

***ITYPHILUS KRAUSI* N.SP.,**
A NEW BALLOPHILID CENTIPEDE FROM PERU
(CHILOPODA: GEOPHILOMORPHA: BALLOPHILIDAE)

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Received: 3 July 1996

Accepted: 9 September 1996

ABSTRACT

Ityphilus krausi n. sp. is described and illustrated from the ♂ holotype. A few data are added to the original description of *I. perrieri* (Brölemann 1909).

KEYWORDS: Peru, Chilopoda, Geophilomorpha.

INTRODUCTION

In a recent paper (Pereira *et al* 1995: 413) we suggested that the ballophilid specimen from Peru referred by Kraus (1957: 367) to *Thalthybius* (*Prionothalthybius*) *perrieri* Brölemann 1909 could possibly belong to a new species, closely related to but distinct from what is now known as *Ityphilus perrieri* (Brölemann 1909).

Thanks to the kindness of Dr. M. Grasshoff of the Forschungsinstitut und Naturmuseum Senckenberg, Frankfurt, we have re-examined the specimen studied by Kraus, confirming that this specimen must be regarded as belonging to a new species.

Note to text and figures. – We use the following abbreviations: a.a., antennal article; d., dorsal; l., left; r., right; v., ventral.

DESCRIPTION

Family Ballophilidae

Genus *Ityphilus* COOK, 1899

Diagnosis

Antennae moderately to strongly clavate. Central portion of labrum membranous, without teeth or with minute hair-like structures. Forcipular coxosternum with complete or nearly complete chitinlines; medial edge of forcipular unguulum unarmed to conspicuously serrate or dentate. Ventral pore fields of anterior region of the body single (subcircular or transversally elliptical), ventral pore fields of posterior region of the body single or divided into two areas. Coxopleura of the last leg-bearing segment each with two internal coxal organs of simple structure ("homogeneous coxal glands", sensu Brölemann & Ribaut 1912). Last pair of legs with seven podomeres, praetarsus in form of a setiform structure, proximally "tubercle-like".

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Remarks

Ityphilus Cook, 1899 is very closely related to *Diplethmus* Cook, 1899. Both genera share the presence of complete or virtually complete chitinlines on the forcipular coxosternum. They differ principally in that in *Ityphilus* the pore fields of the anterior part of the body are always single, whereas in *Diplethmus* all pore fields are split into two parts.

For commentary about problems of interpretation of intergeneric relationships and extension of genera within Ballophilidae see Crabill (1960: 172) and Turk (1955: 482). For concepts on the taxonomic value of the ventral pore fields see Turcato *et al* (1995).

Provisionally, we prefer to conserve *Ityphilus* and *Diplethmus* as separated genera instead of proposing here the synonymy of both based on the presence of double and single pore fields on a single specimen: the holotype of *I. krausi* n. sp. At present, it seems to be more reasonable to include this new species in *Ityphilus* rather than in *Diplethmus*, but it is possible that a thorough revision of the generic classification of this family could require a different combination. At any rate, the generic assignment of the new species to *Ityphilus* requires some change in the diagnosis of the genus, as far as the arrangement of the ventral pore fields is concerned.

Ityphilus krausi n. sp.

Thalphybius (*Prionothalphybius*) *perrieri*, Kraus, 1957 – Senck. biol. 38 (5/6): 367 (non *Ityphilus perrieri* (Brölemann, 1909)).

Diagnosis

An *Ityphilus* species with forcipular unguulum dentate (or "serrate") along the medial edge. Among the Neotropical species of the genus sharing this trait it can be easily differentiated since it has the pore fields divided into two areas in the posterior region of the body (in all the remaining species of the genus, all pore fields are undivided). For differential characters of *I. krausi* and *I. perrieri* see Table 1.

Material

Holotype ♂ from Peru: Atiquipa, close to Chala (in South Peru), "Küste, lichte Waldloma" at 650–700 m a.s.l., 5.I.1956, Koepcke leg. (SMF 2917/1). Specimen with 67 pairs of legs, body length 25 mm in 6 original slides of Kraus: (1) head capsule; (2) mandibles; (3) first and second maxillae; (4) forcipular segment and first leg-bearing segment; (5) leg-bearing segments II–LXV; and (6) last two leg-bearing segments and terminal segments.

Description

Male holotype

67 pairs of legs, body length 25 mm, maximum body width 0.85 mm.

