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***Trigonopalpus* CAMERON, 1951 from mainland Africa, with description of two new species (Coleoptera: Staphylinidae: Staphylininae)**

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Abstract

The mainland African species of *Trigonopalpus* CAMERON, 1951 (Coleoptera: Staphylinidae: Staphylininae) are revised. The three known species are redescribed, and two new species, *T. endroedyi* (South Africa), *T. rossii* (Sierra Leone), are described. The aedeagi of all species (except *T. schenklingi* (BERNHAEUER, 1912)) are illustrated, and habitus photographs of all species as well as a determination key are provided.

Key words: Coleoptera, Staphylinidae, Staphylininae, Anisolinina, *Trigonopalpus*, new species, systematics, taxonomy.

Introduction

Every now and then, certain taxa have the tendency of getting completely overlooked. So it happened with *Trigonopalpus* CAMERON, 1951. Nobody paid any attention to this genus until, in 2016, Adam Brunke suggested checking this taxon during our joint work on a paper describing a new fossil species of Anisolinina (BRUNKE et al. 2017). As it turned out, the genus was identical with *Paratympaophorus* LECOQ, 2002. Oddly enough, both taxa had been overlooked by SCHILLHAMMER (2004) in the first of several papers on Anisolinina. In the course of working on the above mentioned fossil paper, a lot of material had been studied, also revealing a number of new species of *Trigonopalpus* from mainland Africa, from where only one species was recorded by LECOQ (2002). These new species are described herein, and the already known species are redescribed.

Acknowledgement and abbreviations

The material treated in this paper is deposited in the following institutional or private collections:

BMNH	The Natural History Museum, London, UK (R. Booth)
FMNH	Field Museum of Natural History, Chicago, USA (C. Mayer)
MNHN	Muséum national d'histoire naturelle, Paris, France (A. Taghavian, T. Deuve)
NMW	Naturhistorisches Museum Wien, Austria
TMP	Ditsong National Museum of Natural History (formerly: Transvaal Museum), Pretoria, South Africa (R. Müller)

The help of the respective curators and persons mentioned above is greatly appreciated. I am grateful to Alfred F. Newton (FMNH) for making the South African species available to me and to Adam J. Brunke (Ottawa, Canada) for his permanent vigilance in matters concerning my on-going projects, and for proof-reading the manuscript. Volker Assing allowed me to keep the single holotype of *T. rossii* sp.n. for the NMW collection in trade for a specimen of his scientific provenance.

***Trigonopalpus* CAMERON, 1951**

Paratympaophorus LECOQ 2002 (typus generis: *P. steineri* LECOQ, 2002); BRUNKE et al. 2017.

Typus generis: *Trigonopalpus pilosus* CAMERON, 1951.

DIAGNOSIS: The genus shares many characters with *Tympanophorus* NORDMANN, 1837 but differs in the presence of a pair of long and stout gular setae, placed at about midlength of the gula (Fig. 7). For more detailed information including recognition of the genus among the genera of the *Tympanophorus* lineage of the subtribe Anisolinina, see BRUNKE et al. (2017).

***Trigonopalpus pilosus* CAMERON, 1951**

Trigonopalpus pilosus CAMERON 1951: 405.

Syntype ♂: "Type [round label with red border] \ T.H.E. Jackson, Kamengo F. 10-37. \ Pres by Com Inst Ent, B M 1952-575" (BMNH).

REDESCRIPTION: Habitus as in Fig. 1, forebody Fig. 2. Length 6.5 mm (3.9 mm, abdomen excluded). – Black, first three antennal segments, clypeus, labrum, mouthparts, femora and posterior margin of tergite VII reddish brown, third segment of maxillary palpi blackish.

