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Review of the South American millipede genus *Camptomorpha* Sivestri, 1897, with the description of a new species from Peru (Diplopoda: Polydesmida: Chelodesmidae)

Обзор двупарноногих многоножек южно-американского рода *Camptomorpha* Sivestri, 1897, с описанием нового вида из Перу (Diplopoda: Polydesmida: Chelodesmidae)

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КЛЮЧЕВЫЕ СЛОВА: Неотропики, бассейн Амазонки, таксономия, иконография, ключ.

ABSTRACT. The Neotropical genus *Camptomorpha* (= *Ptyxesmus* Chamberlin, 1941, syn.n.) is reviewed and shown to presently comprise 12 species, including *C. hoffmani* sp.n. from Peru, as well as *C. aberrans* Kraus, 1957, *C. atypha* (Chamberlin, 1941), *C. digitata* (Schubart, 1947), *C. dorsalis* Silvestri, 1897 (the type species, = *C. perproxima* Silvestri, 1897, syn.n.), *C. orites* (Chamberlin, 1941), *C. ortizi* Kraus, 1959, *C. papillosa* (Attems, 1931) (= *C. cordillerana* (Attems, 1931), syn.n.), *C. pulvillata* (Attems, 1898), *C. titana* (Kraus, 1956), *C. tocachensis* (Kraus, 1955) and *C. weyrauchi* (Chamberlin, 1955). All 11 previously known species are supplied with brief descriptive notes and illustrations. A pictorial key to the 12 currently recognized *Camptomorpha* species is compiled.

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РЕЗЮМЕ. Дан обзор неотропического рода *Camptomorpha* (= *Ptyxesmus* Chamberlin, 1941, syn.n.), который ныне включает 12 видов, в т.ч. *C. hoffmani* sp.n. из Перу, а также *C. aberrans* Kraus, 1957, *C. atypha* (Chamberlin, 1941), *C. digitata* (Schubart, 1947), *C. dorsalis* Silvestri, 1897 (типовой вид, = *C. perproxima* Silvestri, 1897, syn.n.), *C. orites* (Chamberlin, 1941), *C. ortizi* Kraus, 1959, *C. papillosa* (Attems, 1931) (= *C. cordillerana* (Attems, 1931), syn.n.), *C. pulvillata* (Attems, 1898), *C. titana* (Kraus, 1956), *C. tocachensis* (Kraus, 1955) и *C. weyrauchi* (Chamberlin, 1955). Все 11 ранее известных видов рода снабжены краткими описаниями и иллюстрациями. Составлен иллюстрированный ключ для всех 12 принятых пока видов *Camptomorpha*.

Introduction

The millipede family Chelodesmidae is probably the second largest in the entire class Diplopoda, following the Paradoxosomatidae with its over 1000 species and approximately 200 genera. The Chelodesmidae presently encompasses more than 780 species in 177 genera and 21 tribes, most genera still being unassigned to a tribe. The family is divided into two geographic subfamilies: the Neotropical Chelodesminae and the basically Afrotropical Prepodesminae [Means *et al*., 2023; Bouzan *et al.*, 2024].

The genus *Camptomorpha* Sivestri, 1897 is rather large (12 documented species in northern South America and several more still undescribed) and forms one of the characteristic elements of the Tropical Andes Biodiversity Hotspot through comprising two species in Ecuador and one in Peru [Means *et al*., 2023]. Basically, the distribution of the genus neatly coincides with the Amazon basin, the core area lying on the eastern versant of the Andes (Ecuador and Peru) and suggesting several waves of downstream dispersal all along the Amazon/Solimões River down to the delta area in Pará state of Brazil [Hoffman, in litt.].

The present contribution attempts to outline and review the species diversity and distribution of *Camptomorpha* in connection to the record of a new congener from the Peruvian Andes. By necessity, it is largely based on available iconography.

Material and methods

Initially, the present paper has been prompted by the discovery of a presumably new species of *Camptomorpha* in Peru.

However, to properly allocate it, the project has since expanded into a review of the entire genus. Since most of the type specimens are realistically unavailable either for re-examination or even for on-spot photography, no generic revision could be attempted. Instead, through the kind assistance of three U.S. colleagues, we have luckily got access to the largely unpublished archives of the late Richard L. Hoffman (VMNH), referred to herewith as Hoffman [in litt.], allowing for some of his notes on and sketches of various *Camptomorpha* species to be used now. As a result, the project has to primarily rely on the available meaningful iconography, including that contained in Hoffman's unpublished archives [Hoffman, in litt.].

The material underlying the present contribution is in 75% ethanol, taken by Ilya Melnik, and donated to the collection of the Zoological Museum of the Moscow State University (ZMUM), Moscow. Colour photographs were taken at the Paleontological Institute, Russian Academy of Sciences (PIN), Moscow, using a Flexacam C1 camera mounted on a Leica M165C stereo microscope with built-in LasX software.

The terminology of gonopodal structures follows that of Bouzan *et al*. [2017, 2024].

Repository acronyms: AMNH — American Museum of Natural History, New York, U.S.A.; NHMW — Naturhistorisches Museum Wien, Vienna, Austria; MNRJ — Museu Nacional, Rio de Janeiro, Brazil; MUSM — Museo de Historia Natural, Lima, Peru; SMF — Senckenberg Naturmuseum, Frankfurt a.M., Germany; VMNH — Virginia Museum of Natural History, Martinville, VA, U.S.A.; ZMH — Zoologisches Museum Hamburg, Germany; ZMT — Museo Zoologico, Università di Torino, Turin, Italy; ZMUM — Zoological Museum, Moscow State University, Moscow, Russia.

Taxonomy

Genus *Camptomorpha* Silvestri, 1897

Camptomorpha Silvestri, 1897a: 10, originally proposed invalidly for two species; Brölemann, 1916: 552; Attems, 1931: 44; 1938: 69; Hoffman, 1953: 120, clarification of the genus and type species identity; 1975: 185, assignment to Lepturodesmini; 1980: 152; Schubart, 1955: 508; Jeekel, 1971: 252; Bouzan *et al.*, 2018: 11.

Type species: *C. dorsalis* Silvestri, 1897a: 10, by subsequent designation of Attems [1931: 44].

Genus feminine in gender [Jeekel, 1971], even though sometimes erroneously treated as masculine.

Number of species: 11 described, one new treated below, and several more still undescribed.

= *Phantasmodesmus* Verhoeff, 1927: 509, introduced as a subgenus of *Leptodesmus,* synonymized with *Leptodesmus* by Attems, 1938: 6, synonymized under *Camptomorpha* by Hoffman, 1953: 120, listed as a generic synonym by Hoffman, 1980: 152; Kraus, 1956: 142; Jeekel, 1971: 279.

Type species: *Leptodesmus pulvillatus* Attems, 1898: 391, by monotypy.

= *Eucampesmus* Chamberlin, 1941: 489, synonymized with *Phantasmodesmus* by Kraus, 1956: 141, synonymized with *Camptomorpha* by Hoffman, 1953: 120, listed as a generic synonym by Hoffman, 1980: 152; Jeekel, 1971: 262.

Type species: *Eucampesmus orites* Chamberlin, 1941: 489, by original designation.

= *Ptyxesmus* Chamberlin, 1941: 489, **syn.n.**, after Hoffman [in litt.].

Type species: *Ptyxesmus atyphus* Chamberlin, 1941: 489, by original designation.

DIAGNOSIS. A genus of Lepturodesmini with ♂ coxae 3 usually produced or lobed mesad, almost or fully in contact. Gonopods remarkably complex, sternal remnants strongly reduced or absent; coxites large and globose, devoid of dorsal apophyses; telopodites tripartite, consisting of two large laminae (anterior acropodite and posterior prefemoral process) and a fully independent solenomere branch between both [Hoffman, 1975, in litt.].

BRIEF DESCRIPTION. Adults medium-sized (32–50 mm long and 4–6 mm wide), usually dark olive to brown and usually devoid of a bright pattern, more rarely lighter, red-grey with a yellowish axial stripe, yellowish or yellowish white paraterga and reddish-yellow venter and legs. Body with 20 rings, increasingly wide until ring 5, thereafter increasingly attenuated. Antennae rather short and slender to robust, up to only poorly clavate; in length, antennomeres 2–6>>1=7>8. Collum usually broadly rounded laterally, only occasionally triangular and almost pointed. Metatergal surface smooth and shining, often leathery, very finely striolate, with neither transverse sulci nor an axial line. Dorsum moderately convex, especially anteriorly. Sides smooth, only occasionally finely granulate. Rings 1–4(5) very compact and tightly following one after the other, *vs* remaining rings, more loose and gradually attenuating towards telson. Paraterga well-developed, on ring 19 smallest, set at about upper 1/2 to 1/4 body height, largely rimmed throughout, broadly and more or less regularly rounded anterolaterally and laterally, typically smooth, only occasionally and only on anterior body rings with a small marginal tooth towards anterior corner, caudal corner usually broadly to narrowly rounded, in poreless paraterga sometimes pointed. Pore formula normal: 5, 7, 9, 10, 12, 13, 15–19. Ozopores placed inside ovoid pits or grooves on distinct ovoid calluses (= peritremata), dorsolateral to lateral in position. Epiproct usually short, finger-shaped, tip only occasionally with a paramedian pair of small claws directed ventrocaudally. Hypoproct often with a prominent median projection at caudal margin, longer than paramedian setigerous knobs. Pleurosternal carinae inconspicuous, present only on a few anterior rings.

Sterna usually unmodified, broad, flat, bare and at most with faint cross-impressions. Legs long and slender, anterior ♂ prefemora sometimes with distoventral swellings and most ♂ tibiae with apicoventral pads/chelae subtending the bases of tarsi. ♂ coxae 3 each with a ventral process at apex, usually densely setose.

Gonopodal aperture kidney-shaped, large, taking up most of prozonum 7, but not shifted beyond it, with clearly elevated and rounded lateral sides and a regularly rounded caudal shelf inside (Fig. 12I). Gonopods mostly remarkably complex, characteristic of the genus, each tripartite (see Diagnosis above). Gonopodal coxite large and globose, usually with two macrosetae; cannula not set inside a marginal notch; prefemorite (= a densely setose prefemoral region) proportionately smaller, forming an obtuse angle with telopodite; both acropodite and solenomere set off by a distinct cingulum formed by a strong flexure on lateral side.

The following species of *Camptomorpha* are considered valid, all listed in alphabetic order, each accompanied by brief descriptive notes and available meaningful illustrations. The content and quality of these notes vary significantly depending on the amount of published information available. Only the new species is being described and illustrated in due detail.

Camptomorpha aberrans Kraus, 1957
Fig. 1.

Camptomorpha aberrans Kraus, 1957: 98, plate 8, figs 11–14. Holotype ♂, SMF.

