
MANAGING MULTIPLE VITAL RATES TO MAXIMIZE GREATER SAGE GROUSE POPULATION GROWTH

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Despite decades of greater sage grouse (*Centrocercus urophasianus*) field research, the resulting range-wide demographic data has yet to be synthesized into sensitivity analyses to guide management actions. We summarized range-wide demographic rates from 71 studies

from 1938-2008 to better understand greater sage-grouse population dynamics. We used data from 38 of these studies with suitable data to parameterize a two-stage, female-based population matrix model. We conducted analytical sensitivity, elasticity, and variance-stabilized sensitivity analyses to identify the contribution of each vital rate to population growth rate (λ) and life-stage simulation analysis (LSA) to determine the proportion of variation in λ accounted for by each vital rate. Greater sage grouse showed marked annual and geographic variation in multiple vital rates. Sensitivity analyses suggest that, in contrast to most other North American galliforms, female survival is as important for population growth as chick survival and more important than nest success. In lieu of quantitative data on factors driving local populations, we recommend that management efforts for sage grouse focus on increasing juvenile, yearling, and adult female survival by restoring intact sagebrush landscapes, reducing persistent sources of mortality, and eliminating anthropogenic habitat features that subsidize predators. Our analysis also supports efforts to increase chick survival and nest success by managing shrub, forb, and grass cover and height to meet published brood-rearing and nesting habitat guidelines, but not at the expense of reducing shrub cover and height below that required for survival in fall and winter.