New notes on the family Atopomelidae (Acari, Listrophoroidea)

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ABSTRACT

FAIN A. & BOCHKOV A.V. 2003. New notes on the family Atopomelidae (Acari, Listrophoroidea). *Annls Mus. r. Afr. Centr. (Zool.)* 291: 1-32. Twelve new atopomelid species (Acari, Atopomelidae), mostly from Africa, are described and depicted: *Listrophoroides (Afrolistrophoroides) myomyscus* sp. n., *L. (Af.) colomys* sp.n., *L. (Af.) paraleggada* sp. n., *L (Olistrophoroides) thallomys* sp. n., *L. (O.) oenomiphilus* sp. n., *L. (Alistrophoroides) aethomys* sp. n., *L. (Macroscelistrophoroides* subgen. n.*) petrodromi* sp. n., *L.(Lemurlistrophoroides) lepilemur* sp. n., *Bathyergolichus cryptomys* sp. n., *Caenolestolichus lukoschusi* g. n., sp. n., *Austrochirus (Austrochirus) peroryctes* sp. n., *A. (Austrochiroides) dubininae* sp. n. The females of *Listrophoroides (s.str.) toxophallus* Fain, 1976, *L. (s.str.) iphiophallus* Fain, 1976, *L. (s.str.) stenophallus* Fain, 1981, *L. (Af.) teinophallus* Fain, 1970 and the male of *L. (s.str.) oenomys* Fain, 1972 are described for the first time.

Keywords: systematics, fur-mites, ectoparasites, mammals

1. Introduction

Mites of the family Atopomelidae (Acari, Listrophoroidea) are obligate parasites, living in the fur of mammals. The present paper is devoted to the descriptions of twelve new species belonging to this family. Nine of these species were collected from Africa, two from New Guinea and one from Australia. In addition, we give here the first description of the females of *Listrophoroides (s.str.) toxophallus* Fain, 1976, *L. (s.str.) iphiophallus* Fain, 1976, *L. (s.str.) stenophallus* Fain, 1981, *L. (Afrolistrophoroides.) teinophallus* Fain, 1970 and the male of *L. (s.str.) oenomys* Fain, 1972.

2. Material and Methods

The holotypes of the new species or the new specimens recorded here have been deposited in the following Institutions:

BMH : Bishop Museum, Honolulu.
IRSNB: Institut royal des Sciences naturelles de Belgique, Bruxelles, Belgium.
MNH: Museum of Natural History, London, England.
MRAC: Musée royal de l'Afrique Centrale, Tervuren, Belgium.
TM: Transvaal Museum, South Africa.
UMMZ: University of Michigan, Museum of Zoology, U.S.A.
ZIN: Zoological Institute of the Russian Academy of Sciences, St. Petersburg, Russia

All the measurements are given in micrometers (μm) and were taken as follows: length of the body —total length from posterior border to the anterior extremity of the tegmen; width of the body – maximum width taken at whatever level it occurs; length of the dorsal shields – maximum length, measured in the median line of the shields; length of the posterior legs – from the most basal point of the trochanter to the apex of the tarsus (not including the ambulacrum); length of the tibio-tarsi – from most basal points of this segment to the apex of the tarsus (excluding the ambulacrum).

3. Descriptions

Genus **Listrophoroides** Hirst, 1923

Subgenus **Listrophoroides** s.str.

Listrophoroides (Listrophoroides) oenomys Fain, 1972
Figs 1, 2

RWANDA: 1♂, 3♀ from *Oenomys hypoxanthus* (Muridae): Gakoma, 9.VIII.1955, Fain (IRSNB).

RWANDA: 1♂ from the same host: Astrida (= Butare), XI. 1955. Fain (IRSNB).

