

Evaluating Survival and Home Range Use of Dall's Sheep in Lake Clark National Park and Preserve, Alaska

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Abstract: In Lake Clark National Park and Preserve (LACL), Dall's sheep (*Ovis dalli dalli*) reach the southwest extent of their current geographical range. Sheep are an important resource in LACL, providing excellent opportunities for wildlife viewing by visitors and hunting by sportsmen and local residents. Sheep have been monitored in LACL by aerial surveys, providing estimates of population size and density. Estimates have shown dramatic fluctuations among years and regions in both metrics. To better understand the factors contributing to population variability, a study was initiated to determine survival rates and identify range use patterns of sheep throughout LACL. Between 2005 and 2007, 26 ewes and 14 rams were captured using net gun and fitted with GPS radio-collars. Fourteen of 40 sheep died during the study. Annual survival of ewes (≥ 2 years of age) was 0.77 ± 0.09 and 0.85 ± 0.08 for 2005-06 and 2006-07, respectively. Survival of rams was 0.75 ± 0.13 in 2005-06 and 0.82 ± 0.12 in 2006-07. Survival was not significantly different between sexes or years. Mortalities occurred during 5 months of the year, with April and May accounting for 64% of all mortalities. Eleven of the 14 mortalities occurred within the segment of the population nearest the geographical boundary of sheep range. Home ranges of sheep (surviving ≥ 6 months) averaged 133.4 ± 16.0 km² (MCP-Minimum Convex Polygon) in LACL. Ram home ranges (156.5 ± 17.5 km²) were larger than ewes (121.3 ± 22.5 km²), but were not significantly different. The subpopulation of sheep near the geographical boundary had significantly smaller ($P=0.045$) home ranges (90.7 ± 14.7 km²) than sheep from the central region (168.1 ± 23.5 km²). Smaller home ranges and increased mortality may be indicators of habitat limitations for Dall's sheep on the periphery of their range.

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