Notes on the Biology of *Amblyomma dissimile* Koch, 1844 (Acari:Ixodida) on *Bufo marinus* (Linnaeus, 1758) from Brazil

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Amblyomma dissimile *is a common ectoparasite of cold blooded animals and is an accidental ectoparasite of some wild mammals. Details of the biology of specimens from the State of Amapá were studied in the laboratory in a humidity chamber at an average environmental temperature of 19.5 °C, using* Bufo marinus *as host for the time in Brazil. We also report the first record of this species in the State of Minas Gerais.*

Key words: *Amblyomma dissimile* – tick – ixodida – biology

Amblyomma dissimile, Koch 1844 is a common ectoparasite of amphibians and reptiles, from the United States of America southward to Argentina (Adis 1981).

Floch and Fauran (1959) present a list of *A. dissimile* as accidental ectoparasite in some wild mammals from French Guiana and Antilles. Furthermore, Jongejan (1992) promoted an experimental transmission of *Cowdria ruminantium* (Rickettsiales) between ruminants and reptiles using *A. dissimile* as vector. Aragão and Fonseca (1953), discussed the validity of some species of *Amblyomma* and emphasized that *A. diminutivum* Neumann, 1899 collected on snakes from Brazil and Colombia was synonym of *A. dissimile.* Santos Dias (1958) doubted the validity of the species since the name had already been described with the name of *Ixodes bibroni* Gervais, 1842. Aragão and Fonseca (1961) preferred to keep it as *A. dissimile* Koch, 1844.

Some details of the biology of this species were observed by Dunn (1918) and Bodkin (1918/1919) who demonstrated the occurrence of parthenogenesis in this species.

This manuscript presents the results of studies on the life cycle of *A. dissimile,* using *Bufo marinus* as host in order to clarify some biological aspects.

MATERIALS AND METHODS

An engorged female collected on *Boa constrictor* (L., 1758) from the State of Amapá, Brazil was sent to laboratory. It was used *B. marinus* as host for experimental infestations. The female identified according to Aragão and Fonseca (1961), initiated its posture one week after detachment from the host. This female as well as the nymphs and adults obtained were maintained in individual culture screened vials. The vials of ticks were put in a dry-seal desiccator (ca 70-75% UR, controlled by saturated NaCl solution) at natural cycle of light. The average temperature was of 19.5 °C. The mass of eggs, as well as the emerging larvae, were maintained together in the same conditions. The larvae were fed on *B. marinus* until the end of the cycle.

RESULTS

Larval stage – Nearly 30 days after the first eggs hatched the emerging larvae exhibited activity, and were placed on *B. marinus* host obtaining 65 engorged larvae. The following times were observed: attached to the host, 12 to 47 days, with the greatest drop of on day 14 (Fig. 1); occurrence of the first ecdysis after the detachment observed in 60 specimens, 13 to 35 days, with a higher frequency on the 34th day (Fig. 2). Assuming that an average period of pre-fixation is of 25 days, it is estimated that the duration of the larval stage varied from of 50 to 107 days.

Nymphal stage – Only 18 nymphs attached on the host after a pre-attachment period of 6 to 14 days. The duration of the blood meal was 24 to 32 days (Fig. 3). After detachment the nymphs underwent ecdysis between 31 and 37 days (Fig. 4). The period for this stage was of 59 to 83 days.

