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Mountains of millipedes. The family Odontopygidae in the Eastern Arc Mountains of Tanzania (Diplopoda, Spirostreptida)

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Abstract. The fauna of the millipede family Odontopygidae in the Eastern Arc Mountains of Tanzania is reviewed. Species from the North Pare, South Pare, West Usambara, East Usambara, Nguru, Rubeho, Uluguru and Rungwe Mts are treated. The odontopygids of the Udzungwa Mts have been subject of a series of previous papers and are only treated marginally. Six new genera and 25 new species are described: *Antipustia* gen. nov., *Aptyctosmilax* gen. nov., *Multipronopea* gen. nov., *Notogallanus* gen. nov., *Praludivera* gen. nov., *Uncodrama* gen. nov., *Antipustia hoteldolichoiuli* gen. et sp. nov., *Aptyctosmilax helenae* gen. et sp. nov., *Calyptomastix ingemanni* sp. nov., *Calyptomastix vuasu* sp. nov., *Calyptomastix xystopygoides* sp. nov., *Calyptomastix zoltani* sp. nov., *Chaleponcus jolantae* sp. nov., *Chaleponcus nesrineae* sp. nov., *Chaleponcus schioetzae* sp. nov., *Chaleponcus sergeii* sp. nov., *Chaleponcus soerensenae* sp. nov., *Geotypodon cristinae* sp. nov., *Lamelloramus frederiksenae* sp. nov., *Multipronopea agneteae* gen. et sp. nov., *Notogallanus mastacembalus* gen. et sp. nov., *Praludivera paralellamella* gen. et sp. nov., *Raduliverpa donatellae* sp. nov., *Spinotarsus axeli* sp. nov., *Syndesmogenus estelleae* sp. nov., *Uncodrama coronata* gen. et sp. nov., *Xystopyge bentemarieae* sp. nov., *Xystopyge doggartae* sp. nov., *Xystopyge hippocampus* sp. nov., *Xystopyge minnae* sp. nov., and *Xystopyge voluntariorum* sp. nov. The discussion focuses on diversity and distribution patterns, the justification for monotypic (monospecific) genera, and the following morphological character types: the ozopore series, the limbus, the number of setae on the anal valves, the first pair of male legs, the gonopod sternum, and the sternum of the rudimentary 9th leg-pair.

Keywords. New genera, new species, Pare, Usambara, Uluguru, Nguru, Rubeho.

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Introduction

The endemic Afrotropical family Odontopygidae Attems, 1909 consists of small (less than 2 cm long) to almost giant (more than 10 cm long) cylindrical millipedes (Fig. 1). Members of the family are easily recognized as such because of the dorsal tooth or spine on the anal valves, a.k.a. paraprocts (Fig. 4), a character unique in the order Spirostreptida. While the diversity of body shape in the family is low, their male copulatory organs, the gonopods, offer a breathtaking, seemingly chaotic morphological variability. This, on the one hand, greatly facilititates species identification but also hampers analysis of relationships based on morphology. The internal classification of Odontopygidae thus has been, and still is, a major challenge, especially concerning the definition of genera. In Richard Hoffman's last paper on the family (Hoffman & Howell 2012: 67), the situation was described like this: "Either approach [to the classification] is further complicated by frequent contradictory states of characters as expressed in coxal or telopodital regions. Almost identical coxal forms may recur randomly amongst taxa defined on the basis of the telopodite and thought to be not closely related … A young evolutionary status is implied by the paucity of strong discontinuities in character systems and typical spectral expression of traits." Almost at the same time Frederiksen (2013b) remarked: "The male gonopods … exhibit an incredible diversity of structure, and with no knowledge of which characters to emphasise, make it very hard to recognise genera. On one hand if a strategy of a broadly defined genus is adopted, the genus definition ends up loose and often encompassing a lot of species only vaguely resembling each other … With this approach, some species may possibly even match several genus definitions. A second strategy would be to adopt a splitter approach with a much narrower genus definition, so that only species that closely resemble one another, with most characters in common, are put in the same genus. This, however, could yield a lot of monotypic genera or genera encompassing only a very few species." In the present work, I have tried to strike a balance between the two approaches, stretching a genus definition in some cases, and creating a monotypic (monospecific) genus in others. To reflect this, some of the names of the new genera are anagrams of existing genus names – the same elements in different combinations. With many of the species' epithets I commemorate 'Hotel Dolichoiulus' which was my room while I lived in my parents' house and which, after I moved to my own home, served as a temporary residence for several myriapodologists who were hosted there by my parents Agnete E. Enghoff (1924–2019) and Axel K. Enghoff (1924–2014).

The present work in a way is a continuation of the series "A mountain of millipedes" which has dealt with millipedes, mainly odontopygids from the Udzungwa Mts – the largest of the Eastern Arc Mountain blocks in Tanzania (Enghoff 2014, 2016a, 2016b, 2016c, 2018, 2020; Enghoff & Frederiksen 2015). For this reason, the odontopygids of the Udzungwa Mts are only marginally touched upon in the present article. The diversity of odontopygids in the Eastern Arc Mountains is quite overwhelming (Fig. 2): the Udzungwas alone harbour 41 known species of Odontopygidae (Enghoff 2018, 2020), and the other

Fig. 1. *Calyptomastix ingemanni* sp. nov., paratype (NHMD 621716), to show typical odontopygid habitus. Scale bar = 1 cm. Photo S.G. Selvantharan.

Eastern Arc blocks between them are home to 47 odontopygid species of which 25 are described as new in the present paper. The high species numbers are in line with the status of the Eastern Arc Mountains as a biodiversity hotspot, either in their own right or as part of an East African Afromontane hotspot (Myers *et al.* 2000; Burgess *et al.* 2007; see also https://www.cepf.net/sites/default/files/cepf_eam_eng_r3.pdf [accessed 24 Nov. 2021]).

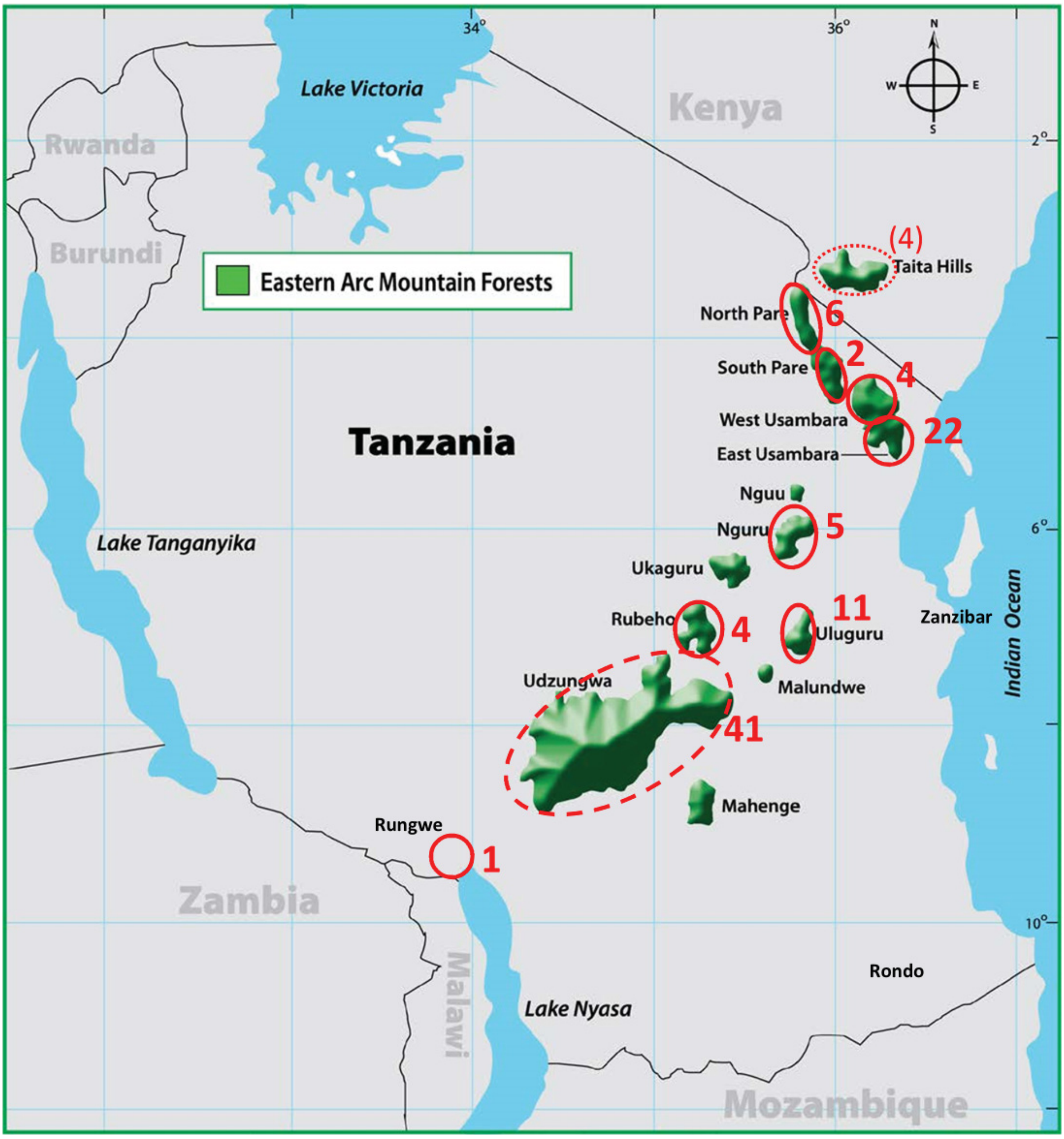

Fig. 2. The Eastern Arc Mountains, with numbers of species of Odontopygidae known from each mountain block. The odontopygids of the Taita Hills in Kenya are not covered by the present work, and those of the Udzungwa Mts are only marginally covered. Base map by permission of the Eastern Arc Mountains Conservation Endowment Fund.

Previous records of odontopygids from the Eastern Arc Mts

Species of Odontopygidae have previously been recorded from the Taita Hills (Kenya) in the north, from the Tanzanian North Pare, South Pare, West Usambara, East Usambara, Uluguru, Nguru (incl. Kanga), Rubeho and Udzungwa Mountains, and from Mt. Rungwe in the south. From the Kenyan Taita Hills VandenSpiegel & Pierrard (2004) described *Xystopyge pelechoides* VandenSpiegel & Pierrard, 2004, ssp. *chaiwa* VandenSpiegel & Pierrard, 2004, *X. estendardis* VandenSpiegel & Pierrard, 2004, and *X. lunula* VandenSpiegel & Pierrard, 2004. The same authors (VandenSpiegel & Pierrard 2009) added *Prionopetalum aculeatum* Attems, 1914.

Table 1 summarizes the records from the Tanzanian Eastern Arc records and also includes an overview of the 25 new species described in the present paper. No odontopygid has been recorded from the Nguu, Ukaguru, Malunde and Mahenge Mountains.

The Udzungwa Mts constitute a species case. The first odontopygid to be recorded from the Udzungwa Mts was *Chaleponcus dabagaensis* Kraus, 1958 (Kraus 1958b). Later, the odontopygids of the Udzungwas have been subject of a series of papers by Enghoff (2014, 2016a, 2016b, 2016c, 2018, 2020; Enghoff & Frederiksen 2015). Altogether 39 odontopygid species were listed by Enghoff (2018), and two more were added by Enghoff (2020). These records are not repeated here, but are included in Table 1, and new records of three species are given from the NE part of the Udzungwas and the adjacent Magombera Nature Reserve, based on material collected by the FoRCE project (http://force-experiment.com/about/ [accessed 24 Nov. 2021]).

Information on collecting areas

Several reports are available on some of the forest reserves from which the specimens treated here derive, some of which are referred to under the species descriptions. At http://easternarc.or.tz/ [accessed 24 Nov. 2021] numerous links to publications and reports about individual Eastern Arc Mountain blocks and forest reserves are available.

Material and methods

Specimens were kept in 70% ethanol (except the holotype of *Syndesmogenus estelleae* sp. nov. which was kept in 100% ethanol) and examined under a stereo microscope. Stacks of photographs of preserved specimens in ethanol were taken using an automated BK+ Visionary Digital Imaging System equipped with a Canon EOS 7D camera; the combined images were compiled using Zerene Stacker. Body parts for Scanning Electron Microscopy (SEM) were transferred to acetone via 96% ethanol, air-dried, and mounted on aluminum stubs, or on a piece of adhesive aluminium tape which was in turn mounted on a stub. A JEOL JSM-6335 was used. Photographs and SEM images were processed in Photoshop; in some cases, two or three SEM images were stacked for extended focus. Plates were mounted in Microsoft Publisher. Drawings of a few structural details were made free-hand.

Institutional abbreviations

HNHM = Hungarian Museum of Natural History, Budapest
NHMD = Natural History Museum of Denmark (formerly ZMUC)
NHMO = Natural History Museum, Oslo
NHMW = Naturhistorisches Museum, Vienna
VMNH = Virginia Museum of Natural History, Martinsville, Virginia, USA

Other abbreviations

a.s.l. = above sea level
FR = Forest Reserve
Mt. = Mountain
Mts = Mountains

Table 1 (continued on next two pages). Species of Odontopygidae from the Tanzanian Eastern Arc Mts. Entries refer to the references listed below, 'new' denotes new records. See Enghoff (2014) for Udzungwa species of the *Chaleponcus dabagaensis* group. 1 = Attems (1896); 2 = Attems (1909a); 3 = Brolemann (1920); 4 = Enghoff (2014); 5 = Enghoff (2016a); 6 = Enghoff (2016b); 7 = Enghoff (2016c); 8 = Enghoff (2017); 9 = Enghoff (2018); 10 = Enghoff (2020); 11 = Enghoff *et al*. (2016); 12 = Enghoff & Frederiksen (2015); 13 = Enghoff & Frederiksen (2018); 14 = Frederiksen (2013a); 15 = Frederiksen (2013b); 16 = Frederiksen & Enghoff (2012); 17 = Frederiksen & Enghoff (2015); 18 = Hoffman (1963); 19 = Hoffman (2002); 20 = Kraus (1958b); 21 = Kraus (1960); 22 = Pocock (1896); 23 = Ribaut (1907); 24 = VandenSpiegel & Pierrard (2004).

	N Pare	S Pare	W Usambara	E Usambara	Nguru incl. Kanga	Rubeho	Uluguru	Udzungwa	Rungwe	outside Eastern Arc (Tanzania if not specified otherwise)
Antipustia hoteldolichoiuli gen. et sp. nov.				new						
Aptyctosmilax helenae gen. et sp. nov.				new						
Aquattuor claudiahempae Enghoff & Frederiksen, 2015								10		Mt. Kilimanjaro (12)
Aquattuor denticulatus Frederiksen, 2013				15						
Aquattuor longipala Enghoff, 2015								12		
Aquattuor major Enghoff, 2015								12		
Aquattuor mollilobus Enghoff, 2020								10		
Aquattuor nguruensis Enghoff, 2020					10					
Aquattuor stereosathe Enghoff, 2015								12		
Aquattuor submajor Enghoff, 2015								12		
Aquattuor udzungwensis Enghoff, 2015								12		
Callistodontopyge latifolia (Attems, 1914)	new		19	new		new				several sites in Tanzania; KENYA: Shimba Hills (19)
Calyptomastix ingemanni sp. nov.	new									
Calyptomastix vuasu sp. nov.		new								
Calyptomastix xystopygoides sp. nov.				new						
Calyptomastix zoltani sp. nov.				new						
Casuariverpa scarpa Enghoff, 2016								6		
Chaleponcus altirungwensis Enghoff, 2017									8	
Chaleponcus dabagaensis-group (21 spp.)								4, 20		
Chaleponcus jolantae sp. nov.			new							
Chaleponcus nesrineae sp. nov.					new					
Chaleponcus parensis Frederiksen, 2013	14									
Chaleponcus schioetzae sp. nov.							new			
Chaleponcus sergeii sp. nov.							new			

Table 1 (continued). Species of Odontopygidae from the Tanzanian Eastern Arc Mts. Entries refer to the references listed below, 'new' denotes new records. See Enghoff (2014) for Udzungwa species of the *Chaleponcus dabagaensis* group. 1 = Attems (1896); 2 = Attems (1909a); 3 = Brolemann (1920); 4 = Enghoff (2014); 5 = Enghoff (2016a); 6 = Enghoff (2016b); 7 = Enghoff (2016c); 8 = Enghoff (2017); 9 = Enghoff (2018); 10 = Enghoff (2020); 11 = Enghoff *et al*. (2016); 12 = Enghoff & Frederiksen (2015); 13 = Enghoff & Frederiksen (2018); 14 = Frederiksen (2013a); 15 = Frederiksen (2013b); 16 = Frederiksen & Enghoff (2012); 17 = Frederiksen & Enghoff (2015); 18 = Hoffman (1963); 19 = Hoffman (2002); 20 = Kraus (1958b); 21 = Kraus (1960); 22 = Pocock (1896); 23 = Ribaut (1907); 24 = VandenSpiegel & Pierrard (2004).

	N Pare	S Pare	W Usambara	E Usambara	Nguru incl. Kanga	Rubeho	Uluguru	Udzungwa	Rungwe	outside Eastern Arc (Tanzania if not specified otherwise)
Chaleponcus soerensenae sp. nov.							new			
Damacornu transversum Enghoff, 2018								9		
Geotypodon cristineae sp. nov.					new					
Geotypodon millemanus Enghoff, 2016								5		
Geotypodon papei Enghoff, 2018								9		
Geotypodon submontanum Enghoff, 2018								5		
Helicochetus dimidiatus (Peters, 1855)								11		several sites in Tanzania; MOZAMBIQUE: Imbahane (11)
Helichochetus gregorii (Pocock, 1896)				11						KENYA: Mt. Kenya (22)
Helicochetus mutaba Kraus, 1960								9		D.R. Congo: Mutaba near Kirungu (21)
Hoffmanides dissutus (Hoffman, 1963)							11	9		Morogoro (18)
Lamelloramus frederiksenae sp. nov.							new			
Lamelloramus rhombiformis Frederiksen, 2013				15						
Lamelloramus triangularis Frederiksen, 2013			new	15						
Multuipronopea agneteae gen. et sp. nov.							new			
Notogallanus mastacembalus gen. et sp. nov.						new				
Plethocrossus nairobinus Attems, 1914	11									Longido Mt.; KENYA: Nairobi (11)
Plethocrossus tardus Attems, 1909							11			Mt. Kilimanjaro; KENYA: Suswa (11)
Praludivera paralellamella gen. et sp. nov.						new				
Prionopetalum asperginis Enghoff, 2016								6		
Prionopetalum frundsbergi Attems, 1927				11						several sites in Tanzania and KENYA (11)
Prionopetalum kraepelini (Attems, 1896)				1	1	new		6		several sites in Tanzania (6)
Prionopetalum serratum Attems, 1909				2						several sites in Tanzania; KENYA: Kaijado (11)
Raduliverpa donatellae sp. nov.				new						
Raduliverpa mitis Frederiksen & Enghoff, 2015	17									
Raduliverpa serpentispina Frederiksen & Enghoff, 2015		17								KENYA: Mt.. Kasigao (17)

Table 1 (continued). Species of Odontopygidae from the Tanzanian Eastern Arc Mts. Entries refer to the references listed below, 'new' denotes new records. See Enghoff (2014) for Udzungwa species of the *Chaleponcus dabagaensis* group. 1 = Attems (1896); 2 = Attems (1909a); 3 = Brolemann (1920); 4 = Enghoff (2014); 5 = Enghoff (2016a); 6 = Enghoff (2016b); 7 = Enghoff (2016c); 8 = Enghoff (2017); 9 = Enghoff (2018); 10 = Enghoff (2020); 11 = Enghoff *et al*. (2016); 12 = Enghoff & Frederiksen (2015); 13 = Enghoff & Frederiksen (2018); 14 = Frederiksen (2013a); 15 = Frederiksen (2013b); 16 = Frederiksen & Enghoff (2012); 17 = Frederiksen & Enghoff (2015); 18 = Hoffman (1963); 19 = Hoffman (2002); 20 = Kraus (1958b); 21 = Kraus (1960); 22 = Pocock (1896); 23 = Ribaut (1907); 24 = VandenSpiegel & Pierrard (2004).

	N Pare	S Pare	W Usambara	E Usambara	Nguru incl. Kanga	Rubeho	Uluguru	Udzungwa	Rungwe	outside Eastern Arc (Tanzania if not specified otherwise)
Spinotarsus axeli sp. nov.							new			
Spinotarsus fortehamatus Enghoff, 2018								9		
Syndesmogenus estelleae sp. nov.	new									
Syndesmogenus voiensis Ribaut, 1907				new						Mt. Kilimanjaro, Tanga (3, 13); KENYA: Voi (23)
Uncodrama coronata gen. et sp. nov.							new			
Utiliverpa decapsulatrix Enghoff, 2016								6		
Xystopyge bentemarieae sp. nov.					new					
Xystopyge doggartae sp. nov.							new			
Xystopyge enghoffi VandenSpiegel & Pierrard, 2004				24						
Xystopyge frontieri Frederiksen & Enghoff, 2012				16						
Xystopyge hippocampus sp. nov.				new						
Xystopyge lamella VandenSpiegel & Pierrard, 2004				24						
Xystopyge lunula VandenSpiegel & Pierrard, 2004				24						
Xystopyge martella VandenSpiegel & Pierrard, 2004			24							
Xystopyge minnae sp. nov.				new						
Xystopyge pelecys Frederiksen & Enghoff, 2012				16						
Xystopyge proplicatus Frederiksen & Enghoff, 2012							16			
Xystopyge voluntariorum sp. nov.				new						
Yia geminispina Enghoff, 2016								6		

The descriptions are based on adult males. Females are in most cases neglected because they usually cannot be referred to a species with any degree of certainty.

Differential diagnoses are given for new genera and species, as well as for other genera in which new species are described.

The descriptions focus on taxonomically useful characters, notably in the gonopods.

As in my latest previous paper on this family (Enghoff 2020) the first pair of legs, especially their prefemoral lobes, are described, but in addition the setation of the basal parts, viz, coxosternum and prefemur, is described. A group of small setae (CXS) is present on the anterior side of each coxosternum. In most genera, the coxosternal setae are situated laterally, well laterad of the prefemoral processes (e.g., Figs 7, 14A–C), but in the genus *Xystopyge* Attems, 1909, they are situated somewhat less laterally, adjacent to the prefemoral processes (Figs 62D, 66A, 69C, 71B, 73B, 75B). On the anterior side of the prefemur, two groups of setae/sensilla can usually be distinguished: a group of a few small, sometimes peglike setae/sensilla (*APS*) on the mesapical corner of the prefemur and a group of usually small, peglike setae/sensilla (*LPS*) more laterally (e.g., Figs 9A, 60G). It should be noted that the numbers of setae/sensilla given in the descriptions refer to the one specimen of each species examined with scanning electron microscopy and that individual variation in these numbers is likely.

Following the recommendation by Hoffman (2000), the sternum of the otherwise fully reduced ninth pair of legs is described where possible. The shape of the male mandibular stipes is also included (Fig. 3), as is a further, hitherto neglected character, viz, the number of setae on the anal valves (paraprocts). Abbreviations for anatomical details are explained in the text below, in Table 2 and in the figure captions.

Information on general distribution comes from Enghoff *et al.* (2016) when not specified otherwise.

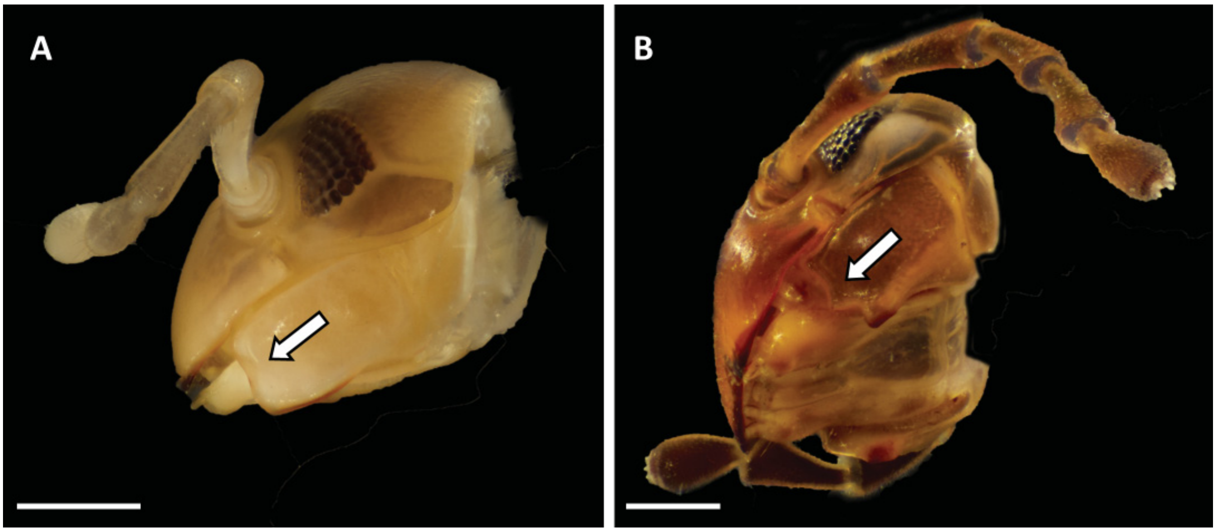

Fig. 3. Heads of odontopygid males, arrows point to distal margin of mandibular stipes. **A**. *Spinotarsus axeli* sp. nov., holotype (NHMD 621761), distal margin of stipes concave/bilobed, as in most odontopygids. **B**. *Callistodontopyge latifolia* (Attems, 1914), specimen from Kiverenge FR (NHMD 621713), distal margin of stipes trilobed as characteristic of this genus. Scale bars = 1 mm. Photo S.G. Selvantharan.

Table 2. Abbreviations for morphological terms used in descriptions and on illustrations of gonopods and first pairs of legs. The table only includes terms for structures which are supposed to be homologous across the family; these abbreviations are in UPPER CASE letters. Additional *ad hoc* terms are given in lower case letters and are explained in the figure captions.

APS	=	mesapical prefemoral setae
ARC	=	arculus
BA	=	basomere
BSS	=	basal solenomeral spine
CU	=	cucullus
CXS	=	coxosternal setae
LCS	=	lateral coxal spine/process
LPS	=	lateral prefemoral setae/sensilla
MF	=	metaplical flange
MFP	=	metaplical flange process
MP	=	metaplica
PN	=	posttorsal narrowing
PP	=	proplica
PPL	=	proplical lobe
PTS	=	posttorsal spine
SLM	=	solenomere
TL	=	torsotope lobe
TM	=	telomere
TT	=	torsotope

Gonopod terminology

The morphology of odontopygid gonopods was interpreted and described in great detail by Kraus (1966) who based his interpretation on the notion that different parts of the telopodite can be homologized with individual podomeres (prefemur, femur, postfemur, tibia, tarsus) of a normal walking leg, from which the gonopod is obviously derived. This idea has now largely been abandoned, at least as far as spirostreptidan millipedes are concerned, and a neutral terminology for parts of the telopodite has been developed (Hoffman 2008; Frederiksen & Enghoff 2012). While I retain the distinction between sternum, coxa and telopodite, I follow the neutral terminology for telopodital parts.

Coxa (Fig 5). The erect part of the *coxa* ("Telocoxit" in the German literature) consists of a folded lamella with the opening facing mesad. The anterior fold is the *proplica* (*PP*); the proplica is usually very simple, its free margin linear or nearly so; it terminates in a small rounded *proplical lobe* (*PPL*). The posterior fold, the *metaplica* (*MP*), usually has a *metaplical flange* (*MF*) which covers the basal part of the mesal coxal opening and may be produced into a *metaplical flange process* (*MFP*); the metaplica may carry various other outgrowths. Basally, the metaplica is continuous with a more or less horizontal flange which projects mesad where it meets its counterpart from the other gonopod and covers the usually very small and inconspicuous gonopod sternum. In most species, proplica and metaplica fuse terminally to form a *cucullus* (*CU*) which is highly variable in shape. The term cucullus (Latin for hood) was introduced for the genus *Chaleponcus* in which the tip of the coxa may indeed be compared with a hood (Enghoff 2014), but it seems more useful to extend the term to denote the part of the coxa distal to the proplical lobe. Often the lateral side of the coxa carries a more or less *laterad process or spine* (*LCS*) which may originate from the cucullus or from a more basal position.

Telopodite (Fig. 6). The *telopodite* is connected to the basis of the coxa. The basal part of the telopodite, the *basomere* (*BA*), starts as a simple rod resting in the coxal cavity. At some point, often associated with a coxal metaplical modification, the basomere makes a mesad bend, the *arculus* (*ARC*), forming

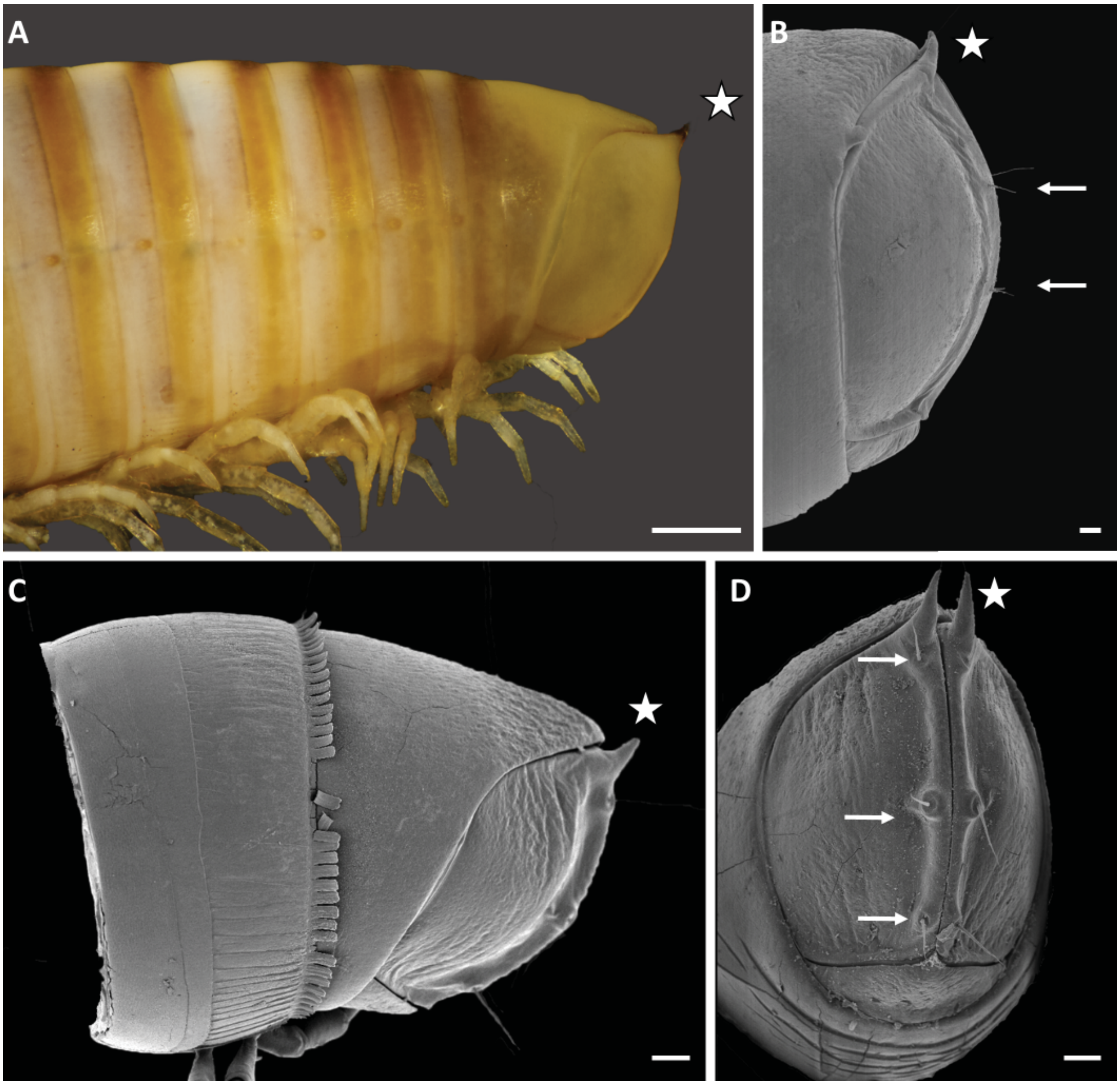

Fig. 4. Telsons of odontopygids. **A**. *Spinotarsus axeli* sp. nov., holotype, ♂ (NHMD 621761), telson and last six body rings, lateral view. **B**. *Xystopyge bentemarieae* sp. nov., paratype, ♂ (NHMD 621767), telson, lateral view, showing two setae per anal valve as characteristic of the genus *Xystopyge*. **C–D**. *Aquattuor udzungwensis* Enghoff, 2015, telson and last body ring (from Enghoff & Frederiksen 2015), showing three setae per anal valve as characteristic of most odontopygids; setae in this species placed on ravelins on raised valve margins. C. Lateral view, also showing the rectangular limbus flaps characteristic of the genus *Aquattuor*. D. Posterior view. Stars indicate the dorsal anal valve spines characteristic of family Odontopygidae; white arrows indicate anal valve setae. Scale bars: A = 1 mm; B–D = 0.1 mm. A–B: Photo S.G. Selvantharan.

an angle which is ca 90° in (all?) Prionopetalini, blunt (ca 135°), in *Xystopyge*, and acute (ca 50°) in *Odontopyge* Brandt, 1841. The part of the telopodite distal to arculus is directed more or less mesad and is often intertwined with the telopodite from the opposite gonopod (see Enghoff 2014: fig. 10, for a particularly complicated example). In most odontopygid genera (including all of those treated here) the arculus is followed by a spiraling part, the *torsotope* (*TT*), then in many species by a *post-torsal spine* (*PTS*) which may be quite conspicuous and often itself spirals around the telopodite shaft. A blunt *torsotope lobe* (*TL*) is often apparent (e.g., Fig. 11A–B). After the torsotope and the post-torsal spine there is a straight, narrow part, the *post-torsal narrowing* (*PN*) (except in *Xystopyge* and some other genera not considered here), which may be more or less pronounced, shorter or longer, and sometimes is obscured by the post-torsal spine. After the post-torsal narrowing, which marks the end of the basomere, the telopodite divides into two major branches: solenomere and telomere. The *solenomere* (*SLM*) carries the distal part of the efferent groove (cf. Enghoff 2011) which runs all the way from the start of the basomere, through torsotope and post-torsal narrowing; the solenomere is usually long and slender, often has a *basal solenomeral spine* (*BSS*) near its beginning and sometimes also one or more small processes closer to the tip; it often rests, wholly or partly, in a gutter formed by the other main branch, the *telomere* (*TM*), but at least in preserved specimens, it is often more or less free from the telomere

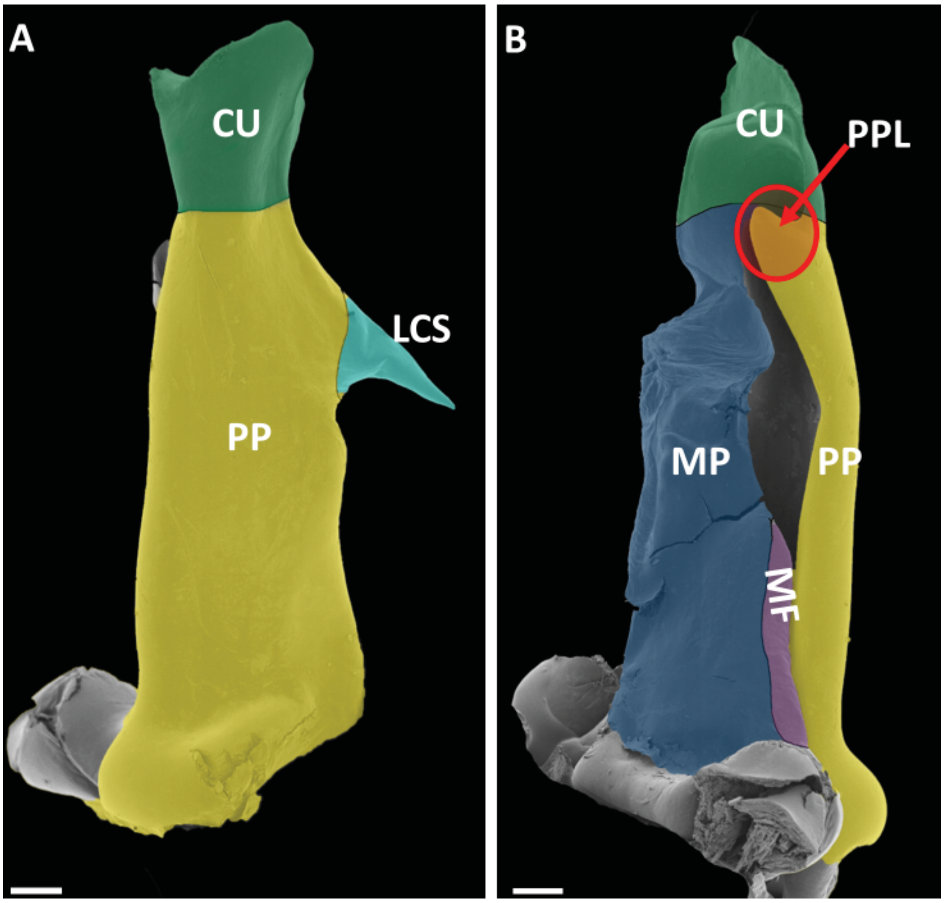

Fig. 5. Odontopygid gonopod terminology, coxa, exemplified by *Chaleponcus sergeii* sp. nov., holotype, ♂ (NHMD 621728). **A**. Right gonopod coxa, anterior view. **B**. Right gonopod coxa, mesal view. Abbreviations and shading: *CU* = cucullus (green); *LCS* = lateral coxal spine (teal); *MP* = metaplica (blue); *MPF* = metaplical flange (purple; not very large in this specimen); *PP* = proplica (yellow); *PPL* = proplical lobe (orange; red circle). Scale bars: A–C = 0.2 mm; D = 0.01 mm. Cf. Fig. 32.

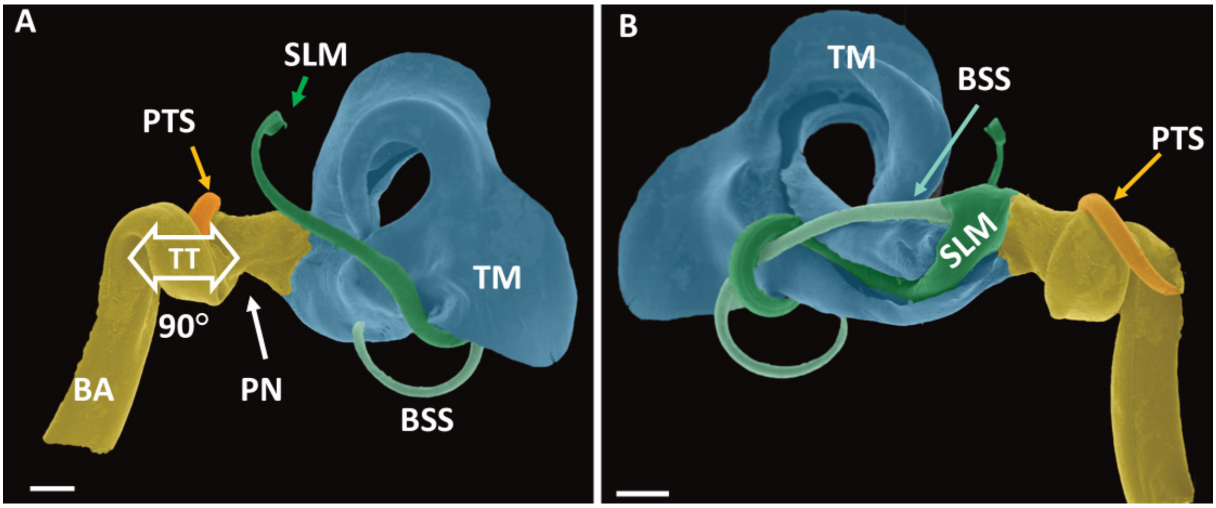

Fig. 6. Odontopygid gonopod terminology, telopodite, exemplified by *Lamelloramus frederiksenae* sp. nov., holotype, ♂ (NHMD 621744), left gonopod telopodite. **A**. Anterior view, "*90°*" indicates arculus. The double-headed arrow indicates the torsotope. **B**. Posterior view. Abbreviations: *BA* = basomere (yellow); *BSS* = basal solenomeral spine (light green); *PN* = post-torsal narrowing; *PTS* = post-torsal spine (orange); *SLM* = solenomere (medium green); *TM* = telomere (blue); *TT* = torsotope. Scale bars = 0.2 mm. Cf. Fig. 42.

and may make a number of loops; its tip is often obliquely longitudinally fluted. The telomere is usually highly complicated and is difficult to describe. Its basal structure may be described as a long lamella with the sides folded in such that a cavity is formed – it is in this widely open gutter that the solenomere may rest. The gutter is not straight but is curved into a more or less complete loop which may be compared to the tyre of a bicycle (under this analogy, the solenomere would correspond to the bicycle tube). On top of this basic structure, the telomere usually has a number of secondary lamellae, processes and/or spines which are usually hard to homologize between species and genera. Table 2 summarizes these terms. A large number of additional terms and abbreviations are used for the multifarious outgrowths, spines, lamellae and other structures found on the gonopods. These terms, which are abbreviated with lower case letter on the illustrations, are entirely descriptive, and the application of similar terms for different taxa does not implicate an assumption of homology.

Results

All odontopygid species recorded from the Eastern Arc Mountains are treated below, except most of those that are known only from the Udzungwa Mts. See Tabel 1 and Enghoff (2014, 2016a, 2016b, 2016c, 2018, 2020) and Enghoff & Frederiksen (2015).

Class Diplopoda de Blainville in Gervais, 1844
Order Spirostreptida Brandt, 1833

Family **Odontopygidae** Attems, 1909

Diagnosis

A family of Spirostreptida with the unique combination of the following characters: gnathochilarium without a promentum; first pair of male legs with prefemoral lobes on anterior side; one pair of gonopods (modified 8th legs); gonopod coxa forming a more or less closed tube accommodating basis of telopodite (basomere); free (distal) part of telopodite projecting mesad; sternum of fully reduced 9th male legs (sternum 9) prominent; anal valves usually with a dorsal, sometimes also a ventral, spinelike process.

Internal classification

The suprageneric classification of Odontopygidae was treated in detail by Kraus (1966), and again by Hoffman (1991), following the realization (Hoffman 1991) that the genus name *Odontopyge* Brandt, 1841, had been mis-applied by virtually all previous authors.

The classification of Hoffman (1991) is as follows (alphabetical sequence):
Subfamily Archepyginae Manfredi, 1939
  Tribe Archepygini Manfredi, 1939
  Tribe Ctenoiulini Hoffman, 1980
  Tribe Prionopetalini Hoffman, 1991
Subfamily Lissopyginae Attems, 1909
Subfamily Odontopyginae Attems, 1909
Subfamily Peridontopyginae Attems, 1914

The monotypic (only one specimen known), highly dubious family Atopogestidae Hoffman, 1980 was retained by Hoffman (1991), as a second family in the superfamily Odontopygoidea. However, *Atopogestus graueri* (Attems, 1927), and hence Atopogestidae, most likely is based on a teratological specimen (Mauriès 1997) and for that reason was not included in the classification by Enghoff *et al.* (2015).

Key to subfamilies and tribes of Odontopygidae Attems, 1909

1. Gonopod telopodite without a flexible zone and without torsion, see, e.g., Kraus (1966: fig. 140). Gonopod sternum inconspicuous. Ozopores starting on body ring 6 ..**Odontopyginae** Attems, 1909
– Telopodite with a flexible zone shortly after its exit from the coxal cavity, mostly with a torsion ('torsotope') at this point, see, e.g., Fig. 16A. Ozopores starting on ring 5 or 6 2

2. Telopodite with a demarcation between a "prefemoral" part and a usually narrower 'femoral' part (post-torsal narrowing, see, e.g., Figs 8A, 55A); torsotope always present. Gonopod sternum inconspicuous. Ozopores starting on ring 6, except in the genus *Pleonoporus* Attems, 1938 .... (**Archepyginae** Manfredi, 1939)...4
– Telopodite without distinction between a "prefemoral" and a usually narrower "prefemoral" zone (no post-torsal narrowing); with or without torsotope.. 3

3. No torsotope. Gonopod sternum inconspicuous. Ozopores starting on body ring 5. Margin of limbus straight .... **Peridontopygini** Attems, 1914
– Torsotope present. Gonopod sternum well-developed (at least in *Xystopyge*, see, e.g., Fig. 62A, VandenSpiegel & Pierrard (2004: figs 1, 4), condition in *Lissopyge* Attems, 1909 dubious). Ozopores starting on body ring 6. Limbus divided into variously shaped lobes .....**Lissopyginae** Attems, 1909

4. Solenomere blunt, short and compact, more or less expanded, never longer than telomere and basally fused with it, see, e.g., Demange & Mauries (1975: fig. 162), Kraus (1960: fig. 169) ....
....**Ctenoiulini** Hoffman, 1980 and **Archepygini** Manfredi, 1939
– Solenomere always ending with a point, even when it may be expanded elsewhere, usually long and slender (1 exception in the genus *Patinatiopsis* Kraus, 1960) .... **Prionopetalini** Hoffman, 1991

The distinction between Ctenoiulini + Archepygini on the one side and the Prionopetalini on the other side roughly reflects couplet 5 in the key to genera of Archepyginae (= Odontopyginae sensu Kraus 1966) of Kraus (1966: 90), see also Hoffman (1980: 99). The distinction between Ctenoiulini and Archepygini is unclear, see Hoffman (1991: 71).

Subfamily Archepyginae Manfredi, 1939

Tribe **Prionopetalini** Hoffman, 1991

With 44 included genera, including six genera described as new here, Prionopetalini is by far the most diverse group of Odontopygidae. The usually highly complex gonopods in most cases allow recognition at the species level, but referring a species to a genus is very often difficult, to say the least. Certain genera are well characterized and circumscribed, e.g., *Aquattuor* Frederiksen, 2013, *Callistodontopyge* Hoffman & Howell, 1981, *Prionopetalum* Attems, 1909, but many others are at best vaguely defined, notably "*Odontopyge sensu auctorum*" (Enghoff 2016a). When describing a new species one therefore often faces the choice between stretching an existing genus concept and erecting a new, usually monotypic genus (cf. Introduction and Discussion).

Genus ***Antipustia*** gen. nov.
urn:lsid:zoobank.org:act:BD248114-CDA1-4701-BAD8-767C6583EE4C

Type species

Antipustia hoteldolichoiuli gen. et sp. nov.

Other included species

None.

Diagnosis

Differs from other genera of Prionopetalini by the combination of an angled gonopod coxa with a stout lateral spine and a stout, U-shaped metaplical spine, a moderately extended torsotope, a post-torsal spine, a taeniate telomere, a slender solenomere as long as the telomere and mostly concealed within it, and a strongly striated limbus partially divided into shallow lobes.

Etymology

The genus name (gender feminine) is an anagram of *Patinatius* and refers to the striate limbus which somewhat resembles that of the genus *Patinatius* Attems, 1926 (Kraus 1966: figs 215, 219, 223, 226, 229, 237).

Remarks

In the key to genera of "Odontopyginae" of Kraus (1966), the new genus runs to *Patinatiopsis*, but differs in having a post-torsal spine and a less compact telomere. If the other alternative of the limbus character in couplet 7 of this key is chosen, the new genus runs all the way through the remaining key to *Odontopyge* or *Patinatius*, cf. Enghoff (2016a). The extended torsotope is shared with *Calyptomastix* Hoffman & Howell, 2012, but in the latter genus, the torsotope extension is more pronounced, and the solenomere is completely hidden with a compact telomere. Many characters, including the structure of the limbus, are also shared with *Aptyctosmilax* gen. nov., but in the latter genus, the gonopod coxa is not angled and has no lateral spine, the telomere is much longer and forms a complete coil, and there is a very long basal solenomeral spine which is absent in *Antipustia* gen. nov. (or maybe replaced by the short, stout basal telomeral spine).

Antipustia hoteldolichoiuli gen. et sp. nov.
urn:lsid:zoobank.org:act:25404A09-4EEA-4774-B395-6C904AFBE897
Figs 7–8

Diagnosis

Redundant, genus monotypic.

Etymology

After 'Hotel Dolichoiulus', many years ago the author's room in his parents' house; subsequently the temporal home for several successive myriapodologists and others for shorter or longer periods.

Material examined (total 2 ♂♂)

Holotype

TANZANIA • ♂; East Usambara Mts, Amani, Kwamkoro; ca 1000 m a.s.l.; 24 Dec. 1975; O. Lomholdt leg.; in rotten wood; NHMD 621699.

Paratype

TANZANIA • 1 ♂; East Usambara Mts, Tanga Region, Muheza District, Nilo FR; 04°54′16″ S, 38°39′45″ E; 1090 m as.l.; 10 Jul. 2000; Frontier Tanzania leg.; NHMD 621700.

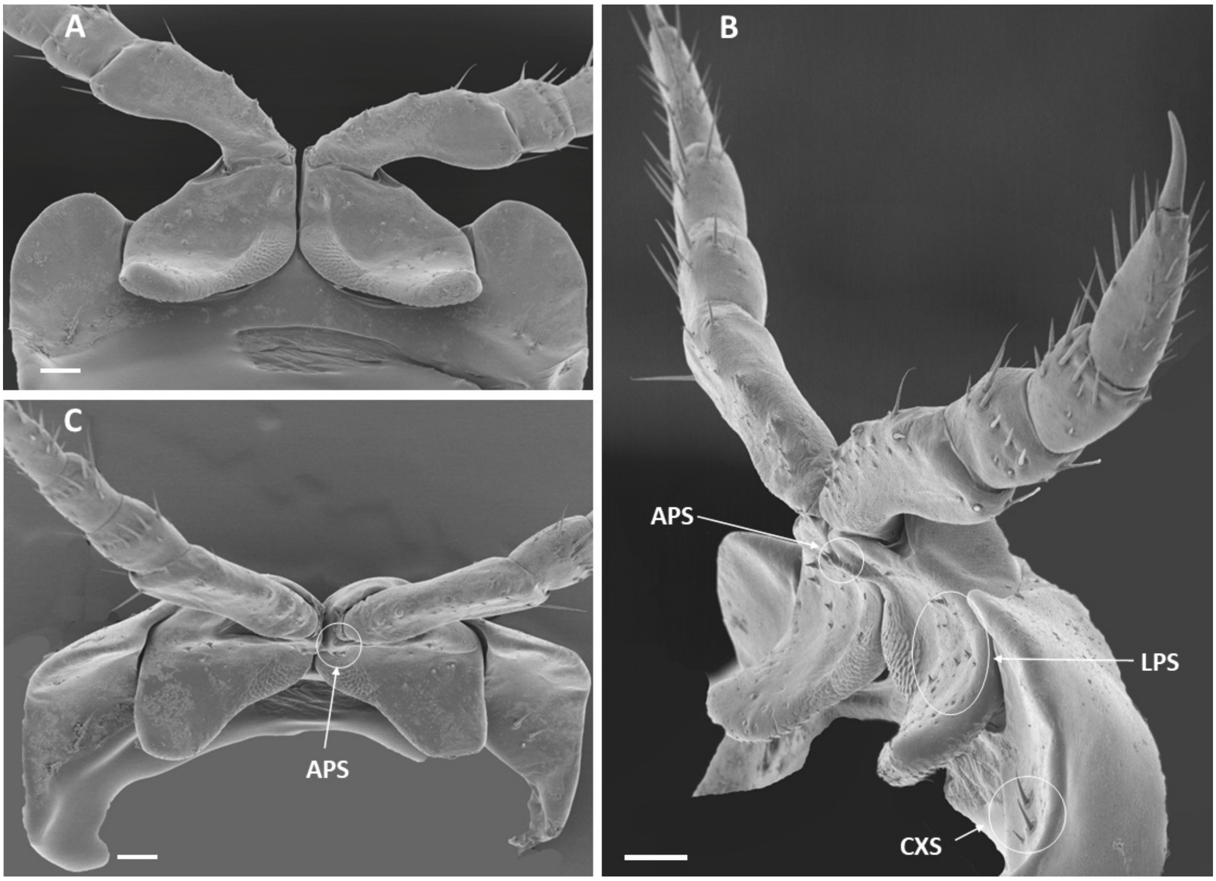

Fig. 7. *Antipustia hoteldolichoiuli* gen. et sp. nov., paratype, ♂ (NHMD 621700), first pair of legs. **A**. Anterior view. **B**. Sublateral view. **C**. Ventral view. Abbreviations: *APS* = mesapical prefemoral setae; *CXS* = coxosternal setae; *LPS* = lateral prefemoral setae. Scale bars = 0.1 mm.

Description (male)

Size. Length 53–61 mm, diameter 2.7–2.9 mm, 69–76 podous rings, no apodous rings in front of telson.

Colour. Specimen from Kwamkoro after 43 years in alcohol faded, but a clear dorsal pale stripe still visible; specimen from Nilo FR after 18 years in alcohol overall light to whitish brown, posterior part of metazonites amber, no dorsal stripe.

Supralabral setae. 4.

Mandibular stipes. With moderate disto-ventral lobe, distal margin hence bilobed.

Anal valves. With moderate dorsal spine, no ventral spine or 'corner', margin raised, each with three setae on protruding ravelins.

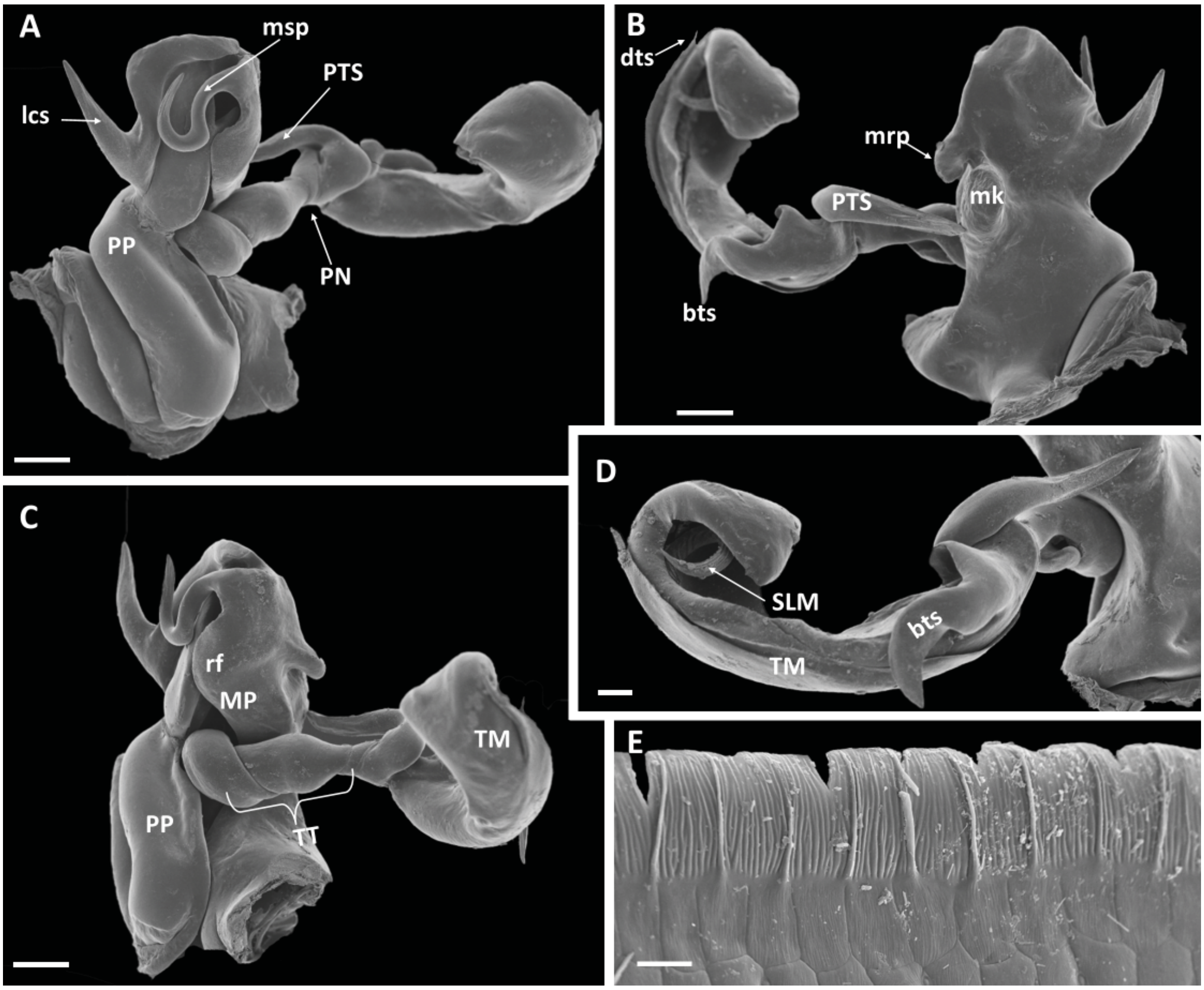

Fig. 8. *Antipustia hoteldolichoiuli* gen. et sp. nov., holotype, ♂ (NHMD 621699). **A–D**. Left gonopod. A. Anterior view. B. Posterior view. C. Anterior-mesal view. D. Telopodite, ventro-posterior view. **E**. Midbody dorsal limbus. Abbreviations: *bts* = basal telomeral spine; *dts* = distal telomeral spine; *lcs* = lateral coxal spine; *mk* = metaplical knob; *MP* = metaplica; *mrp* = metaplical rounded process; *msp* = metaplical U-shaped spine; *PN* = post-torsal narrowing; *PP* = proplica; *PTS* = post-torsal spine; *rf* = metaplical rounded flange; *SLM* = solenomere; *TM* = telomere; *TT* = torsotope. Scale bars: A–D = 0.2 mm; E = 0.01 mm.

Limbus (Fig. 8E). Strongly striate, margin with shallow lobes, one stronger ridge running into and through each lobe.

Legs. With large ventral pads on postfemur and tibia from leg-pair 7 backward, diminishing in size and eventually disappearing toward hind end.

First pair of legs (Fig. 7). Prefemoral lobes relatively short, broadly rounded in ventral view. Three coxosternal setae (*CXS*) close to lateral margin of coxosternum, well separated from prefemoral lobes. Prefemora with two mesapical setae (*APS*) and four to six peglike lateral sensilla (*LPS*).

Sternum 9. Rounded-triangular (damaged during preparation, not illustrated).

Gonopod coxa (Fig. 8A–D). Lateral margin forming a ca 120° angle, with a strong, obliquely distad spine (*lcs*) ca midway between angle and tip. Mesal margin of proplica (*PP*) with an indentation forming a similar angle, proplica hence almost parallel-sided though angled; proplical lobe hidden behind rounded metaplical flange. Metaplica (*MP*) without a differentiated basal flange, subapically with a rounded flange (*rf*) covering proplical lobe, apically with a strong, U-shaped spinelike process (*msp*), process first directed basad or latero-basad, then making a 180° turn and pointing distal or meso-distad. Posterior side of metaplica with a rounded, partly light-coloured, rounded knob (*mk*), just above with a small, rounded process (*mrp*) pointing basad-mesad.

Gonopod telopodite (Fig. 8A–D). Arculus 90º. Torsotope (*TT*) extended. A very long, retrorse, almost straight post-torsal spine (*PTS*) at end of not very pronounced post-torsal narrowing (*PN*). Solenomere (*SLM*) whiplike, almost completely concealed within telomere. Telomere (*TM*) taeniate, forming a sheath for the solenomere, with strong, hooklike basal spine (*bts*) on posterior side, distally curved posteriad-apicad and somewhat expanded into rounded 'palette' and with a straight spine (*dts*) on outer side of curvature.

Distribution and habitat

Known only from the forest around Amani in the East Usambara Mts, and from the Nilo FR slightly to the north of Amani, altitudinal range 930–1000 m a.s.l. See Doody *et al.* (2001) and Beharrell *et al.* (2002) for information on these areas.

Remarks

The basal telomeral spine (*bts*) in this species originates very close to where the basal solenomeral spine (*BSS*) originates in many other species, and it cannot be excluded that the spine in this species is in fact *BSS*.

Genus ***Aptyctosmilax*** gen. nov.

urn:lsid:zoobank.org:act:C9BF60A0-14D4-4021-B8A5-D6412E25E0EC

Type species

Aptyctosmilax helenae gen. et sp. nov.

Other included species

None.

Diagnosis

Differs from other genera of Prionopetalini by the combination of a moderately extended torsotope, a post-torsal spine, a long taeniate telomere forming a full (> 180°) coil, a slender solenomere as long as the telomere and coiling with it, a long slender spine associated with the solenomere, and a strongly striated limbus partially divided into shallow lobes.

