Body Temperature Patterns Vary with Pregnancy and Condition in Moose (*Alces alces*)

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Variation in body temperature of mammals is the result of endogenous regulation of heat from metabolism and the environment, which is affected by body size and life history. We studied moose (*Alces alces*) in Alaska to examine the effects of endogenous and exogenous factors on core body temperature at seasonal and daily time scales. We recorded continuous vaginal temperature (Tv) in adult female moose with a modified vaginal implant transmitter. Vaginal temperature in non-pregnant, wild moose showed a seasonal fluctuation, with a higher daily mean Tv during the summer (37.8°C) than in winter (37.4°C). Daily change in vaginal temperature (ΔTv) was greater in summer (0.98°C) than winter (0.67°C). In comparison with non-pregnant moose, body temperature of pregnant moose was warmer (0.2 °C higher Tv) and less variable (0.1 °C lower ΔTv). During winter, body temperature was lower (Tv) and more variable (ΔTv) as body fat decreased among female moose. Ambient and local temperature (collar temperature), precipitation, and solar radiation accounted for a large amount of the residual variation in Tv after accounting for season, reproductive status, population and individual. Temperature, wind, solar radiation and precipitation had the greatest effect on the residual variation of ΔTv. Our study shows that adult female moose exhibit hypothermia induced heterothermy, and that body temperature is influenced by pregnancy and body energy reserves within seasons and by environmental conditions within days. When studying northern Cervids, the influence of season and condition on heterothermic body temperature patterns should be considered when estimating critical thresholds for environmental stress (e.g. heat stress).