Adult stage – 16 males and two females were obtained and after a pre-attachment period of 1 to 11 days, they were placed on the host. Both

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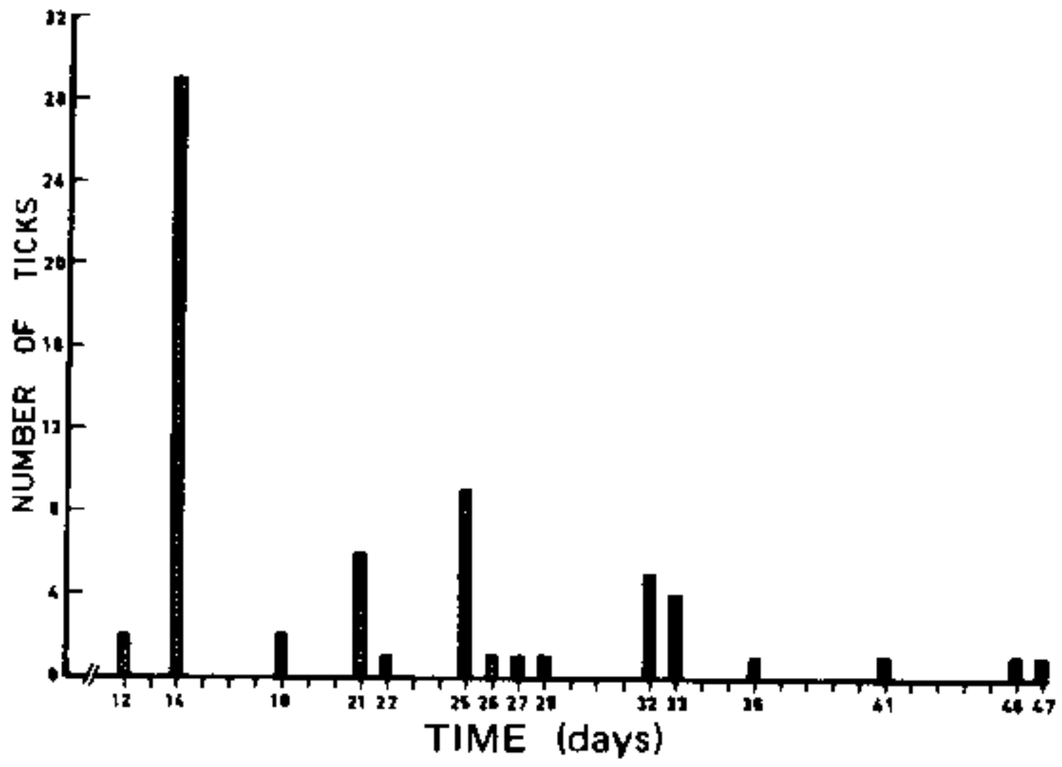

Fig. 1: attachment time of *Amblyomma dissimile* larvae on *Bufo marinus*.