BRIEF DESCRIPTIVE NOTES (after Kraus [1957]). Width 4.7 mm. Coloration uniformly red-brown. Paraterga broadly and regularly rounded, caudal corner obtuse and rounded; midbody pore-bearing calluses clearly set off from anterolateral rim (Fig. 1A). Epiproct simple, short and finger-

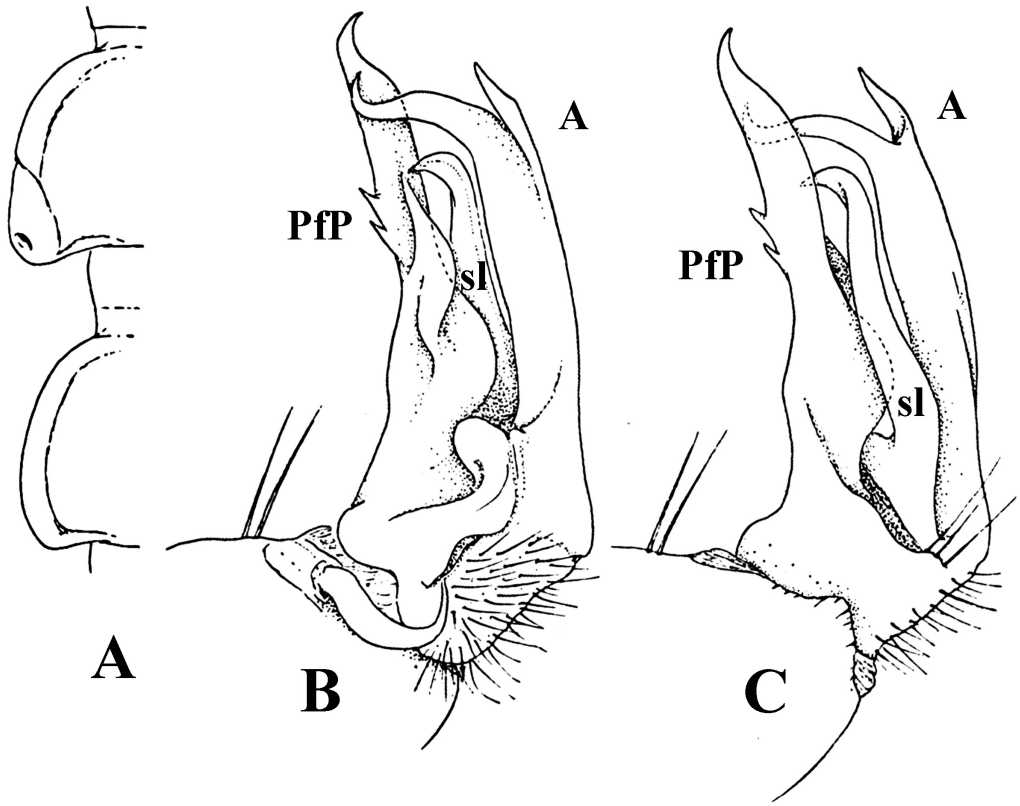

Fig. 1. *Camptomorpha aberrans* Kraus, 1957, ♂ holotype. A — left halves of rings 10 and 11, dorsal view; B — left gonopod, mesal view; C — right gonopod, lateral view. Designations: A — acropodite; PfP — prefemoral process; sl — solenomere. After Kraus [1957].

Рис. 1. *Camptomorpha aberrans* Kraus, 1957, голотип ♂. A — левые половины тудовищных сегментов 10 и 11, сверху; B — левый гонопод, изнутри; C — правый гонопод, сбоку. Обозначения: A — акроподит; PfP — пребеморальный отросток; sl — соленомер. По: Kraus [1957].

shaped. ♂ legs ventrally with prefemora bearing semi-circular bulges distally and with tibiae carrying chelae (= apical soles subtending bases of tarsi).

Gonopods (Fig. 1B, C) with both prefemoral process (**PfP**) and acropodite (**A**) subequal in length, slender and relatively simple, poorly armed; **PfP** with two small and acuminate projections near its middle, and terminating in an acuminate apex; **A** divided into two acuminate branches near its apical region; solenomere (**sl**) rather rod-shaped, curved only apically.

DISTRIBUTION. Peru, Acomayo near Huanuco, 9°53′ 33.8″S 76°18′13.9″W, 2700 m [Kraus, 1957].

Camptomorpha atypha (Chamberlin, 1941)
Fig. 2.

Ptyxesmus atyphus Chamberlin, 1941: 489, figs 101 and 102. Holotype ♂, AMNH, but presently misplaced [Hoffman, in litt.].

BRIEF DESCRIPTIVE NOTES (after Chamberlin [1941]). Width 5.0 mm. Coloration dark olive dorsally, paraterga in part more brownish, legs and antennae dark brown. Collum acutely narrowed on each side (Fig. 2A). Paraterga broadly and regularly rounded, rimmed throughout; caudal corners drawn past rear tergal margins only in caudal body third. Epiproct simple, short and finger-shaped. ♂ legs ventrally with prefemora bearing semi-circular bulges distally and with tibiae carrying chelae apically.

Gonopods (Fig. 2B, C) with both prefemoral process (**PfP**) and acropodite (**A**) subequal in length, **A** being relatively simple and leaf-shaped, with several grooves at external margin, apex directed basally; **PfP** armed and broader, with an irregular internal margin and a small ascending process near middle; solenomere (**sl**) simple.

DISTRIBUTION. Peru, Loreto Dept., Iquitos, 3°44′56.83″S 73°15′13.79″W [Chamberlin, 1941].

Hoffman [in litt.] provided a sketch of a gonopod of this species from a near-topotype, reproduced here in Fig. 2C. He also recorded *C. atypha* from near Tabatinga, Brazil, as well as Rio Yanayacu near Iquitos and Rio Marañon *ca* 2 km above Nauta, Peru.

Camptomorpha digitata (Schubart, 1947)
Fig. 3.

Leptodesmus (*Desmoleptus*) *digitatus* Schubart, 1947b: 43, figs 42–43. Syntypes, MNRJ.

Camptomorpha digitatus (sic!) — Hoffman, 1953: 124.

Leptodesmus (*Phantasmodesmus*) *digitatus* — Kraus, 1956: 142, *Camptomorpha* by implication.

BRIEF DESCRIPTIVE NOTES (after Schubart [1947]). Length 39–40 mm, width 5.2–5.4 mm. Coloration castaneous, clypeus, labrum, sulcus on vertex, basal antennomere, venter, legs and epiproct lighter, sides of collum and rims of paraterga yellowish. Paraterga broadly and regularly rounded, rimmed throughout (Fig. 3A–C); caudal corners increasingly acute, triangular and pointed from ring 14 on. Epiproct simple, short and finger-shaped. ♂ legs ventrally with prefemora bearing semi-circular bulges distally and with all tibiae but two last pairs carrying chelae apically.

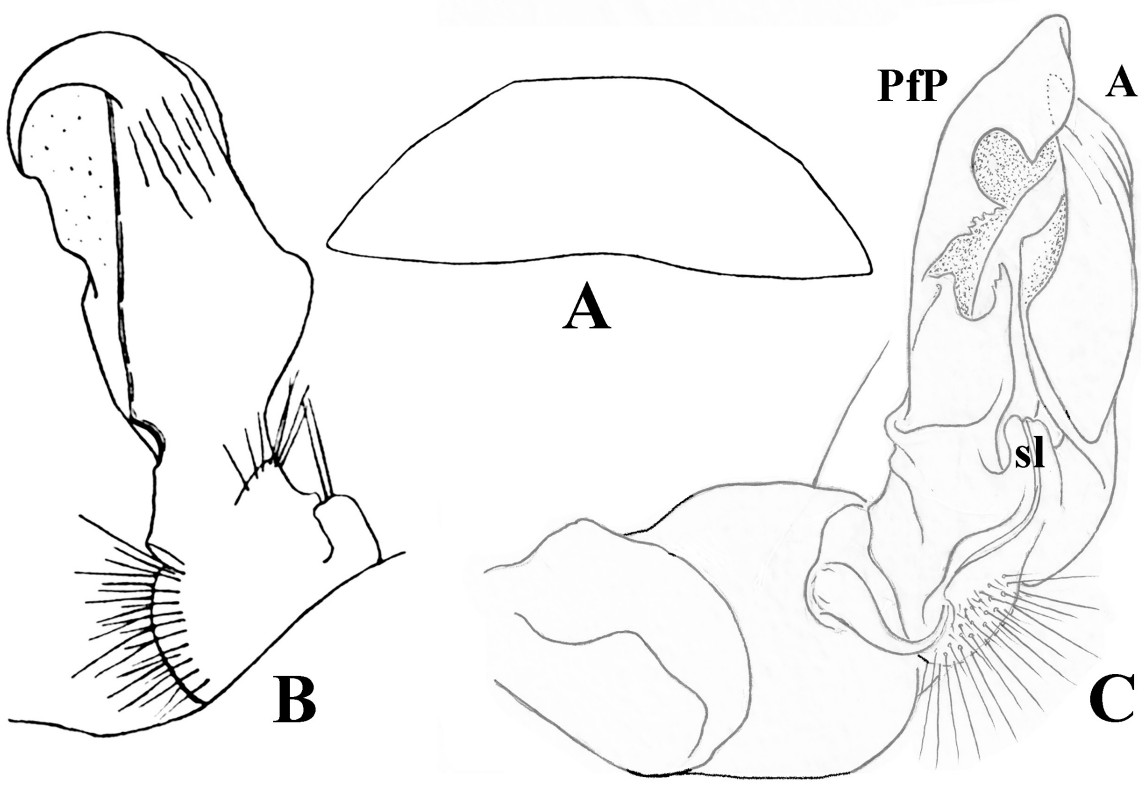

Fig. 2. *Camptomorpha atypha* (Chamberlin, 1941), ♂ holotype (A, B) and ♂ near-topotype (C) from near Iquitos. A — outline of collum, dorsal view; B, C — left gonopod, subcaudal and mesal views, respectively. Designations: A — acropodite; PfP — prefemoral process; sl — solenomere. After Chamberlin [1941] (A, B) and Hoffman [in litt.] (C).

Рис. 2. *Camptomorpha atypha* (Chamberlin, 1941), голотип ♂ (A, B) и почти топотип ♂ из окрестностей Iquitos. A — контур коллума, сверху; B, C — левый гонопод, соответственно примерно сзади и изнутри. Обозначения: A — акроподит; PfP — префеморальный отросток; sl — соленомер. По: Chamberlin [1941] (A, B) и Hoffman [in litt.] (C).

Gonopods (Fig. 3D, E) with prefemoral process (**PfP**) clearly longer than acropodite (**A**), both being rather elaborate and armed; **PfP** with two small and acuminate projections near middle ending in an irregularly shaped acuminate apex, the latter directed basally; apical margin of **A** divided into two branches, internal one being slender, *vs* a broader external one; solenomere (**sl**) simple and slender, subflagelliform distally.

DISTRIBUTION. Brazil, Pará, Aurá near Belem, 1°24′ 29.7″S 48°23′51.4″W [Schubart, 1947]. Hoffman [in litt.] added also Parantins, Amazônas state, almost 800 km W of the type locality.

Hoffman [in litt.] revised type material and noted that Schubart's [1947b] original drawing of the left gonopod was inaccurate and misleading, providing instead several sketches both of an intact gonopod and several body rings (Fig. 3).

Camptomorpha dorsalis Silvestri, 1897
Fig. 4.

