

The 12th North American Caribou Workshop,
Happy Valley/Goose Bay, Labrador, Canada,
4–6 November, 2008.

Insect-weather indices and the effects of insect harassment on caribou behaviour and activity budgets

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Many barren-ground caribou (*Rangifer tarandus groenlandicus*) populations in the Central Arctic are experiencing declining numbers. Possible causes include conditions on the post-calving/summer range, especially harassment by biting and parasitic insects. Insect harassment alters habitat use and activity budgets of caribou, potentially leading to reduced forage intake and elevated energy expenditures. This is of particular concern as climatic warming is predicted to increase the duration and intensity of insect activity. In this study, I collected weather, insect catch, and caribou behaviour data on the summer range of the Bathurst caribou herd in the Northwest Territories/Nunavut in 2007 and 2008. I used count models within a generalized linear model framework to explore the relationship between weather parameters and insect activity. The best models, selected using Akaike's information criteria (AIC), were used to develop a correlative insect-weather index applicable across the Bathurst range. Additionally, I developed models of fine-scale caribou behaviour as a function of vegetation type, phenological stage, topography, time, and insect activity. Model sets were developed for six behaviour categories, and the most parsimonious models selected using AIC. In this poster presentation, I will discuss results regarding insect indices and factors affecting fine-scale caribou behaviour (completion of analysis expected by September/October 2008). In continued work on this project, these results will be used in conjunction with GPS collar data and energetics modeling to explain patterns of movement and habitat use at coarser spatiotemporal scales, as well as to explore consequences for caribou population productivity.

