Host Preferences of Wild Northern and Southern Ixodes scapularis

Stewart, Hannah

Lyme disease is the number one vector-born disease in the United States, most commonly carried by the Black-legged tick, Ixodes scapularis. Although the tick is found all over the United States, the majority of reported cases in humans are heavily concentrated in the northeast. This project theorizes that this may be due to the ticks' preference in host. This study places I. scapularis from the north and the south into an apparatus, created specifically for this experiment, which grants ticks the freedom to choose between three of seven different hosts. The movements of ticks were qualitatively and quantitatively observed and recorded for 24 hour periods over the course of six weeks. One-way ANOVA tests were performed to find if there was a significance difference in the quantities of ticks outside the starting chamber at any specific time. In all results, the statistical significance was calculated to be negligible. The data from the one hour mark was used when calculating chi-squares to determine if ticks preferred a certain type of host over another. Surprisingly, significant results were found only when comparing all lizards (excluding skinks) against mammals for Northern and Southern ticks in favor of the lizards ($p=0.0125$). This indicates that ticks prefer to feed off of cold-blooded lizards, as opposed to warm-blooded mammals. This project will help researchers predict future outbreaks and occurrences of Lyme disease based upon the population densities of known species in an ecosystem.

Awards Won: