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## The bacteria of caribou in the Arctic: What do their hooves reveal to us?



Researchers from the Department of Surgery and Animal Medicine at UAB have identified the presence of *Treponema* bacteria in hooves of apparently healthy Arctic caribou. This finding, which shows similarities to bacteria associated with livestock diseases, raises crucial questions about the health and conservation of caribou in a changing environment.

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In the harsh environment of the Arctic, the good health of caribou is crucial for their survival and reproductive success. Hoof problems can have a significant impact on the mobility, well-being, and survival of these animals. Hoof diseases are a serious concern in the animal world, and Arctic caribou are no exception. To better understand this crucial aspect of their health, we have conducted a study aimed at delving into the microbiological aspects of the hooves of these animals. The objective? To investigate the presence of *Treponema* species, a group of bacteria known to be associated with hoof diseases in livestock.

The findings obtained have been surprising. Through meticulous analysis, we have discovered the presence of species of this bacteria (*Treponema*) in samples of apparently healthy Arctic caribou hoof tissue. The species detected were *Treponema phagedenis*, *Treponema medium*, and *Treponema pedis*. The results of genetic studies of the found in caribou were unexpected, as they showed a high similarity to the bacteria **UAB** livestock. This suggests that these bacteria are widely distributed in hoofed animals temperate zones and can be found in both domestic and wild animals. Apparently, in Arctic

caribou, they may be present in the absence of obvious signs of hoof disease during the cold months of early spring.

These findings raise important questions about the interaction between *Treponema* species and the health of Arctic caribou. What is the specific role of these bacteria in the development of hoof diseases in caribou? How do environmental factors such as climate affect the presence and activity of *Treponema* species in caribou hooves? And what are the implications of this for their conservation in a constantly changing world?

Understanding the microbiology of caribou hooves can help to develop management and conservation strategies that promote the health and well-being of these populations in a changing environment. Although many questions remain to be answered, this study marks an important step in our understanding of the health of Arctic caribou. It reminds us of the complexity and interconnectedness of life in this unique ecosystem and underscores the importance of continuing to study and learn about the health of these magnificent animals.

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