Etymology

The genus name (gender feminine) is an anagram of *Calyptomastix* and refers to the similarities between the two genera.

Remarks

In the key to genera of "Odontopyginae" of Kraus (1966), the new genus runs to *Patinatiopsis*, but differs in having a post-torsal spine and a much less compact telomere. If the other alternative of the limbus character in couplet 7 of this key is chosen, the new genus runs all the way through the remaining key to *Odontopyge*, cf. Enghoff (2016a). The extended torsotope is shared with *Calyptomastix* Hoffman & Howell, 2012, but in the latter genus, the torsotope extension is more pronounced, and the solenomere is completely hidden with a compact telomere. Many characters, including the structure of the limbus, are also shared with *Antipustia* gen. nov., but in the latter genus, the gonopod coxa is strongly angled and has a stout lateral spine, the telomere is much shorter and does not form a full coil, and there is no long basal solenomeral spine (although the short, stout basal telomeral spine may be its homologue).

Aptyctosmilax helenae gen. et sp. nov.

urn:lsid:zoobank.org:act:D9DD4643-1C0C-4109-A762-C7C299C811E8

Figs 9–11

Diagnosis

Redundant, genus monotypic.

Etymology

After Helen Read, British myriapodologist, the first resident of 'Hotel Dolichoiulus'.

Material examined (total 8 ♂♂)

Holotype

TANZANIA • ♂; East Usambara Mts, Amani, Monga; 1000 m a.s.l.; 4 Feb. 1977; H. Enghoff, O. Lomholdt and O. Martin leg.; under fallen leaves; NHMD 621701.

Paratypes

TANZANIA • 1 ♂; same collection data as for holotype; NHMD 621702 • 1 ♂; same collection data as for holotype; 26 Jan. 1977; no habitat data; NHMD 621703 • 1 ♂; same collection data as for holotype; 29 Jan. 1977; no habitat data; NHMD 621704 • 1 ♂; same collection data as for holotype; 7 Feb. 1977; no habitat data; NHMD 621705 • 1 ♂; Tanga Region, East Usambara Mts, Amani; 5°5.7′ S, 38°38′ E; 930 m a.s.l.; 27 Oct.–9 Nov. 1995; C.E. Griswold, N. Scharff and D. Ubick leg.; forest; NHMD 621706 • 1 ♂; East Usambara Mts, Tanga Region, Muheza District, Amani Nature Reserve; 38°36′ E, 05°06′ S; 29 Feb. 2000; Frontier Tanzania leg.; plot 150, sample 3; NHMD 621707 • 1 ♂; East Usambara Mts, Amani; 11 Apr. 1985; T. Gissel Nielsen leg.; on road; NHMD 621708.

Description (male)

Size. Length 80–85 mm, diameter 3.8–4.8 mm, 69–72 podous rings, no apodous rings in front of telson.

Colour. After 18–41 years in alcohol uniform greyish or greyish yellow, sometimes with a narrow paler dorsal stripe. Legs yellowish.

Supralabral setae. (5)–6.

Mandibular stipes. With disto-ventral lobe, distal margin hence bilobed.

Anal valves. With well-developed dorsal spine, no ventral spine, unraised margins and three sessile setae.

Limbus (Fig. 10E). Strongly striate, margin with shallow lobes.

Legs. With large ventral pads on postfemur and tibia of anterior post-gonopodal legs, pads quickly diminishing in size and eventually disappearing towards posterior.

First pair of legs (Fig. 9). Prefemoral lobes relatively slender, triangular in ventral view. Eight short coxosternal setae (*CXS*) close to lateral margin of coxosternum, well separated from prefemoral lobes. Prefemora with two short mesapical setae (*APS*) and one to three peglike lateral sensilla (*LPS*).

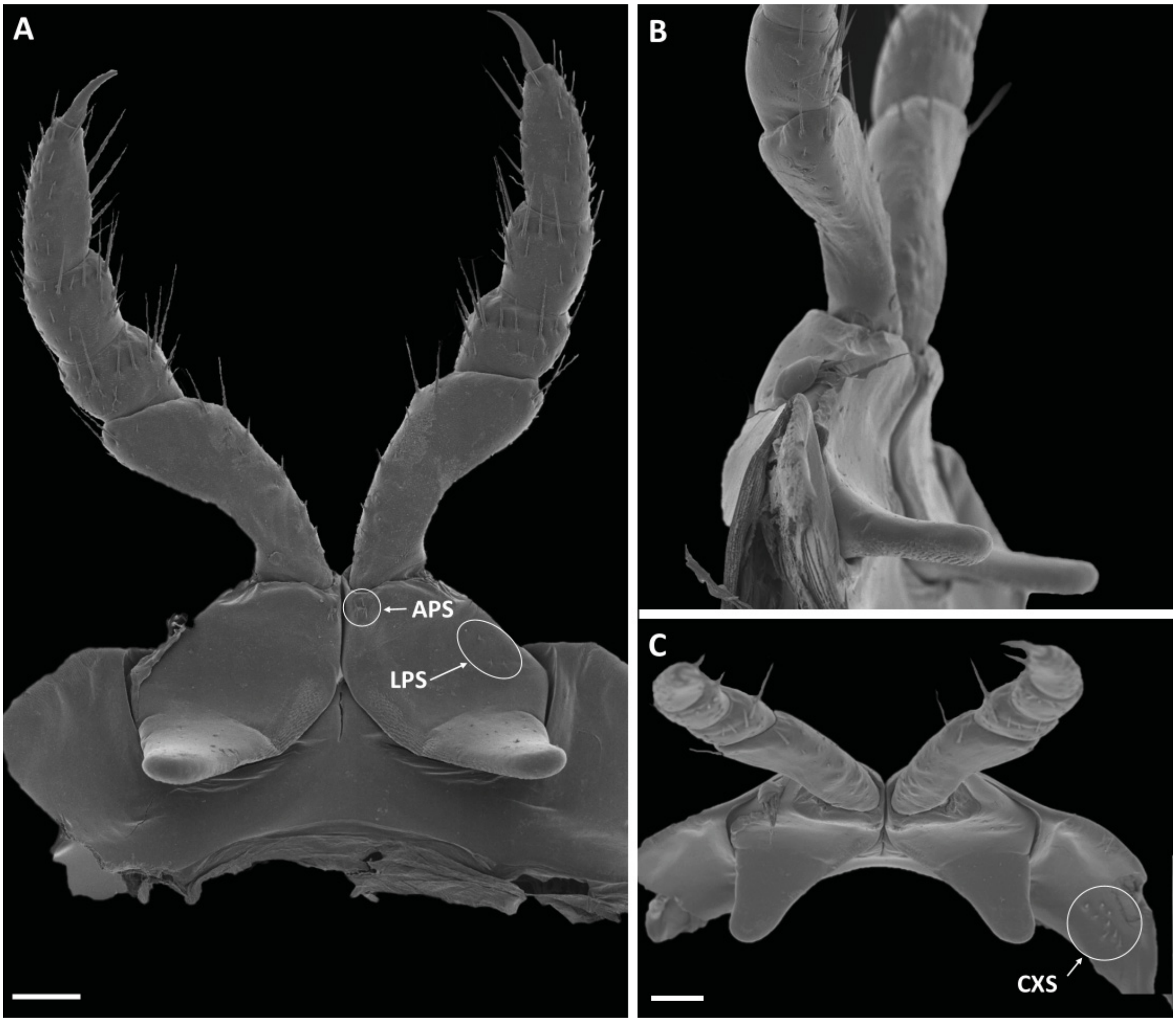

Fig. 9. *Aptyctosmilax helenae* gen. et sp. nov., paratype, ♂ (NHMD 621708), first pair of legs. **A**. Anterior view. **B**. Sublateral view. **C**. Ventral view. Abbreviations: *APS* = mesapical prefemoral setae; *CXS* = coxosternal setae; *LPS* = lateral prefemoral setae. Scale bars: A, C = 0.2 mm; B = 0.1 mm.

Sternum 9 (Fig. 10D). Triangular with rounded corners and a concave basal margin.

Gonopod coxa (Fig. 10A–C). Parallel-sided, becoming abruptly broader ca at mid-length and thus consisting of a relatively narrow shaft and a broader, subrectangular head, lateral margin rectilinear, mesodistal corner of head slightly produced. Proplica (*PP*) simple, mesal margin slightly concave, ending in rounded proplical lobe (*PPL*). Metaplica (*MP*) with poorly delimited basal flange, straight mesal margin, apical margin with broad, pointed, basad spinelike process (*msp*) projecting into space between pro- and metaplica.

Gonopod telopodite (Fig. 11). Arculus 90º. Torsotope (*TT*) extended, with a blunt lobe (*TL*) fitting into torsion on posterior side. A long post-torsal spine (*PTS*) at end of not very procounced post-torsal narrowing (*PN*). Solenomere (*SLM*) whiplike, largely concealed within telomere, with a very long, slender spine (*BSS*) at base, spine *BSS* forming an almost complete circle paralleling the solenomere + telomere coil; projecting tip of solenomere with deep, fishbone-like striation. Telomere (*TM*) taeniate, forming sheath for solenomere; telomere and solenomere forming a tight, > 180º coil.

Distribution and habitat

Known only from the forest around Amani in the East Usambara Mts, 930–1000 m a.s.l. See Doody *et al.* (2001) for information on this area.

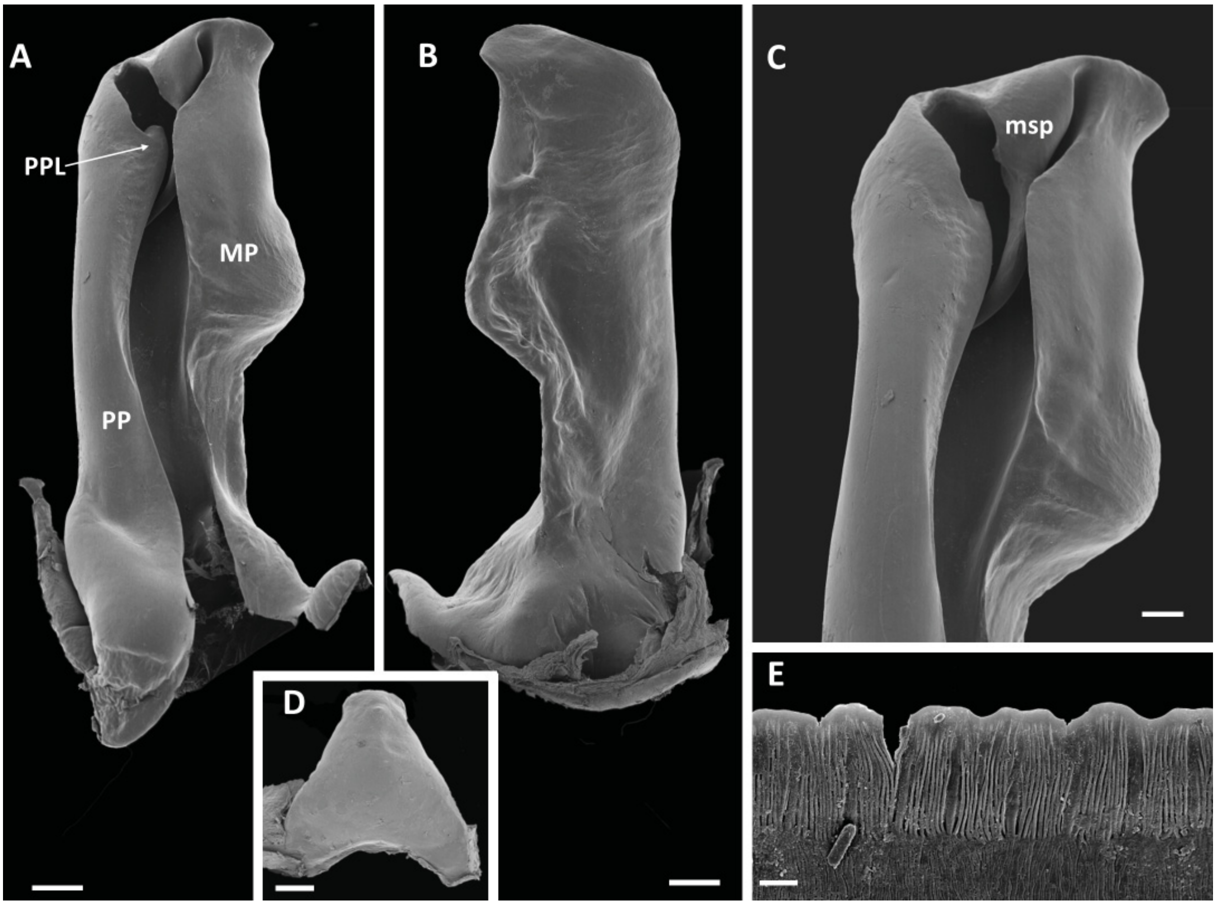

Fig. 10. *Aptyctosmilax helenae* gen. et sp. nov., holotype, ♂ (NHMD 621701). **A–C**. Left gonopod coxa. A. Anterior view. B. Posterior view. C. Anterio-lateral view. **D**. Sternum 9. **E**. Midbody dorsal limbus. Abbreviations: *MP* = metaplica; *msp* = metaplical spinelike process; *PP* = proplica; *PPL* = proplical lobe. Scale bars: A–B, D = 0.2 mm; C = 0.1 mm; E = 0.005 mm.

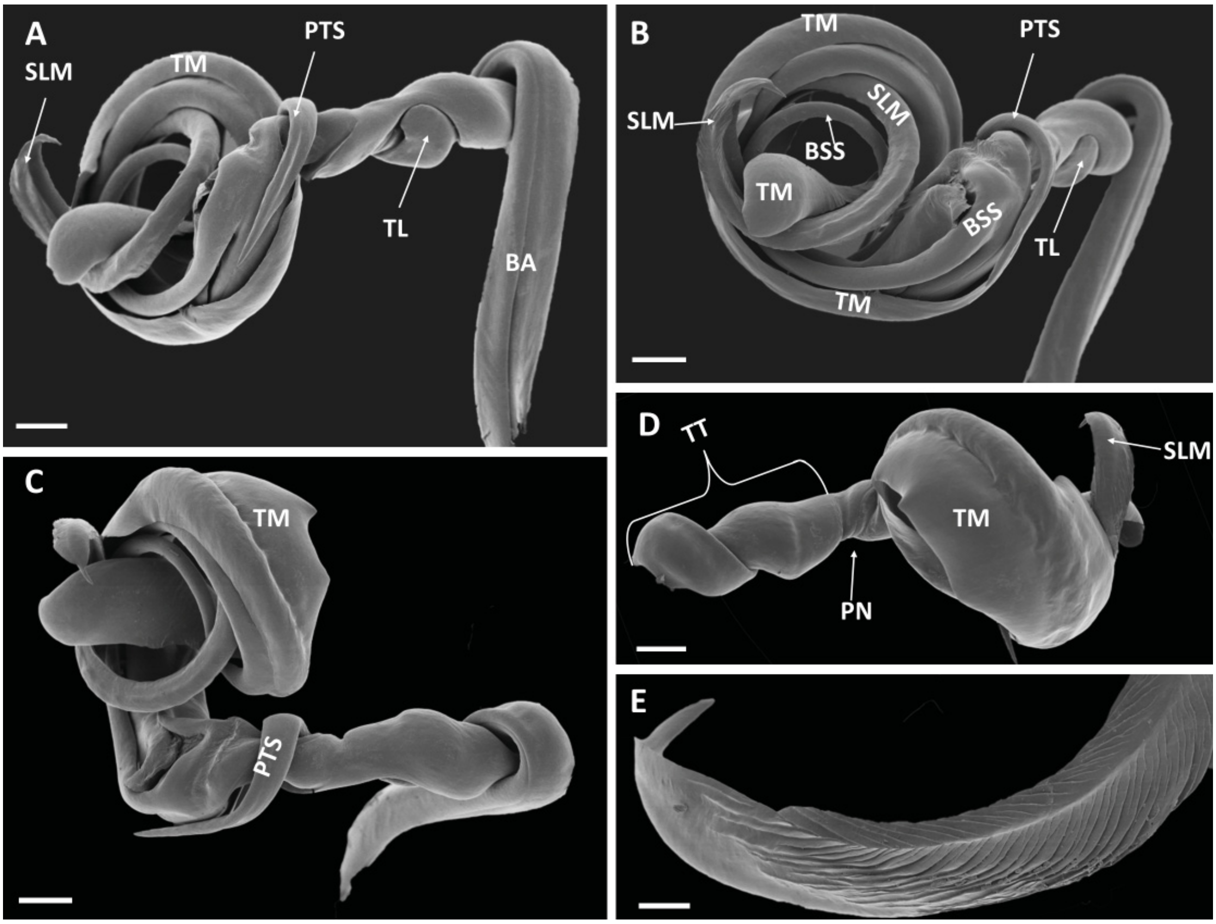

Fig. 11. *Aptyctosmilax helenae* gen. et sp. nov., holotype, ♂ (NHMD 621701), left gonopod telopodite. **A**. Posterior view. **B**. Posterio-mesal view. **C**. Ventral view. **D**. Anterior view, without basomere. **E**. Tip of solenomere. Abbreviations: *BA*=basomere; *BSS*=basal solenomeral spine; *PN*=post-torsal narrowing; *PTS*=post-torsal spine; *SLM*=solenomere; *TL*=torsotope lobe; *TM*=telomere; *TT*=torsotope. Scale bars: A–D=0.2 mm; E=0.05 mm.

Genus ***Aquattuor*** Frederiksen, 2013

Type species

Aquattuor denticulatus Frederiksen, 2013 (Tanzania), by original designation.

Other included species

Nine (Enghoff 2020).

Diagnosis

Differs from all other genera of Odontopygidae by the large, rectangular, detachable limbus flaps (Frederiksen 2013b; Enghoff & Frederiksen 2015; Enghoff 2020).

Remarks

Eight of the ten species in the genus are Eastern Arc endemics. *Aquattuor fasciatus* (Attems, 1896) and *A. claudiahempae* Enghoff & Frederiksen, 2015 have been found at various Tanzanian localities outside the Eastern Arc, and may by synonymous (Enghoff 2020).

In the diagnosis of *A. fasciatus* Enghoff (2020) stated: "Shares a short (as broad as long, or slightly longer) gonopodal palette with *A. claudiahempae*, *A. fasciatus*, *A. stereosathe*, *A. submajor* and *A. udzungwensis.*" This, of course makes no sense – it should have been "Shares a short (as broad as long, or slightly longer) gonopodal palette with *A. claudiahempae*, *A. denticulatus*, *A. stereosathe*, *A. submajor* and *A. udzungwensis.*" I am grateful to Carlos Martínez for having spotted this.

Aquattuor claudiahempae Enghoff & Frederiksen, 2015

New material examined

TANZANIA • 5 ♂♂, 9 ♀♀; Morogoro Region, Kilombero District, Magombera Nature Reserve; 36°57′56″–36°59′28″ E, 7°49′00″–7°50′156″ S; 263–294 m a.s.l.; 24 Sep. 2018–6 Sep. 2019; A. Ngute and A.R. Marshall leg.; NHMD 621709, NHMD 621710, NHMD 621711 (ACC.NO. 2020-EN-002).

Distribution

Previous Eastern Arc records: recorded from Udzungwa Mts National Park.

General distribution: also known from Tanzania: Mt. Kilimanjaro (Enghoff 2020).

Aquattuor denticulatus Frederiksen, 2013

Previous Eastern Arc records: recorded from the East Usambara Mts (Frederiksen 2013b).

General distribution: East Usambara endemic.

Aquattuor fasciatus (Attems, 1896)

Previous Eastern Arc records: recorded from the Rubeho Mts by Enghoff (2016b).

General distribution: also recorded from Tanzania: Zanzibar and Pwani Region (Enghoff 2020).

Genus ***Callistodontopyge*** Hoffman & Howell, 1981

Type species

Callistodontopyge decora Hoffman & Howell, 1981 (Tanzania), by original designation, now a synonym of *C. latifolia* (Attems, 1914), see below.

Other included species

Four (Hoffman 2002).

Remarks

An easily recognized genus of usually bright and contrastfully coloured species (Fig. 12), also unusual among odontopygids by their comparatively compact body and by the trilobed distal margin of the male mandibular stipes (Fig. 3B). The five included species are distributed in Somalia, eastern Kenya and northern Tanzania (Hoffman & Howell 1981; Hoffman 2002).

Callistodontopyge latifolia (Attems, 1914)
Figs 3B, 12–13

Haplothysanus latifolius Attems, 1914: 193.
Callistodontopyge decora Hoffman & Howell, 1981: 690.

Callistodontopyge latifolia decora – Hoffman 2002.

New material examined

TANZANIA • 2 ♂♂; Kilimanjaro region, Mwanga district, North Pare Mountains. Kiverenge FR; 03°47′55,4″ S, 37°39′54,4″ E; 1385m a.s.l.; 14 May 2011; S. Frederiksen leg. and det.; found out in the open on the trail; NHMD 621713, NHMD 621714 • 1 ♂; Tanga Region, Muheza and Korogwe Districts, Bombo East I proposed FR; Sep. 1996; N. Cordeiro leg.; NHMD 621712 • 1 ♂; Dodoma Region, Mpwapwa district, Rubeho Mountains, Kimusi (?); 1200 m a.s.l.; 21 Feb. 1984; J. Kielland leg.; VMNH110627.

Descriptive notes based on new material

First pair of legs (Fig. 13) with large prefemoral lobes almost semicircular with straight distal margin in ventral view, lobes covering entire breadth of prefemur. Three coxosternal setae (*CXS*) close to lateral

Fig. 12. *Callistodontopye latifolia* (Attems, 1914), two specimens (not collected) from Tanzania, small island at Kwale in Manza Bay, to show the compact body shape and bright colour pattern characteristic of thegenus *Callistodontopyge*. Photo Claudia Hemp.

margin of coxosternum, well separated from prefemoral lobes. Prefemora with two mesapical setae (*APS*) and a few shorter setae (*ss*) just basal to *APS*, otherwise bare.

Distribution

Previous Eastern Arc records: Tanga Region, Lushoto Distr., West Usambara Mts, Mazumbai; also known from several other sites in Tanzania and from Shimba Hills in Kenya (Hoffman 2002).

General distribution: Known from several sites in SE Kenya and NE Tanzania (Hoffman 2002: fig. 17).

Remarks

The specimen from Rubeho Mts seems to have been dried out and has lost all traces of a colour pattern. The one from Bombo East I FR also looks quite faded. The specimens from North Pare Mts were studied by Sara B. Frederiksen (unpublished report) who found them to have a dark brown, almost black body with only very small and unnoticeable paramedian dark red spot present on the metazona of most body rings.

See Staddon *et al.* (2002) for information on Bombo East I FR.

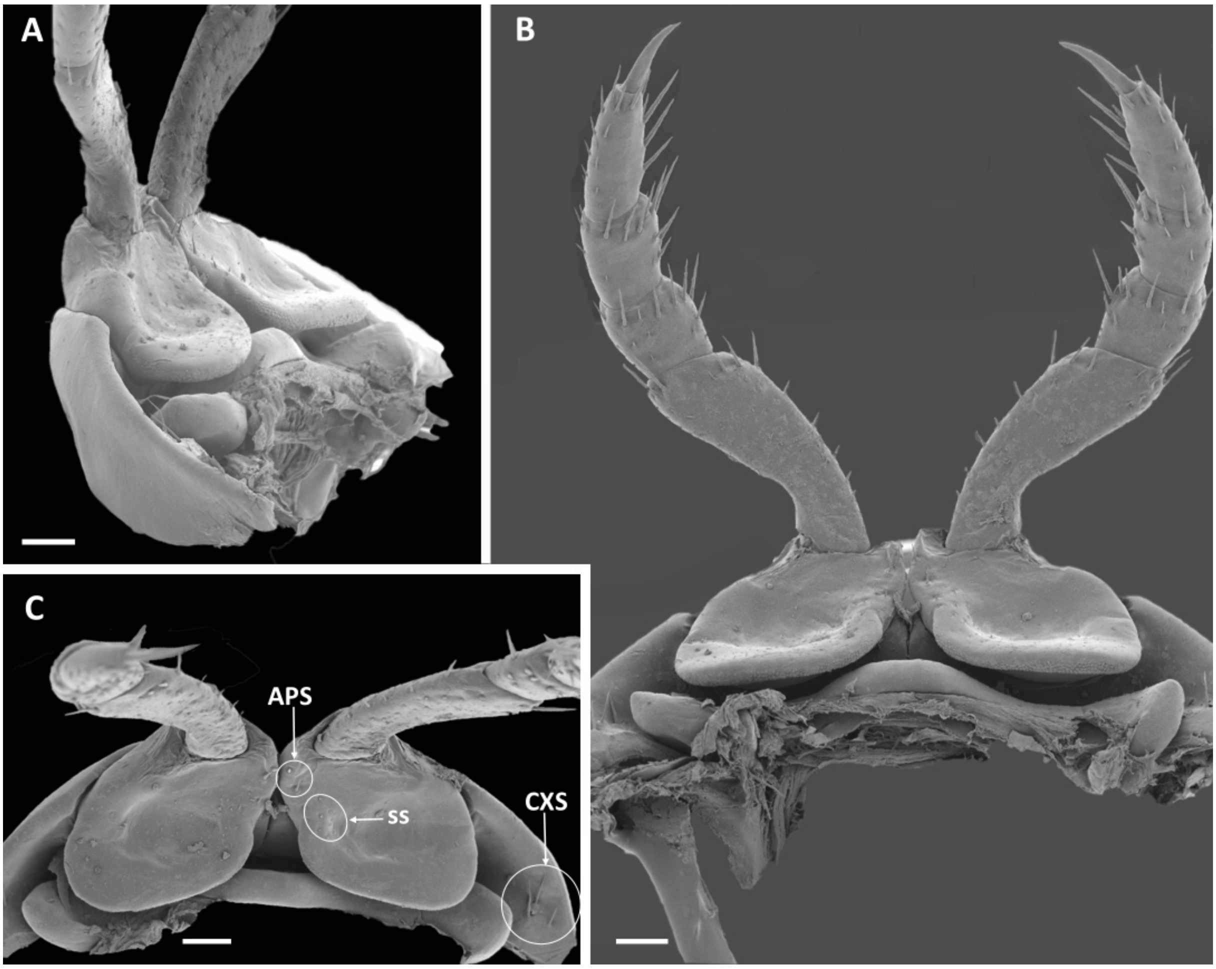

Fig. 13. *Callistodontopyge latifolia* (Attems, 1914), ♂, from Kiverenge FR (NHMD 621713), first pair of legs. **A**. Sublateral view. **B**. Anterior view. **C**. Ventral view. Abbreviations: *APS* = mesapical prefemoral setae; *CXS* = coxosternal setae; *ss* = smaller prefemoral setae. Scale bars = 0.2 mm.

Genus ***Calyptomastix*** Hoffman & Howell, 2012

Type species

Odontopyge kakandae Kraus, 1958 (D.R. Congo), by original designation.

Other included species

Seven, including four new species described here, see Hoffman & Howell (2012).

Diagnosis

Differs from other genera of Prionopetalini by the combination of the elongated basal whorl of the gonopodal torsion (torsotope) and the resultant wide separation of the coxal regions, plus the nearly complete concealment of the solenomere within laminae of the telomere.

Remarks

The four previously known species are distributed in D.R. Congo and Tanzania. One of these, *C. kakandae* (Kraus, 1958a), originally described from D.R. Congo, occurs close to the Eastern Arcs, west of the Tanzanian southern Highlands (Rukwa Region, Sumbawanga District) (Hoffman & Howell 2012).

The new species here assigned to *Calyptomastix* share "the elongated basal whorl of the gonopod torsion" (torsotope) and the "nearly complete concealment of the solenomere with laminae of the apical "calyx" (= tarsus [= telomere])". Hoffman & Howell (2012) did not comment on the limbus of *Calyptomastix* species; however, the limbuses seen in three of the new species (Figs 15F, 17D, 21D) with their triangular marginal lobes are similar to that seen in in type species, *C. kakandae* (Kraus, 1958), as well as in two of the three other species assigned to the genus: *C. leviceps* (Attems, 1909) and *C. pardalis* (Gerstäcker, 1873) (Attems 1909a: fig. 34, 1914: fig. 223; Kraus 1958a: 61). The limbus of *C. dorsalis* (Carl, 1909) has not been described, and that of *C. xystopygoides* sp. nov. (Fig. 19D–E) escapes comparison because of wear.

Calyptomastix ingemanni sp. nov.
urn:lsid:zoobank.org:act:E2D6F8CA-F6F2-45AC-80F9-21D80EB6A698
Figs 1, 14–16

Diagnosis

Differs from other species of *Calyptomastix* by the combination of having a post-torsal spine (= postfemoral spine of Hoffman & Howell 2012) lacking a proper lateral metaplical process but instead having a more apical posteriad triangular process and a small fingerlike process in the cavity of the cucullus.

Etymology

After my grandson Ingemann Andreas Enghoff Mogensen.

Material examined (total 2 ♂♂)

Holotype

TANZANIA • ♂; Kilimanjaro Region, Mwanga District, North Pare mountains, Kiverenge FR; 03°48′41.0″ S, 37°38′52.5″ E; 1563 m a.s.l.; 14 May 2011; S. Frederiksen leg.; NHMD 621715.

Paratype

TANZANIA • 1 ♂; same collection data as for holotype; NHMD 621716.

Description (male)

Size. Length 45–47 mm, diameter 2.6–2.8 mm, 68–69 podous rings, no apodous rings in front of telson.

Colour. Uniform dark grey, posterior part of metazonites amber, a dorsal yellow stripe. Head except clypeal region, collum, antennae and preanal ring dark brownish grey; clypeal region and anal valves reddish brown. Legs yellowish.

Supralbral setae. 4.

Mandibular stipes. With triangular disto-ventral lobe, distal margin hence concave.

Anal valves. With very small dorsal spine, no ventral spine or corner, margins not raised, each with 3 sessile setae.

Limbus (Fig. 15F). With rounded-triangular, striate lobes.

Legs. Postfemoral and tibial pads on post-gonopodal legs, pads diminishing and eventually disappearing towars posterior end.

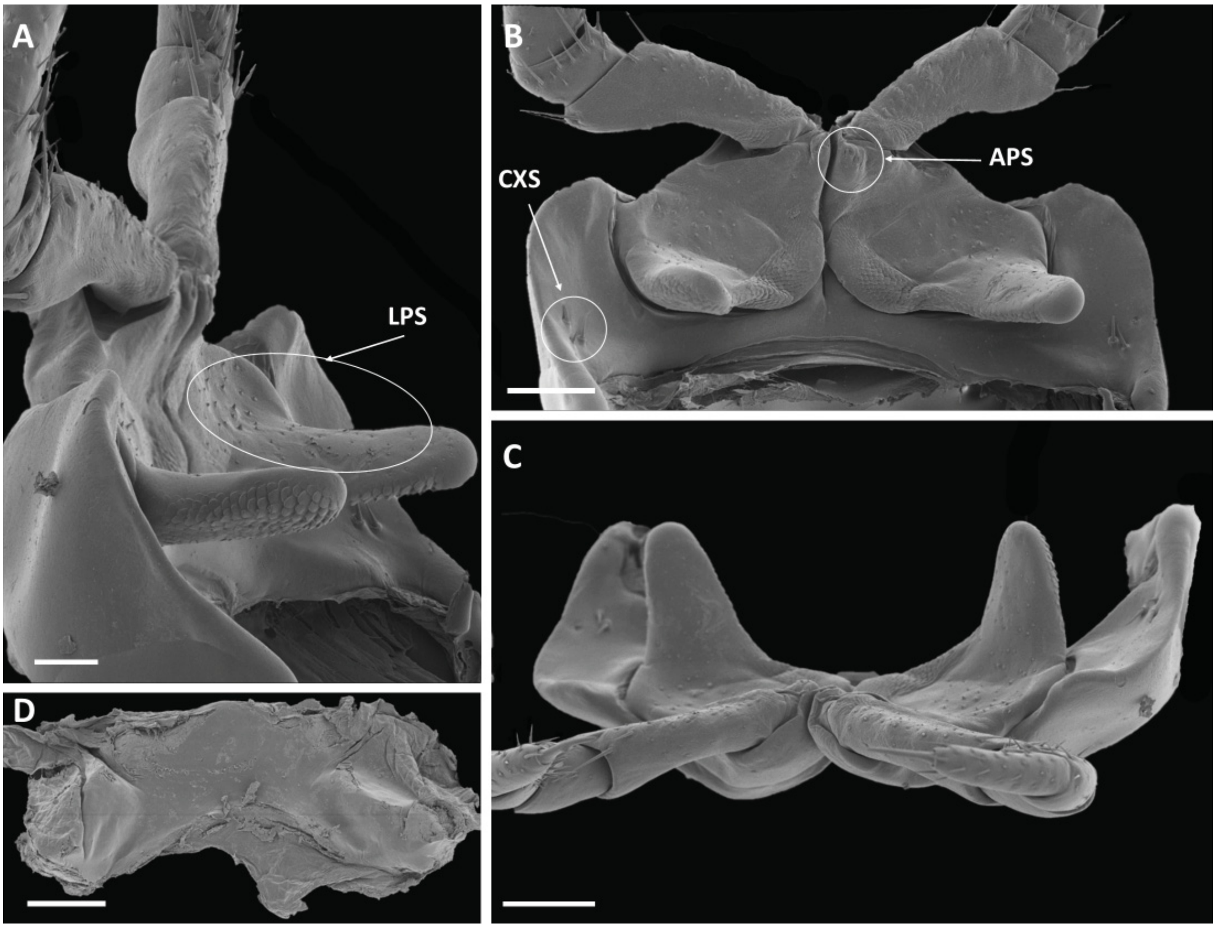

Fig. 14. *Calyptomastix ingemanni* sp. nov., holotype, ♂ (NHMD 621715). **A–C**. First pair of legs. A. Sublateral view. B. Anterior view. C. Ventral view. **D**. Sternum 9. Abbreviations: *APS* = mesapical prefemoral setae; *CXS* = coxosternal setae; *LPS* = lateral prefemoral setae. Scale bars: A = 0.1 mm; B–D = 0.2 mm.

First pair of legs (Fig. 14A–C). Prefemoral lobes relatively long, slender-triangular in ventral view. Two to three coxosternal setae (*CXS*) close to lateral margin of coxosternum, well separated from prefemoral lobes. Prefemora with two short mesapical setae (*APS*) and a scattering of peglike sensilla (*LPS*) extending to tip of prefemoral lobe.

Sternum 9 (Fig. 14D). In the shape of a transverse, parallel-sided, slightly curved band.

Gonopod coxa (Fig. 15A–E). Proplica (*PP*) slender, almost parallel-sided, simple, with a relatively large proplical lobe (*PPL*) distally. Metaplica (*MP*) simple, without a basal metaplical flange, subdistally with a posteriad, pointed triangular process (*mtp*). Cucullus (*CU*) apically with slender, fingerlike process (*fp*) facing proplical lobe.

Gonopod telopodite (Fig. 16). Arculus 90º. Torsotope (*TT*) extended, post-torsal narrowing (*PN*) not very pronounced. A long, stout post-torsal spine (*PTS*) making more than a full turn around post-torsal

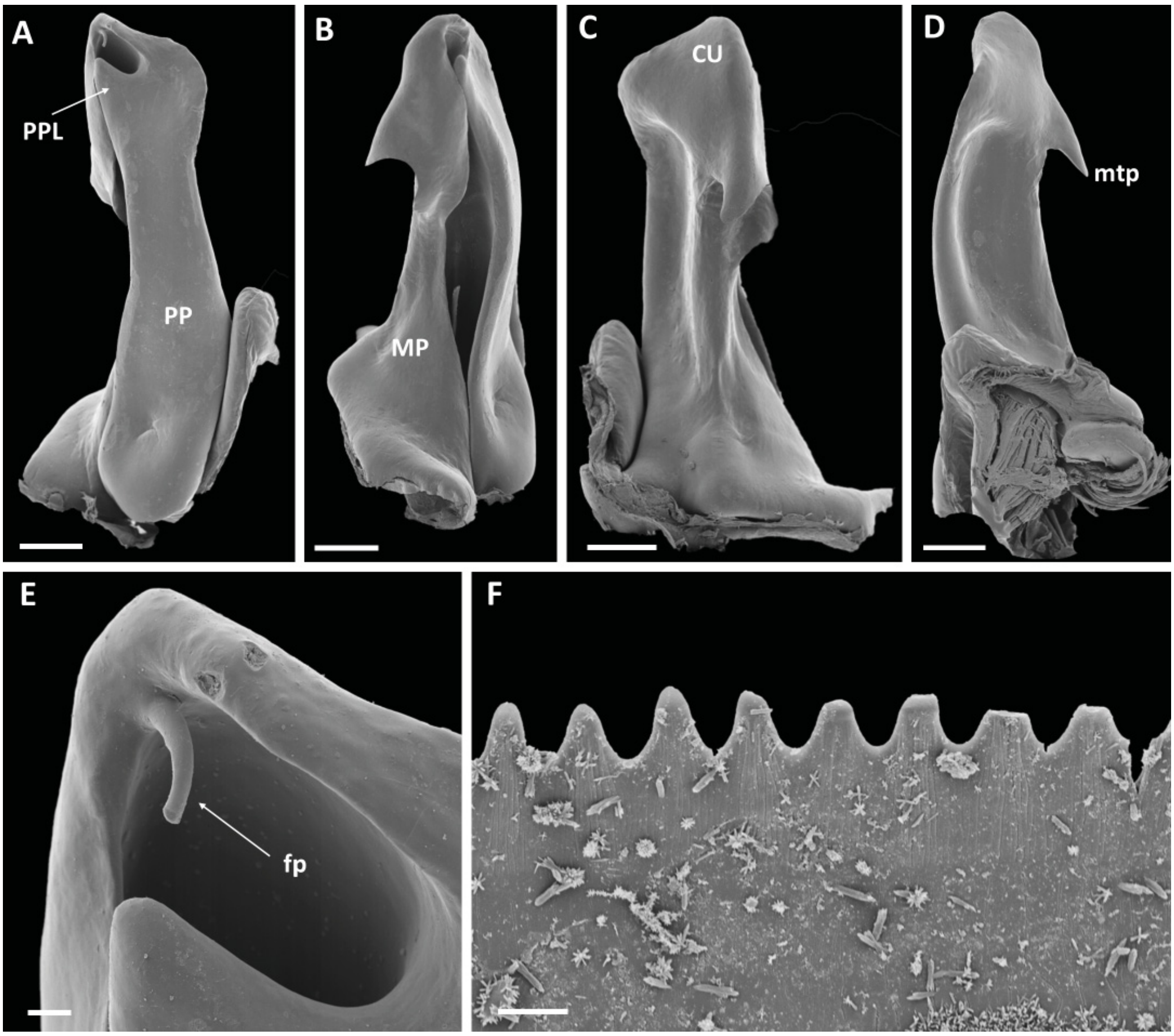

Fig. 15. *Calyptomastix ingemanni* sp. nov., holotype, ♂ (NHMD 621715). **A–E**. Right gonopod coxa. A. Anterior view. B. Mesal view. C. Posterior view. D. Lateral view. E. Cucullus. **F**. Midbody dorsal imbus. Abbreviations: *CU* = cucullus; *fp* = fingerlike process; *MP* = metaplica; *mtp* = metaplical triangular process; *PP* = proplica; *PPL* = proplical lobe. Scale bars: A–D = 0.2 mm; E = 0.02 mm; F = 0.01 mm.

area. Solenomere (*SLM*) slender, simple, relatively short, all but completely hidden within telomere, tip fluted. Telomere (*TM*) in anterior and basal views (Fig 16B, D) appearing as a simple, oblong, distally expanded structure (in outline vaguely resembling the cartoon character Horace Horsecollar); in posterior, ventral, and mesal views (Fig. 16A, E, C) with several convoluted membranes, among which the tip of the solenomerite sticks out.

Distribution

Known only from the type locality in the North Pare Mts.

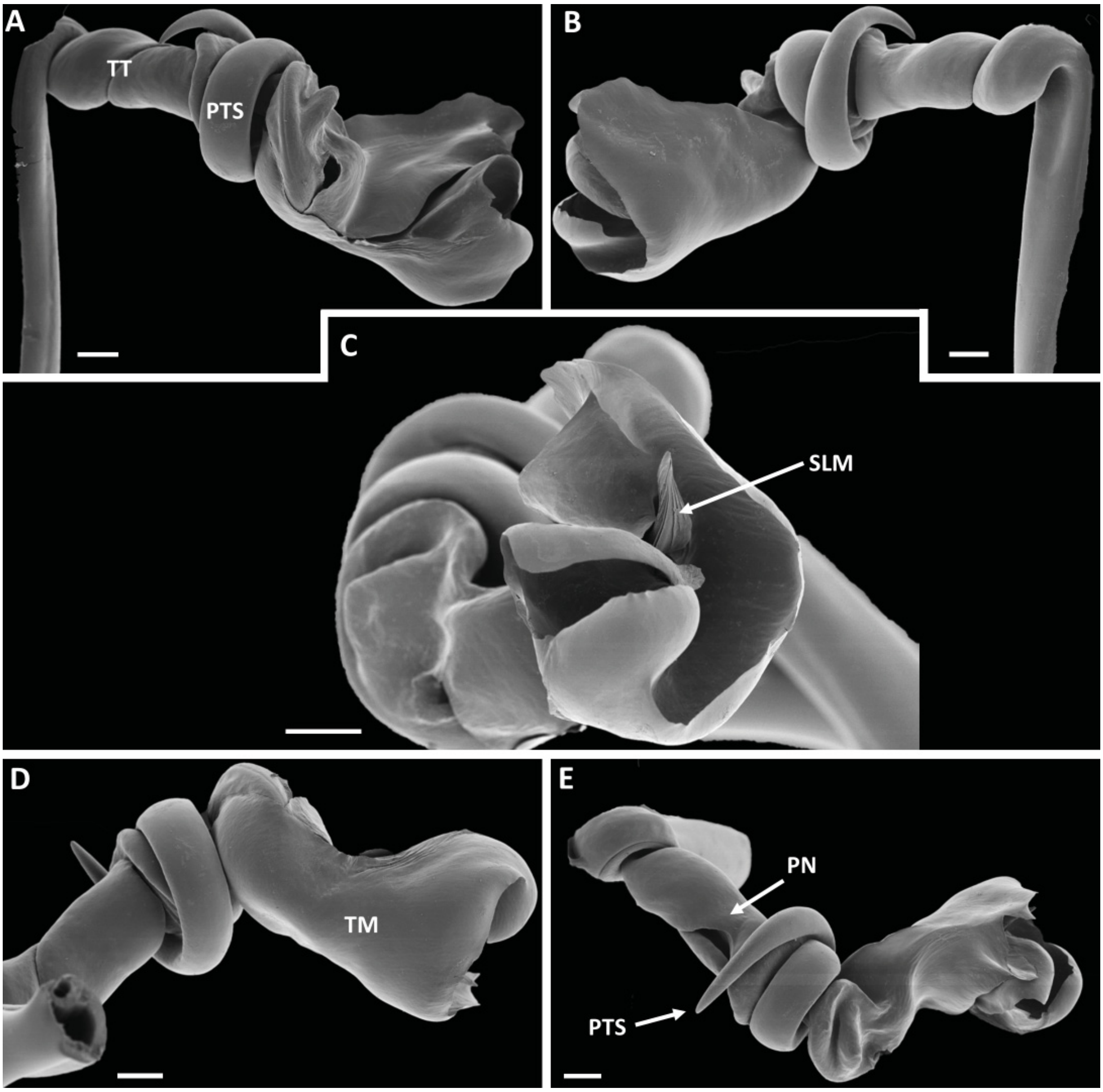

Fig. 16. *Calyptomastix ingemanni* sp. nov., holotype, ♂ (NHMD 621715), right gonopod telopodite. **A**. Posterior view. **B**. Anterior view. **C**. (Sub)mesal view. **D**. Basal (dorsal) view. **E**. Apical (ventral) view. Abbreviations: *PN* = post-torsal narrowing; *PTS* = post-torsal spine; *SLM* = solenomere; *TM* = telomere; *TT* = torsotope. Scale bars = 0.1 mm.

Remarks

The small fingerlike process (*fp*) facing the proplical lobe reminds of the condition in several species of the genus *Helicochetus* Attems, 1909, see, e.g., Enghoff (2016: figs 5–6). The telopodites of the two genera are, however, vastly different.

Calyptomastix vuasu sp. nov.
urn:lsid:zoobank.org:act:FD6512DA-4C6A-47F5-A8AC-A2EBF0B1C678
Figs 17–18

Diagnosis

Differs from other species of *Calyptomastix* by the combination of having a post-torsal spine (= postfemoral spine of Hoffman & Howell 2012) having the lateral coxal process in a subapical position and having a posteriad triangular process at the same level.

Etymology

The historical name used for the South Pare Mountains by its inhabitants. Noun in apposition.

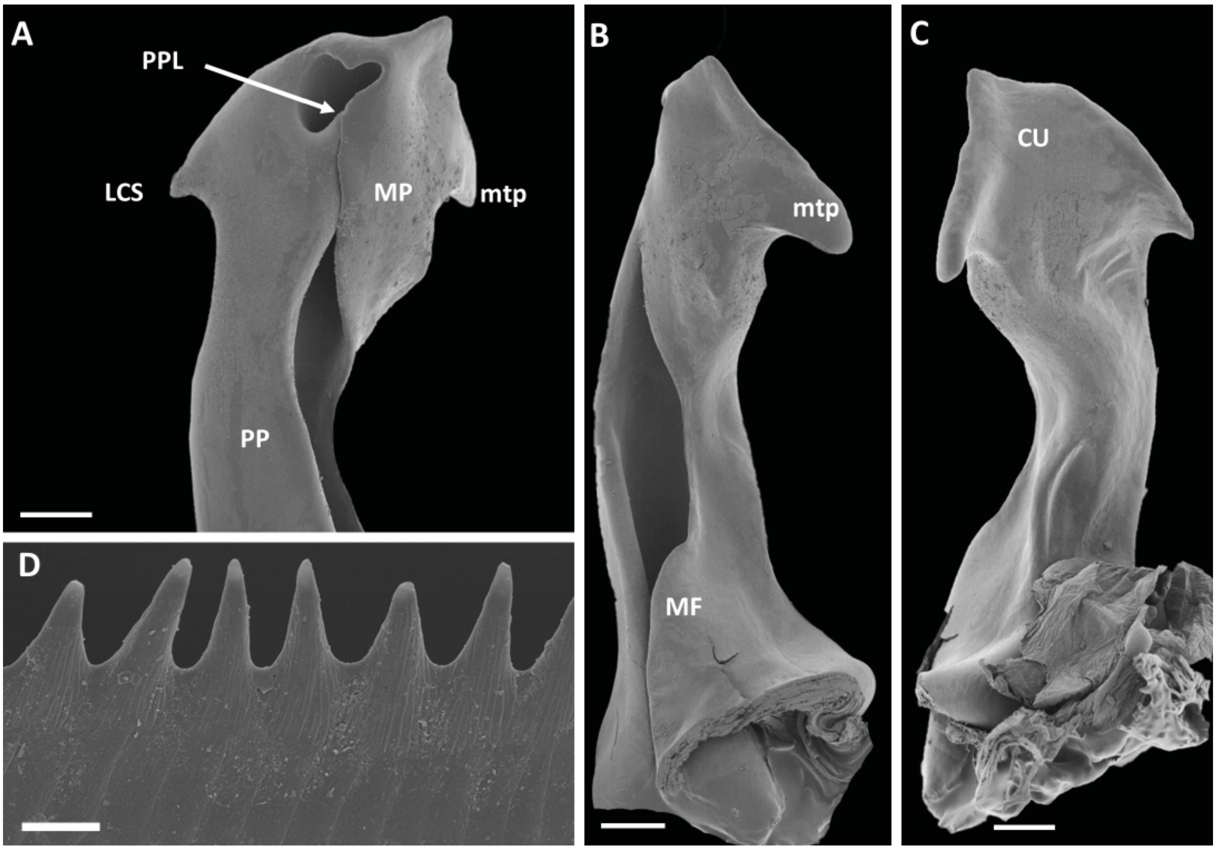

Fig. 17. *Calyptomastix vuasu* sp. nov., holotype, ♂ (NHMD 621717). **A–C**. Left gonopod coxa. A. Anterior view. B. Mesal view. C. Posterior view. **D**. Midbody dorsal limbus. Abbreviations: *CU* = cucullus; *LCS* = lateral coxal process; *MP* = metaplica; *mtp* = metaplical triangular process; *PP* = proplica; *PPL* = proplical lobe. Scale bars: A–C = 0.2 mm; D = 0.01 mm.

Material examined (total 1 ♂)

Holotype

TANZANIA• ♂ (head and rings 1–6 missing); Kilimanjaro Region, Same District, South Pare Mountains, Chome FR; 8 May 2011; S. Frederiksen leg.; NHMD 621717.

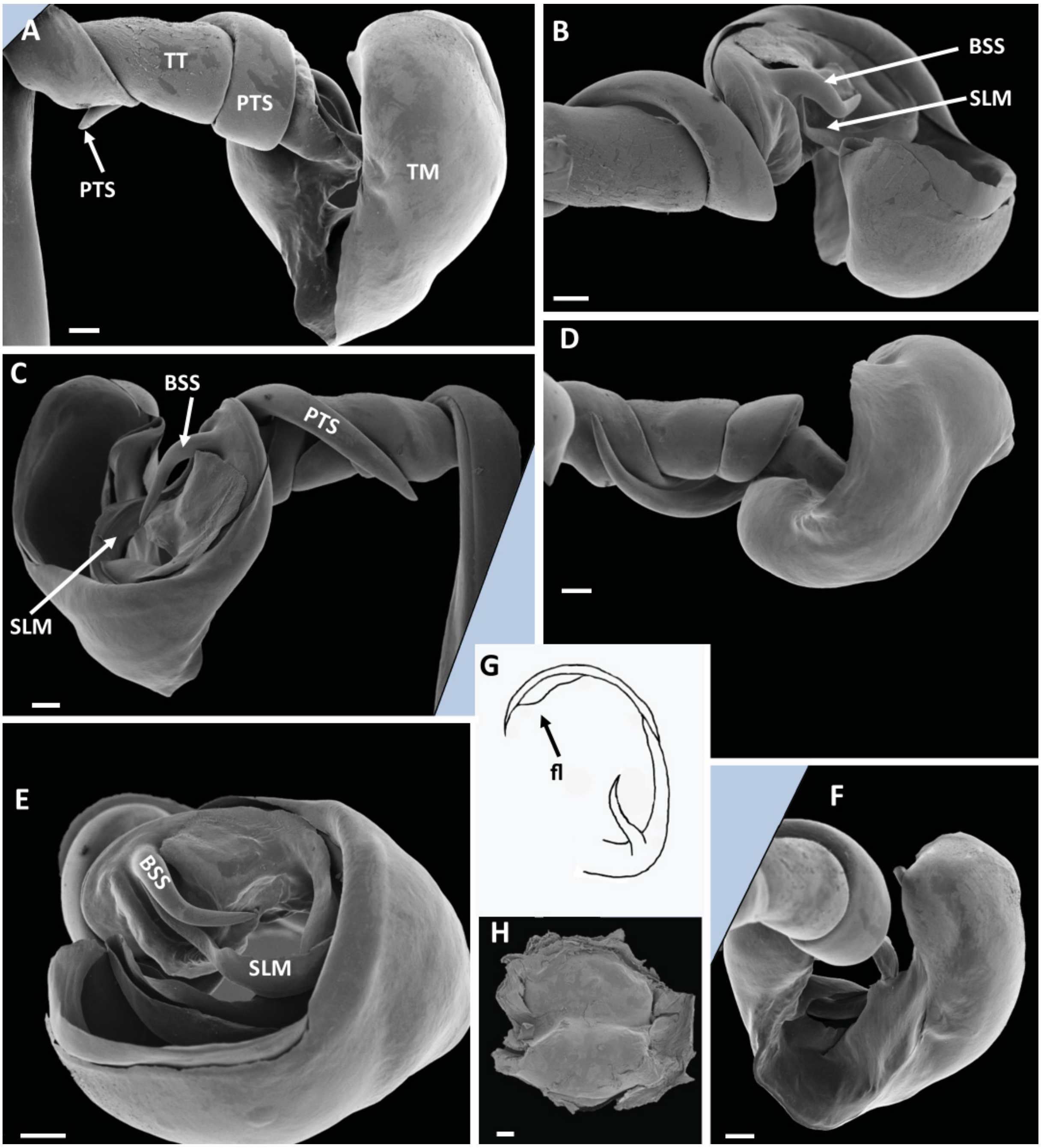

Fig. 18. *Calyptomastix vuasu* sp. nov., holotype, ♂ (NHMD 621717). **A–F**. Left gonopod telopodite. A. Anterior view. B. Ventral view. C. Posterior view. D. Dorsal view. F. Mesal view. **G**. Right gonopod solenomere. **H**. Sternum 9. Abbreviations: *BSS* = basal solenomeral spine; *fl* = flange; *PTS* = post-torsal spine; *SLM* = solenomere; *TM* = telomere; *TT* = torsotope. Light blue areas obscured covered by mounting tape. Scale bars: A–F, H = 0.1 mm; G not to scale.

Description (male)

Size. Diameter 3.4 mm, 74 podous rings, no apodous rings in front of telson.

Colour. Overall greyish brown, posterior part of metazonites amber, a clear yellow dorsal stripe. Telson dark brown, legs yellow.

Anal valves. Only a tiny indication of a dorsal spine, no ventral spine or 'corner'; margins not raised, each with 3 sessile setae.

Limbus (Fig. 17D). With pointed-triangular, striate lobes, ca twice as long as broad.

Legs. Postfemoral and tibial pads well-developed on anterior post-gonopodal legs, diminishing and disappearing towars posterior.

Sternum 9. (Fig. 18H). Subquadratic, with a transverse depression slightly below middle.

Gonopod coxa (Fig. 17A–C). Proplica (*PP*) slender, almost parallel-sided, simple, with a relatively large proplical lobe (*PPL*) distally and a lateral short, triangular process (*LCS*) ca at same level. Metaplica (*MP*) simple, with a poorly demarcated basal metaplical flange (MF), subdistally with a posteriad, rounded triangular process (*mtp*). Cucullus (*CU*) triangular, no fingerlike process facing proplical lobe.

Gonopod telopodite (Fig. 18A–G). Arculus 90°. Torsotope (*TT*) extended, post-torsal narrowing obscured by long, stout post-torsal spine (*PTS*) making more than a full turn around post-torsal area. Solenomere (*SLM*) shorter than, and nested in cavity of telomere, taeniate, pointed, with stout basal solenomeral spine (BSS) and a subdistal flange (*fl*) on posterior side. Telomere (*TM*) relatively simple, curved podshaped, forming a regular 180° curve; external surface smooth, internally with several irregular membranes.

Distribution

Known only from the type locality in the South Pare Mts.

Calyptomastix xystopygoides sp. nov.
urn:lsid:zoobank.org:act:0F641CA1-EB6E-4EB4-82A4-0BE936074D2E
Figs 19–20

Diagnosis

Differs from other species of *Calyptomastix* by having the post-torsal spine straight and directed laterad, by having the telomere more slender and curved in a *Xystopyge*-like way, and having a spinelike lobe on the subdistal ectal surface of the telomere.

Etymology

Named after the superficial gonopodal similarity with species of the genus *Xystopyge*. Adjective.

Material examined (total 1 ♂)

Holotype

TANZANIA • ♂; Tanga Region, East Usambara Mts, Amani; 5°5.7′ S, 38°38′ E; 950 m a.s.l.; 27 Oct.–9 Nov. 1995; C.E. Griswold, N. Scharff and D. Ubick leg.; forest; NHMD 621718.

Description

Size. Length 45 mm. Diameter 2.5 mm. 63 podous rings, no apodous rings in front of telson.

Colour. After 26 years in alcohol faded to light grey with irregular black blotches; posterior parts of metazonites amber; with faint traces of a pale mid-dorsal stripe.

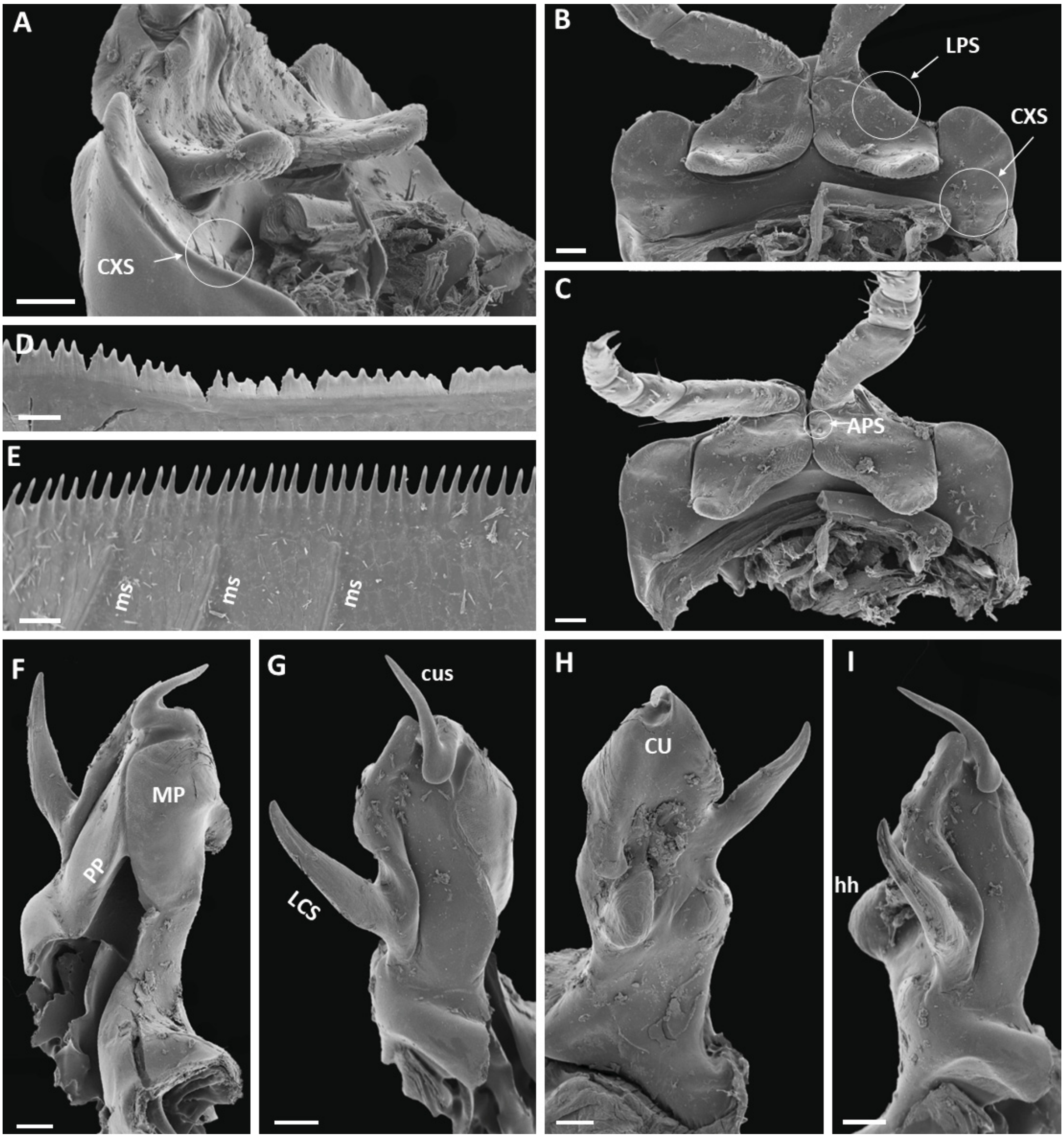

Fig. 19. *Calyptomastix xystopygoides* sp. nov., holotype, ♂ (NHMD 621718). **A–C**. First pair of legs. A. Sublateral view. B. Anterior view. C. Ventral view. **D**. Midbody dorsal limbus (worn). **E**. Midbody ventrolateral limbus. **F–I**. Left gonopod coxa. F. Anterior view. G. Anterior-lateral view. H. Posterior-mesal view. I. lateral view. Abbreviations: *APS*=mesapical prefemoral setae; *CU*=cucullus; *cus*=cucullar spine; *CXS*=coxosternal setae; *hh*=hemisphaerical hump; LCS= lateral coxal spine; *LPS*=lateral prefemoral setae; *MP*=metaplica; *ms*=metazonital striae; *PP*=proplica, Scale bars: A–C, F–I=0.1 mm; D–E=0.02 mm.

Supralabral setae. Not countable due to damage.

Mandibular stipes. With large disto-ventral lobe, distal margin shallowly concave.

Anal valves. Each with a very small dorsal spine, an even smaller ventral one and three setae on slightly raised margins.

