

Records of *Myodopsylla wolffsohni wolffsohni* (Rothschild, 1903) (Siphonaptera, Ischnopsyllidae) on *Myotis nigricans* Schinz, 1821 (Chiroptera, Vespertilionidae), from the State of Paraná, Southern Brazil

Márcia Arzua¹Pedro Marcos Linardi²Darci Moraes Barros-Battesti³

ABSTRACT. The flea, *Myodopsylla wolffsohni wolffsohni* (Rothschild, 1903), had been recorded for the first time in the State of Paraná in 1940, on the bat, *Myotis levis* (I. Geoffroy, 1824). Previously, this species of flea had only been recorded on *Myotis nigricans*, in the Amazonian region. This is the second record of *M. w. wolffsohni* on *M. nigricans* in Brazil, and the first in the State of Paraná. Although this flea has been found on undetermined Chiroptera in the State of Santa Catarina, the present record represents the meridional limit of geographic distribution for the infestation on *M. nigricans*.

KEYWORDS. Bats; ectoparasites; fleas; *Myodopsylla*; *Myotis*; new records.

INTRODUCTION

Ectoparasites infesting bats are included into groups: Acari (15 different families), Diptera (Streblidae and Nycteribiidae), Hemiptera (Polycetenidae and Cimicidae), Dermaptera (Arixeniidae), and Siphonaptera (Ischnopsyllidae and Tungidae). Although infestation by mites and bat flies is very common in chiropterans, parasitism by fleas is not usually observed (MARSHALL 1981), despite the family Ischnopsyllidae being found exclusively on bats.

Ischnopsyllids are represented by 20 genera and 122 species worldwide (LEWIS 1998). According to LINARDI & GUIMARÃES (2000), this family accounts for 3.84% of the world's flea fauna and 8.47% of the Brazilian. In Brazil and South America five genera are found, including *Myodopsylla* Jordan & Rothschild, 1911.

Although cosmopolitan, the genus *Myodopsylla* includes 13 species. In South America it is represented by four species, one of which including two subspecies.

Up to now, only *Myodopsylla w. wolffsohni* (Rothschild, 1903) has been recorded in Brazil. The other subspecies, *Myodopsylla w. salvalis* Jordan, 1931, is known only from

Venezuela (HOPKINS & ROTHSCHILD 1956; JOHNSON 1957). According to HOPKINS & ROTHSCHILD (1956), the females of both subspecies are morphologically indistinguishable, while the males are separated by the number of bristles on the apical margin of tergum VIII.

The distribution range for *Myodopsylla w. wolffsohni* includes Argentina, Brazil, Chile, and Paraguay. In Brazil, the species has been found in the States of Alagoas (Porto Real), Amazonas (Tefé), Mato Grosso (Porto Joffre), Paraná (Rio Negro), and Santa Catarina (Nova Teutônia).

In relation to the hosts, in the State of Paraná, one of the largely distributed species is *Myotis nigricans* Schinz, 1821, a small insectivorous bat. Due to their habits, the insectivorous bats, that usually inhabit caves and tree holes, would be more infested than frugivorous bats, since the conditions in these environments favor the development of flea larvae and pupae (JOHNSON 1957).

MATERIAL AND METHODS

The study area, Estação Ecológica do Caiuá, is located on the banks of the Represa de Rosana in the Paranapanema River

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1. Setor de Parasitologia, Museu de História Natural Capão da Imbuia, Departamento de Zoológico, Prefeitura Municipal de Curitiba. Rua Benedito Conceição, 407, 82810-080 Curitiba-PR, Brazil. E-mail:marzua@zaz.com.br
 2. Departamento de Parasitologia, Instituto de Ciências Biológicas, Universidade Federal de Minas Gerais. Av. Antonio Carlos, 6627, 31270-901 Belo Horizonte-MG, Brazil. E-mail:linardi@mono.icb.ufmg.br. CNPq fellowship.
 3. Laboratório de Parasitologia, Instituto Butantan. Av. Vital Brasil, 1500, 05503-900 São Paulo-SP, Brazil. E-mail:dbattesti@usp.br

(22°39'S, 52°51' W), Diamante do Norte county, State of Paraná. This area constitutes one of the only governmental conservation areas in Northwest Paraná. It contains the remainders of the Semideciduous Seasonal Forest, which was formed on the Arenito of Paranaíba. The climate is mesothermic, humid subtropical, with an annual rainfall average of 1300 mm with no dry season and hot summers, and annual temperature average of 22 °C (MAACK 1981). This region is, without doubt, that more suffered the impact of anthropic activities, basically agriculture and cattle raising, during the last 50 years, totally decharacterizing the regional phytophysiology.

During an environmental diagnosis for the creation of a Management plan for the Estação Ecológica do Caiuá, bats were captured with mist-nets. In one of the field stages, on September 28th, 1994, two specimens of *M. nigricans* were collected, but only one was infested with fleas (one male and one female). The bats were anesthetized with ether and brushed. The fleas were removed from the host's body and preserved in 70% alcohol. After clarification, the fleas were prepared on slides and identified according to LINARDI & GUIMARÃES (2000). They were included in the parasitology collection of the Museu de História Natural "Capão da Imbuia", Curitiba, under the numbers MHNCI 850 and MHNCI 851. In addition, the host was included in the mastozoology collection (MHNCI 3790).

RESULTS AND DISCUSSION

The flea specimens were identified as *Myodopsylla w. wolffsohni* (Rothschild, 1903). Hosts for this species of flea are very rare in Brazil. To date, *M. w. wolffsohni* has been found on *Epitesicus* sp., *Molossus molossus* (Pallas, 1766) (= *M. obscurus*), *Myotis* sp., *M. nigricans*, *M. levis* (= *M. polythrix*), and *Noctilio leporinus* (L., 1758) bats (LINARDI & GUIMARÃES 2000). After recording in the State of Paraná by GUIMARÃES (1940) in Rio Negro county (coordinates 26°06'S, 49°47' W) on *Myotis levis* (cited as *M. polythrix*), the infestation on *M. nigricans* was only observed once in Brazil, in Tefé, State of Amazonas.

Exclusive infestations of *Myotis* by *M. w. wolffsohni* have been observed only in Brazil. In Panama, this Vespertilionidae genus is infested by fleas of the genus *Sternopsylla* (TIPTON & MÉNDEZ 1966). In Venezuela and Argentina, both *Myodopsylla* and *Sternopsylla* occur on this bat. Specifically in Argentina, *M. nigricans*, is infested by another species of *Myodopsylla*,

M. isidori Weyenbergh, 1881 (AUTINO & LARESCHI 1998), while the host for *M. w. wolffsohni* is possibly *Myotis albescens* (Geoffroy) and is not *M. chiloensis* Waterhouse, 1840, according to BARQUEZ *et al.* (1999) and AUTINO & CLAPS (2001).

Taking into account that only in Venezuela and Brazil *M. nigricans* is infested by both subspecies of *M. wolffsohni* and that the records for Santa Catarina were notified on unidentified bats, the present record marks the meridional limit for the geographical distribution of infestations on *M. nigricans*. Although this bat species has been recorded as a host for *M. w. wolffsohni* in the State of Amazonas (LINARDI & GUIMARÃES 2000), here it is observed for the second time in Brazil.

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