Research and Reviews in Parasitology, 58 (1): 49-54 (1998)

Published by A.P.E.
Printed in Barcelona, Spain

TWO ANOPLURA SPECIES FROM RODENTS IN CHILE: *HOPLOPLEURA ANDINA* CASTRO, 1981 (HOPLOPLEURIDAE) FROM *GEOXUS VALDIVIANUS* (CRICETIDAE) AND *EULINOGNATHUS CHILENSIS* N. SP. (POLYPLACIDAE) FROM *ABRACOMA BENNETTI* (ABRACOMIDAE)

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Received 3 March 1997; accepted 29 September 1997

REFERENCE: GOMEZ (M.S.), 1998.– Two Anoplura species from rodents in Chile: *Hoplopleura andina* Castro, 1981 (Hoplopleuridae) from *Geoxus valdivianus* (Cricetidae) and *Eulinognathus chilensis* n. sp. (Polyplacidae) from *Abracoma bennetti* (Abracomidae). *Research and Reviews in Parasitology*, 58 (1): 49-54.

ABSTRACT: Two South American species of Anoplura infecting rodents are described and discussed: *Hoplopleura andina* found on *Geoxus valdivianus* from Lonquimay (Chile), and *Eulinognathus chilensis* n. sp. collected on *Abracoma bennetti* from Copiepo (Chile).

KEY WORDS: Anoplura, *Hoplopleura andina*, *Eulinognathus chilensis* n. sp., rodents, *Geoxus valdivianus*, *Abracoma bennetti*, Chile.

INTRODUCTION

This paper contains the description and discussion on two anopluran species, *Hoplopleura andina*, from the rodent species *Geoxus valdivianus* (Cricetidae), and *Eulinognathus chilensis* sp. n., collected on the rodents species *Abracoma bennetti* (Abracomidae).

MATERIAL AND METHODS

The material reported on in this paper came from two different Chilean localities: *Geoxus valdivianus* from Lonquimay and *Abracoma bennetti* from Copiepo. The field sampling, rodent catching and anoplura isolation were carried out by Dr. M.H. Gallardo, from the Instituto de Ecología y Evolución, Universidad Austral de Chile. Holotype, allotype and paratypes of the newly described species are deposited in the author's collection.

The specimens of both anopluran species were kept, during the sampling period, in 70% alcohol and then mounted directly in Hoyer's liquid.

The morphological terms used herein are those most currently employed for anopluran morphology. The setaetion terminology is that of KIM & LUDWIG (1978) for adults and KIM (1966) for nymphs.

RESULTS

Hoplopleura andina Castro, 1981

Morphology

The main morphologic features of the Chilean specimen female are: head (Fig. 1A), as long as broad, not projecting anteriorly; postantennal angles not extended, accessory setae set close to the principal. Thorax, sternal plate (Fig. 1B) with a rounded and elongated posterior apex. Abdomen, tergal plate of the first segment with 2 long posteroapical setae, tergal plate of second segment with 4 long setae; paratergal plates (Fig. 1C), plate II with 2 subequal acute apical lobes, plates III-VI with quadrate apical lobes, plate III bearing 2 subequal setae longer than lobes, plates IV-VI with 1 long seta and 1 minute seta, plates VII-VIII lacking apical lobes, each with usual pair of long setae.

Eulinognathus chilensis n. sp.

