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## Infection of the Gulf Coast tick, *Amblyomma maculatum* (Acari: Ixodidae), with *Rickettsia parkeri*: first report from the State of Delaware

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### Abstract

The molecular detection of *Rickettsia parkeri* in a Gulf Coast tick, *Amblyomma maculatum*, collected in Delaware represents the first evidence of the human pathogen *R. parkeri* associated with *A. maculatum* in the state. A total of five adult (2 male and 3 female) Gulf Coast ticks were collected from tick drags conducted during a two-day sampling event (21–22 May 2012) at Bombay Hook National Wildlife Refuge, near Smyrna, Delaware. All specimens were tested for the presence of *Rickettsia* with a genus-specific quantitative real-time polymerase chain reaction (qPCR) assay; one of the female specimens tested positive. This specimen was then assessed for the presence of *Rickettsia parkeri* and *Candidatus Rickettsia andeanae* by two species-specific qPCR assays. The presence of *R. parkeri* DNA was detected, whereas *Candidatus R. andeanae* DNA was not.

**Key words:** *Amblyomma maculatum*, *Rickettsia parkeri*, Delaware

### Introduction

The Gulf Coast tick, *Amblyomma maculatum* Koch, has a range that extends from Peru to the southeastern United States, with a documented presence in many northeastern states, including New York, Connecticut and Maine (Teel *et al.* 2010). The occurrence of the species in these far northern states has generally been viewed as incidental dispersion; larval and/or nymphal stages are displaced from the Southeast when attached to migrating avian hosts. While the displaced immature stages may eventually molt into adults, the adult ticks do not complete a life cycle in these areas, probably because no stage is able to overwinter. Yet, the species does appear to be undergoing a range expansion from the past range boundary of South Carolina to the mid-Atlantic East Coast, as evidenced by large numbers of collected specimens, multiple collection sites, and multi-year data from North Carolina (Varela-Stokes *et al.* 2011) and Virginia (Wright *et al.* 2011, Formadel *et al.* 2011) that indicate established, viable populations in those states. In Delaware, the occurrence of *A. maculatum* has been documented only once (Lancaster 1973) in a listing that is suspected of being based upon incidental collection(s) – there is no evidence in the available literature that the species has been consistently found in the state during field collections or as an ectoparasite of animals/humans.