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New Afrotropical species from the tribe Eudorylini (Diptera: Pipunculidae)

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Abstract – Descriptions of four new pipunculid species (*Eudorylas swanengi* sp. n., *E. pondolandi* sp. n., *E. scharffi* sp. n., *Clistoabdominalis lomholdti* sp. n.) from the Afrotropical Region are given with detailed drawings of male genitalia and remarks on species identity as partial results of the taxonomic revision of the group. With 27 figures.

Key words – Pipunculidae, *Eudorylas, Clistoabdominalis*, taxonomy, new species, Afrotropical Region.

INTRODUCTION

Pipunculid flies are the closest relatives of the family Syrphidae (hoverflies), and they can easily be differentiated from them by the wing venation (no vena spuria, open discal cell) and by the (sub)hemispherical head being largely occupied by the compound eyes (DE MEYER 1989). During the larval stage they are endoparasitoids of Auchenorrhyncha (Homoptera). The tribe Eudorylini contains the most species (over 400) within the family, and its taxonomy is confusing because of the insufficient descriptions of earlier authors, who did not publish drawings of the male genitalia, and also because of the lack of a genus-level revision with study of the borders of e.g. *Eudorylas*. To resolve the taxonomic problems of this group more research and comparative study of types are necessary. Recently SKEVINGTON and YEATES (2001) classified the tribe based on morphological characters and a phylogenetic analysis of species from every zoogeographic region, and described two new genera, *Clistoabdominalis* and *Dasydorylas*. Thorough revision of the species of the regions is needed, including the Afrotropical fauna, which is in progress. During the studies of the relevant material of different museums from all over the world several new species have been found and four of them will be described in this paper.

MATERIALS AND METHODS

Terminology and description follow ALBRECHT (1990) and FÖLDVÁRI and DE MEYER (2000). Genitalia were dissected, treated with KOH and mounted in glycerine as outlined in DE MEYER (1989). Structures of the genitalia were studied with dissecting and light microscopes. Drawings were made with a drawing tube attached to the microscope. All specimen data are given as present on the labels, additional remarks are put in square brackets, if necessary.

Abbreviations: BMNH = The Natural History Museum, London, UK; ISNB = Royal Belgian Museum for Natural History, Brussels, Belgium; MRAC = Royal Museum for Central Africa, Tervuren, Belgium; ZMUC = Zoological Museum, University of Copenhagen, Copenhagen, Denmark; f = femur, femora, S = sternite, T = tergite, t = tibia, tibiae.

TAXONOMY

Eudorylas ACZÉL, 1940

Eudorylas ACZÉL, 1940: 151. Type species: *Pipunculus fuscipes* ZETTERSTEDT, 1844, by subsequent designation (ruling of the ICZN 2002: 143, Opinion 2000, Case 3132).

Metadorylas RAFAEL, 1987: 35. Type species: *Pipunculus schreiteri* SHANNON, 1927, by original designation. Synonymized by SKEVINGTON & YEATES (2001).

