

DESCRIPTION OF THE MALE OF *BOTHRIURUS (ANDIBOTHRIURUS) PERUVIANUS* MELLO-LEITAO (SCORPIONIDA: BOTHRIURIDAE)

Oscar F. Francke

Department of Zoology
Arizona State University
Tempe, Arizona 85281

ABSTRACT

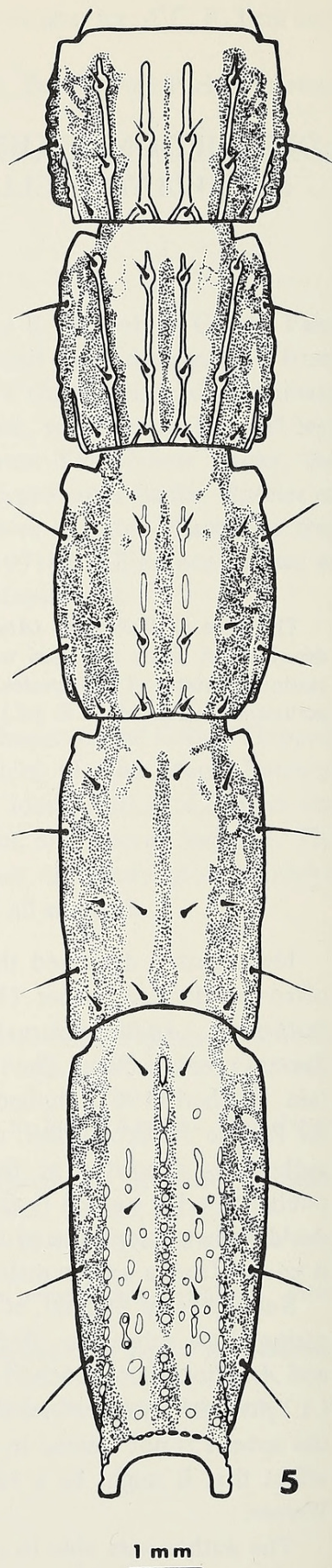
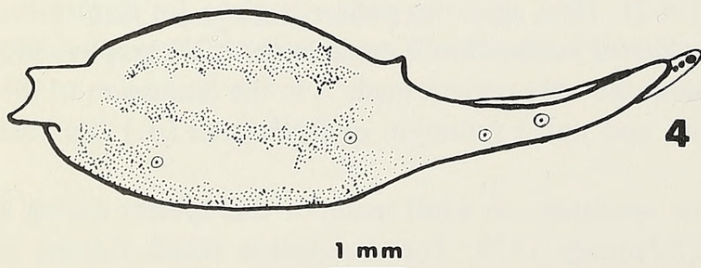
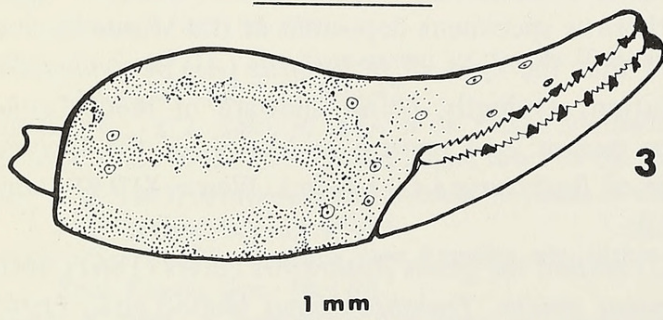
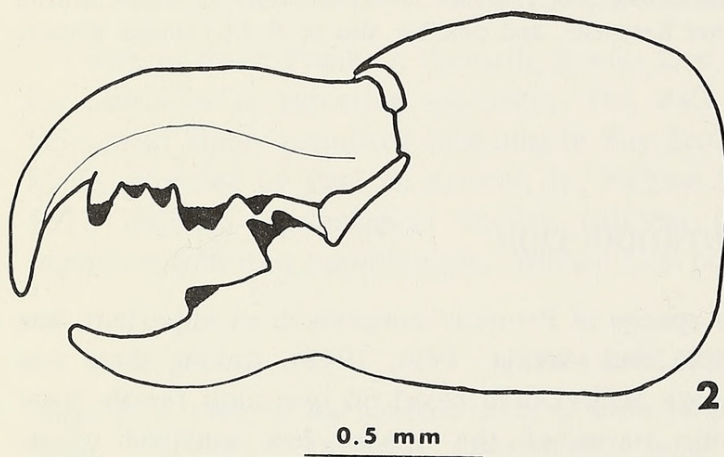
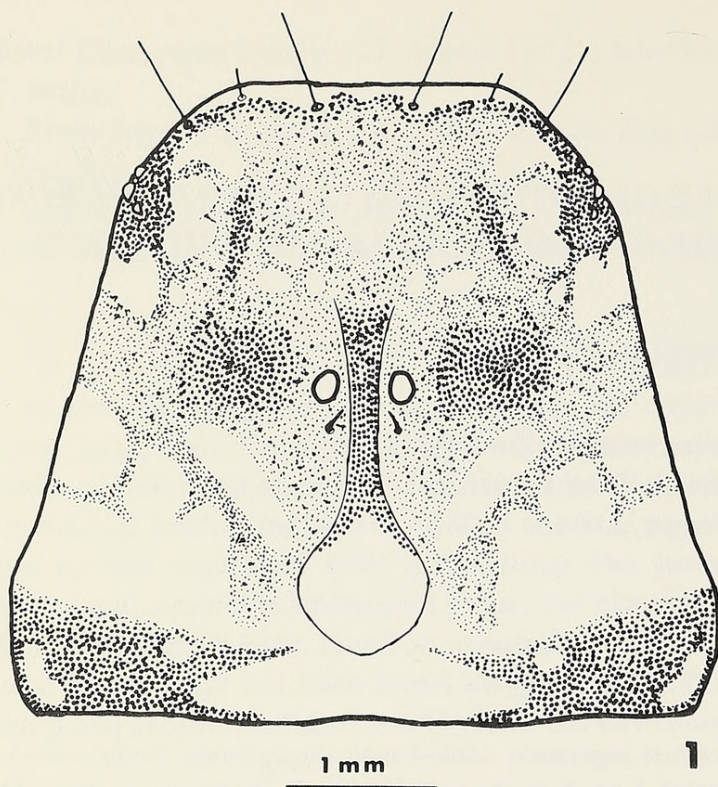
The male of *Bothriurus (Andibothriurus) peruvianus* Mello-Leitão (Scorpionida: Bothriuridae) is described. A single specimen was collected 2 km E of the type locality in Tarma, Junin, Peru. The taxonomic status of this species, previously known only from the holotype female, is cleared. *B. (A.) peruvianus* is related to *B. (A.) burmeisteri* Kraepelin, and possibly also to *B. (A.) lampei* Werner.