Camptomorpha dorsalis Silvestri, 1897b: 10, figs 29–31 (syntypes of both sexes, ZMT); Attems, 1938: 70; Hoffman, 1953: 123, fig. 1; Jeekel, 1971: 252.

Leptodesmus dorsalis — Attems, 1899: 427.

Camptomorpha perproxima Silvestri, 1897b: 11, figs 32–33, **syn.n.** (syntypes of both sexes, ZMT, after Hoffman [in litt.]).

Leptodesmus perproxima (sic!) — Attems, 1899: 427.

Camptomorpha perproxima — Attems, 1938: 71; Hoffman, 1953: 123.

BRIEF DESCRIPTIVE NOTES (after Silvestri [1897b] and Hoffman [in litt.]). Length 32–33 mm, width 4.0–4.6 mm. Coloration red-grey or brown with a yellowish axial stripe from collum to tip of epiproct, sides, entire epiproct and legs sometimes yellow; metaterga, venter and legs yellowish to brown and reddish-yellow; prozona, except anteriormost ones, sometimes with two whitish paramedian spots; paraterga sometimes yellowish white both dorsally and ventrally. Paraterga broadly and regularly rounded, rimmed throughout, paraterga 2 sometimes with a small lateral tooth towards anterolateral corner; caudal corners increasingly acute from ring 5 on (Fig. 4A). Epiproct short and finger-shaped, with a paramedian pair of small apical claws directed caudoventrally (Fig. 4C). ♂ legs 3–20 ventrally with prefemora bearing semi-circular bulges distally and with tibiae carrying chelae apically (Fig. 4B). ♂ coxae 2 enlarged and apically truncate; ♂ coxae 3 (Fig. 4B) also enlarged and apically truncate, densely setose, almost in contact medially; ♂ coxae 4 and 5 produced ventrad into prominent, blunt, rounded lobes.

Gonopods (Fig. 4D–I) with prefemoral process (**PfP**) and acropodite (**A**) subequal in length, both being rather simple, unarmed, with spatuliform apices; **PfP** strongly twisted; solenomere (**sl**) simple, helicoid and slender, subflagelliform distally.

DISTRIBUTION**.** For *C. dorsalis*: Ecuador, San José, 1°29′03.1″S 80°19′59.7″W [Silvestri, 1897b]. Hoffman [in litt.] elucidated the type locality as actually lying at Rio San José, *ca* 25 km NW of Gualaquiza.

For *C. perproxima*: Ecuador, Valle de Zamora (Santiago Zamora = Zamora Chinchipe), 4°03′44.7″S 78°56′55.7″W [Silvestri, 1897b].

JUSTIFICATION OF SYNONYMY. Hoffman [in litt.] recorded and depicted ♂ material of this species from Cushuene,

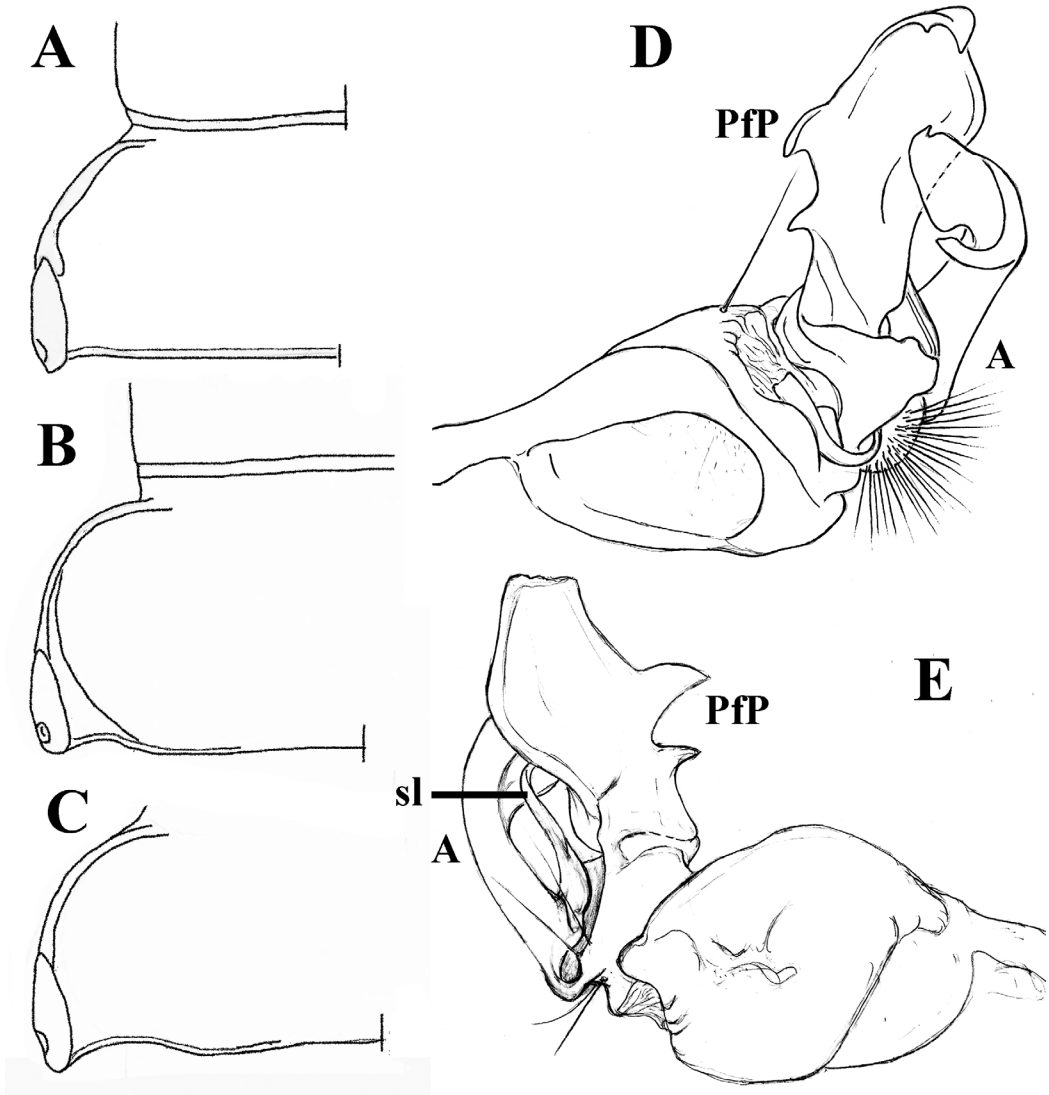

Fig. 3. *Camptomorpha digitata* (Schubart, 1947), ♂ from Parantins, Amazônas, Brazil. A, B and C — left halves of body rings 7, 10 and 17, respectively; D, E — left gonopod, mesal and lateral views, respectively. Designations: A — acropodite; PfP — prefemoral process; sl — solenomere. After Hoffman [in litt.].

Рис. 3. *Camptomorpha digitata* (Schubart, 1947), ♂ из Parantins (Амазонас, Бразилия). A, B и C — левые половины соответственно туловищных сегментов 7, 10 и 17; D, E — левый гонопод, соответственно изнутри и сбоку. Обозначения: A — акроподит; PfP — пребедренный отросток; sl — соленомер. По: Hoffman [in litt.].

Pastaza Prov. (Fig. 4A–E) and Hacienda Santa Inés (1°25′ S 78°12′ W) on Rio Pastaza between Rio Mapoto and Rio Topo, Tungurahua Prov. (Fig. 4F, J), Ecuador, comparing it directly with a syntype of *C. perproxima* (Fig. 4G, H). The results unequivocally prove the synonymy and quite a vast distribution of *C dorsalis* (= *C. perproxima*, syn.n.) in Ecuador.

***Camptomorpha orites* (Chamberlin, 1941)**
Fig. 5.

Eucampesmus orites Chamberlin, 1941: 489, figs 97–100 (holotype ♂, AMNH); Jeekel 1971: 262.

Camptomorpha oreites (sic!) — Hoffman, 1953: 124.

Leptodesmus (*Phantasmodesmus*) *orites* — Kraus, 1956: 142, *Camptomorpha* by implication.

BRIEF DESCRIPTIVE NOTES (after Chamberlin [1941]). Length ca 48 mm, width 6.0 mm. Coloration dark to chocolate brown with light brown or yellowish paraterga, and antennae and legs light brown. Paraterga broadly and regularly rounded, lateral rim smooth (Fig. 5A), most anterior ones each with a small tooth towards anterior corner, caudal corner rather narrowly rounded; midbody pore-bearing calluses (= peritremata) set off from anterolateral rim. ♂ legs ventrally with tibiae carrying apical chelae.

Gonopods (Fig. 5B–D) with both prefemoral process (**PfP**) and acropodite (**A**) subequal in length, both very complex and heavily armed; **PfP** broad, with two elongated and acute projections along its middle portion, ending in another elongated and acute apex directed laterally; **A** with an irregular internal margin with several small indentations, apical portion semi-spatulate in shape, with a triangular projection in central portion of apex; solenomere (**sl**) slender and simple, only slightly curved apically.

DISTRIBUTION. Peru, Contayo Hills, Rio Tapiche, 7°26′55.2″S 73°56′27.3″W, 700 ft [Chamberlin, 1941].

