

Acari, Laelapidae (ectoparasitic mites), central and southern Chile

Marcela Lareschi^{1*} and Daniel González-Acuña²

¹ Centro de Estudios Parasitológicos y de Vectores, CEPAVE (CCT-La Plata, CONICET-UNLP) calle 2 # 584, 1900 La Plata, Argentina.

² Universidad de Concepción, Facultad de Ciencias Veterinarias, Departamento de Ciencias Pecuarias. Avenida Vicente Méndez 595. Chillán, Chile.

* Corresponding author. E-mail: mlareschi@cepave.edu.ar

ABSTRACT: Laelapidae mites include ectoparasites of small mammals. The fauna of mites of many Neotropical areas is still understudied, and such is the case of Chile. We report the results of a survey carried out in central and southern Chile: *Acanthochela chilensis* Ewing 1933 is reported from *Dromiciops gliroides* Thomas 1894; *Lukoschus maresi* Radovsky and Gettinger 1999 from *Abrothrix olivaceus* (Waterhouse 1837); *Laelaps echidninus* Berlese 1887 from *Rattus rattus* (Linnaeus 1758) and *R. norvergicus* (Berkenhout 1769); and *Gigantolaelaps wolffsohni* (Oudemans 1910) and *Mysolaelaps microspinosis* Fonseca 1936 from *Oligoryzomys longicaudatus* (Bennett 1832). The association of *Abrothrix sanborni* Osgood 1943 with *G. wolffsohni* and *M. microspinosis* was accidental, since these mites are common ectoparasites of oryzomine rodents (Rodentia, Cricetidae, Sigmodontinae). *Laelaps maresi*, *L. echidninus* and *M. microspinosis* are reported for the first time for Chile. The results of this study increase the number of ectoparasitic laelapid mites known from Chile to five species.

INTRODUCTION

Mites of the family Laelapidae include ectoparasitic species of small mammals, mainly rodents and marsupials (Strandtmann and Wharton 1958). Knowledge of the laelapid fauna associated with mammals in the Neotropical Region has grown significantly since Strandtmann and Wharton (1958) listed 23 species for South America. However, the fauna of mites of many Neotropical areas is still understudied (Furman 1972; Strandtmann and Wharton 1958). Such is the case of Chile, where its ectoparasitic laelapid fauna is one of the least known in the continent, since a few species were reported (Furman 1972; Radovsky and Gettinger 1999). Chile has borders with Peru to the north, Bolivia in the northeast, and Argentina to the east. Little is known about the fauna from Peru and Bolivia (Gettinger and Gardner 2005). In contrast, 20 species of laelapid mites were recorded from Argentina (Lareschi and Mauri 1998; Gettinger and Lareschi 2009; Lareschi and Gettinger 2009). In the last years two laelapid species were described from the Argentinean Patagonia (Radovsky and Gettinger 1999; Gettinger and Lareschi 2009). These species were collected from the rodent *Abrothrix longipilis* (Waterhouse 1837) (Cricetidae, Sigmodontine), which also inhabits Chile (Wilson and Reeder 2005). Based on the current geographical distributions of rodent and marsupial host species from neighboring countries (Wilson and Reeder 2005), the possibility of finding new records of mite species for Chile is high.

In year 2009, we received a collection of laelapid mites sampled by one of the authors (DGA) and collaborators from the skin and pelage of small mammals from central and southern Chile. In the present study we report the mite species encountered, new host and locality records are also reported.

MATERIALS AND METHODS

Study Sites

Chilean weather conditions, such as humidity and temperature, are diverse because of its vast variation in latitude and altitude; the Pacific Coast in the west and Andes mountain range in the east, the Humboldt Current, the Pacific anticyclone and the proximity to the Antarctic. The transition from arid to cold and rainy conditions begins from the southern part of central Chile (Iriarte 2008). Locality names and coordinates for each sampling point (Figure 1) are: Valparaíso (33°03' S, 71°36' W; urban zone), Río Melado (35°51' S, 71°05' W, farm zone), Campus Chillán (36°35' S, 72°05' W; urban zone), Huemules de Niblinto (36°45' S, 71°29' W; forest zone), Concepción (Carriel sur) (36°46' S 73°03' W; rural zone), Chiloé (Ancud) (41°52' S, 73°49' W; rural zone) and La Junta, Aysén (43°57' S, 72°23' W; forest zone).

Mite collections

The mammals were captured alive with Sherman and Tomahawk traps. Traps remained open throughout the night and were checked in the early morning. Each small mammal was removed from the trap and transferred to a plastic bag. After anaesthetized with ketami-xilacín, when the mammal was torpid, it was removed from the bag, identified, and marked, and entire body was brushed with a toothbrush over a white tray. After recover from anesthesia, the animal was released at the point of capture. The acari were put in alcohol 70 % and after in laboratory were examined under a stereoscope.

Small mammals were identified following the nomenclature of Wilson and Reeder (2005) as: Microbiotheria: *Dromiciops gliroides* Thomas 1894 (Microbiotheriidae); Rodentia: *Rattus rattus* (Linnaeus 1758), *Rattus norvergicus* (Berkenhout 1769) (Muridae:



FIGURE 1. The major Paraguay ecoregions (modified from Cacciali 2010) neighboring Brazil and the close association of Porto Murtinho region with the Chaco biome (A). Points represent approximated herpetofauna sampling sites in Porto Murtinho Chaco region, state of Mato Grosso do Sul (B).

