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EFFECT OF MESO-MAMMAL NEST PREDATOR ACTIVITY ON NORTHERN BOBWHITE NEST SUCCESS

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ABSTRACT

Perceived changes in predator-prey dynamics along with documented declines of northern bobwhite (*Colinus virginianus*) have created a renewed interest from biologists and managers about the role meso-mammals play in shaping bobwhite population trajectories. As part of a larger effort to understand this predator-prey relationship, we evaluated meso-mammal activity on sites where bobwhite demographic data was simultaneously being collected via radio- telemetry. During 1999–2006 we conducted 66 meso-mammal activity surveys using scent stations on 16 sites in 3 southeastern states (Florida, Georgia, and Alabama). We calculated an index of meso-mammal activity (PI), for each site, as the average number of station visits per night by raccoons (*Procyon lotor*), Virginia opossums (*Didelphis virginiana*), nine-banded armadillos (*Dasypus novemcinctus*), bobcats (*Lynx rufus*) and foxes (*Vulpes vulpes*, *Urocyon cinereoargenteus*). We collected bobwhite reproductive information on 2,940 nests ($\bar{x} = 45$/site, SE $= 2.98$) from a total of 4,379 radio-tagged bobwhites ($\bar{x} = 67$/site, SE $= 3.81$). The average PI for all sites combined was 0.13 (range $= 0.03$-0.38, SE $= 0.01$). Nesting success on the sites ranged from 0.29 to 0.72 and averaged 0.52 (SE $= 0.01$). We used a mixed effects logistic regression model including site as a random effect and observed a negative relationship between the PI and nesting success ($\beta = -1.53 \pm 0.72$ SE). Our results suggest that meso-mammal activity affects bobwhite nest success, thus, predator management may be warranted at times on some sites to maximize productivity. Future research and modeling efforts should explore the impacts of meso-mammal activity on population growth rates and stability, especially in varying spatial contexts.

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