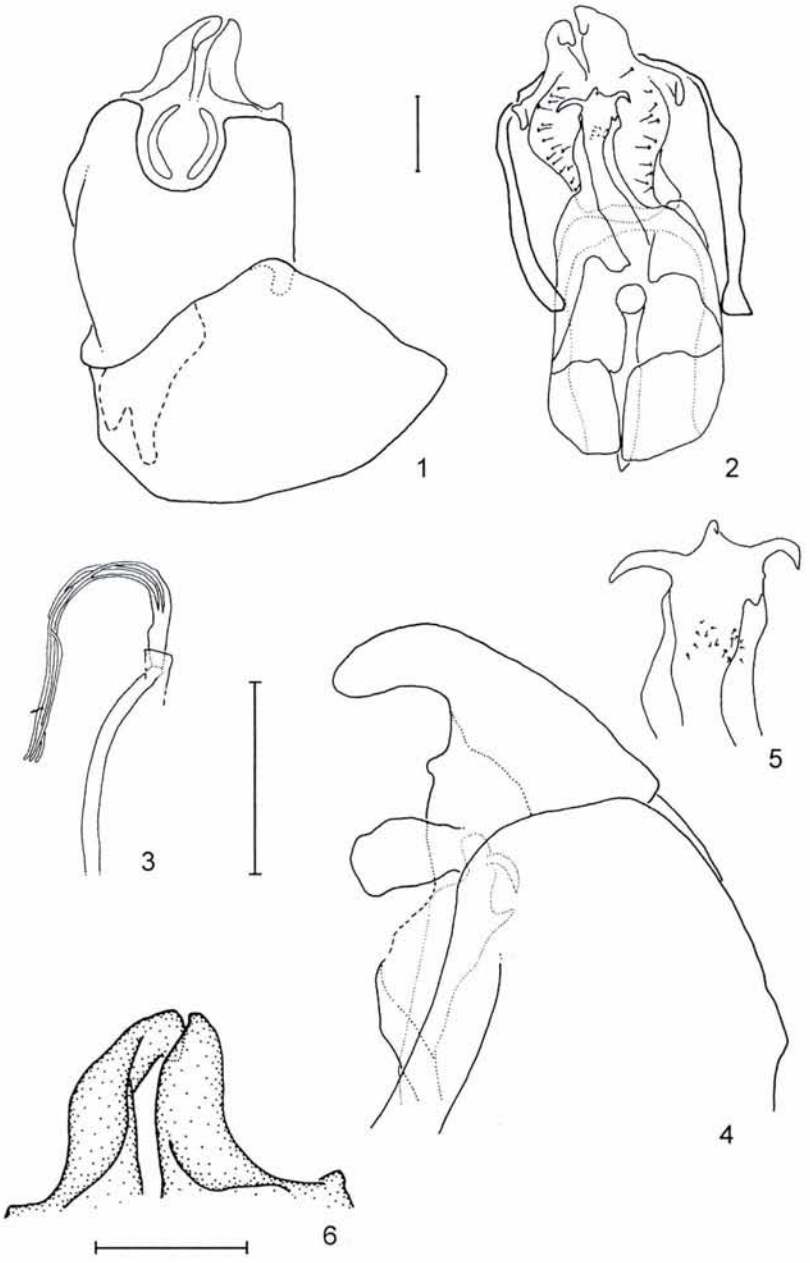
Diagnosis – Pedicel usually with very short bristles, pterostigma present, tegula with 0–2 hairs. Distal tibial spines on first four tibiae usually present, front femur usually with rows of ventral spines. Syntergosternite 8 usually with membranous area, surstyli and gonopods asymmetrical, phallus trifid, ejaculatory apodeme fan-shaped, sperm pump elongate with two distal tails. For more details see SKEVINGTON and YEATES (2001).

Eudorylas swanengi sp. n.
(Figs 1–8)

Type material – Botswana: 1 male, holotype, "Serowe, 08.1989", leg. MARC DE MEYER (in alcohol, ISBN); 1 male, paratype, "Serowe, Swaneng, 01.1986 (MT)" [Malaise trap], leg. MARC DE MEYER (in glycerine, HNHM).

Other material examined – Republic of South Africa: 1 male [paratype of *Eudorylas aemulus*, no head], "S. Africa, Natal, Ingogo, 03.1932, Miss A. MACKIE, Pres by Com. Inst. Ent. B.M. 1952–299." (BMNH).

Description – Male. Head. Third antennal segment long, acuminate; yellow-brown. Face silvery pollinose. Frons, upper part shining black, lower part silvery pollinose, except tiny black spot;



Figs 1–6. *Eudorylas swanengi* sp. n., male, 1 = genitalia, dorsal view, 2 = genitalia without syntergosternite 8, ventral view, 3 = phallus, lateral view, 4 = left surstylus, phallic guide, lateral view, 5 = tip of phallic guide, ventral view, 6 = surstyli, dorsal view. Different scale bars apply to Figs 1–2, Figs 3–5 and Fig. 6 (all 0.1 mm)

eyes touching for distance equal to 2.5–3 times ocellar triangle. Occiput, lower half silvery pollinose, upper half less so.

