NOTE

Rickettsia massiliae (Latreille) from the Azores

Elizabeth H. Foley\(^2\) and Will K. Reeves\(^3,4\)


Spotted fever group *Rickettsia* (Rickettsiales: Rickettsiaceae) cause a wide range of diseases. Several of these are infrequently documented or poorly diagnosed. For example, *Rickettsia massiliae* Beati & Raoul poses a threat to human health, but it is potentially overlooked by both medical professionals and entomologists. *Rickettsia massiliae* was first identified as a human pathogen when it was isolated from a patient in Italy (Vitale et al. 2006). This pathogen also has been isolated from the brown dog tick, *Rhipicephalus sanguineus* (Latreille) (Acari: Ixodidae), in France (Beati & Raoult 1993), and it was later discovered in Africa, North America, other parts of Europe, including Portugal (Bacellar et al. 1995), and the Canary Islands in the Atlantic Ocean (Beati & Raoult 1993, Vitale et al. 2006, Fernández de Mera et al. 2009).

Tick-borne diseases of humans are poorly documented from the Azores, which lie 1360 km west of continental Portugal in the Atlantic Ocean. However, tick-borne diseases have been reported in the Azores in domestic animals. Many of the reported cases of tick-borne diseases in the Azores are from animals that probably have been imported (Baptista et al. 2013). We collected 12 ticks from a domestic dog from a veterinary clinic adjacent to Lajes Field Air Base on Terceira Island, Azores, Portugal, in June 2013 as part of regular vector surveillance for the air base by U.S. Air Force pest control technicians.

Ticks were preserved in 95% ethanol. All ticks collected were identified as *R. sanguineus* using morphological keys (Walker et al. 2000). *Rhipicephalus sanguineus* primarily feeds on dogs, but some ticks bite humans (Goddard 1989). This tick is well documented as a vector of *Rickettsia conorii* Brumpt (Psaroulaki 2003), a member of the spotted fever group. Fully engorged ticks were not tested and several specimens were submitted as voucher specimens. Five flat or nearly flat ticks were macerated with a sterile razorblade and Teflon pestle before the remains were digested with Protease K for 8 h. DNA was extracted from individual ticks with a DNeasy Blood & Tissue Kit (Qiagen, Valencia, CA) and dissolved in nuclease-free water. Extracts were screened for DNA from *Rickettsia* by polymerase chain reaction (PCR) using previously described protocols (Webb 1990). Controls included distilled water as a negative control and a DNA extract from ticks with *Rickettsia parkeri* Lackman as a positive control. PCR products were separated by electrophoresis on 4% agarose

\(^1\)Accepted for publication 17 April 2014.
\(^2\)U.S. Air Force School of Aerospace Medicine/PHD, Wright-Patterson Air Force Base, Ohio 45433, USA.
\(^3\)U.S. Air Force School of Aerospace Medicine/PHR, Wright-Patterson Air Force Base, Ohio 45433, USA.
\(^4\)Corresponding author, wkreeves@gmail.com