Colour of preserved specimen pale ochre.

Antennae ca. 2.4 times as long as the cephalic plate, curved at middle, distally moderately clavate. The apical club extends over a.a. IX to XIV. Ventral chaetotaxy: setae on a.a. I to VIII of different length, few in number, those of remaining articles progres-

Table 1. Differential characters of *Ityphilus krausi* n. sp. and *I. perrieri* (Brölemann).

	<i>I. perrieri</i>	<i>I. krausi</i>
body length	17 mm	25 mm
pairs of legs	male: 61	male: 67
head: length/width ratio	1.0 : 1.0	1.0 : 1.1
labrum: lateral pieces	without teeth	with 3 + 3 very small teeth
internal edge of forcipular tarsungulum	as in Fig. 34	as in Figs. 18–19
pore fields	transversally oval, undivided along the whole trunk	single subcircular in the anterior sterna, divided into two areas on the posterior sterna

sively shorter and very numerous (Figs. 1–2); d. chaetotaxy: setae on a.a. I to VIII similar to those on v. side, setae on a.a. IX to XIV much less numerous than those on v. side. Terminal a.a. with ca. 11 claviform sensory setae on the external border (Fig. 7) and ca. 4 on the internal border (Fig. 4). Distal end of this a.a. with ca. 5 very small hyaline specialised setae apparently not split distally (Figs. 4, 7). Dorsal and v. surface of a.a. II, V, IX and XIII with very small specialised setae which on the v. side are restricted to an internal latero-apical area and are represented by two different types: *a* and *b*. Type *a* setae are very thin and not divided distally, type *b* setae are thicker and have two very small apical branches. A.a. II with 1 type *b* seta (Fig. 3); a.a. V, IX and XIII with 1 type *a* and 1 type *b* setae. Specialised setae on d. side restricted to an external latero-apical area and represented by three different types: *a* and *b*, similar to *a* and *b* of v. side, and type *c* setae a little bigger, not divided distally and much darker (ochreous) in colour (*a*, *b*, *c*, Fig. 6). A.a. II (Fig. 5) and V with 1 type *a* and 1 type *b* seta; a.a. IX (Fig. 6) with 1 type *a*, 1 type *b* and 2 type *c* setae and a.a. XIII with 1 type *a*, 2 type *b* and 2 type *c* setae.

Cephalic plate slightly wider than long (ratio 1.1: 1), shape and chaetotaxy as in Fig. 8.

Clypeus with 1+1 postantennal setae and 5+5 median setae (Fig. 9).

Labrum without teeth on the central part, lateral pieces with 3+3 very small teeth (Fig. 10).

Mandible: dentate lamella not subdivided into blocks, with 9 or 10 teeth (Figs. 11–12); pectinate lamella with ca. 13 hyaline teeth.

First maxillae with palps on both coxosternum and telopodite, those of coxosternum rudimentary (Fig. 14). Coxosternum without setae, median projections of coxosternum well developed, subtriangular and provided with 1+1 setae. Article II of telopodite with 1+1 v. setae and 4+4 d. sensilla (Figs. 13–14).

Second maxillae with 4+4 setae on coxosternum arranged as in Fig. 13. Apical claw of telopodite well developed, bipectinate, the v. edge with ca. 8 teeth (Fig. 15), the d. with ca. 11 teeth (Fig. 16).

Forcípules: basal plate with ca. 30 setae dispersed on almost the whole surface. Coxosternum with complete chitinlines. All articles of telopodites lack teeth. Median part of the internal edge of the unguis strongly serrate (Figs. 17–19). Calyx of poison gland short and subcylindrical (Fig. 18); chaetotaxy of coxosternum and telopodites as in Fig. 17.

Legs (last pair excepted) with chaetotaxy uniform throughout the body length (Fig. 20).

Sterna: pore fields present from the second to antepenultimate sternum. On sterna II to XXXIII the fields are undivided, on sterna XXXIV to antepenultimate the fields are divided in two subsymmetrical areas. Pore fields on sterna II to XXXI placed on a subcircular raised prominence. Form and relative size of fields changing along the trunk as in Figs. 21–29. Number of pores on selected sterna: on sternum II, 7 pores; on VII, 52; on XXI, 119; on XXVIII, 107; on XXXIII, 68; on XXXIV, 37+37; on XL, 6+4; on XLIV, 3+4; on IL, 3+2; on LIV, 2+3; on LVIII, 1+2; on LXII, 1+3; on LXIII, 2+2; on LXV, 0+2.