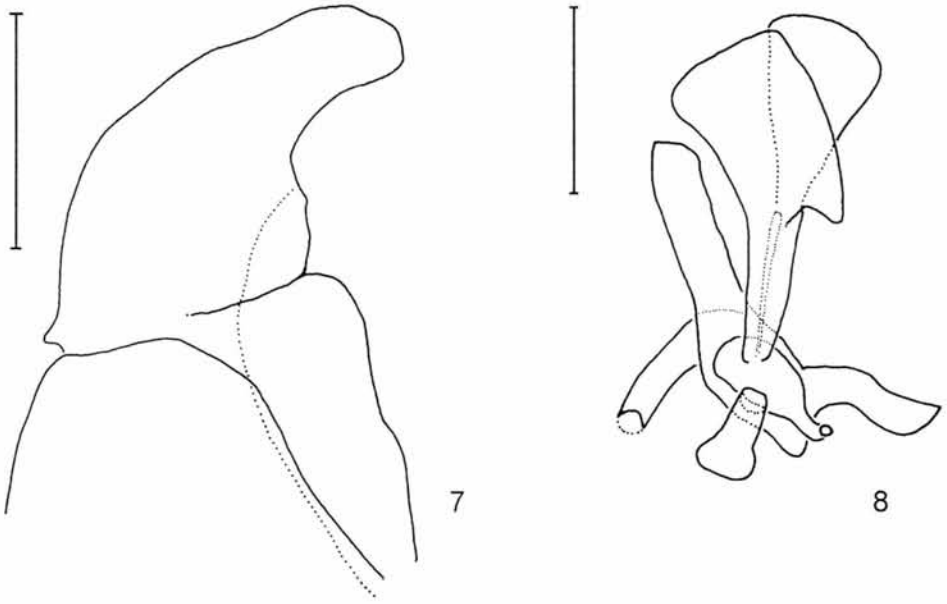
Thorax. Humeri pale brown. Mesonotum (viewed obliquely from front) black with brownish pollinosity, along anterior margin more greyish; from the side greyish pollinose. Scutellum black with brownish-grey pollinosity, 3–4 pairs of distinct, short, pale hairs. Dorsocentral hairs uncertain, not visible. Halter brown, stem darker.

Legs. Trochanters and femora dark brown (posteroventral surface of f3 shining), knees, tibiae and tarsal segments yellow-brown, last segment dark brown. Ventroapical row of minute dark hairs, mainly on f2; posteroventrally some white hairs along f3. Subapical (distal) spines on first four tibiae distinct. One distinct anteromedial hair on 3rd tibia. Hind trochanter with fine, pale hairs on ventral side. Pulvilli equal to last tarsal segment.

Wing. Length 3.87 mm, 3.91 mm. Fourth costal section 0.85 times as long as third costal section. Cross vein R-M beyond 2/5 of discal cell. Pterostigma fully coloured. Hairs on tegula uncertain.

Abdomen. Viewed obliquely from front the ground colour is brown with greyish pollinosity, T2 sometimes brownish. Hairs on abdomen very few and short; 1–3 dark lateral bristles on first tergite. Postabdomen in dorsal view: edge of S7 visible; T5 1.8–2 times as long as T8.

Genitalia (Figs 1–8). Brown in general, no membranous area. Surstyli very broad at base, with hairs as long as surstyli in the middle, projections at base ventrally, tip of surstyli hooked; epandrium roundish around cerci, otherwise rectangular at distal end; no membranous area. Subepandrial sclerite very distinct, with 12–15 hairs ventrally, strongly connected to surstyli; gonopods assymmetric, right gonopod is broader; hypandrium elongated, not connected to epandrium; phallic guide with three hook-like projections at tip ventrally, with tooth-like projection towards surstyli;



Figs 7–8. *Eudorylas swanengi* sp. n., male. 7 = right surstylus, lateral view, 8 = sperm pump and ejaculatory apodeme. Scale bars 0.1 mm

phallus coiled; ejaculatory apodeme 3-sided (with 3 lobes); sperm pump oval, base with 3 projections; phallic sheath possibly present, may be damaged on the specimen from Natal.

Female unknown.

Etymology – The species was named after the locality, Swaneng in Botswana.

Distribution – It was found only in Botswana and South Africa thus far.

Remarks – The species is unique because of the special shape of the phallic guide with three appendages. HARDY (1949: 16) described *Dorilas (Eudorylas) aemulus* as a new species with a female holotype, an allotype and two paratypes. The genitalia of the two paratypes proved to be very different from the allotype, and did not show any similarity with any of the species studied so far. Therefore they are described here as new species (see also *E. pondolandi* sp. n.).

Eudorylas pondolandi sp. n.
(Figs 9–14)

Type material – Republic of South Africa: 1 male [paratype of *Eudorylas aemulus*, no head], holotype, "Port St. John, Pondoland., 16–28.04.1924, 1924–235" (BMNH).

