

ABSTRACT

The role of questing ticks in the epidemiology of tick-borne diseases in Kenya's Maasai Mara National Reserve (MMNR), an ecosystem with intensified human-wildlife-livestock interactions, remains poorly understood. We surveyed the diversity of questing ticks, their blood-meal hosts, and tick-borne pathogens to understand potential effects on human and livestock health. By flagging and hand-picking from vegetation in 25 localities, we collected 1,465 host-seeking ticks, mostly *Rhipicephalus* and *Amblyomma* species identified by morphology and molecular analysis. We used PCR with high-resolution melting (HRM) analysis and sequencing to identify *Anaplasma*, *Babesia*, *Coxiella*, *Ehrlichia*, *Rickettsia*, and *Theileria* pathogens and blood-meal remnants in 231 tick pools. We detected blood-meals from humans, wildebeest, and African buffalo in *Rh. appendiculatus*, goat in *Rh. evertsi*, sheep in *Am. gemma*, and cattle in *Am. variegatum*. *Rickettsia africae* was detected in *Am. gemma* (MIR = 3.10) that had fed on sheep and in *Am. variegatum* (MIR = 250) that had fed on cattle. We found *Rickettsia* spp. in *Am. gemma* (MIR = 9.29) and *Rh. evertsi* (MIR = 200), *Anaplasma ovis* in *Rh. appendiculatus* (MIR = 0.89) and *Rh. evertsi* (MIR = 200), *Anaplasma bovis* in *Rh. appendiculatus* (MIR = 0.89), and *Theileria parva* in *Rh. appendiculatus* (MIR = 24). No *Babesia*, *Ehrlichia*, or *Coxiella* pathogens were detected. Unexpectedly, species-specific *Coxiella* sp. endosymbionts were detected in all tick genera (174/231 pools), which may affect tick physiology and vector competence. These findings show that ticks from the MMNR are infected with zoonotic *R. africae* and unclassified *Rickettsia* spp., demonstrating risk of African tick-bite fever and other spotted-fever group rickettsioses to locals and visitors. The protozoan pathogens identified may also pose risk to livestock production. The diverse vertebrate blood-meals of questing ticks in this ecosystem including humans, wildlife, and domestic animals, may amplify transmission of tick-borne zoonoses and livestock diseases.