Morphology

Female: Holotype 1,4 mm; paratypes (n = 18) 1,3-1,5 mm (Fig. 2D). Head (Fig. 2E) longer than broad (204,0 µm/153,0 µm), anteriorly slightly projecting, narrowly rounded; postantennal angles rounded, not extended; posterolateral margins slightly convergent posteriosly. Cephalic chaetotaxy: ApHS (two pairs), DAnHS (two pairs); DPaLHS (one pair); SpAtHS (one pair); SHS (two pairs); DMHS (two pairs); DAnCHS (one pair); DAcHS (one pair); DPHS (one pair); DPoCHS (one pair); AnMHS (two pairs); VPaHS (two pairs); VPHS (one pair). Thorax wider than head (245 µm); mesothoracic spiracle small; thoracic sternal plate elongated (Fig. 2F) anteriorly rounded, laterally bulbous and rounded, posterior margin blunt with a distinct mesal keel. Thoracic chaetotaxy: DPtS (one pair); DMtS (one pair); DPTS (one pair). Abdomen membranous, with tergal plates I-VII and sternal plates II-VII partially pigmented (Fig. 2G,H,I). Abdominal chaetotaxy: DCAD and VCAS 1 row each one with sword shaped setae; TcAS and SAS as long as middle abdominal setae.

Paratergal plates (Fig. 3L) small spiracles on plates III- VII. One subrounded apical lobe on plate II, two apical lobes on plates III-V, one apical lobe on plate VI.

