



ELSEVIER

Contents lists available at ScienceDirect

Ticks and Tick-borne Diseases

journal homepage: www.elsevier.com/locate/ttbdis

Original article

Lack of seasonality of *Amblyomma rotundatum* (Acari: Ixodidae) on *Rhinella jimi* (Anura: Bufonidae) in a semi-arid region of northeastern Brazil

Glauber Meneses Barboza de Oliveira^a, Andreina de Carvalho Araújo^a,
Josenilton Rodrigues Santos^a, Ivo Wesley Gomes da Silva^a, Marcelo Bahia Labruna^b,
Mauricio Claudio Horta^{a,*}

^aLaboratório de Doenças Parasitárias, Campus Ciências Agrárias, Universidade Federal do Vale do São Francisco, Univasf, Petrolina, PE, Brazil

^bLaboratório de Doenças Parasitárias, Faculdade de Medicina Veterinária e Zootecnia, Universidade de São Paulo, FMVZ-USP, São Paulo, SP, Brazil

ARTICLE INFO

Keywords:

Ixodidae
Tick
Toad
Seasonal dynamics
Caatinga

ABSTRACT

Amblyomma rotundatum is an ixodid tick strictly associated with cold-blooded animals, among them the toad *Rhinella jimi*. This work aimed to evaluate the seasonal dynamics of larvae, nymphs, and adults of *A. rotundatum* parasitizing *R. jimi* in an area within the semi-arid Caatinga Biome of northeastern Brazil. Monthly sampling from February 2014 to January 2016 resulted in a total of 592 *R. jimi* toads captured and inspected for infestation by ticks, which were counted and identified. After the procedure, the toads were released with their ticks at the same capture site. During the study period, a total of 658 *A. rotundatum* were counted, comprising 497 larvae, 110 nymphs, and 51 females. The two-year mean abundances of larvae, nymphs, and adults were 0.84, 0.19, and 0.09, respectively. The two-year mean infestation intensities of larvae, nymphs, and adults were 3.65, 1.45, and 1.34, respectively. Comparing the monthly values of prevalence, mean abundance, and mean infestation intensity of *A. rotundatum* life stages, differences were observed between the first and second year of study; however, with no clear seasonal pattern.

1. Introduction

Amblyomma rotundatum is a parthenogenetic tick of the family Ixodidae that parasitizes a great variety of cold-blooded hosts (toads, lizards, snakes), although members of the Bufonidae and Boidae families are the most common hosts (Viana et al., 2012; Guglielmo et al., 2014). The geographical distribution of this hard tick includes countries of the Nearctic and Neotropical Regions, from the southern United States to Argentina (Luz and Faccini, 2013).

Infestations by *A. rotundatum* can lead to the development of pathologies in their hosts, either by blood spoliation, transmission of pathogens, or inoculation of toxins (Smith et al., 2008; Antonucci et al., 2011). Horta et al. (2015) reported *A. rotundatum* ticks parasitizing *Rhinella jimi*, a toad popularly known as “cururu-toad”, in northeastern Brazil. In the laboratory, the life cycle of this tick species has been studied using toads (Oba and Schumaker, 1983; Luz et al., 2013) and snakes (Rodrigues et al., 2010) as hosts. However, there is no published information about the seasonal occurrence of *A. rotundatum* in nature; therefore, the objective of this work was to evaluate the seasonal pattern of parasitism by *A. rotundatum* ticks on *R. jimi* toads under natural

conditions.

2. Materials and methods

This work was performed on a rural property located in the municipality of Petrolina (9°20′9.8″S; 40°34′33.8″W) in Pernambuco State, Northeastern Brazil. The study site is within a semi-arid region of the Caatinga Biome, which is a mosaic of xerophilous, thorny bushes and forest. Throughout the study period, the local weather was characterized by mean temperatures ranging from 21.2 (minimum) to 32.3 °C (maximum); levels of monthly precipitation averaging 40 mm (0–327 mm); and 32% (minimum) to 79% (maximum) relative humidity of the air (Laboratory of Meteorology of Federal University of the San Francisco Valley, 2018).

Over 24 months, from February 2014 to January 2016, we performed monthly inspections of toads (*R. jimi*) that were manually captured on the same rural property. Inspections consisted of counting ticks (larvae, nymphs and adults) over the whole body of the toad. In preliminary observations, just before our counting periods, some adult and nymphal ticks were collected from captured toads in this same

* Corresponding author at: Laboratório de Doenças Parasitárias, Colegiado de Medicina Veterinária, Campus de Ciências Agrárias, Universidade Federal do Vale do São Francisco, Univasf, Rodovia BR 407, Km 12, Lote 543, Projeto de Irrigação Senador Nilo Coelho, s/n, C1, 56300-990, Petrolina, Pernambuco, Brazil.

E-mail address: horta.mc@hotmail.com (M.C. Horta).

<https://doi.org/10.1016/j.ttbdis.2018.06.005>

Received 12 February 2018; Received in revised form 11 June 2018; Accepted 13 June 2018
1877-959X/© 2018 Published by Elsevier GmbH.