Limbus (Fig. 19D–E). Dorsal and lateral limbus worn, appearing as with rounded-triangular lobes. Ventrolateral limbus with very slender, spinelike lobes. (There may be considerable differences in limbus structure between the dorsal, lateral and ventrolateral parts of a body ring, see Schmidt 1962: figs 1–2.)

Legs. With small postfemoral and tibial pads on anterior postgonopodal legs; pads decreasing in size and absent from midbody backward.

First pair of legs (Fig. 19A–C). Prefemoral lobes rounded-triangular in ventral view. Four coxosternal setae (*CXS*) close to lateral margin of coxosternum, well separated from prefemoral lobes. Prefemora with one or two short mesapical setae (*APS*) and four to five lateral setae (*LPS*).

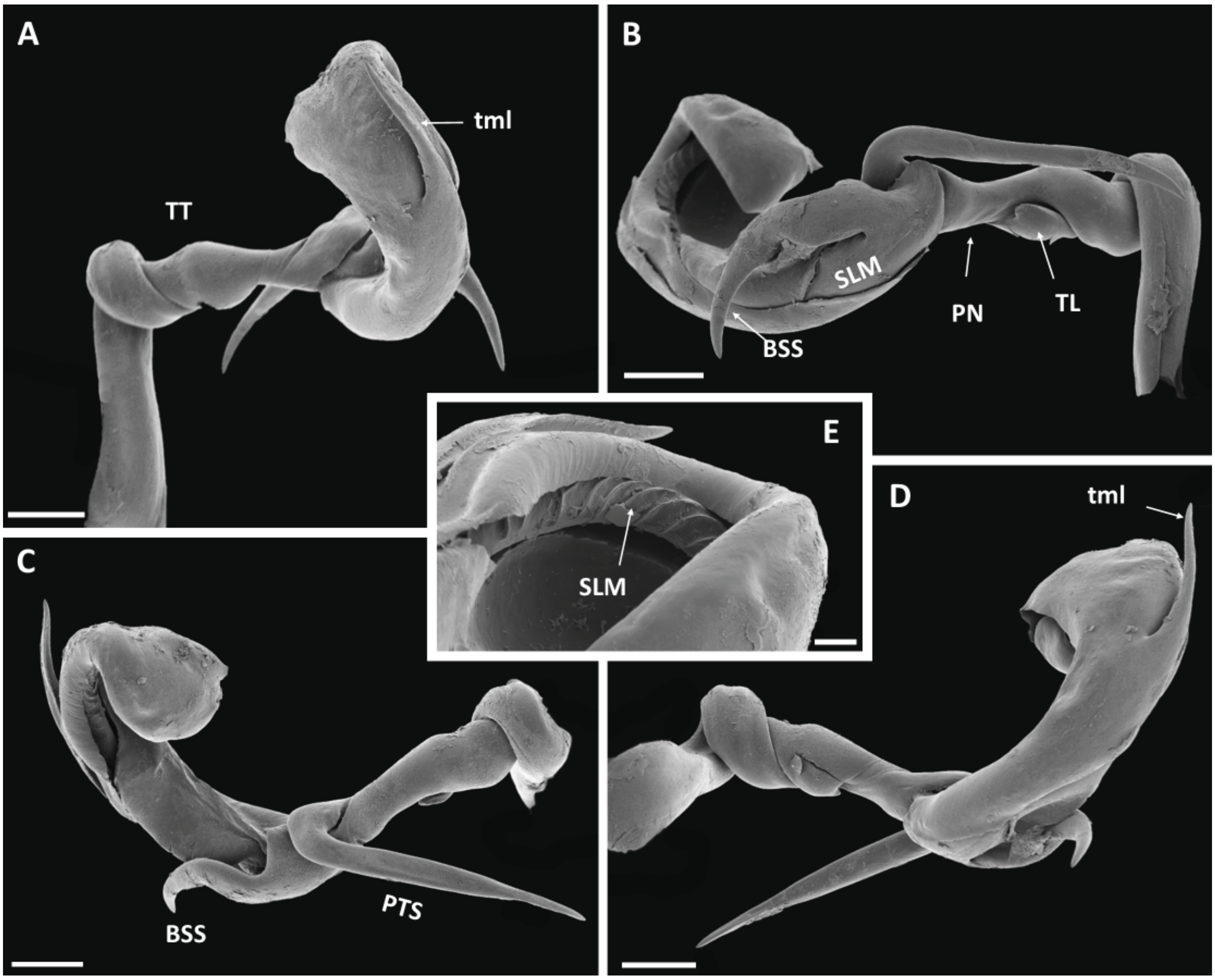

Fig. 20. *Calyptomastix xystopygoides* sp. nov., holotype, ♂ (NHMD 621718), left gonopod telopodite. **A**. anterior-mesal view. **B**. Posterior view. **C**. Ventral view. **D**. Dorsal view. **E**. Detail of telomere and ridged solenomere. Abbreviations: *BSS* = basal solenomeral spine; *PN* = post-torsal narrowing; *SLM* = solenomere; *TL* = torsotope lobe; *tml* = telomeral spinelike lobe; *TT* = torsotope; *PTS* = post-torsal spine. Scale bars: A–D = 0.2 mm; E = 0.05 mm.

Sternum 9. Lost during dissection.

Gonopod coxa (Fig. 19F–I). Rather compact, with a large lateral spine (*LCS*) directed obliquely apicad. Distal part of proplica (*PP*) overlaid by rounded-rectangular anterior lobe of metaplica (*MP*), proplical lobe hence not visible. Cucullus (*CU*) very small, carrying a long, slender, overall straight but basally curved spine (*cus*) directed obliquely posteriad. Posterior surface with a hemisphaerical hump (*hh*).

Gonopod telopodite (Fig. 20). Arculus 90°. Torsotope (*TT*) extended, with semicircular torsotope lobe (*TL*). Post-torsal narrowing (*PN*) moderately pronounced. A very long, straight post-torsal spine directed laterad, i.e., towards arculus. Solenomere (SLM) with a stout, basal spine (*BBS*); apart from basalmost part slender, whiplike, almost completely hidden inside telomere, only a small, obliquely ridged part of the distal half visible (Fig. 20E), tip (not visible on Fig. 20) simple, pointed. Telomere (*TM*) slender, tightly rolled around solenomere and in addition forming a regular, almost 180° curve; distally expanded into sub-rectangular sheet, subdistall with a spinelike lobe (*tml*) originating from ectal surface.

Calyptomastix zoltani sp. nov.
urn:lsid:zoobank.org:act:0D11205E-FB5A-4B27-8EE7-84695DA3B932
Figs 21–23

Diagnosis

Differs from other species of *Calyptomastix* by the combination of having a post-torsal spine (= postfemoral spine of Hoffman & Howell 2012) and having the lateral metaplical process reduced to a short, blunt bump.

Etymology

After Zoltán Korsós, Hungarian myriapodologist, former resident of 'Hotel Dolichoiulus'.

Material examined (total 3 ♂♂, 1 ♀)

Holotype

TANZANIA• ♂; West Usambara Mts, Mazumbai FR, loc. V; Nov. 1990; T. Andersen leg.; pitfall trap; NHMD 621719.

Paratypes

TANZANIA • 1 ♂ (right gonopod lost); E Usambara Mts, Amani, Monga; ca 1000 m a.s.l.; 5 Aug. 1974; I.B. and H. Enghoff leg.; NHMD 621720 • 1 ♂; West Usambara Mountains, Mazumbai; 1600 m a.s.l.; 1 Aug. 1980; M. Stoltze and N. Scharff leg.; in log; NHMD 621721.

Referred non-type material

TANZANIA • 1 ♀; West Usambara Mountains, Mazumbai; 1600 m a.s.l.; 1 Aug. 1980; M. Stoltze and N. Scharff leg.; in log; NHMD 621722.

Description (male)

Size. Length 33–36 mm, diameter 1.7–2.0 mm, 57–62 podous rings, no apodous rings in front of telson.

Colour. After 30–43 years in alcohol faded, but with a broad dorsal pale stripe.

Supralabral setae. 5–6.

Mandibular stipes. Subquadratic, distal margin very shallowly concave.

Anal valves. With small dorsal spine, and marked ventral 'corner'; margins raised, each with three(-four) setae on poorly developed ravelins, ravelins slightly protruding in lateral view. Central seta of right valve duplicated.

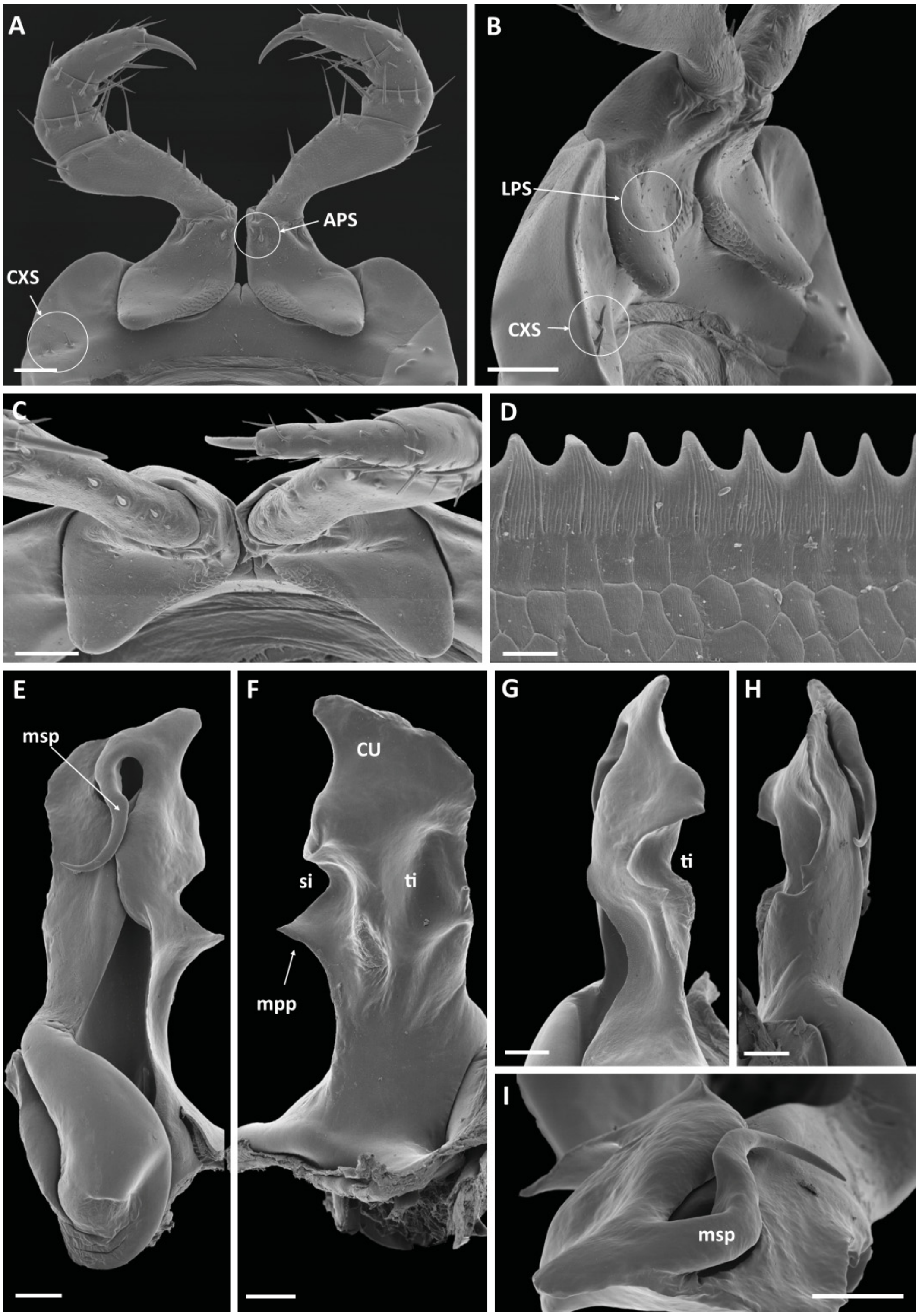

Fig. 21. *Calyptomastix zoltani* sp. nov., holotype, ♂ (NHMD 621719). **A–C**. First pair of legs. A. Anterior view. B. Sublateral view. C. Ventral view. **D**. Midbody dorsal limbus. **E–I**. Left gonopod coxa. E. Anterior view. F. Posterior view. G. Mesal view. H. Lateral view. I. Subventral view. Abbreviations: *APS* = mesapical prefemoral setae; *CU* = cucullus; *CXS* = coxosternal setae; *LPS* = lateral prefemoral setae; *mpp* = mesal proplical process; *msp* = metaplical spinelike process; *si* = mesal sinus; *ti* = transverse impression. Scale bars: A–C, E–I = 0.1 mm; D = 0.01 mm.

Limbus (Fig. 21D). Margin with triangular, weakly striate lobes, one stronger ridge running into each lobe.

Legs. Smallest specimen (from Amani) without ventral pads, specimens from Mazumbai with poorly developed ventral pads on prefemur and tibia of anterior postgonopodal legs.

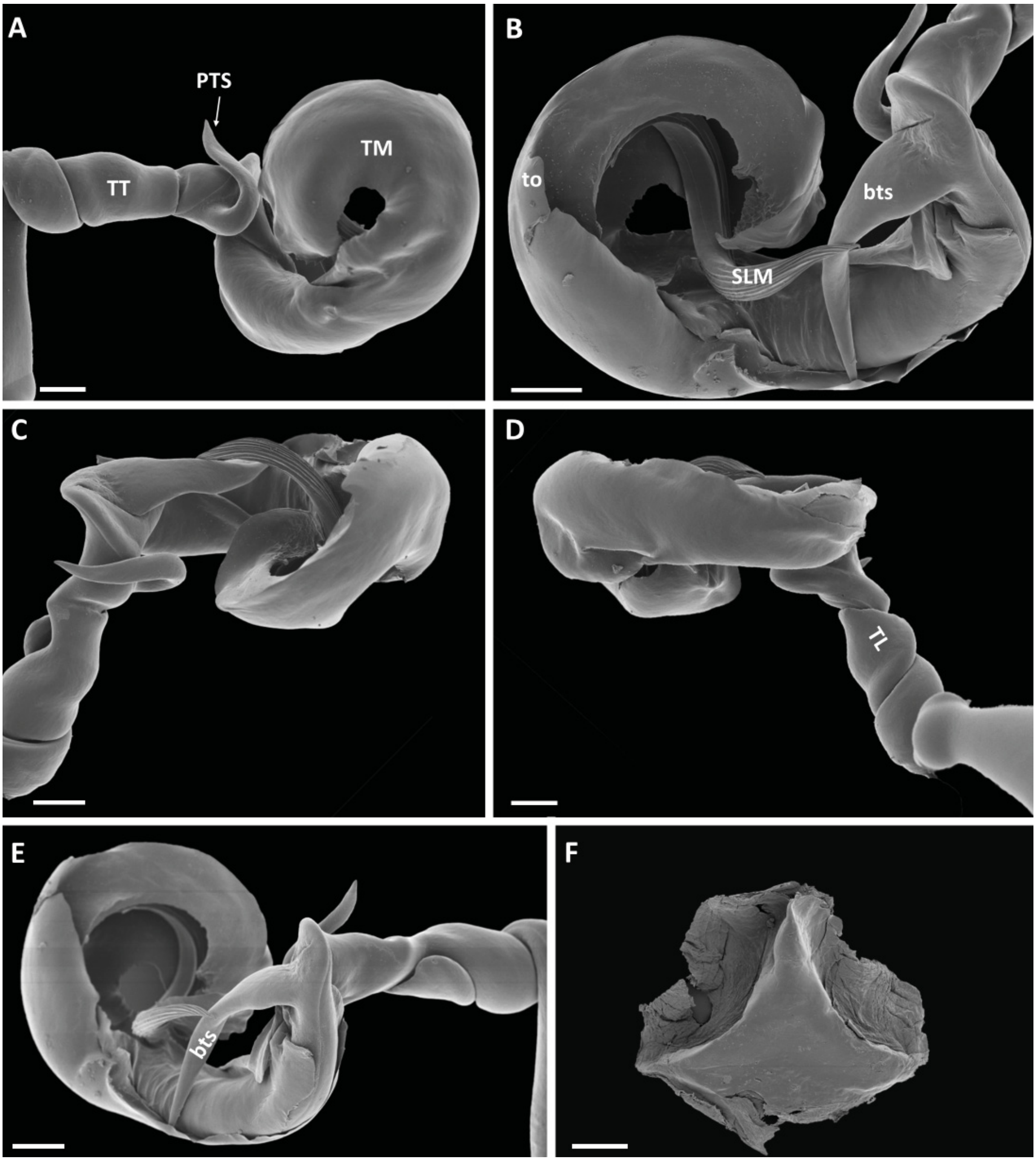

Fig. 22. *Calyptomastix zoltani* sp. nov., holotype, ♂ (NHMD 621719). **A–E**. Left gonopod telpodite. A. Anterior view. B, E. Posterior view. C. Ventral view. D. Dorsal view. **F**. Sternum 9. Abbreviations: *bts* = basal telomeral spine; *PTS* = post-torsal spine; *SLM* = solenomere; *TL* = torsotope lobe; *TM* = telomere; *to* = tongue-like lobe; *TT* = torsotope. Scale bars = 0.1 mm.

First pair of legs (Fig. 21A–C). Prefemoral lobes rounded-triangular in ventral view. Two coxosternal setae (*CXS*) close to lateral margin of coxosternum, well separated from prefemoral lobes. Prefemora with two short mesapical setae (*APS*) and a few, scattered lateral setae (*LPS*).

Sternum 9 (Fig. 22F). Triangular, basal margin convex, lateral margins concave.

Gonopod coxa (Figs 21E–I, 23A–C). Holotype (Fig. 21E–I): proplical lobe hidden behind long, sigmoid metaplical spinelike process (*msp*); cucullus (*CU*) drawn out into rounded process; mesal margin with triangular process (*mpp*) ca at midlength, process forming base of subsemicircular sinus (*si*); posterior surface with broad transverse impression (*ti*). Paratype from Amani (Fig. 23A–C): metaplical spinelike process (*msp*) more strongly curved, fishhook-shaped; mesal sinus (*si*) delimited distally by long rounded lobe (*rl*); transverse impression (*ti*) deeper than in holotype.

Gonopod telopodite (Figs 22A–E, 23). Holotype (Fig. 22A–E): arculus 90º. Torsotope (*TT*) extended, with a triangular lobe (*TL*) fitting into torsion on posterior side. A stout, curved post-torsal spine (*PTS*)

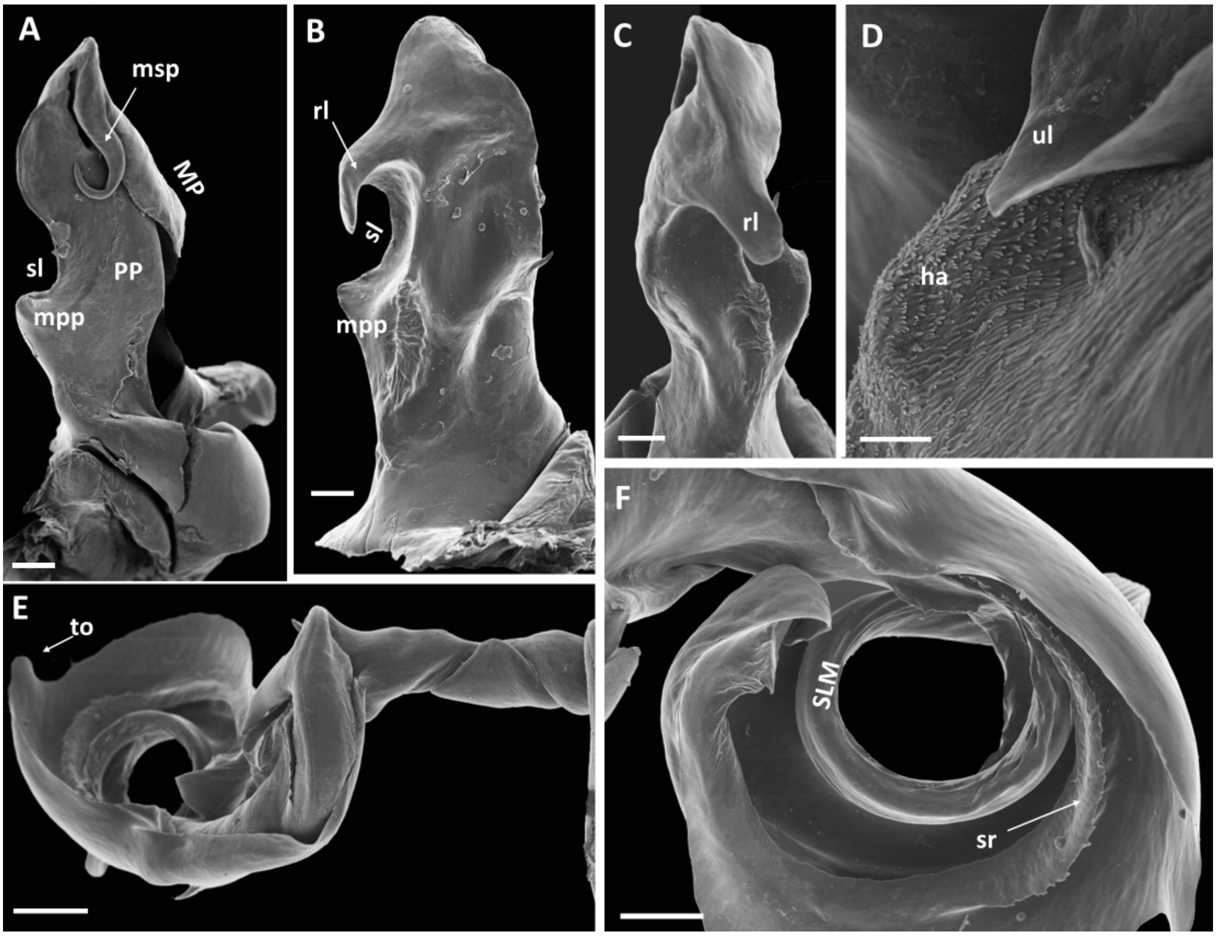

Fig. 23. *Calyptomastix zoltani* sp. nov., paratype, ♂ from Amani (NHMD 621720). **A–C**. Left gonopod coxa. A. Lateral view. B. Subposterior view. C. Mesal view. **D–F**. Left gonopod telopodite. D. Detail from basal outer surface of telomere. E. Posterior view. F. Distal part of telomere, with part of solenomere, posterior-apical view. Abbreviations: *ha* = 'hairy' area; *MP* = metaplica; *mpp* = mesal proplical process; *msp* = metaplical spinelike process; *PP* = proplica; *si* = mesal sinus; *SLM* = solenomere; *sr* = serrated ridge; *to* = tongue-like lobe; *ul* = slightly undulate lamella. Scale bars: A–B, D–E = 0.05 mm; C = 0.1 mm.

at end of torsotope, post-torsal narrowing not distinguishable. Solenomere (*SLM*) whiplike, concealed within telomere except for longitudinally striate tip. Telomere (*TM*) taeniate, forming almost complete circle, with a stout, curved basal spine (*bts*) arising at right angles with surface; margins of telomere smooth, a tongue-like lobe (*to*) near mesal extremity. Paratype from Amani (Fig. 23): tongue-like lobe (*to*) larger; with a longtitudinal serrated ridge (*sr*) along part of inner curvature; basal (dorsal) surface of outer curvature proximally with a 'hairy' area (*ha*) bordering on slightly undulate lamella (*ul*) (the two latter characters were unobservable in the holotype).

Descriptive notes (female)

Size. Length 36 mm, diameter 2.2 mm, 58 podous rings, no apodous rings in front of telson. Conspecificity with males indicated by general appearance including shape of limbus lobes.

Distribution

Known from Mazumbai in the West Usambaras and Amani in the East Usambaras. See Doody *et al.* (2001) for information on Amani, and Redhead (1981) for information on Mazumbai.

Genus ***Chaleponcus*** Attems, 1914

Type species

Chaleponcus limbatus Attems, 1914 (Namibia), by subsequent designation of Kraus (1960).

Other included species

Fourty-seven, including five species described as new here, see Kraus (1960, 1966), Frederiksen (2013a), Vohland & Hamer (2013), Enghoff (2014, 2017).

Diagnosis (modified from Enghoff 2014)

Differs from other genera of Prionopetalini by the combination of the following characters: proplica and metaplica of gonopod coxa coming together apically and forming a hoodlike cucullus; solenomere long and whiplike, at least twice as long as telomere if stretched out, not spiraled terminally; solenomere without accessory branches or outgrowths (except for sometimes at the very base); telomere proximally folded like a tube or a trough and distally dividing into two or three diverging lamellae.

Remarks

About half of the described species occur in southern Africa as far north as Zimbabwe and southern Mozambique (Enghoff 2014). Further north, the genus is represented in the Eastern Arc by *C. parensis* Frederiksen, 2013, five new species described here and, notably, by the the *Chaleponcus dabagaensis* group with 21 species in the Udzungwa Mts and *C. altirungwensis* Enghoff, 2017 from Mt. Rungwe (Enghoff 2014, 2017).

Chaleponcus schioetzae sp. nov. and *C. soerensenae* sp. nov., both from the Uluguru Mts, are very similar, sharing among other things a large metaplical palette; they could be placed in a separate species group, the C. *schioetzae* group, see remarks under *C. schioetzae* sp. nov. below.

Chaleponcus altirungwensis Enghoff, 2017

Previous Eastern Arc records: Mount Rungwe SW, 1900 m (Enghoff 2017).

General distribution: Mt. Rungwe endemic.

Chaleponcus jolantae sp. nov.

urn:lsid:zoobank.org:act:2F74BD3E-030D-49B2-B860-48758902BCAD

Figs 24–25

Diagnosis

Differs from all congeners in the shape of the metaplical spinelike process (*msp*) which in this species forms a complete circle and has a basal rounded lobe.

Etymology

After Jolanta Wytwer, Polish myriapodologist, former resident of 'Hotel Dolichoiulus'.

Material examined (total 1 ♂)

Holotype

TANZANIA • ♂; Tanga, West Usambara Mts, Mazumbai; 4°49′ S, 38°30′ E; 1400–1800 m a.s.l.; 10–20 Nov. 1995; C. Griswold, N. Scharff and D. Ubick leg.; forest; NHMD 621723.

Description (male)

Size. Length 50 mm, diameter 2.7 mm, 66 podous rings, no apodous rings in front of telson.

Colour. After 23 years in alcohol head yellowish with dark brown transverse band; antennae brown. Collum light marbled brown with brown margins. Body rings with thin, black, slightly wavy longitudinal line at ozopore level. Metazonites with dark brown zone in front of amber posteriormost zone. Rest of rings ventral to lateral line brownish yellow, dorsal to line greyish, but with a light longitudinal middorsal stripe. Legs yellowish. Prenal ring dark brown, but with a contrasting light yellowish dorsal band which widens towards posterior; anal valves light yellowish except for small dark bron anterior area.

Supralabral setae. 5.

Mandibular stipes. With triangular lobe, distal margin bilobed.

Anal valves. With small dorsal spine, no ventral spine or corner; margins barely raised, setae not on ravelins.

Limbus (Fig. 25F). With low, rounded lobes (worn?).

Legs. With large ventral pads on postfemora and tibiae from leg-pair 6, pads diminishing towards posterior and eventually disappearing.

First pair of legs (Fig. 24A–C). Prefemoral lobes rounded-triangular in ventral view. Four coxosternal setae (*CXS*) close to lateral margin of coxosternum, well separated from prefemoral lobes. Prefemora with two short mesapical setae (*APS*) and a field of peglike sensilla (*LPS*) extending to tip of prefemoral lobes.

Sternum 9 (Fig. 25E). Triangular-trapezoid.

Gonopod coxa (Fig. 24D–F). At ca ⅔ of its length with a large triangular posteriad process (*cpp*). Cucullus (*CU*) a rounded-triangular palette. Proplica (*PP*) slender, in anterior view with parallel margins, proplical lobe hidden behind metaplical process (*msp*). Metaplica (*MP*) with a pigtail-like basad process (*msp*), base of *msp* with a rounded lobe, apparently duplicating proplical lobe; metaplical flange (*MF*) with a well-differentiated basal process (*MFP*).

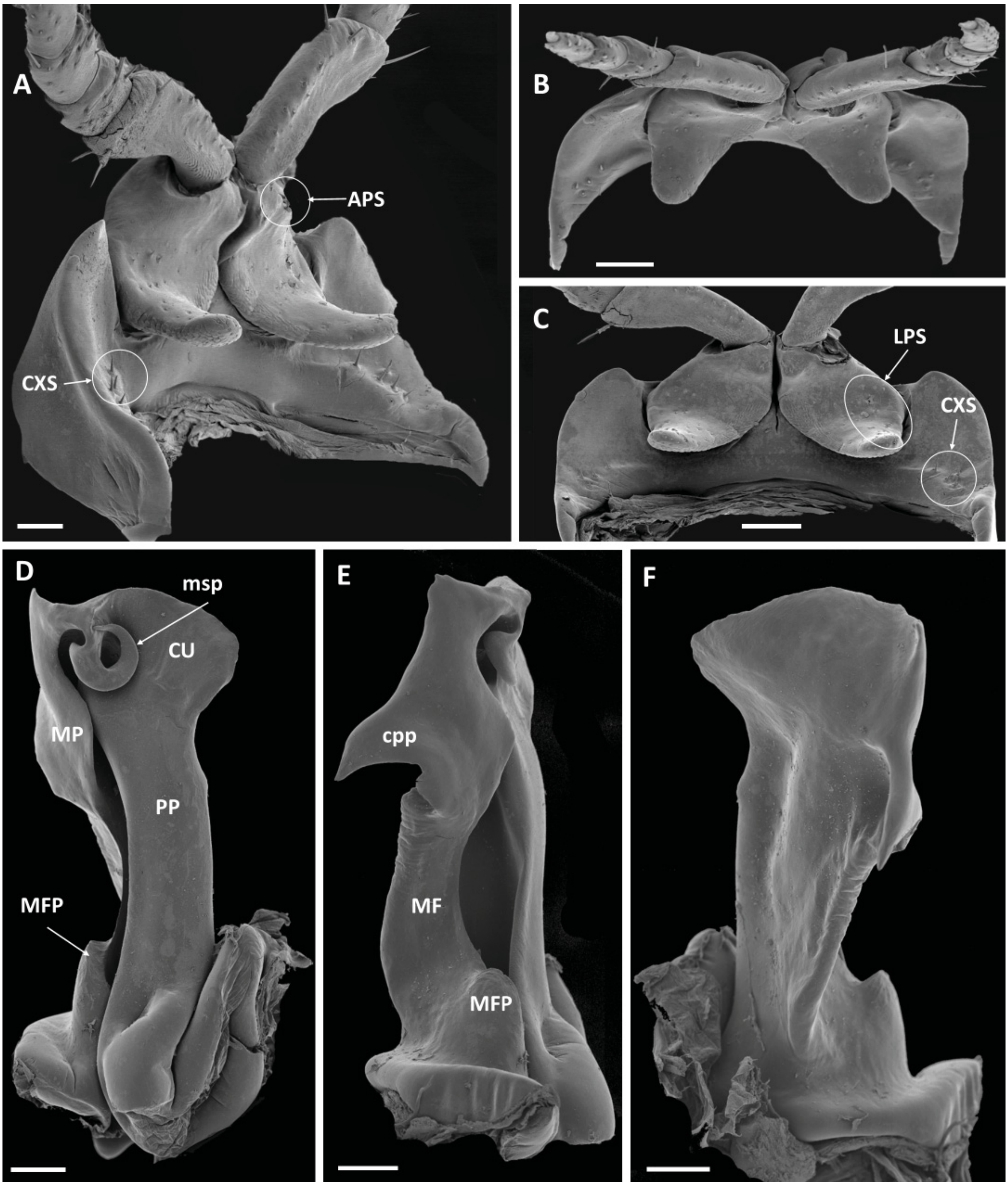

Fig. 24. *Chaleponcus jolantae* sp. nov., holotype, ♂ (NHMD 6217123). **A–C**. First pair of legs. A. Sublateral view. B. Ventral view. C. Anterior view. **D–F**. Right gonopod coxa. D. Anterior view. E. Mesal view. F. Posterior view. Abbreviations: *APS* = mesapical prefemoral setae; *cpp* = coxal posteriad process; *CU* = cucullus; *CXS* = coxosternal setae; *LPS* = lateral prefemoral setae; *MF* = metaplical flange; *MFP* = metaplical flange process; *msp* = metaplical spinelike process; *PP* = proplica. Scale bars: A = 0.1 mm; B–F = 0.2 mm.

Gonopod telopodite (Fig. 25A–D). Arculus 90°. Torsotope (*TT*) moderately extended, with a blunt lobe (*TL*) fitting into torsion on posterior side. Postotorsal narrowing (*PN*) not very procounced, no post-torsal spine. Solenomere (*SLM*) whiplike, apically taeniate, pointed, much longer than telomere, without outgrowths except for stout, curved spine (*BSS*) at base. Telomere (*TM*) rather compact, with a basal lamella (*btl*) sheathing base of solenomere, apically with several irregular lamellae (*tml*); with two

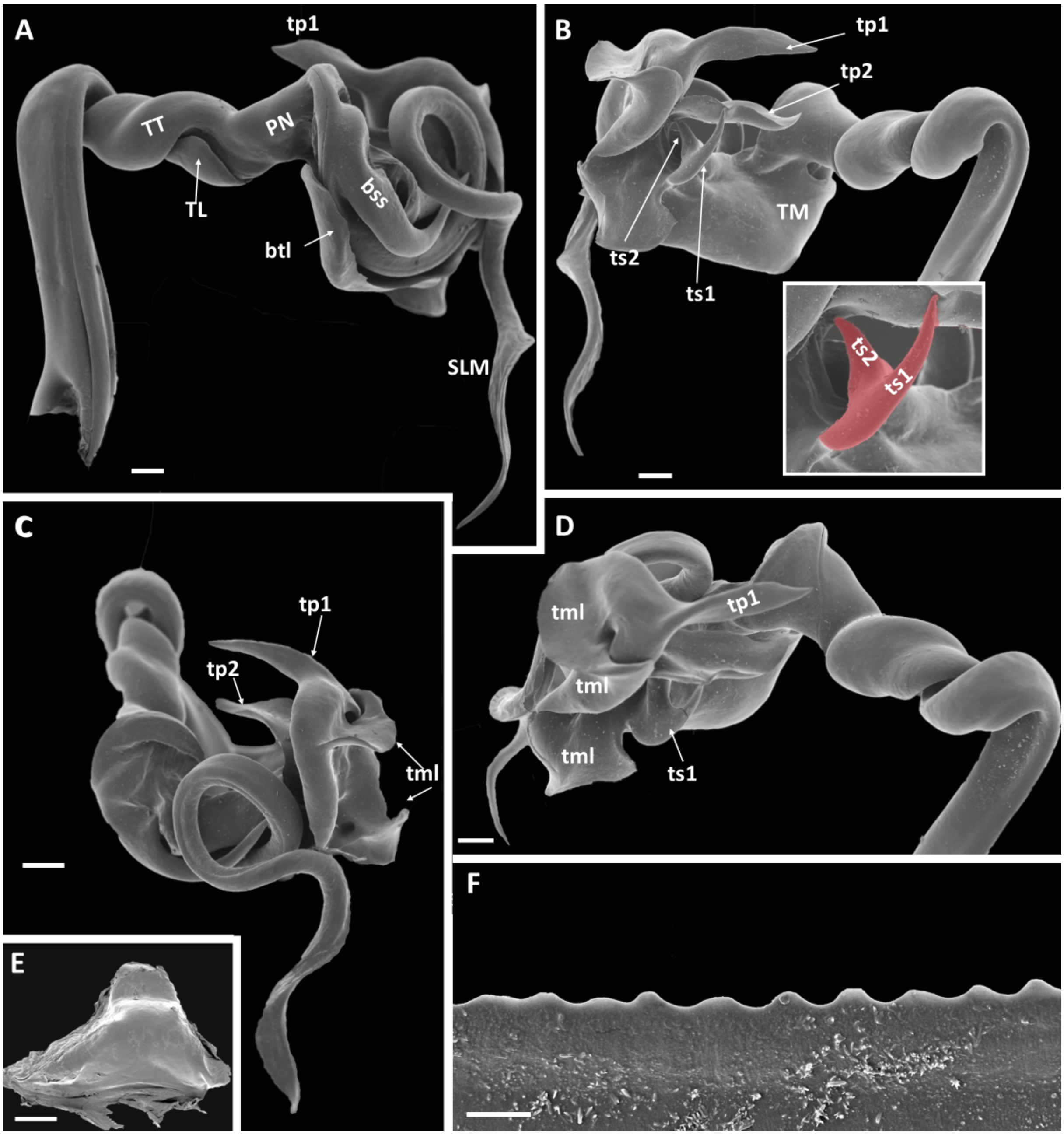

Fig. 25. *Chaleponcus jolantae* sp. nov., holotype, ♂ (NHMD 621723). **A–D**. Right gonopod telopodite. A. Posterior view. B. Anterior view (inset: telomeral spines enlarged and highlighted). C. Submesal view, basomere erased. D. Lateroanterior view. **E**. Sternum 9. **F**. Midbody dorsal limbus. Abbreviations: *btl*=basal telomeral lamella; *PN*=post-torsal narrowing; *SLM*=solenomere; *TL*=torsotope lobe; *TM*=telomere; *tp1*, *tp2*=telomeral processes; *ts1*, *ts2*=telomeral spines; *TT*=torsotope. Scale bars: A–D=0.1 mm; E=0.2 mm; F=0.01 mm.

lamellar processes (*tp1*, *tp2*) directed laterad, i.e., towards coxa, and two dark, curved spines (*ts1*, *ts2*) arising from inner curvature of telomere.

Distribution and habitat

Known only from the type locality, Mazumbai in West Usambara Mts. See Redhead (1981) for information in this area.

Chaleponcus nesrineae sp. nov.

urn:lsid:zoobank.org:act:CC0353E8-0641-40FE-951E-6A7F74FB0268

Figs 26–28

Diagnosis

Differs from other species of *Chaleponcus* by the combination of a coarsely serrate distal telomeral lamella (*tml3*) and a limbus without lobes.

Etymology

After Nesrine Akkari, Tunisian myriapodologist, former resident of 'Hotel Dolichoiulus'.

Material examined (total 1 ♂, 1 ♀)

Holotype

TANZANIA • ♂; Morogoro region and district, near Maskati mission, west side of Nguru Mountains, 20 km west of Turisani; 1900 m a.s.l.; 1986?; Jan Kielland leg.; moist evergreen forest; VMNH110628.

Referred non-type specimen

TANZANIA • 1 ♀; same collection data as for holotype; VMNH110629.

Description (male)

Size. Length 44 mm, diameter 2.8 mm, 50 podous rings, no apodous rings in front of telson.

Colour. After ?32 years in alcohol faded, all straw yellow.

Supralabral setae. 4.

Mandibular stipes. Distal margin bilobed.

Anal valves. Anval valves with well-developed dorsal spine, no ventral spine or 'corner'; margin raised, 4–5 sessile setae per valve, (exceptional, but maybe teratological since one valve is slightly damaged; the female in the sample has 3 setae per valve as normal).

Limbus (Fig. 26I). Not lobed, marginal cells striate, their free margin with minute (< 0.001 mm) spinules.

Legs. Ventral pads on postfemur and tibia from leg-pair 4 backward, diminishing and eventually disappearing towards hind end.

First pair of legs (Fig. 26A–C). Prefemoral lobes relatively long, slender-triangular in ventral view. Four to five coxosternal setae (*CXS*) of different length close to lateral margin of coxosternum, well separated from prefemoral lobes. Prefemora with two short mesapical setae (*APS*) but apparently without further setae or sensilla.

Sternum 9 (Fig. 26H). Pointed pentagonal.

Fig. 26. *Chaleponcus nesrineae* sp. nov., holotype, ♂ (VMNH110628). **A–C**. First pair of legs. A. Sublateral view. B. Anterior view. C. Ventral view. **D–G**. Right gonopod coxa. D. Anterior view. E. Mesal view. F. Posterior view. G. Lateral view. **H**. Sternum 9. **I**. Midbody dorsal limbus. Abbreviations: *amp* = anterior metaplical process; *APS* = mesapical prefemoral setae; *CXS* = coxosternal setae; *lcs* = lateral coxal lobe; *MF* = metaplical flange; *MFP* = metaplical flange process; *mtf* = metaplical transverse fold; *MP* = metaplica; *PP* = proplica. Scale bars: A–H = 0.2 mm; I = 0.005 mm.

Gonopod coxa (Fig. 26D–G). Basally with subparallel margins, cucullus (*CU*) broadly rounded, apical ⅓ with rounded lateral lobe (*lcs*). Proplica (*PP*) simple, proplical lobe hidden from view by anterior metaplical process. Metaplica (*MP*) with well-differentiated metaplical flange (*MF*) ending in distinct process (*MFP*); metaplica with large transverse fold (*mtf*) at ca ⅔ of its length and with large, broadly rounded, basad anterior process (*amp*).

Gonopod telopodite (Figs 27–28). Arculus 90°. Torsotope (*TT*) moderately compact; no post-torsal spine. Post-torsal narrowing (*PN*) very pronounced. Solenomere (*SLM*) slender, whiplike, longer than telomere, making several turns, without a basal spine, tip (Fig. 27E) simple. Telomere a highly convoluted irregular lamella featuring a proximal rounded, folded lobe (*tml1*), a distal triangular, curved lobe (*tml2*) and a distal large main lobe (*tml3*) with coarsely serrate margins.

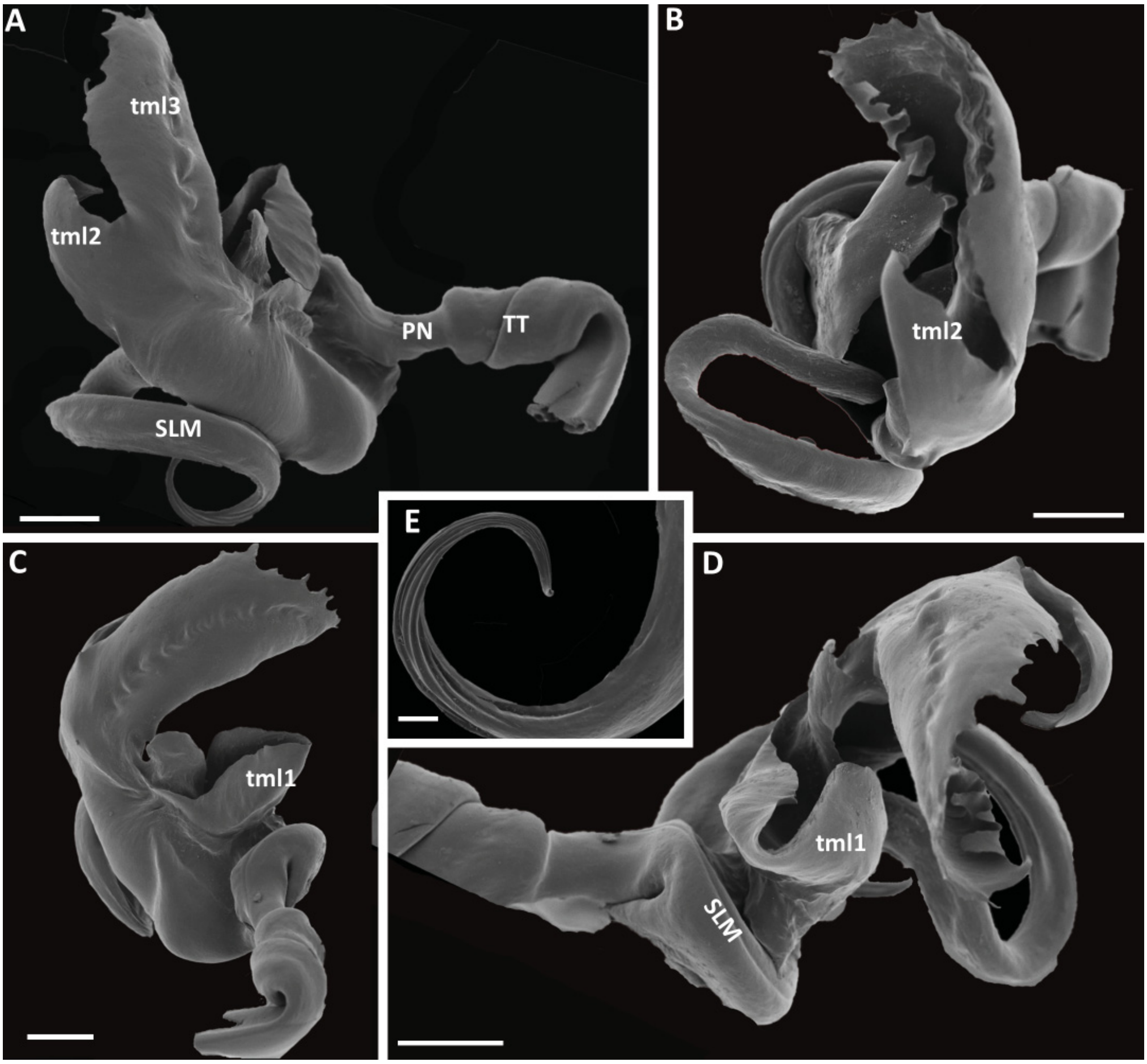

Fig. 27. *Chaleponcus nesrineae* sp. nov., holotype, ♂ (VMNH110628). Right gonopod telopodite. **A**. Anterior view. **B.** Mesal view. **C**. Posterior view. **D**. Lateral view. **E**. Tip of solenomere. Abbreviations: *PN* = post-torsal narrowing; *SLM* = solenomere; *tml* = telomeral lamellae (numbered); *TT* = torsotope. Scale bars: A–D = 0.2 mm; E = 0.05 mm.

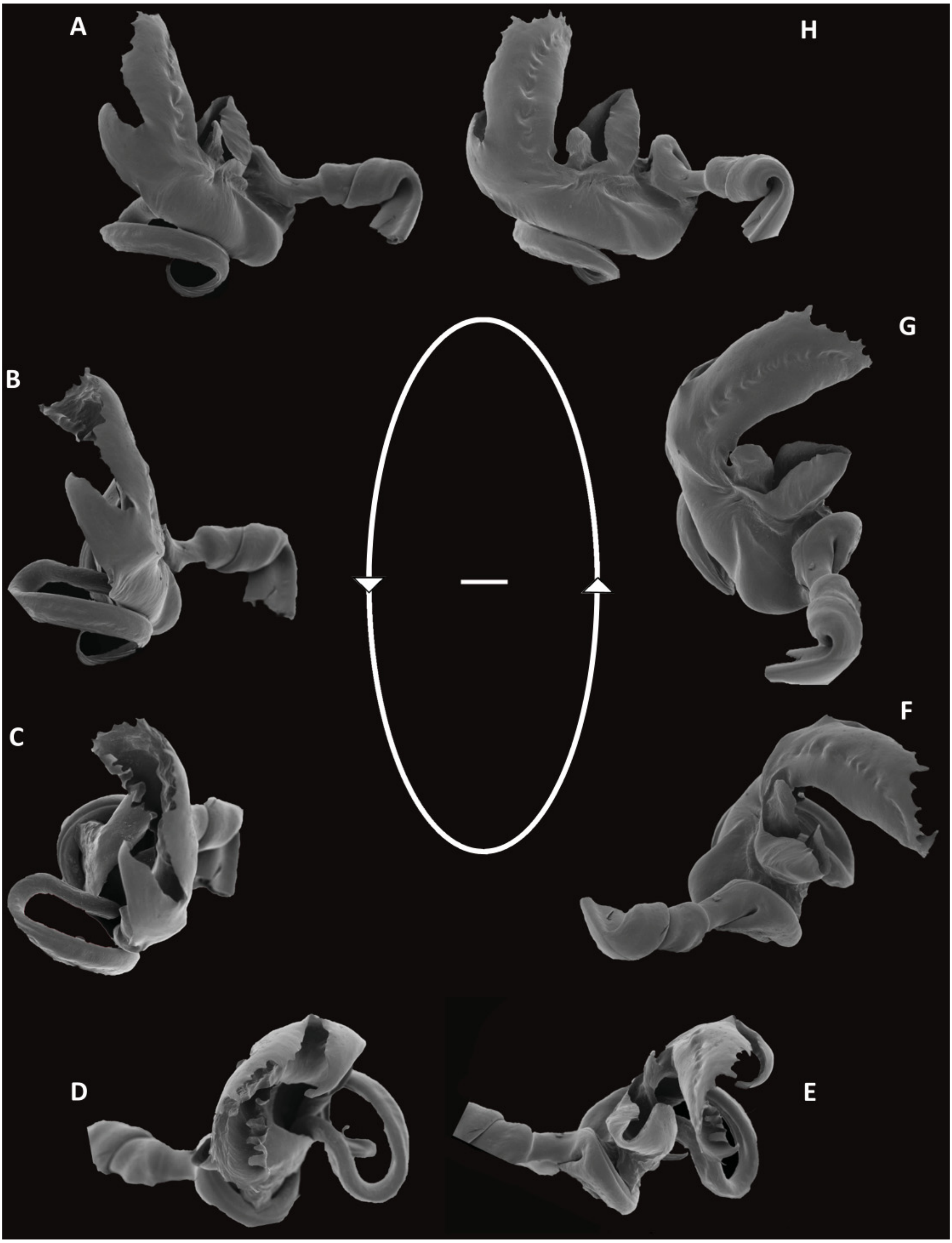

Fig. 28. *Chaleponcus nesrineae* sp. nov., holotype, ♂ (VMNH110628). Right gonopod telopodite, '360° tour'. **A**. Anterior view. **B**. Meso-anterior view. **C**. Mesal view. **D**. Meso-posterior view. **E**. Posterior view. **F**. Latero-posterior view. **G**. Lateral view. **H**. Latero-anterior view. Scale bar = 0.2 mm.

Figure 28 shows as '360° tour' of the telopodite in order to convey a better impression, especially of the highly complicated, three-dimensional telomere.

Descriptive notes (female)

SIZE. Length 45 mm, diameter 3.4 mm, 48 podous rings, no apodous rings in front of telson. Conspecificity with males indicated by general appearance and the characteristic limbus.

Distribution and habitat

Known only from the type locality in moist evergreen forest in the Nguru Mts; altitude 1900 m a.s.l.

Remarks

In the key of Kraus (1966) *C. nesrineae* sp. nov. runs to *Tibiomus* Chamberlin, 1927 because of the unlobed limbus. However, the value of the limbus as a genus-defining character has been challenged: whereas Kraus (1960) included a simple, serrate limbus in the diagnosis of *Chaleponcus*, Enghoff (2014: fig. 4) found many different limbus types in species of the *C. dabagaensis* group, including a completely unlobed type similar to that of *C. nesrineae* sp. nov. The gonopods of *C. nesrineae* sp. nov. show a general similarity to those of *Tibiomus* species although *C. nesrineae* sp. nov. has no post-torsal spine ("Femoraldorn") as in *Tibiomus* species except *T. eurypeza* Attems, 1953, and also has no spine at the base of the solenomere ("Tibialdorn"). However, the gonopods of the new species are clearly of a typical *Chaleponcus* shape: the gonopod cucullus is pronouncedly hood-like, the slender solenomere is much longer than the telomere, and the telomere is divided into several diverging lamellae.

Chaleponcus parensis Frederiksen, 2013

Previous Eastern Arc records: Kilimanjaro Region, Mwanga Distr., Kiverenge FR, North Pare Mts, 1500 m Kilimanjaro Region, Mwanga Distr., Kive, North Pare Mts, 1459 m a.s.l. (Frederiksen 2013a).

General distribution: North Pare Mts endemic.

Chaleponcus schioetzae sp. nov.
urn:lsid:zoobank.org:act:76ECCFEE-C783-4B6B-8C58-2A1137DD6491
Figs 29–30

Diagnosis

Differs from all other *Chaleponcus* species except *C. soerensenae* sp. nov., by the large metaplical palette. Differs from *C. soerensenae* sp. nov. by lacking a latero-posterior coxal spine.

Etymology

After Vibeke Schiøtz, the first Danish zoologist to describe new millipede species from tropical Africa (Schiøtz 1966a, 1966b).

Material examined (total 3 ♂♂)

Holotype

TANZANIA • ♂; Uluguru Mts, Lupanga, West; 1400 m a.s.l.; 1 Jul. 1981, M. Stoltze and N. Scharff leg.; under stone; NHMD 621725.

Paratypes

TANZANIA • 1 ♂; Uluguru Mts, Lupanga, West; 1800 m a.s.l.; 1 Jul. 1981; M. Stoltze and N. Scharff leg.; in trunk; NHMD 621726 • 1 ♂; Uluguru Mts, Lupanga, Peak; 2138 m a.s.l.; 10 Sep. 1981; N. Scharff leg.; pitfall trap; NHMD 621727.

Description (male)

Size. Length 30–39 mm, diameter 2.4–3.1 mm, 44–48 podous rings, no apodous rings in front of telson.

Colour. After 37 years in alcohol strongly faded, only posterior amber zone of metazonites and faint traces of longitudinal dorsal stripe preserved.

Supralabral setae. 6.

Mandibular stipes. Distal margin almost straight, only very shallowly bilobed.

Anal valves. With large dorsal spine/hook and faint ventral 'corner', free margins not raised, each with three sessile setae.

Limbus (Fig. 29H). Striate, no cellular structure, margin completely straight, no lobes.

Legs. Postfemoral and tibial pads obvious from 2nd pair until anterior post-gonopodal legs, thereafter reduced in size and eventually disappearing.

First pair of legs (Fig. 29A–C). Prefemoral lobes relatively long, slender-triangular in ventral view. Three coxosternal setae (*CXS*) close to lateral margin of coxosternum, well separated from prefemoral lobes. Prefemora with two mesapical setae (*APS*) but apparently without further setae or sensilla.

Sternum 9 (Fig. 29D). Triangular; lateral margins convex, almost angled, sternum hence almost pentagonal.

Gonopod coxa (Fig. 29E–G). With a slender shaft with a slightly convex lateral margin; apically strongly expanded, distolaterally drawn out into short, blunt process in specimen from 1400 m a.s.l., almost evenly rounded in specimens from 1800 and 2138 a.s.l. Proplica (*PP*) with straight mesal margin, ending in small proplical lobe (*PPL*). Metaplica (*MP*) basally with a poorly delimited flange (*MF*), apically with a very large mesal palette (*mpa*) with irregularly undulate margin, in posterior view with a sub-hemispherical lobe (*ml*) and, just basal to *ml*, with a small-ridged shelf (*ms*).

Gonopod telopodite (Fig. 30). Arculus 90°. Torsotope (*TT*) moderately compact, no post-torsal spine. Post-torsal narrowing (*PN*) not very pronounded. Solenomere (*SLM*) very long, much longer than telomere, whiplike, with several coils, tip simple, without a proximal spine. Telomere (*TM*) basally narrow, shortly after separation from solenomere expanded into very complicated folded sheet with a small basal, triangular lobe (*tml1*) on anterior side, an apical (ventral) semicircular lobe (*tml2*), a domed lobe (*tml3*) with microdentate margin, closely juxtaposed to *tml2*, a large distal, irregularly circular domed lobe (*tml4*) with a microtrichose area fitting under *tml2*, and an anterior bandlike, terminally hooked lobe (*tml5*).

Distribution and habitat

Known only from Lupanga in the Uluguru Mts, altitude 1400–2138 m a.s.l.

Remarks

The significance of the slight variation of the gonopod coxa outline cannot be assessed with just three specimens at hand. Very similar to *C. soerensenae* sp. nov. These two species might be placed in a separate species group, the *Chaleponcus schioetzae* group, characterized by having a completely smooth limbus, a large mesal metaplical palette on the gonopod coxa and a very compact and complicated telomere. The *C. schioetzae* group forms a (very much less diverse) Ulugurus counterpart to the large *C. dabagaensis* group in the Udzungwa Mts (Enghoff 2014).

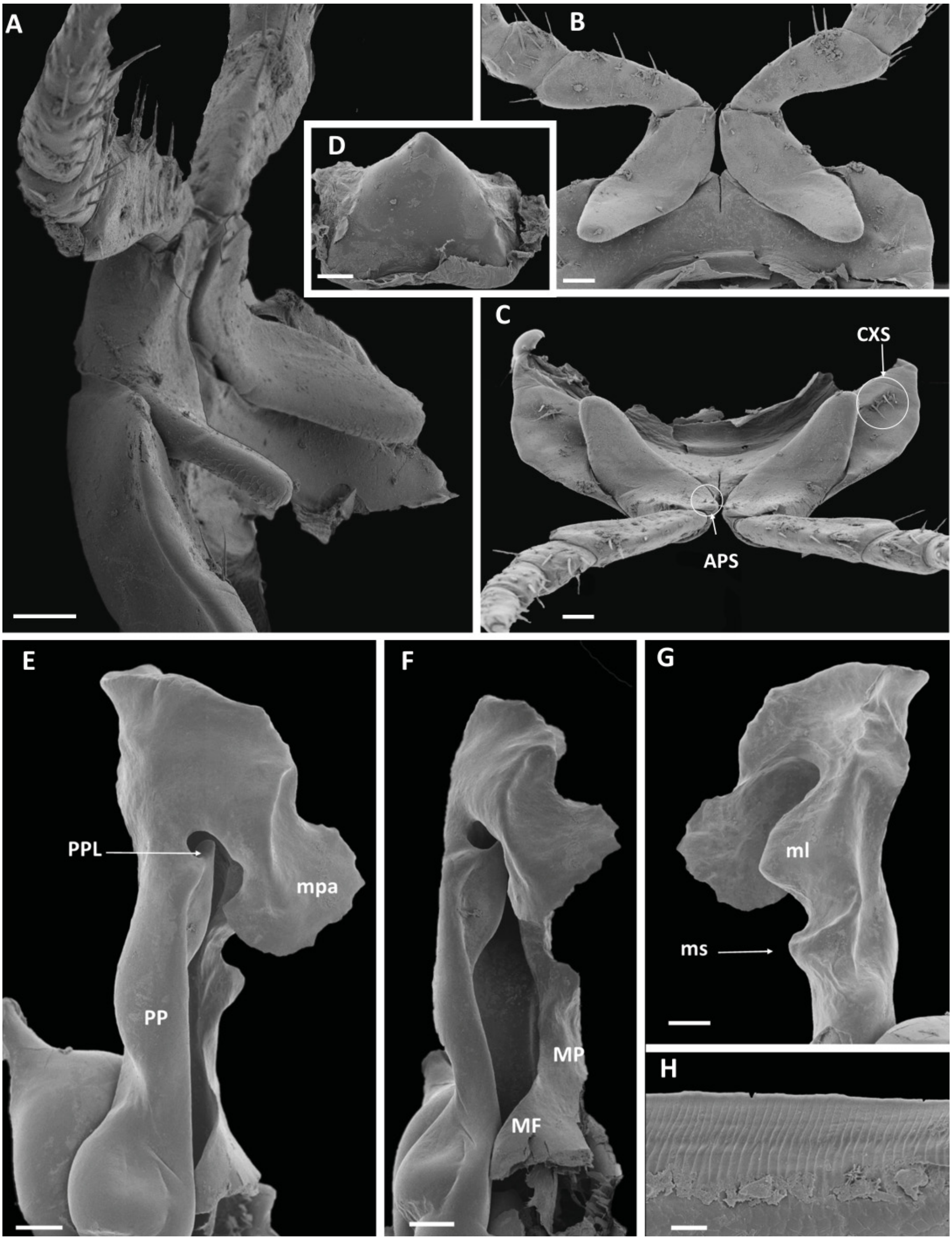

Fig. 29. *Chaleponcus schioetzae* sp. nov., holotype, ♂ (NHMD 621725). **A–C**. First pair of legs. A. Sublateral view. B. Anterior view. C. Ventral view. **D**. Sternum 9. **E–G**. Left gonopod coxa E. Anterior view. F. Mesal view. G. Lateral view. **H**. Midbody dorsal limbus. Abbreviations: *APS*=mesapical prefemoral setae; *CXS*=coxosternal setae; *MF*=metaplical flange; *ml*=metaplical lobe; *mpa*=metaplical palette; *ms*=metaplical shelf; *PP*=proplica; *PPL*=proplical lobe. Scale bars: A–G=0.1 mm; H=0.02 mm.

