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HABITAT, CLIMATE, AND RAPTORS AS FACTORS IN THE NORTHERN BOBWHITE DECLINE: A MULTI-SCALE ANALYSIS

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ABSTRACT

Landscape-level processes such as habitat loss and fragmentation are primarily responsible for the declines in northern bobwhite (*Colinus virginianus*). These landscape processes generally occur at a scale beyond that of traditional quail studies and may involve not only habitat loss and fragmentation but also broad-scale changes in climate trends and predation risk. However, reductions in usable space and changes in habitat configuration at smaller scales may also reduce population viability. It is therefore imperative to study relationships to bobwhite populations at multiple scales. The objective of our research is to quantify to what extent habitat loss and fragmentation, climate, and predators are affecting quail populations at multiple scales within Texas. Our study area will include the Rolling Plains and Rio Grande Plains ecoregions, which are historic strongholds of bobwhite, though each has seen recent declines. We will examine the relative contributions of 3 general factors (habitat, climate, and predators) on quail populations at multiple scales (ranch, route-level, and landscape). Specifically, these factors include total habitat amount, degree of fragmentation, raptor relative abundance, temperature, and precipitation. We will obtain data from multiple sources to determine quail trends (Breeding Bird Survey and ranch-level data) and relate habitat trends (National Land Cover Database and Texas Ecological Systems Classification Project), raptor abundance (Breeding Bird Survey), and climate factors (PRISM) within a multiple linear regression framework. This study will provide an understanding of 1) to what degree habitat loss and fragmentation are affecting quail populations on Texas rangelands, 2) how other factors such as climate and predators may be compounding these effects, and 3) how these relationships vary at multiple scales.

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