



Dall's Sheep Population Declines in Alaska's Chugach Range May be Related to Climate and Weather Patterns

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ABSTRACT: Dall's sheep populations in the Chugach range in Alaska have declined 30-50% since the late 1980s. Research in two study areas was initiated in 2009 and 2012 to identify rates and causes of mortality, assess nutritional condition, screen for disease, and check pregnancy rates on adult (age 3-17) ewes. Additional objectives were to quantify rates and causes of mortality on lambs from natality to one year of age. In the absence of baseline data, the project was designed to identify primary factors influencing sheep populations in Southcentral Alaska. With 134 and 183 sheep-years of data on adult sheep in the two study populations, annual adult survival was 87% in each population. Lamb survival was 57% and 32%, respectively. While these rates are very similar to that reported in other study populations, pregnancy rates in Chugach ewes are low and variable, ranging from 18-88% in one population, and 44-96% in the other. It appears likely that weather, climate, nutrition, and habitat play a far greater role in shaping the trajectories of these populations than does predation. Using a combination of nutritional condition measures, forage quality assessment, and remote sensing, current research efforts are focused on assessing changes in habitat quantity and quality due to changing weather and climatic conditions. We will discuss data that led to the current research direction, and present preliminary results that suggest that tree and shrubline advance has reduced available habitat, and that warmer, drier weather has reduced diet quality. Together, these pieces of evidence suggest that carrying capacity has declined to support sheep populations at present levels.

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KEYWORDS Dall's sheep; *Ovis dalli*; lamb survival; population dynamics; nutrition; climate; weather.