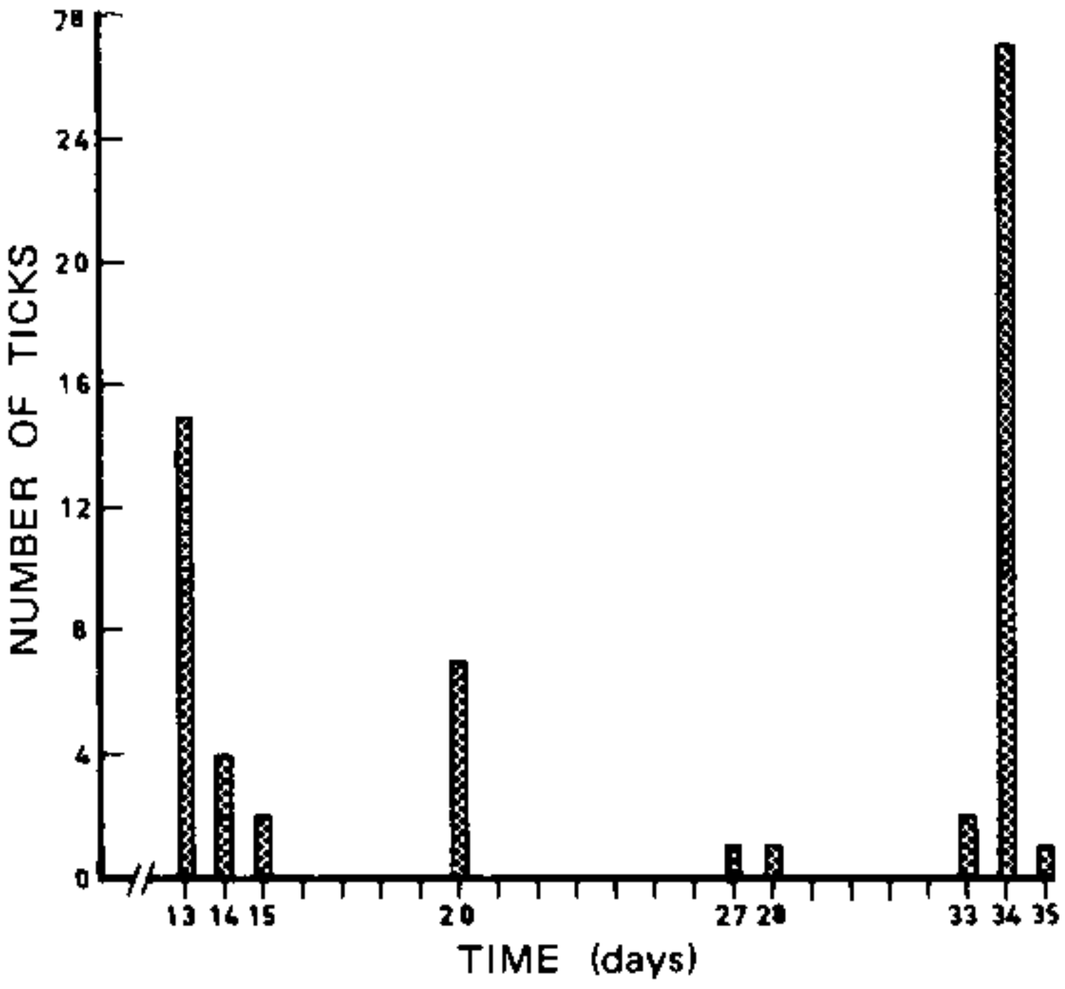

Fig. 2: occurrence of first ecdysis of *Amblyomma dissimile* after detachment.

