

Black-Legged Tick (*Ixodes Scapularis*) Impacts on Hematology and Ectoparasite Communities of *Peromyscus* Mice

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Abstract : As the climate warms, the black-legged tick's (*Ixodes scapularis*) range expands further north in Ontario, Canada, reaching new host populations that have not previously interacted with this blood-feeding parasite. *Peromyscus* mice in these northern areas are unfamiliar and inexperienced to the effects of these ticks compared to their southern counterparts that have adapted to living with these organisms. The purpose of this study was to see if there is a difference in physiology between these two groups – deer mice living in areas where tick populations have established and deer mice living in black-legged tick-free environments – looking specifically to see if there is significant variation in hemoglobin levels, which can negatively impact how these mice function in their environment. Along with this, a comparison of the parasite community structure on these mice hosts was analyzed to see if ticks change the composition of these micro-environments. Blood samples were collected from individual mice from populations where black-legged ticks were either present or absent to assess haemoglobin levels. At the same time, ectoparasites were collected from these same mice to determine parasite loads and species diversity. Haemoglobin levels were found to be lower when tick loads were high, and parasite diversity appeared to be higher when ticks were absent. Since black-legged ticks are carriers of many pathogens that can be passed on to humans, including Lyme's disease, it is important to understand their movement and distribution across Ontario as well as their interactions with their hosts (and co-occurring parasites) in their environments.

Keywords : community ecology, hematology, hosts, parasites

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