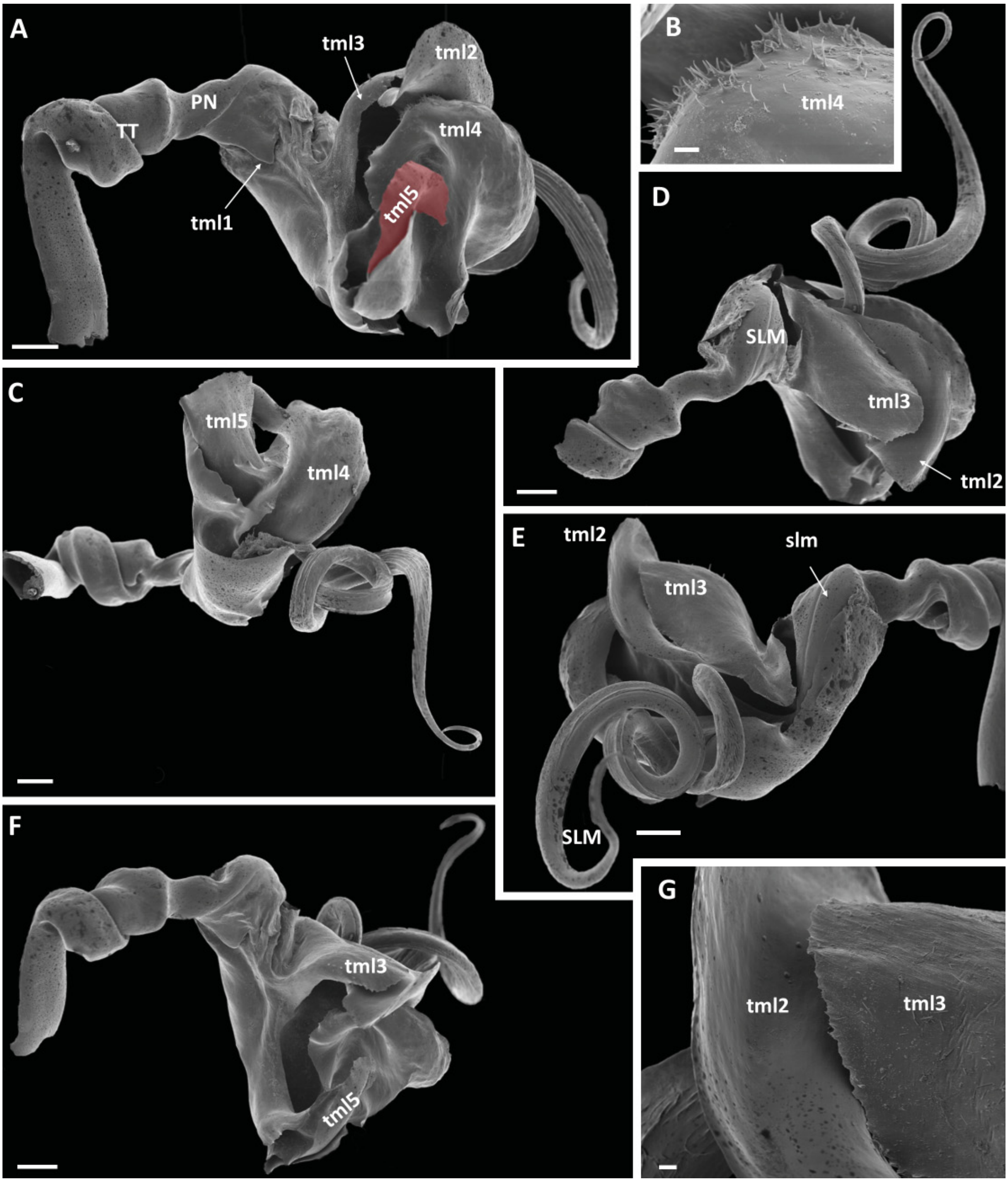

Fig. 30. *Chaleponcus schioetzae* sp. nov., holotype, ♂ (NHMD 621725), left gonopod telepodite. **A**. Anterior view, *tml5* highlighted**. B**. Close-up of microtrichose area of *tml4*. **C**. Basal (dorsal) view. **D**. Distal (ventral) view. **E**. Posterior view. **F**. Anterior-ventral view. **G**. Close-up of *tml2* and *tml3*. Abbreviations: *PN* = post-torsal narrowing; *SLM* = solenomere; *tml1*-5 = telomeral lobes; *TT* = torsotope. Scale bars: A, C–F = 0.1 mm; B, G = 0.01 mm.

Chaleponcus sergeii sp. nov.
urn:lsid:zoobank.org:act:A33D4AAF-96E3-40D8-ACA0-7ED685549D87
Figs 5, 31–33

Diagnosis

Resembles species of the *C. dabagaensis* gropy by having a metaplical shelf (*ms*), but differing from these by not having a 'metaplical shelf spine' originating on the shelf.

Etymology

After Sergei Golovatch, Russian myriapodologist, former resident of 'Hotel Dolichoiulus'.

Material examined (total 12 ♂♂)

Holotype

TANZANIA • 1 ♂; Uluguru Mts, Lupanga, West; 1900 m a.s.l.; 1 Jul. 1981; M. Stoltze and N. Scharff leg.; under stone; NHMD 621728.

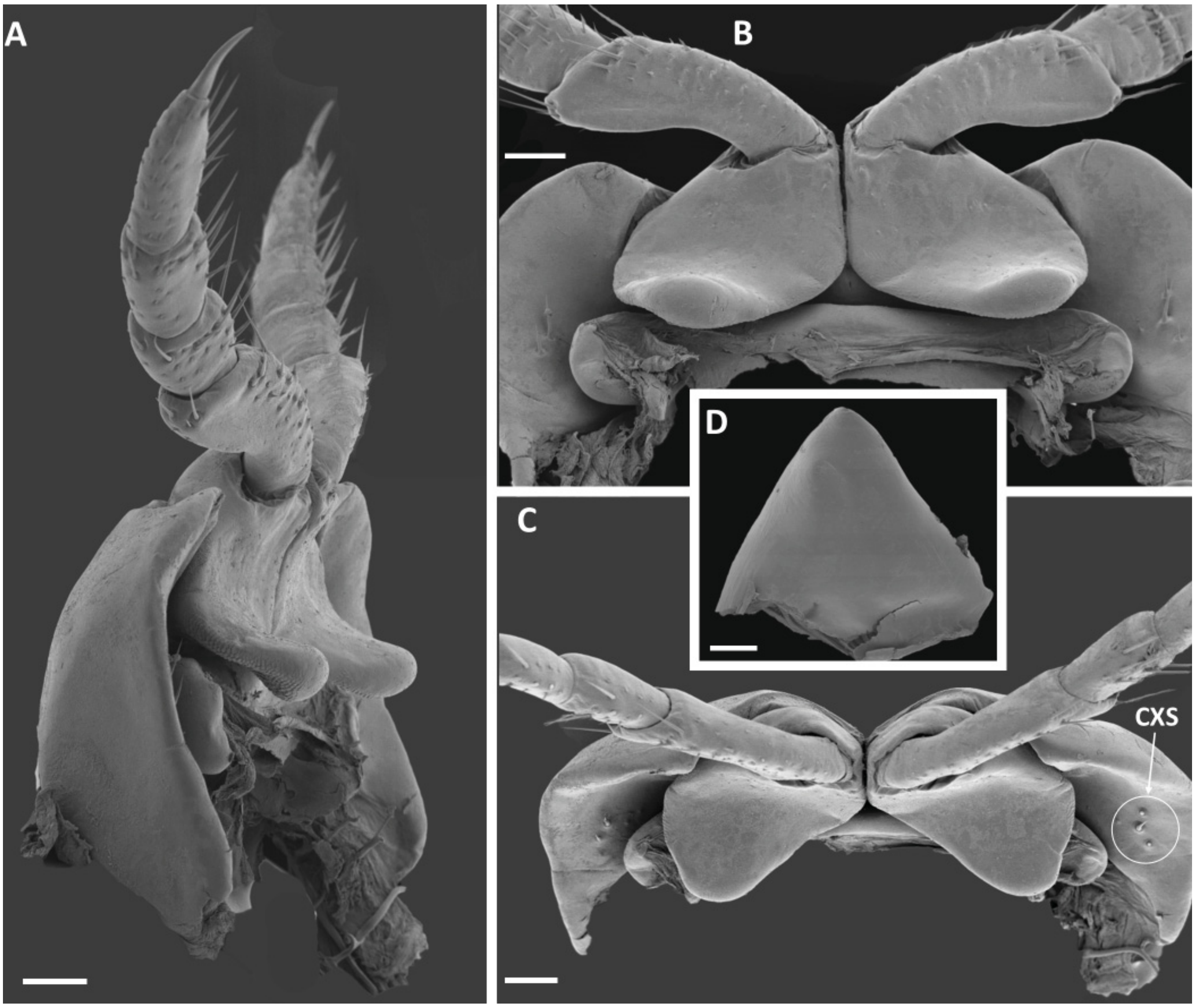

Fig. 31. *Chaleponcus sergeii* sp. nov., holotype, ♂ (NHMD 621728). **A**–**C**. First pair of legs. A. Sublateral view. B. Anterior view. C. Ventral view. **D**. Sternum 9. Abbreviation: *CXS* = coxosternal setae. Scale bars = 0.2 mm.

Paratypes

TANZANIA • 1 ♂; same collection data as for holotype; 1400 m a.s.l.; NHMD 621729 • 1 ♂; Uluguru Mts, Lupanga, East; 1600 m a.s.l.; 10 Jul. 1981; M. Stoltze and N. Scharff leg.; in trunk; NHMD 621730 • 1 ♂; Morogoro Region, Uluguru South FR, forest above Ukwama village; 07°11′ S, 36°42′ E; 1500–1600 m a.s.l.; Oct. 1993; L. Sørensen leg.; ULU 109; NHMD 621731 • 2 ♂♂; same collection data as for preceding; 1700 m a.s.l.; Ulu 108; NHMD 621732 • 1 ♂; Morogoro Region, Uluguru South FR, Ukwama/Kimkondo Hill; 1520 m a.s.l.; 15 Oct. 1993; Louis A. Hansen leg.; NHMD 621733 •

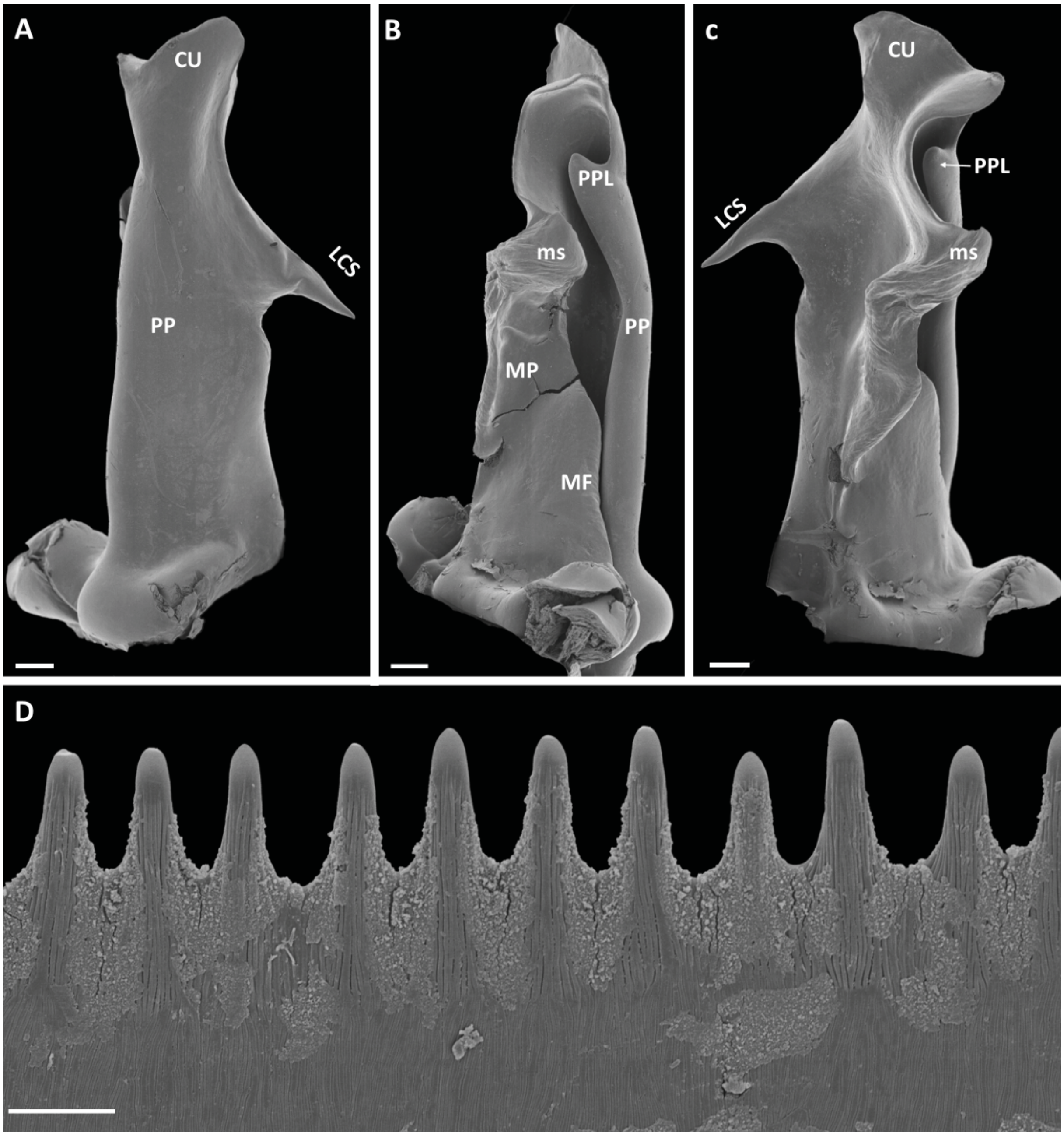

Fig. 32. *Chaleponcus sergeii* sp. nov., holotype, ♂ (NHMD 621728). **A–C**. Right gonopod coxa. A. Anterior view. B. Mesal view. C. Posterior view. **D**. Midbody dorsal limbus. Abbreviations: *CU* = cucullus; *LCS* = lateral coxal spine; *MP* = metaplica; *MF* = metaplical flange; *ms* = metaplical shelf; *PP* = proplica; *PPL* = proplical lobe. Scale bars: A–C = 0.2 mm; D = 0.01 mm.

1 ♂; Morogoro Region and district, Bondwa Road, Uluguru FR; 24 Apr. 1980; K.M. Howell leg.; VMNH110630 • 3 ♂♂; Fn forest near Morningside; 27 Apr. 1980; K.M. Howell leg.; KMH 1380, 1381, 1382 ; VMNH110631.

Referred non-type specimen
TANZANIA • 1 ♂; Uluguru Mts, Lupanga, West; 1400 m; 1 Jul. 1981; M. Stoltze and N. Scharff leg.; under stone, poorly preserved, esp. gonopods, but apparently this species; NHMD 621734.

Description (male)

Size. Length 60–83 mm, diameter 3.8–5.2 mm, 55–62 podous rings, no apodous rings in front of telson.

Colour. After 37 years in alcohol head and antennae yellowish brown, but head above antennal socket dark brown. Collum marbled brown with dark brown margins, dark margins expanded in midline, especially anterior margin. Body rings and telson milky white, posterior ca 40% of metazonites amber. Legs yellowish.

Supralabral setae. 6.

Mandibular stipes. Distal margin bilobed.

Anal valves. With dorsal spine, no ventral spine or corner; margins not raised, with three sessile setae.

Limbus (Fig. 32D). With long, weakly striate, rounded-triangular lobes, ca twice as long as broad.

Legs. With narrow ventral pads on postfemora and tibiae from leg-pair 6, pads missing from last several leg-pairs.

First pair of legs (Fig. 31A–C). Prefemoral lobes rounded-triangular in ventral view. Two to three coxosternal setae (*CXS*) close to lateral margin of coxosternum, well separated from prefemoral lobes. Prefemora without setae or peglike sensilla.

Sternum 9 (Fig. 31D). Very large, triangular to bell-shaped, apically sometimes with more or less distrinct longitudinal blunt ridge.

Gonopod coxa (Fig. 32A–C). Proplica (*PP*) with straight, slightly diverging margins; proplical lobe (*PPL*) hidden in subapical metaplical concavity, not visible in anterior view. Metaplica (*MP*) with large metaplical flange (*MF*) in basal part; mesal margin with large metaplical shelf (*ms*), subapically forming mesad concavity into which proplical lobe projects; cucullus (*CU*) irregularly rectangular, its lateral margin forming a sharp flange basally ending in strong latero-basad, pigmented spine (*lcs*).

Gonopod telopodite (Fig. 33). Arculus 90º. Torsotope (*TT*) compact; a stout post-torsal spine (*PTS*) making a 270° turn around torsotope. Post-torsal narrowing (*PN*) very pronounced. Solenomere (*SLM*) very long, much longer than telomere, slender, making several coils, with a straight, mesad proximal spine (*BSS*) of variable length, distal part of *SLM* narrowly taeniate, longitudinally fluted. Telomere (*TM*) from a narrow base dividing into three branches: a very small anterior lamella (*tm1*), a very large main branch (*tm2*), and a small posterior lamella (*tm3*) subtending proximal solenomeral spine. Main branch (*tm2*) first directed mesad, with two pointed mesad lobes (*x*, *y*), from there flexed laterad, becoming narrower, taeniate, twisted, ending in thin terminal tip.

Remarks

Identified as *Chaleponcus* sp. by D. VandenSpiegel (unpublished).

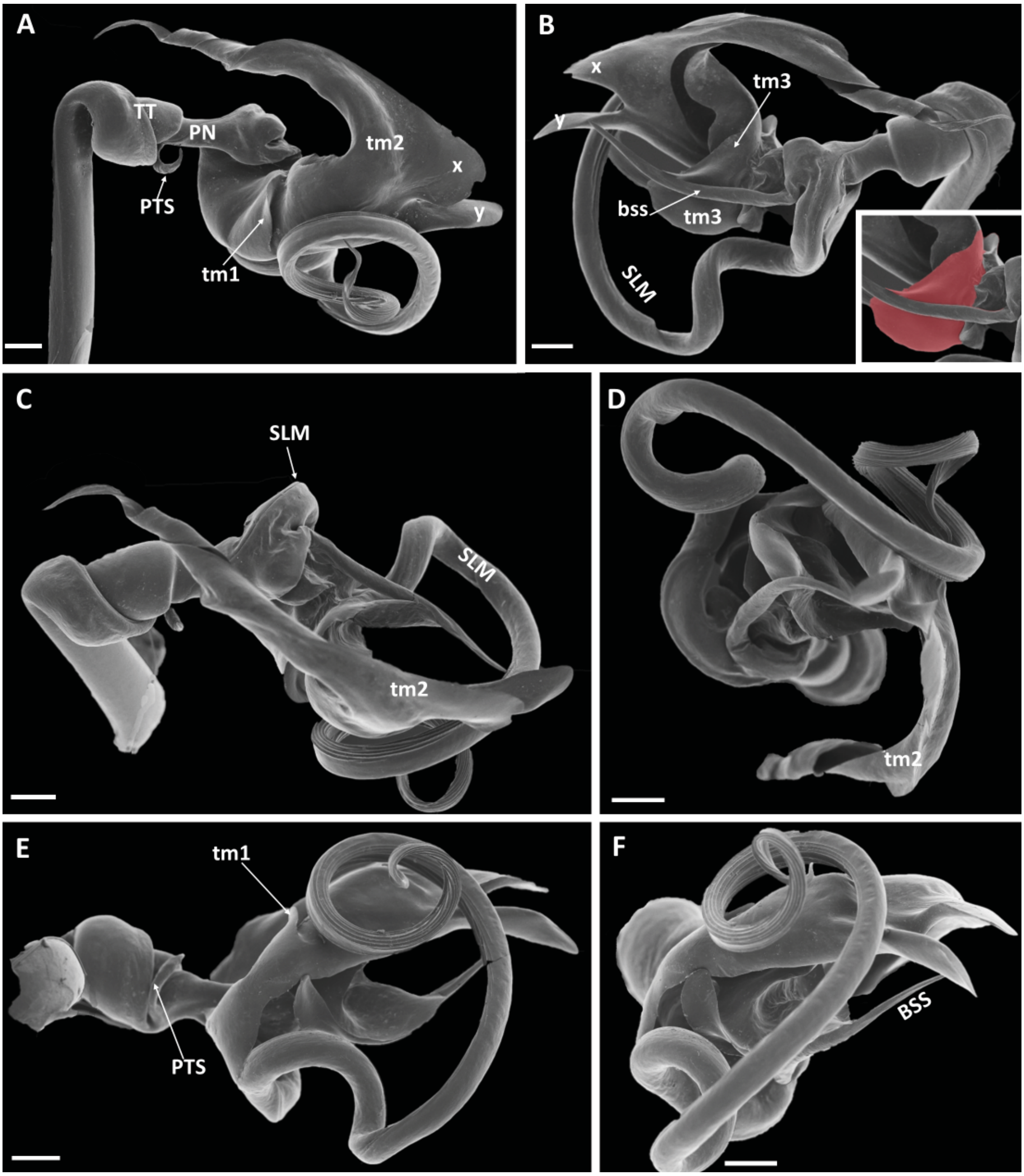

Fig. 33. *Chaleponcus sergeii* sp. nov., paratype, ♂ (NHMD 621731), left gonopod telopodite. **A**. Anterior view. **B**. Posterior view, inset: *tm3* highlighted. **C**. Ventral view. **D**. Dorsal view. **E–F**. Dorso-mesal views. Abbreviations: *BSS* = proximal solenomeral spine; *PN* = post-torsal narrowing; *PTS* = post-torsal spine; *SLM* = solenomere; *tm1*, *tm2*, *tm3* = telomeral branches of *tm*; *x*, *y* = mesad lobes of *tm2*. Scale bars = 0.2 mm.

Chaleponcus soerensenae sp. nov.
urn:lsid:zoobank.org:act:26C4F108-3B05-41CC-97B5-065209EC6CA9
Figs 34–36

Diagnosis

Differs from all other species of *Chaleponcus* except *C. schioetzae* sp. nov. by the large metaplical palette. Differs from *C. schioetzae* sp. nov. by having a latero-posterior coxal spine.

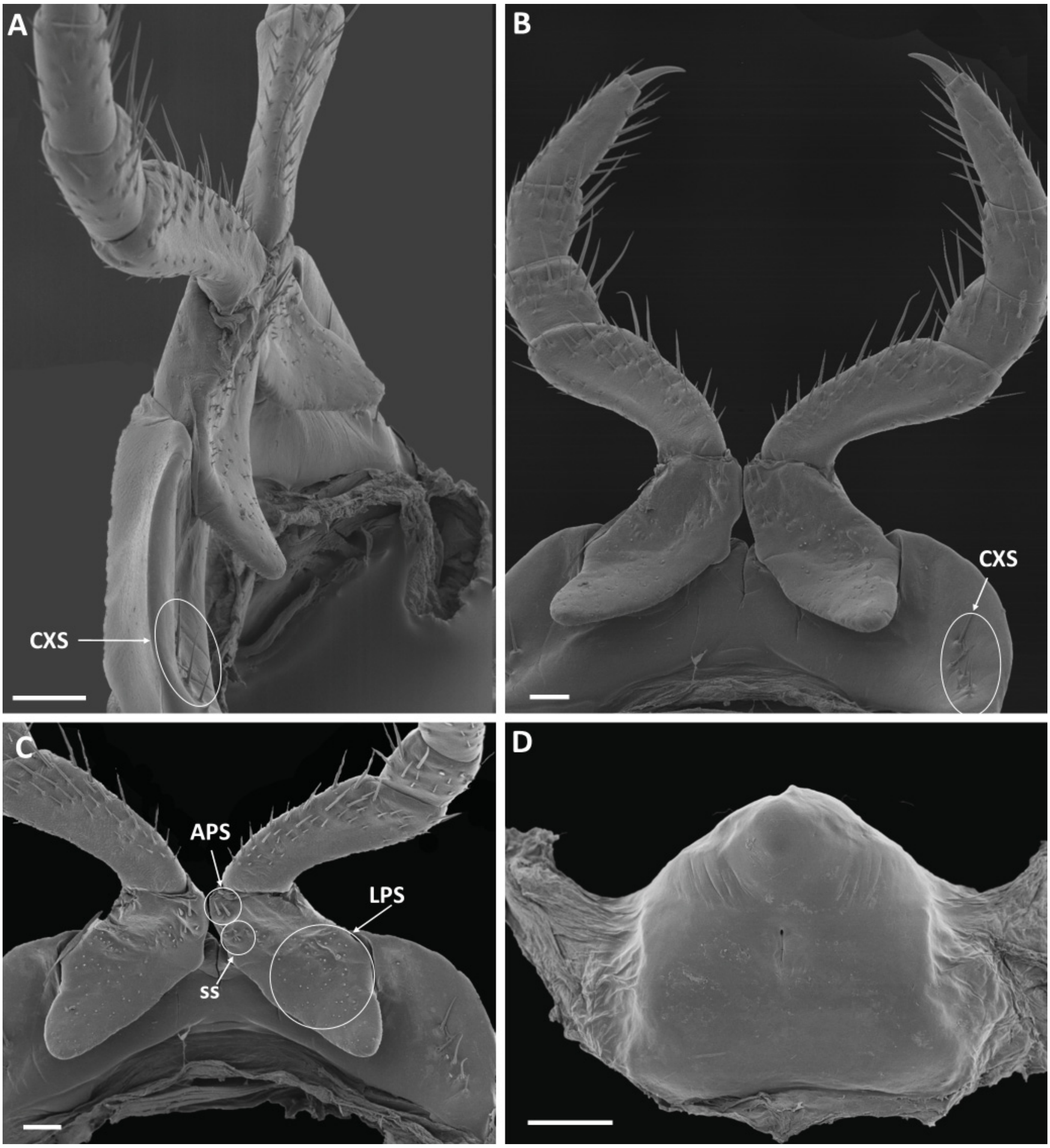

Fig. 34. *Chaleponcus soerensenae* sp. nov., holotype, ♂ (NHMD 621735). **A–C**. First pair of legs. A. Sublateral view. B. Anterior view. C. Subventral view. **D**. Sternum 9. Abbreviations: *APS* = mesapical prefemoral setae; *CXS* = coxosternal setae; *LPS* = lateral prefemoral sensilla; *ss* = smaller prefemoral setae. Scale bars = 0.1 mm.

Etymology

After Line Sørensen, Danish zoologist, author of a Tanzanian millipede species (Sørensen 1997) and collector of several of the odotopygids described in the present paper.

Material examined (total 1 ♂)

Holotype

TANZANIA • ♂; Morogoro Region, Morogoro District; Ruvu FR; 06°53′–07°02′ S, 37°49′–37°54′ E; 200–400 m a.s.l.; Sep. 2000; Nike Doggart leg.; lowland forest; Uluguru Mountains Biodiversity Conservation Project; NHMD 621735.

Description (male)

Size. Length 50 mm, diameter 3.3 mm, 56 podous rings, no apodous rings in front of telson.

Colour. After 18 years in alcohol somewhat faded. Head, collum and antennae black, except white antennomeres 6–7. Legs pale yellowish. Body rings: prozonites pale yellow, anterior ⅔ of metazonites black, posterior ⅓ amber. Telson black. No traces of dorsal light stripe.

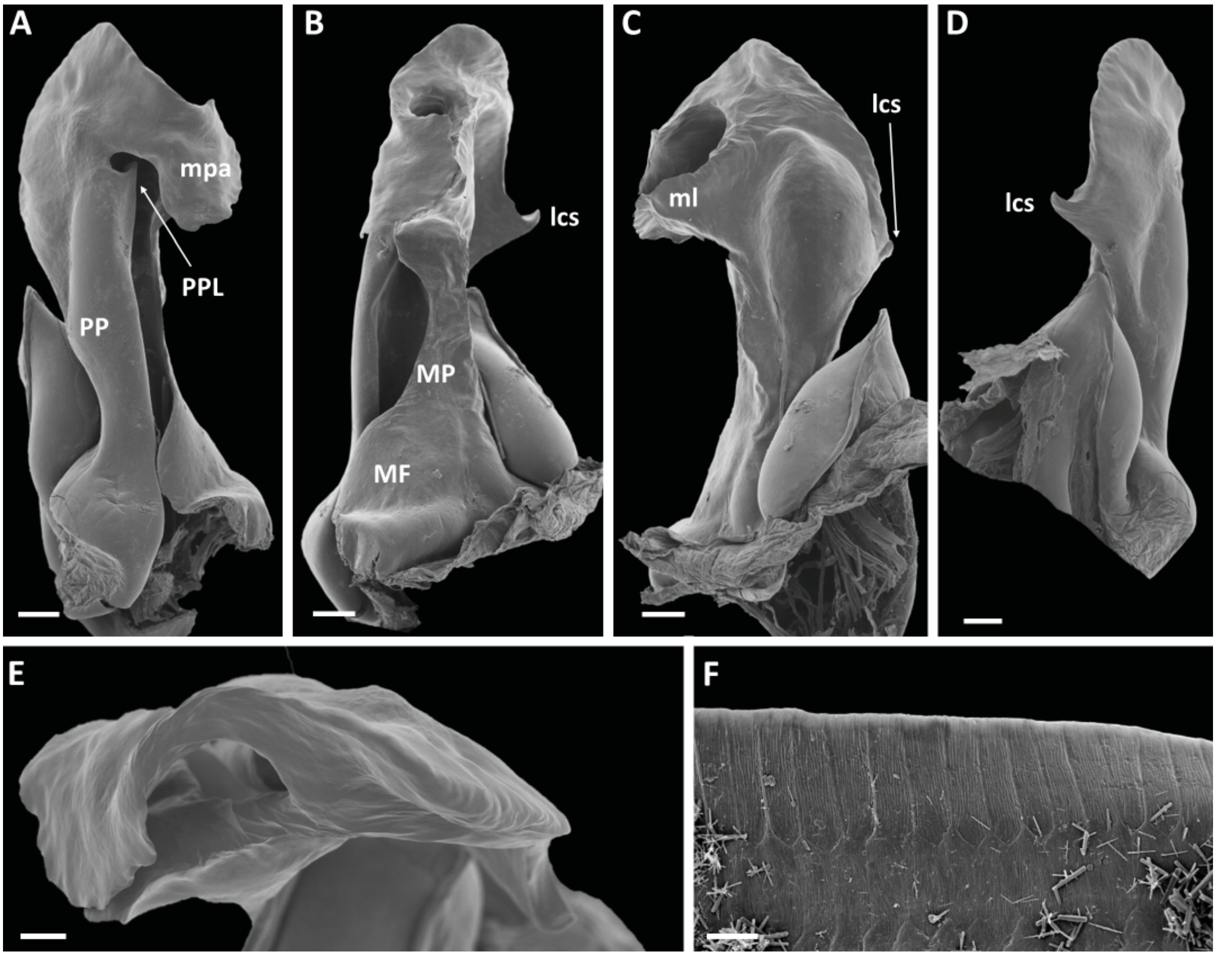

Fig. 35. *Chaleponcus soerensenae* sp. nov., holotype, ♂ (NHMD 621735). **A–E**. Left gonopod coxa. A. Anterior view. B. Mesal view. C. Lateral view. D. Lateral view. E. Distal view. **F**. Midbody dorsal limbus. Abbreviations: *lcs* = latero-posterior coxal spine; *MF* = metaplical flange; *ml* = metaplical lobe; *MP* = metaplica; *mpa* = metaplical palette; *PP* = proplica; *PPL* = proplical lobe. Scale bars: A–D = 0.1 mm; E = 0.05 mm; F = 0.01 mm.

Supralabral setae. Indistinct.

Mandibular stipes. Distal margin of stipes almost straight, only very shallowly bilobed.

Anal valves. With strong dorsal spine/hook, no ventral 'corner', free margins raised, each with three sessile setae.

Limbus (Fig. 35F). Weakly striate, with cellular structure, margin completely straight, no lobes.

Legs. Postfemoral and tibial pads well-developed from leg-pair 4 until ca ring 15, then becoming smaller and eventually disappearing.

First pair of legs (Fig. 34A–C). Prefemoral lobes relatively long, slender-triangular in ventral view. Four to five coxosternal setae (*CXS*) close to lateral margin of coxosternum, well separated from prefemoral lobes. Prefemora with two long mesapical setae (*APS*), a few shorter setae (*ss*) just basal to *APS* and a scattering of peglike sensilla (*LPS*) over most of ventral side of lobe Femora apparently more densely setose than in most other odontopygids.

Sternum 9 (Fig. 34D). Pentagonal with parallel side margins ('house-shaped').

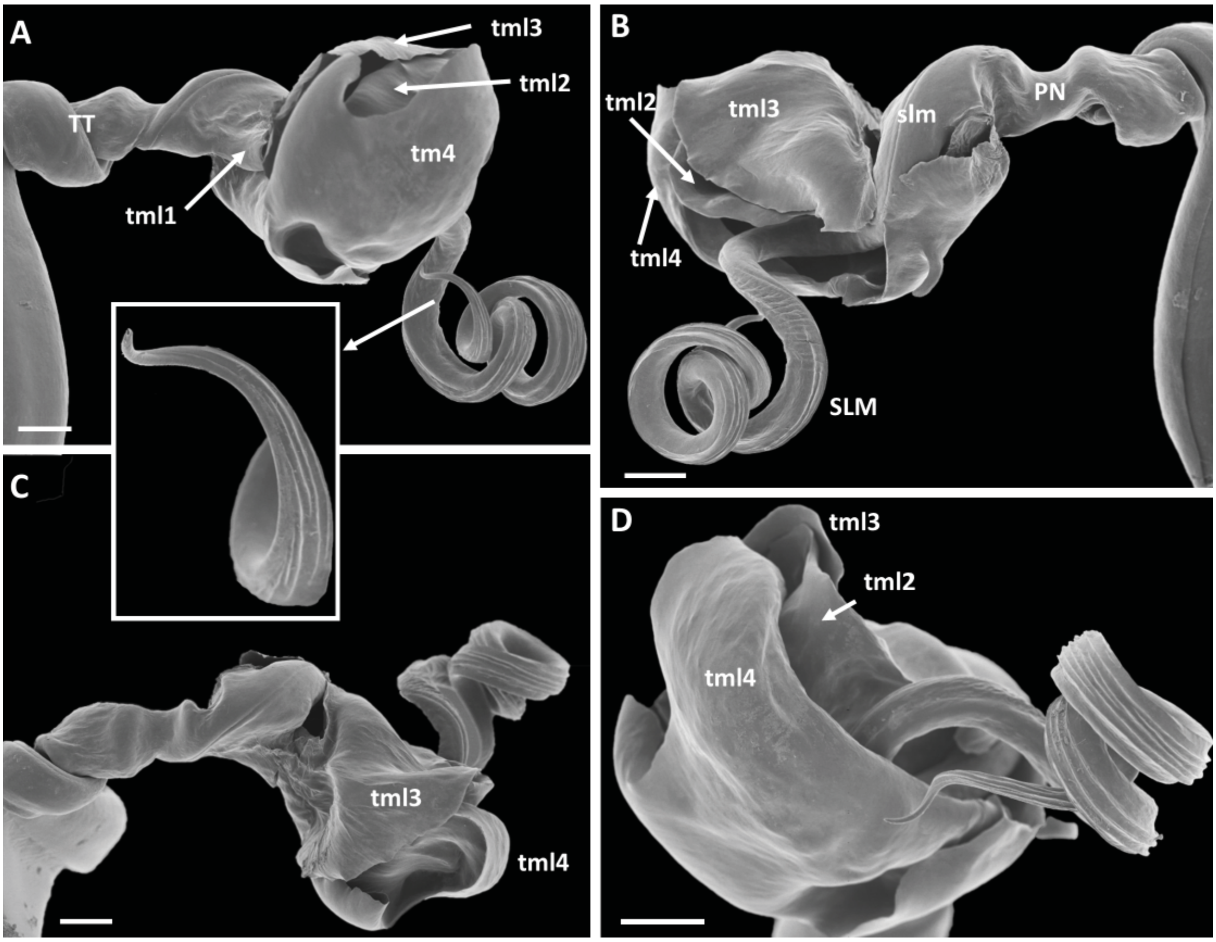

Fig. 36. *Chaleponcus soerensenae* sp. nov., holotype, ♂ (NHMD 621735), left gonopod telopodite. **A**. Anterior view, inset: close-up of solenomere tip. **B**. Posterior view. **C**. Ventral view. **D**. Mesal view. Abbreviations: *PN* = post-torsal narrowing; *SLM* = solenomere; *tml1-4* = telomeral lobes; *TT* = torsotope. Scale bars = 0.1 mm.

Gonopod coxa (Fig. 35A–E). With a slender shaft with a slightly convex lateral margin; apically strongly expanded, roughly triangular; with a short latero-posterior spine (*lcs*) a little distal to mid-length. Proplica (*PP*) with straight mesal margin, ending in small proplical lobe (*PPL*). Metaplica (*MP*) basally with a poorly delimited flange (*MF*), apically with a very large mesal palette (*mpa*) with irregularly undulate margin, in posterior view with rounded-triangular lobe (*ml*).

Gonopod telopodite (Fig. 36). Arculus 90°. Torsotope (*TT*) moderately compact, no post-torsal spine. Post-torsal narrowing (*PN*) not very pronounded. Solenomere (*SLM*) very long, much longer than telomere, whiplike, with several coils, tip simple, without a proximal spine. Telomere (*TM*) basally narrow, shortly after separation from solenomere expanded into very complicated folded sheet with a small basal, triangular lobe (*tml1*) on anterior side, a simple apical (ventral) lobe (*tml3*) overlying a smaller, simple lobe (*tml2*), and a large distal, irregularly circular domed lobe (*tml4*) with a broad, rounded distal (ventral) incision.

Distribution and habitat

Known only from lowland forest in the Ruvu FR in the Uluguru Mts, altitude 200–400 m a.s.l.

Remarks

See under *C. schioetzae* sp. nov.

Genus ***Geotypodon*** Enghoff, 2016

Type species

Geotypodon millemanus Enghoff, 2016 (Tanzania), by original designation.

Other included species

Twenty-two, including one species described as new here, see Enghoff (2016a, 2018).

Diagnosis (modified from Enghoff 2018)

Differs from other genera of Prionopetalini by the combination of the following characters: gonopod coxa with a basad metaplical spine on the anterior side; torsotope compact; absence of pre-torsal or torsal spines/processes; post-torsal narrowing procounced; solenomere slender, whiplike; telomere consisting of various lobes and lamellae with largely smooth margins

Remarks

Although *Geotypodon* does provide a 'home' for several orphaned species of *Odontopyge* from various parts of tropical Africa (cf. Hoffman 1991) as well as a number of recently described species, the genus remains quite inhomogeneous, see Enghoff (2016a, 2018).

Geotypodon cristinae sp. nov.
urn:lsid:zoobank.org:act:2D928EA2-BB90-406C-81EA-EA9AC0483BC3
Figs 37–39

Diagnosis

Very much resembling and probably closely related to *G. papei* Enghoff, 2018 and *G. carli* (Kraus, 1960) with which species it shares a particularly long, slender, simple telomere. With *G. papei* it further shares the peculiar, wavy surface of part of the solenomere. It differs from all other species of *Geotypodon* in the lack of post-torsal, basal solenomeral or basal telomeral spines.

Etymology

After Maria Cristina Vicente (1948–2000), Spanish myriapodologist, former resident of 'Hotel Dolichoiulus'.

Material examined (total 2 ♂♂, 1 ♀)

Holotype

TANZANIA • ♂; Nguru Mts, Mhonda Mission at Turiani; 2 Oct. 1992; M. Andersen leg.; NHMD 621736.

Paratype

TANZANIA • 1 ♂; same collection data as for holotype; NHMD 621737.

Referred non-type specimen

TANZANIA • 1 ♀; same collection data as for holotype; NHMD 621738.

Description (male)

Size. Length 61–64 mm, diameter 4.7–4.9 mm, 53 podous rings, no apodous rings in front of telson.

Colour. After 26 years in alcohol head and legs brownish yellow; antennae, collum and telson greyish brown. Rings: anterior ⅓ of prozonites and posterior ¼ or metazonite amber, posterior ⅔ of prozonites whitish, a narrow zone just behind suture dark brown, rest of metazonite grey; no indications of a dorsal band.

Supralabral setae. 7–8.

Mandibular stipes. Distal margin bilobed.

Anal valves. With a small dorsal spine, a ventral 'corner'; margin clearly raised, setae not on tubercles.

Limbus (Fig. 38E). With clearly separated, ridged, subrectangular lobes; distal margin of each lobe with 5–7 tiny denticles. Surface in front of limbus micro-spiculate.

Legs. Postfemoral pads from leg-pair 5 almost to end of body. No tibial pads.

First pair of legs (Fig. 37A–B, D). Prefemoral lobes rounded-triangular in ventral view. Three long coxosternal setae (*CXS*) close to lateral margin of coxosternum, well separated from prefemoral lobes. Prefemora with two to three, partly long mesapical setae (*APS*) and six to eight lateral setae (*LPS*).

Sternum 9 (Fig. 37C). Subrectangular.

Gonopod coxa (Fig. 38A–D). Slender, almost parallel-sided, apically attenuate and inclined mesad. Proplica (*PP*) simple, proplical lobe (*PPL*) almost hidden from view by anterior metaplical process. Metaplica (*MP*) with a distinct metaplical flange (*MF*), apically on anterior side with broad process (*msp*) ending in small spine, at ca same level with a broad, rounded, mesad process (*mrp*).

Gonopod telopodite (Fig. 39). Arculus 90°. Torsotope (*TT*) moderately compact, with a blunt lobe (*TL*) fitting into torsion on posterior side, no post-torsal spine. Post-torsal narrowing (*PN*) very long and pronounced. Solenomere (*SLM*) very long and slender, but not much longer than telomere, describing an almost complete loop and ending in a relatively tight spiral before the spinelike tip; external surface of *slm* along part of its course with coarse, wavy sculpture (Fig. 39E, arrow), no basal solenomeral spine.

Telomere (*TM*) very long and slender, describing an almost complete loop more or less in parallel with solenomere; basally with a broad lamella (*btl*) on inner side of curvature, distad to that a narrow gutter, tip slightly expanded, bifid.

Descriptive notes (female)

Size. Length 68 mm, diameter 5.9 mm, 53 podous rings, no apodous rings in front of telson. Conspecificity with males indicated by general appearance and the characteristic limbus.

Distribution and habitat

Known only from the type locality. Mhonda mission is situated at 06°13′ S, 37°48′ E, altitude 488 m a.s.l. (Doggart & Loserian 2007).

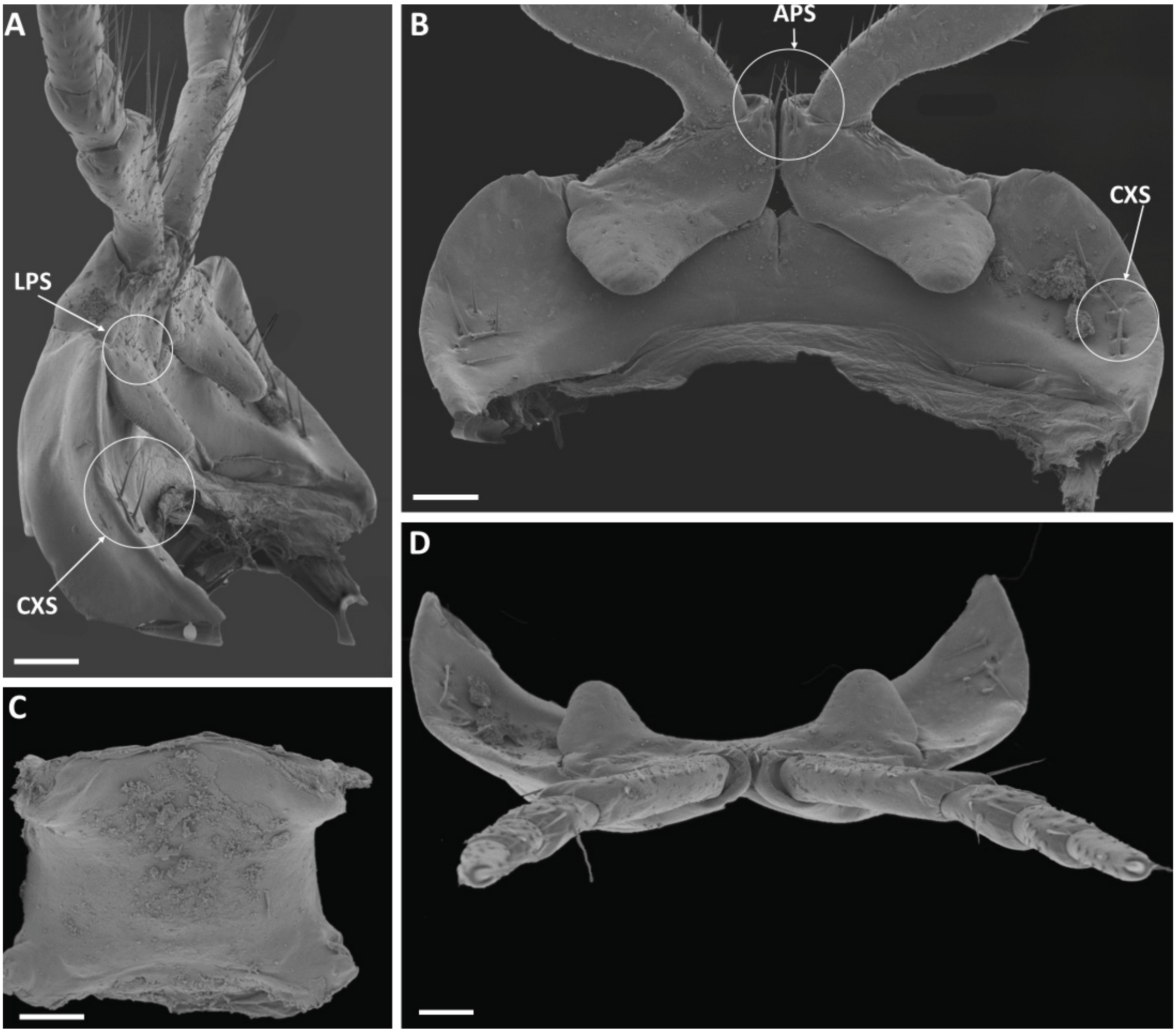

Fig. 37. *Geotypodon cristinae* sp. nov., holotype, ♂ (NHMD 621736). **A–B, D**. First pair of legs. **C**. Sternum 9. Abbreviations: *APS* = mesapical prefemoral setae; *CXS* = coxosternal setae; *LPS* = lateral prefemoral setae. Scale bars = 0.2 mm.

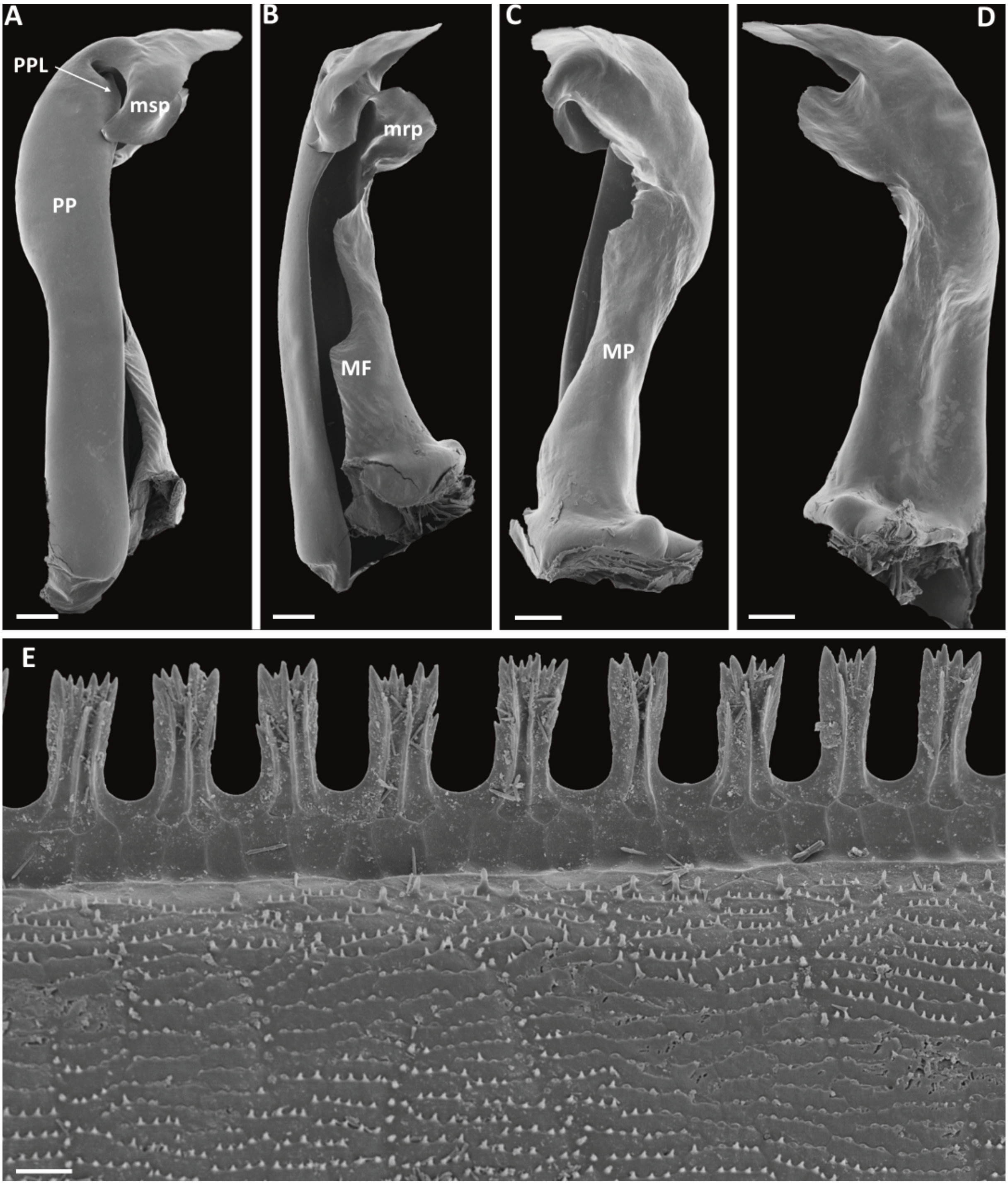

Fig. 38. *Geotypodon cristinae* sp. nov., holotype, ♂ (NHMD 621736). **A–D**. Left gonopod coxa. A. Anterior view. B. Mesal view. C. Lateral view. D. Posterior view. **E**. Midbody dorsal limbus. Abbreviations: *MF* = metaplical flange; *MP* = metaplica; *mrp* = mesad rounded process; *msp* = metaplical spinelike process; *PP* = proplica; *PPL* = proplical lobe. Scale bars: A–D = 0.2 mm; E = 0.01 mm.

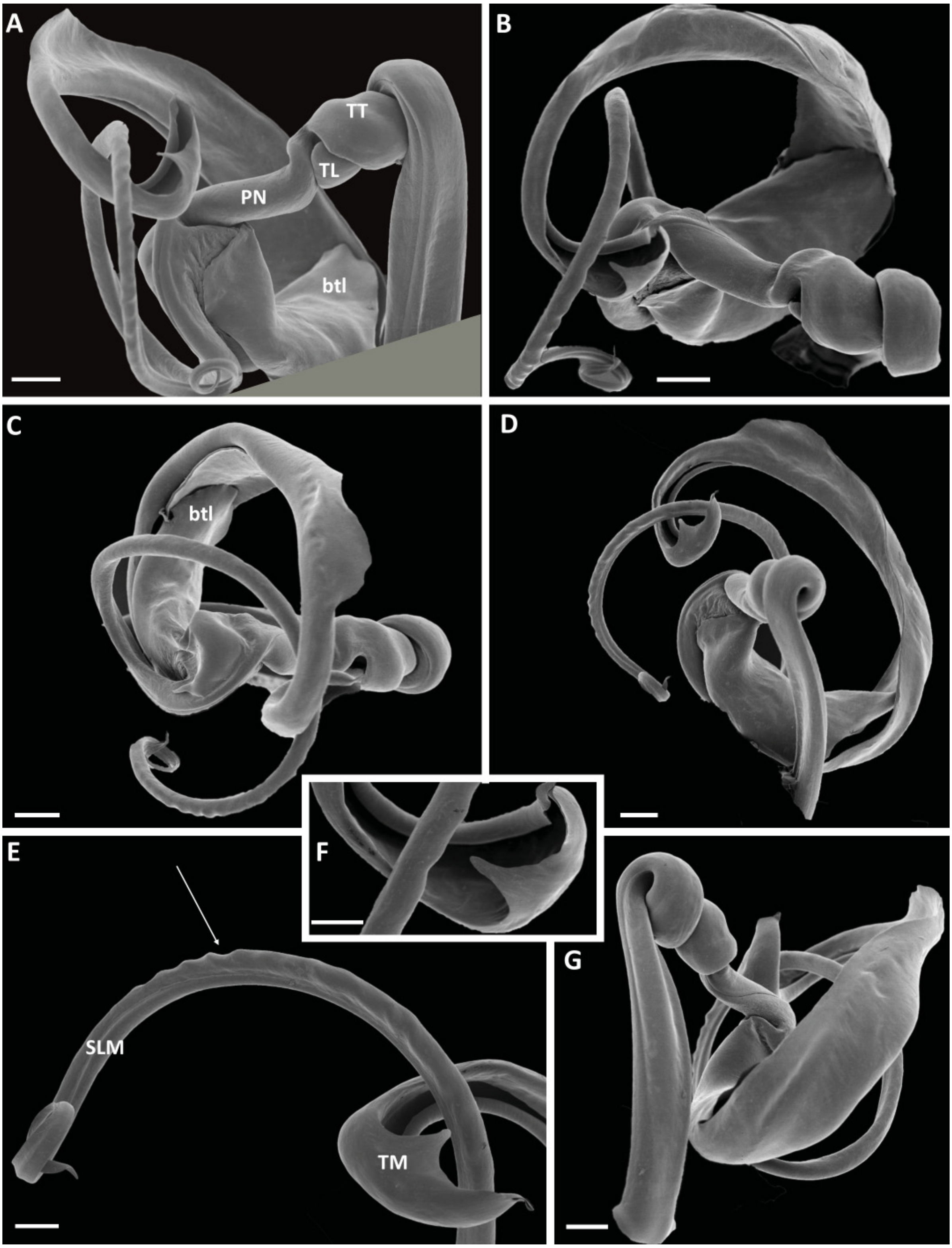

Fig. 39. *Geotypodon cristinae* sp. nov., holotype, ♂ (NHMD 621736). Left gonopod telopodite. **A**. Posterior view. **B**. Ventral view. **C**. Meso-ventral view. **D**. Lateral view. **E**. Distal parts of solenomere and telomere, arrow points to 'wavy' surface. **F**. Tip of telomere (crossed by solenomere). **G**. Latero-anterior view. Abbreviations: *btl* = basal telomeral lamella; *PN* = post-torsal narrowing; *SLM* = solenomere; *TL* = torsotope lobe; *TM* = telomere; *TT* = torsotope. Scale bars: A–D, G = 0.2 mm; E–F = 0.1 mm.

Genus ***Helicochetus*** Attems, 1909

Type species

Spirostreptus dimidiatus Peters, 1855 (Mozambique), by original designation.

Other included species

Twelve (Enghoff 2018), Zambia, D.R. Congo, Kenya, and Tanzania.

Helichochetus gregorii (Pocock, 1896)

Odontopyge gregorii Pocock, 1896.

Helicochetus gregorii – Attems 1914: 206.

Previous Eastern Arc records: Tanga Region, Muheza Distr., Bamba FR (Enghoff *et al.* 2016).

General distribution: also known from Tanzania: Tanga and Kenya: Mt. Kenya (Enghoff *et al.* 2016). Recently collected on Tanzania: Mt. Kilimanjaro (specimens in NHMD).

Remarks

The status of this species vis-à-vis several others, including *H. mutaba* Kraus, 1960 recorded from the Udzungwa Mts, is quite uncertain – maybe only one variable species is involved (Enghoff 2018).

Genus ***Hoffmanides*** Kraus, 1966

Type species

Spinotarsus dissutus Hoffman, 1963 (Tanzania), by original designation.

Other included species

None.

Hoffmanides dissutus (Hoffman, 1963)

Spinotarsus dissutus Hoffman, 1963.

Hoffmanides dissutus – Kraus 1966: 135.

New material examined

TANZANIA • 1 ♂; Morogoro region, Matombo 45 km S of Morogoro; 4 Feb. 1987; Mahunka and Zicsi leg.; sifted material from the debris accumulated near the entrance of a cave - later extracted in Moczarsky-Winkler bag; HNHM diplo-03045 • 1 ♂, 1 ♀; Kimboza FR; 07°2′ S, 37°47′ E; 31 Mar. 1989; A. Zicsi leg.; HNHM diplo-03046 • 1 ♂, 1 ♀, 1 juv.; Morogoro Region, Kilombero District, Udzungwa Mountains National Park; 07°50′57″ S, 36°53′01″ E; 325 m a.s.l.; 2 Mar. 2020; A. Ngute and A.R. Marshall leg.; NHMD 621739, NHMD 621740; ACC.NO. 2020-EN-002) 0149 • 6 ♂♂, 5 ♀♀; Morogoro Region, Kilombero District, Magombera Nature Reserve; 07°48′ 53″–7°49′28″ S, 36°58′ 03″–7°58′55″ E; 271–282 m a.s.l.; 31 Jan.–5 Mar. 2020; A. Ngute and A.R. Marshall leg.; NHMD 621741, NHMD 621742, NHMD 621743; ACC.NO. 2020-EN-00.

Distribution

Previous Eastern Arc records: Morogoro Region, Uluguru Mts, Morningside (Enghoff *et al.* 2016); Iringa-Morogoro regions, Udzungwa National Park, 350 m a.s.l. (Enghoff 2018).

General distribution: Probably an Eastern Arc endemic (cf. Enghoff 2018).

Genus ***Lamelloramus*** Frederiksen, 2013

Type species

Lamelloramus rhombiformis Frederiksen, 2013 (Tanzania), by original designation.

Other included species

Lamelloramus triangularis Frederiksen, 2013 (Tanzania, East Usambara Mts), one new species described here, and another new species from Mt. Kilimanjaro, coll. NHMD.

Diagnosis (modified from Frederiksen 2013b)

Differs from other genera of Prionopetalini by the combination of a side-branching lamella on a long, ribbon-shaped, more or less curled-up telomere, a simple whiplike solenomere with a small loop at the apex and the gonopod coxa apically dividing into a median metaplical process and the actual coxal/ proplical apex.

Lamelloramus frederiksenae sp. nov.

urn:lsid:zoobank.org:act:A324AFEE-BAD1-4DB6-B10F-4E45999F5FC0

Figs 6, 40–42

Diagnosis

Differs from other species of *Lamelloramus*, including the undescribed one from Mt. Kilimanjaro mentioned above, by the presence of a very long basal solenomeral spine (*BSS*) (vs absent or very short in other species) as well as in the outline of the "side-branching telomeric lamella" and the detailed shape of the gonopod coxa.

Etymology

After Sara B. Frederiksen who described the genus *Lamelloramus* (Frederiksen 2013b).

Material examined (total 1 ♂)

Holotype

TANZANIA • ♂; Morogoro Region, Uluguru South FR, forest above Linzi village; 07°06′ S, 37°40′ E; Nov. 1993; The Uluguru Biodiversity Survey leg.; NHMD 621744.

Description (male)

Size. Length 49 mm, diameter 3.3 mm, 55 podous rings, no apodous rings in front of telson.

Colour. After 25 years in alcohol all faded.

Supralabral setae. 6.

Mandibular stipes. Distal margin distinctly concave-bilobed.

Anal valves. With well-developed dorsal spine, no ventral spine, margins not raised, each with three sessile setae.

Limbus (Fig. 41E). With simple, triangular lobes (strongly worn on unique specimen).

Legs. Ventral pads on postfemur and tibia from leg-pair 4, diminishing and eventually disapperaring towards posterior.

First pair of legs (Fig. 40A–C). Prefemoral lobes broad, triangular in ventral view. One to three coxosternal setae (*CXS*) close to lateral margin of coxosternum, well separated from prefemoral lobes. Prefemora with two short mesapical setae (*APS*), lateral setae absent or indistinct.

Sternum 9 (Fig. 40D). Large, in the shape of an inverted triangle on a stout foot, with an irregular keel from bottom to top.

Gonopod coxa (Fig. 41A–D). Quite stout, margins shallowly sinuous. Proplica (*PP*) with shallowly sinuous mesal margin, proplical lobe hidden under anterior metaplical lobe (*ml*). Metaplical flange (*MF*) without a process. Metaplica (*MP*) forming apical 'crown' with a system of ridges delimiting two broad troughs (*tr1*, *tr2*), one shallow, one deep; on anterior side forming broad basad lobe (*ml*) covering proplical lobe; on lateral side with semicircular lobe (*mll*).