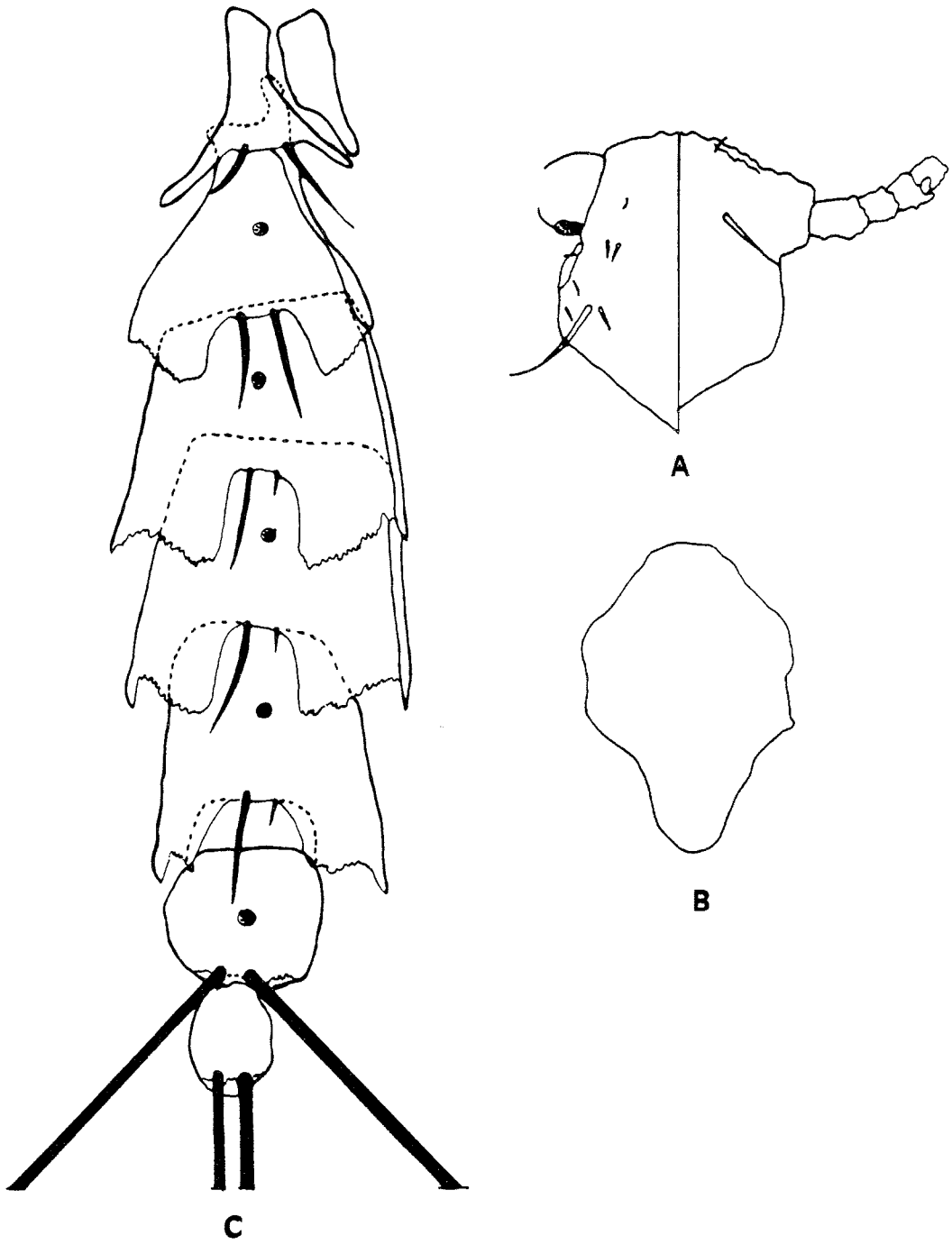

Fig. 1.– *Hoplopleura andina*: A) head; B) sternal plate; C) paratergal plates.

Plates II-III with two subequal apical setae longer than apical lobes; plates IV-V with two apical setae, one longer than apical lobes, the other shorter; plate VI with one short apical setae. In some female paratypes (3/18) one plate V has only one apical seta; one of these female paratypes also shows, on the same side, paratergal plates VI with two short apical seta.

Genitalia (Fig. 2J), subgenital plate elongated with two short setae. Gonopods with 3 marginal setae. Short genital setae spiniform. Lobes on lateral margin on ninth abdominal segment with setae longer that those of gonopods.

Male: Allotype 0,8 mm; paratypes (n = 24) 1,3-1,5 mm. Like female except in sexual dimorphic characters. Further separable by the absence of apical setae on parater-