Head subquadrate, 1.07 times as wide as long, eyes slightly longer (1.17 times) than tempora, latter slightly convergent toward rounded hind angles in almost straight line; surface moderately coarsely and moderately densely punctate, punctures separated by a puncture diameter or slightly less, clypeus impunctate; with very conspicuous and long silvery pubescence, macrosetae stout and long; antennae short, antennomeres 2–3 slightly oblong, 4–10 distinctly transverse, almost disc-shaped, 11 about as long as wide; pronotum as long as wide, subparallel-sided, anterior and posterior angles broadly rounded, entire base almost perfectly convex; punctuation somewhat finer and less dense than that on head, with badly delimited indication of impunctate midline; pubescence as on head; elytra about as long as wide, slightly widened posteriad; along suture slightly elevated; densely punctate, punctures separated by about 1–2 puncture diameters in longitudinal direction, much less than a puncture diameter in horizontal direction, in places even contiguous; scutellum punctate and pubescent; abdominal tergites rather densely, coarsely punctate, punctural grooves shortly elongate; pubescence very long and dense, black, but with silvery laterobasal tufts on tergite III, posterior third of tergite VII entirely covered by silvery pubescence; tergite VII with apical seam of palisade setae; male sternite VIII with deep medio-apical emargination, entire apical margin occupied by extensive semi-membranous extension.

Aedeagus (Fig. 10) with huge phallobasis, occupying about half of aedeagus length; median lobe very slender and slightly bent (ventral view), in lateral view split into two long lobes, one almost contiguous with paramere, the other lobe leading straight dorsad, carrying the ostium dorsale at apex; paramere slender, slightly asymmetrical, with four apical peg setae and numerous subapical normal setae.

Female: unknown.

DIAGNOSIS: Among the known mainland African species, *T. pilosus* is recognizable by the long and dense pubescence of the entire body, from *T. schenklingi* and *T. rossii*, in addition, by the much finer and sparser punctuation of head and pronotum, and the much less elongate punctural grooves on tergites VII–VIII.

DISTRIBUTION: The species is at present known only from the type locality in Mengo District, Uganda.

***Trigonopalpus africanus* (LECOQ, 2002)**

Paratympanophorus africanus LECOQ 2002: 122.

Trigonopalpus africanus: BRUNKE et al. 2017: 7.

Holotype ♂: “Ruwenzori, R.B. Celis \ crête des [illegible], Ft de bambous, 2440 m, I 1954 \ Holotype \ Paratympapanophorus africanus n.sp. J.-C. Lecoq det. 2001” (MNHN). – **Paratype** ♀: “Lastourville, Gabon, A.M. \ Paratype \ Paratympapanophorus africanus n.sp. J.-C. Lecoq det. 2001” (MNHN).

NOTE: Part of the second label of the holotype is illegible. In the original description it reads: “crête septentrionale”. Maybe this information was retrieved from some different source, because it is definitely not what is written on the label. A similar note is mentioned in JEANNEL (1956: 4): “*Mukasabu*. - Prov. De Toro, Uganda, sur l'éperon septentrionale de la chaîne du Ruwenzori. Forêt de Bambous assez dense, alt. 2.440 m (RR. PP. Celis, Collard et Massaux, 18.I.1954)”, which might refer to this locality.

REDESCRIPTION: Forebody as in Fig. 3. Length 8.8–9.2 mm (4.1–4.5 mm, abdomen excluded). – Black, shining, anterior margin of clypeus, margins of pronotum obscurely reddish; first two visible abdominal segments dark reddish, posterior margins of segments V and VI narrowly, that of segment VII more broadly reddish, posterior third of segment VIII somewhat paler reddish (holotype); posterior margins of tergites very narrowly and very obscurely reddish in remaining specimens; mouthparts black to reddish brown, last segment of maxillary palpi paler, labrum yellowish; antennae black to reddish brown with distal two segments markedly paler; legs with femora reddish brown, tibiae almost black except for narrow part reddish basally, tarsi bright reddish or black with tarsomeres 2–4 dark reddish brown. – The paler colors mentioned are for the holotype, mature specimens are most likely the darker forms.

