
ADULT FEMALE SURVIVAL IN A PARTIALLY MIGRATORY ELK HERD

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Partial migration occurs when a portion of the population migrates, and results from density-dependence in the relative costs and benefits of migrating or remaining a resident. For elk (*Cervus elaphus*), partial migration is an adaptive strategy for maximizing optimum forage quality while reducing predation risk. I tested related hypotheses about the effects of migration status, season (summer, winter) and density on the winter range for adult female elk survival. I first tested whether migrants had higher survival, based on the hypothesized forage benefits of migration. Next, I tested the hypothesis that survival of adult female migrant and resident elk differs over time first, as a function of density and second, as a function of seasonal variation between summer and winter. I estimated survival for 204 radio-collared elk over 8 yrs using the non-parametric Kaplan Meier (KM) approach and regressed survival estimates against population size. I tested my hypotheses regarding season, migratory status, and density using the semi-parametric Cox-Proportional Hazards (PH) Model. I found weak evidence supporting my hypothesis that adult female survival is higher for migrant elk compared to resident elk. Migrants had twice the variation in survival rates and a greater risk of death during summer compared to residents. I observed strong evidence of density dependence from the Cox PH model and my regression of KM survival estimates for residents showed adult female survival decreased with increasing elk density over time. My results show preliminary evidence for density dependence affecting resident, not migrant, adult female elk in this population.