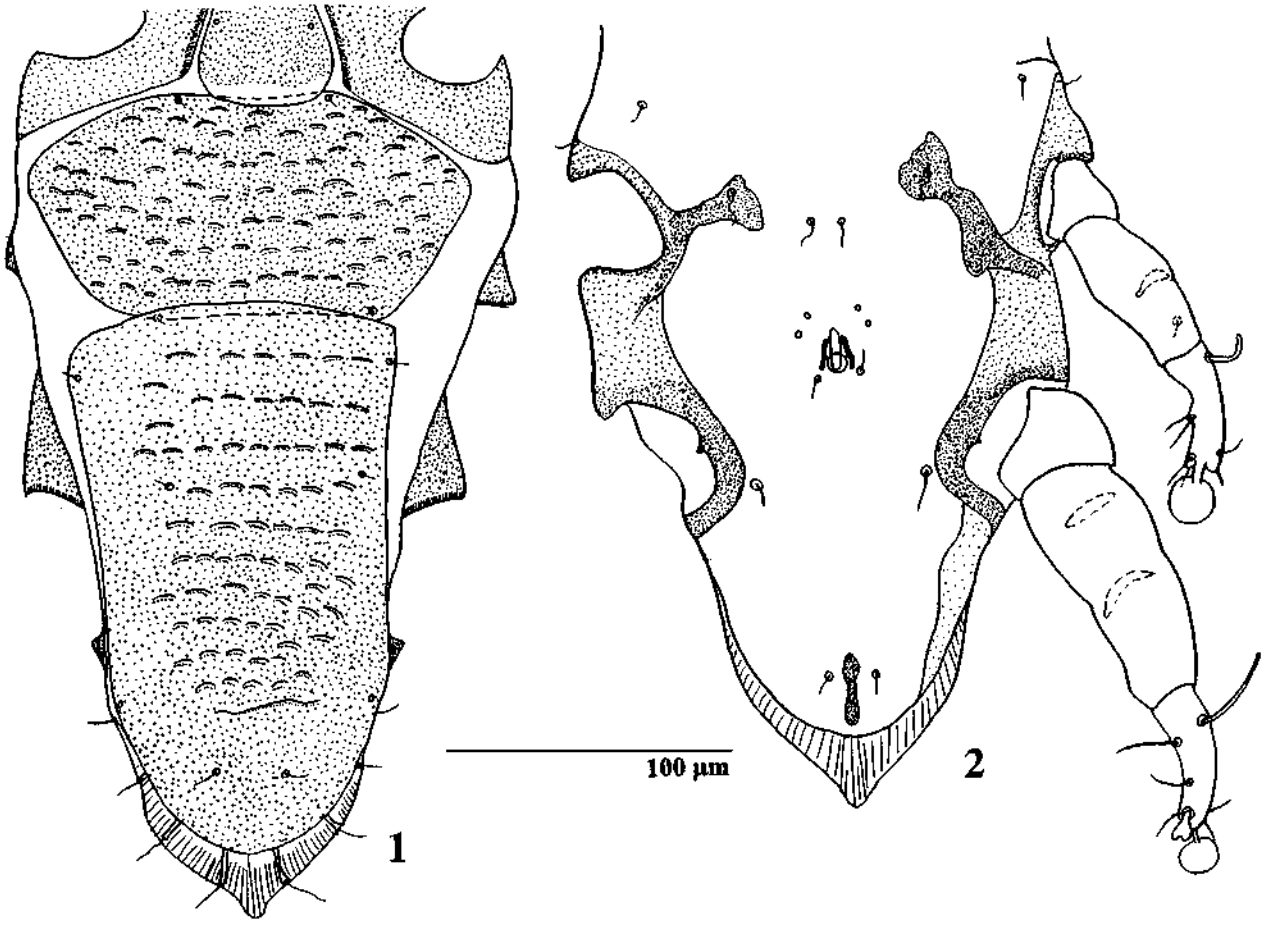
This species was described from females from *Oenomys hypoxanthus* (Muridae) in Zaire (Fain, 1972a). Later on, Fain et al. (1986) found the males of this species, but did not describe them. We give here the first description of the male of *L. oenomys*.

MALE. Body, including gnathosoma, 415 long and 186 maximum wide. *Dorsum*. Postscapular shield 85 long, completely covered with short curved transverse lines. Hysteronotal shield completely covered with the same pattern as the postscapular one, 200 long. Opisthosomal membrane relatively well developed, triangular, with rounded corners. *Venter*. Penis about 15 long. Postgenital shield lacking. Epimeres III without projections, epimeres IV with free projections. Legs III and IV 115 and 165 long, respectively. Tibio-tarsi III and IV 40 and 50 long, respectively. Solenidia of tibiotasus III and IV 20 and 40 long, respectively.

Listrophoroides (Listrophoroides) toxophallus Fain, 1976
Figs 3, 4

INDONESIA: Riau Prov., Pulau Bunguran: 3♂, 11♀ from *Maxomys rajah* (Muridae), n° 94.9.28.44-45, from the collection of BNH. The typical material had been described from the same host but from Thailand and deposited in BMH (Fain, 1981). Among the specimens from this new locality 2♂ and 6♀ are deposited in BMH and the other in IRSNB.

This species was described from the male from *M. rajah* in Bunguran Island and *M. surifer* in Malaysia (Fain 1976a, 1981). The female of *L. toxophallus* is found for the first time from the same host specimen as the paratypes (specimen from Bunguran Isl.).



Figs 1-2. *Listrophoroides (Listrophoroides) oenomys* Fain, 1972, male. 1, dorsal view; 2, hysterosoma in ventral view.