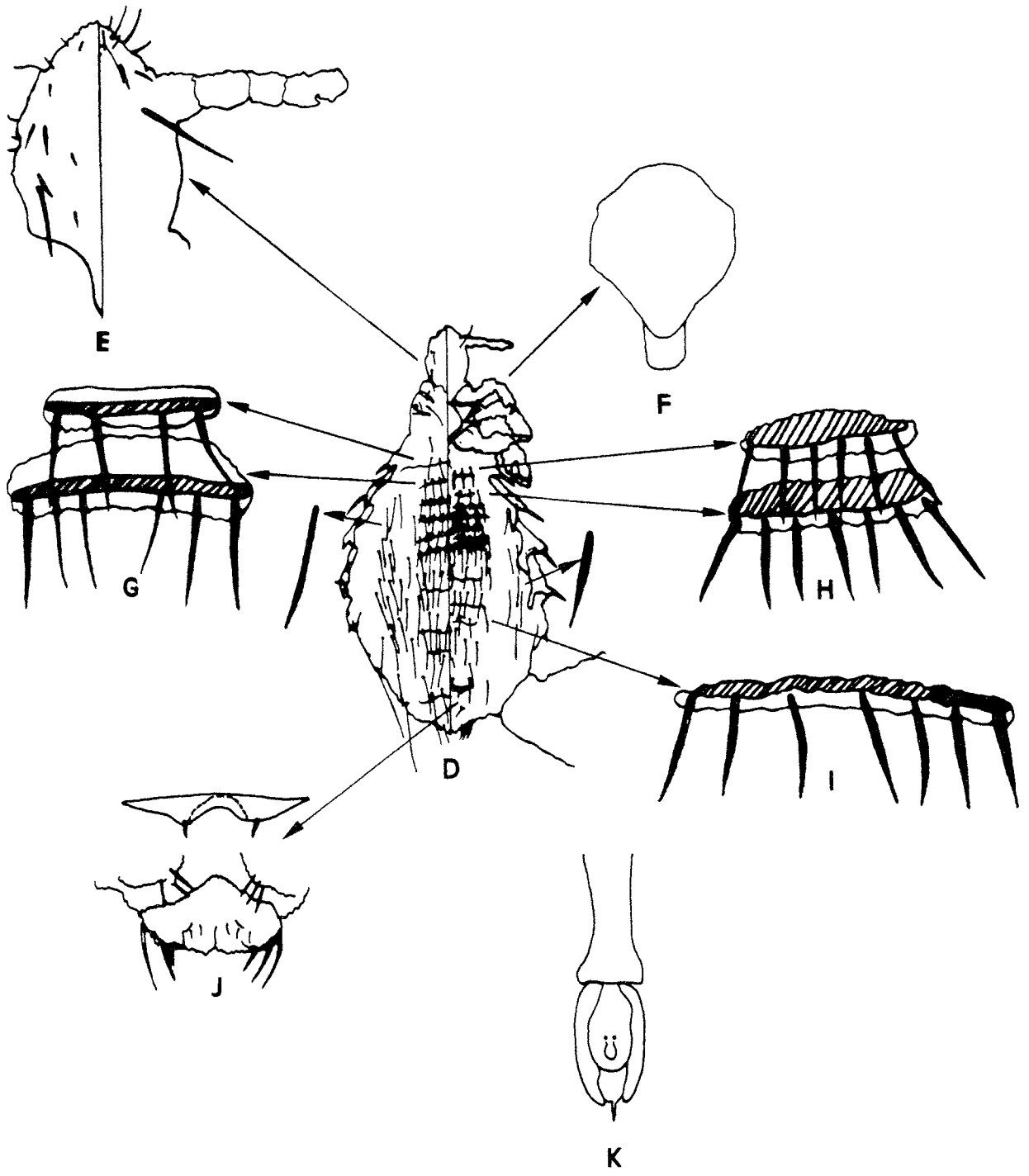

Fig. 2.– *Eulinognathus chilensis* n. sp.: D) female holotype; E) head; F) sternal plate, G) tergal plates I-II; H) sternal plates II-III; I) sternal plates VI; J) female genitalia; K) male genitalia.

gal plates V-VI (Fig. 3M); moreover aberrand male paratypes display some variability in those paratergal plates, such as: having a short apical setae on either one (3/24) or both (2/24) paratergal plates V, lacking an apical lobe on one paratergal plate V (1/24) or having two lobes on one paratergal plate VI (1/24). Genitalia (Fig. 2K), aedeagus with elongate gonopode; pseudopenis Y shaped, slightly serrate laterally, the blunt tip extending slightly beyond parameres; parameres elongated evenly convex laterally; basal apodeme long and parallel.

