
****HARVEST AND NON-HARVEST MORTALITY RELATIONSHIPS FOR LESSER SCAUP BREEDING IN SOUTHWESTERN MONTANA**

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Since the mid-to-late 1990s, lesser scaup (*Aythya affinis*) populations have remained more than 20% below the population goal set forth in the North American Waterfowl Management Plan. Accordingly, considerable attention has been directed towards understanding what factors may be limiting their population, including the role of harvest. Red Rock Lakes National Wildlife Refuge (RRL) in southwestern Montana is the site of a long-term study of lesser scaup ecology and demography with data from which survival and harvest rates can be estimated using capture-mark-recapture statistical techniques. The role of harvest in regulating duck population dynamics, including lesser scaup, is clouded with uncertainty. Decades of research into the additive or compensatory nature of harvest mortality has yielded little consensus as to which of these hypotheses prevail in North American duck populations. The most limiting factor to assessing these relationships stems from lacking estimates of population size during waterfowl hunting seasons. We assessed the relationship between survival rates and harvest rates for lesser scaup females breeding at RRL for an 11 years, beginning in 2005. Consistent with predictions of density dependence regulation of natural mortality rates during the non-breeding season, we found evidence suggesting adult female survival rates fluctuate in response to harvest regulations, an index of population size, and the total number of lesser scaup harvested in the Pacific and Central Flyways.