It differs from the female of *L. rajah* Fain, 1974, described from the same host species in Thailand (Fain 1941, 1981), by the shape of spermatheca and from *L. eudrilus* Fain, 1976, described from *M. surifer* in Malaysia (Fain 1976a, 1981), by the shape of spermatheca and epigynium (Figs 5-8).

4. Listrophoroides (Listrophoroides) iphiophallus Fain, 1976
Fig. 9

MALAYSIA: State of Sabah, at Kinabalu. The holotype (male) of this species had been described from N. Borneo and deposited in BMH. New specimens (4♂) were recorded from the same host in Kinabalu (Fain, 1981). The present material (1♂, 6♀) was collected from the same host and locality and deposited in BMH and IRSNB. We give here the first description of the female.

FEMALE. Body, including gnathosoma, 430 long and 175 wide. *Dorsum*. Postscapular shield 90 long, scarcely punctated. Scutal organs lacking. Hysteronotal shield 185 long, clearly separated from the postscapular shield, covered with ornamentation from its anterior margin to level of setae *d3*. This ornamentation consists of two parts, 6-8 transverse lines in anterior half of the hysteronotal shield and short numerous curved lines in its posterior half. Lateral margin of opisthosoma with scales. Spermatheca ampulliform. Terminal copulatory papilla absent. *Venter*. Epigynium large, Vulvar lips well developed. Opisthosoma almost completely sclerotized, without ornamentation. Posterior part of opisthosoma strongly sclerotized forming 3 unequal extensions of which two narrow laterals, and one wide reaching anus.

Remark. The female of *L. iphiophallus* is closest to *L. hemistriatus* FAIN, 1976 from *M. surifer* and *M. rajah* from Burma and Malaysia, respectively (Fain 1976a, 1981), but it is easily distinguished from this species by the following characters. In females of *L. iphiophallus* the postscapular shield does not have any transversal striations (but it is scarcely punctated), the hysteronotal shield bears 6-8 transversal lines in its anterior half and numerous short undulate lines in its posterior half, the proximal part of spermatheca is ampulliform. In females of *L. hemistriatus* the postscapular shield carries 3 long transversal lines, the hysteronotal shield bears only 4 well-developed transversal lines, the spermatheca is gradually attenuated.

Listrophoroides (Listrophoroides) stenophallus Fain, 1981
Figs 10-12

MALAYSIA: Sarawak, Gunung Mulu (type locality). This species was known only from the male. We found now 3♂ and 3♀ from the same host and locality (rat n° 78.1555-56 in MHN.

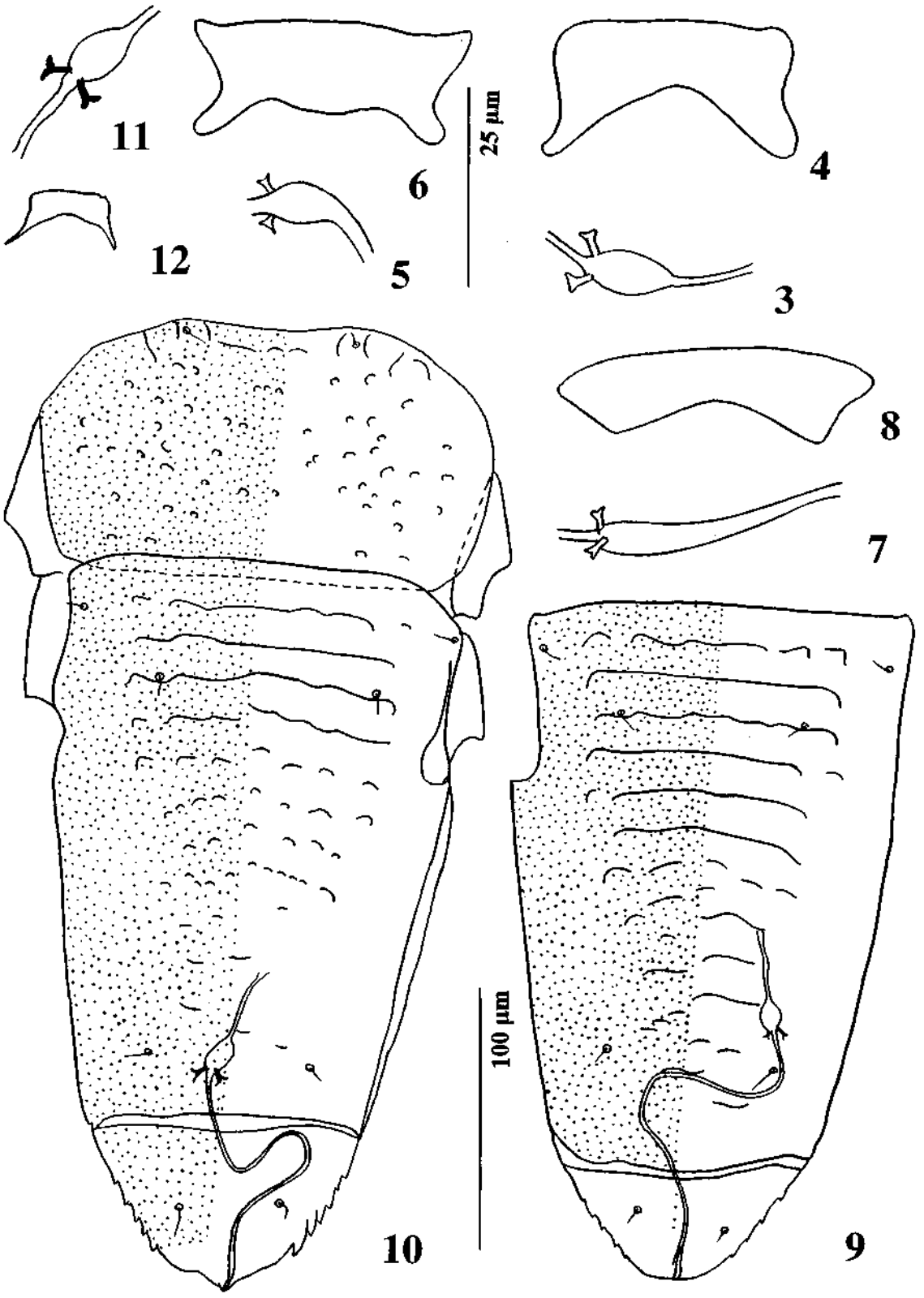
This species was described from male from *M. surifer* in Borneo (Fain 1981).). The female of *L. toxophallus* is found for the first time, from the type host and locality. It differs from the female of *L. iphiophallus* only by the ornamentation of hysteronotal shield. In *L. stenophallus* the hysteronotal shield bears only 4 transverse lines, while in *L. iphiophallus* it bears 6-8 ones.