Description – Male. Head. Missing.

Thorax. Humeri brown, slightly paler than mesonotum. Mesonotum (viewed obliquely from front) brownish pollinose; slightly greyish pollinose from the side. Scutellum brownish pollinose, with dispersed, pale hairs. Dorsocentral hairs very weakly developed. Halter brown, stem darker.

Legs. Trochanters and base of femora dark brown, femora dark brown, tips yellow-brown, knees, tibiae and tarsal segments yellow-brown, last segment dark brown. No ventroapical spines on first four femora; 3–4 indistinct, black spines on 3rd femur. Subapical (distal) spines on first four tibiae present. No anteromedial hairs on 3rd tibia. Hind trochanter with fine, short, white hairs on ventral side. Pulvilli slightly smaller than last tarsal segment.

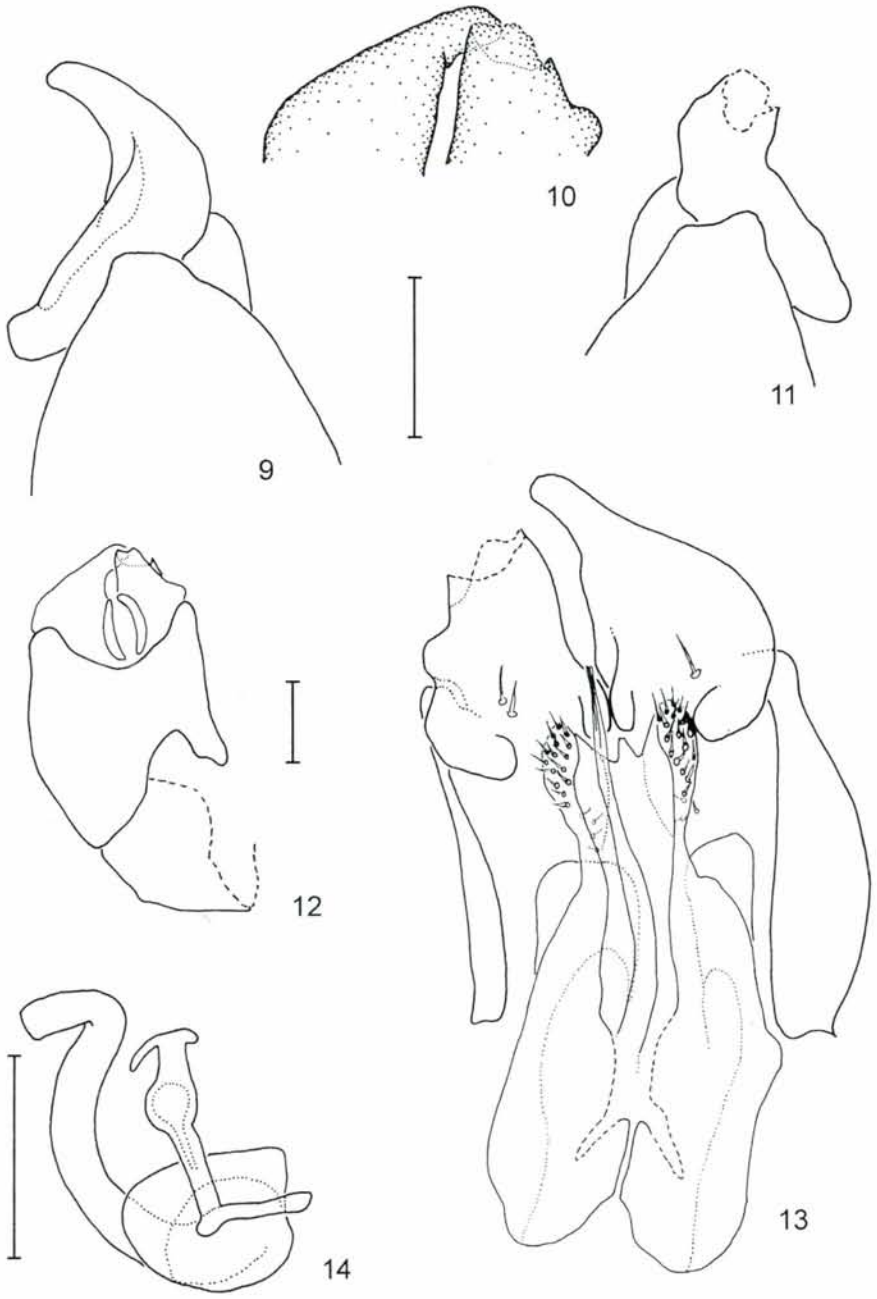
Wing. Length 2.60 mm. Fourth costal section 1.5 times as long as third costal section. Cross vein R-M at 2/5 of discal cell. Distal 2/3 of pterostigma full coloured. Hairs on tegula uncertain.

