Prevalence of *Ehrlichia ewingii* in *Amblyomma americanum* in North Carolina

Ticks as vectors of *Ehrlichia* parasites have been the subject of study in North Carolina since 1993. Recently, *Ehrlichia ewingii*, which causes canine granulocytic ehrlichiosis, was documented as causing human illness in Missouri (3). Previously, the Lone Star tick, *Amblyomma americanum*, was confirmed as the vector of this parasite in dogs (2). Accordingly, in 1999, we focused our efforts on determining the presence and infection rate of *E. ewingii* in *A. americanum*. Field-collected ticks from all three geographical sections of the state were preserved in 95% ethanol. DNA was extracted from 2,970 ticks and subjected to nested PCR analysis (9). DNA from one adult and four pools of nymphs of *A. americanum* was positive when tested with *Ehrlichia* groESL primers but failed to amplify with *Ehrlichia chaffeensis*- or *Ehrlichia phagocytophila*-like (HGE)-specific primers. The primer set GE2b-GE3x was then used to amplify the 5′ portion of the 16S rRNA gene, giving a characteristic 569-bp product (6). These products were gel purified and sent to Commonwealth Biotechnologies, Inc. (Richmond, Va.), for sequence analysis. The sequences were most closely related to those of *E. ewingii* when compared to sequences of accession no. U96436 (5) and M73227 (1) deposited in GenBank. From one to six base pair differences over a 500+ base pair region were noted between our sequences and the GenBank sequences. After DNA from the five pair region were noted between our sequences and the GenBank, From one to six base pair differences over a 500 plus ticks in 106 pools were tested for males, and a pool-positive rate of 4.7% (5 of 106) was obtained. Positive ticks originated from three additional pools of nymphs of *A. americanum*. Considering the high annual incidence rates of human monocytic ehrlichiosis reported for North Carolina (4, 7), the *E. ewingii* infections in dogs (5), the large populations of *A. americanum* in North Carolina, and the high levels of human contact with this tick, we suspect that some of those cases of human monocytic ehrlichiosis were caused by *E. ewingii*.

**REFERENCES**


**TABLE 1.** *E. ewingii*-positive Lone Star ticks in North Carolina

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