Gonopod telopodite (Fig. 42). Arculus 90°. Torsotope (*TT*) compact, with a long post-torsal spine (*PTS*). Post-torsal narrowing (*PM*) not very pronounced, relatively short. Solenomere (*SLM*) very long, longer than telomere, whiplike, with an exceptionally long, first straight, then strongly curved basal

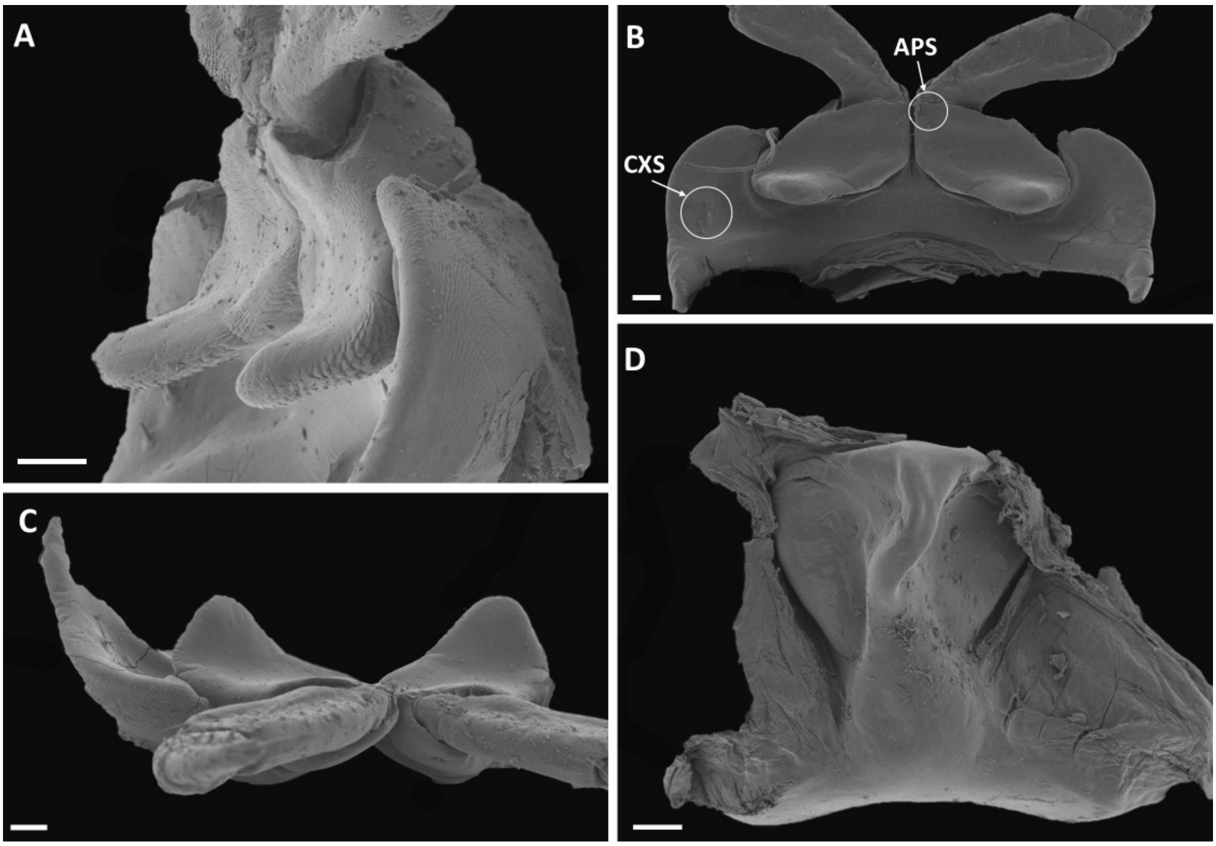

Fig. 40. *Lamelloramus frederiksenae* sp. nov., holotype, ♂ (NHMD 621744). **A–C**. First pair of legs. A. Sublateral view. B. Anterior view. C. Ventral view. **D**. Sternum 9. Abbreviations: *APS* = mesapical prefemoral setae; *CXS* = coxosternal setae. Scale bars = 0.1 mm.

spine (*BSS*) otherwise without any outgrowths; solenomere making a large U-bend on dorsal side of telomere, apically fluted and spiralled (Fig. 42F–G). Telomere (*TM*) relatively simple, mesally dividing into a broadly rounded-triangular mesad(-posteriad) lamella (*stl* = "side-branching telomeric lamella" sensu Frederiksen 2013b), and a long bandlike, tapering process (*tp*) which turns laterad and then makes an almost complete loop in a plane perpendicular to main axis of telopodite.

Distribution and habitat

Known only from the Uluguru South FR.

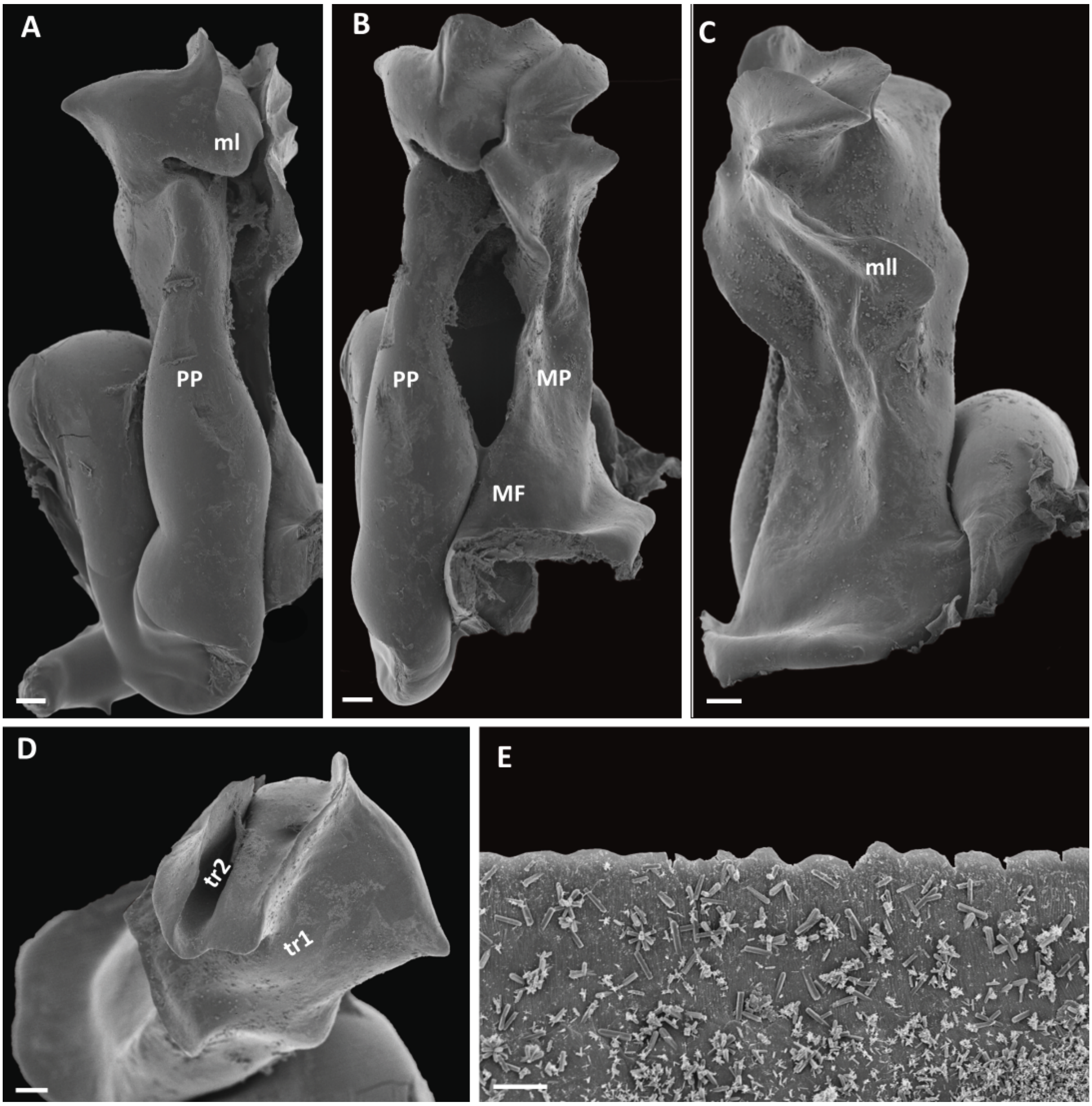

Fig. 41. *Lamelloramus frederiksenae* sp. nov., holotype, ♂ (NHMD 621744). **A–D**. Left gonopod coxa. A. Anterior view. B. Mesal view. C. Posterior view. D. Distal view (lateral side to the right). **E**. Midbody dorsal limbus. Abbreviations: *MF* = metaplical flange; *ml* = metaplical lobe; *mll* = metaplical lateral lobe; *MP* = metaplica; *PP* = proplica; *tr1*, *tr2* = apical metaplical troughs. Scale bars: A–D = 0.1 mm; E = 0.01 mm.

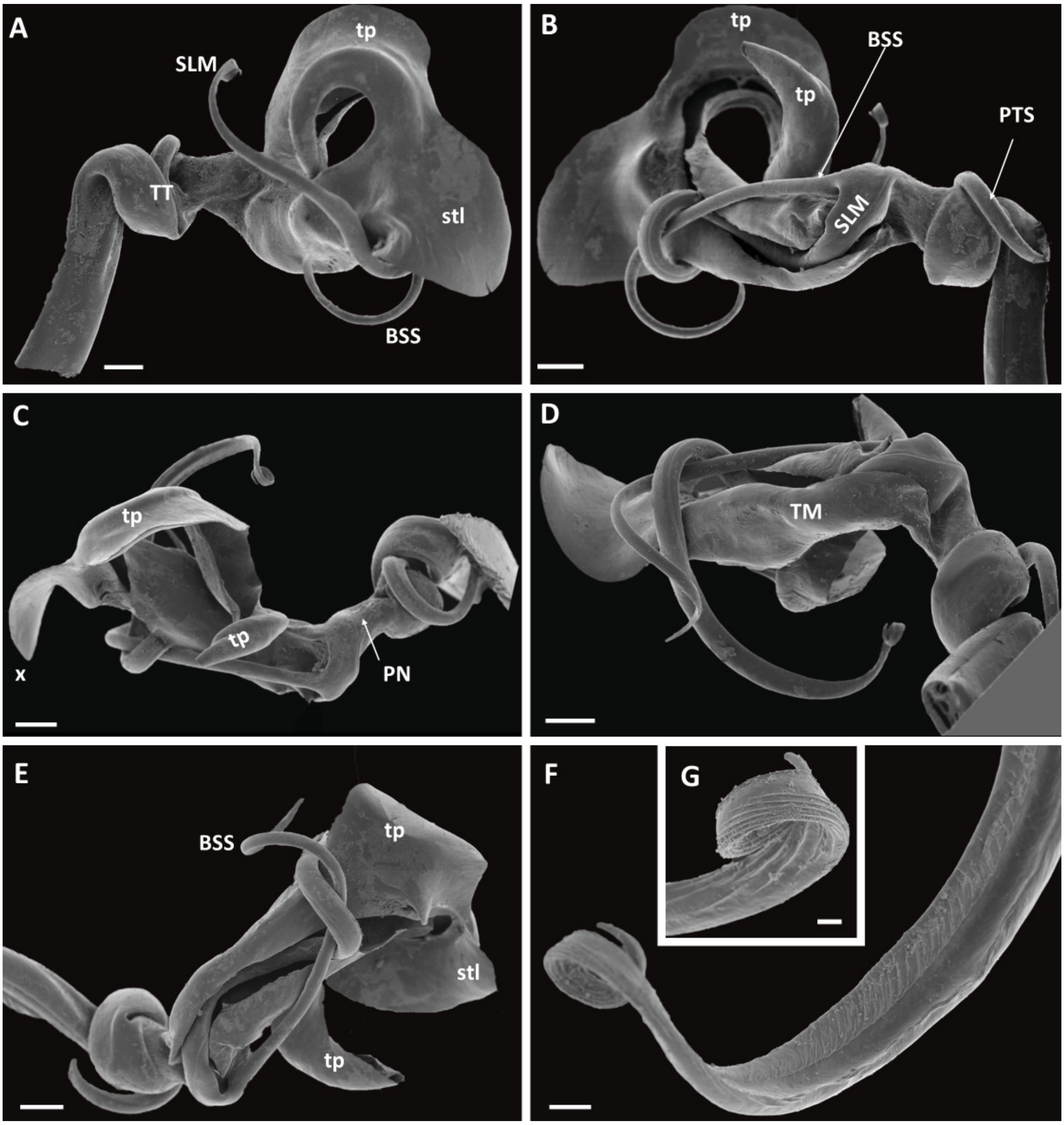

Fig. 42. *Lamelloramus frederiksenae* sp. nov., holotype, ♂ (NHMD 621744), left gonopod telopodite. **A**. Anterior view. **B**. Posterior view. **C**. Distal (ventral) view. **D**. Sub-dorsal view (grey area in lower right covered by mounting tape). **E**. Dorso-anterior view. **F–G**. Solenomere tip. Abbreviations: *BSS* = basal solenomeral spine; *PN* = post-torsal narrowing; *PTS* = post-torsal spine; *SLM* = solenomere; *stl* = 'side-branching telomeric lamella'; *TM* = telomere; *tp* = telomeral process. Scale bars: A–E = 0.2 mm; F = 0.05 mm; G = 0.02 mm.

Lamelloramus rhombiformis Frederiksen, 2013

New material examined

TANZANIA • 1 ♂; East Usambara Mts, Amani and Monga; 2–19 Sep. 1992; M. Andersen leg.; NHMD 621745 • 5 ♂♂, 1 ♀; East Usambara Mts, Amani, forest; 05°5.7′ S, 38°38′ E; C.E. Griswold, N. Scharff and D. Ubick leg.; NHMD 621746.

Distribution

Previous Eastern Arc records: Tanga Region, Muheza Distr., East Usambara Mts, Amani, 05°05–07′ S, 38°34–38′ E, 1000 m a.s.l. (Frederiksen 2013b).

General distribution: East Usambara endemic.

Lamelloramus triangularis Frederiksen, 2013

New material examined

TANZANIA • 1 ♂; Tanga region, Amani, National Institute for Medical Research, 1000 m a.s.l.; 11 Feb. 1987; Mahunka, Pócs and Zicsi leg.; hand collecting from litter and under barks of standing trees; HNHM diplo-03047 • 2 ♂♂, 2 ♀♀; West Usambara Mts, Mazumbai; 04°49′ S, 38°3′ E; 10–20 Nov. 1995; C.E. Griswold, N. Scharff and D. Ubick leg.; forest; NHMD 621747 • 3 ♂♂, 2 ♀♀; West Usambara Mts, Mazumbai; 04°49′ S, 38°3′ E; 10–20 Nov. 1995; C.E. Griswold, N. Scharff and D. Ubick leg.; forest; NHMD 621748.

Distribution

Previous Eastern Arc records: Tanga Region, Muheza Distr., East Usambara Mts, Amani, 500–100 m a.s.l. • Tanga Region, Muheza + Korogwe Distr., East Usambara Mts, Nilo FR, 04°53–57′ S, 38°38′ E (Frederiksen 2013b).

General distribution: Usambara endemic.

Genus ***Multipronopea*** gen. nov.
urn:lsid:zoobank.org:act:C7AAFDC4-1858-413C-9482-157FCF84E20C

Type species

Multipronopea agneteae gen. et sp. nov.

Other included species

None.

Diagnosis

Differs from other genera of Prionopetalini by the combination of uniquely shaped limbus lobes (resembling the prow of a boat with multiple bowsprits) and an extremely elongated, slender and unilateraly serrate distal telomeral process.

Etymology

The genus name (gender feminine) is an anagram of *Prionopetalum*, referring to the similarities with this genus.

Table 3. Comparison of three odontopygid genera.

	***Multipronopea* gen. nov.**	***Yia* Enghoff, 2016**	***Prionopetalum* Attems, 1909**
Pro-metazonital suture	straight	with extended, shallow anteriad sinus below ozopore	straight
Limbus: denticles	single or double-pointed, with high longitudinal keel	single-pointed, simple	single-pointed, simple
Gonopods:			
Post-torsal spine	flattened, lobelike	absent	normal
Basal solenomeral spine	long	absent	absent
Basal telomeral outgrowth	a stout, darkened spine	two long, slender spines	a variously shaped process

Remarks

In the key to genera of "Odontopyginae" of Kraus (1966), *Multipronopea agneteae* gen. et sp. nov. runs to couplet 31 where it fits neither alternative (*Haplothysanus* Attems, 1909, vs *Haplothysaria* Kraus, 1960).

Whereas the limbus of *Multipronopea agneteae* gen. et sp. nov. seems to be unique, the new genus shares gonopodal peculiarities with some other genera. Thus, the extremely slender, elongated telomere reminds of *Allantogonus* Attems, 1912, in which, however, the telomere is completely smooth, lacking the serrations in *Multipronopea* gen. nov.

The long, serrated distal telomeral process (*tp*) reminds of *Prionopetalum* Attems, 1909, and *Yia* Enghoff, 2016, but *Multipronopea* gen. nov. differs from both genera in several aspects, see Table 3.

Multipronopea agneteae gen. et sp. nov.
urn:lsid:zoobank.org:act:08B6C1A5-8B3F-4323-B62A-65266561F1F0
Figs 43–46

Diagnosis

Redundant, genus monotypic.

Etymology

After Agnete Elisabeth Enghoff (1924–2019), the author's mother and 'landlady' of 'Hotel Dolichoiulus'.

Material examined (total 4 ♂♂)

Holotype

TANZANIA • ♂; Morogoro Region, Morogoro District, Kasanga FR; 37°45′ E, 7°10′ S, 700–900 m a.s.l.; 27 Jul.–2 Aug. 2000; Uluguru Mountains Biodiversity Conservation Project 2000; Nike Doggart leg.; lowland submontane forest, taken from leaf litter and rotting logs; NHMD 621749.

Paratypes

TANZANIA • 1 ♂; Morogoro Region, Morogoro District, Chamayani FR, Mvuha; 07°10′ S, 37°50′ E, 160–300 m a.s.l.; Jul. 2000; Uluguru Mountains Biodiversity Conservation Project, Nike Doggart leg.;

riverine and lowland forest, taken from leaf litter and rotting logs; NHMD 621750 • 2 ♂♂; Uluguru Mts, Kimboza Forest; 250 m a.s.l.; 18 Jul. 1981; M. Stoltze and N. Scharff leg.; NHMD 621751.

Description (male)

Size. Length 42–55 mm, diameter 2.1–2.8 mm, 67–74 podous rings, no apodous rings in front of telson.

Colour. After 18–37 years in alcohol faded to uniform brownish white, except, in specimen from Kimboza Forest, for brown head, collum and other pregonopodal rings; the latter with indications of dark middorsal spots, i.e., no signs on dorsal light band.

Supralabral setae. 6.

Mandibular stipes. Distal margin shallowly concave, bilobed.

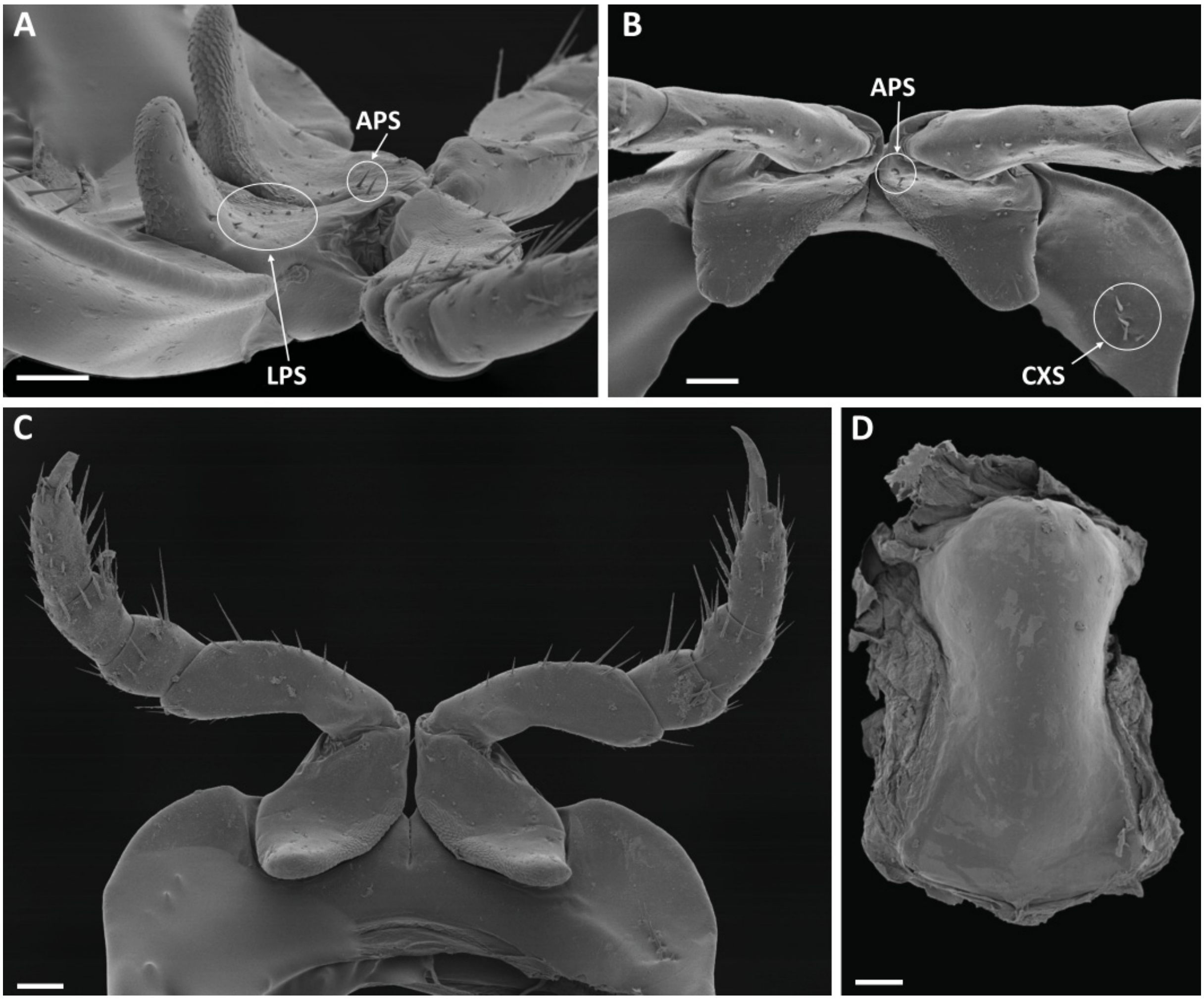

Fig. 43. *Multipronopea agneteae* gen. et sp. nov., paratype, ♂, from Chamayani F.R. (NHMD 621750). **A–C**. First pair of legs. A. Sublateral view. B. Ventral view. C. Anterior view. **D**. Sternum 9. Abbreviations: *APS* = mesapical prefemoral setae; *CXS* = coxosternal setae; *LPS* = lateral prefemoral setae. Scale bars = 0.1 mm.

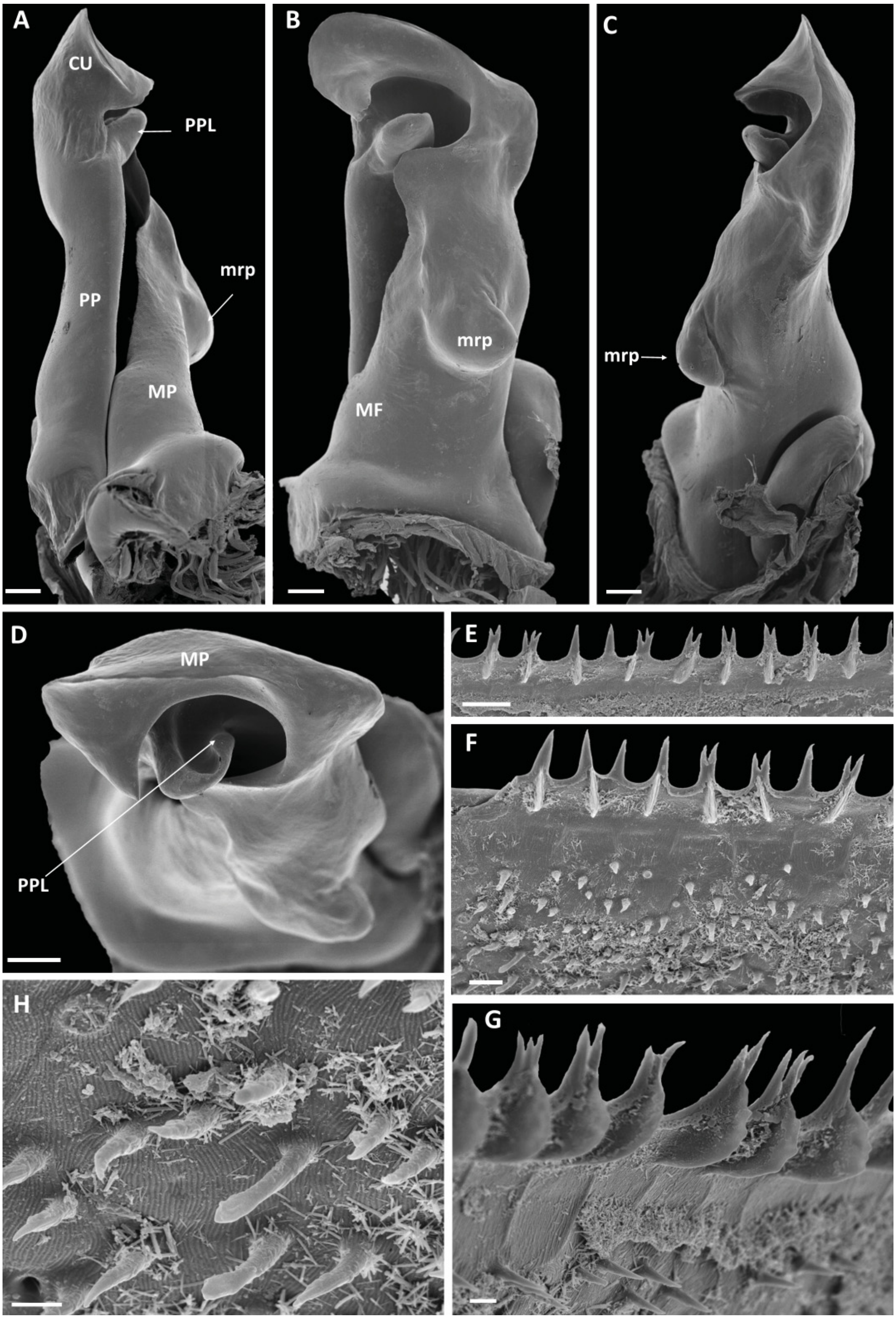

Fig. 44. *Multipronopea agneteae* gen. et sp. nov., holotype, ♂ (NHMD 621749). **A–D**. Left gonopod coxa. A. Anterior view. B. Mesal view. C. Posterior view. D. Apical view. **E–G**. Midbody dorsal limbus. **H**. cuticle near limbus. Abbreviations: *CU* = cucullus; *MF* = metaplical flange; *MP* = metaplica; *mrp* = metaplical rounded process *PP* = proplica; *PPL* = proplical lobe. Scale bars: A–D = 0.1 mm; E = 0.01 mm; F = 0.005 mm; G–H = 0.002 mm.

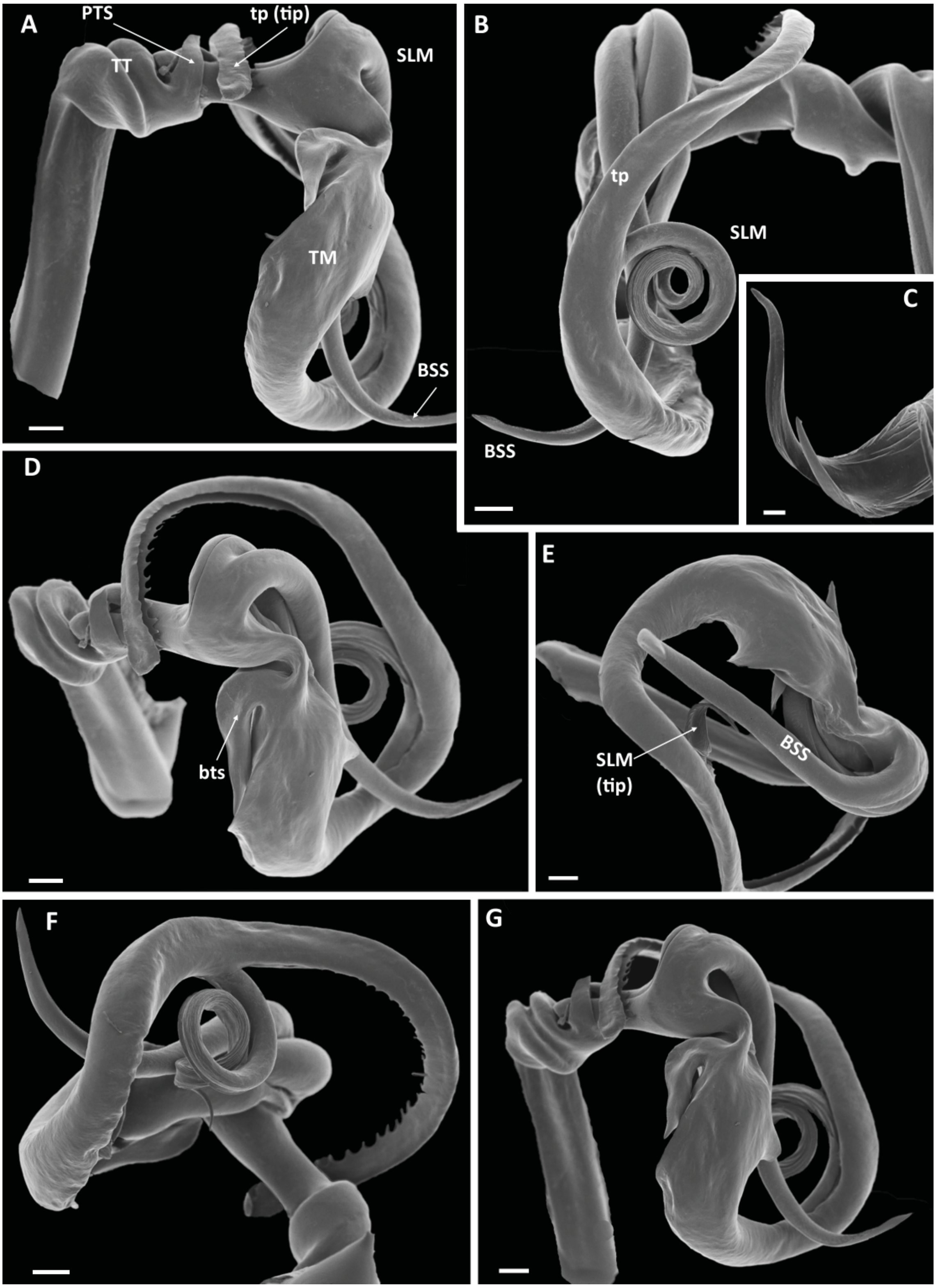

Fig. 45. *Multipronopea agneteae* gen. et sp. nov., holotype, ♂ (NHMD 621749), left gonopod telopodite. **A**. Anterior view, showing tip of telomere process. **B**. Posterior view. **C**. Tip of solenomere. **D**. Anterior-distal (ventral) view. **E**. Mesal view, showing tip of solenomere. **F**. Ventral view. **G**. Anterio-mesal view. Abbreviations: *BSS* = basal solenomeral spine; *bts* = besal telomeral spine; *PTS* = post-torsal spine; *SLM* = solenomere; *TM* = telomere; *tp* = telomeral process. Scale bars: A–B, D–G = 0.1 mm; C = 0.02 mm.

Anal valves. With small yet distinct dorsal spine; ventral spine blunt, almost as large as dorsal spine; margins not raised, three sessile marginal setae.

Limbus (Fig. 44E–G). Peculiar: margin with long, thin, simple, double or triple spines; each with a high, arched, longitudinal ridge. Cuticle in front of limbus (Fig. 44H) roughly spinose, some spines rodlike.

Legs. Postfemoral and tibial pads well-developed from leg-pair 3 or 4 backward, diminishing in size and eventually disappearing towards posterior end.

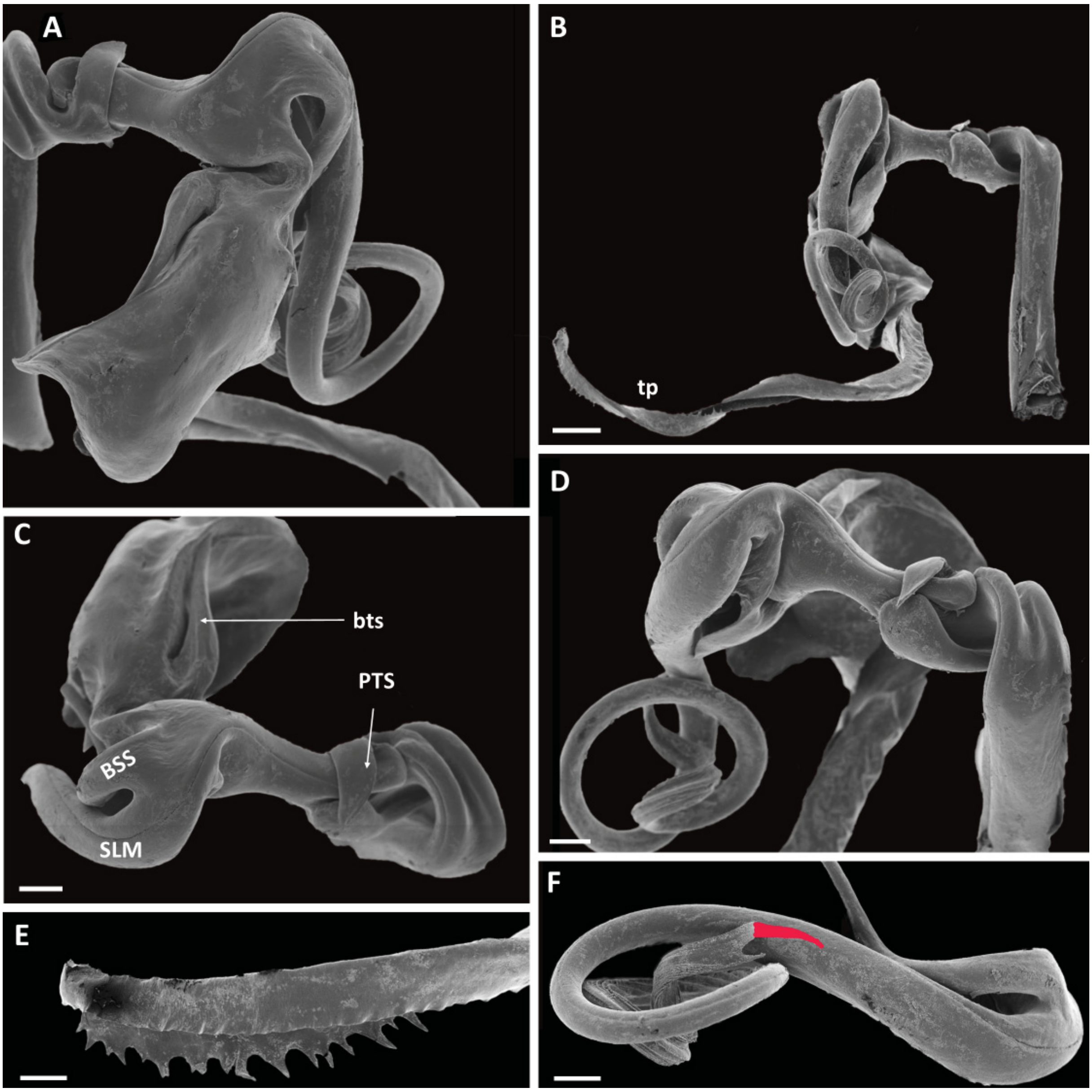

Fig. 46. *Multipronopea agneteae* gen. et sp. nov., paratype, ♂, from Kimboza (NHMD 621751), left gonopod telopodite. **A**. Anterior view. **B**. Posterior view. **C**. Apical (ventral) view. **D**. Meso-posterior view. **E**. Tip of telomere. **F**. Solenomere, main tip reconstructed (red). Abbreviations: *BSS* = basal solenomeral spine; *bts* = besal telomeral spine; *PN* = post-torsal narrowing; *PTS* = post-torsal spine; *SLM* = solenomere; *TM* = telomere; *tp* = telomeral process. Scale bars: A, C–D, F = 0.1 mm; B = 0.2 mm; E = 0.05 mm.

First pair of legs (Fig. 43A–C). Prefemoral lobes rounded-triangular in ventral view. One to three coxosternal setae (*CXS*) close to lateral margin of coxosternum, well separated from prefemoral lobes. Prefemora with one mesalpical seta (*APS*) and ca 10 peglike lateral sensilla (*LPS*).

Sternum 9 (Fig. 43D). High, tongue-like, distal part almost circular in outline.

Gonopod coxa (Fig. 44A–D). Proplica (*PP*) simple, with straight mesal margin, ending in small proplical lobe (*PPL*). Metaplica (MP) with large metaplical flange (*MF*) almost closing mesal opening of coxa; with a rounded mesal process (*mrp*), somewhat resembling the flipper of a seal, ca at mid-length; cucullus (CU) triangular in outline, open in top (Fig. 44D).

Gonopod telopodite (Figs 45–46). Arculus 90°. Torsotope (*TT*) compact, with a flattened post-torsal spine/lobe (*PTS*). Post-torsal narrowing (*PN*) pronounced, extended. Solenomere (*SLM*) very long and slender, ca same length as telomere, making two complete coils, with a very long basal spine (*bss*) (Fig. 45, *bss* somewhat shorter in specimen from Kimboza), tip of solenomere (Figs 45C, 46F) unequally bifurcate. Telomere (*TM*) from a moderately broad basis (considerably broader in specimen from Kimboza) drawn out into extremely long, slender, curved process (*tp*) formed by a longitudinally folded narrow sheet; one edge of sheet coarsely dentate; a stout, darkened spine (*bts*) on anterior basal margin of telomere.

Distribution and habitat

Known from three lowland to submontane FRs in the Uluguru Mts, altitude 160–900 m a.s.l. See Doggart *et al.* (2004) for information on these areas.

Remarks

The specimens from Kimboza FR differ slightly from the others: fewer podous rings (Kimboza: 67, Chamayani: 74); basal solenomeral spine shorter, but basal part of telomere broader. For the time being, these differences are interpreted as intraspecific variation.

Genus ***Notogallanus*** gen. nov.

urn:lsid:zoobank.org:act:5A64E853-E182-4B15-8D6F-E8B5D72479DC

Type species

Notogallanus mastacembalus gen. et sp. nov.

Other included species

None.

Diagnosis

Differs from other genera of Prionopetalini by the combination of a very elongated, slender telomere and a long, thin, unilaterally microserrate solenomere.

Etymology

The genus name (gender masculine) is an anagram of *Allantogonus*, referring to the similarities (telomere almost as slender as solenomere) with this genus.

Remarks

In the vial containing the holotype of the type species of *Notogallanus* gen. nov., Richard Hoffman had placed a label saying “really bizarre new genus”, a statement with which it is difficult to disagree. In the key to genera of “Odontopyginae” of Kraus (1966), *Notogallanus mastacembalus* gen. et sp. nov.

runs all the way to *Odontopyge*, although underways the similarities with *Allantogonus* (couplet 4, telomere roughly same shape as telomere) and *Prionopetalum* (couplet 22, distal part of telomere very slender) may cause confusion. A very long, thin telomere is also present in *Multipronopea agneteae* gen. et sp. nov. In the latter, however, the solenomere is smooth and has a huge basal spine, while the telomere is coarsely dentate, whereas in *Notogallanus mastacembalus* gen. et sp. nov., the solenomere is microserrate and has no basal spine, while the telomere is almost smooth. The microserrate solenomere seems to be a unique feature of this genus. There are other odontopygids in which the solenomere has a more or less sawlike row of denticles, but these are then much larger and/or not placed on the margin of the solenomere, see, e.g., Attems (1935: fig. 91), Kraus (1960: fig. 220) and Frederiksen & Enghoff (2015: figs 2b, 3c) for *Rhanphidarpoides* spp., or Kraus (1958a: figs 111, 115) for *Rhamphidarpella flagellosa* Kraus, 1958 and *Rhamphidarpe occidentalis* Kraus, 1958.

Notogallanus mastacembalus gen. et sp. nov.
urn:lsid:zoobank.org:act:03954FC9-26CC-451A-AAE5-B92A131DD425
Figs 47–49

Diagnosis

Redundant, genus monotypic.

Etymology

After the spiny eel genus *Mastacembelus* Scopoli, 1777, to which the microserrate solenomere of the new species bears some resemblance, see https://www.britannica.com/animal/spiny-eel. Noun in apposition.

Material examined (total 1 ♂)

Holotype

TANZANIA • ♂; Dodoma Region, Mpwapwa District, Wota FR, Rubeho Mts; Apr. 1984; J. Kielland leg.; VMNH110632.

Description (male)

Size. Length 23+ mm, diameter 2.2 mm, 50+ podous rings, no apodous rings in front of telson. Ring 7 is missing from the specimen, and it cannot be excluded that more rings are missing, too.

Colour. Faded, with traces of a longitudinal light dorsal stripe.

Supralabral setae. Indistinct.

Mandibular stipes. Produced ventrad in triangular process, distal margin very shallowly concave.

Anal valves. With a very small dorsal spine, no ventral spine; margins barely raised, each with three sessile setae.

Limbus (Fig. 48E). With rounded-triangular, well separated lobes.

Legs. Postfemoral and tibial pads from leg-pair 4 backward, diminishing in size and eventually disappearing near hind end.

First pair of legs (Fig. 47A–C). Prefemoral lobes rounded-triangular in ventral view, their mesal margin forming a blunt angle with main part of prefemur (in other odontopygids this angle is less distinct). One to two short coxosternal setae (*CXS*) close to lateral margin of coxosternum, well separated from prefemoral lobes. Prefemora with two short mesapical setae (*APS*) and a scattering of inconspicuous peglike sensilla more basally/laterally.

STERNUM 9 (Fig. 47D). About twice as broad as long, swollen in middle.

GONOPOD COXA (Fig. 48A–D, F). Proplica (*PP*) simple, basally narrow, with proplical lobe (*PPL*) hidden behind large subspherical lobe (*msl*) originating from mesal margin of metaplica (*MP*). Metaplica/cucullus with low, regularly curved ridge (*mr*) Cucullus (*CU*) subrhomboidal, with a blunt mesal triangular process (*trp*) and a short irregular lateral process (*ilp*).

GONOPOD TELOPODITE (Figs 48G–H, 49). Arculus 90°; torsotope (*TT*) compact, post-torsal narrowing (*PN*) pronounced; no post-torsal spine. Solenomere (*SLM*) very long, ca same length as telomere, whiplike, with a row of tiny, sharp denticles (*ssd*) with their tips pointing distad, along one side of part of the distal section of the solenomere which therefore resembles a saw (or a spiny eel, cf. remarks to genus). Telomere (*TM*) very long, from a relatively broad basis extending into very slender distal part formed by a transversely rolled-up sheet. At the place where the solenomere leaves the telomere, the margin of the latter forms a 'skirt' (Fig. 49E).

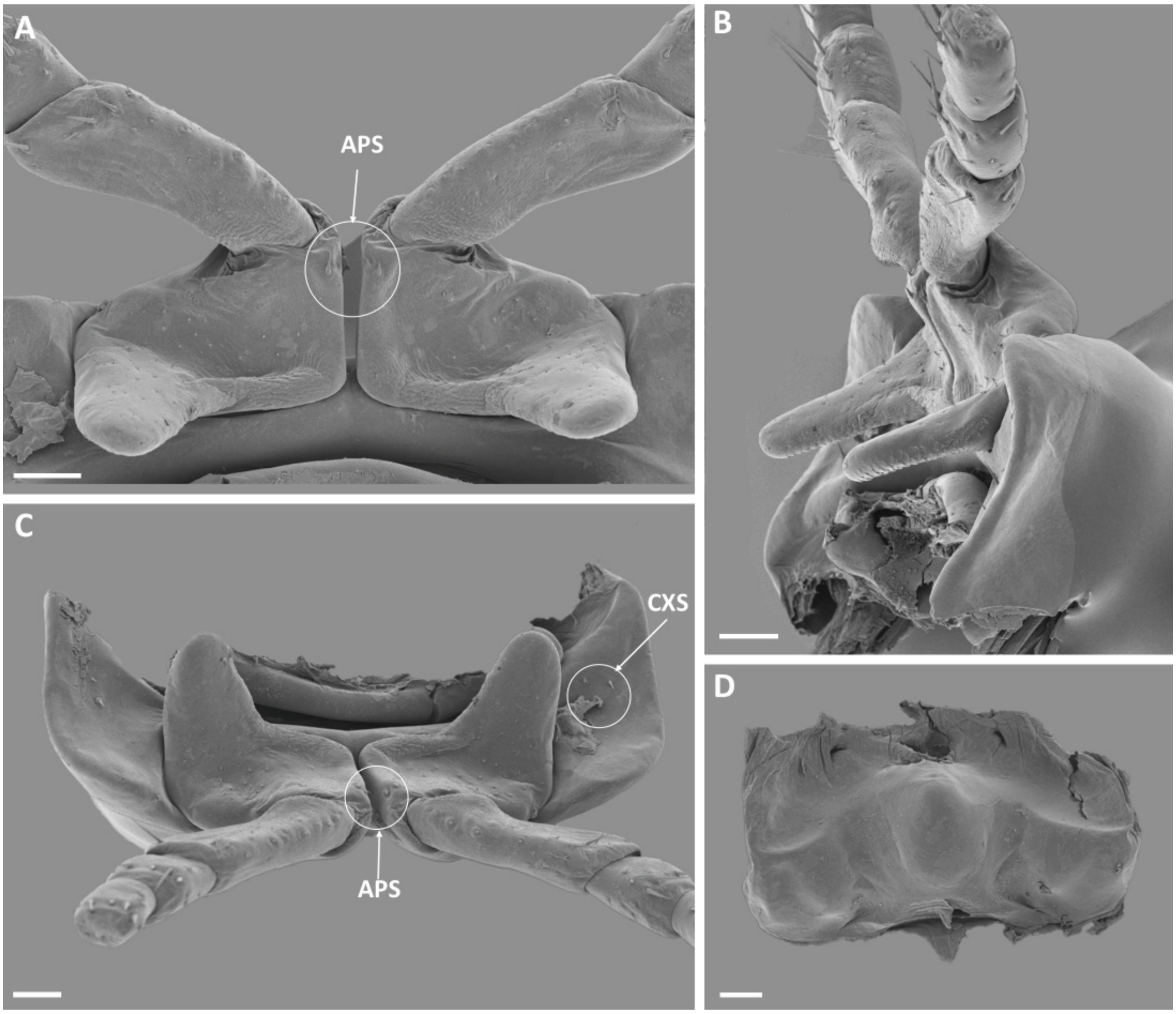

Fig. 47. *Notogallanus mastacembalus* gen. et sp. nov., holotype, ♂ (VMNH110632). **A–C**. First pair of legs. A. Anterior view. B. Sublateral view. C. Ventral view. **D**. Sternum 9. Abbreviations: *APS* = mesapical prefemoral setae; *CXS* = coxosternal setae. Scale bars = 0.1 mm.

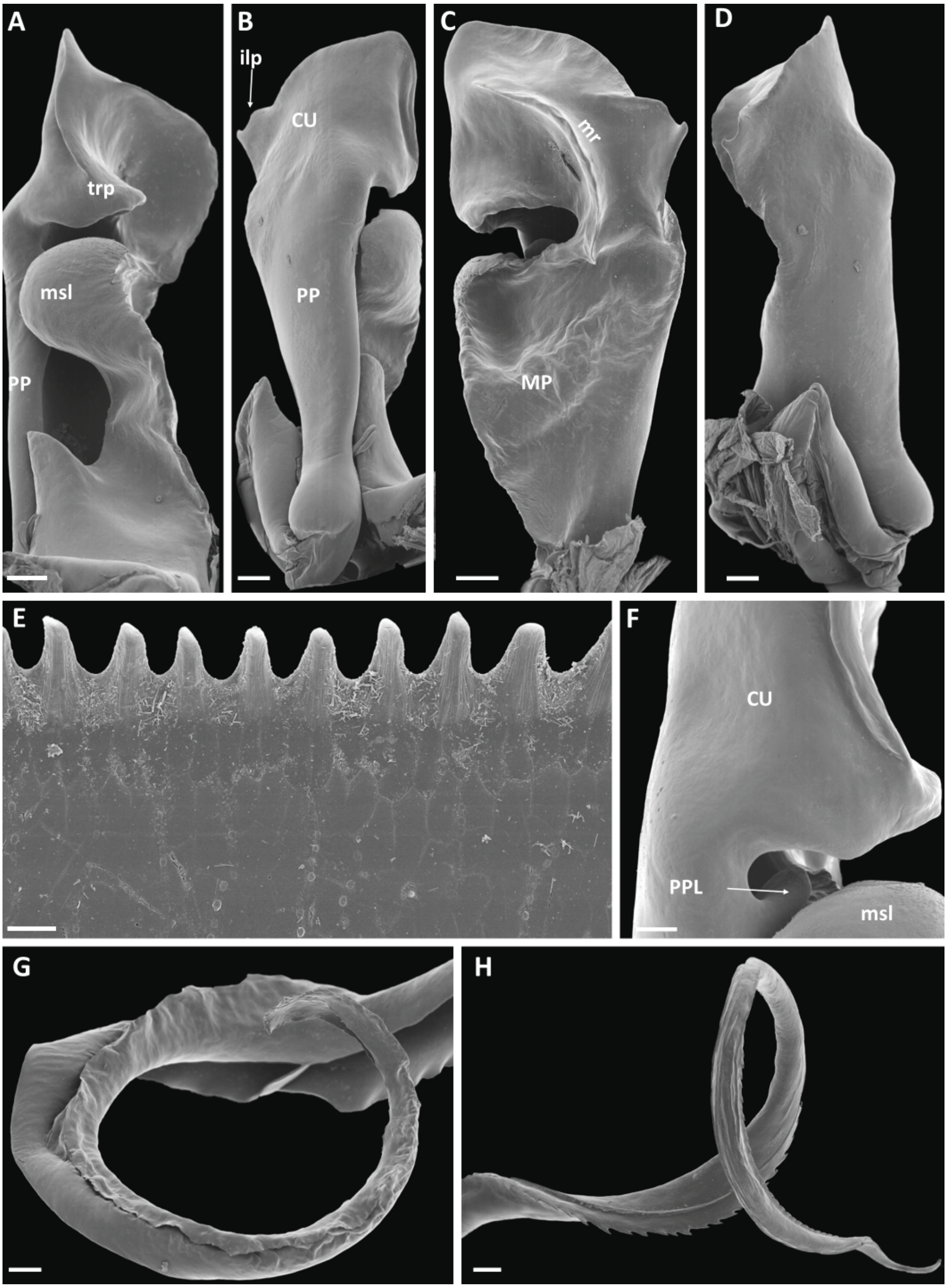

Fig. 48. *Notogallanus mastacembalus* gen. et sp. nov., holotype, ♂ (VMNH110632). **A–D, F**. Left gonopod coxa. A. Mesal view. B. Anterior view. C. Posterior view. D. Sublateral view. F. Detail of cucullus and proplica, showing proplical lobe. **E**. Midbody dorsal limbus. **G–H**. Left gonopod telopodite. G. Tip of telomere. H. Tip of solenomere. Abbreviations: *CU* = cucullus; *ilp* = irregular lateral process; *MP* = metaplica; *mr* = metaplical ridge; *msl* = metaplical subspherical lobe; *PP* = proplica; *trp* = triangular process. Scale bars: A–D = 0.1 mm; E = 0.01 mm; F–H = 0.05 mm.

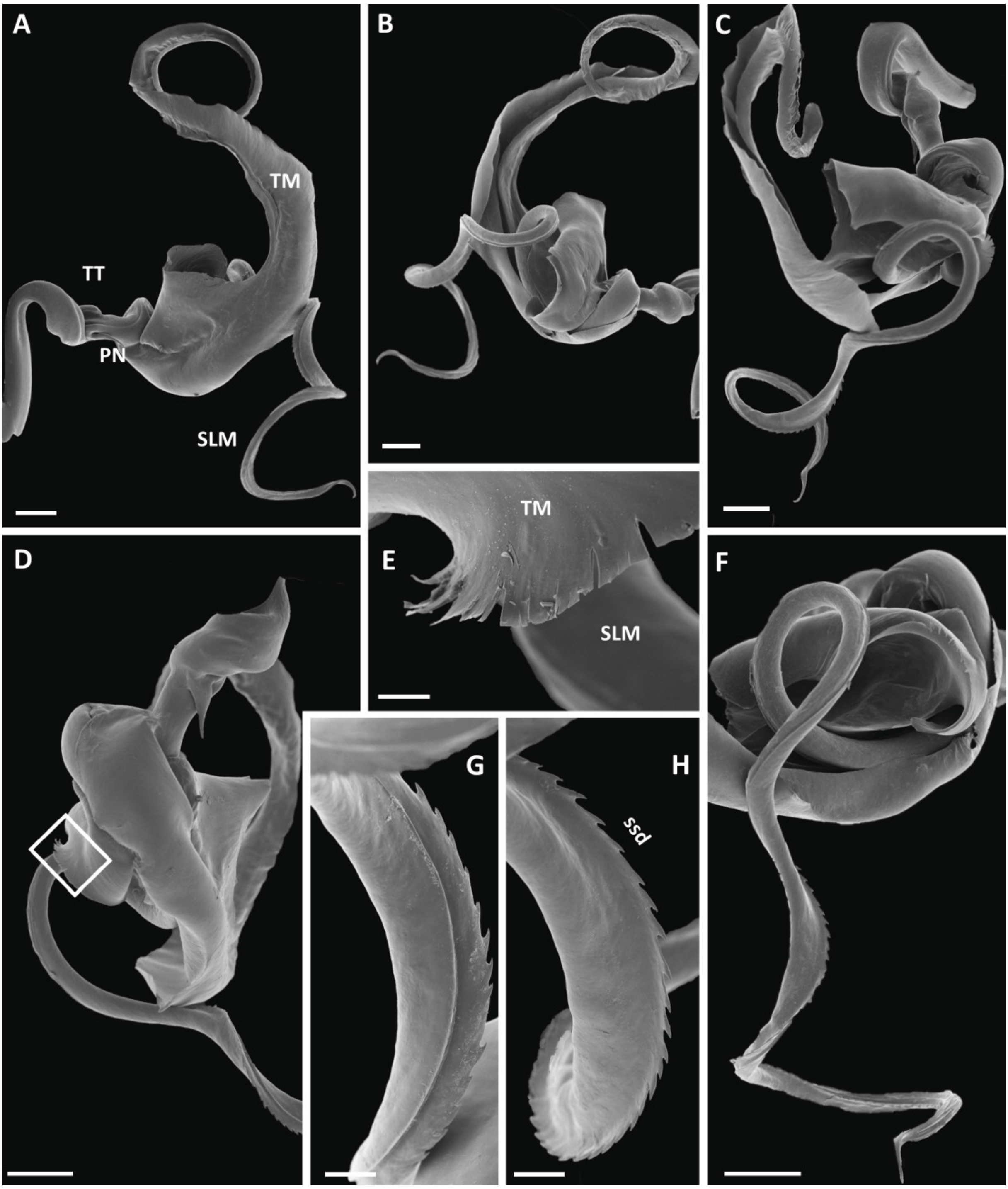

Fig. 49. *Notogallanus mastacembalus* gen. et sp. nov., holotype, ♂ (VMNH110632), left gonopod telopodite. **A**. Anterior view. **B**. Posterior view. **C**. Subventral view. **D**. Subdorsal view. **E**. Close-up of framed area of D, showing telomeral 'skirt' at exit of solenomere. **F**. Submesal view. **G–H**. close-ups of serrate part of solenomere. Abbreviations: *PN* = post-torsal narrowing; *SLM* = solenomere; *ssd* = solenomeral 'saw teeth'; *TM* = telomere; *TT* = torsotope. Scale bars: A–D, F = 0. 2 mm; E = 0.02 mm; F–G = 0.05 mm.

Genus ***Plethocrossus*** Attems, 1909

Type species

Plethocrossus octofoveatus Attems, 1909 (Tanzania), by original designation.

Other included species

Seven, West, Central and East Africa (Kraus 1960).

Plethocrossus nairobinus Attems, 1914

New material examined

TANZANIA • 1 ♂; Kilimanjaro Region, Mwanga District, North Pare Mts, Kiverenge FR; 3°47′55.4″ S, 37°39′54.4″ E; 1305 m a.s.l.; 14 May 2011; S. Frederiksen leg.; NHMD 621752.

Distribution

Previous Eastern Arc records: Kilimanjaro Region, Mwanga District, North Pare Mts, Kifula, Ugwena (Enghoff *et al.* 2016).

General distribution: also known from Tanzania: Arusha Region, Lomgido District, Longido Mt., and from several places in Kenya (Enghoff *et al.* 2016).

Plethocrossus tardus Attems, 1909

Previous Eastern Arc records: Morogoro Region, Morogoro Rural Distr., Uluguru Mts, Lupanga West (Enghoff *et al.* 2016).

General distribution: also known from Tanzania: Mt. Kilimanjaro and from Kenya, Suswa (Enghoff *et al.* 2016).

Genus *Praludivera* gen. nov.
urn:lsid:zoobank.org:act:7D27B7DD-6A35-4663-BEC8-E4B284FB2B38

Type species

Praludivera paralellamella gen. et sp. nov.

Other included species

None.

Diagnosis

Differs from other genera of Prionopetalini by the combination of the mesal margin of the proplica running all the way to the coxal tip which is forming a distal opening, a simple, distally striate solenomere slightly shorter than the telomere, and a telomere with a set of parallel lamellae on the internal surface.

Etymology

The genus name (gender feminine) is an anagram of *Raduliverpa* Frederiksen & Enghoff, 2015 and refers to the similarities with this genus, especially in characters of the solenomere tip.

Remarks

This genus is not very well characterized vis-à-vis several other genera including *Raduliverpa* and *Rhamphidarpoides* Kraus, 1960, although the two characters here taken to be diagnostic of *Praludivera* gen. nov., viz, the extended proplica, the distally open coxa and the telomeral lamellae, are indeed exceptional. In the key to genera of "Odontopyginae" of Kraus (1966), *P. paralellamella* gen. et sp. nov. runs to the last couplet where it fits with neither alternative, viz *Patinatius* Attems, 1928, and *Odontopyge* sensu Kraus (see Enghoff 2016a concerning the latter genus).

Praludivera paralellamella gen. et sp. nov.

urn:lsid:zoobank.org:act:832256AE-9496-4350-B5C1-E09348DB8B40

Figs 50–51

Diagnosis

Redundant, genus monotypic.

Etymology

The species epithet, a noun in apposition, refers to the set of parallel lamellae distally on the gonopodal telomere.

Material examined (total 1 ♂)

Holotype

TANZANIA • ♂; Rubeho Mts, Mangalisa Mt.; 2100 m a.s.l.; 23 Feb. 1984; J. Kielland leg.; open grassland; retrieved from jar labelled "Kielland rehabs", seems to have been dried out; VMNH110633.

Description (male)

Size. Length 58 mm, diameter 3.5 mm, 65 podous ring, no apodous rings in front of telson.

Colour. After 37 years in alcohol, and possibly temporal drying, head, collum and telson black, but head becoming brownish towards anterior margin. Rings blackish with amber posterior zone and large whitish patches (obviously artefacts) and traces of a longitudinal pale stripe. Legs medium brown.

Supralabral setae. 4.

Mandibular stipes. Produced ventrad in triangular process, distal margin very shallowly concave.

Anal valves. With a medium-sized dorsal spine and a slightly smaller ventral spine; margins raised, 3 setae on ravelins.

Limbus (Fig. 50F). With short, rounded (worn?), faintly striate lobes.

Legs. Postfemoral and tibial pads present but indistinct (due to shrinkage?).

First pair of legs (Fig. 50G–I). Prefemoral lobes relatively slender, triangular in ventral view. Two coxosternal seta (*CXS*) close to lateral margin of coxosternum, well separated from prefemoral lobes. Prefemora with two short mesapical setae (indistinct, not seen on Fig. 50G–I), apparently no lateral prefemoral setae.

Sternum 9. Not retrievable.