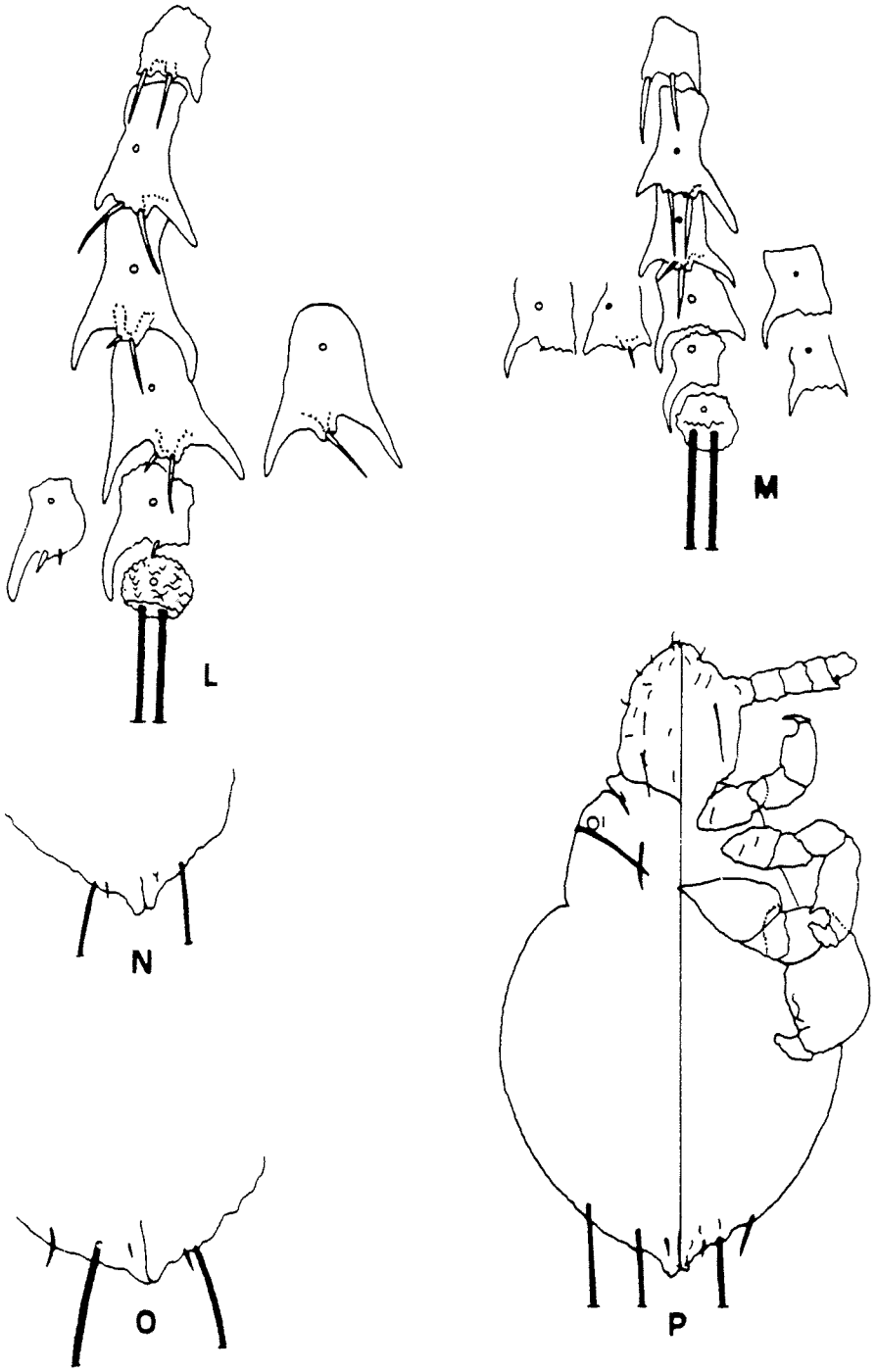

Fig. 3.– *Eulinognathus chilensis* n. sp.: L) paratergal plates of female holotype and variations on female paratypes; M) paratergal plates of male allotype and variations on male paratypes; N) first instar nymph (abdominal end); O) second instar nymph (abdominal end); P) third instar nymph.

First instar nymph: Length 612 μm; head projecting slightly apically; third pair of legs larger than second. Cephalic and thoracic chaetotaxy as in adults. Anal lobe broad. DMAS (one pair) long; A_nS (one pair) short; VMAS (one pair) long; A_cS (one pair) (Fig. 3N).

Second instar nymph: Length 765 μm. Like first instar except for two pairs of DMAS, anterior pair short, posterior long (Fig. 3 O).

Third instar nymph: Length 839,8 μm. Like second

instar except for the two pairs of long DMAS, two pairs A_nS; two pairs of VMAS, anterior pair short posterior long; several pairs of A_eS (2-5). One specimen of this instar shows VMAS long but single not paired (Fig. 3P).

DISCUSSION

Diagnosis of *Hoplopleura andina*

The morphology of this female specimen allows us to consider it as *Hoplopleura andina*, a travassosi member, while the female allotype has a dorsal lobe on paratergal plate VII. We consider this difference as a morphologic variability already found by other authors. JONHSON (1972) mentioned variability in lobulation within a single species of the travassosi group, and CASTRO (1981) found some morphologic differences between holotype male and allotype and paratypes.