INTRODUCTION

Mello-Leitão described three new species of Peruvian scorpions in an important, but often overlooked, paper (Mello-Leitão and Araújo Feio, 1948). Among these was *Bothriurus (Andibothriurus) peruvianus* Mello-Leitão based on one adult female from Tarma, Junin, Peru. The taxonomic status of this species has remained uncertain. Bücherl (1962) studied the *Bothriurus* specimens deposited at the Museu Nacional do Rio de Janeiro, Brasil, and stated that the type of *Bothriurus (A.) peruvianus* "no author" is deposited at that institution; evidently being unaware of Mello-Leitão's publication he treated it as a *nomen nudum*, and upon examination of the specimen decided that it represented the female of *Bothriurus (A.) titschaki* Werner (1939), which is known from a unique male from Chile.

Subsequently Bücherl, et al. (1962) revised the genus *Bothriurus* Peters (1861), recognizing three subgenera: *Bothriurus sensu stricto*, *Transbothriurus* Mello-Leitão (1945), and *Andibothriurus* Bücherl, et al. (1962). Here again no author is given for *Bothriurus (A.) peruvianus*, no reference to the original publication is made in the bibliography, and the species is not treated in the revision; the only remark made is in the discussion to the effect that it might be a valid species and not a synonym of *Bothriurus (A.) titschaki* Werner.

The author was able to collect one specimen, an adult male, of this species during a brief visit to Peru in December 1972-January 1973. The description which follows is aimed at clearing the confusion existing in the literature with regards to this species.



Bothriurus (*Andibothriurus*) *peruvianus* Mello-Leitão
(Figs. 1-5)

Bothriurus peruvianus Mello-Leitão, 1948, p. 315-316, Fig. 2; ? *Bothriurus chilensis*, Blancas Sánchez, 1959 [non *B. chilensis* (Molina, 1782)]; *Bothriurus titschaki*, Bücherl, 1962, p. 198 (non *B. titschaki* Werner, 1939); *Bothriurus* (A.) *peruvianus*, Bücherl, et al., 1962, p. 222, *Bothriurus peruvianus*, Aguilar and Meneses, 1970, p. 2.

Diagnosis of Male—Medium sized (42.1 mm). Coloration; carapace with dense fuscous pattern. Mesosomal dorsum with two broad, dark longitudinal stripes. Metasoma pigmented on inferior and lateral intercarinal spaces, and along dorsomedian keels. Prosoma; median groove of carapace present. Superior margin of movable finger of chelicera with five teeth. Pedipalps with movable finger shorter than carapace length, fingers touching only at tips when closed. Mesosoma; tergites smooth, tergum 7 with two pairs of weak, crenulated keels. Sternites smooth, sternum 7 with median keels vestigial, lateral keels obsolete. Pectinal teeth 14-15 (12 teeth in female). Metasoma; inferior median keels smooth on segments I-II, vestigial on III, obsolete on IV. Inferior lateral keels weak, smooth on I-II, obsolete on III-IV. Segment V with inferior median and inferior lateral keels smooth to granulose, parallel; paramedian keels granulose, poorly defined, sub-parallel. Telson; dorsal surface of vesicle slightly concave (flat in female).

Description of Male—*Coloration*. Ground color light brown, metasoma and walking legs paler. Prosoma; carapace fuscous throughout in complex pattern (Fig. 1). Humerus and brachium of pedipalps heavily infuscate; chela pigmented where keels should occur, giving impression that latter are present (Fig. 3 and 4). Femur, tibia, and metatarsus of walking legs fuscous. Mesosoma; tergites heavily infuscate on lateral two-fifths, leaving narrow clear medial band. Sternites lightly fuscous on lateral portions, increasing in density and extent posteriorly so that on sternum 7 the lateral one-fourth is completely darkened. Metasoma; caudal segments with dorsomedian keels underlaid with dark pigment, lateral and inferior intercarinal spaces fuscous (Fig. 5). Vesicle with lateral areas weakly pigmented, defining a clear ventromedial zone.

Prosoma. Carapace; (Fig. 1) anterior margin straight, armed with four large bristles. Lateral eyes small, subequal in size; three per side, posterior one forming an angle of approximately 105° with anterior pair. Median eyes separated by twice their diameter. Median groove originating as shallow depression at anterior margin, extending shallowly over ocular tubercle, ending in deep, wide conical pit centered four-fifths down carapace length. Posterior lateral furrows vestigial. Surface minutely punctate and vestigially granulose. Chelicera; (Fig. 2) distal inferior tooth of movable finger approximately three times longer than distal superior tooth. Superior margin bearing five teeth. Pedipalps; humerus with obsolete carinae, anterior surface sparsely granulose. Brachial dorso-anterior carina smooth, others obsolete; surfaces smooth. Chela (Figs. 3 and 4) smooth, all keels obsolete; only prominent structure is tubercle at inner surface commissure (male generic character). Fixed and movable fingers distinctly shorter than carapace length; fingers meeting only at tips when closed, leaving distinct space between. Five supernumerary teeth on fixed finger, six on movable finger. Walking legs; tarsomere II spine formula:

$$\frac{1}{1} \frac{1}{1} : \frac{2}{2} \frac{2}{2} : \frac{3}{3} \frac{3}{3} : \frac{3}{3} \frac{3}{3} .$$