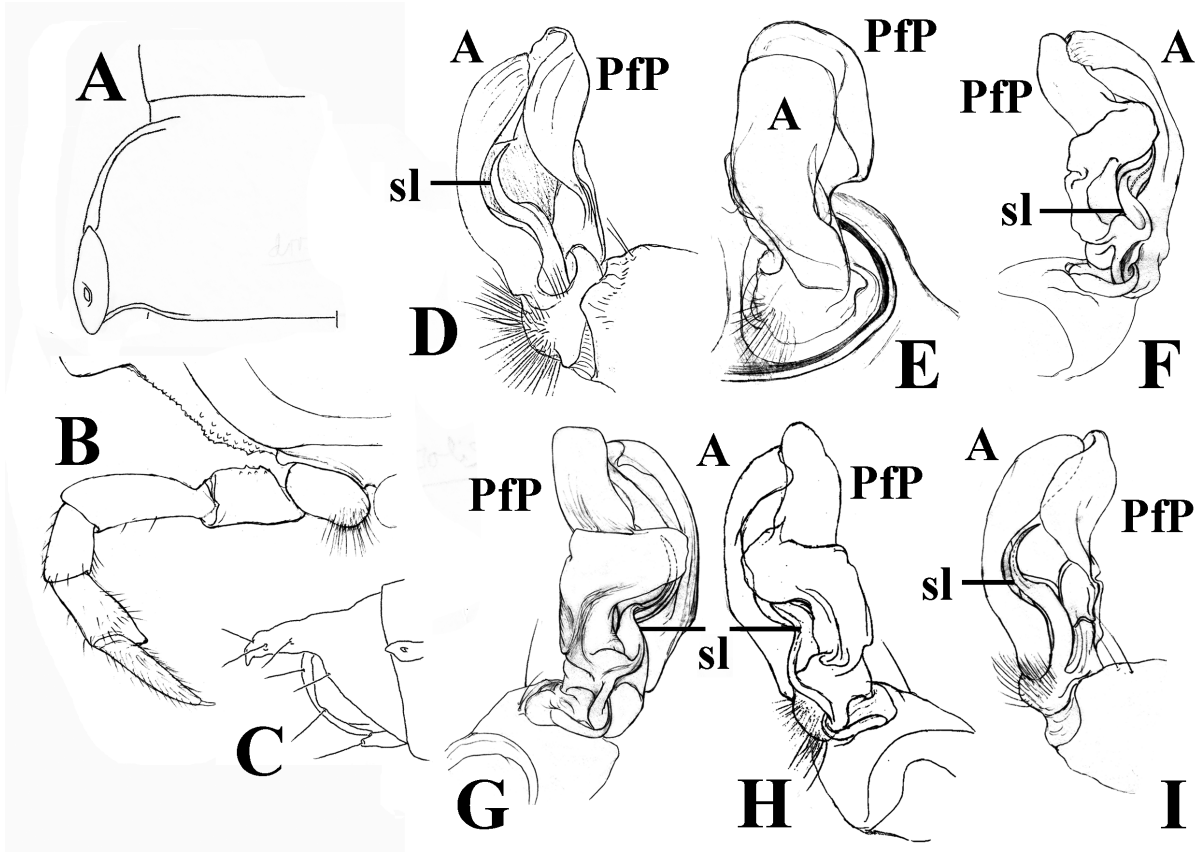

Fig. 4. *Camptomorpha dorsalis* Silvestri, 1897, ♂ from Cushuene, Pastaza Prov., Ecuador (A–E), ♂ from Santa Inés, Tungurahua Prov., Ecuador (F, I), and ♂ syntype of *C. perproxima* (G, H). A — left half of ring 10, dorsal view; B — leg 3 *in situ*, caudal view; C — telson, lateral view; D–F, I — left gonopod, lateral ventral, mesal and lateral views, respectively; G, H — left and right gonopods, respectively, mesal views. Designations: A — acropodite; PfP — prefemoral process; sl — solenomere. After Hoffman [in litt.].

Рис. 4. *Camptomorpha dorsalis* Silvestri, 1897, ♂ из Cushuene (пров. Пастаса, Эквадор) (A–E), ♂ из Santa Inés (пров. Тунгурауа, Эквадор) (F, I), и синтип ♂ *C. perproxima* (G, H). A — левая половина туловищного сегмента 10, сверху; B — нога 3 на месте, сзади: C — тельсон, сбоку; D–F, I — левый гонопод, соответственно сбоку, снизу, изнутри и сбоку; G, H — соответственно левый и правый гоноподы, изнутри. Обозначения: A — акроподит; PfP — пребеморальный отросток; sl — соленомер. По: Hoffman [in litt.].

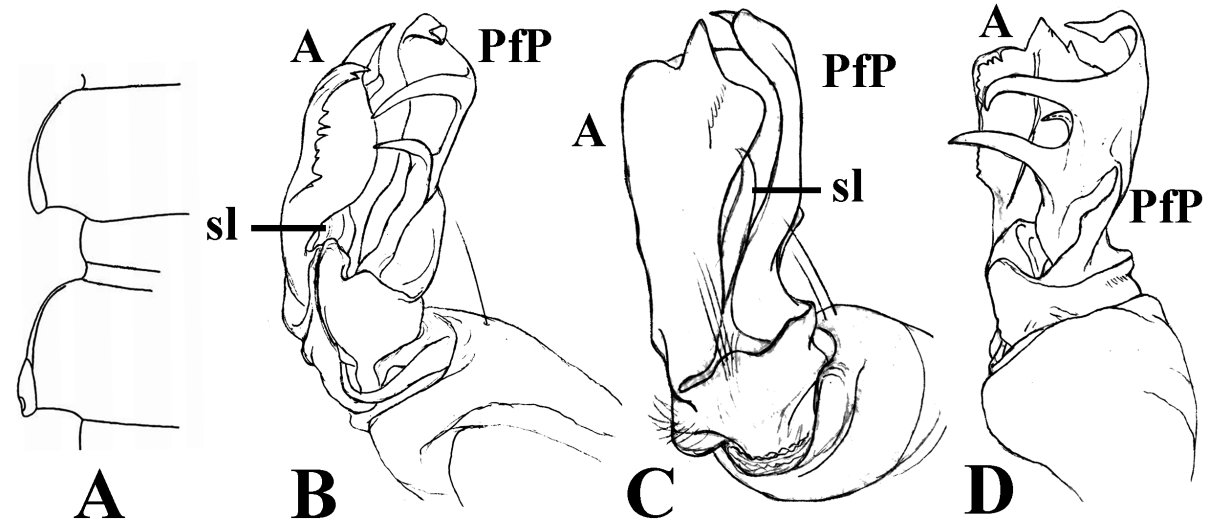

Fig. 5. *Camptomorpha orites* (Chamberlin, 1941), ♂ holotype (A) and strict ♂ topotype (B–D). A — left halves of rings 11 and 12, dorsal view; B–D — right gonopod, mesal, sublateral and dorsal views, respectively. Designations: A — acropodite; PfP — prefemoral process; sl — solenomere. After Chamberlin [1941] (A, rectified) and Hoffman [in litt.] (B–D).

Рис. 5. *Camptomorpha orites* (Chamberlin, 1941), голотип ♂ (A) и строгий топотип ♂ (B–D). A — левые половины туловищных сегментов 11 и 12, сверху; B–D — правый гонопод, соответственно изнутри, почти сбоку и сверху. Обозначения: A — акроподит; PfP — пребеморальный отросток; sl — соленомер. По: Chamberlin [1941] (A, исправлено) и Hoffman [in litt.] (B–D).

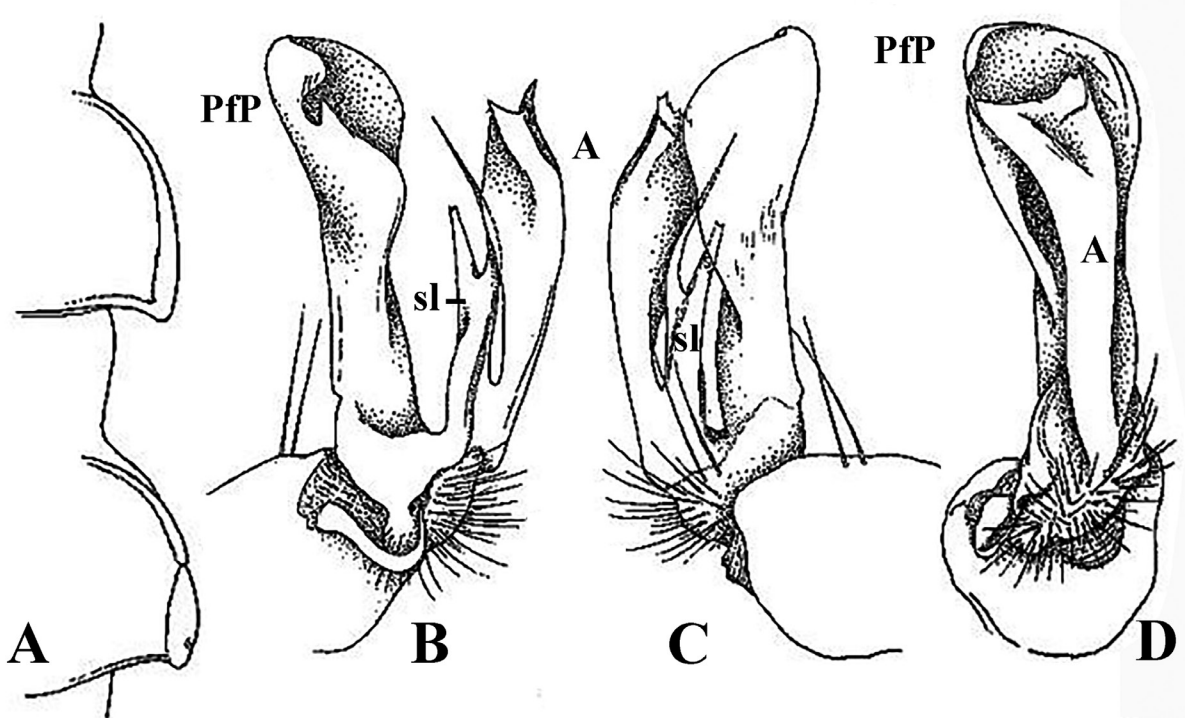

Fig. 6. *Camptomorpha ortizi* Kraus, 1959, ♂ holotype. A — right halves of rings 8 and 9, dorsal view; B–D — left gonopod, mesal, lateral and ventral views, respectively. Designations: A — acropodite; PfP — prefemoral process; sl — solenomere. After Kraus [1959].

Рис. 6. *Camptomorpha ortizi* Kraus, 1959, голотип ♂. A — правые половины туловищных сегментов 8 и 9, сверху; B–D — левый гоноподы, соответственно изнутри, сбоку и снизу. Обозначения: A — акроподит; PfP — префеморальный отросток; sl — соленомер. По: Kraus [1959].

Hoffman [in litt.] located a strict topotype ♂ in the AMNH collection and depicted its right gonopod in proper detail (Fig. 5B–D).

Camptomorpha ortizi Kraus, 1959
Fig. 6.

Camptomorpha ortizi Kraus, 1959: 266, figs 4–7. Holotype ♂, SMF.

BRIEF DESCRIPTIVE NOTES (after Kraus [1959]). Width 4.4 mm. Coloration dull red-brown, paraterga and their caudal corners, as well as epiproct and legs yellow-white. Paraterga broadly and regularly rounded, caudal corners mostly rounded, pore-bearing calluses (= peritremata) distinctly set off from a completely smooth lateral rim (Fig. 6A). Epiproct short and finger-shaped, with a paramedian pair of small apical claws. Hypoproct with an apical tooth between both setigerous knobs. ♂ legs ventrally with prefemoral apical knobs gradually reduced towards midbody legs and with all tibiae carrying apical chelae.

Gonopods (Fig. 6B–D) with prefemoral process (**PfP**) only slightly longer than acropodite (**A**), both only moderately complex and poorly armed; **PfP** spoon-shaped, internal margin near apex with a small invagination subsequently forming a small acute process; **A** more slender, with a slightly broadened and spatuliform apex, also featuring several small indentations at apical margin; solenomere (**sl**) unusually slender and bipartite, ventral branch much longer than and flagelliform compared to dorsal branch.

DISTRIBUTION. Peru, Yuanjui (Juanjuí), Rio Huallaga, 7°10′24.0″S 76°43′37.0″W [Kraus, 1959].

Camptomorpha papillosa (Attems, 1931)
Fig. 7.

Leptodesmus (*Leptodesmus*) *papillosus* Attems, 1931: 10, figs 1–4 (syntypes, ZMH); Attems, 1938: 13, fig. 8; Weidner [1960: 84], listed in type catalogue.

Camptomorpha papillosus (sic!) — Hoffman, 1953: 123.

Leptodesmus (*Phantasmodesmus*) *papillosus* — Kraus, 1956: 142, *Camptomorpha* by implication.

