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Development and survival of *Ostertagia gruehneri* under natural and artificially warmed conditions on the Canadian tundra

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Abstract: Climate change in the Arctic is occurring at an unprecedented rate and is anticipated to alter the ecology of northern ecosystems, including the patterns, diversity, and transmission of infectious diseases. *Ostertagia gruehneri* is the most common gastrointestinal nematode in caribou and can cause decreased food intake, weight loss, and reduced pregnancy rates in *Rangifer* species. Because *O. gruehneri* has a direct life-cycle that includes a free-living stage, the development and survival rates of this parasite are influenced by climate and climate change. To investigate the response of the free-living stages of *O. gruehneri* to climate change field experiments were done from May to September 2007-08 at the Tundra Ecosystem Research Station (TERS), Daring Lake, Northwest Territories. Fecal plots containing *O. gruehneri* were established on the tundra under natural and artificially warmed conditions. Plots were sampled throughout the summer to determine development and survival rates of *O. gruehneri* and to compare between the two climate regimes (natural vs. warmed). Effects of both temperature and relative humidity on development and survival were investigated. Results from these field seasons will be used, together with laboratory experiments, to develop and validate a predictive model for the impacts of climate change on the epidemiology of *O. gruehneri*.