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Abstracts

## Genetic relationships between Woodland and Barren ground caribou

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*Abstract:* The genetic relationships between woodland and barren ground caribou herds are being investigated using both mitochondrial and nuclear DNA. DNA sequence variation in the most variable region (the D-loop region) of mitochondrial DNA indicate the woodland caribou from Newfoundland, Ontario, Alberta, and British Columbia are closely related and form a monophyletic clade although introgression of barren ground mitochondrial genotypes occur in some herds. In addition, micro-satellites, which are highly variable nuclear loci used for DNA finger printing, are being developed which can distinguish individuals within and between herds.

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## Importance of summer weight gain to the reproductive success of caribou in Arctic Alaska

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*Abstract:* 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 ( $y_i$ , kg) varied inversely with July body weight ( $x_i$ , kg):  $y_i = -0.51 x_i + 54.71$  ( $r = 0.75$ ;  $P < 0.001$ ); 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.

**Key words:** body weight, fecundity, *Rangifer*, reproduction

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