Hoplopleura andina has been isolated on South America cricetid rodents of the genus *Akodon*: *A. andinus, A. olivaceus, A. xanthorinus* and *A. longipilis* (CASTRO, 1981; CASTRO & CICCHINO, 1985). The specimen reported here was taken from a male of *Geoxus (Notyomys) valdivianus*. This rodent is a known cricetid from Chile (center and south) and Argentina (southwest) (HONANCKI, KINMAN & KOEPPL, 1982) and is sympatric with two other host species, *Akodon olivaceus* and *A. xanthorinus*, in some areas.

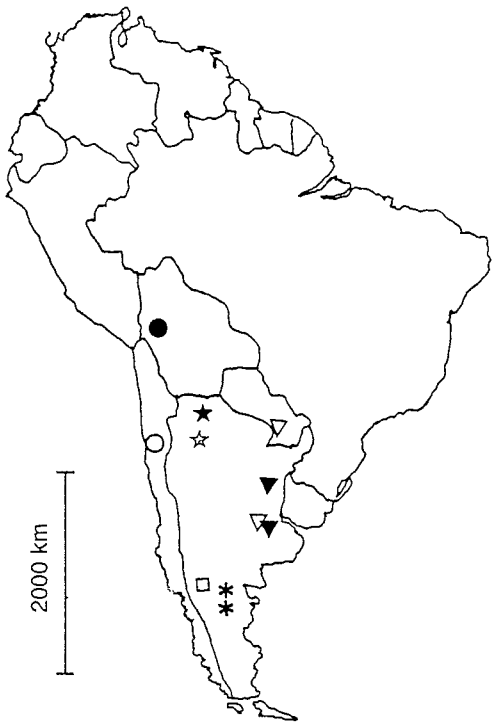

Fig. 4.– Geographical distribution of the neotropical *Eulinognathus* species. * = *E. patagonicus*; □ = *E. hepperi*; ∇ = *E. americanus*; ▼ = *E. torquatus*; ☆ = *E. wernecki*; ★ = *E.* sp.; ● = *E. bolivianus*; ○ = *E. chilensis*.

Diagnosis of *Eulinognathus chilensis* n. sp.

The neotropical *Eulinognathus* included, until DURDEN & MUSSER (1994), 6 species of 27 known in the genus throughout the world. These species are: *E. americanus, E. bolivianus, E. patagonicus, E. torquatus*, and *E. wernecki*, all parasites on Ctenomydae, and *E. hepperi* from Chinchillidae.

Eulinognathus mauri has not been included in the neotropical group. This specie was synonymized by KIM & LUDWIG (1978). Moreover, DURDEN & MUSSER (1994) listed it again as *Cuyana mauri*. This species should, therefore, be excluded from *Eulinognathus*.

In contrast, those specimens collected by WERNECK (1952) on *Ctenomys barbarus* must be taken into account among neotropical *Eulinognathus*, although they should be referred to as *Eulinognathus* sp.

The finding of *Eulinognathus chilensis* must be considered from three points of view: morphologic, host and geographical.

From a morphological point of view: The characteristics of the Chilean specimens from *Abracoma benneti* are closed to those of the species *E. bolivianus*. Both species *E. chilensis* n. sp. and *E. bolivianus* have elongated thoracic sternal plates, two setae on paratergal plates II-V, and slightly pigmented tergal plates. They differ in the form of lobes on paratergal plates IV-V, by having one long and one short apical setae on paratergal plates IV-V, and a stout seta on paratergal plate IV rather than two long setae. *E. chilensis* n. sp. is like *E. patagonicus* in some respects, such as having a longer than wide thoracic sternal plate and two setae on paratergal plate II-III, although in *E. chilensis* both setae are subequal in lenght.

It is easily separable from all other South American *Eulinognathus* by the form of thoracic sternal plate, membranous abdomen, and length and number of paratergal plates setae.