Abdomen. Viewed obliquely from front tergites brownish pollinose, as well as hind margins and sides. No lateral spines on first tergite. Postabdomen without dissection: specimen already dissected.

Genitalia (Figs 9–14). Surstyli separate, right surstylus broken; syntergosternite 8 broken (membranous area not visible). Subepandrial sclerite uncertain, with hairs behind phallic guide; gonopods well sclerotized; hypandrium elongated, slightly turned, not connected to epandrium; phallic guide contains two lobes with hole-like structures; phallus narrowing very much towards tip; ejaculatory apodeme filiform with basal projection; sperm pump globose.

Female unknown.

Etymology – The species was named after the type locality, Pondoland in the Republic of South Africa.



Figs 9–14. *Eudorylas pondolandi* sp. n., male. 9 = left surstylus, lateral view, 10 = surstyli, dorsal view, 11 = right surstylus (broken), lateral view, 12 = genitalia (syntergosternite 8 broken), dorsal view, 13 = genitalia without syntergosternite 8, ventral view, 14 = sperm pump and ejaculatory apodeme. Different scale bars apply to Figs 9–11, 13, Fig. 12 and Fig. 14 (all 0.1 mm)

Distribution – It was found only in South Africa thus far.

Remarks – This is the second paratype of the species *E. aemulus*, described by HARDY (1949). The genitalia is completely different even from that of the first paratype, now described as *E. swanengi* sp. n.

Eudorylas scharffi sp. n.
(Figs 15–20)

Type material – Tanzania: 1 male, holotype, "Tanzania, Uzungwe Mts., Mwanihana Forest above Sanje, 1000 m, 01.viii.1981, M. Stolze & N. Scharff leg." (ZMUC); 1 male, paratype, "Tanzania, Uluguru Mts., Kimboza Forest, 250 m, 18.vii.1981, M. Stolze & N. Scharff leg." (HNHM).

Description – Male. Head. Third antennal segment acuminate; pale brown. Face silvery pollinose. Frons, upper part shining black, lower part silvery pollinose, except median little black spot; eyes touching for distance equal to 3.5 times ocellar triangle. Occiput silvery pollinose.

Thorax. Humeri brown. Mesonotum (viewed obliquely from front) brown pollinose; silvery from the side. Scutellum greyish pollinose, without hairs. Dorsocentral hairs weakly developed. Halter yellow, base of stem dark brown.

Legs. Trochanters and base of femora yellow, 3/5 of femora in the middle black, otherwise yellow, knees, tibiae, tarsal segments yellow, last segment black. Ventroapical row of 4–5 short, black spines on f1, 6–8 longer spines on f2; 2–3 spines (longest) on 3rd femur. Subapical (distal) spines on first four tibiae missing. No anteromedial hairs on 3rd tibia. Hind trochanter with a patch of very fine white hairs on ventral side. Pulvilli shorter than last tarsal segment.

Wing. Length 3.88 mm, 3.57 mm. Fourth costal section 0.55 times as long as third costal section. Cross vein R-M at 1/2 of discal cell. Pterostigma fully coloured. Hairs on tegula missing.

Abdomen. Shining black when viewed obliquely from front tergites, except T1, which is greyish pollinose, sides with small grey patches. Hairs dispersed, short, pale and weakly developed. Laterally 4–5 dark spines in a row on first tergite. Postabdomen in dorsal view: T6, S7 or epandrium not visible; T5 1.2 times as long as T8. Genitalia without dissection: shining black, width of membranous area equals half the width of syntergosternite 8.

Genitalia (Figs 15–20). Surstyli narrowing towards tip. Subepandrial sclerite with uncertain borders, well sclerotized, dark brown; gonopods missing; phallic guide very broad, tip narrow; phallus trifid, short, with thick branches; ejaculatory apodeme linear with bulbous end; sperm pump small, round.