◊ Figs. 1-5.—*Bothriurus* (A.) *peruvianus* Mello-Leitão, adult male from 2 km E of Tarma, Junin, Peru: 1, dorsal view of carapace; 2, ventral view of left chelicera; 3, external view of right chela; 4, dorsal view of right chela; 5, ventral view of metasoma.

Mesosoma. Tergites; posterior halves vestigially granulose. Tergum 7 with two pairs of weak, crenulated keels interspersed with small granules. Genital operculi; triangular, fused along entire length. Genital papillae absent. Basal piece of pectines nearly twice as wide as long, with deep median notch extending more than half its length. Pectines; over five and one-half times as long as greatest width. Teeth angular, increasing in length distally from 0.4mm to 0.6mm; numbering 14-15. Middle lamellae subcircular, numbering 9-10. Anterior and middle lamellae, and fulcra moderately covered with short red setae. Sternites; vestigially punctate. Sternum 7 with median keels vestigial, lateral keels obsolete. Stigmata elliptical.

Metasoma. (Fig. 5) segment I wider than long, segment V more than twice as long as wide. Dorsal median keels weak, smooth on segments I-IV. Dorsal lateral keels crenulate to smooth on I-III, obsolete on IV. Lateral keels weak, smooth to crenulate on posterior half of I; vestigial on II; obsolete on III-IV. Inferior lateral keels smooth on I-II, obsolete on III-IV. Inferior median keels smooth on I-II, vestigial on III, obsolete on IV. Segment V; dorsal and lateral keels obsolete; inferior lateral keels vestigial to obsolete on anterior third, granulose on posterior two-thirds, parallel; inferior median keel weak, smooth on anterior third, granulose on posterior two-thirds; paramedian keels poorly defined, represented by scattered granules on posterior two-thirds, subparallel. Telson; slightly shorter than segment V. Dorsal surface of vesicle slightly depressed; ventral surface moderately hirsute and shallowly punctate. Aculeus reddish, moderately curved.

Measurements—Descriptive data of the male is compared with that given in the original description for the holotype female in Table I.

Locality—Male; 2 km E Tarma, Junin, Peru, 4 January 1973 (Neil F. Hadley and Oscar F. Francke). The single specimen was found dead under a rock that was resting on a dried grass clump. It is assumed that it had recently died, for no signs of decomposition nor desiccation were evident. The site is on a NNE exposed slope of 25°-30° and heavily eroded, at an elevation of 3,400 m (11,400 ft) covered with scant xerophytic vegetation. Over two hours of blacklighting (U. V. detection) on 1 January 1973 failed to reveal any scorpions in the area, and further attempts to use this method on 4 January 1973 were prevented by rain.

Type Data—Holotype female; Tarma, Junin, Peru (3,100 m), no date (W. Weyrauch). Deposited at the Museu Nacional do Rio de Janeiro, Brasil.

DISCUSSION

Bothriurus (A.) *peruvianus* is related to *B.* (A.) *burmeisteri* Kraepelin (1894) from Argentina and Chile. Maury (1968) has studied the holotype of *B.* (A.) *burmeisteri*, and from his account the following similarities and differences become evident. Both species have subparallel paramedian keels on the posterior two-thirds of segment V; and they are the only species in the genus reported to have five teeth on the superior margin of the movable finger of the chelicera (other *Bothriurus* spp. have four). These two species can be easily separated by their pectinal tooth counts; *B.* (A.) *burmeisteri* with 24 in males and 16 to 22 in females, *B.* (A.) *peruvianus* with 14 to 15 in the male and 12 in the female.