Head rounded subquadrangular to quadrate (Fig. 8), about as long as wide; tempora subparallel to slightly or more markedly convergent, 1.1–1.3 times as long as slightly protruding eyes, hind angles of head broadly rounded; dorsal surface of head rather densely punctate, punctures mostly separated by about a puncture diameter, much denser posteriorly in front of neck, where punctural grooves are almost contiguous, but becoming considerably less dense on vertex, clypeus impunctate; pubescence rather long, silvery; antennae short, segment 4 about as long as wide or slightly transverse, subsequent segments becoming increasingly more transverse, penultimate segments distinctly transverse; pronotum (Fig. 8) 1.05–1.10 times as long as wide, widest slightly in front of midlength, narrowed toward base in very shallow concave arc; dorsal surface rather densely punctate but punctures well isolated, separated by about a puncture diameter or slightly less, impunctate midline rather broad but not well delimited; elytra along sides as long as or slightly longer than pronotum along midline, densely and moderately strongly punctate, punctures separated by about a puncture diameter or slightly less; abdominal tergites III–IV moderately densely and moderately coarsely punctate, punctation becoming increasingly denser and coarser on subsequent tergites, punctural grooves becoming oblong on tergites VI–VIII; tergite VIII with tiny medioapical notch, sternite VIII with deep medioapical emargination.

Aedeagus (Fig. 11) with huge phallobasis occupying more than half the length of the aedeagus; paramere flat and broad, apex pointed, with two small peg setae at the very tip, normal setae reduced.

ADDITIONAL MATERIAL EXAMINED:

C A M E R O O N: 1 ♂: “Kamerun, R.F. Nyong \ Cameroun – 1949-50, 8/12 – 182, Lok. R.F. Nyong, J.B.-S. J.D.” (NMW).

DIAGNOSIS: The species is primarily recognized by the characteristic aedeagus. Externally, it is most similar to *T. endroedyi*, but differs in the slightly oblong pronotum with stronger punctation.

NOTE: The female paratype slightly differs from the male holotype in several aspects: larger body size (4.5 mm, abdomen excluded), tempora more distinctly convergent, eyes slightly larger, pronotum slightly broader, tergite IV with denser punctation. The specimen from Cameroon also differs from the holotype in the following characters: pronotum with punctation slightly coarser; elytra shorter; legs somewhat thicker. The differences in the aedeagus are subtle, at best. The type series of *T. endroedyi* shows a similar variability range, but the large distance between the

type locality and Cameroon caused initial doubts. However, due to the scarcity of material, one can only speculate over the dispersal abilities of *Trigonopalpus* species.

DISTRIBUTION: The species is at present known only from the type locality (most likely in Bundibugyo District) in Uganda, as well as from Gabon and Cameroon.

Trigonopalpus endroedyi sp.n.

Holotype ♂: "S.Afr.: Zululand, Hluluwe Game Res., 28.05 S – 32.04 E \ 20.11.1992; E-Y: 2838, intersept trap, for, leg. Endrödy-Younga" (TMP). – **Paratypes**: 2 ♂♂, 4 ♀♀: same label data as holotype (4 TMP, 2 NMW).

DESCRIPTION: Forebody as in Fig. 4. Length 8.0–10.8 mm (3.7–4.2 mm, abdomen excluded). – Black, tibiae with reddish brown longitudinal stripe of variable extent, tarsi sometimes brown to reddish brown; abdominal segment VII broadly, obscurely reddish apically, segment VIII with reddish apical half, genital segment bright reddish.

Head variably shaped, quadrangular to almost suborbicular, slightly wider than long (up to 1.08 times), rarely as long as wide; tempora very variable in length, usually 1.1–1.2 times as long as eyes, rarely as long as eyes or even shorter, eyes weakly protruding; antennae moderately short, segment 4 about as long as wide or inconspicuously transverse, subsequent segments distinctly transverse, 3–5 distal segments contiguous, giving the impression of a club (NOTE: this might be an artefact due to dehydration); dorsal surface of head moderately densely, rather finely punctate, with long, silvery pubescence, punctuation somewhat less dense along midline; pronotum convex, as wide as long or slightly wider, widest in posterior third, sides almost regularly convex, dorsal surface rather finely, moderately densely punctate, punctures separated by more than a puncture diameter, impunctate midline rather broad but not well delimited; elytra along sides longer than pronotum along midline, densely and rather strongly punctate, punctures separated by clearly less than a puncture diameter; abdominal tergites coarsely and rather densely punctate, punctural grooves shortly elongate on first three visible tergites, grooves more oblong on posterior tergites; male sternite VIII with broad but shallow medio-apical emargination, semi-membranous extension not extensive.

