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INFLUENCE OF NORTHERN BOBWHITE NEST SITE SELECTION ON NEST SURVIVAL IN AN AGRICULTURAL LANDSCAPE

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ABSTRACT

Working farms provide excellent potential for conserving northern bobwhite (*Colinus virginianus*) habitat in agricultural landscapes. Managing for areas of early successional vegetation can increase bobwhite abundance with little reduction in crop production on working farms, but the mechanisms behind the increase is not well known. Our objective was to determine nest site characteristics that may predict nest initiation and survival on agricultural lands to inform future management activities. We radio-collared 241 wild bobwhite on 1 farm with and 2 farms without bobwhite habitat management in southeastern North Carolina. Study sites consisted of a 1,740-ha farm with 9% of property actively managed for early successional cover using areas planted in native vegetation and fallow field borders, a 170-ha farm with 2% of property in early-successional field borders monitored in 2014, and a 395-ha farm with no previous early successional management efforts monitored in 2015. We monitored nests ($n = 71$) from 15 May to 30 September, 2014 and 2015. We compared vegetation cover between nests and paired reference sites within 250 m of each nest using a generalized linear mixed-effect model. We used measurements of vegetation cover types at nest sites as predictors of nest survival using the Program MARK nest survival model. Bobwhite on the farm with habitat management exhibited higher nest initiation (1 nest/2 marked individuals) than those on unmanaged farms (1 nest/4 marked individuals). On the managed farm, 76% of nests were located in fallow early successional vegetation. Percent forb cover ($P = < 0.001$) was greater at nest sites on managed ($\mu = 53.61$, $SE = 4.32$) than unmanaged ($\mu = 17.01$, $SE = 2.49$) farms. Bobwhite selected nest sites with greater forb cover ($\beta = 1.08$, $SE = 0.21$) than reference sites. Daily nest survival was 0.962 ($SE = 0.007$) with no covariates that described variation in nest survival rates. Results indicate increasing fallow forb cover on agricultural lands can benefit nest initiation rates by increasing the cover bobwhite select for nesting.

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Key words: northern bobwhite, *Colinus virginianus*, nest survival, agriculture, private land management, field border

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