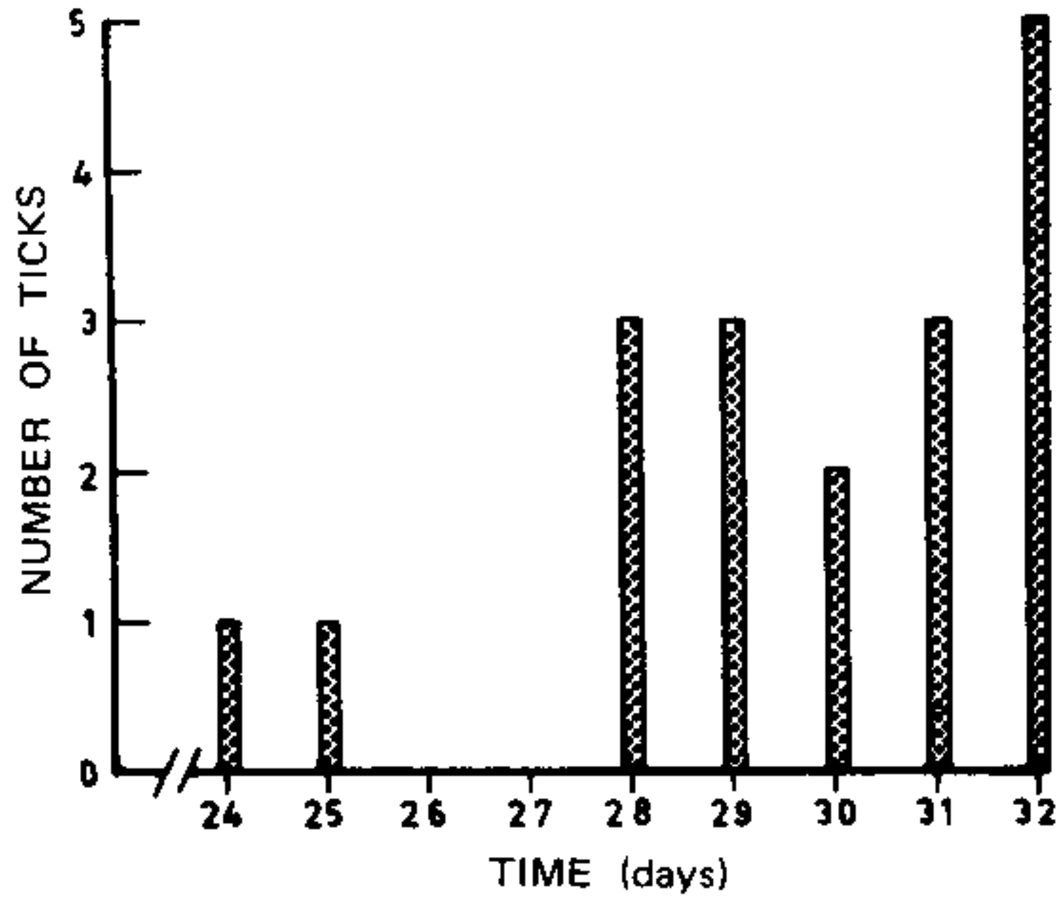

Fig. 3: attachment time of *Amblyomma dissimile* nymphs on *Bufo marinus*.

