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Description of nymphal instars of *Ornithodoros mimon* Kohls, Clifford & Jones, 1969 (Acari: Argasidae)

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Abstract

Ornithodoros mimon is an argasid tick common on Chiroptera in the Neotropical region, where it also bites humans aggressively. Here we describe for the first time all nymphal instars (N1, N2 and N3) of *O. mimon* based on optical and scanning electron microscopy. Although the nymphal instars of *O. mimon* resemble each other closely, there are characters that differentiate them: the N3 are taller that N1 and N2; the genital primordium occurs in some N2 and all N3; the spiracular plate in N1 and N2 is cone-like, but in N3 it is semicircular; and the submarginal dorsal groove is less distinct in N1 but more evident in N3. Nymphs of *O. mimon* closely resemble the bat-associated species of the genus *Ornithodoros* included in the *Alectorobius* group. We review prior descriptions of nymphs of the *Alectorobius* group and make comparisons with nymphs of *O. mimon*, highlighting characters with diagnostic information, such as the idiosomal shape, presence of discs and hood and absence subapical protuberance of tarsus I. The description of nymphal instars of *O. mimon* herein presented, improves the taxonomy of the family Argasidae, performing a work more detailed about the immature stage of this species.

Key word:. *Ornithodoros mimon*, nymphal instars, description

Introduction

The ticks of the family Argasidae are known mainly by larval descriptions, and their morphology, including chaetotaxy, is used to describe genera and species. Nevertheless, argasid classification is in a state of flux because taxonomists lack consensus on the genus-level classification of ticks (Guglielmone *et al.* 2010). Estrada-Peña *et al.* (2010) mentions that there are two factors contributing to this scenario: first, the lack of adequate guidelines, based on stable morphological features, for a reliable definition of genera and second, the high biodiversity of Argasidae, which it has been underestimated in the compilation of taxonomic keys, mainly in the Neotropical region (Nava *et al.* 2010; Dantas-Torres *et al.* 2012). Thus, considering the uncertainty of the classification of the family Argasidae, we have adopted the classical systematic proposed by Hoogstraal (1985) and maintained by Guglielmone *et al.* (2010), who considered the following genera as valid: *Antricola* Cooley & Kohls, *Argas* Latreille, *Nothoaspis* Keirans & Clifford, *Ornithodoros* Koch and *Otobius* Banks.

The genus *Ornithodoros* is the most diverse of the family Argasidae, having 116 described species in the world, from which 55 occur in the Neotropical region and 16 belong to the Brazilian tick fauna (Dantas-Torres *et al.* 2009; Guglielmone *et al.* 2010; 2012; Venzal *et al*. 2012; Venzal *et al*. 2013; Nava *et al.* 2013). Approximately 86 species of *Ornithodoros* are included in the group *Alectorobius*, which was considered a subgenus by Clifford *et al.* (1964) and Kohls *et al.* (1965, 1969). From these, 46 species are distributed in the Neotropics and only 21 of them have a brief description of an unspecified nymphal instar.

The species *Ornithodoros mimon* Kohls, Clifford & Jones is an argasid tick common on Chiroptera, but very aggressive towards humans, and was for long time known only from the larval description (Kohls *et al.*, 1969). The

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