Aedeagus (Fig. 12) short, stout; phallobasis of normal size; median lobe with distinctly asymmetrical apical portion; paramere broad, rather flat, asymmetrical, with a small cluster of subapical peg setae and numerous normal setae, subapically along lateral margins of paramere.

DIAGNOSIS: Externally, the species is very similar to *T. pilosus*, but differs in the less transverse antennomere 4, more convex sides of the pronotum and shorter, less conspicuous pubescence on the sides of the abdomen.

DISTRIBUTION: The species is at present known only from the type locality in South Africa.

ETYMOLOGY: The species is named after the famous coleopterist and field researcher Sebastian Endrödy-Younga (1934–1999), who collected the type series of this species.

Trigonopalpus schenklingi (BERNHAEUER, 1912)

Tympanophorus schenklingi BERNHAUER 1912: 204.

Trigonopalpus schenklingi: BRUNKE et al. 2017: 7.

Holotype ♀: "S.O.Kamerun Lolodorf L.Conradt 95 \ Deutsch. Entomol. National Musm. \ Schenklingi Bernh. Typus. \ Chicago NHMus M.Bernhauer collection" (FMNH).

REDESCRIPTION: Forebody as in Fig. 5. Length 9.2 mm (4.5 mm, abdomen excluded). – Black, fore body rather dull due to very dense punctuation; mouthparts dark reddish brown; antennae black, segments 1–2 to a larger extent reddish brown, segment 3 black with reddish basal portion, segment 11 dark reddish; abdomen black, posterior margin of segment VII

narrowly, that of segment VIII more broadly reddish brown, genital segment reddish; legs black, tibiae with a dark reddish longitudinal stripe in proximal third to half, tarsi reddish.

Head (Fig. 9) quadrate, as long as wide, hind angles well demarcated, dorsal surface rather flat, tempora parallel-sided, 1.12 times as long as eyes, latter hardly protruding; dorsal surface very densely, moderately coarsely punctate, interstices very narrow, clypeus more or less impunctate, impunctate area extending posteriad in somewhat triangular shape; antennae comparatively long, segments 4–5 about as long as wide, segments 6–10 only weakly transverse; pronotum (Fig. 9) slightly oblong, 1.12 times as long as wide, widest slightly in front of midlength, distinctly narrowed toward base in shallow concave arc; dorsal surface as densely and strongly punctate as head, impunctate midline complete, very narrow but distinct, slightly widened in front of base; elytra along sides slightly wider than pronotum along midline, as densely punctate as head and pronotum, pubescence short, mostly dark grey but silvery around shoulders; scutellum with punctuation as on elytra, individual punctures rather well isolated; abdominal tergites III–V densely and coarsely punctate, punctural grooves almost normal, hardly elongate, tergites VI–VII with distinctly elongate and deeply impressed punctural grooves which are very dense, leaving hardly any space between them; pubescence mostly riven off, but obviously rather short.

Male: unknown.

DIAGNOSIS: The species is readily recognized by the much less transverse antennomeres 4–10. It differs from the similarly strongly punctate *T. rossii* in the well isolated individual punctural grooves of the pronotum.

NOTE: Shortly after submission of the manuscript, Adam J. Brunke informed me of the presence of additional specimens, including a male, which he found in the collection of the FMNH. This material will be treated in a follow-up publication in the near future.

DISTRIBUTION: The species is at present known only from the type locality in southeastern Cameroon.

Trigonopalpus rossii sp.n.

