# How Does Harvest Mortality Affect Sage Grouse Population Dynamics?[TWS]

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Sage grouse (*Centrocercus urophasianus*) have been extirpated in five states and one province, and their populations have reportedly declined over the remainder of their historical range. Many studies have been conducted to determine rates of reproduction and survival, but the effects of hunting on population dynamics of sage grouse has been less studied. Both additive and compensatory mortality hypotheses have been suggested as factors affecting harvest mortality rates of sage grouse, but compelling evidence for either hypothesis is lacking. To assess the effect of harvest on population dynamics and the relationship between harvest and these competing hypotheses, we began radio-marking and monitoring sage grouse on two sites, one open and one closed to hunting, in south-central Montana during spring 2003. We have been monitoring the level, timing, and, whenever possible, the causes of female mortality from spring through the end of hunting season each year. We also monitored reproductive effort and success in these birds to allow us to compare productivity between the two sites, which will especially be of interest should we find evidence that density was reduced by harvest on the hunted site. Results to date were presented regarding levels of female mortality during hunting season, breeding effort and success, and overall mortality of females during the first 2 of 3 years of study. Useful future research regarding the effects of harvest on sage-grouse populations was discussed.