Last leg-bearing segment with pleurites at the sides of praeternum. Praesternum apparently divided along the sagittal plane; form and chaetotaxy of sternum and tergum as in Figs. 30–31. Coxopleura with numerous setae on v. side, the remaining surface with few setae. Two single (“homogeneous”) coxal organs on each coxopleuron opening on the membrane between coxopleuron and sternum. Last legs with seven podomeres, strongly thickened, subconically narrowing from base to distal end, form and chaetotaxy as in Figs. 30–31. Praetarsus represented by a long straight, setiform structure, accompanied by a very small spine (Fig. 32).

Terminal segments: intermediate tergum with posterior border convex, intermediate sternum with posterior border concave; first genital sternum with posterior border concave (Figs. 30–31). Gonopods apparently uniaarticulate, with ca. 2–3 setae; penis seemingly without apico-dorsal setae (Fig. 33).

Female

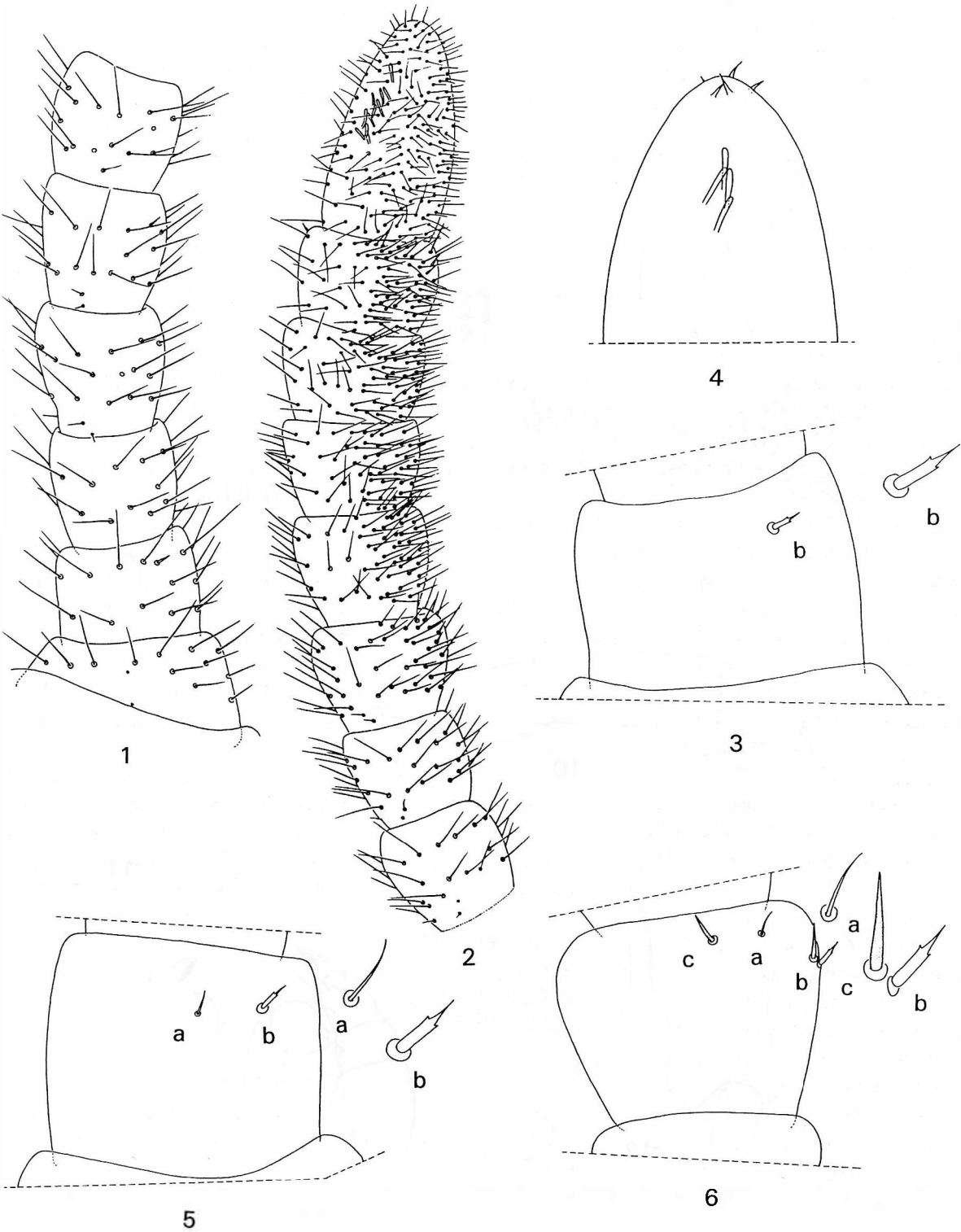
Unknown.