Subgenus **Afrolistrophoroides** Fain, 1972

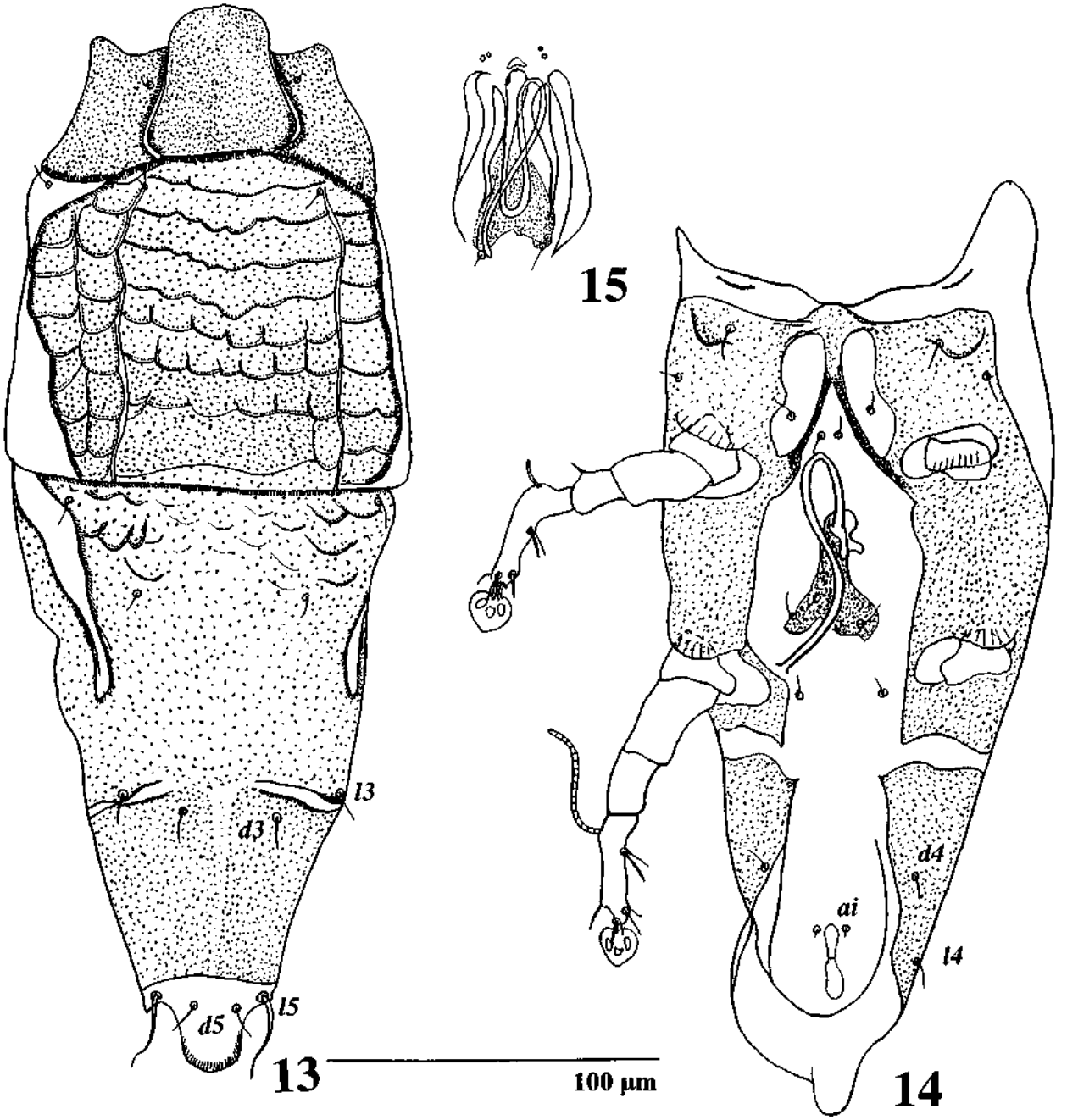
5. Listrophoroides (Afrolistrophoroides) myomyscus sp. n.
Figs 13, 14, 16, 17