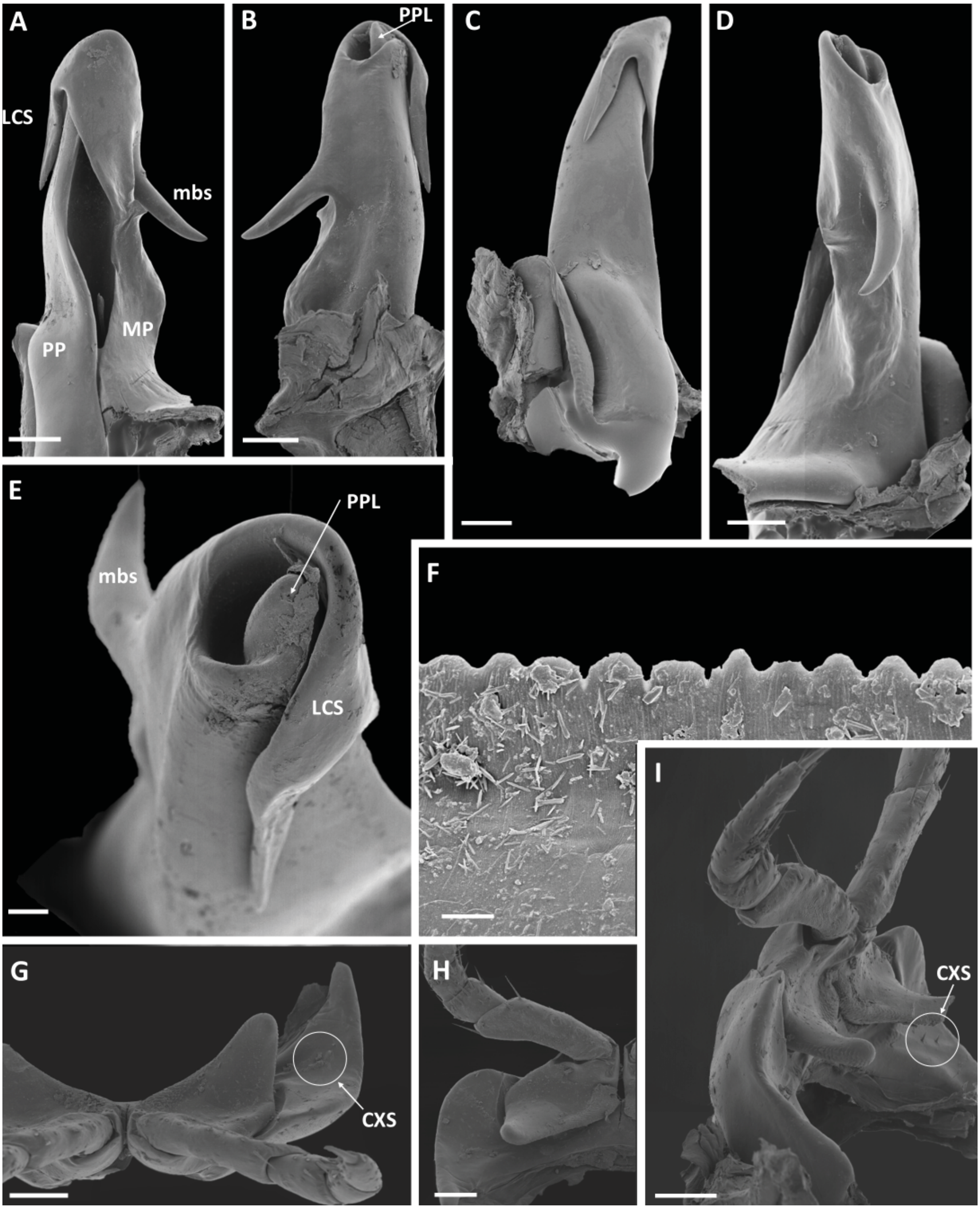

Fig. 50. *Praludivera paralellamella* gen. et sp. nov., holotype, ♂ (VMNH110633), **A–E**. Left gonopod coxa. A. Anterior view. B. Posterior view. C. Lateral view. D. Mesal view. E. Oblique apical view. **F**. Midbody dorsal limbus. **G–I**. First pair of legs (right prefemoral lobe broken). Abbreviations: *CXS* = coxosternal setae; *LCS* = lateral coxal spine; *mbs* = metaplical mesad-basal spine; *MP* = metaplica; *PP* = proplica; *PPL* = proplical lobe. Scale bars: A–D, G–I = 0.2 mm; E = 0.05 mm; F = 0.01 mm.

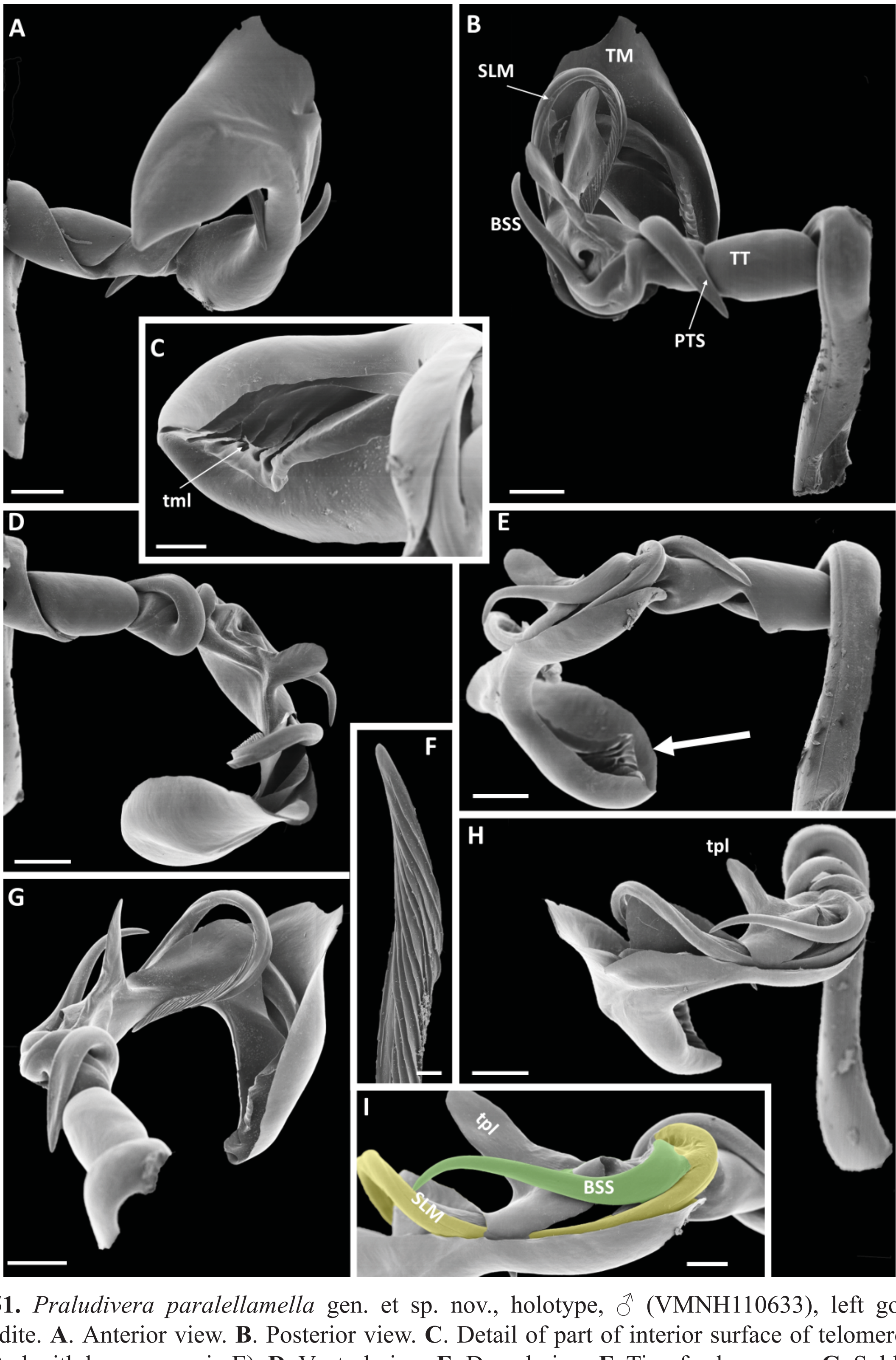

Fig. 51. *Praludivera paralellamella* gen. et sp. nov., holotype, ♂ (VMNH110633), left gonopod telopodite. **A**. Anterior view. **B**. Posterior view. **C**. Detail of part of interior surface of telomere (area indicated with large arrow in E). **D**. Ventral view. **E**. Dorsal view. **F**. Tip of solenomere. **G**. Sublateral-dorsal view. **H**. Submesal view. **I**. Basal part of telomere with solenomere (highlighted in yellow) and basal solenomeral spine (highlighted in green). Abbreviations: *BSS* = basal solenomeral spine; *PTS* = post-torsal spine; *SLM* = solenomere; *TM* = telomere; *tpl* = telomeral perpendicular lobe; *TT* = torsotope. Scale bars: A–B, D–E, G–H = 0.2 mm; C, I = 0.1 mm; F = 0.02 mm.

Gonopod coxa (Fig. 50A–E). Proplica (*PP*) simple, ending in proplical lobe (*PPL*) situated at very tip of coxa; distal part of proplica covered by metaplica. Metaplica (MP) folded around proplica, distally forming subcircular opening in which the proplical lobe is visible. Lateral coxal spine (LCS) originating close to tip of metaplica, directed basad; metaplica in addition with a stout mesad-basad spine (*mbs*) originating ca at half-height of mesal margin.

Gonopod telopodite (Fig. 51). Arculus 90°. Torsotope (*TT*) extended; post-torsal spine (*PTS*) stout, making a half turn around distal part of torsotope, overall direction laterad. Solenomere (*SLM*) slightly shorter than telomere, simple, slender, distally striate, with a long, stout basal spine (*BSS*). Telomere (*TM*) in basal part with a small perpendicular lobe ((*tpl*), distally exped into large, roughly triangular recurved sheet; internal surface of sheet near dorsal corner of telomere with ca 5 parallel lamellae (*tml*).

Genus ***Prionopetalum*** Attems, 1909

Type species

Prionopetalum serratum Attems, 1909 (Tanzania), by original designation.

Other included species

Twenty-two, West, Central and East Africa (Enghoff 2016b).

Prionopetalum asperginis Enghoff, 2016

New material examined

TANZANIA • 6 ♂♂, 7 ♀♀, 2 juv.; Morogoro Region, Kilombero District, Magombera Nature Reserve; 7°48′55″–7°49′22″ S, 36°57′35″–36°59′28″ E; 263–284 m a.s.l., 28 Jan. 2018–15 Mar. 2020; A. Ngute and A.R. Marshall leg.; NHMD 621753, NHMD 621754, NHMD 621755, NHMD 621756, NHMD 621757, NHMD 621757; ACC.NO. 2020-EN-002.

Descriptive notes

The new specimens agree fully with the types from Udzungwa Scarp FR, except that traces of a light dorsal stripe flanked by darker spots are discernible, probably due to the new specimens having spent no more than 2 years in alcohol. The type specimens, which had spent 18 years in alcohol, were reported as being almost uniform light brown without lighter dorsal markings.

Distribution

Previous Eastern Arc records: Udzungwa Mts, Udzungwa Scarp FR, 750 m a.s.l. (Enghoff 2016b).

General distribution: Udzungwa endemic.

Prionopetalum frundsbergi Attems, 1927

Prionopetalum serratum frundsbergi Attems, 1927: 85.

Prionopetalum frundsbergi – Kraus 1960: 87.

Previous Eastern Arc records: Tanga Region, Muheza Distr., Mgambo Proposed FR, 350 m a.s.l., Sep. 1996, N. Cordeiro leg. (Enghoff *et al.* 2016).

General distribution: known from several places in NE Tanzania and SE Kenya (Enghoff *et al.* 2016).

Prionopetalum kraepelini (Attems, 1896)

Odontopyge kraepelini Attems, 1896: 37.
Prionopetalum stuhlmanni Attems, 1914: 193.
Odontopyge pardalis Attems, 1896: 39.

Prionopetalum kraepelini – Attems 1914: 210.
Prionopetalum pardalis – Attems 1909a: 52.

Not *Spirostreptus pardalis* – Gerstäcker 1873: 513.

New material examined

TANZANIA • 10 ♂♂; Mhonda Mission at Turiani, Nguru Mts, 2 Oct. 1992; M. Andersen leg.; topotypes, NHMD • 1 ♂; Kanga Mts, Morogoro Region, Kanga FR; 400–500 m a.s.l.; 22–25 Nov. 1984; N. Scharff leg.; lowland rain forest; NHMD • 1 ♂, several ♀♀/juvs; Morogoro Region, Kilosa District, Rubeho Mts, 5 km SW of Madizini; 900 m a.s.l., 10–24 Sep. 1993; M. Andersen leg.; NHMD • 1 ♂; Rubeho Mtn, Mangalisa Mts; 2100 m a.s.l., 23 Feb. 1984, J. Kielland leg.; open grassland; VMNH110634. – **Not from the Eastern Arc** • 1 ♂; 2–3 km far from Handa, valley of Chazi River, next to the water; 23 Mar. 1989, leg. A. Zicsi; HNHM diplo-03048.

Distribution

Previous Eastern Arc records: Morogoro Region, Mhonda (Nguru) (Attems 1896); Morogoro Region, Mang'ula, Udzungwa Ecological Monitoring Centre (Enghoff 2016b).

General distribution: also recorded from Tanzania: Arusha and Dar es Salaam. The record from "Tanga Regon, Lushoto Distr. Usambara Mts, Lewa" in Enghoff *et al.* (2016) refers to "Lewa Usambara" (Attems 1896). Lewa was a German plantation situated SE of Muheza town and thus not in the East Usambara Mts.

Prionopetalum serratum Attems, 1909

Prionopetalum serratum Attems, 1909c: 158.

Previous Eastern Arcs records: Tanga Region, Usambara, Mombo (Attems 1909a).

General distribution: also known from Tanzania: Mt. Kilimanjaro, as well as Arusha, Meru valley and Oldeani in Arusha Region and Kenya: Kaijado (Enghoff *et al.* 2016).

Prionopetalum suave (Gerstaecker, 1873) sensu Attems (1896)

Spirostreptus suavis Gerstaecker, 1873: 514.

Odontopyge suavis – Attems 1896: 38.
Prionopetalum suavis – Attems 1909a: 52.
Prionopetalum suave – Attems 1914: 210.

Previous Eastern Arcs records: Mhonda (Nguru) (Attems 1896).

General distribution: also recorded from Tanzania: Zanzibar, but cf. remarks.

Remarks

Gerstäcker (1873) did not describe the gonopods, and it remains uncertain whether the specimens recorded as *Odontopyge suavis* by Attems (1896) are conspecific with Gerstäcker's specimens from Zanzibar. Mhonda in the Nguru Mts is type locality of *P. kraepelini* (see above), and it appears suspicious that two so similar *Prionopetalum* species should coexist at Mhonda.

Genus ***Raduliverpa*** Frederiksen & Enghoff, 2015

Type species

Raduliverpa serpentispina Frederiksen & Enghoff, 2015 (Tanzania), by original designation.

Other included species

Four, including one species described as new here, see Frederiksen & Enghoff (2015) (Tanzania, DR Congo).

Diagnosis

Differs from other genera of Prionopetalini by a relatively short solenomere which from a slender basis gets broader distally where it carries a number of parallel ridges (Frederiksen & Enghoff 2015).

Raduliverpa donatellae sp. nov.

urn:lsid:zoobank.org:act:640AD516-04DF-433C-8229-7F450593BF5A

Figs 52–53

Diagnosis

Differs from other species of *Raduliverpa* by having the limbus only very shallowly lobed, and the metaplical spinelike process (*msp*) very strongly curved, almost like a pig-tail, as opposed to the serrated limbus and much less curving *msp* seen in other species, see Frederiksen & Enghoff (2015) for *R. serpentispina* Frederiksen & Enghoff, 2015 and *R. mitis* Frederiksen & Enghoff, 2015, Kraus (1960) for *R. serrata* (Kraus, 1960) and Attems (1935) for *R. sicaria* (Attems, 1935).

Etymology

After Donatella Foddai, Italian myriapodologist, former resident of 'Hotel Dolichoiulus'.

Material examined (total 2 ♂♂)

Holotype

TANZANIA • ♂; East Usambara Mts, Tanga Region, Muheza District, Mgambo Proposed FR; 350 m a.s.l.; Sep. 1996; Norbert Cordeiro leg.; NHMD 621759.

Paratype

TANZANIA • 1 ♂; same collection data as for holotype; NHMD 621760.

Description (male)

SIZE. Length 56–57 mm, diameter 2.9–3.0 mm, 70–71 podous rings, no apodous rings in front of telson.

COLOUR. Strongly faded after 22 years in alcohol, but faint indications of a medium-broad light dorsal stripe.

SUPRALABRAL SETAE. 4–5.

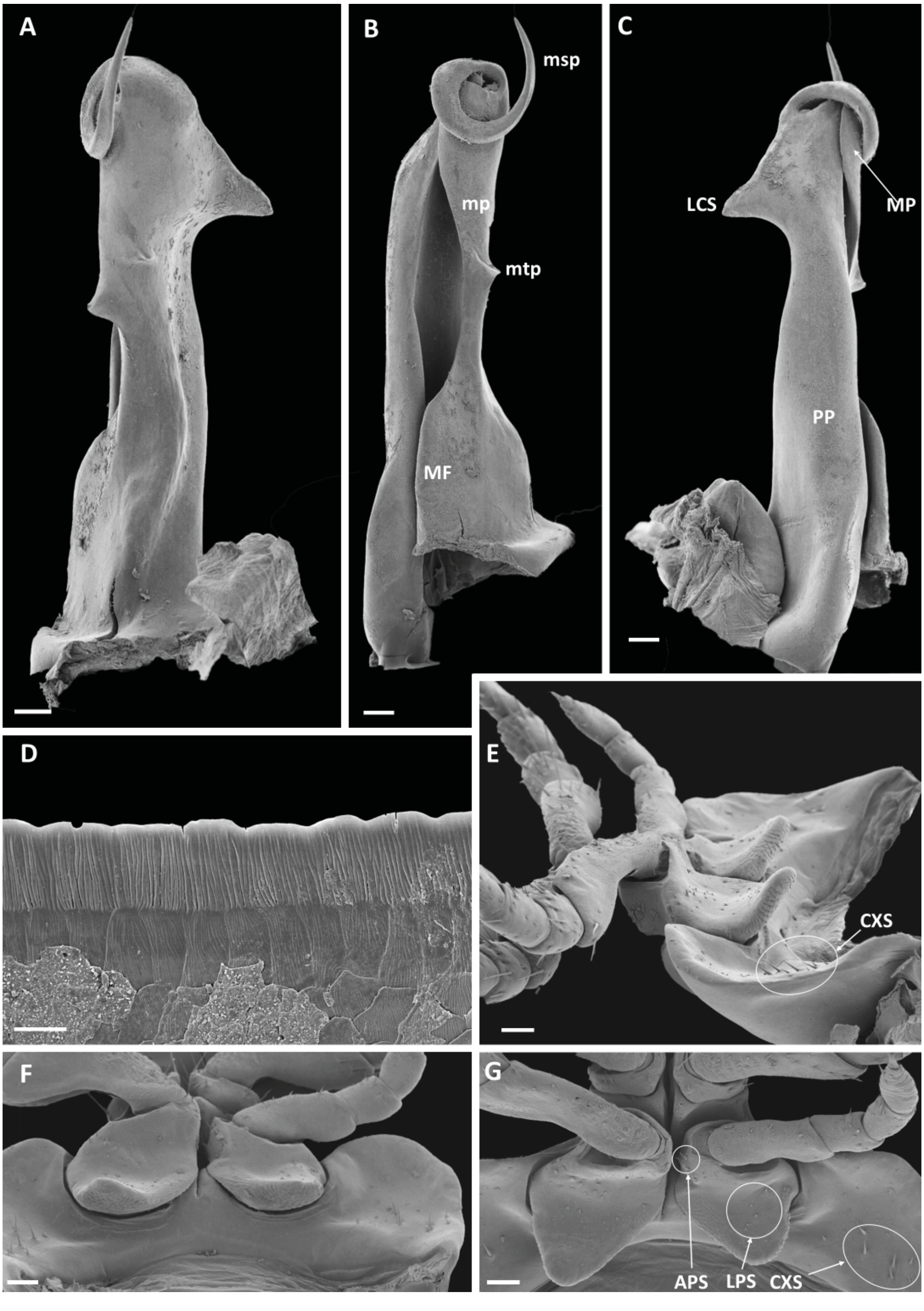

Fig. 52. *Raduliverpa donatellae* sp. nov. **A–C**. Holotype, ♂ (NHMD 621759). Left gonopod coxa. A. posterior view. B. Mesal view. C. Anterior view. **D**. Midbody dorsal limbus. **E–G**. Paratype, ♂ (NHMD 621760), first and second pair of legs (right first legs misshapen/diminished). E. Sublateral view. F. Anterior view. G. Ventral view. Abbreviations: *APS* = mesapical prefemoral setae; *CXS* = coxosternal setae; *LCS* = lateral coxal process; *LPS* = lateral prefemoral setae; *MF* = metaplical flange; *MP* = metaplica; *msp* = metaplical spinelike process; *mtp* = metaplical triangular process; *PP* = proplica. Scale bars: A–C, E–G = 0.1 mm; D = 0.01 mm.

Fig. 53. *Raduliverpa donatellae* sp. nov., holotype, ♂ (NHMD 621759), gonopod telopodites. **A**. Right telopodite, posterior view. **B**. Left telopodite, subanterior view. **C**. Right telopodite, disto-mesal-basal view. **D**. Close-up of right solenomere tip (also with part of post-torsal spine) to show the genus-characteristic striation. **E**. Left telopodite, anterior-basal view. Abbreviations: *PTS* = post-torsal spine; *SLM* = solenomere; *TL* = torsotope lobe; *TM* = telomere; *tlm* = telomere lamellae; *TT* = torsotope. Scale bars: A–C, E = 0.1 mm; D = 0.02 mm.

Mandibular stipes. Ventrodistally produced in strong triangular, slightly mesad process, distal margin very shallowly concave.

Anal valves. With with moderate dorsal spine, a protruding ventral 'corner', margins raised, each with three setae on poorly developed ravelins.

Limbus (Fig. 52D). Striate, margin with very shallow lobes.

Legs. With postfemoral and tibial pads, covering whole length of podomeres, from leg-pair ca 6, diminishing and eventually disappearing toward hind end.

First pair of legs (Fig. 52E–G). Prefemoral lobes with rounded-triangular in ventral view. Five to six coxosternal seta (*CXS*) close to lateral margin of coxosternum, well separated from prefemoral lobes. Prefemora with 2 of short mesapical setae (*APS*) and 5–12 peglike lateral setae (*LPS*).

Sternum 9. Transversely rounded-triangular (not illustrated).

Gonopod coxa (Fig. 52A–C). Slender, straight, almost parallel-sided, distolaterally with an almost equilateral triangular lateral process (*LCS*). Proplica (*PP*) simple, proplical lobe hibben behind fold of metaplica. Metaplica (*MP*) with a poorly delimited mesad flange (*MF*) basally, ca at mid-length with small, mesad triangular, process (*mtp*), distally with long, slender, strongly curved spinelike process (*msp*), process first directed basad then making a smooth 180° turn and projecting distad beyond gonopod tip.

Gonopod telopodite (Fig. 53). Arculus 80º. Torsotope (*TT*) extended, with angular lobe (*TL*) fitting into torsion. A long, stout post-torsal spine (*PTS*) making a full turn around post-torsal narrowing which is hence not evident. Solenomere and telomere originating near mesalmost part of telopodite, flexed back in front of and distal to torsotope. Solenomere (*SLM*) not very long, relatively stout, partially concealed within telomere, terminally flattened, pointed and transversely striate (Fig. 53D). Telomere (TM) shaped like an irregular bowl, smooth on the outside and along margins, with several contorted lamellae (*tml*) on the inside.

Distribution and habitat

Known only from Mgambo FR (formerly: Mgambo Proposed forest Reserve) in the north-east of the East Usambara Mts, altitude 350 m a.s.l. See Oliver *et al.* (2002) for information on the Mgambo FR.

Raduliverpa serpentispina Frederiksen & Enghoff, 2015

Previous Eastern Arc records: Kilimanjaro region, Same district, South Pare Mts, Vumari FR.

General distribution: also known from Tanzania: Mt. Kilimanjaro and from Kenya: Taita Hills (Frederiksen & Enghoff 2015).

Genus ***Spinotarsus*** Attems, 1909

Type species

Spinotarsus xanthonotus Attems, 1909 (Namibia) by subsequent designation of Attems (1909a).

Other included species

Close to one hundred Kraus (1960, 1966). Most species are from southern Africa – only one species is known from Tanzania, viz *S. fortehamatus* Enghoff, 2018, from the Udzungwa Mts, to which a species described as new below can now be added.

Diagnosis

Differs from other genera of Prionopetalini by having a spinulose basal telomeral lamella, often in combination with a darkened lamella arising from the posterior side of the telomere.

Spinotarsus axeli sp. nov.

urn:lsid:zoobank.org:act:9B6978B5-2771-4984-AE66-A93A2C07E764

Figs 3A, 4A, 54–55

Diagnosis

Differs from other species of *Spinotarsus* by the huge, slightly curved spine (*LCS*) which is directed latero-basad.

Etymology

After Axel Kristen Enghoff (1924–2014), the author's father and 'landlord' of 'Hotel Dolichoiulus'.

Material examined (total 3 ♂♂)

Holotype

TANZANIA • ♂; Shikurufumi FR; 37°31′ E, 7°09′ E; Sep. 2000; Uluguru Mountains Biodiversity Conservation Project, Nike Doggart leg.; submontane forest; NHMD 621761.

Paratypes

TANZANIA • 2 ♂♂; same collection data as for holotype; NHMD 621762.

Description (male)

Size. Length 68–70 mm, diameter 4.6–5.1 mm, 57–59 podous rings, no apodous rings in front of telson.

Colour. After 18 years in alcohol all whitish.

Supralabral setae. 6–7.

Mandibular stipes. Shallowly concave.

Anal valves. With large dorsal spine and distinct ventral 'corner'; margins barely raised, three sessile setae on each.

Limbus (Fig. 54D). Margin with slender pointed-triangular lobes, ca twice as long as broad.

Legs. Postfemoral and tibial pads present from leg-pair 6 backward, diminishing and eventually disappearing.

First pair of legs (Fig. 54E–G). Prefemoral lobes broadly rounded-triangular in ventral view. A single coxosternal seta (*CXS*) close to lateral margin of coxosternum, well separated from prefemoral lobes. Prefemoral setae/sensilla indistinct.

Sternum 9 (Fig. 54H). Triangular.

Gonopod coxa (Fig. 54A–C). With a huge latero-basad, slightly curved spine (*LCS*). Proplical lobe (*PPL*) not covered. Metaplica with a large metaplical flange (*MF*) and more distally, a semi-circular lobe (*ml*).

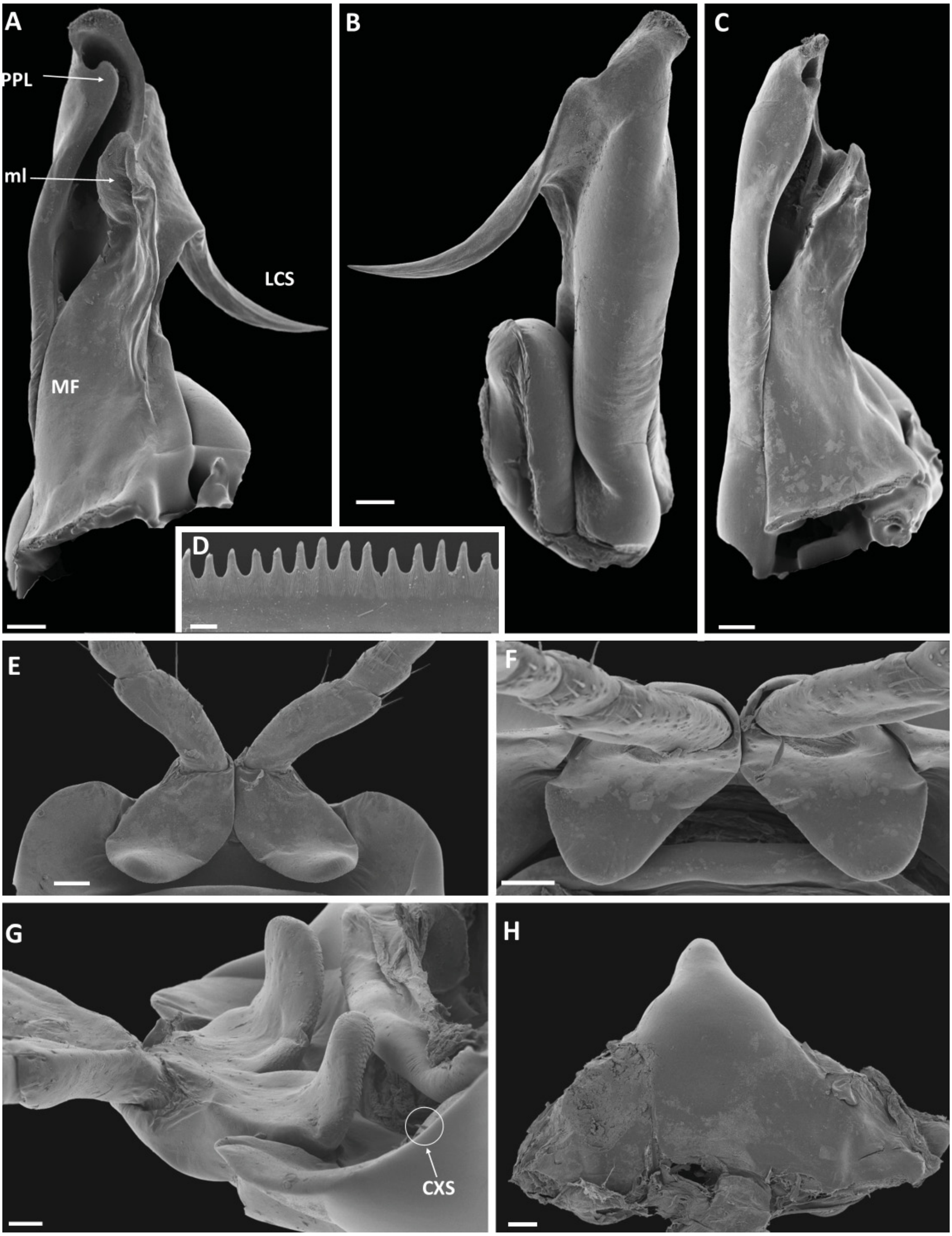

Fig. 54. *Spinotarsus axeli* sp. nov., holotype, ♂ (NHMD 621761). **A–C**. Left gonopod coxa. A. Anterior (-mesal) view. B. Posterior view. C. Mesal view. **D**. Midbody dorsal limbus. **E–G**. First pair of legs. E. Anterior view. F. Ventral view. G. Sublateral view. **H**. Sternum 9. Abbreviations: *CXS* = coxosternal seta; *LCS* = lateral coxal spine; *MF* = metaplical flange; *ml* = metaplical lobe; *PPL* = proplical lobe. Scale bars: A–C, E–F = 0.2 mm; G–H= 0.1 mm; D = 0.01 mm.

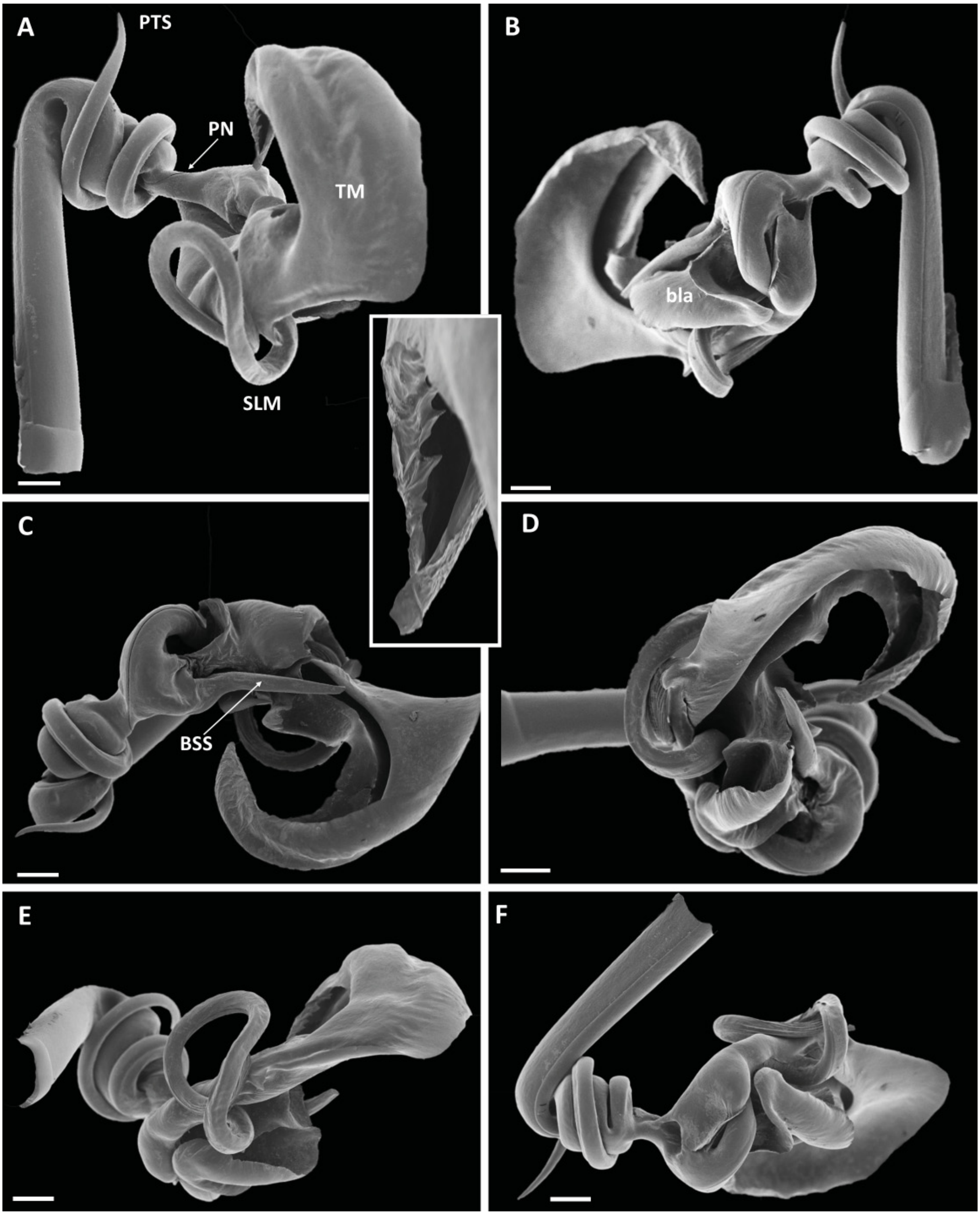

Fig. 55. *Spinotarsus axeli* sp. nov., holotype, ♂ (NHMD 621761), left gonopod telopodite. **A**. Anterior view, inset: tip of telomere. **B**.Posterior view. **C**. Venral view. **D**. Dorsal view. **E**. Anterior-dorso-apical view. **F**. Posterior-dorsal view. Abbreviations: *bla* = basal telomeral lamella; *BSS* = basal solenomeral spine; *PN* = post-torsal narrowing; *PTS* = post-torsal spine; *SLM* = solenomere; *TM* = telomere. Scale bars = 0.2 mm.

GONOPOD TELOPODITE (Fig. 55). Arculus 90°. Torsotope compact, almost completely hidden by 1½ coil of very long post-torsal spine (*PTS*). Post-torsal narrowing (*PN*) very pronounced. Solenomere (*SLM*) long, ca same length as telomere, simple, whiplike, coiling irregularly, without outgrowths, with a long straight spine (*BSS*) at base. Telomere (*TM*) with a rounded-rectangular, inconspicuously spinose basal lamella (*bla*), its distal part a broad, longitudinally folded sheet bent into U-shape, narrowing towards tip, one margin near tip with coarse denticles (Fig. 55A, inset)

Distribution and habitat

Known only from the Shikurufumi FR in the Uluguru Mts, cf. Doggart *et al.* (2004).

Remarks

The basal lamella (*bla*) which is very inconspicuously spinose (spinules not visible on Fig. 55B) suggests placement in the large genus *Spinotarsus*, and no other characters are in conflict with this allocation. Like the only other species of *Spinotarsus* known from the Eastern Arc Mts, *S. fortehamatus* Enghoff, 2018, the new species lacks a darkly sclerotized ridge on the posterior surface of the telomere, a character found in very many congeners. In the key to *Spinotarsus* species by Kraus (1966), *S. axeli* sp. nov. runs without problems to couplet 60, as follows. Couplet 1: Gonopodal metaplica with **one** or several dark sclerotized lateral spines which stand clearly out in strict oral view → couplet 38: **One** or more spine(s) ("Postfemoraldorn") at base of solenomere present → couplet 59: **One** spine at base of solenomere → couplet 60. Couplet 60 (cf. Enghoff 2018) leads to couplet 65 where the choice is between the lateral metaplical spine being directed more or less apicad, or being horizontal (strictly laterad); however, in *S. axeli* sp. nov. the lateral spine is directed obliquely laterobasad which seems to be unique in the genus.

Genus ***Syndesmogenus*** Attems, 1909

Type species

Syndesmogenus gracilis Attems, 1909 (Tanzania), by original designation.

Other included species

Seventeen, including one species described as new here, see Kraus (1960), Demange (1965), Pierrard (1970), Vohland & Hamer (2013).

Diagnosis (modified from Kraus 1960**)**

Differs from other genera of Prionopetalini by the combination of small size, a basad metaplical process on the gonopod coxa, a very long, slender solenomere (much longer than telomere), and often a subapical spinelike side branch on the solenomere.

Remarks

This genus of small odontopygids is widely distributed in West, Central, East and southern Africa.

Syndesmogenus estelleae sp. nov.
urn:lsid:zoobank.org:act:C3B90F9A-A6C6-46EF-9F38-396451EE0EDC
Figs 56–57

Diagnosis

Differs from other species of *Syndesmogenus* by the unique, 'tilted triangular' shape of the cucullus.

Etymology

After Estelle Bourdon, French palaeontologist, last resident of 'Hotel Dolichoiulus'.

Material examined (total 1♂)

Holotype

TANZANIA • ♂; Kilimanjaro Region, 18 km SSE of Mwanga, 4.5 km SE of Lembeni, North Pare Mts, Kiverenge Forest; 3º48.692′ S 37º38.873′ E; 1576 m a.s.l.; 7 Nov.; 2010; V.I. Gusarov leg.; sifting forest litter; small trees; NHMO.

Description (male)

Size. Length 30 mm, diameter 1.5 mm, 69 podous rings, no apodous rings in front of telson.

Colour. After 9 years in 100% alcohol in a freezer head, antennae, and pregonopodal rings medium to dark brown; postgonopodal rings below ozopores, and legs, light yellowish; rings above ozopores medium brown with a broad, ill-defined median lighter band. Telson ventrally light yellowish, dorsally mottled.

Supralabral setae. 5.

Mandibular stipes. Distal margin shallowly bilobed.

Anal valves. No traces of dorsal or ventral denticles or 'corners'; margin slightly raised, apparently no marginal setae.

Limbus (Fig. 56F). Margin with well-separated, smooth, pointed-triangular lobes.

Legs. Well-developed ventral pads on postfemur and tibia from leg-pair four; shortly behind gonopods, pads decreasing in size and eventually disappearing.

First pair of legs (Fig. 56G–I). Prefemoral lobes relatively slender, rounded-triangular in ventral view. A single coxosternal seta (*CXS*) close to lateral margin of coxosternum, well separated from prefemoral lobes. Prefemora with a single mesapical seta (*APS*) and a few lateral setae (*LPS*).

Sternum 9 (Not illustrated). Similar to that of *S. voiensis* (see Fig. 58H).

Gonopod coxa (Fig. 56A–E). Slender, straight, posteriolaterally ca at mid-height with a small thumblike process (*th*), anterolaterally with a tiny subtriangular process (*tr*) at ca same level; cucullus (*CU*) with a large, blunt-triangular process (*mcp*). Proplica (*PP*) simple, proplical lobe hidden behind fold of metaplica. Metaplica (*MP*) with a poorly delimited mesad flange (*MF*) basally, distally folded back on anterior side and covering distal part of proplica, but not forming a spinelike process.

Gonopod telopodite (Fig. 57). Arculus 90°. Torsotope (*TT*) relatively extended, a long post-torsal spine (*PTS*) making a full turn around post-torsal narrowing, post-torsal narrowing hence not visible. Solenomere (*SLM*) separating from telomere immediately after post-torsal narrowing, very long, much longer than telomere, slender, simple; a long, very thin spine (*BSS1*) branching off from base of solenomere, a shorter but stouter spine (*BSS2*) branches off *SLM* a little after. A tiny spinelike side branch (*slb*) in the distal part of *SLM*, but still quite far from solenomere tip (Fig. 57H). Telomere (*TM*) much longer than broad, extremely complicated, overall apparently consisting of a broad, twisted lamella with various folds and secondary lamellae, including a possible homologue of process "d" in *S. voiensis*.

Distribution and habitat

Known only from the type locality in the North Pare Mts.

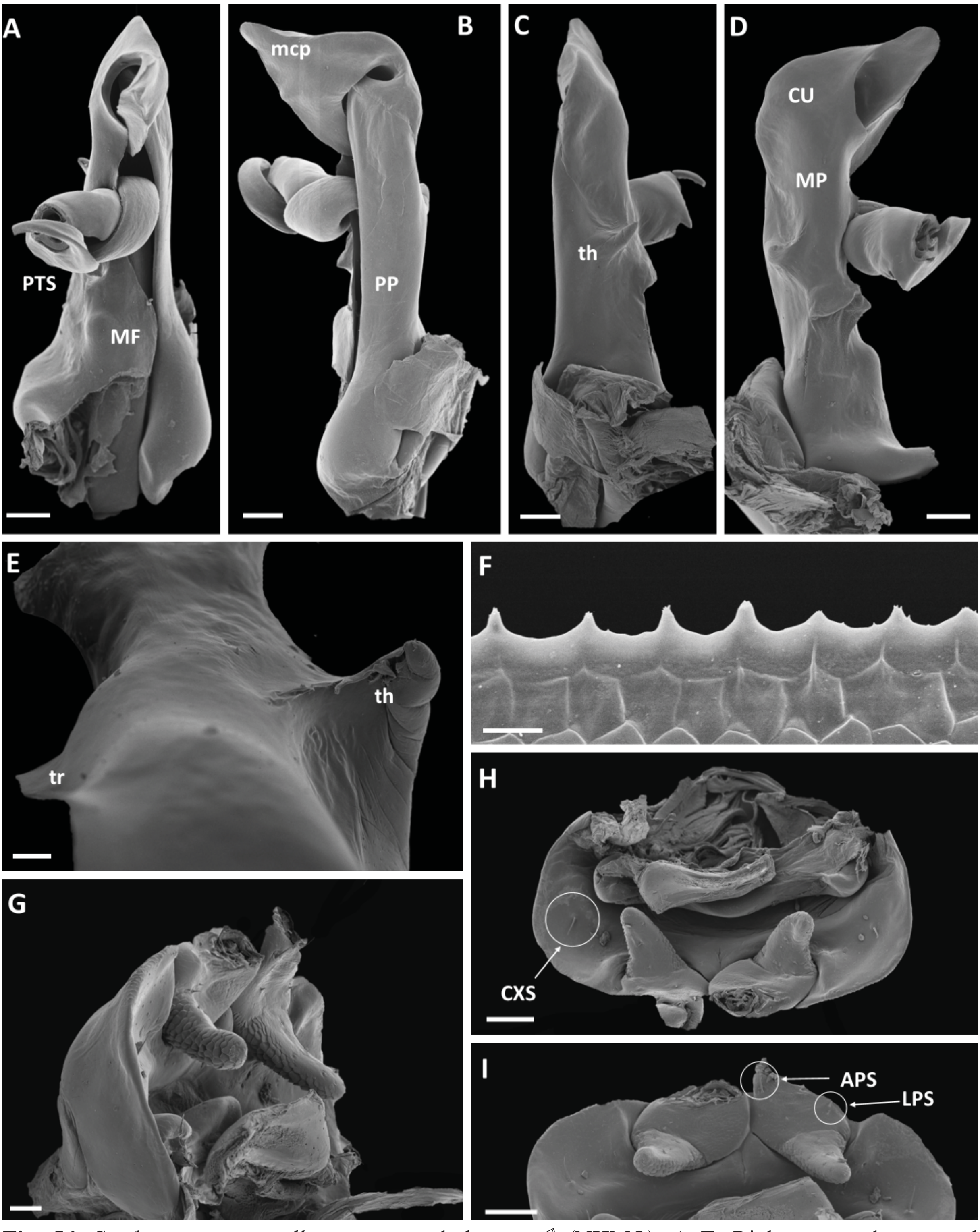

Fig. 56. *Syndesmogenus estelleae* sp. nov., holotype, ♂ (NHMO). **A–E**. Right gonopod coxa and basomere. A. Mesal view. B. Anterior view. C. Lateral view. D. Posterior view. E. Oblique lateroposterior view. **F**. Midbody dorsal limbus. **G–I**. First pair of legs (only coxosternum and prefemora). G. Sublateral view. H. Ventral view. I. Anterior view. Abbreviations: *APS* = mesapical prefemoral seta; *CXS* = coxosternal seta; *CU* = cucullus; *LPS* = lateral prefemoral setae; *mcp* = mesal cucullar process; *MF* = metaplical flange; *MP* = metaplica; *PP* = proplica; *PTS* = port-torsal spine; *th* = thumblike process; *tr* = triangular process. Scale bars: A–D, H–I = 0.1 mm; E = 0.02 mm; F = 0.01 mm; G = 0.05 mm.

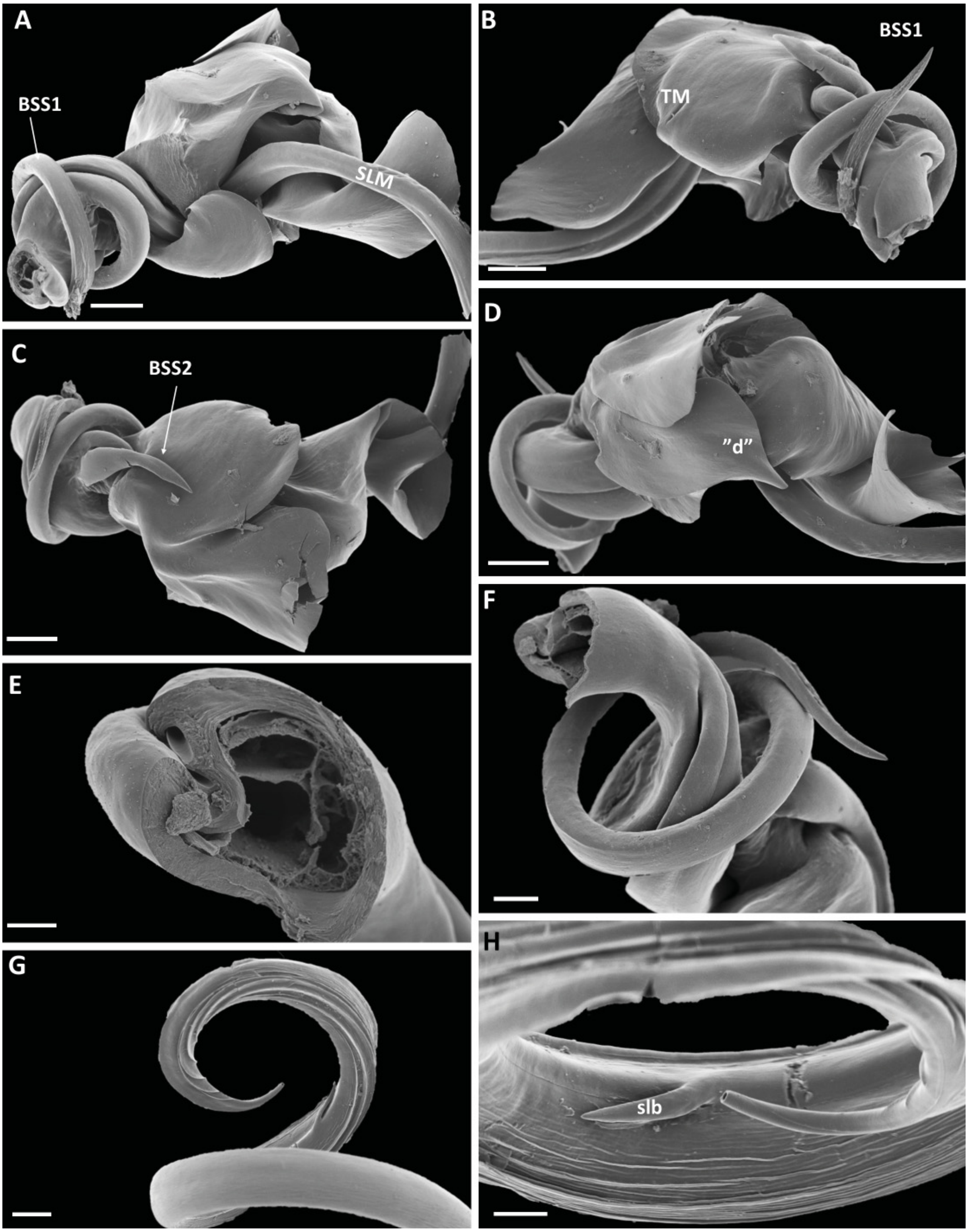

Fig. 57. *Syndesmogenus estelleae* sp. nov., holotype, ♂ (NHMO), right gonopod telopodite, broken through torsotope and missing basal part; distal part of solenomere also broken off. **A**. Anterior view. **B**. Posterior view. **C**. Ventral view. **D.** Dorsal view. **E**. Transverse 'section' (break) through basal part of torsotope. **F**. Sublateral view. **G–H.** Distal part of solenomere. Abbreviations: *BSS1*, *BSS2* = basal solenomeral spines; "*d*" = structure "d" sensu Ribaut (1907); *SLM* = solenomere; *TM* = telomere. Scale bars: A–D = 0.1 mm; E, H = 0.02 mm; F–G = 0.05 mm.

Remarks

In the key to *Syndesmogenus* species by Kraus, the new species doesn't really fit in. The profile of the distal part of the gonopod coxa (cucullus) to some extent resembles that of *S. kivuensis* Kraus, 1960, but in the latter species the mesal cucullar process is subrectangular (vs triangular in *S. estelleae* sp. nov.), and the limbus has no denticles or lobes (vs small denticles in *S. estelleae* sp. nov.)

Syndesmogenus voiensis (Ribaut, 1907)
Figs 58–59

Odontopyge voiensis Ribaut, 1907: 511

Spinotarsus voiensis – Attems 1909a: 51.
Syndesmogenus voiensis – Kraus 1960: 181.
?*Syndesmogenus* sp. (probably n.sp.) – Enghoff & Enghoff 1976: 7.

Material examined (total 2 ♂♂)

TANZANIA • 1 ♂; East Usambara Mts, Amani, Kwamkoro; ca 1000 m a.s.l.; 24 Dec. 1975; O. Lomholdt leg.; in rotten wood; NHMD 621763. – **not Eastern Arc** • 1 ♂; Kilimanjaro Region, Mt. Kilimanjaro, coffee plantation; 37.32028° E, 3.247895° S; 1305 m a.s.l.; 2013; S. Frederiksen leg.; NHMD 621764.

Description (male from Amani)

Size. Length 42 mm, diameter 1.5 mm, 74 podous rings, no apodous rings in front of telson.

Colour. After 37 years in alcohol overall yellowish, but with large brown areas at ozopore level (not defense glands shining through) resulting in a dorsal light band, dorsolateral dark bands and ligt ventral half. Legs yellowish.

Supralabral setae. Not recognisable.

Mandibular stipes. Subrectangular, ventral margin shallowly bilobed/concave.

Body rings. Metazonites vaulted, rendering the body somewhat moniliform. Cuticle, at least in front of limbus, with numerous interscutal bands carrying a row of very small (ca 0.001 mm) beadlike structures (fungi?) which seem to have fallen off in some cases (Fig. 58D). See Enghoff & Reboleira (2017).

Anal valves. Without spines or protruding corners, posterior margin raized, each with three setae on poorly developed ravelins.

Limbus (Fig. 58C). Margin with short, blunt-angled yet pointed lobes, smooth except for one ridge running into each lobe.

Legs. With postfemoral and tibial pads, covering whole length of podomeres, from leg-pair ca 6, diminishing and eventually disappearing toward hind end.

First pair of legs (Fig. 58E–G). Prefemoral lobes rounded-triangular in ventral view. One to two coxosternal setae (*CXS*) close to lateral margin of coxosternum, well separated from prefemoral lobes. Prefemora with two mesapical setae (*APS*) and a few lateral setae (*LPS*).

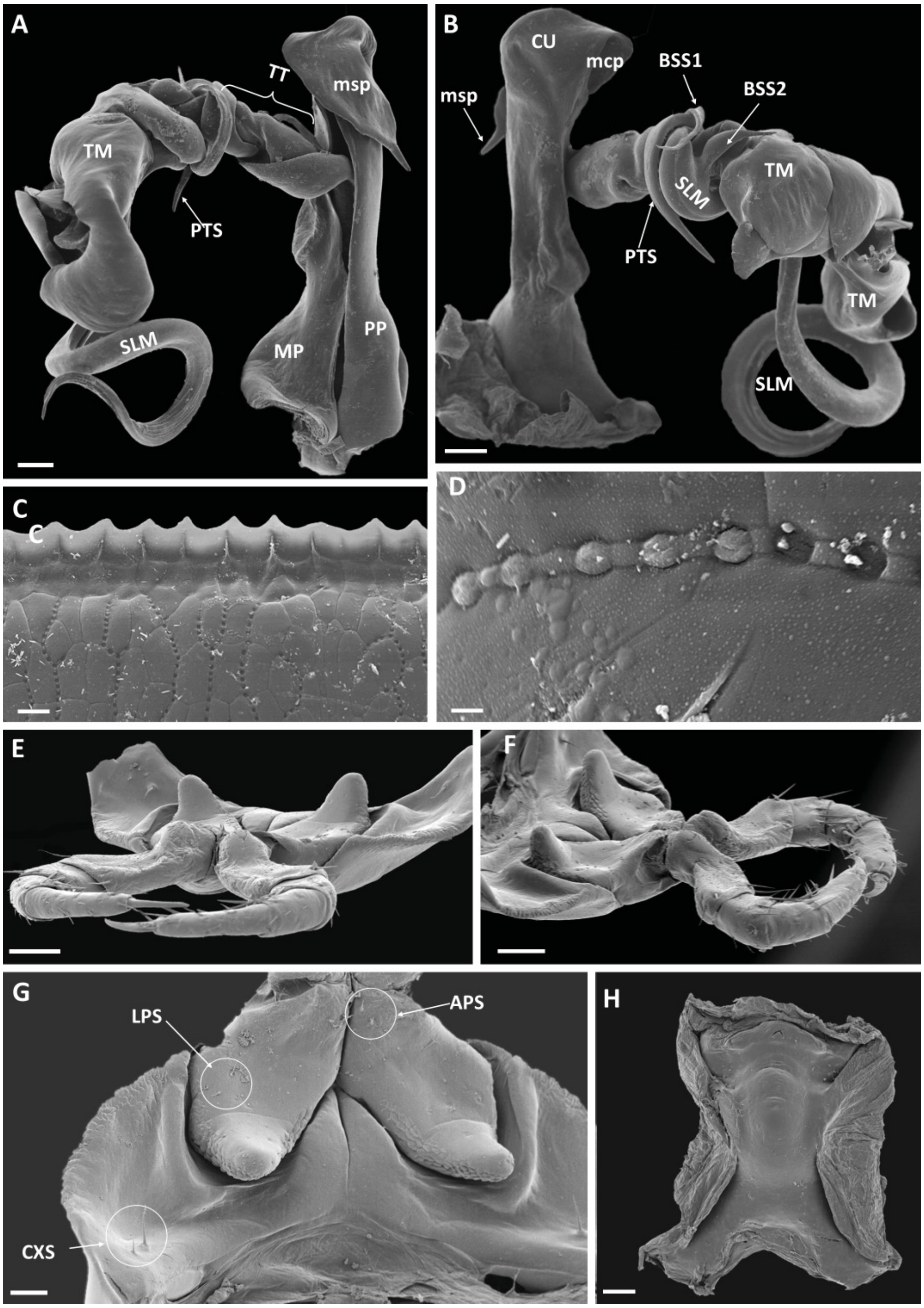

Fig. 58. *Syndesmogenus voiensis* (Ribaut, 1907). **A–G**. Specimen from E Usambara Mts (NHMD 621763). A. Right gonopod, anterior view. B. Right gonopod, posterior view. C. Midbody dorsal limbus, notice interscutal structures. D. Interscutal structures (fungi?) with spherical bodies to the left in the picture and ?sockets after such structures to the right. **E–G**. First pair of legs. E. Ventral view. F. Sublateral view. G. Anterior view. **H**. Specimen from Mt. Kilimanjaro (NHMD 621764), sternum 9. Abbreviations: *APS* = mesapical prefemoral setae; *BSS1*, *BSS2* = basal solenomeral spines; *CU* = cucullus; *CXS* = coxosternal setae; *LPS* = lateral prefemoral setae; *mcp* = mesal cucullar process; *MP* = metaplica; *msp* = metaplical spinelike process; *PP* = proplica; *PTS* = post-torsal spine; *SLM* = solenomere. Scale bars: A–B, E–F = 0.1 mm; C = 0.01 mm; D = 0.001 mm; G–H = 0.05 mm.

Sternum 9. Lost during dissection. In a specimen from Mt. Kilimanjaro, the posterior sternum is longer than broad, subrectangular with concave lateral and basal margins and a slightly convex apical margin (Fig. 58H)

Gonopod coxa (Fig. 58A–B). Slender, straight, cucullus (*CU*) with a large, blunt-triangular process (*mcp*). Proplica (*PP*) simple, proplical lobe hidden behind fold of metaplica. Metaplica (*MP*) with a poorly delimited mesad flange (*MF*) basally, distally flexed back on anterior side and forming broad, triangular, pointed spinelike process (*msp*) covering distal part of proplica.

Gonopod telopodite (Figs 58A–B, 59). Arculus 90°. Torsotope (*TT*) relatively extended, a long post-torsal spine (*PTS*) making a full turn around post-torsal narrowing and projecting basad (dorsad), post-torsal narrowing hence not visible. Solenomere (*SLM*) separating from telomere immediately after post-torsal narrowing, very long, much longer than telomere, slender, simple; a long, very thin spine (*BSS1*) branching off from base of solenomere, a shorter but stouter spine (*BSS2*) branches off *SLM* a little after. A tiny spinelike side branch (*slb*) in the distal part of *SLM*, but still quite far from solenomere tip (Fig. 59D–E). Telomere (*TM*) much longer than broad, extremely complicated, overall apparently

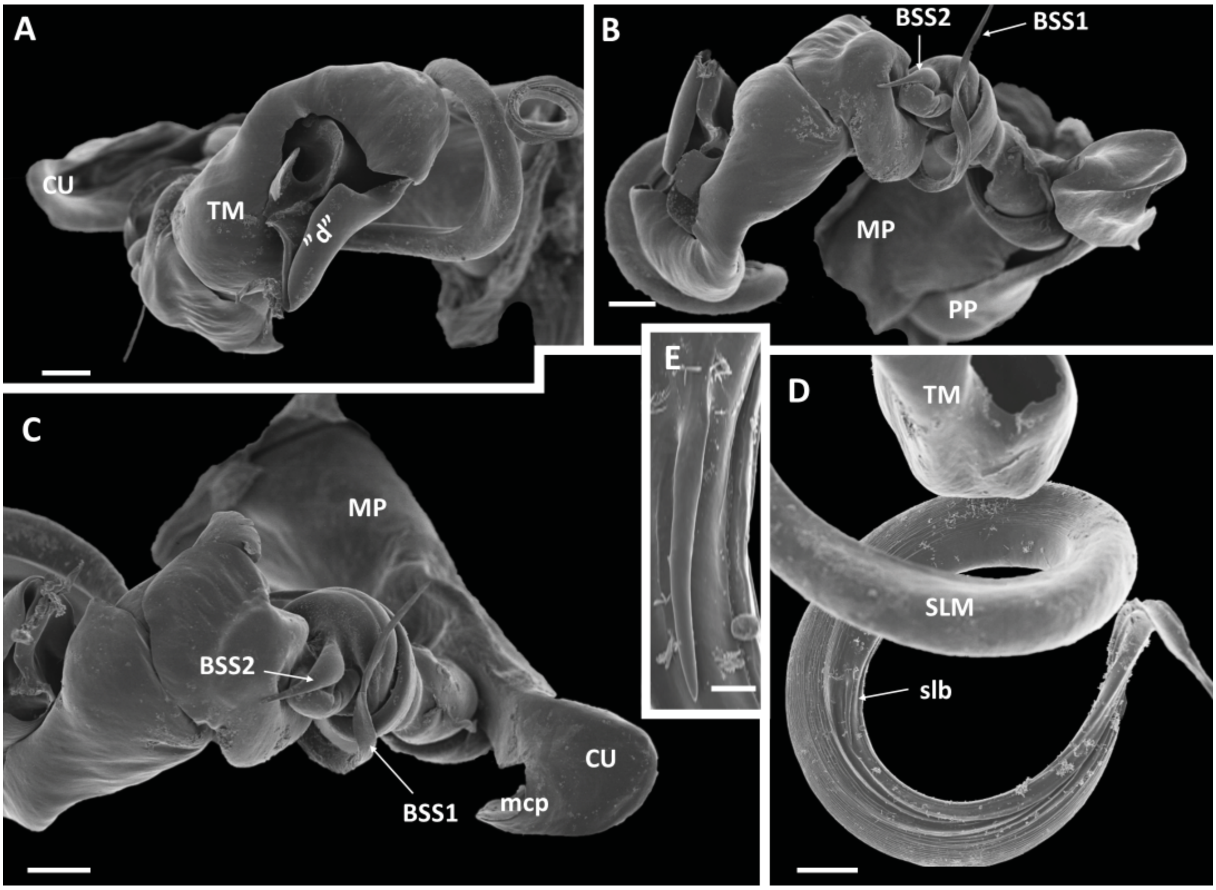

Fig. 59. *Syndesmogenus voiensis* (Ribaut, 1907), specimen from E Usambara Mts (NHMD 621763), right gonopod. **A**. Mesal view. **B.** Subdistal (subventral) view. **C**. Distomesal view. **D**. Tips of solenomere and telomere. **E**. Close-up of solenomeral side branch. Abbreviations: *BSS1*, *BSS2* = basal solenomeral spines; *CU* = cucullus; "*d*" = structure "d" sensu Ribaut (1907); *mcp* = mesal cucullar process; *MP* = metaplica; *PP* = proplica; *slb* = solenomeral side branch; *SLM* = solenomere. Scale bars: A–C = 0.1 mm; D = 0.05 mm; E = 0.01 mm.

consisting of a broad, twisted lamella with various fold and secondary lamellae, including a long-triangular structure also described by Ribaut (1907) who labelled it "d".