Etymology

This species is named after our distinguished colleague Prof. Dr. Otto Kraus in recognition to his important contribution to the knowledge of the Myriapod fauna of Peru.

Remarks

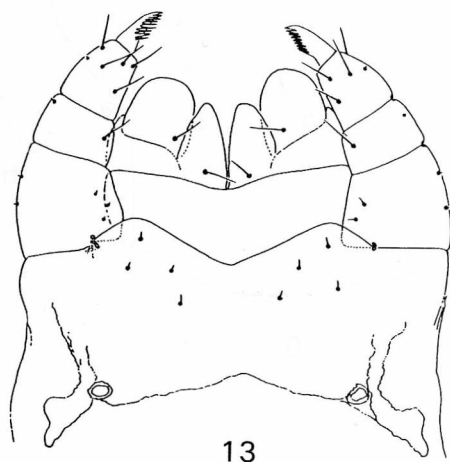
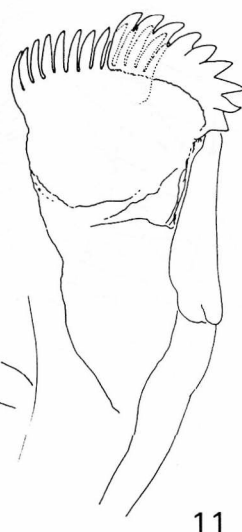
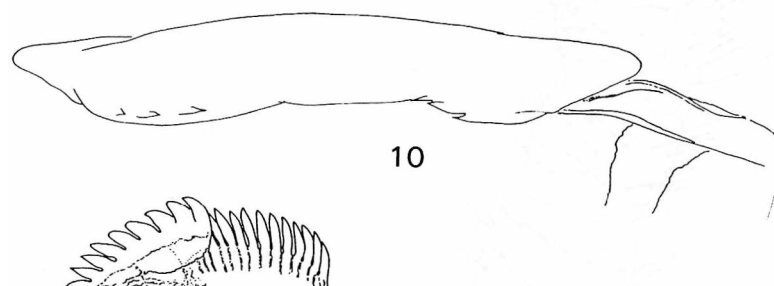
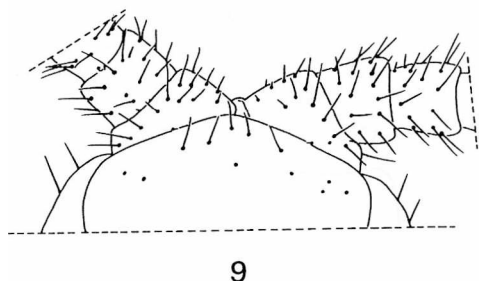
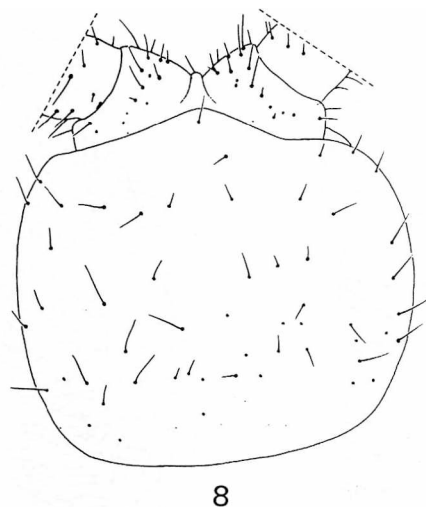
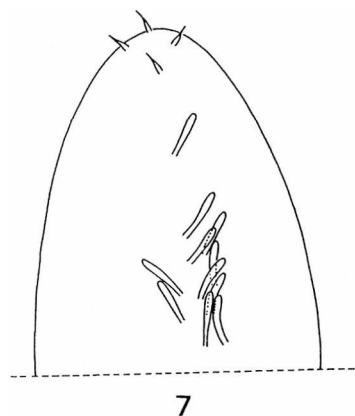
Figs. 1–7 do not show the exact length/width ratio of the antennal articles due to collapse of these structures in the original slides. The author stated that the specimen studied by him and identified with the number SMF 2917/1 was a ♀ but a careful examination of the terminal segments reveals the presence of