Holotype ♂: "SIERRA LEONE, Eastern Prov., Gola, Rain Forest N.P., near Lalehun, 20.-23.XI.2015, Rossi" (NMW).

DESCRIPTION: Forebody as in Fig. 6. Length 6.5 mm (3.4 mm, abdomen excluded). – Black, fore body rather shining despite dense punctuation; posterior margin of abdominal segment VII narrowly reddish, anterior and posterior margin of segment VIII broadly reddish; antennae black, very base of segment 2 and entire segment 11 reddish; maxillary palpi dark brown, distal two thirds of last segment yellowish, labial palpi dark brown to black; legs black, femora and base of tibiae dark reddish brown, tarsi reddish.

Head subquadrate, inconspicuously wider than long, tempora subparallel, 1.14 times as long as eyes, latter weakly protruding; dorsal surface densely and coarsely punctate, punctures deeply impressed, interstices rather shining, clypeus impunctate; antennae short and stout, segments 4–10 strongly transverse; pronotum inconspicuously oblong, 1.04 times as long as wide, widest slightly in front of midlength, slightly narrowed toward base in almost straight line; punctuation almost as on head, but interstices even more strongly elevated, forming short rugae, the very base medially sparingly punctate and thus very shining, a narrow impunctate midline reaching anteriorly slightly beyond midlength; head and pronotum with short silvery pubescence; elytra along sides slightly wider than pronotum along midline, punctuation coarse and dense, interstices slightly less than a puncture diameter, shining; scutellum with a few isolated punctures only anteriorly, remaining punctural grooves confluent forming transverse rugae, punctures inside grooves hardly discernible; abdominal tergites densely and coarsely punctate, especially in

transverse basal depressions on first four visible tergites, punctural grooves becoming elongate on tergite VII.

Aedeagus (Fig. 13) rather small and very slender; median lobe widened apically and deeply asymmetrically split (Fig. 13c), with subapical tooth-like extension on parameral face, apical portion shortly setose; paramere slender, asymmetrical, irregularly curved, with two peg setae at apex and numerous very long normal setae subapically along lateral margins.

Female: unknown.

DIAGNOSIS: The smallest species of the genus so far. From the only somewhat similar species, *T. schenklingi*, it differs in the more shining appearance, the rugulose puncture interstices on pronotum, the much shorter antennae, and different punctuation of scutellum.

DISTRIBUTION: The species is at present known only from the type locality.

ETYMOLOGY: The species is named in honour of Walter Rossi (L'Aquila, Italy), specialist in Laboulbeniales (Fungi), who collected this species.

Key to species of *Trigonopalpus* from continental Africa

- 1 Forebody with simple punctuation, punctures moderately coarse, interstices flat and shiny, at least half a puncture diameter wide (Fig. 8) 2
- Forebody very densely and coarsely punctate, punctures more or less contiguous, interstices extremely narrow, in places even forming more or less distinct rugae (Fig. 9) 4
- 2 Pronotum slightly longer than wide (ratio 1.05–1.10), sides very shallowly concave in front of base; punctuation of pronotum stronger, punctures separated by less than a puncture diameter along well delimited impunctate midline *africanus*
- Pronotum as long as wide or slightly wider than long, sides subparallel or slightly convex in front of base; punctuation of pronotum finer, punctures separated mostly by more than a puncture diameter along poorly delimited impunctate midline 3
- 3 Sides of abdomen with dense and very long pubescence, length of setae exceeding width of paraterga (Fig. 1); segment 4 of antennae markedly transverse *pilosus*
- Pubescence on sides of abdomen dense, but not unusually long; segment 4 of antennae about as long as wide or inconspicuously wider *endroedyi*
- 4 Antennae less stout, antennomeres 4 and 5 about as long as wide, 6–10 weakly transverse; pronotum more distinctly oblong (ratio 1.12), punctural grooves of pronotum dense but well isolated, dense punctuation reaching backward to posterior margin *schenklingi*
- Antennae short and stout, antennomeres 4–10 markedly transverse; pronotum inconspicuously oblong (ratio 1.04), punctural grooves of pronotum confluent in many places, forming sub-longitudinal rugae, pronotum with transverse shiny impunctate irregular band in front of posterior margin *rossii*

