Infestation of Parthenogenetic Haemaphysalis iongicornis Ticks in New York Schoolyards: Implications for Spread of Tick-Borne Disease

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A newly invasive tick species, native to East Asia, has recently established itself in 17 U.S. states: Haemaphysalis longicornis, the Asian Longhorned tick. This invasion is of great concern as this arthropod is a known vector of multiple tick-borne diseases in its region of origin. Additionally, there remains a lack of research which examines tick species in areas where children are susceptible to exposure to tick-borne pathogens. Thus, this study performed tick surveillance to measure tick abundance and tick-borne pathogen yield in four schoolyards in Westchester County, NY over seven months. Cotton flannel drags measuring 1m² were used to collect ticks over 100m² transects, and wind speed, humidity, soil temperature, soil moisture, soil pH, temperature, and vegetation were recorded at each site. Results indicate an acute invasion of the H. longicornis tick, with 650 of the 668 total ticks collected (~97.3%) identified as H. longicornis, a marked change from previous studies in the region. Of all ticks collected, significantly more were found on ‘non-manicured’ than ‘manicured’ transects ($p < .05$). There were no significant correlations between environmental factors and tick populations collected ($p > .05$), nor were there substantial pathogens detected; only one I. scapularis tick carried Rickettsia parkeri. However, as H. longicornis continues to grow as a vector for disease in the US, and, as supported by this research, as an environmentally resilient species, this spread suggests a major threat to human health. The results of this study help document the expansion of H. longicornis populations in NYS and serve to inform local tick management strategies for schoolyards, to protect students as the tick emerges as a vector for tick-borne disease in the US.

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