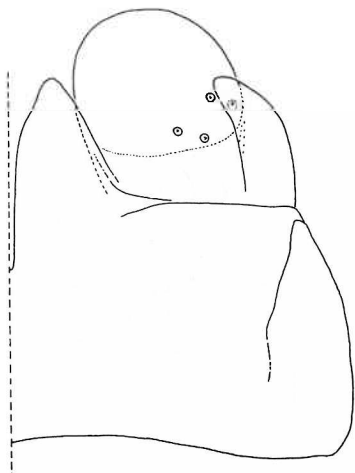
Figs. 1-2 0.2 mm

Figs. 3-6 0.05 mm

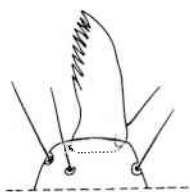
Figs. 1-6. *Ityphilus krausi* n. sp. ♂ holotype (Peru: Atiquipa). 1, r. a.a. I-VI, v.; 2, r. a.a. VII-XIV, ventro latero-external view; 3, r. a.a. II, v.; 4, l. a.a. XIV, latero-internal view; 5, r. a.a. II, d.; 6, r. a.a. IX, d.



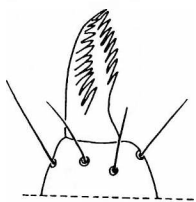
Figs. 7, 10-12 0.05 mm
 Figs. 8-9 0.3 mm
 Fig. 13 0.2 mm



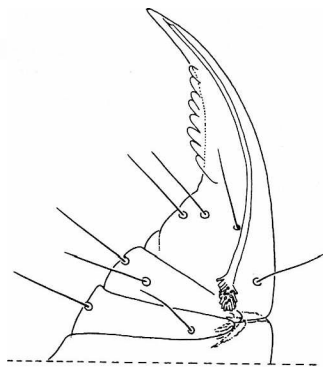
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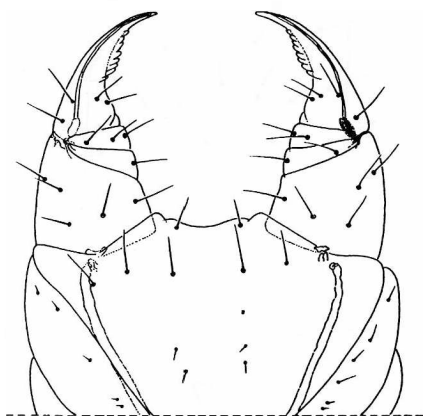
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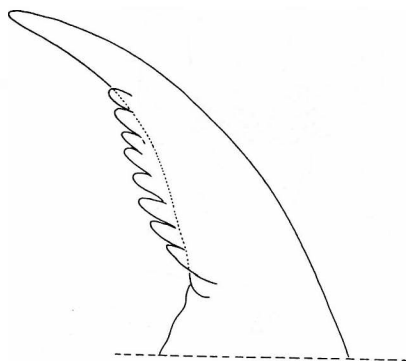
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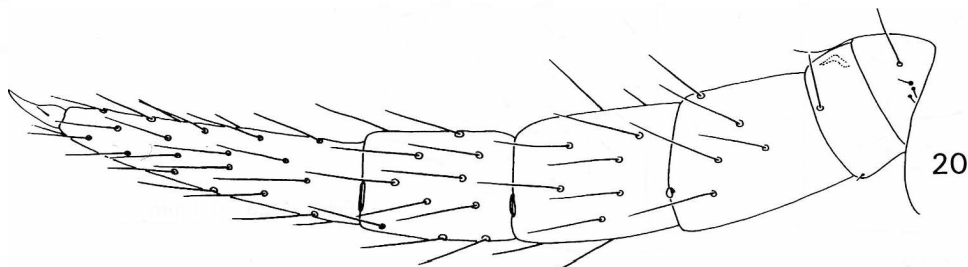
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Figs. 14-16, 19 0.05 mm