Zusammenfassung

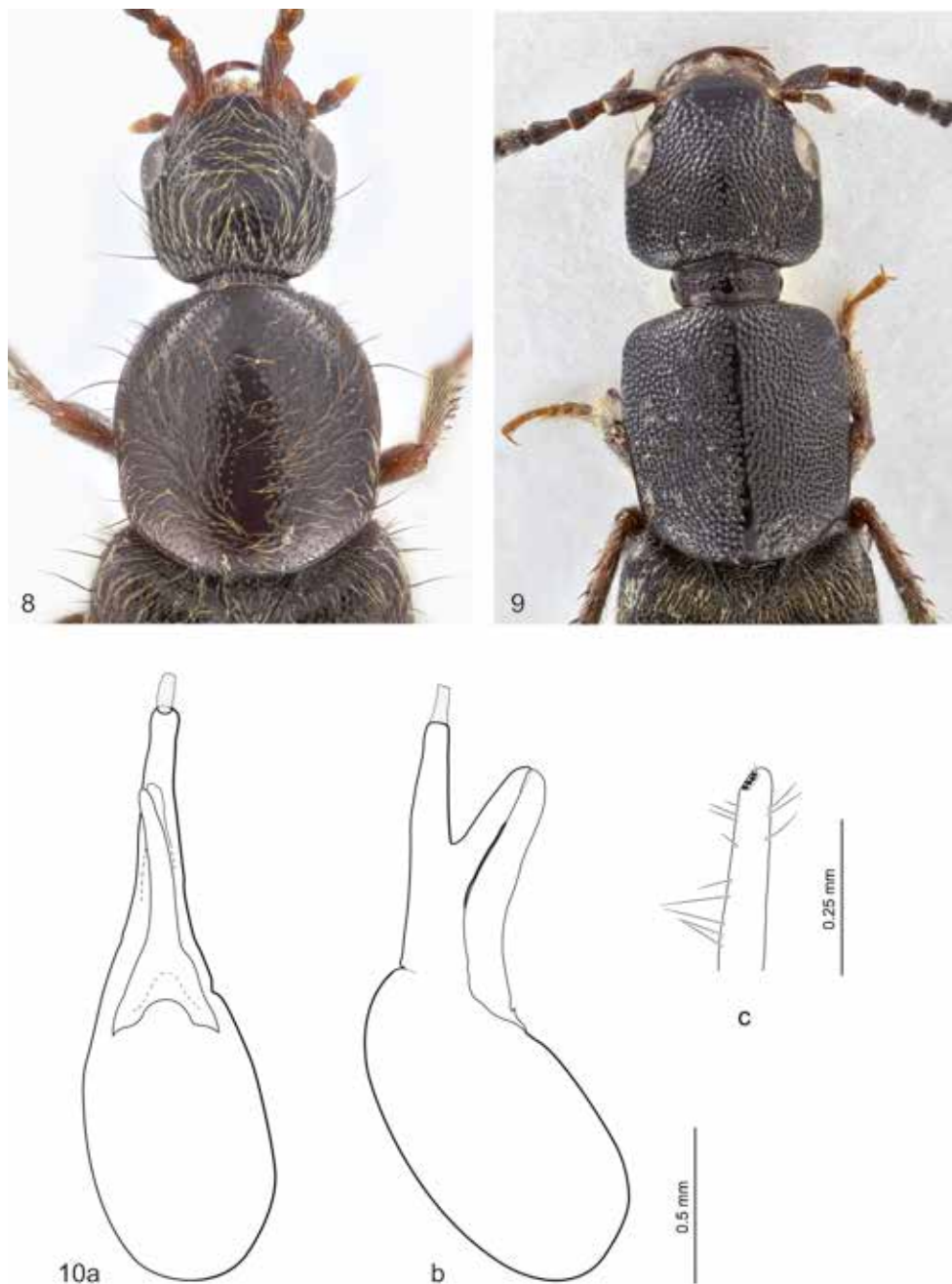
Die kontinentalafrikanischen Arten der Gattung *Trigonopalpus* CAMERON, 1951 werden revidiert. Zwei Arten sind neu für die Wissenschaft: *T. endroedyi* (Südafrika), *T. rossii* (Sierra Leone). Die drei bereits bekannten Arten werden redeskribiert und die Aedeagi aller durch Männchen vertretenen Arten abgebildet. Habitusfotos und ein Bestimmungsschlüssel der behandelten Arten sind ebenfalls inkludiert.



