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# EVALUATING RELEASE STRATEGY FOR TRANSLOCATED NORTHERN BOBWHITES IN THE CROSS TIMBERS ECOREGION OF TEXAS: A PILOT STUDY

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## ABSTRACT

Northern bobwhite (*Colinus virginianus*) population decline is largely driven by the loss, fragmentation, and degradation of grassland habitats. Translocation is used to reintroduce or augment populations in fragmented landscapes where natural dispersal is inhibited. Northern bobwhites have been successfully translocated in the southeastern portion of their range, but outcomes of translocations in western ranges have been mixed. Our objective was to conduct a pilot study to test the feasibility of translocating northern bobwhites to a restored, but isolated, habitat in the Cross Timbers ecoregion of Texas, USA and to evaluate the influence of release strategy for improving northern bobwhite site fidelity and survival post-release. The release property was restored through brush management, native species seeding, and proper grazing management. We trapped and translocated 84 northern bobwhites from source populations in the Rolling Plains and Edwards Plateau ecoregions during March 2015. Coveys were assigned to either delayed or immediate release treatment. We radio-collared all hens ( $n = 40$ ; 11 adults; 29 juveniles) and evenly divided the sample between delayed and immediate releases. Delayed release coveys were held on the release site for 4 weeks in a Surrogator<sup>®</sup> (Wildlife Management Technologies, LLC). We trapped and radio-collared resident hens ( $n = 15$ ) in March and monitored all hens through breeding season (March–August; 180 days). We implemented a 2-state (alive or dead) multistate model in Program MARK to analyze survival as a function of the release treatment, resident status, and age. We found no evidence that survival differed between translocated and resident hens ( $\beta = 0.48$ , standard error [SE] = 0.38), release treatments ( $\beta = 0.10$ , SE = 0.40), or age ( $\beta = -0.16$ , SE = 0.54). Daily survival for all hens was 0.99 (SE = 0.009) and breeding season survival was 0.19 (SE = 0.08). Four (20%) immediate, 2 (10%) delayed release, and 0 resident hens dispersed off-property. Translocated and resident hens survived at similar rates, indicating that translocation may be a feasible management strategy for augmenting a northern bobwhite population on restored habitats in the Cross Timbers ecoregion although overall survival was low. We did not find evidence that delayed release improved daily survival post-release, but our small sample size may have prevented us from detecting a difference. However, delayed release birds were effectively sheltered from predation during peak raptor migration. Additional research is needed to fully understand population dynamics and implications of release strategy for translocated northern bobwhite.

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**Key words:** *Colinus virginianus*, northern bobwhite, release strategy, survival, Texas, translocation

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