Proposal

Title: *Seasonal Micro-environments of Ticks on Candlers Mountain, VA.*

Program of Study: Biology

Presentation Type: Print Poster

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Category: Basic

Abstract:

Little research has been done to document the micro-environment of the forest floor on Candlers Mountain, VA, especially in the wintertime. Lone Star ticks, which are common in the summer, are thought to take shelter in insulated environments during the winter, such as the leafy litter found on Candlers' forest floor (Ludwig, Ginsberg, Hickling, & Ogden, 2016). Seasonal effects on the Lone Star tick's life cycle have been investigated elsewhere, showing that, while ticks are known to survive in freezing environments and cope with temperature changes through diapause, both changes in temperature as well as day-night cycles affect survival rates and activity (Ludwig, et al., 2016). While field studies have been conducted elsewhere, there is a need to investigate the local habitats of these ticks to increase the available information on local tick ecology. In hopes of defining local Lone Star tick behavior, winter forest floor samples were examined for identifiable microfauna. During this process, several creatures were discovered and documented. Thus far annelids, ants, pseudoscorpions, snails, centipedes, a termite, spiders, nematodes, predatory mites, beetles, and one Lone Star tick have been found in the samples from Candlers Mountain. The continuing project will record any microfauna identified, quantity of each species identified, and source location. As changing seasons will be the greatest variable in this project, seasonal and meteorological data will also be recorded, including, but not limited to, temperature, precipitation, humidity, and time of day. Data will be synthesized with additional information about each species in hopes of providing an informative, comprehensive research paper that will contribute valuable habitat information pertaining to the Lone Star tick population on Candlers Mountain.

Keywords: Lone Star tick, Candlers Mountain, microfauna, Central Virginia, winter

References

Ludwig, A., Ginsberg, H. S., Hickling, G. J. & Ogden, N. H. (2016). A Dynamic Population Model to Investigate Effects of Climate and Climate-Independent Factors on the Lifecycle of *Amblyomma americanum* (Acari: Ixodidae). *Journal of Medical Entomology, 53*(1), 99-115. http://dx.doi.org/10.1093/jme/tjv150

Christian Worldview:

In Genesis 1:28 (ESV), God told Adam and Eve to "[b]e fruitful and multiply and fill the earth and subdue it, and have dominion over the fish of the sea and over the birds of the heavens and over every living thing that moves on the earth." Studying and learning about creation is part of subduing the earth. Additionally, as we examine the community of microfauna in the forest floor and look at the predator and prey relationships among the microfauna, we see the evidence of the fallen creation. This is especially apparent in tick ecology. The parasitic nature of the tick shows us the corruption of sin on every part of creation. Furthermore, studying the tick's habitat and behaviors increases our understanding of the tick and its environment, which can aid in researching the diseases the tick transmits. This could help in developing cures and treatments for the diseases that ticks cause, helping to heal people suffering from these ailments. As Christians, we are commanded to love others, and participating in research that could someday help to reduce suffering is a part of loving and helping other people. the details of God's creation, which allows us to learn more about Him and His design. In addition, A Christian worldview allows us to look at the different organisms and see the details of God's creation, which allows us to learn more about Him and His incredible design. This allows us to appreciate the complexity of even the simplest organisms, and to see the differences and similarities in God's design for each organism. Our Christian worldview allows us to look at the world in a unique way.