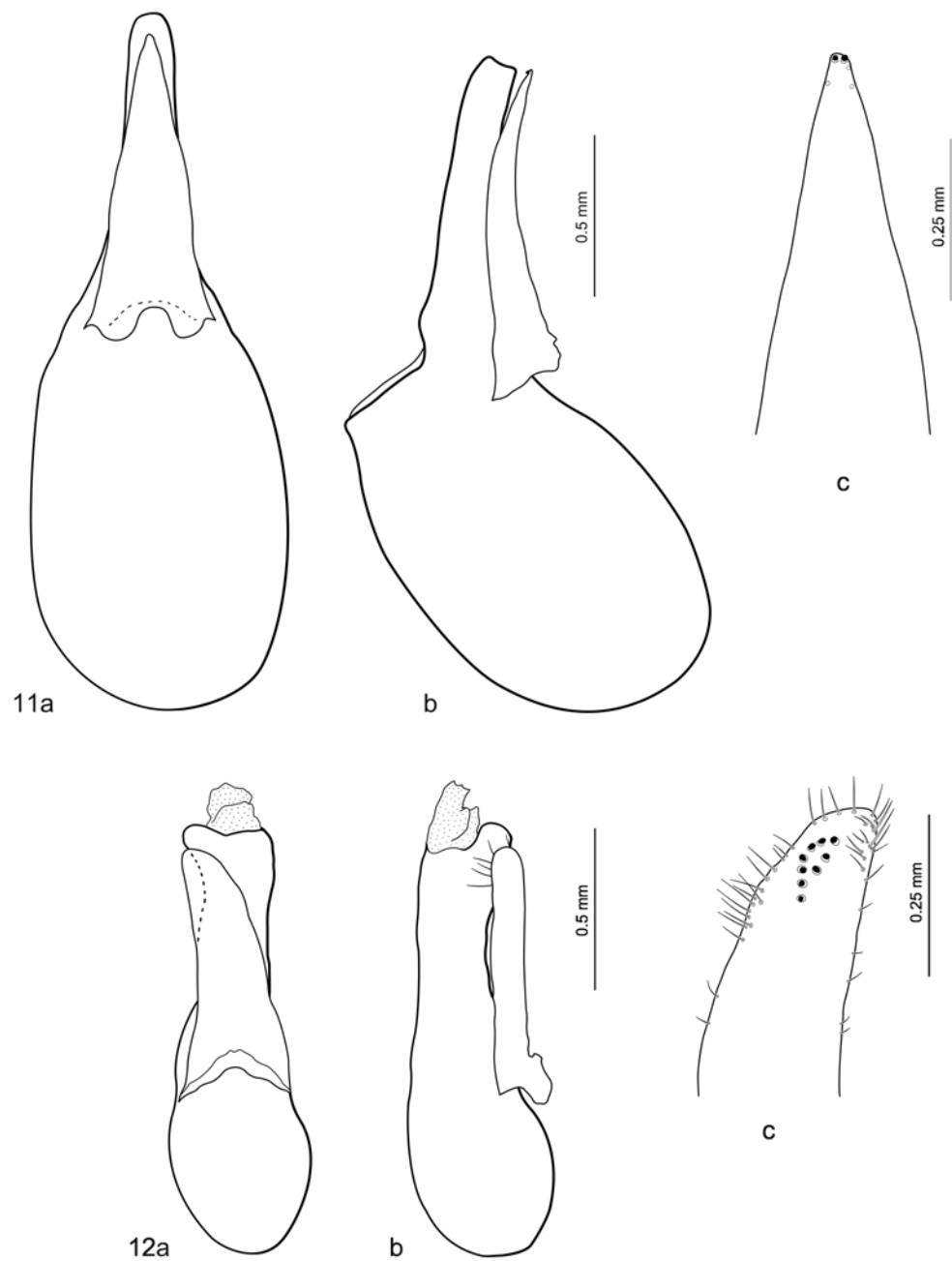
Fig. 1: Habitus of *Trigonopalpus pilosus*.



