
A REGIONAL ANALYSIS OF FACTORS AFFECTING ADULT FEMALE ELK SURVIVAL

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The Western Elk Research Collaborative has pooled elk (*Cervus elaphus*) telemetry data from seven states, one Canadian province, and Yellowstone National Park. We have collected data from 3550 individual elk across 51 populations. The vast spatial scale of this analysis affords us an unprecedented opportunity to understand how natural ecological conditions and human changes to the environment influence survival of this critical segment of the population. We use proportional hazards models and information-theoretic approaches to assess how predator diversity, harvest by humans, habitat conditions, land use, climatic factors, and interactions between these factors affect adult female survival across the region. Most of our variables are uniform within a given population, but we also assess the effects of "age" at the individual level. Some variables such as land tenure, road density, and forest cover are considered temporally static for the purposes of this study, whereas others such as precipitation, climate, and density dependence could vary over time within each population. The survival estimates we generate will ultimately help inform decision-support tools that managers could use at statewide and regional scales to explore how harvestable numbers of elk are influenced by management of habitat and predation in the context of climatic and habitat changes.