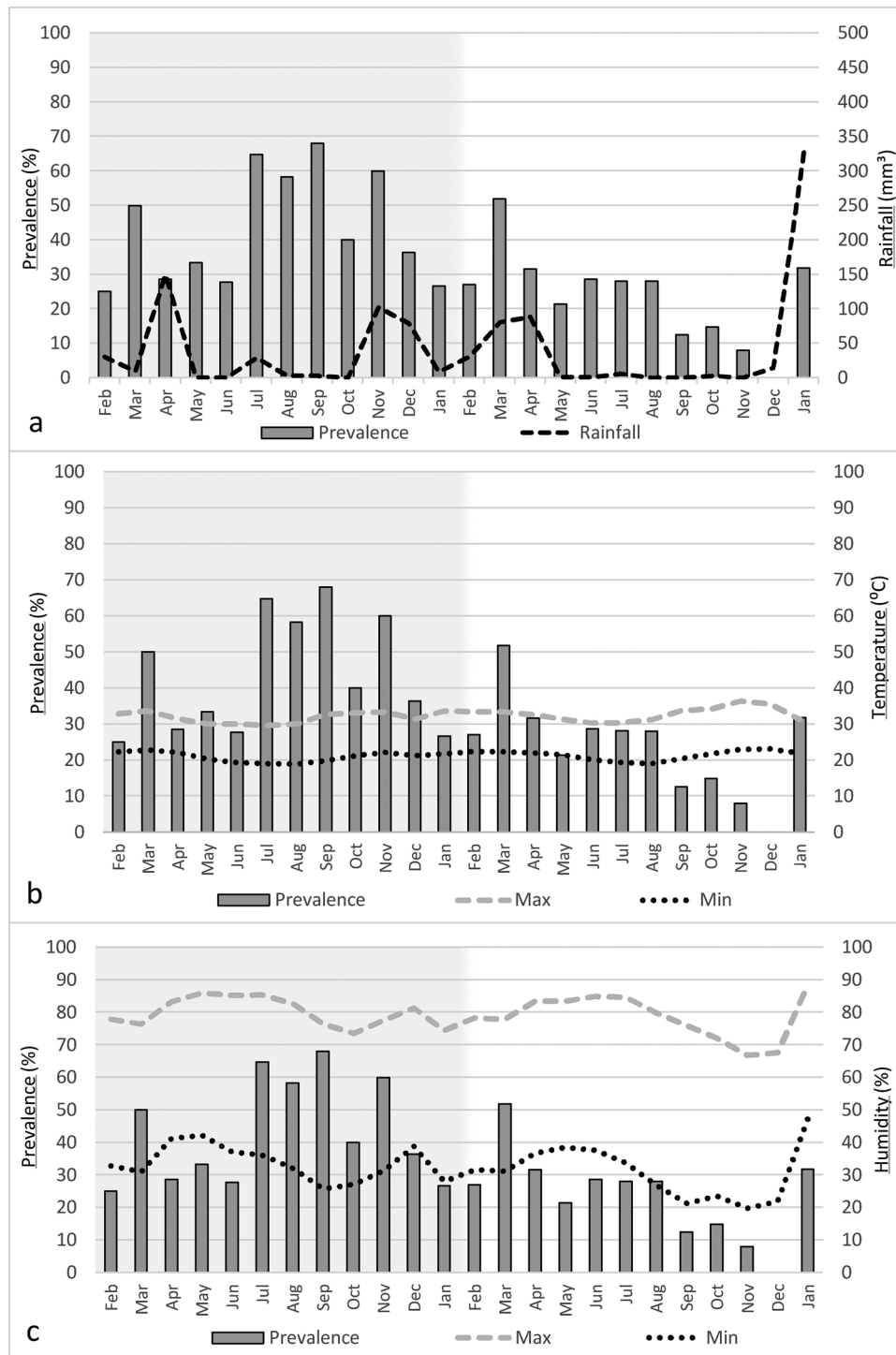


Fig. 1. Monthly prevalences of *Amblyomma rotundatum* ticks on 592 *Rhinella jimi* toads captured between February 2014 and January 2016 in Petrolina, Pernambuco, Brazil. Superimposed monthly local weather parameters include rainfall (a), extremes of ambient air temperatures (b), and extremes of ambient relative humidities.

area; in the laboratory, all ticks were identified as *A. rotundatum*, following Onofrio et al. (2006) and Martins et al. (2010). Each toad was released at its capture site shortly after being inspected, without ticks being removed to avoid impacting the natural tick population.

The infestation parameters used in this study were adopted from the definitions of parasitological terms proposed by Bush et al. (1997), and included prevalence: number of tick-infested toads / number of examined toads x 100; mean abundance: total number of ticks / total number of examined toads; mean infestation intensity: total number of ticks/ total number of infested toads.

In order to further confirm that *A. rotundatum* was the sole tick species infesting toads in the study area, random samples (taken for counting only) of ticks (females, nymphs and engorged larvae) were collected every 3 months and taken to the laboratory, where females and nymphs were identified following Onofrio et al. (2006) and Martins et al. (2010), respectively. Engorged larvae were placed in an incubator and allowed to molt to nymphs, which were subsequently identified to species.

Download English Version:

<https://daneshyari.com/en/article/8507125>

Download Persian Version:

<https://daneshyari.com/article/8507125>

[Daneshyari.com](https://daneshyari.com)