Pseudoleptodesmus (*Pseudoleptodesmus*) *cordilleranus* Attems, 1931: 28, figs 40–42, **syn.n.** (syntypes, ZMH, after Hoffman [in litt.]).

Leptodesmus (*Pseudoleptodesmus*) *cordilleranus* — Attems, 1938: 39, fig. 42.

Camptomorpha cordilleranus (sic!) — Hoffman, 1953: 122.

Leptodesmus (*Phantasmodesmus*) *cordilleranus* — Kraus, 1956: 142, *Camptomorpha* by implication.

BRIEF DESCRIPTIVE NOTES (after Attems [1931, 1938]). Width 4.0 mm. Coloration dark castaneous brown with a vague, lighter, axial stripe; antennae and legs dark red-brown. Paraterga relatively small and faintly rimmed, caudal corners mostly sharp and dentiform (Fig. 7A). Epiproct simple and finger-shaped, directed slightly dorsad. Hypoproct subtrapeziform. with a small apical tooth between both thick setigerous knobs. ♂ legs ventrally with all tibiae but four last pairs carrying apical chelae; ♂ coxae 3 each with a strong, blunt, densely setose process directed forward.

Gonopods (Fig. 7B–F) with both prefemoral process (**PfP**) and acropodite (**A**) subequal in length, very complex and strongly armed; **PfP** also broad, with an irregular internal margin and a small digitiform process near middle; **A** robust and leaf-shaped, with several grooves at external margin, one of the apical branches being directed basally; solenomere (**sl**) simple and only slightly curved.

DISTRIBUTION. Ecuador, Sabanilla, 1°50′45.0″S 80°13′ 04.3″W, East slope of the Cordilleras [Attems, 1931, 1938].

JUSTIFICATION OF SYNONYMY. Hoffman [in litt.] provided ample evidence of the synonymy of *C. papillosa* with *C. cordillerana* (Fig. 7B–F). Indeed, both these formal species came from the same collection and even the same population, even though Attems [1931] assigned them to different genera! Following Hoffman [in litt.], we choose to use the name *C. pap-*

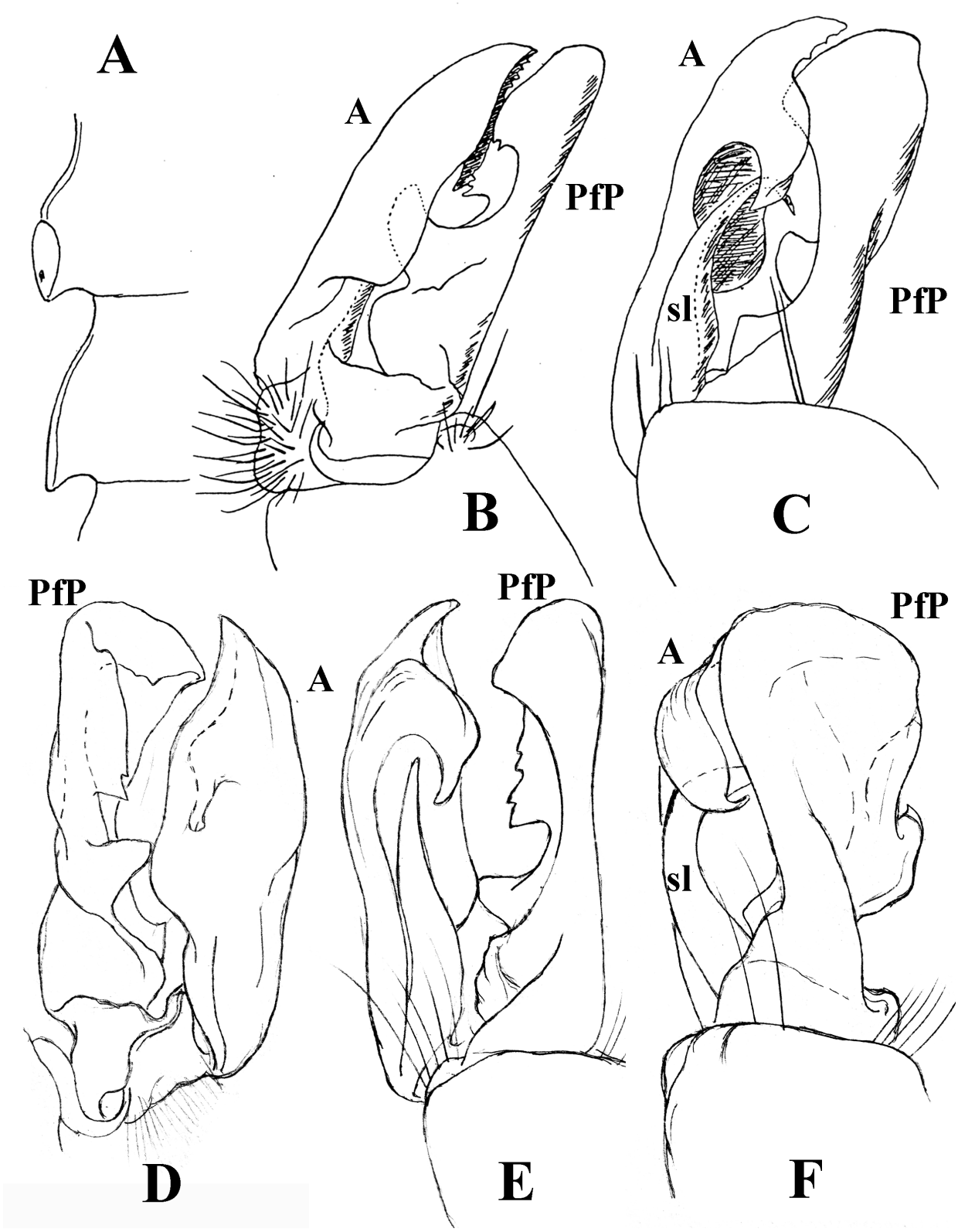

Fig. 7. *Camptomorpha papillosa* (Attems, 1931), ♂ syntypes of *C. cordillerana* (A–C) and *C. papillosa* (D–F). A — left halves of rings 10 and 11, dorsal view; B — right gonopod, mesal view; C–F — left gonopod, lateral, mesal, sublateral and dorsal views, respectively. Designations: A — acropodite; PfP — prefemoral process; sl — solenomere. After Attems [1931] (A–C) and Hoffman [in litt.] (D–F).

Рис. 7. *Camptomorpha papillosa* (Attems, 1931), синтипы ♂♂ *C. cordillerana* (A–C) и *C. papillosa* (D–F). A — левые половины туловищных сегментов 10 и 11, сверху; B — правый гонопод, изнутри; C–F — левый гонопод, соответственно сбоку, изнутри, пости сбоку и сверху. Обозначения: A — акроподит; PfP — пребеморальный отросток; sl — соленомер. По: Attems [1931] (A–C) и Hoffman [in litt.] (D–F).

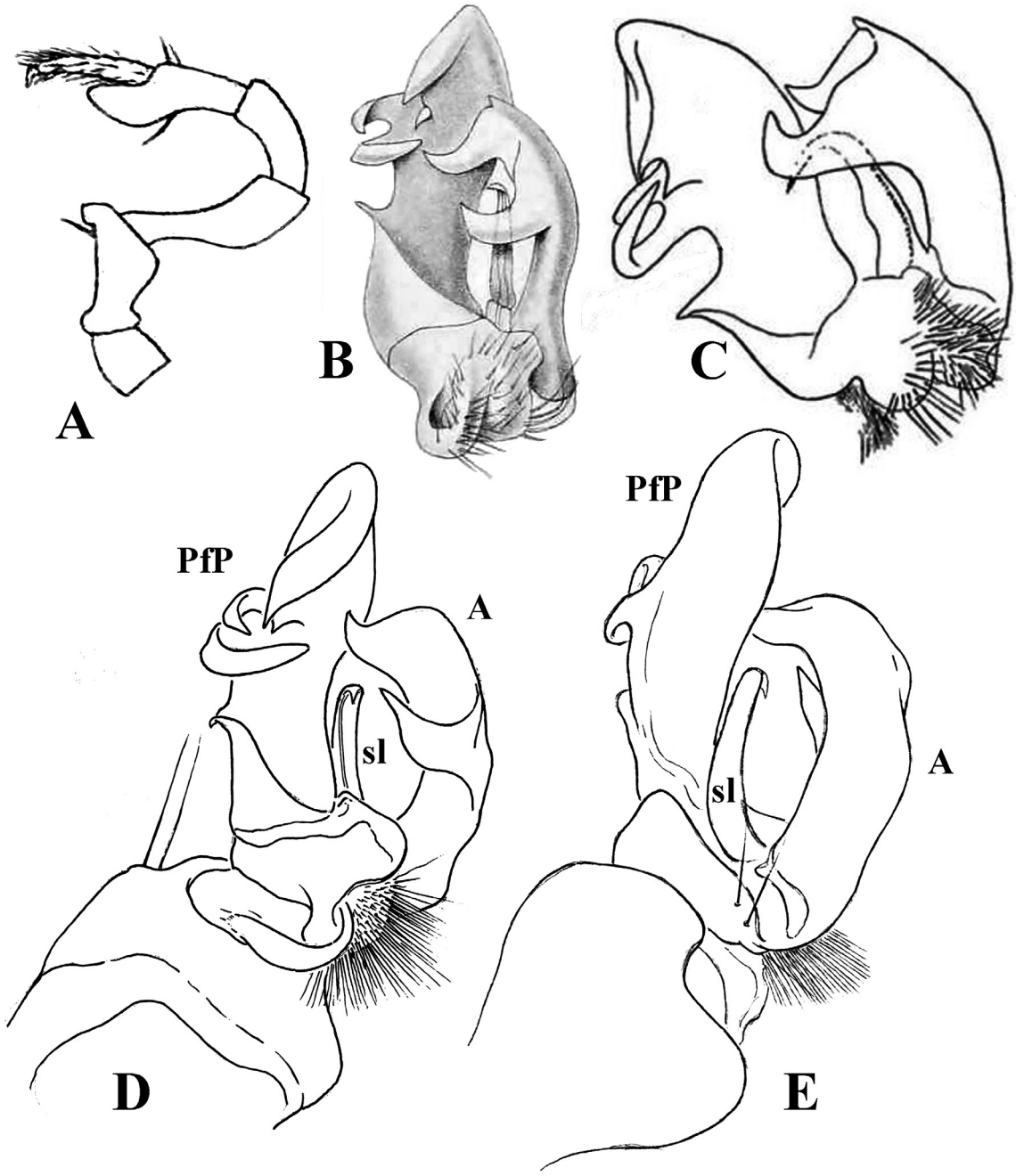

Fig. 8. *Camptomorpha pulvillata* (Attems, 1898), ♂ syntype (A–C) and ♂ from near Iquitos (D, E). A — leg 3, caudal view; B–E — left gonopod, mesal, submesal, mesal and lateral views, respectively. Designations: A — acropodite; PfP — prefemoral process; sl — solenomere. After Attems [1898, 1938] (A–C) and Hoffman [in litt.] (D, E).