Holotype: ♂ from *Myomyscus daltoni* (Muridae), IVORY COAST, N.W. Comoe, 1.III. 1979, Weisser (MRAC).
Paratypes: 4♂, 5♀: with the same data as the holotype (MRAC, IRSNB and ZIN).

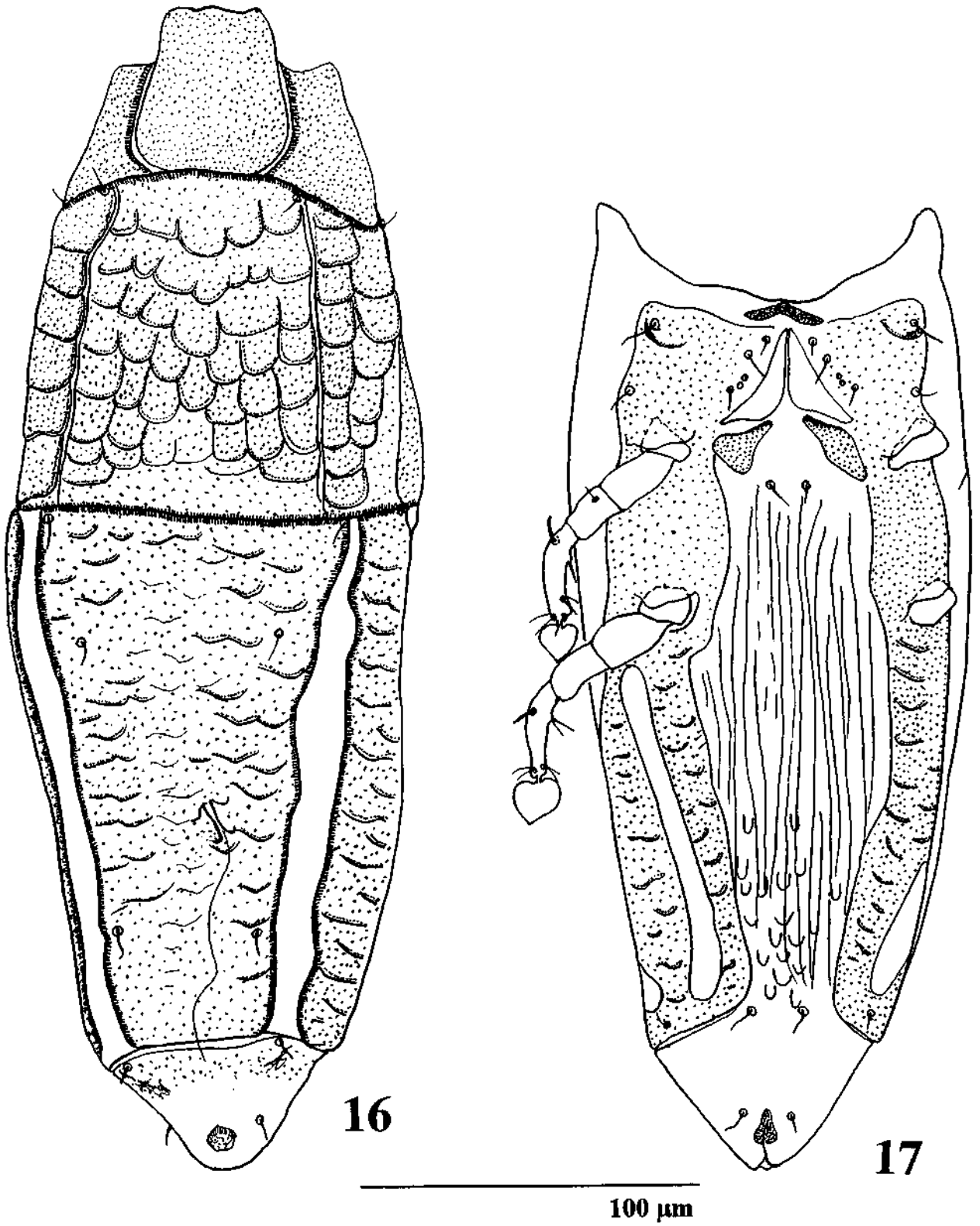
MALE (holotype). Body, including gnathosoma, 330 long and 115 maximum wide. *Dorsum*. Postscapular shield 100 long, almost completely covered with a scale-like pattern, the median area in the posterior third without this pattern. Hysteronotal shield completely covering the hysterosoma, 160 long, with deep transversal incisions at level of setae *l3*. It bears a scale-like pattern in anterior part between levels of setae *l2* and *d2*. These scales almost scarcely visible in its median part. Opisthosoma with small lateral projections at the bases of setae *l5*. Posterior extremity of opisthosomal membrane with median projection. Setae *l5* 20 long. *Venter*. Penis about 100 long, without a complex structure. Genital membrane lacking. Postgenital shield triangular in shape, about 40 long in midline, bearing setae *gm*. Postanal membrane relatively well developed. Epimeres III fused with median margins forming a sclerite in



