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Association of Environmental Factors with Seasonal Intensity of *Erysipelothrix rhusiopathiae* Seropositivity among Arctic Caribou

Appendix 1

Literature Review

The search terms and associated strings for this review were developed and optimized through discussions with caribou and wildlife disease experts. The search was performed in English using the bibliographic database ISI Web of Science and the following search engine (caribou OR rangifer) AND (weather OR climate OR environment OR insects OR temperature OR rain OR snow OR precipitation OR ice). Among the 146 articles returned from the search, only 28 were deemed relevant at the title and abstract revision (Appendix 1 Table). These articles were reviewed and the weather/climatic events and environmental variables influencing caribou performance were summarized.

Appendix 1 Table: Summary of literature review investigating the environmental variables influencing caribou performance

Range	Environmental variables	Consequences	References
Winter	Temperature, humidity, cloudiness, precipitation	Associated with herd decline, changes in migration patterns (fall and spring), negatively associated with pregnancy rate, mass mortality,	(*1,2*)
	Snowfall, precipitations, cumulative snow on the ground, snow deep, snow density, rain on snow, hardness of snow, snow melting	Associated with herd decline, changes in migration patterns (fall and spring), negatively associated with pregnancy rate, mass mortality	(*1–11*)
	Icing events, freeze-thaw events, the hardness of snow, snow crust	Associated with body condition next fall, population trends Degree days in May positively associated with body condition next Fall	(*7,9,12–14*)
Spring	Snow deepness and hardness, Snow water equivalent, Soft melting snow	Influence on caribou movement (e.g., slowed walk), delayed migration departure, associated with body condition	(*2,4,12,15*)
	Precipitations, warm temperatures, cold temperatures, growing degree days	Changes in migration patterns (e.g., departure, arrival), associated with body condition in fall	(*2,12*)
Calving	Normalized difference vegetation index (NDVI), the start of plant growing season	Associated with birth mass, peak calving date	(*11,16*)
	Start of plant growing season	Associated with peak calving date. Delayed peak calving date significantly decreases the birth rate.	(*16*)
	Insect density (mosquitos and oestrids)	Changes in the use of the landscape (e.g., use higher altitudes, use snow patches), changes in behavior (e.g., time spent in feeding, standing, running), changes in group sizes.	(*17*)
	Blizzard	Behavioral changes (e.g., increase in bedding, posterior increasing in feeding)	(*18*)

Range	Environmental variables	Consequences	References
Summer	Oestrid flies and mosquitoes	Changes in activity budget (e.g., standing time, feeding time), negative influence on body condition, variation of group size, negative associated with calves weight in autumn	(*12,19–26*)
	Temperature, wind speed, humidity, and cloud cover	Associated with changes in activity budget (e.g., standing time, feeding time), group size, the distance among individuals, herd decline, herd increase	(*1,19*)
	Normalized difference vegetation index (NDVI)	Negative association with population growth	(*27*)
	Intensity of Arctic Oscillation (Warmer temperatures and longer growing seasons)	Positively associated with population growth, increase in dissectible fat	(*28*)
Fall	NDVI in October, snow water equivalent, warmer temperatures	Changes in fall migration patterns	(*2*)

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