Рис. 8. *Camptomorpha pulvillata* (Attems, 1898), синтип ♂ (A–C) and ♂ из окрестностей Икитоса (D, E). A — нога 3, сзади; B–E — левый гонопод, соответственно изнутри, почти изнутри, изнутри и сбоку. Обозначения: A — акроподит; PfP — пребеморальный отросток; sl — соленомер. По: Attems [1898, 1938] (A–C) и Hoffman [in litt.] (D, E).

illosa because it has 26 pages of priority over *C. cordillerana*, while both names have been used the same number of times in the primary taxonomic literature.

***Camptomorpha pulvillata* (Attems, 1898)**
Fig. 8.

Leptodesmus pulvillatus Attems, 1898: 391, figs 132–133 (holotype ♂, NHMW); Attems, 1938: 12, fig. 6.

Camptomorpha pulvillatus (sic!) — Hoffman, 1953: 123.

Leptodesmus (Phantasmodesmus) pulvillatus — Kraus, 1956: 142, *Camptomorpha* by implication.

BRIEF DESCRIPTIVE NOTES (after Attems [1898, 1938]). Length 56 mm, width of pro- and metazona 4.0 mm and 6.0 mm, respectively. Coloration yellowish brown; head, sides and anterior margins of metazona castaneous brown; antennae, lateral rims of paraterga and legs yellow; prozona yellowish with a brown axial line. Paraterga unusually narrow,

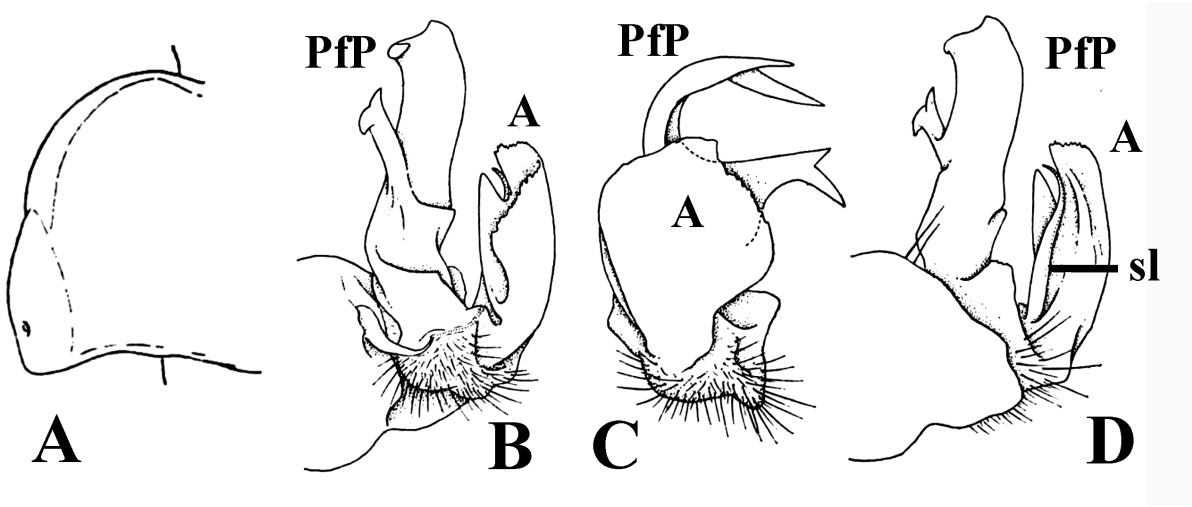

Fig. 9. *Camptomorpha titana* (Kraus, 1956), ♂ holo- or paratype. A — left half of ring 10, dorsal view; B–D — left gonopod, mesal, ventral and lateral views, respectively. Designations: A — acropodite; PfP — prefemoral process; sl — solenomere. After Kraus [1956].

Рис. 9. *Camptomorpha titana* (Kraus, 1956), голотип или паратип ♂. A — левая половина туловищного сегмента 10, сверху; B–D — левый гонопод, соответственно изнутри, снизу и сбоку. Обозначения: A — акроподит; PfP — пребеморальный отросток; sl — соленомер. По: Kraus [1956].

but strongly rimmed, both anterior and caudal corners mostly rounded, caudal corners on rings 4–7 rectangular, thereafter dentiform; lateral rim on rings 1–4 finely serrate. Epiproct simple and finger-shaped, directed slightly dorsad. Hypoproct with a small apical tooth between both thick setigerous knobs. ♂ legs ventrally with all prefemora but two last pairs carrying apical swellings, and tibiae with very large apical chelae, tarsi being unusually small and slender (Fig. 8A). ♂ coxae 1–3 nearly in touch medially, each coxa 3 apically with a slender, straight and densely setose ventral process.

Gonopods (Fig. 8B–E) with prefemoral process (**PfP**) considerably longer than acropodite (**A**), both quite complex and strongly armed; **PfP** broad, with four acute projections at its internal margin, two middle projections being more elongate, **PfP** ending in another elongated and acute apex directed laterobasally; **A** with internal margin bearing a process near middle, slightly broadened and acute, apex directed laterally, also wide and acute; solenomere (**sl**) simple and only slightly curved.

DISTRIBUTION. Brazil, Amazônas, São Paulo de Olivença, 3°27′23.2″S 68°48′01.3″W [Attems, 1898, 1938; Schubart, 1946]. Attems [1938] erroneously placed that locality in Pará state.

Hoffman [in litt.] recorded this species from Padre Cocha and Rio Yanayacu, both near Iquitos, Peru. To prove the identity, he also depicted the left gonopod of a ♂ (Fig. 8D, E).

Camptomorpha titana (Kraus, 1956)
Fig. 9.

Leptodesmus (*Phantasmodesmus*) *titanus* Kraus, 1956: 142, plate 18, figs 9–12. Holotype ♂, SMF; paratypes, ♂/♀ and immatures, SMF.

Camptomorpha titana — Kraus, 1957: 98.

BRIEF DESCRIPTIVE NOTES (after Kraus [1957]). Length 47 mm, width 5.8 mm (♂), or 50 mm and 6.4 mm (♀), respectively. Coloration black-brown with a vague, narrow, axial stripe and paraterga white-yellowish, legs horn brown. Paraterga well-developed and strongly rimmed, both anterior and caudal corners mostly clearly rounded even on midbody rings, calluses set off from lateral rim (Fig. 9A). Epiproct short, simple and finger-shaped. Hypoproct with a small apical tooth between both thick setigerous knobs. ♂ legs ventrally with prefemora carrying apical swellings, and tibiae with apical chelae.

Gonopods (Fig. 9B–D) with prefemoral process (**PfP**) considerably longer than acropodite (**A**), both quite complex and strongly armed; **PfP** subrectangular, with one elongated projection in middle portion, ending in a bifid projection; apical portion of **PfP** bipartite, with two acute branches directed laterally; **A** wide and irregularly spoon-shaped, internal margin near apex with a small invagination subsequently forming a small subacute process; solenomere (**sl**) simple, subflagelliform and only slightly curved.

DISTRIBUTION. Peru, San Martin Dept., Divisoria, Cordillera Azul, divide between Ucayali and Huallaga valleys, 7°50′05.3″S 76°02′53.7″W, 1650 m; Sinchono, Cordillera Azul, 1500 m [Kraus, 1956, 1957].

Camptomorpha tocachensis (Kraus, 1955)
Fig. 10.

Proletus tocachensis Kraus, 1955: 186, plate 18, figs 25–28. Holotype ♂, MUSM.

Leptodesmus (*Phantasmodesmus*) *tocachensis* — Kraus, 1956: 142, *Camptomorpha* by implication.

BRIEF DESCRIPTIVE NOTES (after Kraus [1955]). Length 45 mm, width 4.8 mm (♂). Coloration light red-brown with a light axial stripe; lateral halves of paraterga white-yellow both dorsally and ventrally, sides red-brown, sterna and legs light brown. Paraterga short and strongly rimmed, anterior corners strongly rounded, lateral rim slightly serrate, caudal corners mostly rounded and slightly drawn past straight rear tergal margins. Epiproct short, slightly attenuated and subtruncate. Hypoproct roundly triangular with two thick setigerous knobs near caudal margin. ♂ legs ventrally with prefemora carrying apical swellings, and tibiae with apical chelae (Fig. 10A).

Gonopods (Fig. 10B–D) with prefemoral process (**PfP**) much longer than acropodite (**A**), both highly complex and strongly armed; **PfP** with a broad and concave apex directed basally, with two processes: one longer and curved, bearing a small secondary branch, and a smaller one positioned more basally; **A** irregular in shape, resembling a wide lamina, with a well-developed process at internal medial margin; solenomere (**sl**) simple, subflagelliform and only slightly curved.

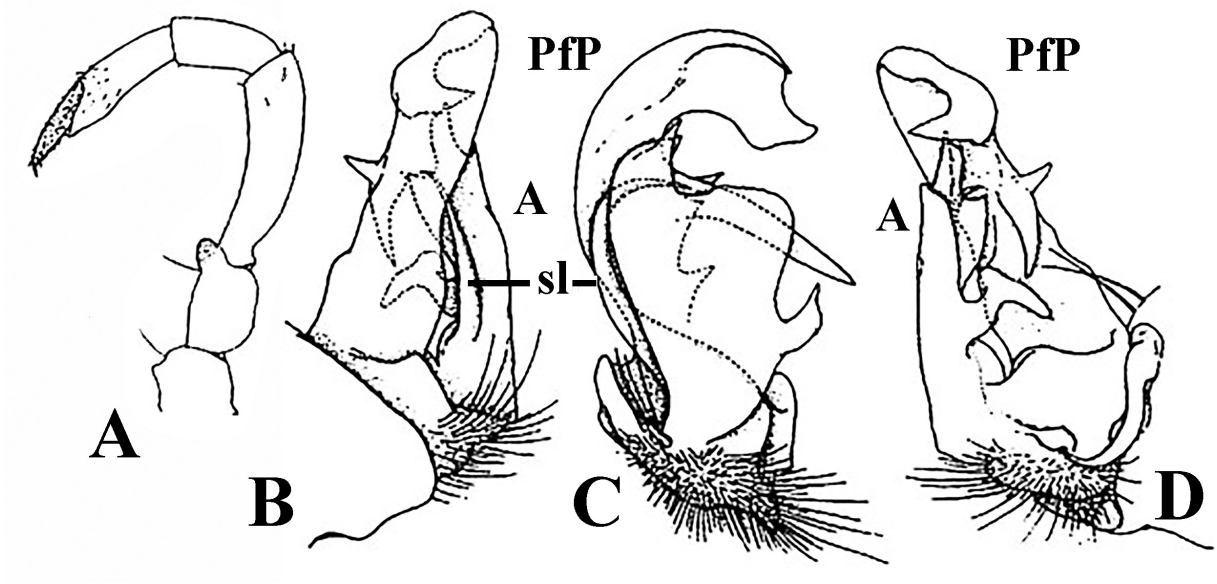

Fig. 10. *Camptomorpha tocachensis* (Kraus, 1955), ♂ holotype. A — leg 9, caudal view; B–D — right gonopod, lateral, ventral and mesal views, respectively. Designations: A — acropodite; PfP — prefemoral process; sl — solenomere. After Kraus [1955].

