

IMPORTANCE OF SUMMER WEIGHT GAIN TO THE REPRODUCTIVE SUCCESS OF CARIBOU IN ARCTIC ALASKA

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In early July and again in early October 1988-91, 36 different adult female caribou (*Rangifer tarandus granti*) of the Central Arctic Herd were captured and weighed 92 times (i.e. 46 pairs of weights). For nonlactating females, July-October weight gain (Y , kg) varied inversely with July body weight (x , kg): $Y = -0.51x + 54.71$ ($r = 0.75$; $P < 0.001$); the hypothetical autumn "target" body weight (i.e., x -intercept) of 107 kg yields a 99% probability that a female will ovulate, conceive, and carry a fetus to term. For lactating females, however, that relationship was not significant ($P > 0.1$), and mean body weight by autumn was significantly lower than that of nonlactating females (85 vs. 94 kg, respectively; $P < 0.001$). The 9-kg difference in weight gain represents the net or "ecological" cost of mid- and late lactation, which would theoretically depress the parturition rate of the herd by 28%. Reduced fecundity probably results from repeated failure to compensate for the metabolic demands of lactation, thereby increasing the likelihood of breeding pauses.



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