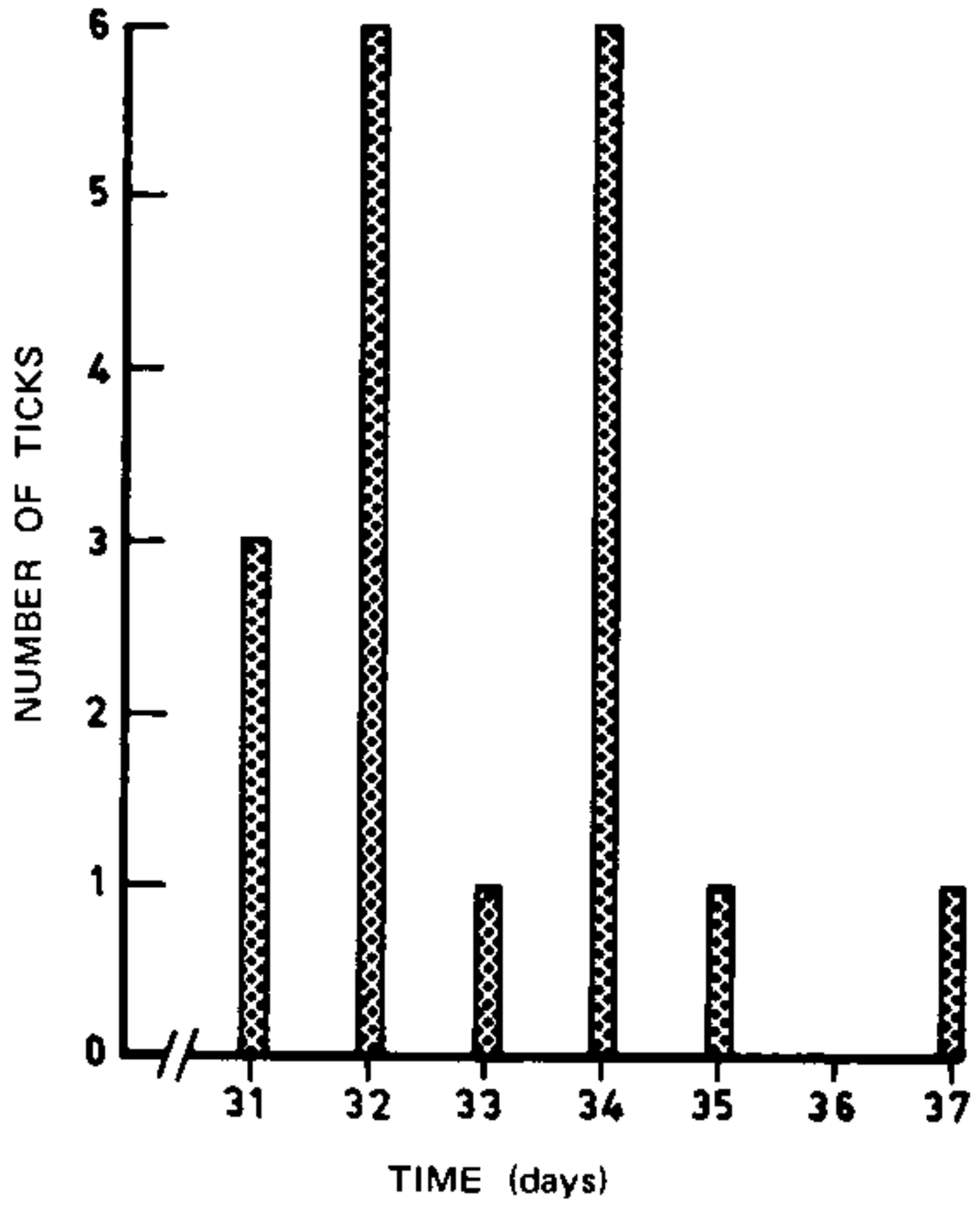

Fig. 4: occurrence of second ecdysis of *Amblyomma dissimile* after detachment.

females attached immediately, engorging during 35 days. Females were fertilized by males which were wandering on the host for different periods of time. After mating males fed although their feeding periods were always shorter than that of the females. The periods of pre-oviposition, after detachment was eight days for both females. The period of oviposition and incubation lasted 58 to 59 days. One engorged female, with a weight of 1,148 g laid 4890 eggs with eclosion rate of 29.9%, and the other, with a weight of 1,250 g laid 5299 eggs from which 19.33% hatched.

DISCUSSION

The total life cycle of *A. dissimile* from the beginning of the 1st generation to the beginning of the subsequent generation (egg to egg) lasted seven months under our experimental conditions. This record was slightly longer than that found by Dunn (1918) who reported a cycle of six months, keeping the experiment between 25.5 °C and 26.08 °C. He used a snake as host, after having tried toads and iguana without success. Bodkin (1918/1919) used French Guiana toads as a host and reported a cycle of 153 days for *A. dissimile* and observed parthenogenesis in females propositedly fed but not fertilized. Brumpt (1934) observed the cycle on toads and iguanas and questioned the parthenogenesis obtained by

Bodkin (1918/1919) which was not observed in our study.

Recently we also observed 20 females of *A. dissimile* on *Xenodon* sp., a snake from Conceição das Alagoas, State of Minas Gerais. This is the first record of *A. dissimile* from this State. Other records in Brazil are from State of Pará and Upper Amazon mentionated by Robinson (1926), State of São Paulo (Santos Dias 1958), and Central Amazon (Adis 1981).

Although this tick has been considered of little economic importance, Bodkin (1918/1919) recognized the need to validate studies on *A. dissimile* parasitic on toads, which are great consumers of disease transmitting insects. These experimental toads died with high infestation rate. Although *A. dissimile* is usually found on cold blooded animals, Floch and Fauran (1959) recorded its occurrence on mammals such as *Hydrochoerus hidrochaeris* (Rodentia) and *Bos taurus* (cattle) from French Guiana, while Jones et al. (1972) recorded it on *Proechimys semispinosus* (Rodentia) from Venezuela and Jongejan (1992) used goat as host in experimental transmission of *C. ruminantium*.

Aspects of the biology of this ectoparasite need to be studied further, because a great number of species of the genus *Amblyomma* are involved as vectors of a wide range of illnesses, and we have little knowledge about *Amblyomma* species from its natural environment.

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