Distribution

Previous Eastern Arc records: None.

General distribution: described from Voi in southern Kenya (Ribaut 1907), subsequently reported from Tanga in North-East Tanzania by Brolemann (1920) and from Tanzania: Mt. Kilimanjaro by Enghoff & Frederiksen (2018). In the Eastern Arc mountains known only from Kwamkoro in Amani Nature Reserve, E Usambara Mts, altitude 1000 m a.s.l. See Doody *et al.* (2001) for information on this area.

Remarks

A careful comparison of the East Usambara specimen with the detailed original description (Ribaut 1907) reveals numerous points of agreement, but also some differences. Thus, the telopodital spine called *e1* by Ribaut corresponds to the post-torsal spine (*PTS*) in the East Usambara specimen, and likewise *e2* (=*BSS1*) and *e3* (=*BSS2*). Spine *PTS* in the East Usambara specimen is, however, much longer than Ribaut's *e1*, whereas spine *BSS2* is shorter than his *e3*. The tiny solenomeral side branch (*slb*) was not mentioned, nor illustrated by Ribaut (1907). In the key of Kraus (1960) this branch would lead to *S. spiralis* (Carl, 1909). However, *slb* is very small and inconspicuous and may well have been overlooked by Ribaut (it was actually initially not recognized on the East Usambara specimen, but the presence of a similar spine in *S. estelleae* sp. nov. inspired successful re-scrutiny), and apart from this discrepancy, the East Usambara specimen runs easily to *S. voiensis* in the key. The triangular coxal lobe called *a* by Ribaut seems not to be present in the East Usambara specimen. The telomeral lobe *d* of Ribaut can also be identified in the East Usambara specimen, and the construction of the telomere which Ribaut characterized as "Les lamelles présentent une forme extrêmement compliquée" in general seems to be similar. Comparison with a male from Mt. Kilimanjaro identified by Sara Frederiksen (Enghoff & Frederiksen 2018) revealed partly different minute differences, and *S. voiensis* as understood here may indeed prove to include several species.

Genus ***Uncodrama*** gen. nov.

urn:lsid:zoobank.org:act:8ECD78AE-280D-4480-A354-E0C15CFB024F

Type species

Uncodrama coronata gen. et sp. nov.

Other provisionally included species

Uncodrama medjensis (Chamberlin, 1927) comb. nov. ex *Hapthysanus* Attems, 1909. Congo.

Uncodrama tumidens (Karsch, 1881) comb. nov. ex. *Spirostreptus* (*Odontopyge*). S. Sudan.

Diagnosis

Differs from other genera of Prionopetalini by the combination of a subrectangular distal lobe on the proplica, a wide mesal opening between pro- and metaplica (gonocoel), a simple whiplike solenomere and a simple, 'twisted boat'-shaped telomere with a distal, complicated antlerlike lobe.

Etymology

The genus name (gender feminine) is an anagram of *Damacornu* Enghoff, 2018, another genus with an antlerlike structure on the gonopod telopodite.

Remarks

In Kraus' (1966) key to genera of "Odontopyginae", *Uncodrama coronata* gen. et sp. nov. runs all the way through to *Odontopyge*, a name which was mis-applied until Hoffman (1991) clarified the situation. Enghoff (2016a) further addressed the "*Odontopyge* problem". Of the "orphaned" nominal *Odontopyge* species listed by Enghoff (2016a), one may provisionally be re-allocated to *Uncodrama* gen. nov., viz, *O. medjensis* (Chamberlin, 1927), judged from the original description (Chamberlin 1927, as *Haplothysanus m.*) and the re-description by Kraus (1960). The same applies, with even more reservation, to *O. tumidens* (Karsch, 1881), based on the re-description by Attems (1914).

Uncodrama coronata gen. et sp. nov.
urn:lsid:zoobank.org:act:02D27069-D3EB-4497-89D9-48485AB6DC2D
Figs 60–61

Diagnosis

Redundant, genus monotypic.

Etymology

The species epithet is a Latin adjective meaning 'crowned' and refers to the antlerlike telomere.

Material examined (total 1 ♂)

Holotype

TANZANIA • ♂; Uluguru Mts, Lupanga, West; 1900 m a.s.l.; 1 Jul. 1981; M. Stoltze and N. Scharff leg.; litter; NHMD 621765.

Description (male)

Size. Length 51 mm, diameter 3.1 mm, 58 podous rings, no apodous rings in front of telson.

Colour. Quite faded after 37 years in alcohol. Head pale yellowish brown, except for dark brown band between eyes, dark band extended anteriad along antennal socket and in middle. Antennae and legs pale yellowish brown. Collum marbled brown with dark brown margins, dark margins expanded in midline, especially anterior margin. Body rings: anterior ⅔ of prozonites whitish, posterior ⅓ of prozonites and anterior ½ of metazonite dark brown, posterior ½ of metazonites amber. Telson pale yellowish white, except for dark brown anterior ½ of preanal ring.

Supralabral setae. Indistinct.

Mandibular stipes. Distal margin bilobed.

Anal valves. Each with a small dorsal spine and a slightly produced ventral 'corner' margin not raised, with three sessile setae.

Limbus (Fig. 60D). Margin with slender, smooth lobes, more than twice as long as broad.

Legs. With postfemoral and tibial pads on post-gonopodal legs, decreasing in size and eventually disappearing on posterior legs.

First pair of legs (Fig. 60E–G). Prefemoral lobes almost semicircular in ventral view. Three coxosternal setae (*CXS*) close to lateral margin of coxosternum, well separated from prefemoral lobes. Prefemora with a few peglike mesapical sensilla (*APS*), numerous peglike lateral sensilla (*LPS*) distributed over large part of prefemoral lobes.

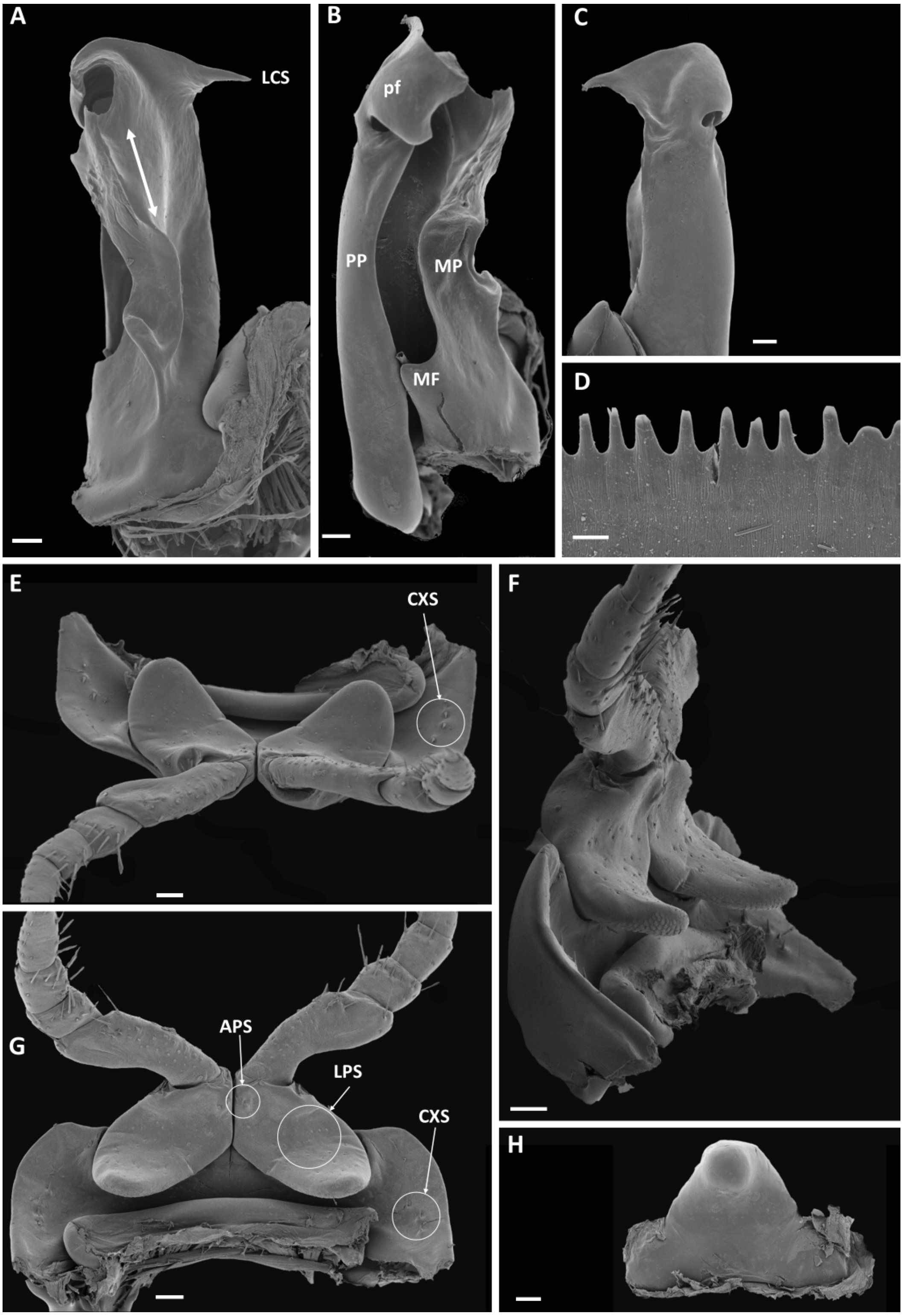

Fig. 60. *Uncodrama coronata* gen. et sp. nov., holotype, ♂ (NHMD 621765). **A–C**. Left gonopod coxa. A. Posterior view. B. Mesal view. C. Anterior view. **D**. Midbody dorsal limbus. **E–G**. First pair of legs. E. Ventral view. F. Sublateral view. G. Anterior view. **H**. Sternum 9. Abbreviations: *APS* = mesapical prefemoral sensilla; *CXS* = coxosternal setae; *lcs* = lateral coxal spine; *LPS* = lateral prefemoral sensilla; *MF* = metaplical flange; *MP* = metaplica; *pf* = proplical flange; *PP* = proplica; double-headed arrow: postero-lateral concavity. Scale bars: A–C, E–H = 0.1 mm; D = 0.01 mm.

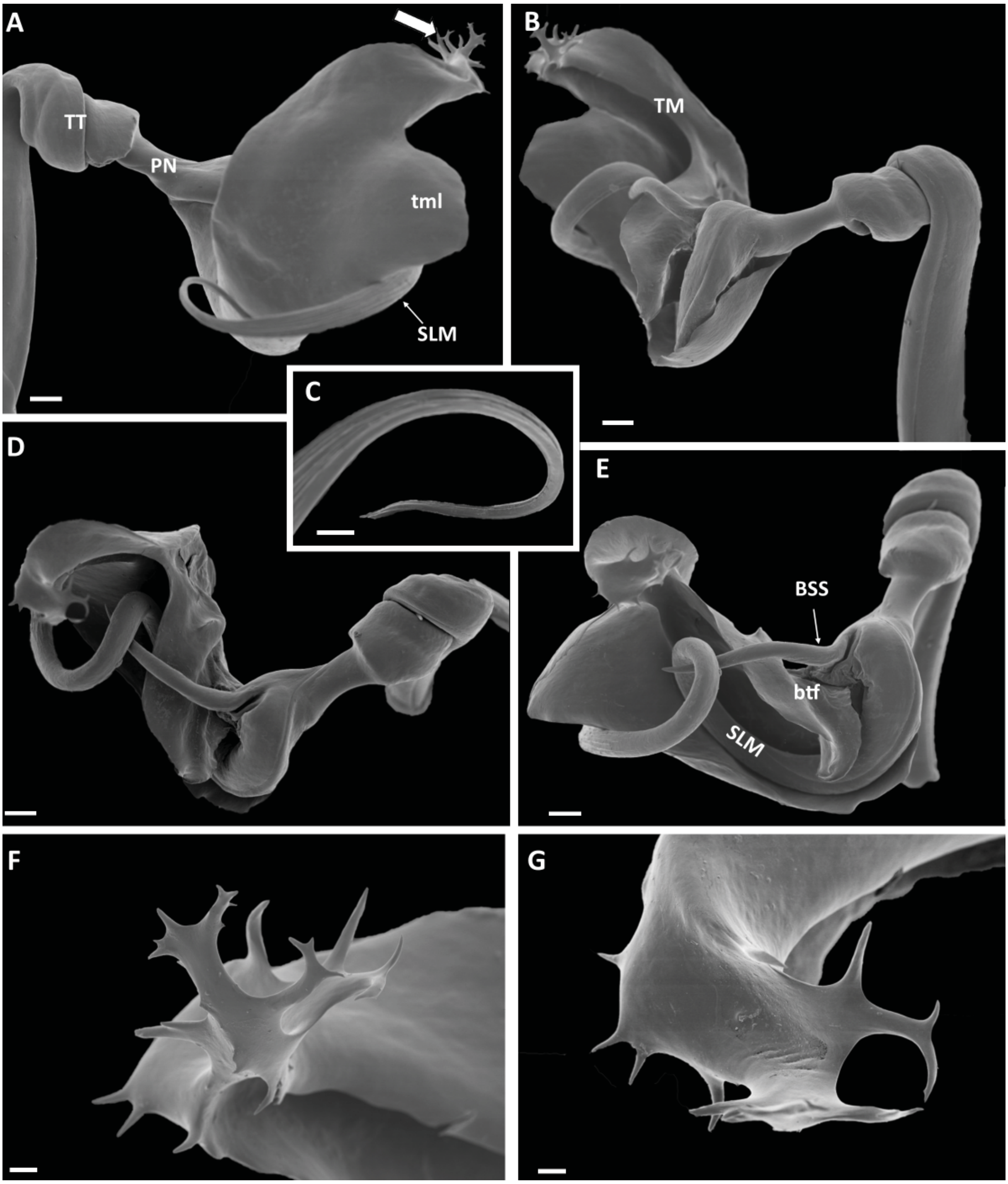

Fig. 61. *Uncodrama coronata* gen. et sp. nov., holotype, ♂ (NHMD 621765), left gonopod telopodite. **A**. Anterior view. **B**. Posterior view. **C**. Tip of solenomere. **D**. Ventral view. **E**. Submesal view. **F–G**. Two views of terminal anterlike structure on telomere. Abbreviations: *BSS* = basal solenomeral spine; *btf* = basal telomeral flange; *PN* = post-torsal narrowing; *SLM* = solenomere; *tml* = telomeral lobe; *TT* = torsotope. Scale bars: A–B, D–E = 0.1 mm; C = 0.05 mm; F–G = 0.02 mm.

Sternum 9 (Fig. 60H). Triangular with rounded corners.

Gonopod coxa (Fig. 60A–C). Roughly parallel-sided, posterior-lateral surface deeply concave (Fig. 60A, double-headed arrow). Proplica (*PP*) with straight mesal margin, ending in small proplical lobe (hidden under *pf* on Fig. 60B); distal to lobe with subrectangular, shallowly bilobed mesad flange (*pf*). Metaplica (*MP*) with roughly straight mesal margin; distal margin also straight, laterally produced in almost horizontal, pigmented spine (*LCS*), basally with large, almost right-angled metaplical flange (*MF*).

Gonopod telopodite (Fig. 61). Arculus 90°. Torsotope (*TT*) simple, compact, no post-torsal spine. Post-torsal narrowing (*PN*) pronounced, quite long. Solenomere (*SLM*) very long, longer than telomere, whiplike, with a long, straight, basal spine (*BSS*) at right angles to main stem of solenomere, otherwise without any outgrowths, smoothly curving in concavity of telomere, then smoothly curving back. Telomere (*TM*) overall a single boat-shaped lamella, basally forming a flange (*btf*) subtending *BSS*, mesally forming large, semicircular lobe (*tml*), distally narrowing, ending in complicated, irregularly branched structure resembling a set of antlers (Fig. 61A, thick arrow).

Remarks

Uncodrama coronata gen. et sp. nov. is remarkable for its elaborate, antlerlike terminal telomeral lobe. Many odontopygids belonging to various genera have distally spinose telomeres, e.g., some *Chaleponcus dabagaensis* group members (Enghoff 2014), *Kompsoprium calcaratum* (Attems, 1935), *Spinotarsus johnsensis* Kraus, 1960, *S. rhodesianus* Kraus, 1960, *S. silvicolens* Kraus, 1960, *Patinatius bidentatus simulator* Kraus, 1966. The new species, however, is by far the most elaborate in this respect, followed at a distance by *K. calcaratum* (Attems 1935: fig. 107).

Subfamily **Lissopyginae** Attems, 1909

This subfamily contains only two genera, *Lissopyge* Attems, 1909, and *Xystopyge* Attems, 1909. The distinction between them is unclear. Thus, as mentioned in the introduction, the status of the gonopod sternum in *Lissopyge* remains uncertain, whereas in *Xystopyge* the gonopod sternum is large and conspicuous, in contrast to all other odontopygid genera. According to Kraus (1966: 85) the two genera further differ in the length and structure of the solenomere ("Rinnenast"): much longer than the telomere ("Tarsus") and with teeth, lobes or spines in *Lissopyge*, vs same length as telomere and without peculiarities in *Xystopyge.* However, subsequently described species of *Xystopyge* (VandenSpiegel & Pierrard 2004, Frederiksen & Enghoff 2012) do have various processes on the solenomere. The difference between the two genera in the relative length of solenomere and telomere, on the other hand, seems to hold.

Genus ***Xystopyge*** Attems, 1909

Type species

Xystopyge lineata Attems, 1909 (Tanzania), by original designation.

Other included species

Twenty-two, including five species described as new here, see VandenSpiegel & Pierrard (2009) and Frederiksen & Enghoff (2012).

Diagnosis

Differs from all other odontopygid genera, with the possible exception of *Lissopyge*, (see above) by the strongly developed gonopod sternum. Differs from *Lissopyge* by having solenomere and telomere of approximately same length, vs solenomere much longer than telomere in *Lissopyge*.

Remarks

In spite of two recent reviews (VandenSpiegel & Pierrard 2009; Frederiksen & Enghoff 2012) new species of *Xystopyge* constinue to be discovered. In addition to those described here, several others have already been collected but remain unnamed so far. The known distrbituion of the genus covers eastern Kenya and Tanzania.

See above concerning the differences between *Xystopyge* and *Lissopyge*, the only genera in subfamily Lissopyginae.

Xystopyge bentemarieae sp. nov.
urn:lsid:zoobank.org:act:0968ADE8-6469-44B3-AE8D-D427EED0A597
Figs 4B, 62–64

Diagnosis

Differs from other species of *Xystopyge* by the combination of a hammerlike profile of the distal part of the gonopod coxa in certain views (Fig. 63C) (shared only with *X. martella* VandenSpiegel & Pierrard, 2004, and *X. doggartae* sp. nov.), an only moderately long, tongue-shaped gonopod sternum (very long, slender-triangular in *X. martella* and *X. doggartae* sp. nov.), a very stout, moderately curved hook (*th*) at midlength of the gonopod telomere (very strongly curved in *X. doggartae* sp. nov.), lack of a basal solenomeral spine (*BSS*) (a small tubercle in *X. martella*, a long basal spine in in *X. doggartae* sp. nov.) and a distal division of the solenomere into two branches (undivided in *X. martella*).

Etymology

After my granddaughter Bente Marie Enghoff Mogensen.

Material examined (total 7 ♂♂)

Holotype

TANZANIA • ♂; Morogoro Region, Kanga Mts, Kanga FR; 400–500 m a.s.l.; 22–25 Nov. 1984; lowland rain forest; N. Scharff leg.; NHMD 621766.

Paratypes

TANZANIA • 6 ♂♂; same collection data as for holotype; NHMD 621767.

Description

Size. Length 57–73 mm. Diameter 3.5–4.0 mm. 61–62 podous rings; no podous rings in fornt of telson.

Colour. After 36 years in alcohol faded to light (greyish) brown; however, a broad mid-dorsal pale stripe still evident.

Supralabral setae. 5–6.

Mandibular stipes. Distal margin slightly concave, posterior-distal corner almost right-angled.

Anal valves (Fig. 4B). Each with a distinct dorsal spine and 2 setae on raised margin; no ventral spine.

Limbus (Fig. 62C). Margin with short, smooth rounded lobes.

Legs. With postfemoral and tibial pads from leg-pair 5, except for last few leg-pairs; size of pads decreasing towards posterior.

First pair of legs (Fig. 62D–F). Prefemoral lobes short, triangular in ventral view. Six to eight long coxosternal setae (*CXS*) adjacent to lateral side of prefemoral process; prefemur with a few peglike mesapical sensilla (*APS*) and ca 12 peglike lateral sensilla (*LPS*).

Gonopod sternum (sternum 8) (Fig. 62A). Tongue-shaped, ca twice as long as broad.

Sternum 9. Pentagonal with parallel lateral margins ('house-shaped').

Gonopod coxa (Fig. 63). Proplica (*PP*) simple, proplical lobe (*PPL*) relatively slender, clearly visible in anterior view. Metaplica (*MP*) at level of proplical lobe produced mesad into triangular ridged process (*mpo*), at lateral end of *mpo* a large vertical lobe (*mpv*), distally produced into complex structure with four subhorizontal processes: 1. A large, subrectangular meso-posteriad process (*mpp*), 2. A long, triangular mesad process (*mtp*), 3. A very slender process (*sx*) process originating next to *mtp* 4. A subrectangular anteriad process (*rx*) (*sx* and *rx* corresponding to the similarly labelled processes in *X. doggartae* sp. nov.).

Gonopod telopodite (Fig. 64). Arculus 135°. Torsotope not very well delimited. Solenomere (*SLM*) at rest concealed within gutter formed by telomere; ca as long as telomere, simple, without a basal spine, towards end divided into a long, striate branch (*sdl*) with the opening of the efferent canal, and a longer, slender, smooth, curved spinelike branch (*sdp*), the latter with a short basal accessory spinelike branch. Telomere (*TM*) overall consisting of a ribbon describing a full circle and at the same time folded lengthwise forming a concavity along the inner side of the circle, with a very stout, smooth hook (*th*) ca at mid-length; at the end with a transverse spinelike process (*ttp*).

Distribution and habitat

Only known from lowland rain forest at 400–500 m a.s.l. at the type locality, Kanga FR in the Kanga Mts (part of Nguru Mts).

Remarks

Although *X. bentemariae* sp. nov. is here diagnosed vis-à-vis *X. martella* and *X. doggartae* sp. nov., it also shows some striking similarities with *X. robusta* Attems, 1910. This species has been illustrated by Attems (1910) and VandenSpiegel & Pierrard (2004), but the opportunity is here taken to show some SEM images (Fig. 65) of the gonopods of a male of *X. robusta* collected close to the Uluguru Mts, viz:

TANZANIA • ♂; Morogoro Region, Morogoro, foot of Uluguru Mts, above the university campus; 17 Mar. 1989; hand collecting from ground and from plants; Mahunka and Zicsi leg.; HNHM diplo-03051 (Compared side by side with a syntype of *X. robusta* (NHMW 9114, Insel Pemba, Chake Chake, Voeltkow leg. and don.) – the gonopods are completely identical.)

Specific similarities between *X. robusta* and *X. bentemarieae* sp. nov. include:
- the very complicated distal part of the metaplica, especially the slender process *sx*
- the simple telomere (TM)
- the hooklike moderately curved telomeral process (*th*)

Differences include:
- details of the apical metaplical processes other than *sx*
- the solenomere (*slm*) which in *X. robusta* ends in a striate lamella with a terminal hook, vs divided into a striate branch (*sdl*) and a spinelike process (*sdp*) in *X. bentemarieae* sp. nov.

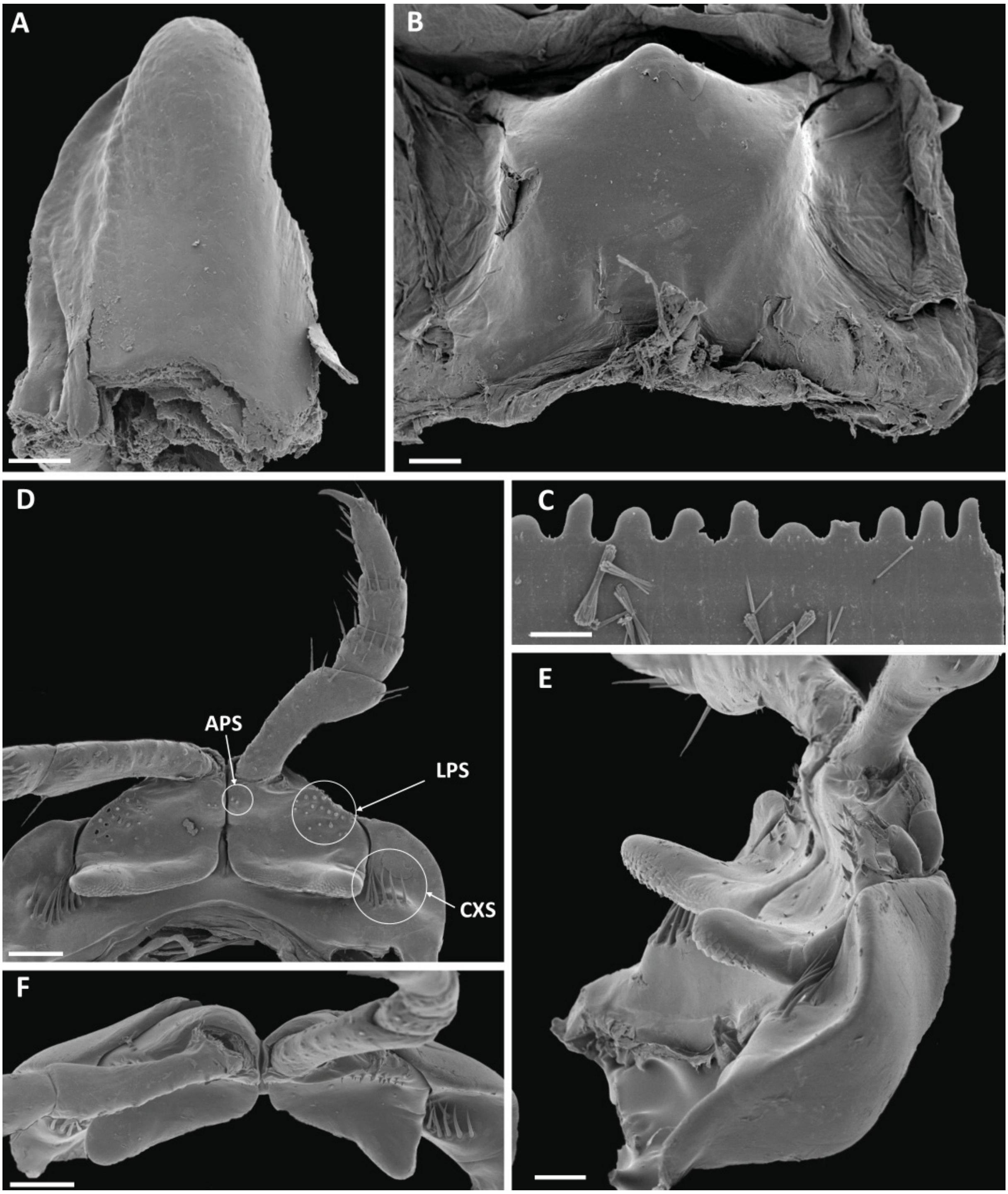

Fig. 62. *Xystopyge bentemarieae* sp. nov., holotype, ♂ (NHMD 621766). **A**. Gonopod sternum (sternum 8). **B**. Sternum 9. **C**. Midbody dorsal limbus. **D–F**. First pair of legs. D. Anterior view. E. Lateral view. F. Ventral view. Abbreviations: *APS* = mesapical prefemoral sensilla; *CXS* = coxosternal setae; *LPS* = lateral prefemoral sensilla. Scale bars: A = 0.05 mm; B, E = 0.1 mm; C = 0.01 mm; D, F = 0.2 mm.

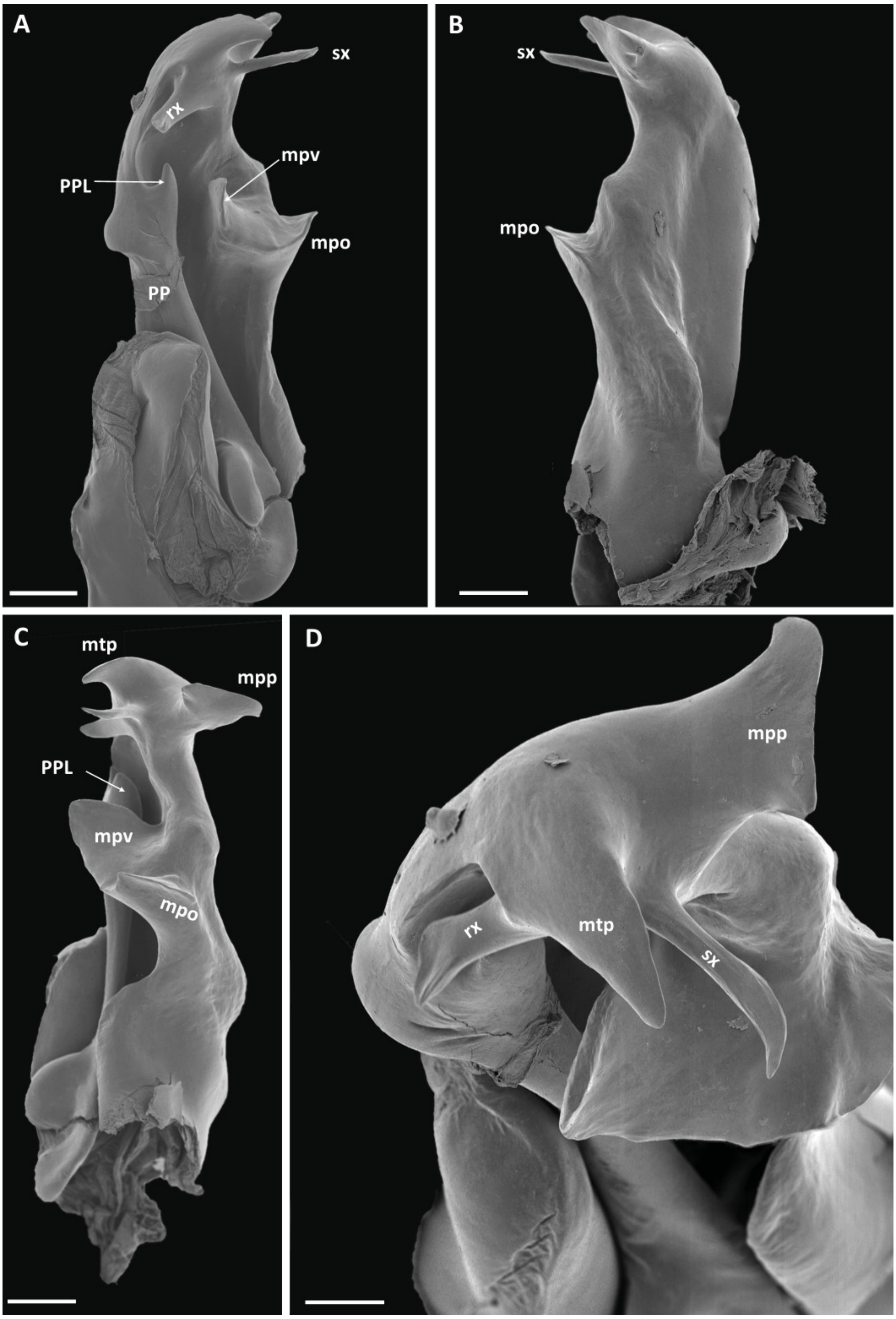

Fig. 63. *Xystopyge bentemarieae* sp. nov., holotype, ♂ (NHMD 621766), left gonopod coxa. **A**. Anterior view. **B**. Posterior view. **C**. Mesal view. **D**. Apical view. Abbreviations: *MP* = metaplica; *mpo* = metaplical ridged process; *mpp* = metaplical posterior process; *mpv* = metaplical vertical lobe; *mtp* = metaplical triangular process; *PP* = proplica; *PPL* = proplical lobe; *rx* = metaplical subrectangular process; *sx* = slender metaplical process. Scale bars: A–C = 0.2 mm; D = 0.1 mm.

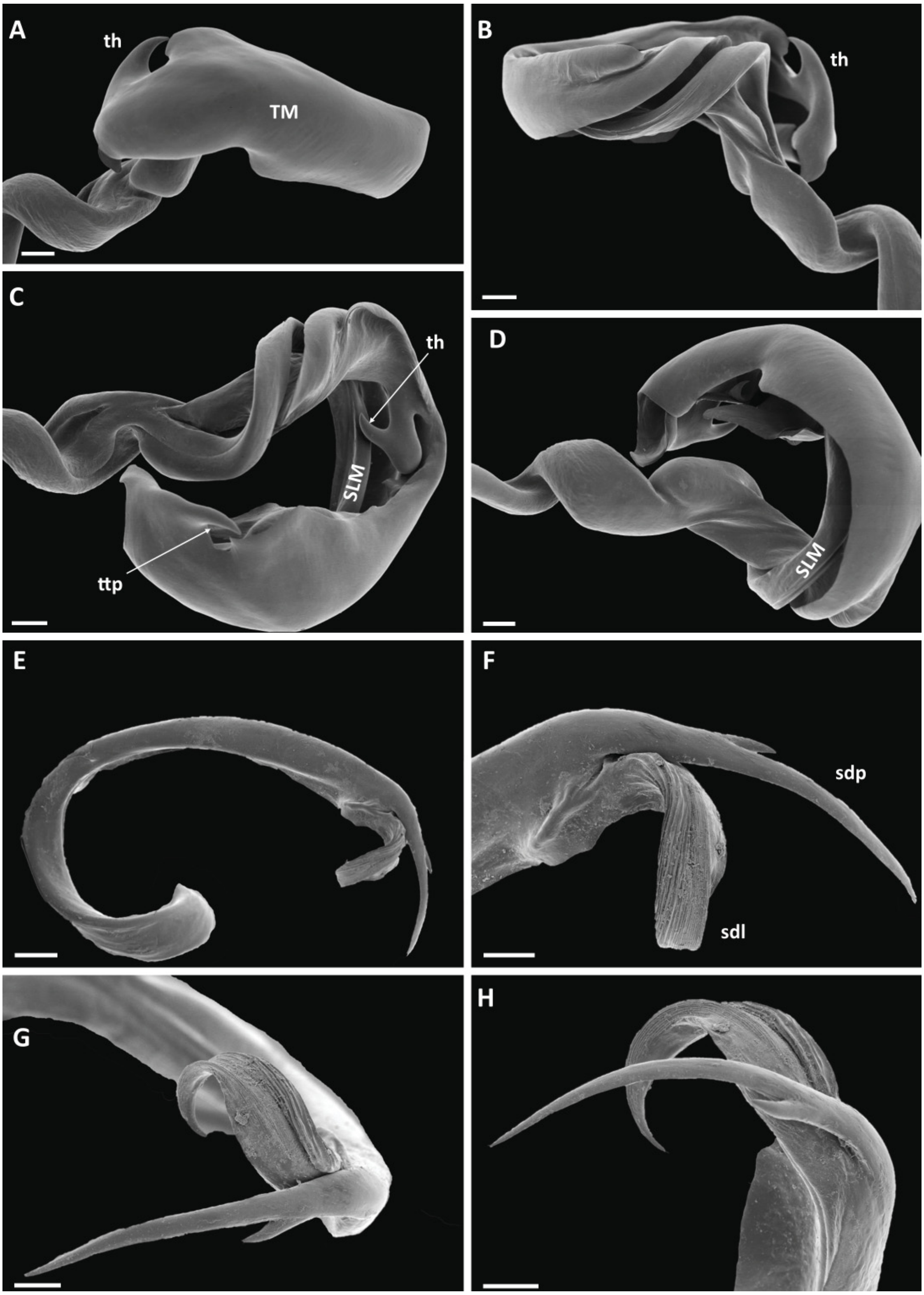

Fig. 64. *Xystopyge bentemarieae* sp. nov. **A–D**. Holotype, ♂ (NHMD 621766), left gonopod telopodite. A. Anterior view. B. Posterior view. C. Dorsal view. D. Ventral view. **E–H**. Paratype, ♂ (NHMD 621767), isolated solenomere. Abbreviations: *sdl* = solenomeral distal microstriate branch; *sdp* = solenomeral distal spinelike branch; *SLM* = solenomere; *th* = telomeral hook; *TM* = telomere. Scale bars: A–E = 0.1 mm; F–H = 0.05 mm.

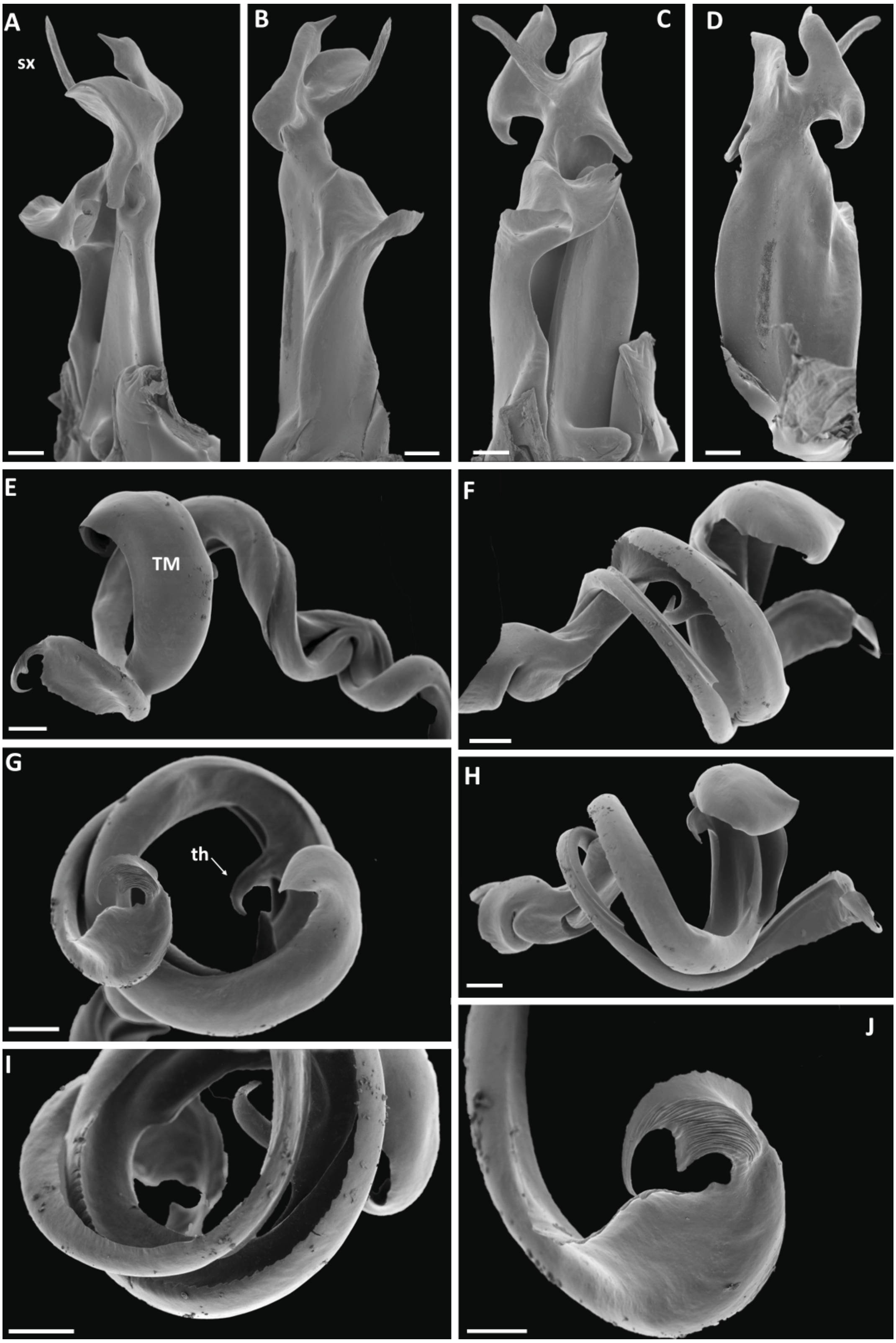

Fig. 65. *Xystopyge robusta* Attems, 1910, ♂, from Morogoro (HU-HR-124), right gonopod. **A–D**. Coxa. A. Anterior view. B. Posterior view. C. Mesal view. D. Lateral view**. E–J**. Telopodite. E. Anterior view. F. Posterior view. G. Mesal view. H. Ventral view. I. Lateral view. J. Tip of solenomere. Abbreviations: *sx* = slender metaplical process; *th* = telomeral hook; *TM* = telomere. Scale bars: A–I = 0.2 mm; J = 0.1 mm.

Xystopyge doggartae sp. nov.
urn:lsid:zoobank.org:act:5228A21E-9964-4B1B-A536-CD37E6B578CB
Figs 66–68

Diagnosis

Differs from other species of *Xystopyge* by the combination of a hammerlike profile of the distal part of the gonopod coxa in certain views (Fig. 67B–C) (shared only with *X. martella* and *X. bentemarieae* sp. nov.), a very long, slender-triangular gonopod sternum (shared with *X. martella* and a few other species, but not with *X. bentemarieae* sp. nov.), a very stout, strongly curved hook (*th*) at midlength of the gonopod telomere (smaller and not so strongly curved in *X. martella* and *X. bentemarieae* sp. nov.), a very strong basal solenomeral spine (BSS) (only a small tubercle at this place in *X. martella*, nothing in *X. bentemarieae* sp. nov.) and a distal division of the solenomere into two branches (undivided in *X. martella*).

Etymology

After the collector, Nike Doggart.

Material examined (total 1 ♂)

Holotype

TANZANIA • ♂; Morogoro Region, Morogoro District, Kasanga FR; 37°45′ E, 7°10′ S; 700–900 m a.s.l.; 27 Jul.–2 Aug. 2000; Nike Doggart leg.; Uluguru Mountains Biodiversity Conservation Project; lowland submontane forest, taken from leaf litter and rotting logs; NHMD 621768.

Description (male)

(Only the head and the first 18 body rings are present)

Size. Diameter 2.5 mm.

Colour. Quite faded after 20 years in alcohol; a broad dorsal pale stripe still evident.

Supralabral setae. 5.

Mandibular stipes. With large disto-ventral lobe, distal margin shallowly concave.

Limbus (Fig. 66D). Margin with smooth, rounded, finger-shaped lobes.

Legs. With tibial pads from leg-pair 6; post-gonopodal legs with postfemoral as well as tibial lobes, at least until body ring 18.

First pair of legs (Fig. 66A–B, E). Prefemoral lobes short, triangular in ventral view. Three to four long coxosternal setae (*CXS*) adjacent to lateral side of prefemoral process; prefemur with a few peglike mesapical sensilla (*APS*) and ca 10 peglike lateral sensilla (*LPS*).

Gonopod sternum (sternum 8) (Fig. 66C). Long, narrow triangular.

Sternum 9 (Fig. 66F). Pentagonal.

Gonopod coxa (Fig. 67). Rather massive. Proplica (*PP*) simple, proplical lobe (*PPL*) clearly visible in anterior view. Metaplica (*MP*) at level of proplical lobe produced mesad into two subsemicircular lobes, one (*mpv*) vertical and one (*mpo*) oblique to almost horizontal; distally produced into complex structure with a large, pointed, curved, posteriad process (*mpp*) and a meso-anteriad, subrectangular process (*map*) carrying a long, slender straight extension (*sx*) at its meso-posterior corner and a short retrose extension (*rx*) at its latero-anterior corner.

GONOPOD TELOPODITE (Fig. 68). Arculus 135°. Torsotope (*TT*) not very well delimited. Solenomere (*SLM*) at rest concealed within gutter formed by telomere; ca as long as telomere; at base with a large,

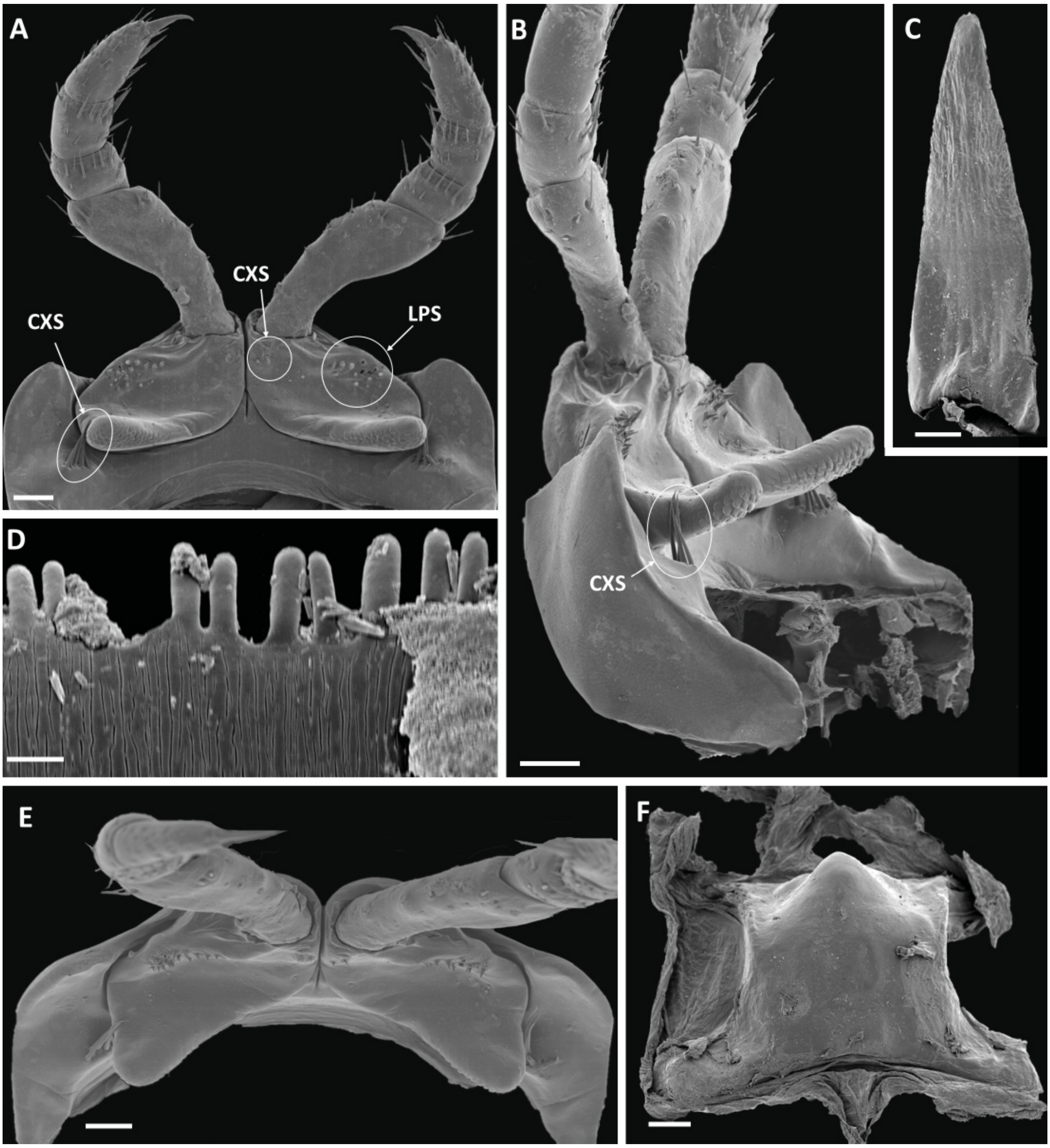

Fig. 66. *Xystopyge doggartae* sp. nov., holotype, ♂ (NHMD 621768). **A–B, E**. First pair of legs. A. Anterior view. B. Sublateral view. E. Ventral view. **C**. Gonopod sternum (sternum 8). **D**. Midbody dorsal limbus. **F**. Sternum 9. Abbreviations: *APS* = mesapical prefemoral sensilla; *CXS* = coxosternal setae; *LPS* = lateral prefemoral sensilla. Scale bars: A–C, E–F = 0.1 mm; D = 0.005 mm.

Fig. 67. *Xystopyge doggartae* sp. nov., holotype, ♂ (NHMD 621768), left gonopod coxa. **A**. Anterior view. **B**. Mesal view. **C**. Lateral view. **D**. Posterior view. **E**. Apical view. Abbreviations: *map* = metaplical anterior process; *MP* = metaplica; *mpo* = metaplical oblique lobe; *mpp* = metaplical posterior process; *mpv* = metaplical vertical lobe; *PP* = proplica; *PPL* = proplical lobe; *rx* = retrorse extension of *map*; *sx* = straight extension of *map*. Scale bars = 0.1 mm.

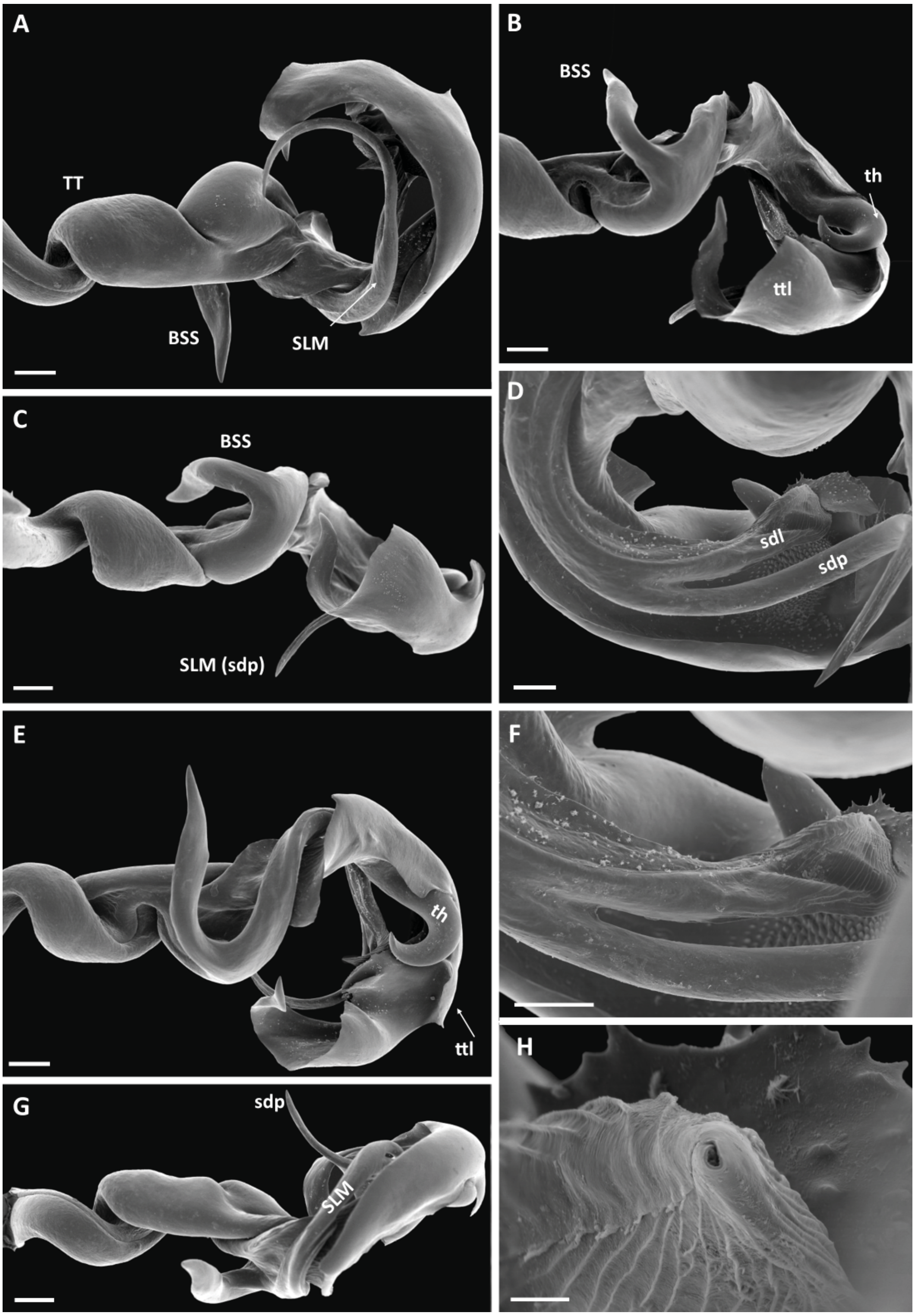

Fig. 68. *Xystopyge doggartae* sp. nov., holotype, ♂ (NHMD 621768), left gonopod telopodite. **A**. Anterior view. **B**. Posterio-lateral view. **C**. Dorsal view. **D, F**. Distal part of solenomere resting in telomere gutter. **E**. Posterior view. **G**. Ventral view. **H**. Close-up of opening of efferent canal. Abbreviations: *BSS* = basal solenomeral spine; *sdl* = solenomeral distal microstriate branch; *sdp* = solenomeral distal spinelike branch; *SLM* = solenomere; *th* = telomeral hook; *TT* = torsotope; *ttl* = telomeral triangular lamella. Scale bars: A–C, E, G = 0.1 mm; D, F = 0.05 mm; H = 0.01 mm.

stout, curved spine (*BSS*); ca at ⅔ from base dividing into a shorter, microstriate branch (*sdl*) with the opening of the efferent canal, and a longer, slender, smooth, curved spinelike branch (*sdp*). Telomere (*TM*) overall consisting of a ribbon describing a full circle and at the same time folded lengthwise forming a concavity along the inner side of the circle, with a very stout, strogly curved, smooth hook (*th*) ca at mid-length followed a hyaline, triangular lamella (*ttl*); interior surface of telomere at least partly microspiculate (Fig. 68F).

Distribution and habitat

Known only from the type locality where it was taken from leaf litter and rotting logs lowland submontane forest. See Doggart *et al.* (2004) for information on this area.

Remark

Found in the same sample as *X. proplicatus* Frederiksen & Enghoff, 2012 (see below).

Xystopyge enghoffi VandenSpiegel & Pierrard, 2004

New material examined

TANZANIA • 1 ♂; Tanga Region, Muheza District, Amani Nature Reserve; 5°06′ S, 38°36′ E; 29 Feb. 2000; Frontier Tanzania leg.; NHMD 621769.

Distribution

Previous Eastern Arc records (all in the East Usambara Mts, some coordinates obviously erroneous in original publication, corrected here): Tanga Region, Muheza Distr., Kwamgumi; 4°57′ S, 38°44′ E • Tanga Region, Muheza Distr., East Usambara Mts, Amani; 5°07′ S, 38°38′ E • Mtai FR; 4°50′ S, 38°46′ E • Tanga Region, Muheza Distr., Amani Nature Reserve; 5°07′ S, 38°38′ E • Tanga Region, Muheza Distr., Nilo FR; 1240 m a.s.l.; submontane forest (VandenSpiegel & Pierrard 2004; Enghoff *et al.* 2016).

General distribution: East Usambara endemic.

Xystopyge frontieri Frederiksen & Enghoff, 2012

Previous Eastern Arc records: Tanga Region, Muheza + Korogwe Distr., Nilo FR, 04°57′53″ S, 38°38′28″ E (Frederiksen & Enghoff 2012).

General distribution: East Usambara endemic.

Xystopyge hippocampus sp. nov.
urn:lsid:zoobank.org:act:DDCFB7F2-1F31-41EE-8939-EDDEAE26E48F
Figs 69–70

Diagnosis

Differs from other species of *Xystopyge* by the profile of the gonopod coxa and the shape of the terminal lobes of the telomere. The coxal profile reminds of that in *X. enghoffi* but in *X. hippocampus* sp. nov. the concavities on the mesal side are much deeper. Details of the terminal lobes have not been well described by previous authors, but apparently no other species has a seahorse-shaped lobe like that in *X. hippocampus* sp. nov.

Etymology

Named after the (somewhat) sea-horsehead like terminal telomeral lobe. Noun in apposition.

Material examined (total 1♂)

Holotype

TANZANIA • ♂; Tanga Region, Muheza District, Manga FR; 5°02′ S, 38°47′ E; 4 Aug. 1994; Frontier Tanzania leg.; plot 30:2; NHMD 621770.

Description

(Only the head and the first 32 body rings are present)

Size. Diameter 3.5 mm.

Colour. After 26 years in alcohol uniform pale yellowish, traces of a narrow dorsal pale stripe present.

Supralabral setae. 6.

Mandibular stipes. Sub-rectangular, disto-ventrally rounded, diatal margin slightly sigmoid.

Limbus (Fig. 69H). Margin with smooth, rounded, finger-shaped lobes.

Legs. With postfemoral and tibial pads from leg-pair 4.

First pair of legs (Fig. 69A–C). Prefemoral lobes short, almost semicircular in ventral view. Four long coxosternal setae (*CXS*) adjacent to lateral side of prefemoral process; prefemur with three mesapical setae (*APS*) and ca seven short lateral setae (*LPS*).

Gonopod sternum (sternum 8). Tongue-shaped, ca twice as long as broad, slightly tapering towards emarginate tip, as in *X. corolla* VandenSpiegel & Pierrard, 2004¸ but slightly stouter, cf. VandenSpiegel & Pierrard (2004: fig. 1).

Sternum 9 (Fig. 69I–J). Transverse trapezoidal, ca twice as broad as long, with slightly concave diverging sides; apically with a pair of connected circular shallow pits separated by round bulges.

Gonopod coxa (Fig. 69D–G). Proplica (*PP*) in anterior view almost parallel-sided, proplical lobe (*PPL*) duplicated, a blunt longitudinal ridge (*lr*) along mesal margin from *PP*; proplica in mesal view with a pair of thick, fingerlike bulges, one (*fb1*) curved, one (*fb2*) straight. Metaplica (*MP*) arched, with semicircular mesal incision, far overreaching proplica in the form of a somewhat bird-head-shaped cucullus (*CU*), at level of proplical lobe with oblique ridge (*mor*).

Gonopod telopodite (Figs 69G, 70). Basomere (*BA*) of uniqiue specimen broken, see Fig. 69G. Arculus 135°. Torsotope not very well-delimited. Solenomere (*SLM*) almost as long as telomere, at rest nesting in hollow inner surface of the latter, in basal ¾ slender with a subcircular cross section; at base with stout, perpendicular basal spine (*BSS*); distally expanded and divided into a lamellate, pointed lobe (*sdl*) and a smooth pointed process (*sdp*). Telomere (*TM*) overall consisting of a ribbon describing a full circle and at the same time folded lengthwise forming a concavity along the inner side of the circle; without obvious processes, distal ¼ expanded, divided into two lobes delimiting a mesal window one (*dtl1*) simple, one (*dtl2*) sigmoid, spiculate along margin, vaguely resembling a sea-horse head.