Figs 3-12. *Listrophoroides (Listrophoroides)* spp. 3, 4, *Listrophoroides toxophallus* Fain, 1976, female, spermatheca (3), epigynium (4); 5, 6, *Listrophoroides rajah* Fain, 1974, female, spermatheca (5), epigynium (6); 7, 8, *Listrophoroides eudrilus* Fain, 1976, female, spermatheca (7), epigynium (8); 9, *Listrophoroides iphiophallus* Fain, 1976, hysteronotal shield of female; 10-12, *Listrophoroides stenophallus* Fain, 1981, female, idiosoma in dorsal view (10), spermatheca (11), epigynium (12).



Figs 13-15. *Listrophoroides (Afrolistrophoroides)* spp., males. 13, 14, *L. myomyscus* sp. n., dorsal view (13), hysterosoma in ventral view (14); 15, *Listrophoroides radfordi* Fain, 1970, aedeagus.



Figs 16, 17. *Listrophoroides (Afrolistrophoroides) myomyscus* sp. n., female. 16, dorsal view; 17, hysterosoma in ventral view.

an inverted Y. Epimeres IV with free projections. Tibio-tarsi III and IV about 35 long.
FEMALE (paratype). Body, including gnathosoma, 380 long and 125 wide. *Dorsum*. Postscapular shield 110 long, ornamentation as in the male. Hysteronotal shield 175 long, almost completely covered with strong ornamentation (scale-like pattern) in the lateral parts and less pronounced ornamentation in the median part. *Venter*. Lateral parts of the opisthosoma with two pairs of longitudinal sclerotized bands, covered by the same ornamentation as the hysteronotal shield. Median part of the opisthosoma with longitudinal striations and with a few tubercles in its posterior third. Posterior extremity rounded.
Differential diagnosis. This new species belongs to the *mastomys* species group which includes five species (Fain 1972a). In both sexes of this group the postscapular shield is almost completely covered with scales; in the males the posterior extremity is rounded, without lobes, the penis is long in most of the species.
Within this group the new species is closest to *Listrophoroides radfordi* Fain, 1970 from *Praomys tullbergi* and *P. jacksoni* (Muridae) from Ivory Coast and Kivu, respectively (Fain 1972a, Fain et.al. 1986). *L. myomyscus* sp. n. is easily distinguished from this species by the following characters: In both sexes of *L. myomyscus* sp. n. the median area of posterior third of the postscapular shield is devoid of scales. In the males the penis is 100 long and has a simple structure, the membrane covering of the genital area is lacking, the postgenital shield is well developed; the hysteronotal shield is transversely divided. In both sexes of *L. radfordi* the postscapular shield is completely covered with scales. In the males the penis is 150 long, it has the complex structure and is covered by a fine membrane (Fig. 15), the postgenital shield is almost lacking; the hysteronotal shield is not divided.

