

Public Abstract

Dana Morris

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Biology

Effects Of Forest Fragmentation On Reproductive Effort And Productivity Of Indigo Buntings (*Passerina cyanea*)

Advisor: Dr. John Faaborg

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Forest fragmentation creates edge habitat that attracts nest predators that lower reproductive success and force breeding songbirds to renest. The increased effort required to renest may have physiological consequences for adults and their offspring. To determine if predation-induced renesting elevates stress in breeding females and reduces productivity and offspring quality, I measured maternal condition (body mass and stress hormones) and reproductive output (clutch size, nestling quality, brood sex ratios, nest success) of Indigo Buntings (*Passerina cyanea*) breeding in a fragmented and a contiguously forested landscape in Missouri. Nesting success did not differ significantly between landscapes, however, the effort to produce fledglings was higher in the fragmented landscape because only 34% of females in the fragments produced broods on their first attempt whereas 61% in the contiguous forest produced broods on their first attempt. Renesting females had lower body condition than females that were successful on their first attempt. As maternal condition declined with nesting attempt, stress hormone levels increased, suggesting poor-conditioned females lack the energetic reserves to meet increased demands. In addition, females in poor condition produced small clutches and poor-conditioned nestlings. In the fragmented landscape, 40% (11/27) of nests contained only female nestlings, whereas 19% (7/37) of nests were all-female in the unfragmented landscape, indicating a bias in production of the smaller, less profitable sex in the fragmented landscape. These results suggest that increased reproductive effort associated with renesting in the fragmented landscape imposes costs to breeding females and decreases their ability to invest in high quality offspring.