B. (A.) *titschaki* differs from *B.* (A.) *peruvianus* in the structure of the metasomal keels, and in pectinal tooth counts. *B.* (A.) *titschaki* has granulose inferior median and

Table 1.—Measurements (in millimeters) of *Bothriurus (Andibothriurus) peruvianus* Mello-Leitao (the figure given for the holotype female are those found in the original description).

	Adult ♂	Holotype ♀
Total length	42.1	40.0
Carapace: length	4.6	
Anterior width	3.3	
Width at median eyes	4.0	
Posterior width	5.3	
Mesosoma: length	13.0	
Metasoma: length	24.5	20.0
Segment I: length	2.5	2.0
width	3.1	
Segment II: length	2.9	2.6
width	2.8	
Segment III: length	3.4	3.0
width	2.8	
Segment IV: length	3.8	3.4
width	2.7	
Segment V: length	6.0	4.6
width	2.7	
Telson: length	5.9	4.4
Vesicle: length	4.4	
width	2.6	
depth	2.3	
Aculeus: length	1.5	
Pedipalp: length	15.1	13.7
Humerus: length	3.7	3.0
width	1.4	1.0
Brachium: length	3.8	3.5
width	1.5	1.5
Chela: length	7.6	7.2
width	2.5	2.0
depth	2.3	
Movable finger: length	4.0	4.0
Fixed finger: length	3.2	
Pectinal teeth: left/right	15/14	12/12
Middle lamellae: left/right	10/9	

inferior lateral keels on segments III-IV; in *B. (A.) peruvianus* the inferior median keels are vestigial on III and obsolete on IV, and the inferior laterals are obsolete on III and IV. The pectinal tooth count on *B. (A.) titschaki* is 7 to 9 in the male. Werner (1939) does not mention the cheliceral dentition of *B. (A.) titschaki* in his original description. The holotype has been examined by Maury, and his study (in press) will probably reveal the number of teeth found on this structure, as well as any other similarities or differences existing between these two species.

Another possibly related species is *B. (A.) lampei* Werner (1916) described from a unique specimen (male?) from Peru. The original description leaves much to be desired, but the obvious differences of this species from *B. (A.) peruvianus* relate to the structure of the metasomal keels and the pectinal tooth counts. *B. (A.) lampei* has smooth inferior lateral keels on segments III-IV, and a pectinal count of 20 teeth. The study of Werner's type specimen by Maury (in press) will probably elucidate the nature of the keels on segment V, the cheliceral dentition, contribute to the knowledge of *B. (A.) lampei*, and increase the understanding of the species relationships in the subgenus *Andibothriurus*.

ACKNOWLEDGEMENTS

I wish to express my sincere gratitude to the following individuals, all of whom contributed in one way or another to the successful completion of this paper. Dr. Mont A. Cazier and Dr. Frank F. Hasbrouck read the manuscript and made valuable suggestions. Dr. Neil F. Hadley endured the adversities of high altitude collecting in Peru. Mr. Robert L. Smith, Mr. Paul J. Pinter, and Miss Beverly Chilton provided technical assistance. Finally, my grandfather translated from German the pertinent publications.