Female unknown.

Etymology – The species was named after one of the collectors of the types, the excellent spider specialist, NIKOLAJ SCHARFF (ZMUC).

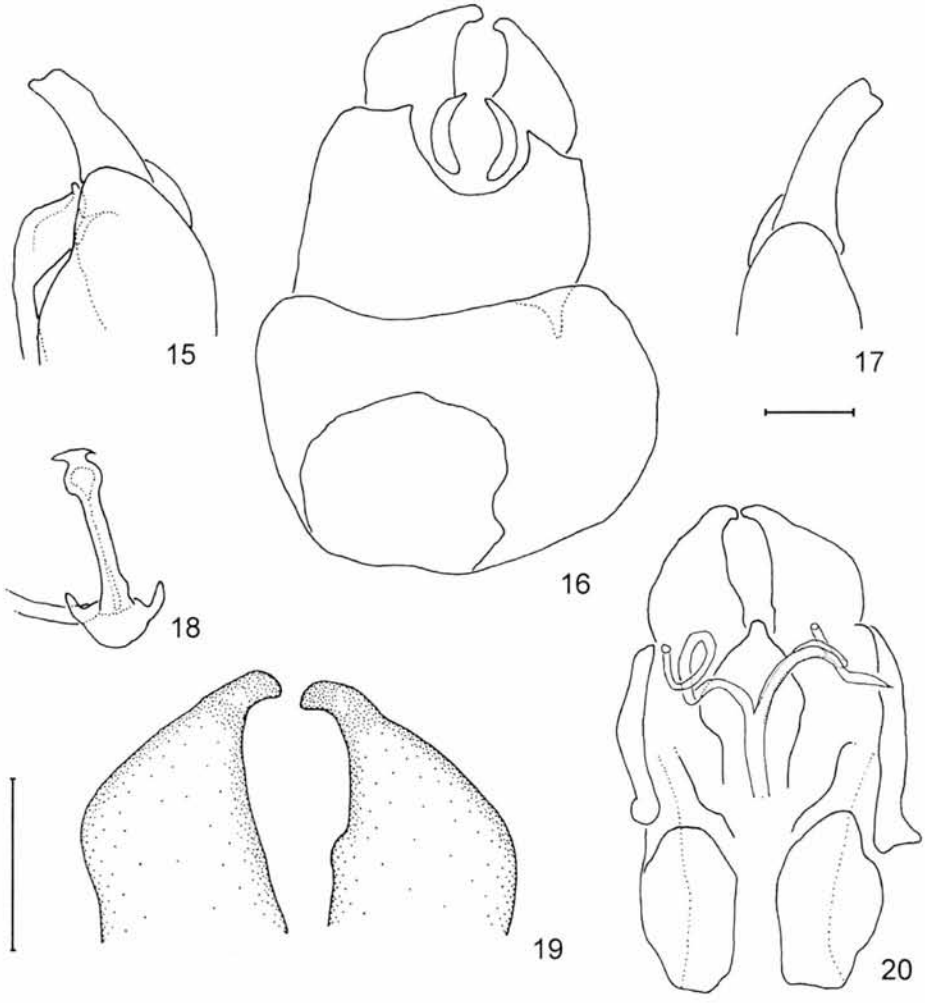
Distribution – It was found only in the Eastern Arc Mountains, Tanzania thus far.

Remarks – The species is characterised by three thick branches of the phallus and the broad phallic guide, which is rare in *Eudorylas*.

Clistoabdominalis SKEVINGTON, 2001

Clistoabdominalis SKEVINGTON in SKEVINGTON & YEATES, 2001: 435. Type species: *Pipunculus helluo* PERKINS, 1905, by original designation.

Diagnosis – Pedicel with very short bristles, pterostigma usually present. Distal tibial spines often present on front and mid tibiae. Tergite 1 with lateral fan of



Figs 15–20. *Eudorylas scharffi* sp. n., male. 15 = left surstylus, phallic guide, lateral view, 16 = genitalia, dorsal view, 17 = right surstylus, lateral view, 18 = sperm pump and ejaculatory apodeme, 19 = surstyli, dorsal view, 20 = genitalia without syntergosternite 8, ventral view. Different scale bars apply to Figs 15–18, 20 and Fig. 19 (all 0.1 mm)

setae absent or minute, tergite 6 often with lateral protuberances, membranous area of syntergosternite 8 usually absent, phallus trifid, ejaculatory apodeme usually funnel- shaped or three-sided, very large, with a swollen basal rosette. For more details see SKEVINGTON and YEATES (2001).

