
GRIZZLY BEAR POPULATION VITAL RATES AND TREND IN THE NORTHERN CONTINENTAL DIVIDE ECOSYSTEM, MONTANA

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We estimated grizzly bear (*Ursus arctos*) population vital rates and trend for the Northern Continental Divide Ecosystem, Montana, between 2004–2009 by following radio-collared females and observing their fate and reproductive performance. Our estimates of dependent cub and yearling survival were 0.612 (95% CI = 0.300–0.818) and 0.682 (95% CI = 0.258–0.898). Our estimates of subadult and adult female survival were 0.852 (95% CI = 0.628–0.951) and 0.952 (95% CI = 0.892–0.980). From visual observations, we estimated a mean litter size of 2.00 cubs/litter. Accounting for cub mortality prior to the first observations of litters in spring, our adjusted mean litter size was 2.27 cubs/litter. We estimated the probabilities of females transitioning from one reproductive state to another between years. Using the stable state probability of 0.322 (95% CI = 0.262–0.382) for females with cub litters, our adjusted fecundity estimate (m_x) was 0.367 (95% CI = 0.273–0.461). Using our derived rates, we estimated that the population grew at a mean annual rate of approximately 3 percent ($\lambda = 1.0306$, 95% CI = 0.928–1.102), and 71.5% of 10,000 Monte Carlo simulations produced estimates of $\lambda > 1.0$. Our results indicate an increasing population trend of grizzly bears in the NCDE. Coupled with concurrent studies of population size, we estimate that approximately 1000 grizzly bears reside in and adjacent to this recovery area. We suggest that monitoring of population trend and other vital rates using radioed females be continued.