Fig. 17 0.3 mm

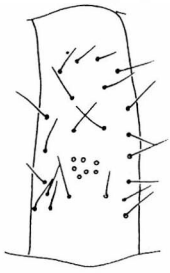
Fig. 18 0.05 mm

Fig. 20 0.1 mm

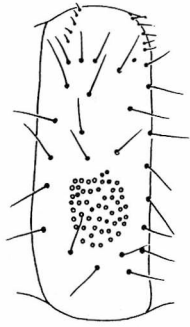


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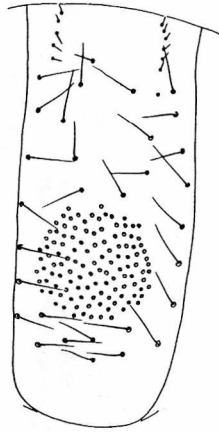
Figs. 14-20. *Ityphilus krausi* n. sp. ♂ holotype (Peru: Atiquipa). 14, r. first maxilla, d.; 15, claw of l. second maxilla, v.; 16, the same, d.; 17, forcipular segment with poison claws, v.; 18, detail of calyx of poison gland in l. poison claw, v.; 19, detail of internal edge of l. forcipular unguis, v.; 20, r. leg XXIV, v.



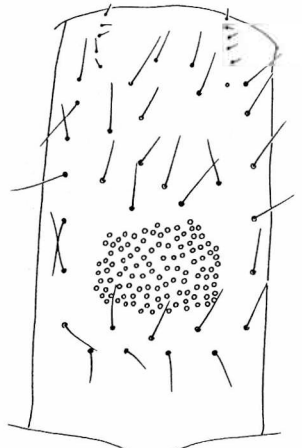
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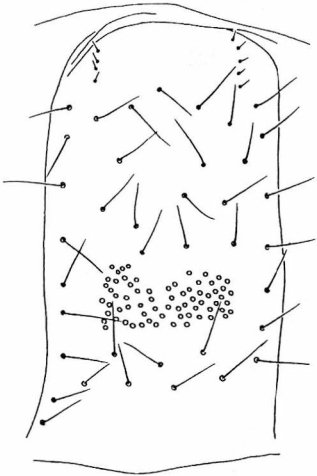