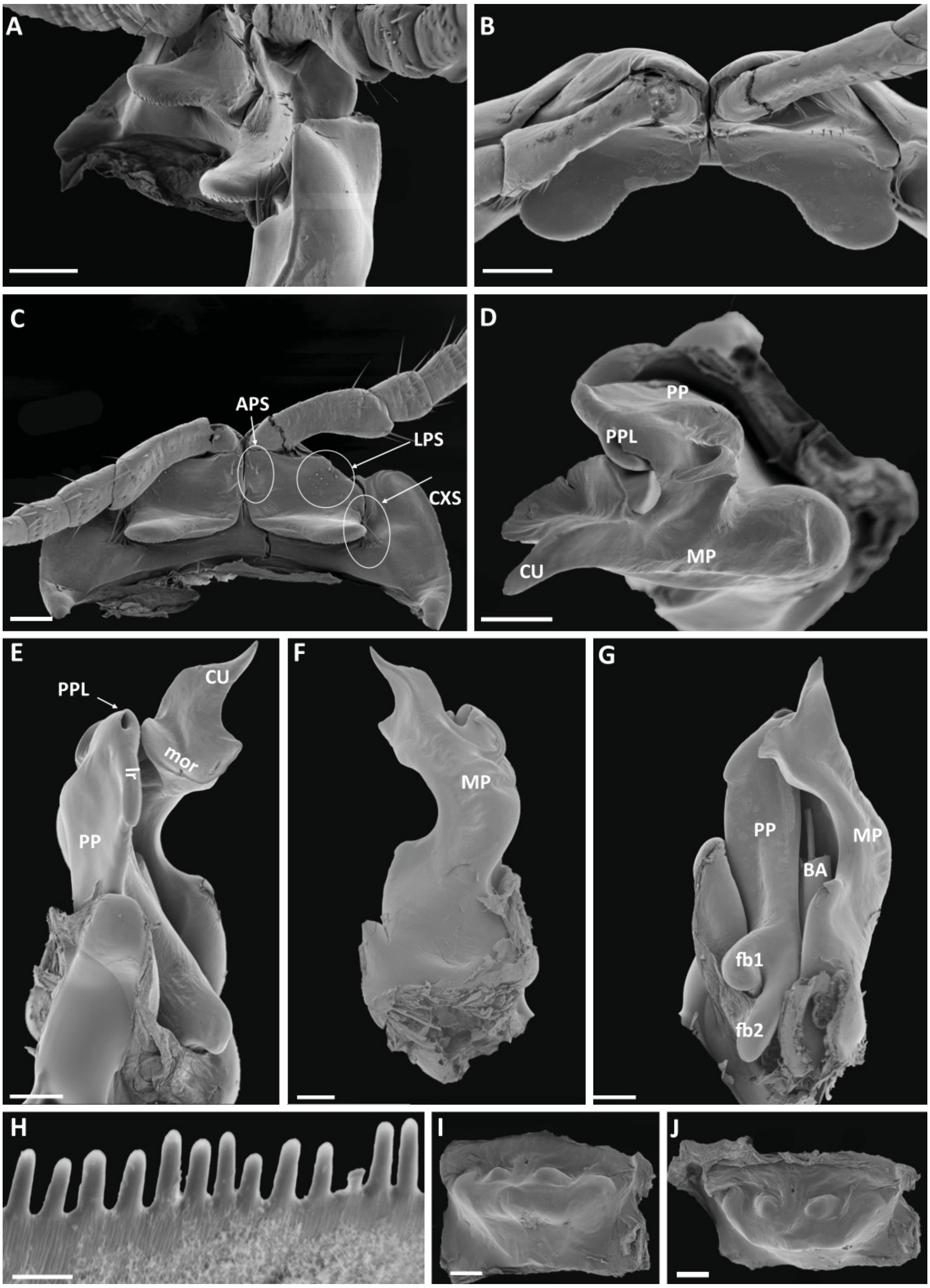

Fig. 69. *Xystopyge hippocampus* sp. nov., holotype, ♂ (NHMD 621770). **A**–**C**. First pair of legs. A. Sublateral view. B. Ventral view. C. Anterior view. **D**–**G**. Left gonopod coxa. D. Apical (ventral) view. E. Anterior view. F. Posterior view. G. Mesal view. **H**. Midbody dorsal limbus. **I**–**J**. Sternum 9. I. Posterior view. J. Subapical (subventral) view. Abbreviations: *APS* = mesapical prefemoral setae; *BA* = basomere of telopodite (broken); *CU* = cucullus; *CXS* = coxosternal setae; *fb1*, *fb2* = fingerlike proplical bulges; *LPS* = lateral prefemoral setae; *lr* = longitudinal proplical ridge; *mor* = metaplical oblique ridge; *MP* = metaplica; *PP* = proplica; *PPL* = proplical lobe. Scale bars. A–G, I–J = 0.2 mm; H = 0.01 mm.

Distribution and habitat

Known only from Manga FR in the East Usambara Mts. See Doggart *et al.* (1999) for information on this area. Found in same sample as *X. voluntariorum* sp. nov.

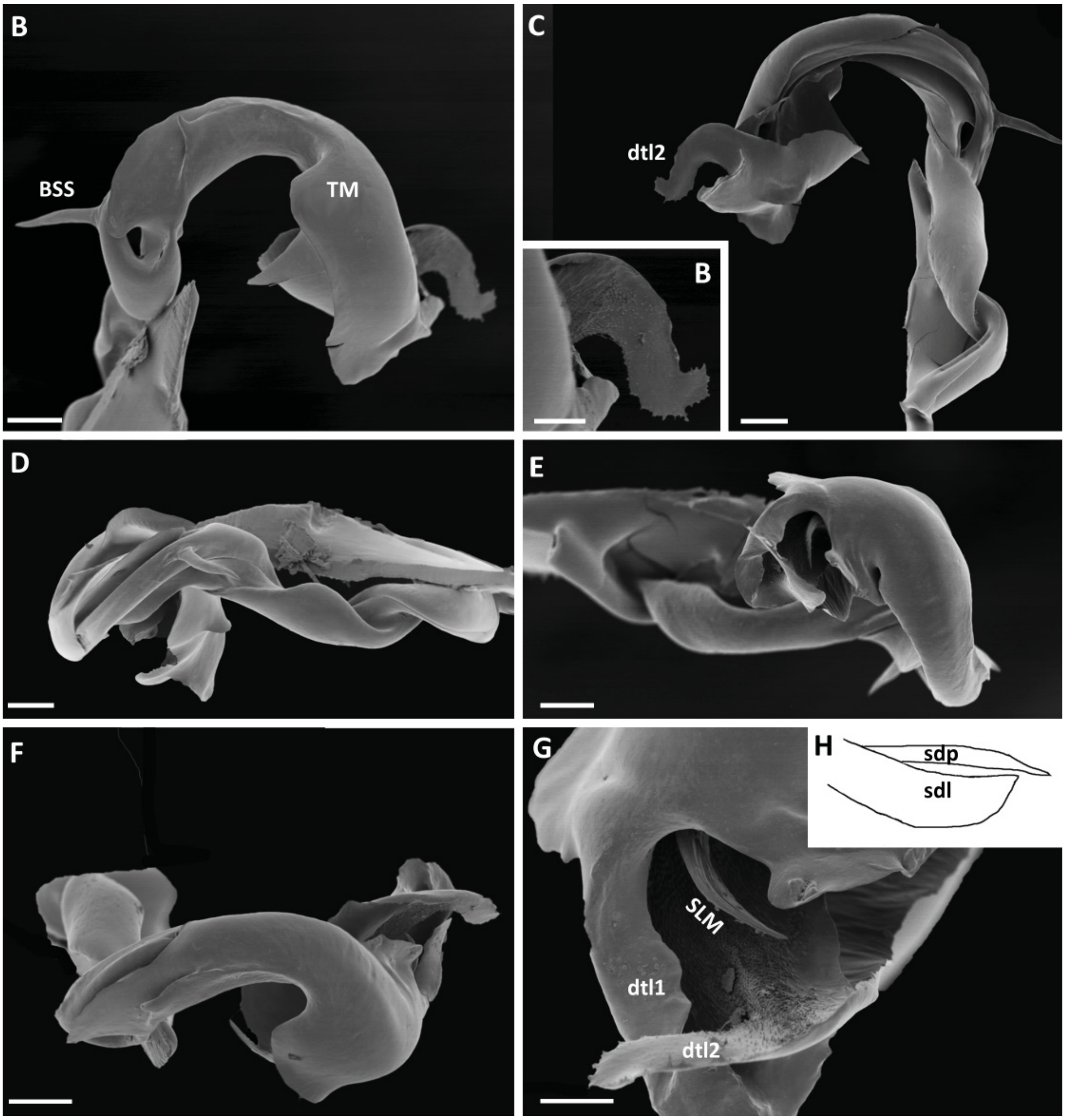

Fig. 70. *Xystopyge hippocampus* sp. nov., holotype, ♂ (NHMD 621770). **A–G**. Left gonopod telopodite. A. Anterior view. B. As A, close-up of tip. C. Posterior view. D. Ventral view. E. Dorsal view. F. Mesal view. G. Dorso-mesal view, close-up of tip. **H**. Right solenomere, tip. Abbreviations: *BSS* = basal solenomeral spine; *dtl1*, *dtl2* = distal telomeral lobes; *sdl* = soloenomeral distal lobe; *sdp* = solenomeral distal process; *SLM* = solenomere; *TM* = telomere. Scale bars: A, C–F = 0.2 mm; B, G = 0.1 mm; H not to scale.

Xystopyge lamella VandenSpiegel & Pierrard, 2004

Previous Eastern Arc records: Tanga Region, Muheza Distr., East Usambara Mts, Kihuhwi Forest; 5°13′ S, 38°45′ E • Tanga Region, Muheza Distr., East Usambara Mts, Nilo FR • Tanga Region, Muheza Distr., East Usambara Mts, Amani; 1000 m a.s.l. (VandenSpiegel & Pierrad 2004; Frederiksen & Enghoff 2012).

General distribution: East Usambara endemic.

Xystopyge lunula VandenSpiegel & Pierrard, 2004

Previous Eastern Arc records: Tanga Region, Muheza Distr., Mungu (recte: Manga) FR; 5°02′ S, 38°47′ E (VandenSpiegel & Pierrard 2004).

General distribution: East Usambara endemic.

Xystopyge martella VandenSpiegel & Pierrard, 2004

New material examined

TANZANIA • 1 ♂; West Usambara Mts, Matundi-Mashindei ridge, SW of Ambangulu Tea Estate; 1300 m a.s.l.; 4 Feb. 1985; L. Peregovits leg.; submontane rain forest; hand collecting; HNHM diplo-03049 • 1 ♂; West Usambara Mts, Mazumbai FR, loc. III; Nov. 1990; T. Andersen *et al.* leg.; pitfall trap; NHMD 621771.

Distribution

Previous Eastern Arc records: Tanga Region, Lushoto distr., Shume Magamba FR, West Usambara Mts, N of Lushoto • Tanga Region, Lushoto Distr., West Usambara Mts, Mazumbai FR; 4°49′ S, 38°29′ E; 1600 m a.s.l. (Frederiksen & Enghoff 2012; Enghoff *et al.* 2016).

General distribution: West Usambara endemic.

Xystopyge minnae sp. nov.
urn:lsid:zoobank.org:act:5A15CE18-B31F-477C-BCB9-5878915D6E06
Figs 71–72

Diagnosis

Differs from all other *Xystopyge* species by the large, crescent-shaped distolateral coxal spine paralleled by an equally long lateral outgrowth from the cucullus, and by the set of one smooth plus two serrate distal processes on the telomere.

Etymology

After my granddaughter Minna Margrethe Enghoff Mogensen.

Material examined (total 2 ♂♂)

Holotype

TANZANIA • ♂; Tanga Region, Muheza District, Nilo FR; 4°52′ S, 38°38′ E; 24 Sep.–28 Nov. 2000; Frontier Tanzania leg.; NHMD 621772.

Paratype

TANZANIA • 1 ♂ (incomplete); same collection data as for holotype; NHMD 621773.

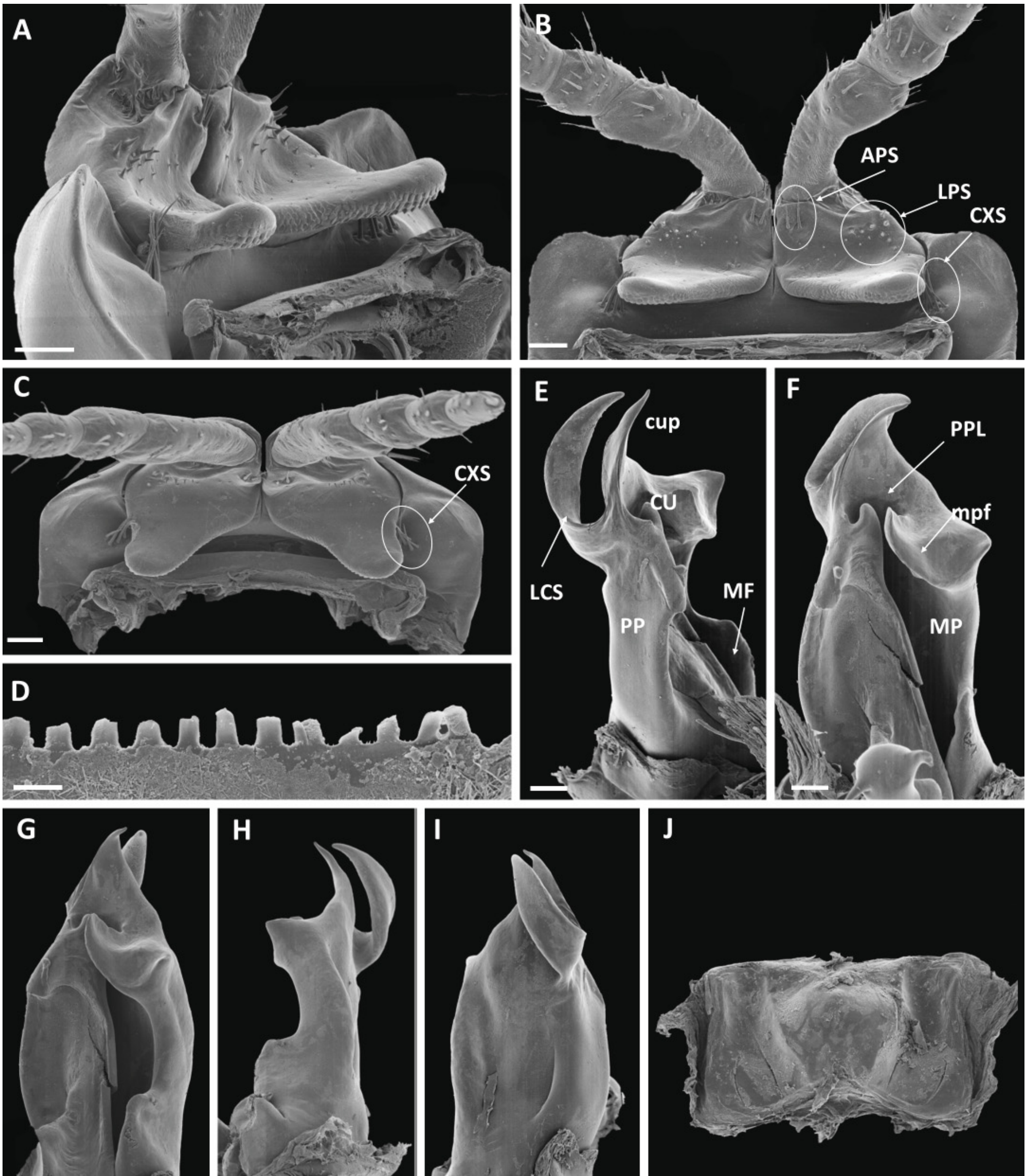

Fig. 71. *Xystopyge minnae* sp. nov., holotype, ♂ (NHMD 621772). **A–C**. First pair of legs. A. Sublateral view. B. Anterior view. C. Ventral view. **D**. Midbody dorsal limbus. **E–I**. Left gonopod coxa. E. Anterior view. F. Anterior-mesal view. G. Mesal view. H. Posterior view. I. Lateral view. **J**. Sternum 9. Abbreviations: *APS* = mesapical prefemoral setae; *CU* = cucullus; *cup* = cucullar process; *CXS* = coxosternal setae; *LCS* = lateral coxal spine; *LPS* = lateral prefemoral setae/sensilla; *MF* = metaplical flange; *MP* = metaplica; *mpf* = metaplical distal flange; *PP* = proplica; *PPL* proplical lobe. Scale bars: A–C, E–J = 0.1 mm; D = 0.01 mm.

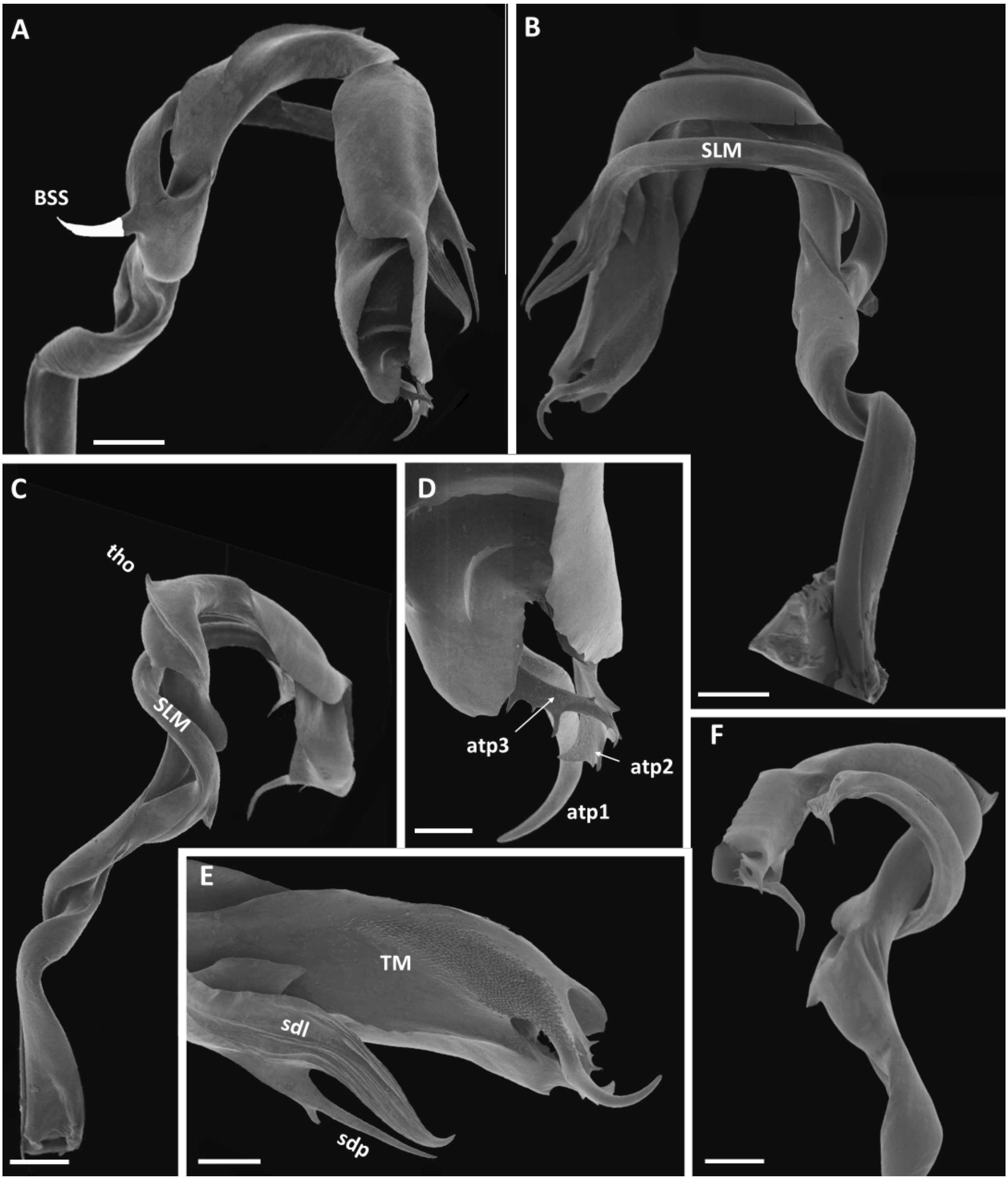

Fig. 72. *Xystopyge minnae* sp. nov., holotype, ♂ (NHMD 621770), left gonopod telopodite. **A**. Anterior view. **B**. Posterior view. **C**. Ventral view. **D**. Tip of telomere, anterior view. **E**. Tip of solenomere and telomere, posterior-mesal view. **F**. Dorsal view. Abbreviations: *atp1*, *atp2*, *atp3* = apical telomeral processes; *BSS* = basal solenomeral spine (reconstructed); *sdl* = solenomeral distal microstriate branch; *sdp* = solenomeral distal spinelike branch; *SLM* = solenomere; *tho* = telomeral thornlike outgrowth; *TM* = telomere Scale bars: A–C, F = 0.2 mm; D = 0.05 mm; E = 0.1 mm.

Description

Size. Length 40 mm. Diameter 2.5–2.6 mm. 51 podous rings; no podous rings in front of telson.

Colour. After 20 years in alcohol faded to light (greyish) yellow, with darker yellow to amber posterior parts of metazona; traces of a relatively narrow mid-dorsal pale stripe still evident.

Supralabral setae. 5–6.

Mandibular stipes. Subrectangular, ventro-distal corner sharp, distal margin very shallowly concave.

Anal valves. Each with a medium-size dorsal spine and two sessile setae on slightly raised margin; no ventral spine.

Limbus (Fig. 71D). Margin with subrectangular lobes, but looks worn, so lobes may really be longer.

Legs. With postfemoral and tibial pads from leg-pair 4 until midbody, size of pads decreasing towards posterior.

First pair of legs (Fig. 71A–C). Prefemoral lobes short, rounded-triangular in ventral view. Three to four long coxosternal setae (*CXS*) adjacent to lateral side of prefemoral process; prefemur with two mesapical setae (*APS*) and ca 10 partly peglike lateral setae/sensilla (*LPS*).

Gonopod sternum (sternum 8). Long-triangular, twice as long as broad, as in *X. robusta* (s.s.), but slightly stouter (cf. VandenSpiegel & Pierrard 2004: fig. 1.)

Sternum 9 (Fig. 71J). Subrectangular, twice as broad as long, with concave distal and lateral margins.

Gonopod coxa (Fig. 71E–I). Proplica (*PP*) simple, proplical lobe (*PPL*) visible in anterior view. Lateral coxal spine (*LCS*) very large, crescent-shaped, directed distad, parallel to lateral process of cucullus. Metaplica (*MP*) with an oblique distal flange (*mpf*) opposing proplical lobe; basal metaplical flange (*MF*) small. Cucullus (*CU*) in anterior view subrectangular, with a lateral process (*cup*) paralleling lateral coxal spine.

Gonopod telopodite (Fig. 72). Arculus 135°. Solenomere (*SLM*) slightly shorter than telomere (*TM*), resting in *TM* for most of its length, artificially freed on illustrated specimen; apically bifurcating into a broader, pointed striate branch (*sdl*) and a slender pointed brach (*sdp*) with a small lateral tine. Basal solenomeral spine (*BSS*) slightly curved, arising perpendicularly from main body of solenomere (broken in illustrated holotype, outline added from paratype). Telomere (*TM*) slender, with a small thornlike outgrowth (*tho*) ca at midlength, apically with three processes, one (*atp1*) smooth and regularly curved, two (*atp2*, *atp3*) of irregular shape, coarsely serrate.

Distribution

Known only from the Nilo FR in East Usambara Mts. See Beharrell *et al.* (2002) for information about this area.

Xystopyge pelecys Frederiksen & Enghoff, 2012

New material examined

TANZANIA • 1 ♂; Tanzania, Amani, Tanga region, National Institute for Medical Research; 14 Feb. 1987; Mahunka and Zicsi leg.; hand collecting from the soil; HNHM diplo-0350.

Distribution

Previous Eastern Arc records: Tanga Region, Muheza Distr., Nilo FR; 04°54′16″ S, 38°39′45″ E; TL • Tanga Region, Muheza Distr., East Usambara Mts, Amani; 1000 m a.s.l. (Frederiksen & Enghoff 2012).

General distribution: East Usambara endemic.

Xystopyge proplicatus Frederiksen & Enghoff, 2012
Figs 73–74

New Material examined (total 2 ♂♂)

TANZANIA • 2 ♂♂; Morogoro Region, Morogoro District, Kasanga FR; 37°45′ E, 7°10′ S, 700–900 m a.s.l.; 27 Jul.–2. Aug. 2000; lowland submontane forest, taken from leaf litter and rotting logs; Nike Doggart leg., Uluguru Mountains Biodiversity Conservation Project; NHMD 621774 • 1 ♂; Morogoro Region, Morogoro District; Ruvu FR; 37°49′–37°54′ E, 6°53′–7°02′ S; 200–400 m a.s.l.; Sep. 2000; lowland forest; Nike Doggart leg., Uluguru Mountains Biodiversity Conservation Project; NHMD 621775.

Descriptive notes based on new material

Size. Length ca 55 mm, diameter 3.2–3.4 mm, 57–59 podous rings, no apodous rings in front of telson.

Colour. After 20 years in alcohol faded to straw yellow; traces of dorsal pale stripe still visible.

Supralabral setae. 4–5.

Mandibular stipes. With large disto-ventral lobe, distal margin very shallowly concave.

Anal valves. With a distinct dorsal spine, no ventral spine; margin raised, with 2 sessile setae.

Limbus (Fig. 73E). Margin with smooth rounded, finger-shaped lobes.

Legs. Ventral pads on postfemur and tibia from leg-pair 4 till the last.

First pair of legs (Fig. 73A–C). Prefemoral lobes short, rounded-triangular in ventral view. Three to five long coxosternal setae (*CXS*) adjacent to lateral side of prefemoral process; prefemur with two mesapical setae (*APS*) and five to six peglike lateral sensilla (*LPS*).

Gonopod sternum (sternum 8) (Fig. 73J, drawing, gonopod sternum of specimen prepared for SEM lost). Slender, parallel-sided, apically emarginated, closely appressed to long processes from the very well-developed metaplical flange.

Sternum 9 (Fig. 73D). Broader than long, pentagonal.

Gonopod coxa (Fig. 73F–I). Rather compact. Proplica (*PP*) longer than metaplica, distally with two rounded processes (*ppr1*, *ppr2*) of which *ppr1* may correspond to the proplical lobe (*PPL*) seen in other odontopygids; a long spine (*pps*) behind the two *ppr* processes. Metaplica (*MP*) massive, posterior margin expanded into large 'hump' (*mph*) delimiting large concavity on posterior-lateral surface of coxa; metaplica anterio-distally prolonged into short 'snout' (*mps*).

Gonopod telopodite (Fig. 74). Arculus 135°. Torsotope (*TT*) not very well-delimited. Solenomere (*SLM*) as long as telomere, at rest nesting in hollow inner surface of the latter (partly free from telomere

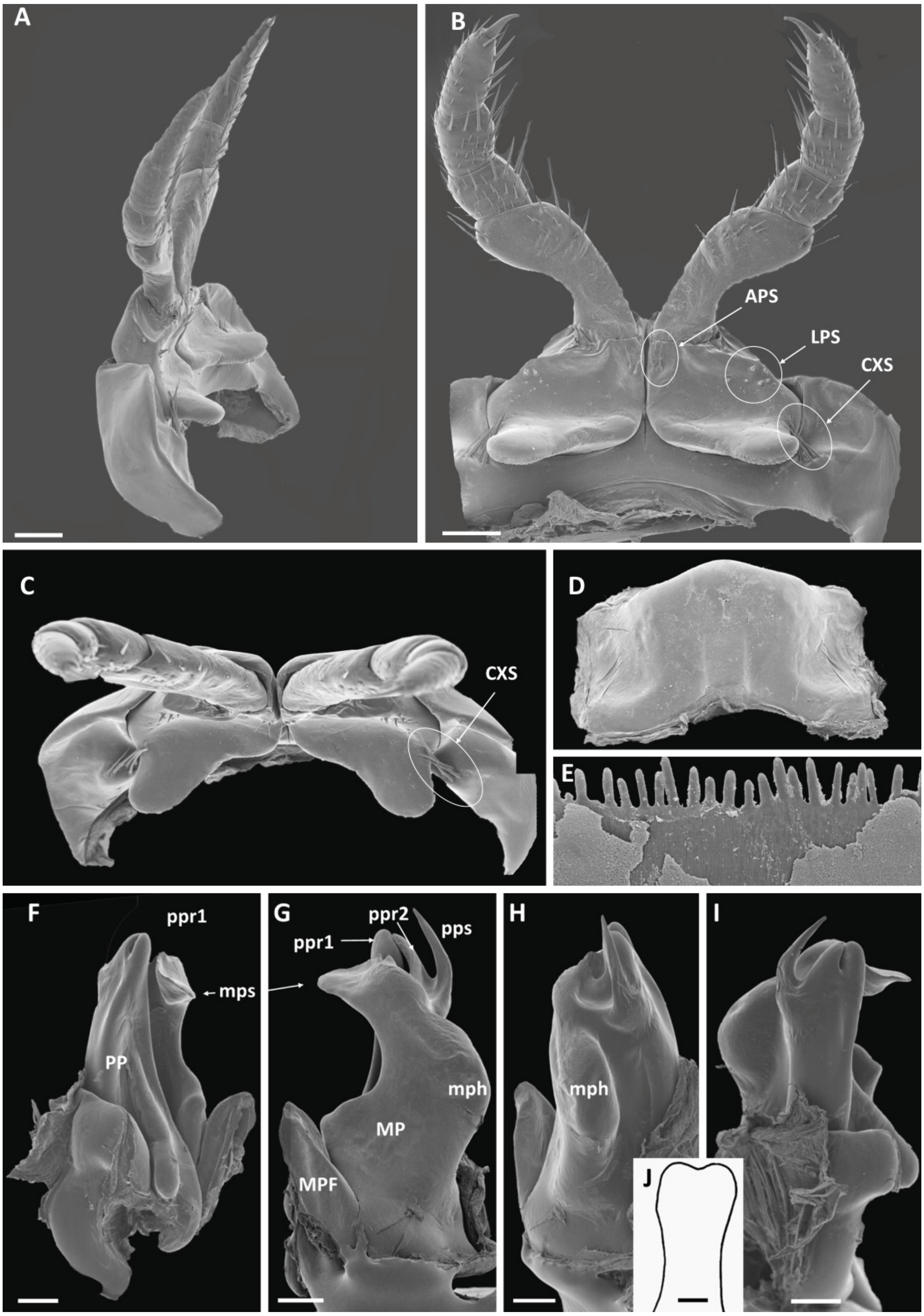

Fig. 73. *Xystopyge proplicatus* Frederiksen & Enghoff, 2012, specimen from Kasanga (NHMD 621774). **A–C**. First pair of legs. A. Sublateral view. B. Anterior view. C. Ventral view. **D**. Sternum 9. **E**. Midbody dorsal limbus. **F–I**. Left gonopod coxa. F. Anterior view. G. Mesal view. H. Posterior view. I. Lateral view. **J**. Gonopod sternum. Abbreviations: *APS* = mesapical prefemoral setae; *CXS* = coxosternal setae; *LPS* = lateral prefemoral sensilla; *MP* = metaplica; *MPF* = metaplical flange; *mph* = metaplical 'hump'; *mps* = metaplical 'snout'; *PP* = proplica; *ppr1*, ppr2 = proplical processes; pps = proplical spine. Scale bars: A–D, F–J = 0.2 mm; E = 0.01 mm.

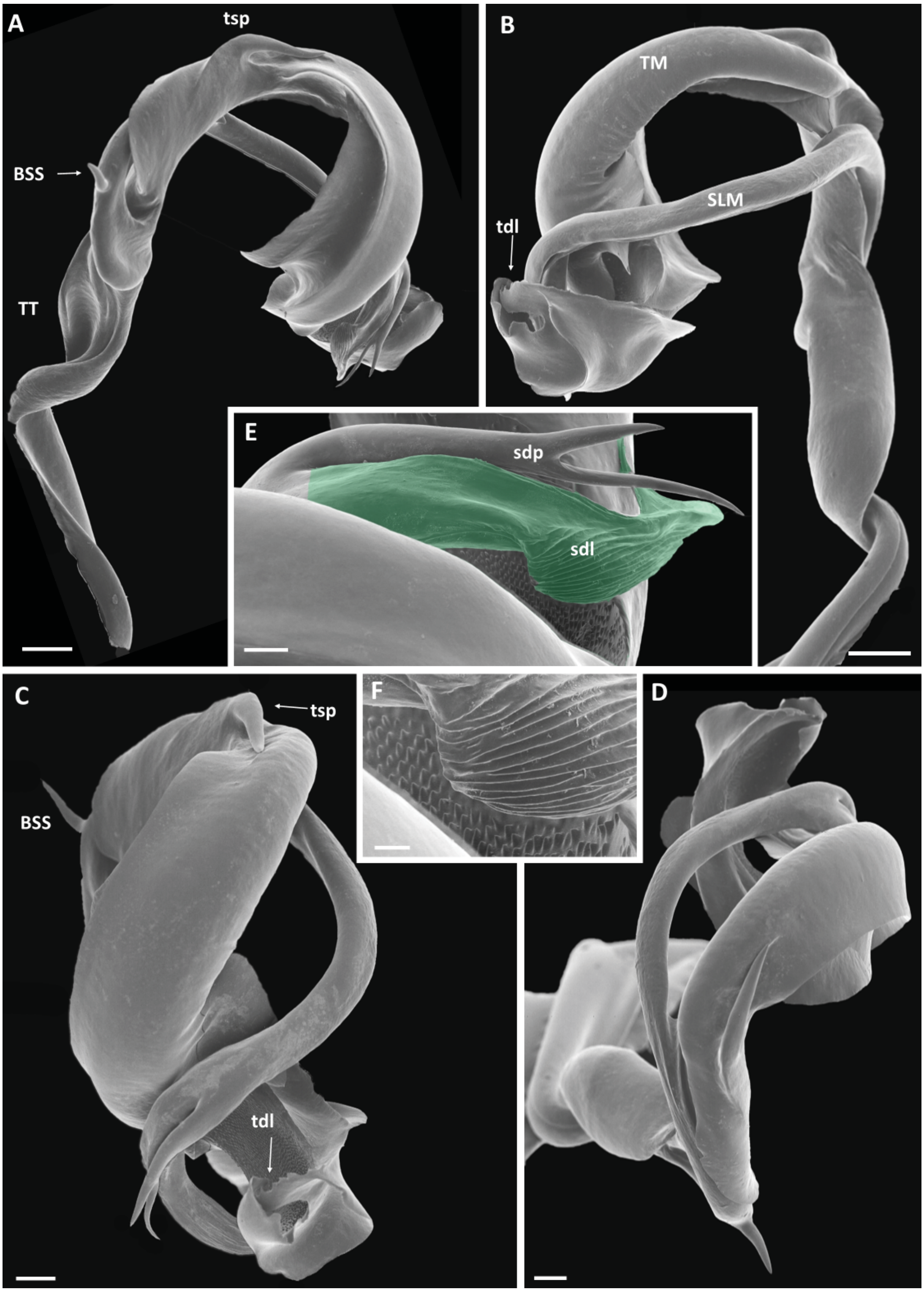

Fig. 74. *Xystopyge proplicatus* Frederiksen & Enghoff, 2012, specimen from Kasanga (NHMD 621774). **A**. (Dorso-)anterior view. **B**. (Ventro-)posterior view. **C**. Ventral view. **D**. Mesal view. **E**. Tip of solenomere, solenomeral distal lobe (*sdl*) highlighted in green. **F**. Close-up of fluted areas of solenomeral distal lobe and microspiculate inner surface of telomere. Abbreviations: *BSS* = basal solenomeral spine; *sdl* = soloenomeral distal lobe; *sdp* = solenomeral distal process; *SLM* = solenomere; *TM* = telomere; *tsp* = telomeral spinelike process. Scale bars: A–B = 0.2 mm; C–D = 0.1 mm; E = 0.005 mm; F = 0.02 mm.

on Fig. 74 due to preparation); Basal ¾ of solenomere slender with a subcircular cross section; with a small basal spine (*BSS*) a short distance from basis, distally expanded and divided into a lamellate, strongly fluted, pointed lobe (*sdl*) and an smooth process (*sdp*) ending in two slender spines of unequal length. Telomere (*TM*) overall consisting of a ribbon describing a full circle and at the same time folded lengthwise forming a concavity along the inner side of the circle; a spinelike process (*tsp*) closely appressed to outer surface of telomere ca ⅓ from its basis, no processes along inner perimeter; distal ¼ of telomere bent posteriad, expanded and with several irregular lamellae, including a small, unilaterally dentate lamella (*tdl*); interior surface of telomere at least partly microspiculate (Fig. 74F).

Distribution and habitat

Previously reported from Morogoro Region, Morogoro Rural Distr., Uluguru Mts, Kimboza Forest; 250 m a.s.l. (Frederiksen & Enghoff 2012). Now known from three forest reserves in the Uluguru Mts. In Kasanga FR taken from leaf litter and rotting logs in lowland and lowland submontane forest.

Remarks

Found in the same sample as the holotype of *X. doggartae* sp. nov. The newly studied specimens closely agree with the original description of *X. proplicatus*, with one notable exception: Frederiksen & Enghoff (2012: fig. 8: ass1 and ass2) described the solenomere tip in *X. proplicatus* as having two consecutive spines, whereas a SEM examination of one of the new specimens showed that these spines are in fact tines originating from one common stem (*sdp*). However, reexamination revealed that this also applies to the holotype of *X. proplicatus* (NHMD: ZMUC00020498).

The near-juxtaposition of the fluted solenomeral lobe (*sdl*) and the mirospiculate inner surface of the telomere (also seen in *X. doggartae* sp. nov.) suggests that these structures may play a role in sperm transfer and/or in sperm competition (cf. Barnett & Telford 1996).

Xystopyge voluntariorum sp. nov.

urn:lsid:zoobank.org:act:D6AE9E01-70CD-4159-BC2B-1DC243A3FA97

Figs 75–76

Diagnosis

Differs from other species of *Xystopyge* by the very long, stout, slightly curving, apically positioned and laterad directed lateral coxal spine.

Etymology

Named after the volunteers working for Frontier Tanzania, in recognition of the abundant and interesting collections they made in the Eastern Arc Mountains. Noun in plural genitive.

Material examined (total 1 ♂)

Holotype

TANZANIA • ♂; Tanga Region, Muheza District, Manga FR; 5°02′ S, 38°47′ E; 4 Aug. 1994; Frontier Tanzania leg.; plot 30:2; NHMD 621776.

Description

Size. Length 64 mm, diameter 4.4 mm, 62 podous rings; no podous rings in fornt of telson-

Colour. After 26 years in alcohol with anterior parts of prozonae pale yellow, posterior parts of prozonae as well as metazona and preanal ring grey, analvalves brown, legs yellow.

Supralabral setae. 6.

Mandibular stipes. With large rounded disto-ventral lobe; distal margin slightly sigmoid

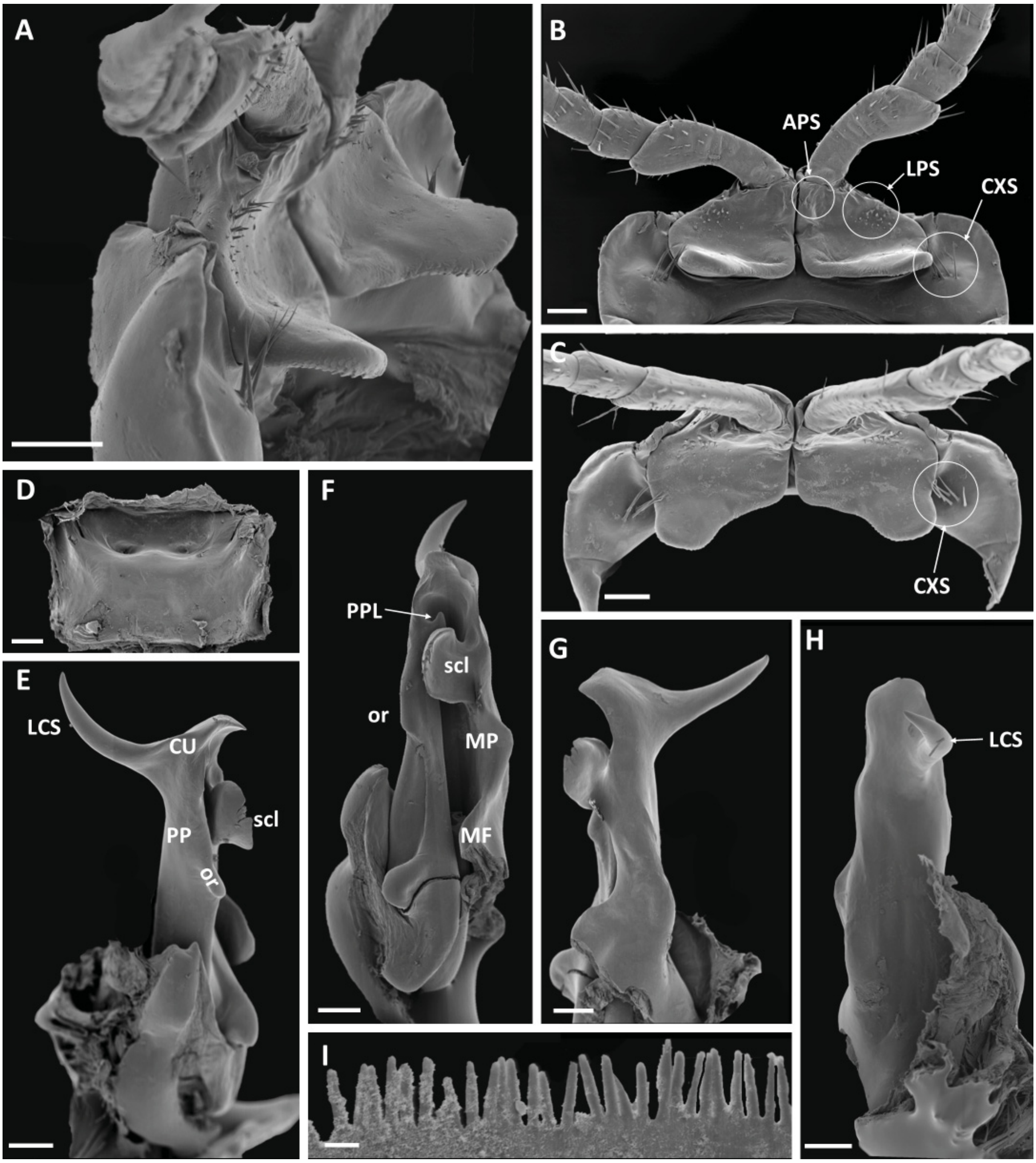

Fig. 75. *Xystopyge voluntariorum* sp. nov., holotype, ♂ (NHMD 621774). **A–C**. First pair of legs. A. Sublateral view. B. Anterior view. C. Ventral view. **D**. Sternum 9. **E–H**. Left gonopod coxa. E. Anterior view. F. Mesal view. G. Posterior view. H. Lateral view. **I**. Midbody dorsal limbus. Abbreviations: *APS*=mesapical prefemoral setae; *CU*=cucullus; *CXS*=coxosternal setae; *LCS I*=Lateral coxal spine; *LPS*=lateral prefemoral sensilla; *MF*=metaplical flange; *MP*=metaplica; *or*=oblique ridge; *PP*=proplica; *PPL*=proplical lobe; *scl* =semicircular lobe. Scale bars: A–H= 0.2 mm; I=0.01 mm.

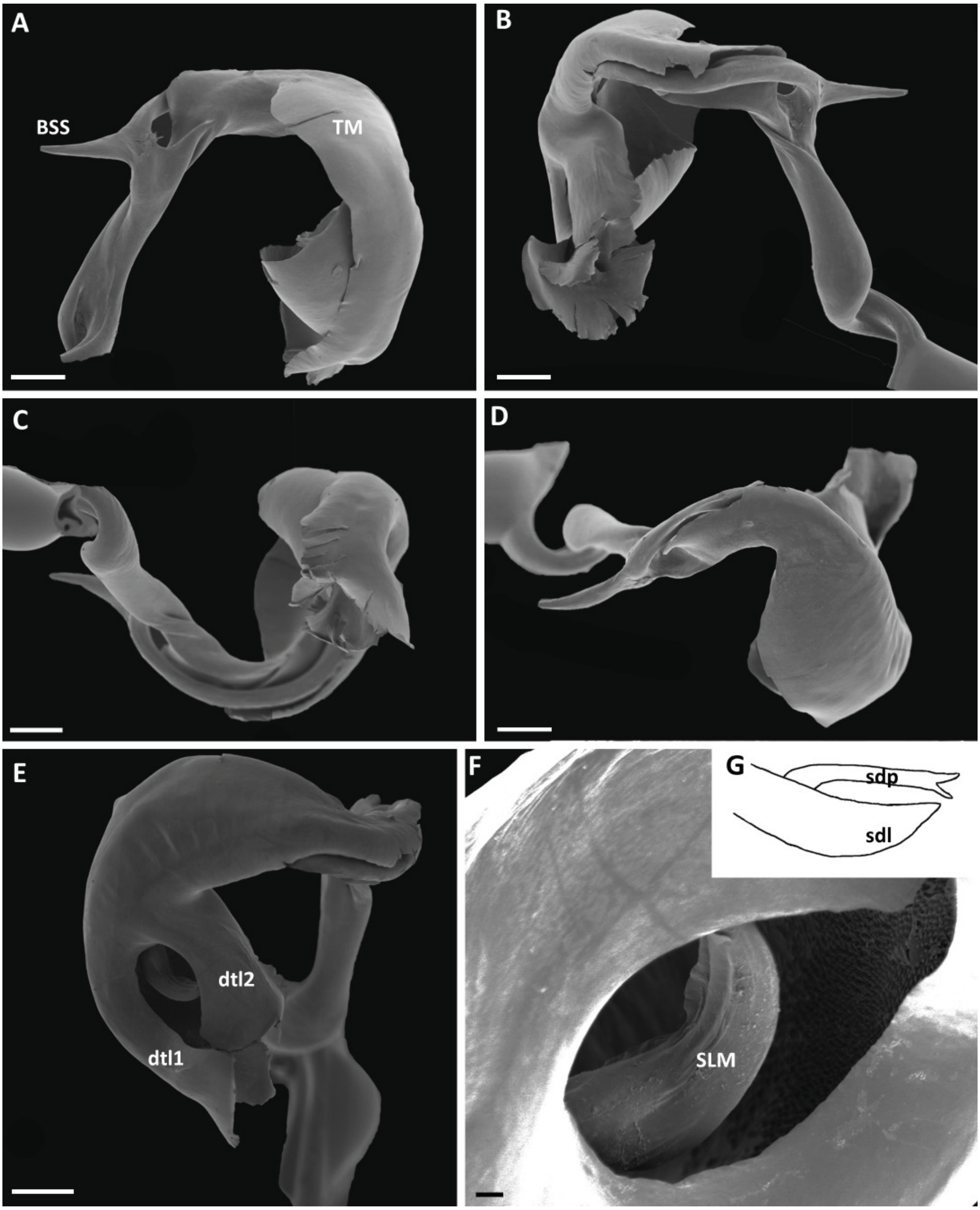

Fig. 76. *Xystopyge voluntariorum* sp. nov., holotype, ♂ (NHMD 621774). **A–F**. Left gonopod telopodite. A. Anterior view. B. Posterior view. C. Dorsal view. D. Ventral view. E. Mesal view. F. Mesal view, close-up, showing part of solenomere. **G**. Right solenomere, tip. Abbreviations: *BSS* = basal solenomeral spine; *dtl1*, *dtl2* = distal telomeral lobes; *sdl* = soloenomeral distal lobe; *sdp* = solenomeral distal process; *SLM* = solenomere; *TM* = telomere. Scale bars: A–E = 0.2 mm; F = 0.02 mm; G not to scale.

Anal valves. Each with a big dorsal spine and 2 setae on the lateral side of distintly raised margins; no ventral spine.

Limbus (Fig. 75I). Margin with very slender, smooth, rounded, finger-shaped lobes.

Legs. With postfemoral and tibial pads from leg-pair 4 till the end.

First pair of legs (Fig. 75A–C). Prefemoral lobes short, subrectangular in ventral view. Five long coxosternal setae (*CXS*) adjacent to lateral side of prefemoral process; prefemur with a two long and one short mesapical setae (*APS*) and ca 10 peglike lateral sensilla (*LPS*).

Gonopod sternum (sternum 8). Tongue-shaped, ca twice as long as broad, slightly tapering towards emarginate tip, as in *X. corolla¸* but slightly stouter, cf. VandenSpiegel & Pierrard (2004: fig. 1).

Sternum 9 (Fig. 75D). Transverse trapezoidal, ca twice as broad as long, with slightly concave diversging sides; subapically with a pair of connected circular shallow pits.

Gonopod coxa (Fig. 75E–H). Slender. Proplica (*PP*) parallel-sided in anterior view, ca at mid-length with short, blunt, oblique ridge (*or*); lateral coxal spine (*LCS*) positioned apically (actually part of cucullus), long, stout, pointed, curving slightly distad. Cucullus (*CU*) short, mesally produced into beak-shaped process. Metaplica (*MP*) with poorly delimited basal metaplical flange (*MF*) and semicircular mesal lobe (*scl*) projecting just basal to proplical lobe (*PPL*).

Gonopod telopodite (Fig. 76). Arculus 135°. Torsotope not very well-delimited. Solenomere (*SLM*) almost as long as telomere, at rest nesting in hollow inner surface of the latter, in basal ¾ slender with a subcircular cross section; at base with stout, perpendicular basal spine (*BSS*); distally expanded and divided into a lamellate, pointed lobe (*sdl*) and a smooth, bifurcate process (*sdp*). Telomere (TM) simple, without processes, overall consisting of a ribbon describing a full circle and at the same time folded lengthwise forming a concavity along the inner side of the circle; distal ¼ expanded, divided into two lobes (*dtl1*, *dtl2*) delimiting a mesal window.

Distribution and habitat

Known only from Manga FR in the East Usambara Mts. See Doggart *et al.* (1999) for information on this area. Found in same sample as *X. hippocampus* sp. nov.

Discussion

Diversity and distribution patterns

New material of 35 odontopygid species from the Eastern Arc Mountains (except the Udzungwa Mts) was examined. Out of these no less than 25 are new species, whereas 10 were already known. An additional 13 odontopygid species have been reported from the non-Udzungwan Eastern Arcs by previous authors but were not present in the material studied here. Of each of the previously known species, 1–6 males were examined (average 2.4 males per species), and four species were represented by only one male. Of each of the new species, 1–12 males were examined (average 2.6 males per species), and no less than 13 of the new species were represented by only one male. It is obvious that several additional odontopygid species await discovery in the Eastern Arcs. The discussion of the *Chaleponcus dabagaensis* group by Enghoff (2014) points in the same direction.

With 41 species (Enghoff 2018, 2020) the Udzungwa Mts, which are only marginally treated in the present paper, stand clearly out from the other Eastern Arc Mountain blocks. The East Usambaras are second with 22 species, followed by the Ulugurus with 11 species; the remaining blocks are known each to house 0–6 odontopygid species. The differences may partially be explained by differences in collecting effort; the East Usambaras have been visited repeatedly by several collectors, and the Udzungwas have been subject to relatively recent extensive sampling campaigns. The species richness of the Udzungwas is primarily due to the possibly monophyletic *Chaleponcus dabagaensis*-group (21 endemic species in the Udzungwas plus one endemic species on Mt. Rungwe). Also, the genus *Aquattuor*, with seven out of its ten species occurring in the Udzungwas, six of them endemic there), contributes to the diversity. The only other instance of a comparable concentration of species of a genus in a single mountain block is that of *Xystopyge* in the East Usambaras: eight out of 22 described *Xystopyge* species are known only from the East Usambaras, but whether the Usambaran species are particularly closely related to one another is unknown.

Monotypic genera

Six monotypic (monospecific) genera have been erected to accommodate six of the 25 newly described species. As mentioned in the introduction, this is the result of a balance between diluting the morphological concept of an existing genus and burdening millipede taxonomy with additional monotypic genera, of which there are already very many, cf. Sierwald & Bond (2007) and Brewer *et al.* (2012). In the case of Odontopygidae the choice between including a new species in an existing genus and creating a new monotypic genus has, for the time being, to be based on morphological evidence only, sine molecular studies on Odontopygidae are as good as non-existing.

The wisdom of creating monotypic genera has been questioned (e.g., Brewer *et al.* 2012). In phylogenetic terms a monotypic genus undeniably provides no 'added value' in comparison with its sole constituent species. Yet, since biological classification and the names we attach to organisms, in addition to (ideally) reflecting phylogenetic relationships, also are means for communicating about the organisms, a monotypic genus in some cases may be preferable to a polytypic one with a very vague (morphological) diagnosis. The new monotypic genera proposed here may thus prove useful, although some might regard them as belonging in the category of "monotypic taxa based on often ambiguous or poorly defined sets of morphological characters … erected in the absence of any formal analysis" (Brewer *et al.* 2012: 2).

Comments on certain morphological characters

The ozopore series

By far most odontopygids have an uninterrupted series of ozopores (defensive gland openings, "Drüsenporen" in the German literature) starting on body ring ("segment") 6. However, in a few taxa, ozopores are also present on body ring 5. Uncharacteristically, Kraus' account (1966) of this character is confusing. On p. 47 he stated that only three species have ozopores on ring 5, viz, *Pleonoporus robustus* (Attems, 1927) (Prionopetalini), *Lissopyge neumanni* Attems, 1909 (Lissopyginae), and *Neodontopyge gracilis* (Carl, 1913) (Peridontopyginae). However, on p. 82, ozopores on ring 5 is stated as characteristic of Peridontopyginae (as Peridontopygini), not just *Neodontopyge* Carl, 1913, but also *Peridontopyge* Silvestri, 1907; I can confirm the presence of ozopores on ring 5 in several species of *Peridontopyge* (pers. obs.). Concerning *Lissopyge*, Kraus (1966: 85), quoting Attems (1909b) included "Drüsenporen vom 6. Segment an vorhanden" in the diagnosis of *Lissopyge*. Finally, ozopores on ring 5 in *Pleonoporus* can be confirmed, based on an undescribed species currently under study by N. Akkari and the author.

Summarizing, ozopores of ring 5 seem to be independently diagnostic of two taxa: subfamily Peridontopyginae and genus *Pleonoporus*.

As a curiosity it may be mentioned that the series of ozopores is interrupted uni- or bilaterally on rings 31, 47, and 56–59 in the unique holotype of *Spinotarsus fortehamatus* Enghoff, 2018 (Enghoff 2018: 21).

Limbus

The limbus has long been known to provide useful taxonomic characters, especially in Odontopygidae (e.g., Schmidt 1962; Kraus 1966; Enghoff 2014). However, as for all other morphological characters, the structure of the limbus may vary at different levels. For example, all species of *Aquattuor* share the same, very characteristic limbus type (Frederiksen 2013b; Enghoff & Frederiksen 2015; Enghoff 2020), whereas in the (probably monophyletic) *Chaleponcus dabagaensis*-group, the limbus is highly variable.

Among the species treated here, there are several cases of shared, more or less unusual limbus type:

Antipustia hoteldolichoiuli gen. et sp. nov., *Aptyctosmilax helenae* gen. et sp. nov. and *Raduliverpa donatellae* sp. nov. share a strongly microstriate limbus with shallow lobes (Figs 8E, 10E, 52D).

Chaleponcus nesrineae sp. nov., *C. schioetzae* sp. nov. and *C. soerensenae* sp. nov. share a virtually non-lobate limbus (Figs 26I, 29H, 35F). A similar limbus is seen in *C. circumvallatus* Enghoff, 2014 (Udzungwa Mts), and whereas other species of the *C. dabagaensis* group show many different types (Enghoff 2014, 2017), the limbus seems to be quite monotonous (with pointed-triangular lobes) in *Chaleponcus* species not belonging to this group (Kraus 1960, 1966).

Geotypodon cristineae sp. nov. and *Multipronopea agneteae* gen et sp. nov. have a cover of microspicules on the cuticle just in front of the limbus (Figs 38E, 44F, H), a condition shared with most species of *Helicochetus* (Kraus 1960; Enghoff 2018).

Geotypodon cristineae sp. nov. shares handlike limbus lobes (Fig. 38E) with several congeneric species, including the type species of the genus (Enghoff 2016a).

The two species of *Syndesmogenus* treated here share short, pointed-triangular limbus lobes (Figs 56F, 58C) with *S. effilis* Pierrard, 1970, from the Central African Republic (Pierrard 1970); other species of *Syndesmogenus* have quite different limbus types (Brolemann 1926; Kraus 1960, 1966).

Four of the *Xystopyge* species treated here have characteristic fingerlike limbus lobes with rounded tips (Figs 66D, 69H, 73E, 75I), and in at least some of the other species an apparently different shape of the lobes may be due to wear. Similar limbus lobes have been described for most other *Xystopyge* species (VandenSpiegel & Pierrard 2004; Frederiksen & Enghoff 2012) and may constitute another autapomorphy for this genus.

Number of setae on the anal valves

The anal valves are widely used in odontopygid systematics: the dorsal spines, and sometimes ventral ones as well, may be developed to very different degrees; the margin of the valves may be more or less raised/ridged, and the marginal setae may be sessile or seated on more or less prominent tubercles or ravelins. See, e.g., Enghoff (2014: fig. 6) and Kraus (1966: 49).

There is, however, still a character on the anal valves which has so far not been fully exploited. Although anal valve setae are often absent, probably abraded, especially in the larger species, in the vast majority of cases where the setae have been observed, there are three marginal setae per valve. Exceptions are the genera *Peridontopyge*, *Neodontopyge* and *Xystopyge* where there are only 2 setae per valve (Demange 1972: 736; VandenSpiegel & Pierrard 2004: 32; HE orig. obs. on numerous genera, and several species of *Peridontopyge*, *Neodontopyge* and *Xystopyge*, e.g., Fig. 4B). Unfortunately, the number of setae is unknown in the taxonomically isolated genera *Odontopyge* and *Lissopyge*. Two setae per valve seem to be standard in "basal" families of the related order Julida (Mongoliulidae, Aprosphylosomatidae, Blaniulidae, Nemasomatidae) and might represent the original, plesiomorphic stae in superorder Juliformia (HE, pers. obs.).

Frederiksen & Enghoff (2015) reported zero and one seta per valve in two species of *Rhamphidarpoides*, respectively, whereas other congeners had three. I have re-examined the type specimens in question (NHMD) and believe that the setae are wholly or partially abraded. The same explanation most probably applies to the record of two setae per valve in *Lacionogonus robustus* Demange & Mauriès, 1975, (Demange & Mauries 1975) – in a sample of *L. robustus* in NHMD (Guinea, N'Nzérékoré; 4 Apr. 1950; Galathea-Ekspeditionen 1950–1952 leg), all four specimens have three setae per valve.

The first pair of male legs

This study has revealed considerable variation in the shape and setation of the first pair of male legs, similar to that described for the related family Spirostreptidae by Krabbe (1979, 1982). The significance of the differences found needs, however, to be evaluated based on studies on intraspecific variations. Some trends, however, seem to be well-substantiated, including the position of the coxosternal setae adjacent to the prefemoral processes in the genus *Xystopyge* and the very broad prefemoral processes in the genus *Callistodontopyge*.

The gonopod sternum and sternum 9

In most odontopygids, the sternum of the gonopods proper (modified 8th legs) is small, inconspicuous, and more or less covered by mesal outgrowths from the coxa; it is easily overlooked and often lost when right and left gonopods are separated by dissection. In the genus *Xystopyge*, however, the gonopod sternum is large, projecting prominently between the two gonopods; see, e.g., VandenSpiegel & Pierrard (2004: fig. 1) and Figs 62A, 66C, 73J. The gonopod sternum has not been described in any of the two known species of *Lissopyge*, the only other genus in the subfamily Lissopyginae (Attems 1909b; Manfredi 1939). Whereas Kraus (1966: 84) stated that the gonopod sternum of *Lissopyge* is normal, the original illustration of the gonopod coxa of *L. zavatteri* Manfredi, 1939, shows a "suspicious" process, labelled "f", not mentioned in the description (Manfredi 1939), and resembling the gonopod sternum of certain species of *Xystopyge* although apparently situated on the lateral side of the coxa. It thus remains uncertain whether a well-developed gonopod sternum is characteristic of Lissopyginae, or just of *Xystopyge*.

The 9th pair of legs in adult odontopygid males is fully reduced. However, the corresponding sternum, "sternum 9", is well-sclerotized and varies considerably in shape; see, e.g., VandenSpiegel & Pierrard (2004: fig. 2) and Hoffman (2000: figs 1–2). A description of sternum 9 is included in the descriptions of the new species described here (except where it has been lost during dissection of a unique specimen). Considerable shape variation was found, but no pattern in the variation was detected.

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