Clistoabdominalis lomholdti sp. n.

(Figs 21–27)

Type material – Namibia: 1 male, holotype, "South West Africa, Gobabeb, 29.I.1978, Kuiseb River Bed, O. Lomholdt leg." (ZMUC); 1 male, paratype, same data, except "26.I.1978" (HNHM); 1 female, paratype, "South West Africa, Rooibank, 7.II.1978, Kuisel [sic!] River Bed, small dunes with bushes, O. Lomholdt leg." (ZMUC).

Description – Male. Head. Third antennal segment acuminate; whitish yellow, arista black. Face silvery pollinose. Frons, upper part shining black, lower part silvery pollinose; eyes touching for distance equal to 2 times ocellar triangle (on male paratype eyes are not touching). Occiput greyish pollinose.

Thorax. Humeri yellow. Mesonotum (viewed obliquely from front) silvery pollinose; also from the side. Scutellum silvery pollinose, with 7–8 pairs of strong hairs. Dorsocentral hairs well developed. Halter yellow, base of stem brown.

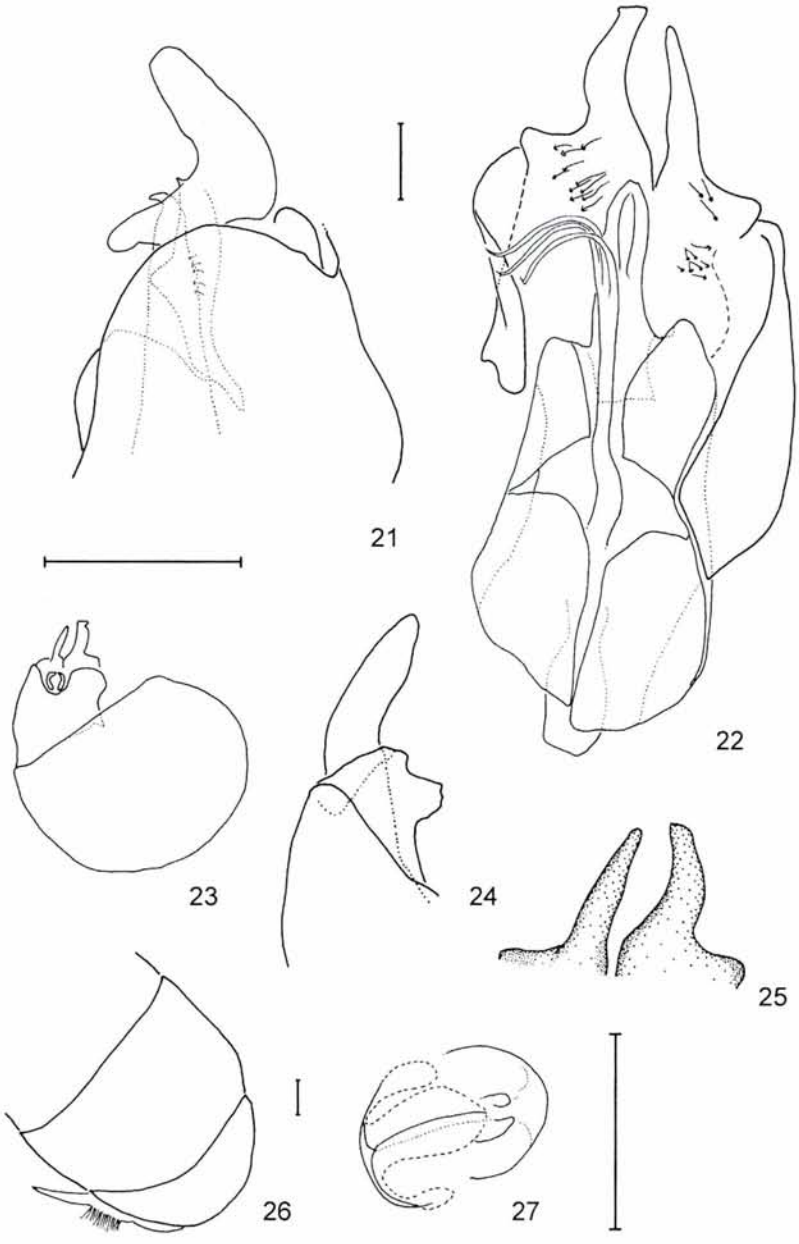
Legs. Trochanters and base of femora yellow, femora yellow with brown markings on distal half, f3 much thicker than others. Knees, tibiae yellow, hind tibia more curved than in most of the Eudorylini species. Tarsal segments yellow, last segment brown. Ventroapical row of 9–12 short, black spines on f2; only whitish hairs on 3rd femur. Subapical (distal) spines on first four tibiae present. No anteromedial hairs on 3rd tibia. Hind trochanter triangle shaped, with 8–10 white hairs on ventral side as long as width of tibia at base. Pulvilli shorter than last tarsal segment.