Рис. 10. *Camptomorpha tocachensis* (Kraus, 1955), голотип ♂. A — нога 9, сзади; B–D — правый гонопод, соответственно сбоку, снизу и изнутри. Обозначения: A — акроподит; PfP — префеморальный отросток; sl — соленомер. По: Kraus [1955].

DISTRIBUTION. Peru, Tocache, Rio Huallaga, 8°11′ 24.1″S 76°30′33.9″W, 580 m [Kraus, 1955].

Camptomorpha weyrauchi (Chamberlin, 1955)

Fig. 11.

Leptodesmus (*Pseudoleptodesmus*) *weyrauchi* Chamberlin, 1955: 37, fig. 77. Syntypes, SMF.

Leptodesmus (*Phantasmodesmus*) *weyrauchi* — Kraus, 1956: 142, plate 18, figs 13–16, *Camptomorpha* by implication.

Camptomorpha weyrauchi — Bouzan *et al.,* 2022: 239.

BRIEF DESCRIPTIVE NOTES (after Chamberlin [1955] and Kraus [1956]). Length 45 mm, width 5.0–5.3 mm (♂, ♀). Coloration dull red-brown to chocolate brown with contrasting yellow paraterga and a moderately wide, light, axial stripe; legs light brown. Paraterga well-developed and strongly rimmed, anterior corners strongly rounded, calluses clearly set off from a smooth lateral rim; caudal corners mostly rounded and only slightly drawn past straight rear tergal margins (Fig. 11A). Epiproct short, cylindrical, slightly curved ventrad. Hypoproct roundly triangular with two thick setigerous knobs at caudal margin. ♂ legs ventrally with prefemora carrying apical swellings, and tibiae with apical chelae.

Gonopods (Fig. 11B–F) with prefemoral process (**PfP**) considerably longer than acropodite (**A**), both highly complex and strongly armed; **PfP** subrectangular in shape, with an elongated projection in its middle portion, ending in a bifid projection; apical portion of **PfP** slightly bipartite, with two acute branches directed laterally; **A** broad, with an irregularly shaped apex featuring several indentations; internal margin near apex with a small invagination subsequently forming a small subacute process; solenomere (**sl**) simple, subflagelliform and only slightly curved.

DISTRIBUTION. Peru, Dept. Huanuco, Cave "Cueva de las Luchuzas" near Tingo Maria, Rio Huallaga, 9°17′55.0″S 76°00′01.6″W, 670 m; strict topotype ♂ [Chamberlin, 1955; Kraus, 1956].

Camptomorpha hoffmani sp.n.

Fig. 12.

HOLOTYPE ♂ (ZMUM), Peru, Junin Dept., Satipo Prov., near Rio Venado, 1100–1400 m a.s.l., 11°11′41″S 74°46′40″W to 11°11′04″S 74°45′59″W, tropical forest, 13–20.XI.2016, I. Melnik leg.

NAME. Gladly dedicated to the late Richard L. Hoffman (1927–2012), a globally renowned specialist in the systematics of Diplopoda and an amiable friend, whose unpublished documents have so extensively been used in the present review.

DIAGNOSIS. Differs from congeners primarily by the details of gonopodal structure (see also Key below and Fig. 12).

DESCRIPTION. Length *ca* 48 mm, width of midbody metazona 6.3 mm. General colouration in alcohol mostly brown to grey-brown, lateral rims of paraterga and their immediately adjacent parts yellowish to grey-yellow both dorsally and ventrally, legs largely red-brown, antennae and legs somewhat infuscate distally, venter a little lighter, gonopodal telopodites yellow (Fig. 12).

Head with a rather densely setose clypeolabral region, vertex nearly bare, epicranial suture evident; interantennal isthmus narrow, about half as wide as diameter of antennal socket (Fig. 12A, B). Antennae short and robust, only slightly clavate, *in situ* barely projecting past ring 2 dorsally; in length, antennomeres 2=6>3–5> 1>7>8.

Collum broadly rounded laterally and rather broadly rounded caudolaterally, narrowly rimmed. Collum and rigs 2–4 unusually compact and tightly following one after the other, *vs* remaining rings, these being more loose, as usual, and gradually attenuating towards telson. Dorsum moderately convex, especially anteriorly. Metaterga rather smooth and shining, prozona more dull, sides below paraterga arcuately striolate. Paraterga well-developed, on ring 19 smallest, mostly set at about upper 1/3 body height, clearly rimmed throughout, poriferous calluses (= peritremata) distinct, but not set off from lateral rim. Anterior corner of paraterga invariably broadly rounded, lateral rim smooth, caudal corners first obtuse and well rounded, on rings 4 and 5 subrectangular, thereafter increasingly acute, starting with

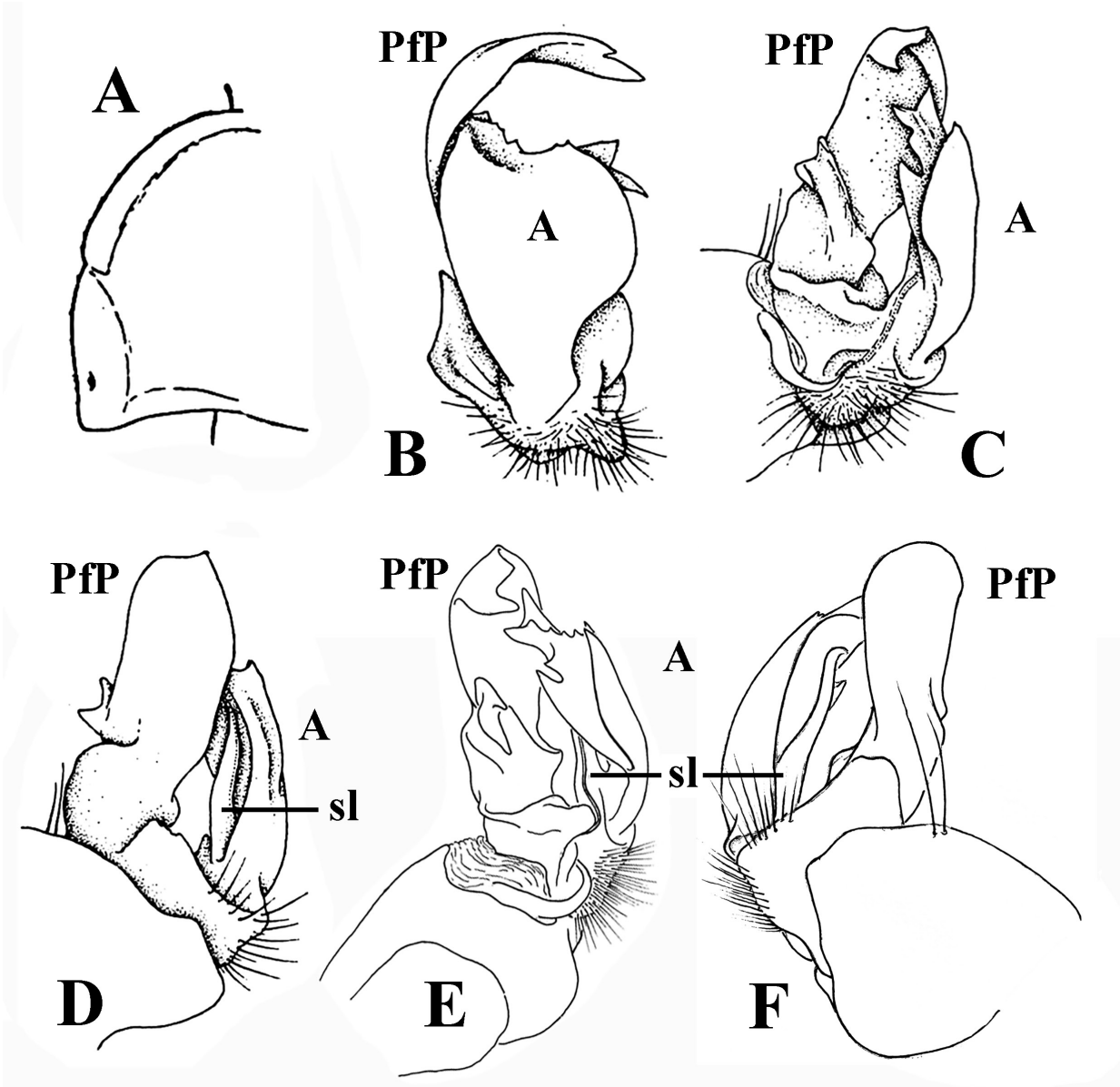

Fig. 11. *Camptomorpha weyrauchi* (Chamberlin, 1955), strict ♂ topotype (A–D) and ♂ holotype (E, F). A — left half of ring 10, dorsal view; B–F — left gonopod, ventral, mesal, lateral, mesal and lateral views, respectively. Designations: A — acropodite; PfP — prefemoral process; sl — solenomere. After Kraus [1956] (A–D) and Hoffman [in litt.] (E, F).

Рис. 11. *Camptomorpha weyrauchi* (Chamberlin, 1955), строгий топотип ♂ (A–D) и голотип ♂ (E, F). A — левая половина туловищного сегмента 10, сверху; B–F — левый гонопод, соответственно снизу, изнутри, сбоку, изнутри и сбоку. Обозначения: A — акроподит; PfP — префеморальный отросток; sl — соленомер. По: Kraus [1956] (A–D) и Hoffman [in litt.] (E, F).

ring 7 increasingly pointed and drawn past rear tergal margin. Tergal setae missing, setation pattern untraceable. Ozopores inside pits dorsolateral. Strictures between pro- and metazona deep lines. Limbus inconspicuous and entire. Pleurosternal carinae very small ridges on rings 2–5, poor swellings on rings 6 and 7, thereafter virtually missing. Spiracles small and inconspicuous. Epiproct very short, digitiform, subtruncate at apex and devoid of apical claws. Hypoproct subtriangular, with a short central tooth and 1+1 large setigerous knobs at caudal margin (Fig. 12A–H).

Sterna smooth, flat and bare, cross-impressions slight, sternal cones absent. Legs long and slender, *ca* 1.2–1.3 times as long as midbody height; coxae 3 each with a rather high, setose, straight, digitiform, apically rounded and well separated ventro-apical process (♂); all prefemora and tibiae but two last pairs with evident ventro-apical swellings and chelae (= sole pads subtending the tarsi basally), respectively (♂). In length, femur (clearly curved ventrad) > prefemur = tibia (with chela) > postfemur = tarsus > coxa >> claw.

