

INITIAL MOVEMENTS AND DISTURBANCE RESPONSE OF A
NEWLY REINTRODUCED ELK HERD IN THE MISSOURI OZARKS

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ABSTRACT

Initial movements of reintroduced wildlife can contribute to restoration success, as low site fidelity is associated with increased mortality and failure to breed. We studied movements of elk (*Cervus elaphus*) reintroduced to Missouri in 2011-2013 for 6 months post-release. We fit repeated measures mixed models to determine the effects of predictor variables on movement metric outcomes. Site fidelity was high, with 57-97% of animals >10km from the release site 6 months post-release. Release site was the most important variable overall contributing to initial movement patterns, although sex and release year were also supported. Elk acclimated in phases, including immediate departure from the release site and elevated movement rates followed by establishment and expansion of a home range.

We also studied the effect of human disturbance on reintroduced elk, as disturbance may cause habitat abandonment. We fit repeated measures mixed models to assess the response of elk to deer hunts, a major human disturbance event beginning 4 months post-release. During deer hunts, speeds increased and ranges contracted, indicating that elk identified refugia and made more directed movements. Time, within and between years, was the most important predictor variable, indicating a learned response. We also tracked deer hunter movements and conducted a dynamic interaction analysis, but found no spatiotemporal response of elk to deer hunters.