Nutrition and reproduction of mountain goats in coastal Alaska.

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Abstract: Understanding characteristics of nutrition and reproduction is critical for interpreting variation in demographic processes of mountain ungulates. This occurs because nutritional condition is often positively correlated with reproductive performance which, in turn, influences population dynamics. In this study, data collected during a 5-year research project on radio-marked mountain goats (females, n = 65, males, n = 78) in coastal Alaska are used to characterize patterns in diet composition, over-summer body mass gain and age-specific reproductive performance. In addition, costs of reproduction were assessed by contrasting differences in body mass and rump fat thickness between adult females with and without kids at heel. Overall, findings indicate that summer diet composition is dominated by sedges, lichens, forbs and ferns while winter diets were composed primarily of conifer needles (western hemlock), shrubs and lichens, in order of decreasing preference. Between August 1-October 15, mountain goats gained body mass at a high rate (males: 0.58 lbs/day; females: 0.40 lbs/day) relative to overall body mass (body mass on August 1st: males, mean = 260 lbs; females, mean = 160 lbs) suggesting the importance of summer range conditions in the annual nutritional cycle of mountain goats. Within this context, female mountain goats experience a significant nutritional cost of reproduction such that females with kids at heel were both lighter and had less rump fat than those without kids at heel. Overall, annual kid production ranged between 58-62% for adult females; no animals less than 4-years old had young. When comparing females for which kid production was determined during subsequent years, reproductive pauses were observed in 60% of cases (n = 68). In a broad context, these findings provide an overview of the nutritional and reproductive status of mountain goats in coastal Alaska. Specifically, these data offer insight into the linkage between nutrition and reproduction in alpine ungulates and pose important questions about the importance of summer range conditions and reproductive costs on population productivity and resilience.

Biennial Symposium of the Northern Wild Sheep and Goat Council 17:79; 2010

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