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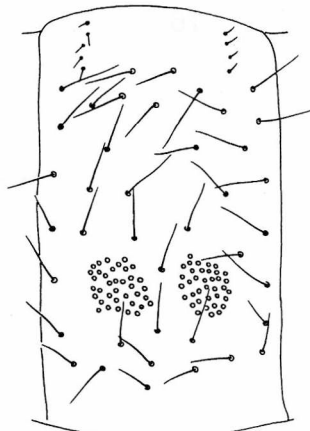
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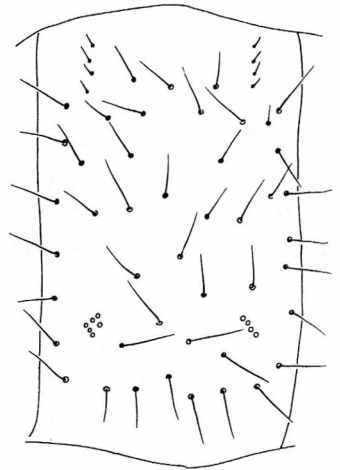
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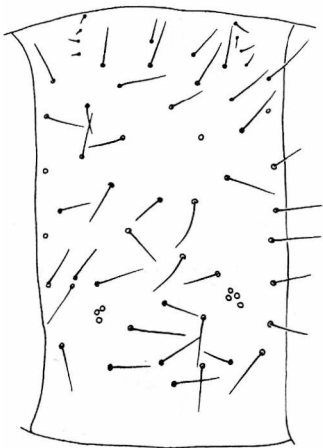
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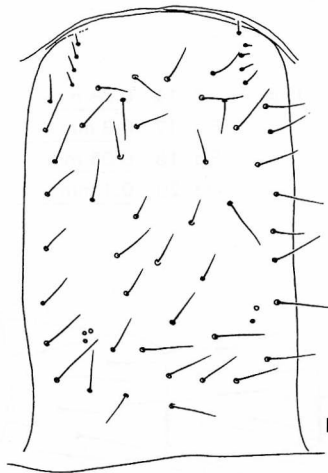
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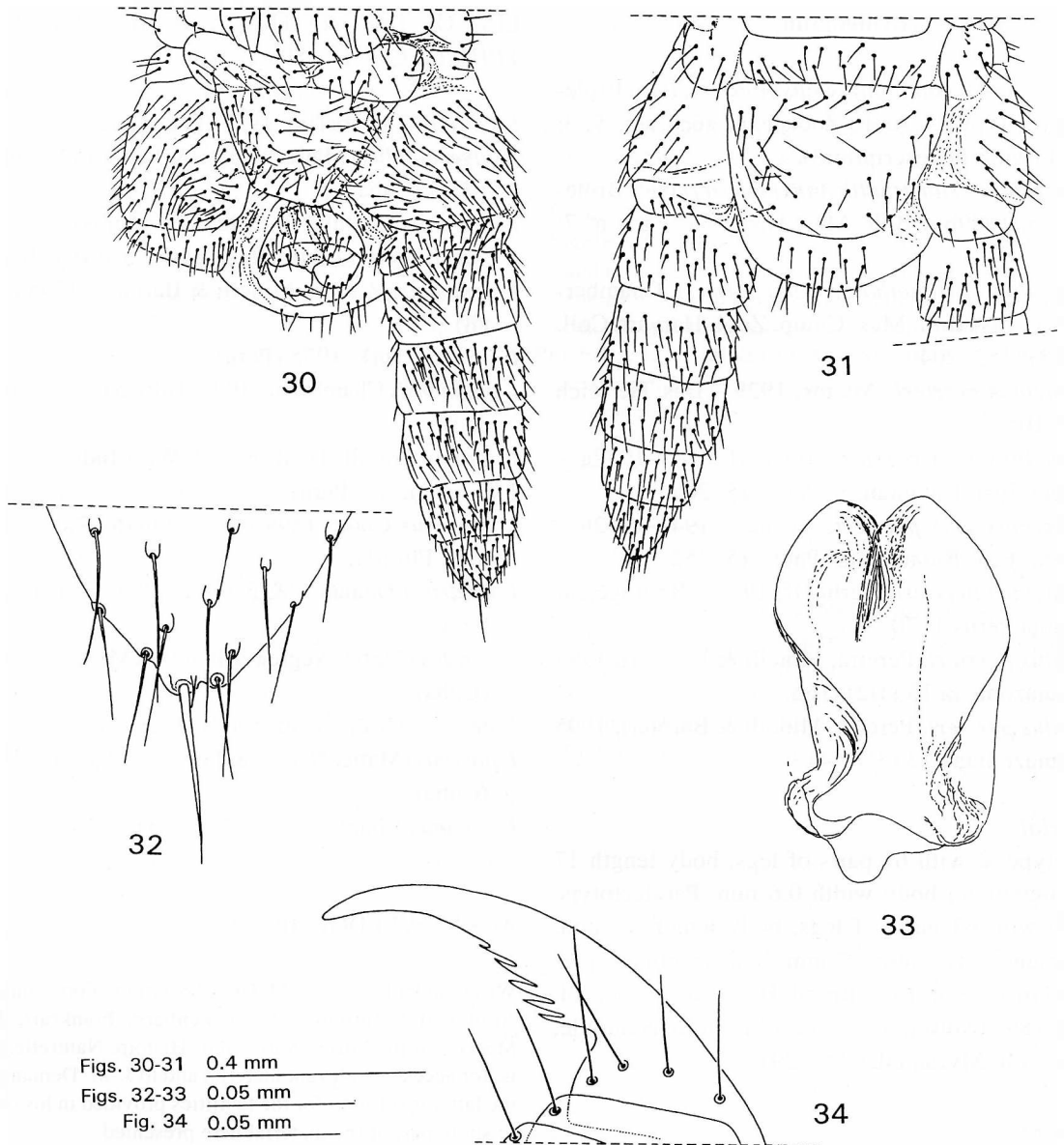


28



29

Figs. 21-29 0.3 mm



Figs. 30-31 0.4 mm

Figs. 32-33 0.05 mm

Fig. 34 0.05 mm

Figs. 30-33. *Ityphilus krausi* n. sp. ♂ holotype (Peru: Atiquipa). 30, last leg-bearing segment and terminal segments, v.; 31, the same, d.; 32, detail of distal end of last podomere of l. last leg, d.; 33, penis, d.

