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HOME RANGE AND SPACE USE OF NORTHERN BOBWHITE UNDER TWO DIFFERENT MANAGEMENT MODELS IN SOUTHWESTERN MISSOURI

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ABSTRACT

Northern bobwhite (*Colinus virginianus*; hereafter, bobwhite) management in Missouri, USA has traditionally been focused on providing an interspersed mosaic of grass, crop, old field, and woody cover juxtaposed to disked idle areas and food plots to maintain bobwhite populations. This traditional model is implemented with the goal of providing all essential habitat components within 40-acre blocks throughout a larger area used by a population. While this model can produce usable bobwhite space in agriculture-dominated landscapes, it may not be the most effective or efficient approach to producing and maintaining bobwhite in grassland-dominated landscapes. In southwestern Missouri native tallgrass prairie conservation areas are managed primarily with historical ecological processes, such as fire and grazing, to produce the desired patchy habitat mosaic. Additionally, it has been on these native tallgrass prairie conservation areas that managers have seen the most stable and productive bobwhite populations. Over a 5-year period (2014–2018) we quantified movements of northern bobwhite on 3 traditionally managed areas ($n = 185$) and on 3 managed native tallgrass prairie conservation areas ($n = 211$) to determine whether home range sizes and space use differed between these two management models. We used the 6-month (Apr–Sep) breeding period to determine core area, home range, mean movement rate, and maximum distance moved. Overall (pooled) home ranges of bobwhite did not differ significantly between traditional and grassland managed areas; however, there were significant yearly differences between management models and study areas. Males generally had larger home range sizes and had higher movement rates than females. For the 5 years of the study few birds made long-distance movements (>1.6 km; 3%), and all remained relatively close to capture locations in winter (Feb–Mar). For both traditional and grassland managed areas, bobwhite selected for areas that had disturbance (fire and grazing) in the last 2 years and for the native grassland vegetation type. These findings suggest that areas managed under the grassland management model provide preferred habitat for bobwhite and could result in significant improvement in habitat quality for tallgrass prairie wildlife.

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Key words: burning, *Colinus virginianus*, grazing, habitat management, home range, northern bobwhite, southwestern Missouri, space use

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