Gonopodal aperture (Fig. 12H, I) transversely reniform, large, taking up most of ventral side of ♂ prozonum 7, not shifted onto metazonum 6, with prominent, lateral, rounded ridges and a rather small, central, caudal shelf inside. Gonopodal sternal elements fully membranous, devoid of sclerites (Fig. 12J). Gonopods complex (Fig. 12H–M). Coxites short, globose, much shorter than caudally curved telopodites, each with two distodorsal macrosetae; cannula as usual, slender and regularly curved. Telopodites tripartite, prefemorites as usual, short and

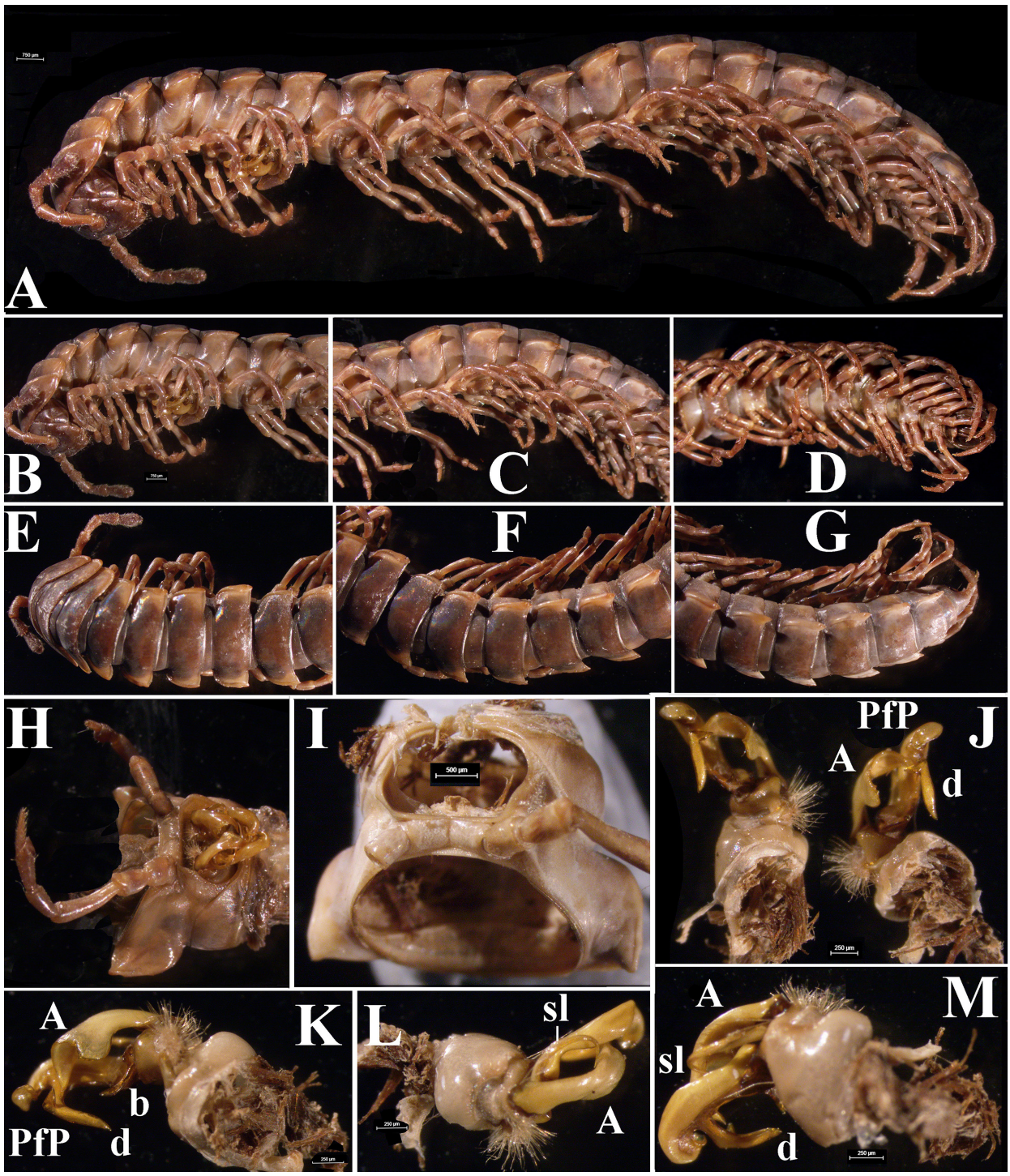

Fig. 12. *Camptomorpha hoffmani* sp.n., ♂ holotype. A — habitus, lateral view; B, E — anterior part of body, ventrolateral and dorsal views, respectively; C, F — middle part of body, sublateral and dorsolateral views, respectively; D, G — caudal part of body, ventral and dorsolateral views, respectively; H — intact ring 7 with gonopods *in situ*, subventral view; I — ring 7 with removed gonopods; J — both gonopods, anteroventral view; K–M — left gonopod, anteromesal, anteroventral and sublateral views, respectively. Designations: A — acropodite; b — basal spine on PfP; d — distal spine on PfP; PfP — prefemoral process; sl — solenomere.

Рис. 12. *Camptomorpha hoffmani* sp.n., голотип ♂. A — общий вид, сбоку; B, E — передняя часть тела, соответственно одновременно снизу и сбоку и сверху; C, F — средняя часть тела, соответственно почти сбоку и одновременно сверху и сбоку; D, G — задняя часть тела, соответственно снизу и одновременно сверху и сбоку; H — целый туловищный сегмент 7 с гоноподами на месте, почти снизу; I — туловищный сегмент 7 с вычлененными гоноподами; J — оба гонопода, одновременно спереди и снизу; K–M — левый гонопод, соответственно одновременно спереди и изнутри, одновременно спереди и сзади и почти сбоку. Обозначения: A — акроподит; b — шип в основании PfP; d — дистальный шип на PfP; PfP — пребеморальный отросток; sl — соленомер.

very densely setose. Prefemoral process (**PfP**) bipartite, but button-shaped at an articulated apex and carrying two spines of different size, one (**d**) distal and significantly more strongly developed than a basal spine **b** (Fig. 12J–M). Acropodite (**A**) acuminate, with a considerable rounded lobe orally at midway. **PfP** much longer than **A**. Solenomere (**sl**) simple, rather regularly curved and acuminate.

♀ unknown.

DISTRIBUTION. Only the type locality.

Remarks on the generic composition

The following species were originally described in or later assigned at some time to *Camptomorpha*, but have since been transferred elsewhere, as follows:

Camptomorpha bohlsi = ***Strongylomorpha bohlsi*** (Attems, 1898);

Camptomorpha bovei = ***Strongylomorpha bovei*** (Silvestri, 1895);

Camptomorpha campestris = ***Geminodesmus campestris*** (Schubart, 1950);

Camptomorpha cognata = ***Strongylosomides cognatus*** (Brölemann, 1902);

Camptomorpha cortaderiae Schubart, 1950 = ***Strongylomorpha vanvolxemi*** Silvestri, 1897;

Camptomorpha folium = ***Trichomorpha folia*** (Brölemann, 1903);

Camptomorpha iheringi = ***Leptodesmus iheringi*** Brölemann, 1902;

Camptomorpha missiones = ***Strongylomorpha missiones*** (Schubart, 1954);

Camptomorpha ornithopus = ***Iguazus ornithopus*** (Brölemann, 1902);

Camptomorpha phoenicopterus Schubart, 1943 = ***Iguazus ornithopus*** (Brölemann, 1902);

Camptomorpha volutatus = ***Strongylomorpha volutata*** (Brölemann, 1902).

Concluding notes on *Camptomorpha* systematics

Hoffman [1975] treated *Camptomorpha* in a key to all four genera of the tribe Lepturodesmini, also emphasizing its somewhat disjunct status. Later he [Hoffman, 1980] again listed all four genera of Lepturodesmini and treated *Camptomorpha*, with its junior synonyms *Phantasmodesmus* Verhoeff, 1927 and *Eucampesmus* Chamberlin, 1941, as altogether containing "about seven species in Ecuador, Peru and Brazil". Hoffman [in litt.] revisited the scope of the tribe through adding a few more genera therein, and giving a key.

Specific differentiation in *Camptomorpha* appears to chiefly be expressed in gonopodal structure, but also in size, coloration, shape of ♂ coxae 3, shape of the collum and epiproct, and distribution of ♂ prefemoral apical knobs and tibial apical chelae.

Hoffman [in litt.] delimited a few species groups in *Camptomorpha*, based chiefly on similarities in overall gonopodal structure. We refrain, however, from following that approach at the moment, because, given the still too poorly assessed real *Camptomorpha* diversity, with definitely numerous new species and records ahead, it seems premature. Instead, to promote further taxonomic studies on the genus and to conclude the present contribution, we propose a key to all 12 presently known congeners.

A pictorial key to *Camptomorpha* species, based on gonopodal structure

1. Prefemoral process (**PfP**) equal or subequal in length to acropodite (**A**) (Fig. 4D–F) 2
– Prefemoral process (**PfP**) conspicuously longer than acropodite (**A**) (Fig. 9B–D) 7
2. Prefemoral process (**PfP**) with at least two acute projections at mesal margin (Figs 1B, 5B) 3
– Prefemoral process (**PfP**) without well-developed projections at mesal margin (Figs 2C, 6B) 4
3. Apex of acropodite (**A**) with a triangular projection (Fig. 5C) ..... *C. orites*
– Apex of acropodite (**A**) divided into two acuminate branches (Fig. 1B–C) ..... *C. aberrans*
4. Mesal apical margin of prefemoral process (**PfP**) conspicuously irregular, with indentations and a digitiform projection near its middle (Fig. 2C) 5
– Mesal apicaI margin of prefemoral process (**PfP**) regular, with neither indentations nor a digitiform projection (Figs 4F, 6B) 6
5. Digitiform projection at mesal margin of prefemoral process (**PfP**) regular, without indentations (Fig. 7B–D) ..... *C. papillosa*
– Digitiform projection at mesal margin of prefemoral process (**PfP**) irregular, with small indentations (Fig. 2C) ..... *C. atypha*
6. Solenomere branch (**sl**) bipartite (Fig. 6B) ..... *C. ortizi*
– Solenomere (**sl**) a single branch (Fig. 4D) ..... *C. dorsalis*
7. Prefemoral process (**PfP**) with only a single lateral projection (Fig. 9B–D) 8
– Prefemoral process (**PfP**) with at least two lateral projections (Fig. 3D–E) 10
8. Apex of prefemoral process (**PfP**) deeply divided into two branches (Fig. 9C) ..... *C. titana*
– Apex of prefemoral process (**PfP**) either weakly divided or not divided (Fig. 11B) 9
9. Prefemoral process (**PfP**) bipartite, divided into two subequal branches (Fig. 11B–E) ..... *C. weyrauchi*
– Prefemoral process (**PfP**) bipartite, but button-shaped at apex and divided into two branches of different size, both spiniform and one (**d**) being significantly more strongly developed than spine **b** (Fig. 12J–M) . *C. hoffmani* **sp.n.**
10. Apex of prefemoral process (**PfP**) strongly directed basally (Fig. 8B–D) 11
– Apex of prefemoral process (**PfP**) only slightly directed basally (Fig. 3D) ..... *C. digitata*
11. Prefemoral process (**PfP**) bipartite, apical part being subsecuriform and middle one with a strong, unequally bifid spine (Fig. 10B–D) ..... *C. tocachensis*
– Prefemoral process (**PfP**) more simple, a single branch with an acuminate unciform apex and two smaller, similarly unciform, lateral processes (Fig. 8B–D) ..... *C. pulvillata*

Compliance with ethical standards

Conflict of interests: The authors declare that they have no conflict of interest.

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