Listrophoroides (Afrolistrophoroides) teinophallus Fain, 1970
Figs 18-20

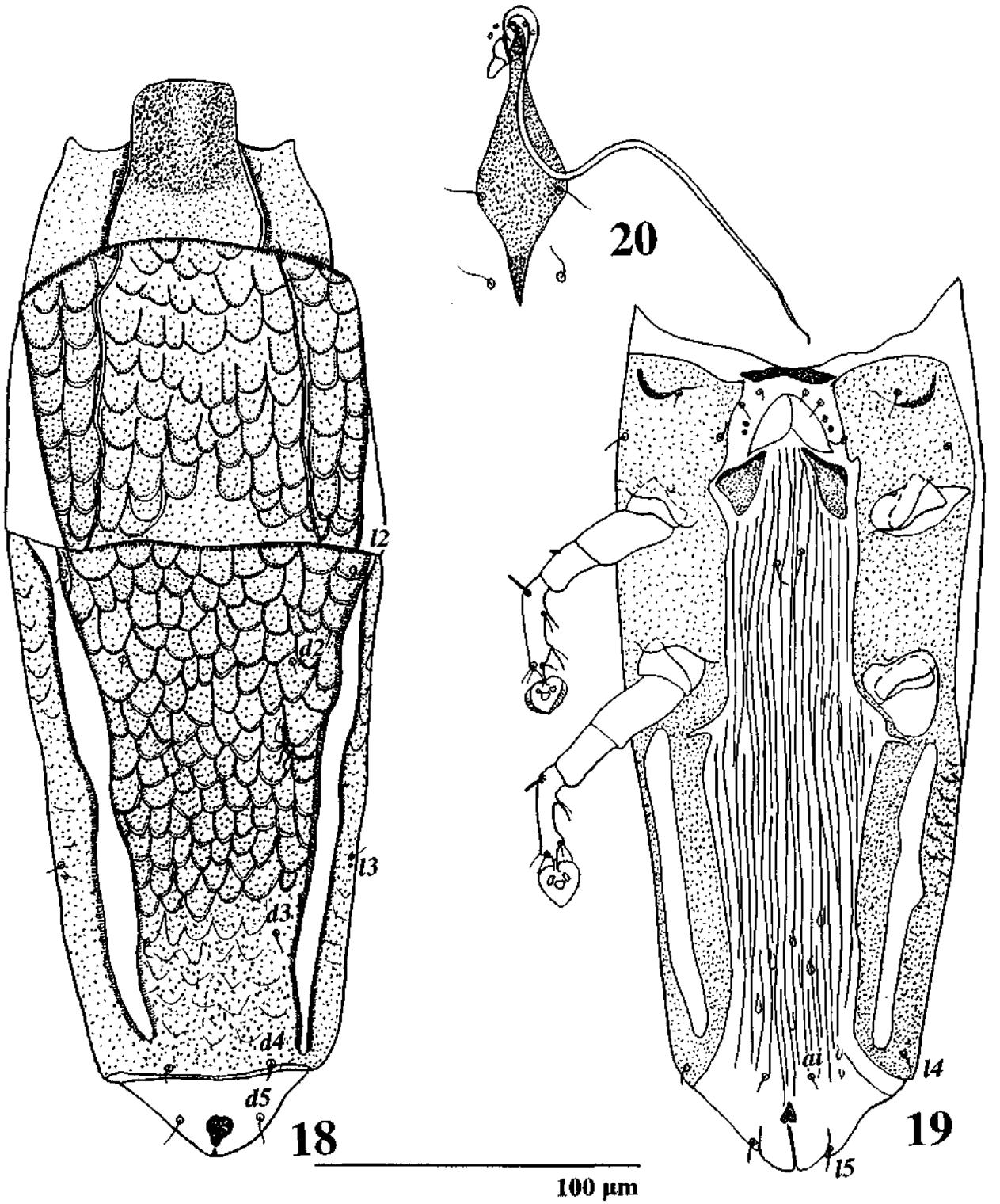
IVORY COAST: 6♂, 5♀ from *Mastomys erythroleucos* (Muridae): Soundre, 1.III.1979, Weisser (MRAC, IRSNB).

This species was described from males from *Mastomys natalensis* in Ivory Coast (Fain 1970a, 1972). We give here the first description of the female.
FEMALE. Body, including gnathosoma, 380 long and 120 wide. *Dorsum*. Postscapular shield 100 long, almost completely covered with a scale-like pattern, only a small median area in its posterior third is lacking ornamentation. Hysteronotal shield 170 long, almost completely covered with a strong scale-like pattern. *Venter*. Lateral parts of the opisthosoma with two pairs of longitudinal sclerotized bands, the internal one without ornamentation, the external one covered with the same ornamentation as the hysteronotal shield. Median part of the opisthosoma with longitudinal striations and with a few tubercles in the posterior half. Posterior extremity rounded.
Remarks. (i) According to the original figure of the holotype (Fain 1972a: fig. 92, p. 98), the postgenital shield of the male of *L. teinophallus* is triangular in shape and its anterior border is situated at the level of the setae *gm*. Actually, this holotype is an aberrant specimen because the postgenital shield is rhombus-like (Fig. 20) in all the other specimens. (ii) The *L. teinophallus* belongs to the *mastomys* species group. The female of this species is very similar to *L. mastomys*. It differs, however from the latter species by the absence of ornamentation on the inner sclerotized bands.