Murinae); *Abrothrix olivaceus* (Waterhouse 1837) and *Oligoryzomys longicaudatus* (Bennett 1832) (Cricetidae, Sigmodontinae); and *A. longipilis* and *Abrothrix sanborni* Osgood 1943 following (D'Elía *et al.* 2007). Mites were cleared in lactophenol and mounted in Hoyer's medium for taxonomic identification. Voucher specimens were deposited in the Collection of Entomología del Museo de la Plata, Argentina and Collection of Laboratory of Zoology of the Veterinary Faculty, of the University of Concepción, Chile. The list of mite specimens collected is given below. Number of specimens of each sex, developmental stage, host and locality are also given. A brief report including comments on geographical distribution and host species previously known is also included for each species.

RESULTS AND DISCUSSION

Family Laelapidae Berlese 1892

Subfamily Acanthochelinae Radovsky and Gettinger 1999

Acanthochela chilensis Ewing 1933

Two females and 2 deutonymphs were collected on the marsupial *D. gliroides* from Chiloé. Specimens of *A. chilensis* studied here fit descriptions given for females and deutonymphs (Ewing 1933; Mauri and Alzuet 1985; Radovsky and Gettinger 1999); one of the females had an egg inside. *Acanthochela chilensis* was described on the basis of specimens collected from the marsupial *Thylamys elegans* (Waterhouse 1839) from Lota, Chile. *Acanthochela chilensis* was also reported associated with *D. gliroides* from San Martín de los Andes, Neuquén Province, Argentina (Mauri and Alzuet 1985), and Malleco, San Bernardo, in Chile (Radovsky and Gettinger 1999). The new reported record extends the distribution of *A. chilensis* to Chiloé.

Lukoschus maresi Radovsky and Gettinger 1999

One female was collected on the rodent *A. olivaceus* from Huemules de Niblinto, and a deutonymph on *A. longipilis* from Chiloé. Specimens of *L. maresi* studied here fit the original description of the species. The genus *Lukoschus* (Radovsky and Gettinger 1999), with its only species *L. maresi*, was described on the basis of mites collected on *A. longipilis* from Neuquén Province (2 km S Lonco Luan along Hwy 23), Argentina. *Lukoschus maresi* and *A. chilensis* are the only species included in the subfamily Acanthochelinae (Radovsky and Gettinger 1999). *Lukoschus maresi* was also recorded parasitizing the rodents *Irenomys tarsalis* (Philippi 1900), *O. longicaudatus* and one individual of an undetermined species, from localities in Neuquén Province, Argentina (Villa Pehuenia and Villa La Angostura) (Radovsky and Gettinger 1999). The present record is the first in Chile and *A. olivaceus* constitutes a new host for this mite.

Subfamily Laelapinae Berlese 1892

Laelaps echidninus Berlese 1887

Six and 5 females were collected on *R. rattus* and *R. norvergicus* respectively, from Campus Chillán, Ñuble. *Laelaps echidninus* is a cosmopolitan parasite in temperate and tropical areas, primarily parasitizing murid rodents, especially species of *Rattus*, and the record of mammals other than *Rattus* represents accidental and temporary associations (Strandtmann and Wharton 1958; Furman 1972). *Laelaps echidninus* is recorded for the first time in Chile. *Laelaps echidninus* is the natural vector of *Hepatozoon muris* (Balfour 1905), and has been found to experimentally transmit the agent of tularemia (Strandtmann and Wharton 1958). Moreover, since the Junin virus (the causing agent of epidemic hemorrhagic fever) has been isolated from this species in South America (Parodi *et al.* 1959), the first record of this mite in Chile is important from an epidemiological standpoint.

Gigantolaelaps wolffsohni (Oudemans 1910)

One female on *A. sanborni* from Chiloé, and 6 females on *O. longicaudatus* from La Junta Aysen, Río Melado, Valparaíso and Concepción (Carriel sur) were collected. *Gigantolaelaps wolffsohni* has Neotropical distribution and is a common parasite of oryzomysine rodents (Furman 1972); thus, the present association with the abrotrichine *A. sanborni* must be considered accidental. *Gigantolaelaps wolffsohni* was described from an unidentified small rodent from Valparaiso, Chile. *Gigantolaelaps wolffsohni* has already been reported associated with *O. longicaudatus* in northwestern Argentina (Lareschi *et al.* 2003). La Junta Aysen, Río Melado and Concepción (Carriel sur) represent new localities for *G. wolffsohni*, which extends the southern limit of its known distribution.

Mysolaelaps microspinosis Fonseca 1936

One female on *A. sanborni* from Chiloé, and 2 females on *O. longicaudatus* from Aysen, Concepción, were collected. *Mysolaelaps microspinosis* is known only from the southern neotropics. The species was described from an undetermined rat from São Paulo, Brazil. In

northwestern and central Argentina this mite has been recorded in humid environments from oryzomine rodents (Mauri 1965; Lareschi and Mauri 1998; Lareschi *et al.* 2003). Thus, the present association with the abrotrichine *A. sanborni* must be considered accidental. *Mysolaelaps microspinosis* has been previously recorded associated with *O. longicaudatus* from Tucumán Province (Mauri 1965; Lareschi and Mauri 1998). The present record is the first mention of *M. microspinosis* in Chile.

The results obtained in this study increase the number of laelapid species ectoparasitic on small mammals known from Chile from two to five. Since some host species considered in this study are cosmopolitan and the others inhabit Chile and Argentina (Wilson and Reeder 2005), where some laelapid species have been previously recorded in association with them (Lareschi and Mauri 1998; Radovsky and Gettinger 1999), a similar laelapid fauna was equally expected to be found.

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