Fig. 34. *Ityphilus perrieri* (Brölemann, 1909), ♂ lectotype (Brazil: Haut-Carsevène), detail of l. forcipular tarsungulum, v.

a well developed penis inside the second genital segment which is clearly visible by transparency in the original slide (Fig. 33). Our revised study also revealed the following minor differences in respect to the original description of the specimen: (1) the presence of rudimentary palps on the coxosternum of the first maxillae and also well developed ones on the

first article of telopodites of the same appendages; (2) a few sternal pores are also present on the last third of the trunk, not just to sternum 45, but to antepenultimate one; and (3) the last pair of legs have a rudimentary praetarsus, in the form of a long straight setiform structure, accompanied by a very small spine (Fig. 32).

***Ityphilus perrieri* (Brölemann, 1909) (Fig. 34)**

Thalthybius (*Prionothalthybius*) *Perrieri* (sic) Brölemann, 1909a – Arch. Zool. exp. gén., sér. 5, 3: 334 (without description!).

Thalthybius (*Prionothalthybius*) *Perrieri* (sic) Brölemann, 1909b – Bull. Mus. Hist. Nat. Paris n° 7: 415.

Thalthybius (*Prionothalthybius*) *perrieri*, Chamberlin, 1914 – Bull. Mus. Comp. Zool. Harvard Coll. 58(3): 153, 204.

Thalthybius perrieri, Attems, 1929 – Das Tierreich 52: 105.

Thalthybius (*P.*) *perrieri*, Bücherl, 1941-1942a – Mem. Inst. Butantan, S. Paulo 15: 205.

Thalthybius (*P.*) *perrieri*, Bücherl, 1941-1942b – Mem. Inst. Butantan, S. Paulo 15: 352.

Thalthybius perrieri, Verhoeff, 1941 – Beiträge zur Fauna Perus 1: 70.

Ityphilus perrieri, Pereira, Minelli & Barbieri, 1994 – Amazoniana 13 (1/2): 166.

Ityphilus perrieri, Pereira, Minelli & Barbieri, 1995 – Amazoniana 13 (3/4): 413.

Material

Lectotype ♀ with 61 pairs of legs, body length 17 mm, maximum body width 0.6 mm. Paralectotype (sex?) with 63 pairs of legs, body length 18 mm, maximum body width 0.7 mm (both specimens preserved in alcohol) from Brazil: Haut-Carsevène, col. Geay, 1897 (Muséum National d' Histoire Naturelle, Paris. Coll. Myriapodes M. 329).

Remarks

Unfortunately this material is in poor state of preservation and for this reason it is very difficult to give details on previously undescribed features; nevertheless we can add the following. First, the calyx of the poison gland is very short, subcylindrical to subsphaerical; second, on the last leg-bearing segment the pleurites are apparently present at both sides of the praetergum and the pore fields are apparently absent on first and penultimate sternum (that is, present from second to antepenultimate).

LIST OF THE NEOTROPICAL SPECIES OF *ITYPHILUS* COOK, 1899

I. calinus Chamberlin, 1957 (Colombia)

I. cavernicolus (Matic, Negrea & Fundora Martinez 1977) (Cuba)

I. ceibanus Chamberlin, 1921 (Honduras)

I. crabilli Pereira, Minelli & Barbieri, 1994 (Brazil)

I. demoraisi Pereira, Minelli & Barbieri, 1995 (Brazil)

I. grandis Turk, 1955 (Peru)

I. guianensis Chamberlin, 1921 (British Guiana, Trinidad)

I. idanus Crabill, 1960 (British West Indies)

I. krausi n. sp. (Peru)

I. lilacinus Cook, 1899 (Cuba, Puerto Rico, Bahamas, Florida)

I. mauriesi Demange & Pereira, 1985 (French Antilles)

I. palidus (Matic, Negrea & Fundora Martinez, 1977) (Cuba)

I. perrieri (Brölemann, 1909) (Brazil)

I. polypus (Matic, Negrea & Fundora Martinez, 1977) (Cuba)

I. savanus Chamberlin, 1943 (Mexico)

ACKNOWLEDGEMENTS

We are indebted to Drs. M. Grasshoff of the Forschungsinstitut und Naturmuseum Senckenberg, Frankfurt, J.-P. Mauries of the Musée National d' Histoire Naturelle, Paris, for access to relevant material and to J.-M. Demange of the latter institution for the facilities provided in his office to study part of the material here presented.

This paper has been partly supported by grants of the Italian C.N.R. and M.U.R.S.T. to one of the authors (A. M.).

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