LITERATURE CITED

- Aguilar, P. G., and O. Meneses. 1970. Escorpiones y Escorpionismo en el Peru I.-Nota preliminar sobre los Scorpionida peruanos. An. Cien. Univ. Nac. Agraria, Lima 8(1-2):1-5.
- Alsop, R. 1808. The geographical, natural and civil history of Chili. By Abbe J. Ignatius Molina . . . With notes from the Spanish and French versions, . . . Translated from the original Italian by an American gentleman (R. Alsop). Alsop, Brannan and Alsop, Middletown, Connecticut, 2 vols., 827 p. (see Molina, J. I. 1782).
- Blancas Sánchez, F. 1959. Comunidades y campos de vida de Acolla y sus alrededores. Univ. Mayor San Marcos, Mem. Mus. Hist. Nat. "Javier Prado", Lima N° 7, 24 p.
- Bücherl, W. 1962. Escorpiones e Escorpionismo no Brasil XI.-Revisao dos Bothriurideos da Coleccao Escorpionica do Museu Nacional do Rio de Janeiro. Inst. Butantan, Mem. 30:187-206.
- Bücherl, W., P. R. San Martin, M. Flores da Cunha, F. A. Matthiesen, S. Zimmer e I. Bücherl. 1962. Escorpiones e Escorpionismo no Brasil XII.-Revisao Sistemática e critica dos escorpiones do genero *Bothriurus* Peters 1861. Inst. Butantan, Mem. 30:207-288.
- Kraepelin, K. 1894. Revision der Skorpione II.-Scorpionidae und Bothriuridae. Jarh. Hamburgischen Wiss. Anstalten 11:1-248.
- Maury, E. A. 1968. Aportes al conocimiento de los escorpiones de la Republica Argentina II.-Algunas consideraciones sobre el genero *Bothriurus* en la Patagonia y Tierra de Fuego con la descripcion de una nueva especie. Physis 28(76):149-164.
- Maury, E. A., Sobre las especies de *Bothriurus* descritas por Franz Werner. Neotropica, in press.
- Mello-Leitão, C. 1945. Escorpiones Sul-Americanos. Arq. Mus. Nac. Rio de Janeiro 40:9-455.
- Mello-Leitão, C. e J. de Araújo Feio. 1948. Notas sobre pequena coleccao de aracnidos do Peru. Bol. Mus. Paraensi "Emilio Goeldi," Belem 10:313-324.
- Molina, J. I. 1782. Saggio sulla Storia Naturale de Chili. Bologna (1st. English translation: Alsop, Brannan and Alsop, Middletown, Connecticut, 1808), 2 vols., 827 pp. (see Alsop, R. 1808).
- Peters, M. B. 1861. Ueber eine neue Einteilung der Skorpione und die ihm Mossambique gessammelten Arten von skorpionen. Monatsberichte der Koeniglich Preussischen Akad. der wiss. zu Berlin 1861, p. 507-516.
- Werner, F. 1916. Ueber einege Skorpione und Gliederspinnen des Natur-historischen Museum in Wiesbaden. Wiesbaden Jarh. Vereins Naturhist. 69:79-97.
- Werner, F. 1939. Neu eingange von Skorpionen in Zoologischen Museum in Hamburg. Festch. Geburtstage von Prof. Dr. Embirik Strand 5:351-360.

NOTE ADDED IN PROOF: Maury, E. A. 1973. Neotropica 19(59):110-112, after studying Werner's types concluded that *Bothriurus titschaki* Werner, 1939 is actually *Centromachetes titschaki* (Werner, 1939) and is endemic to central Chile; *Bothriurus lampei* Werner, 1916 [based on 4 specimens, adult female and 3 immatures, and not (male ?) as indicated above], is a junior objective synonym of *Bothriurus* (A.) *curvidigitus* Kraepelin (pectinal teeth 20-23 in male, 20 in female).



Francke, Oscar F. 1973. "Description of the Male of Bothriurus (Andibothriurus) Peruvianus Mello-Leitao (Scorpionida: Bothriuridae)." *The Journal of arachnology* 1(3), 215–220.

View This Item Online: <https://www.biodiversitylibrary.org/item/221721>

Permalink: <https://www.biodiversitylibrary.org/partpdf/226951>

Holding Institution

Smithsonian Libraries and Archives

Sponsored by

Biodiversity Heritage Library

Copyright & Reuse

Copyright Status: In Copyright. Digitized with the permission of the rights holder

Rights Holder: American Arachnological Society

License: <https://creativecommons.org/licenses/by-nc-sa/4.0/>

Rights: <https://www.biodiversitylibrary.org/permissions/>

This document was created from content at the **Biodiversity Heritage Library**, the world's largest open access digital library for biodiversity literature and archives. Visit BHL at <https://www.biodiversitylibrary.org>.