From the host point of view: This is the first time that a member of this anopluran genus has been detected on *Abracoma* host species. Most of the neotropical *Eulinognathus* species are *Ctenomys* parasites, since only *E. hepperi* had been recorded on *Lagidium viscacia*, a Chinchillidae rodent species (RONDEROS & CAPRI, 1969).

The neotropical *Abracoma* genus is the only representative of the Abracomidae rodent family named «chinchillones». It has two species: *A. bennetti*, known only in Chile (from Copiepo to Rio Bobo area), and *A. cinerea*, with a broader distribution area (SE Peru, W Bolivia, N Chile, and NW Argentina as Jujuy province). Thus, to date, *E. chilensis* n. sp. has been found in only one locality of its type host distribution area.

From a geographical point of view: This is also the first time that a *Eulinognathus* species has been reported in Chile. Along with *E. bolivianus*, it constitutes an exception, since, to date, both species are not present in Argentina and all other neotropical species of this genus have Argentinian distribution.

All *Eulinognathus* species parasitizing *Ctenomys* spp. (5 of 6 South American *Eulinognathus*) were classified by CASTRO & CICCHINO (1986) into four groups (Fig. 4):

- Patagonic group: the most southern, with *E. patagonicus* from *Ctenomys sericus* (Chuhut province) and from *Ctenomys* sp. (Black river), both in Argentinian patagonia;
- Pampeano group: with two species, *E. americanus*, taken from *C. haigi, C. torquatus* and *C. talarum* captured in several Argentinian places (Buenos Aires province) and from *C. brasiliensis* in Paraguay (Salade River), and *E. torquatus* taken on *C. chasiquensis* and *C. mendocinus* in Argentinian places (Buenos Aires and Entre Rios province);
- Prepuneño group: with *E. wernecki* from *C. latro* and *C. tucumanus*, both captured in the Argentinian Tucuman province, and the material collected on *C. barbarus* in the Argentinian Jujuy province, named *Eulinognathus* sp. by WERNECK (1952);
- Puneño group: with *E. bolivianus* from *C. opimus* collected in Bolivia (Oruro and Sajama); this species has not yet been found in Argentina but, according to CASTRO & CICCHINO (1986), it should be expected because its rodent host species *C. opimus* lives in the NW of this country (Jujuy and Salta altiplane).

The other neotropical *Eulinognathus* caught in San Juan (Argentina), *E. hepperi*, has obviously not been considered by CASTRO & CICCHINO (1986) in these corologic groups, because it is a Chinchillidae parasite. Like this species, *E. chilensis* n. sp. has not been included, for the moment, in any CASTRO & CICCHINO (1986) corologic groups.

Summing up, *E. chilensis* n. sp. seems to be, in morphological, host and geographic terms, a very well defined species. Nevertheless, it has more morphological similarities to the two more isolated neotropical *Eulinognathus* species, *E. patagonicus* and *E. bolivianus*, rather than to the pampeanus and prepuneños species group.

To understand the Chilean findings and similarities with its closest species, several considerations should be taken into account. If a puneño component like *E. bolivianus* is expected in those Argentinian localities where its host species are distributed, it must also be expected in those Northern Chilean localities where *Ctenomys opimus* is present. In this context, if *E. chilensis* n. sp. is a genus-specific parasite rather than an species-specific parasite, it could be parasitizing *Abracoma cinerea* and perhaps be present in some places of this host distribution area (N Chile and Argentinian Jujuy altiplane).

Taking into account that *Abracoma cinerea* and *Ctenomys opimus* are sympatric species in several areas, they could coexist in several places. *E. chilensis* n. sp. may have a phylogenetic relationship with *E. bolivianus*, with *Abracoma cinerea* acting as a link between them. Furthermore, our Chilean finding on *Abracoma bennetti* might be the result of animal contact and parasite exchange between both *Abracoma* species, rather than isolated evolution of the anopluran species.

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