Figs. 2–7: 2–6) Forebody of *Trigonopalpus pilosus* (2), *T. africanus* (3), *T. endroedyi* (4), *T. schenklingi* (5), *T. rossii* (6); 7) head in lateral view of *T. rossii*.



Figs. 8–10: 8–9) Head and pronotum of *Trigonopalpus africanus* (8) and *T. schenklingsi* (9); 10) aedeagus of *T. pilosus* in ventral (a) and lateral (b) view, and paramere (c).



Figs. 11–12: Aedeagus of 11) *Trigonopalpus africanus*, 12) *T. endroedyi* in ventral (a) and lateral (b) view, and paramere (c).

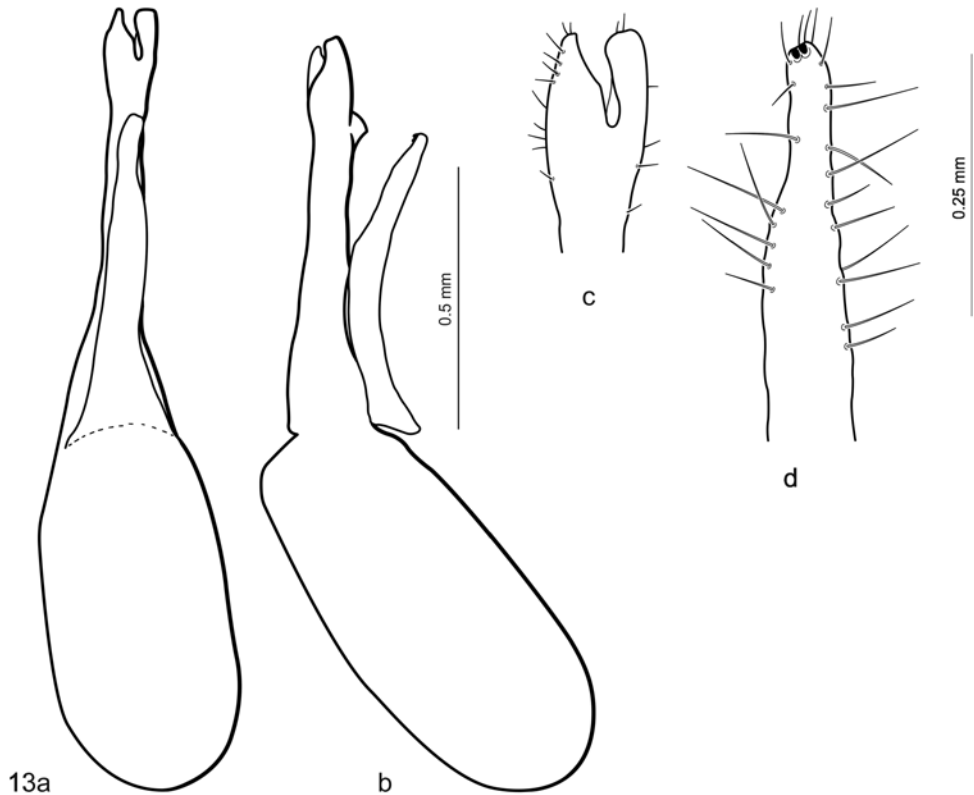


Fig. 13: *Trigonopalpus rossii*, aedeagus in ventral (a) and lateral (b) view, apex of median lobe (c) and paramere (d).

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