Wing. Length 3.49 mm, 3.77 mm. Fourth costal section as long as third costal section. Cross vein R-M at 1/3 of discal cell. Pterostigma fully coloured. No hairs on tegula.

Abdomen. Viewed obliquely from front tergites silvery pollinose, syntergosternite 8 more brown in ground colour, sides more greyish. Hairs dispersed, as long as width of t3 at base, on T2 somewhat longer. Laterally 1–3 pale hairs on first tergite. Postabdomen in dorsal view: T6, S7 or epandrium not visible; T5 0.7 times as long as T8. Genitalia without dissection: very large syntergosternite 8, no membranous area, epandrium and surstyli completely yellow.

Genitalia (Figs 21–25, 27). Surstyli with broad base and narrow tip; syntergosternite 8 enlarged. Borders of subepandrial sclerite uncertain, on both sides with a patch of hairs; gonopods asymmetric, right gonopod longer; sides of phallic guide parallel, tip rounded; phallus trifid, branches pointed; ejaculatory apodeme and sperm pump parachute-like, as in *Clistoabdominalis flexus* (HARDY, 1949).

Female. Wing length 2.59 mm. As male except for the following characters. Frons, eyes separated; probably silver-grey pollinose (greasy on paratype), except in front of ocellar triangle for length equal to 2 times the triangle. Femora slightly thickened, form of trochanters moderately modified, t3 less curved than in male. Pulvilli and claws about 1.5 times as long as last tarsal segment. Female ovipositor (Fig. 26) with modified S6 to receive it, base visible, not enlarged, without protuberances.



Figs 21–27. *Clistoabdominalis lomholdti* sp. n., male and female. 21 = left surstylus, phallic guide, lateral view, 22 = genitalia without syntergosternite 8, ventral view, 23 = genitalia, dorsal view, 24 = right surstylus, lateral view, 25 = surstyli, dorsal view, 26 = female ovipositor, lateral view, 27 = male sperm pump and ejaculatory apodeme. Different scale bars apply to Figs 21–22, 24–25, Fig. 26 (0.1 mm) and Figs 23, 27 (1 mm)

Etymology – The species was named after the collector of the type series, the hymenopterist, O. LOMHOLDT (Denmark).

Distribution – It was found only in Namibia thus far.

Remarks – This is a characteristic *Clistoabdominalis* species with large syntergosternite 8 and well developed ejaculatory apodeme, although there is no deflection of the epandrium, as in other species of the genus (see SKEVINGTON & YEATES 2001).

*

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Checklist of the Diptera of Hungary

Edited by L. Papp

This is an international undertaking of 20 authors: a checklist of the dipterous species found through the end of 2000 in Hungary, with references to their first reliable records in the territory of modern Hungary. The "minimum requirements" for a "first record" are to have the name of the identifier and the place of deposition, and to have evidence that the site is a locality of present-day Hungary. The starting point for most parts is Thalhammer's Fauna Regni Hungariae in 1900 and every family part has a short introduction. These parts contain data on the number of recorded species and on the number of species expected to occur in Hungary. Most of the voucher specimens are deposited in the Diptera collection of the Department of Zoology, Hungarian Natural History Museum, Budapest (HNHM); in exceptional cases the name of the relevant institution is given. There are numerous species new to Hungary reported here for the first time, however, the dipterous fauna of Hungary is still poorly known with 5550 species in this book. According to our present knowledge no less than 10000 species may occur in the country.

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