Predation And Bighorn Sheep Transplants In New Mexico: A Tale Of Two Herds

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Abstract: Transplantation is considered imperative for the restoration of bighorn sheep (*Ovis canadensis*) to historic habitats in North America. During 1992-93, New Mexico Department of Game and Fish established a new population of desert bighorn sheep (*O. c. mexicana*) in the Sierra Ladron Wilderness Study Area in central New Mexico, and during 1993 a new population of Rocky Mountain bighorn sheep (*O. c. canadensis)* was established in the Wheeler Peak Wilderness Area of northern New Mexico. Both populations were established with similar numbers of bighorn sheep (n=32 in Wheeler Peak; n=31 in Sierra Ladron). The post-lambing population estimates in 2000 are 180 in the Wheeler Peak population and 21 in the Sierra Ladron population. Starkly contrasting adult survival and recruitment rates combine to produce these 2 very different population sizes. Annual adult survival rate was higher (z=3.703; P<0.005) in the Wheeler Peak population (0.955) than in the Sierra Ladron population (0.784). Annual lamb:ewe ratios were significantly higher (P< 0.0001) in the Wheeler Peak population (79.9 vs. 30.5). Mean annual exponential growth rate (r) in the Wheeler Peak population was r = 0.25 compared to r = -0.01 for the Sierra Ladron population. Predation by mountain lions (*Puma concolor*) was the major (75%) source of known-cause mortalities of radiocollared bighorn sheep in the Sierra Ladron population; the annual cause-specific mortality rate due to mountain lion predation was 0.13 for rams, 0.09 for ewes, and 0.11 for all adult bighorn. Domestic cattle were preyed upon by mountain lions in the Sierra Ladron population and may 'subsidize' this predator. No predation was documented in the Wheeler Peak population. No fatal disease outbreaks or permanent emigrations were documented in either population. High mountain lion predation may require mitigation for the successful restoration of bighorn sheep in areas of historic habitat.