIZE AND NEST DENSITY INFLUENCE NEST SURVIVAL

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ABSTRACT

Nest predation is the primary cause of avian nest failure and therefore an important driver of avian population growth. Studies indicate that landscape context plays an important role in nest success, and although this is widely attributed to changes in nest predator communities, landscape context also influences nest density which affects predator search area and effort. Much debate remains as to whether specifically the size of a habitat patch or the density of nests has the greatest effect on nest predation rates. We explored the interactions between landscape context, predator efficiency, and nest survival. Northern bobwhite quail (*Colinus virginianus*) possess specific habitat requirements within a small home range and are a short-lived species that relies upon high reproductive performance, which make them the ideal system to test the extent to which landscape context affects nest predation rates. We investigated the extent to which the size of a grassland patch versus nest density affects nest survival by studying the predation rates of 617 artificial nests during two 23 day trials on 12 study sites in south central Nebraska. To examine the effects of patch size, we selected 6 study sites that were small patches of grassland (including pastures and Conservation Reserve Program fields) ranging in size from 40-60 ha and 6 study sites that were approximately 50 ha sections of larger contiguous grasslands. A high density of artificial nests were placed on half of the small and large patch study sites with the remaining sites having a low density of nests, for the second trial the nest density treatments were switched for each site.

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Key words: *Colinus virginianus*, nest survival, landscape context, northern bobwhite, and predation

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