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Deer Browsing and the Distribution of *Ixodes scapularis* (Acari: Ixodidae) in Central New Jersey Forests

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Abstract

We examined the effects of white-tailed deer (*Odocoileus virginianus* Zimmerman) browsing on the abundance of the black-

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legged tick (*Ixodes scapularis* Say) in forested habitats. We estimated abundance of all active stages and recorded habitat variables at two heavily browsed and two control forest areas over 3 yr. Numbers of questing ticks varied significantly between years and between study areas in different years, but neither habitat structure nor tick abundance differed significantly between heavily browsed and control forests. Principal components analysis of habitat variables accounted for 73.4% of the variance in the data set, and tick abundance was directly related to shrub cover and leaf litter depth. However, regression analysis showed no relationship between tick numbers and browse damage. Whereas deer pellet count density was positively correlated with levels of deer browse damage, neither was related to numbers of host-seeking adult ticks. Foraging deer did not disturb the leaf litter and, even at park areas with nearly one-half of shrub stems browsed back, did not seem to alter forest vegetation in a way to affect tick habitats in the understory and shrub layers. In suburban landscapes, deer activity in, and consequently the relative likelihood of introducing ticks into, “edge” and “interior” habitats is likely to be very similar and may account for the lack of a detectable relationship between numbers of questing ticks and distance to ecotonal edges observed here.

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Keywords: *Ixodes scapularis*, deer browse, habitat

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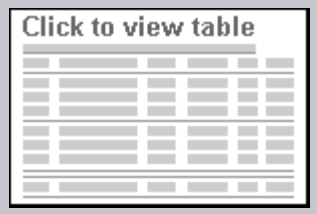

Table 1. Results of one-way ANOVA comparing vegetation parameters at four study areas in Monmouth County parks

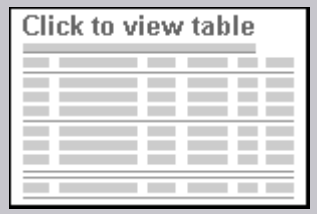

Table 2. Component loadings for the first 2 PCs derived from analysis of the habitat variables recorded at at four study areas in Monmouth County parks

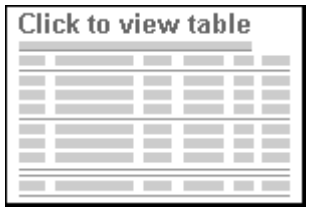

Table 3. Numbers of *I. scapularis* (mean/100 m^2 ± SE) collected during walking/dragging surveys at four study areas in Monmouth County parks, 2001–2003

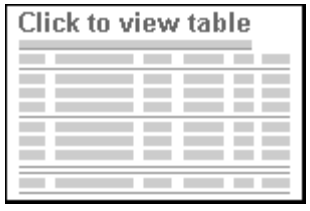

Table 4. Multiple regression analyses of the effects of habitat factors on tick abundance at four park sites in Monmouth County, NJ