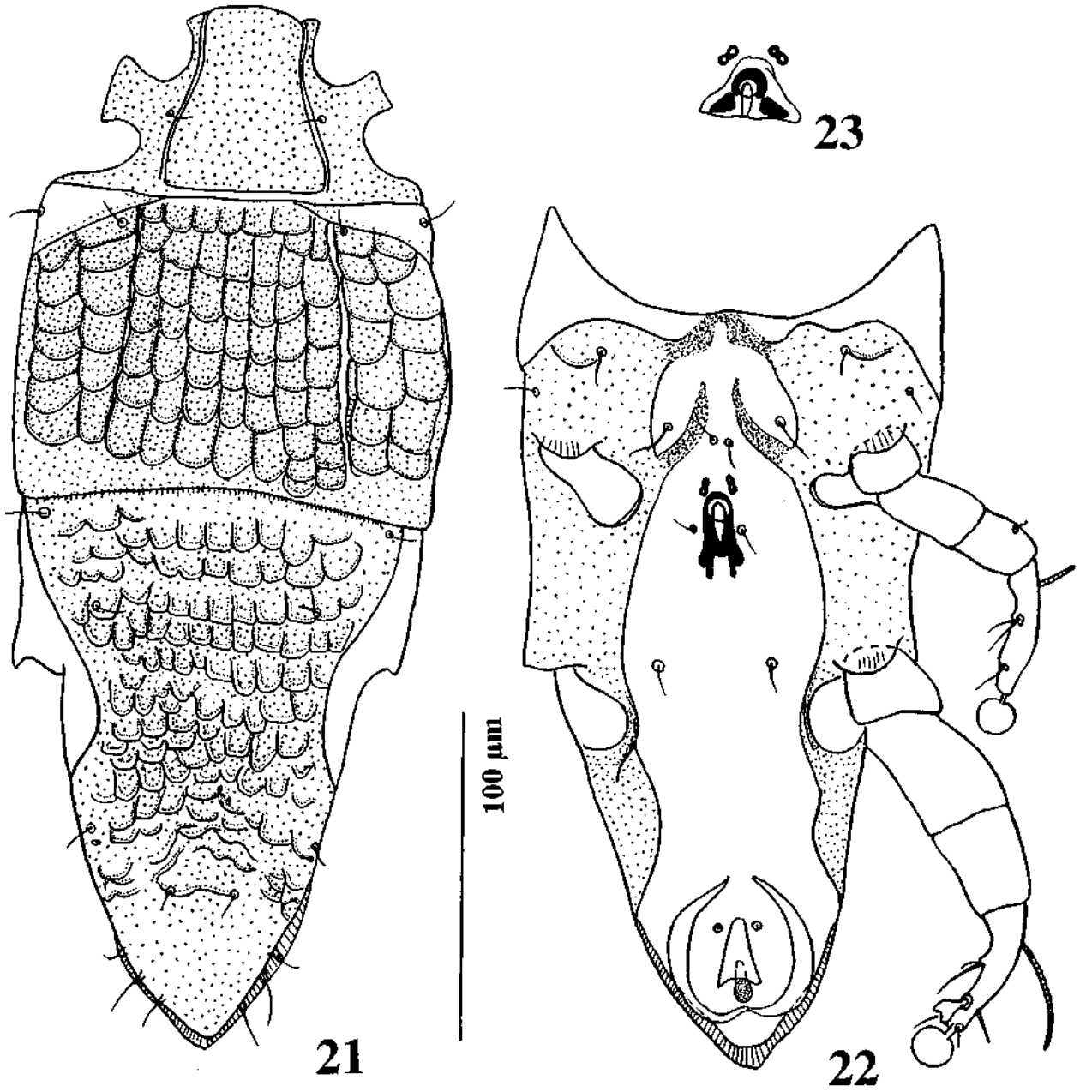
Listrophoroides (Afrolistrophoroides) colomys sp. n.
Figs 21, 22, 24, 25

Holotype: ♂ from *Colomys goslingi* (Muridae), ANGOLA, R. Luachimo, Park Carrisso, 10.VII.1972. Machado (MRAC).
Paratypes: 2♂, 3♀: with the same data as the holotype (MRAC, IRSNB and ZIN).

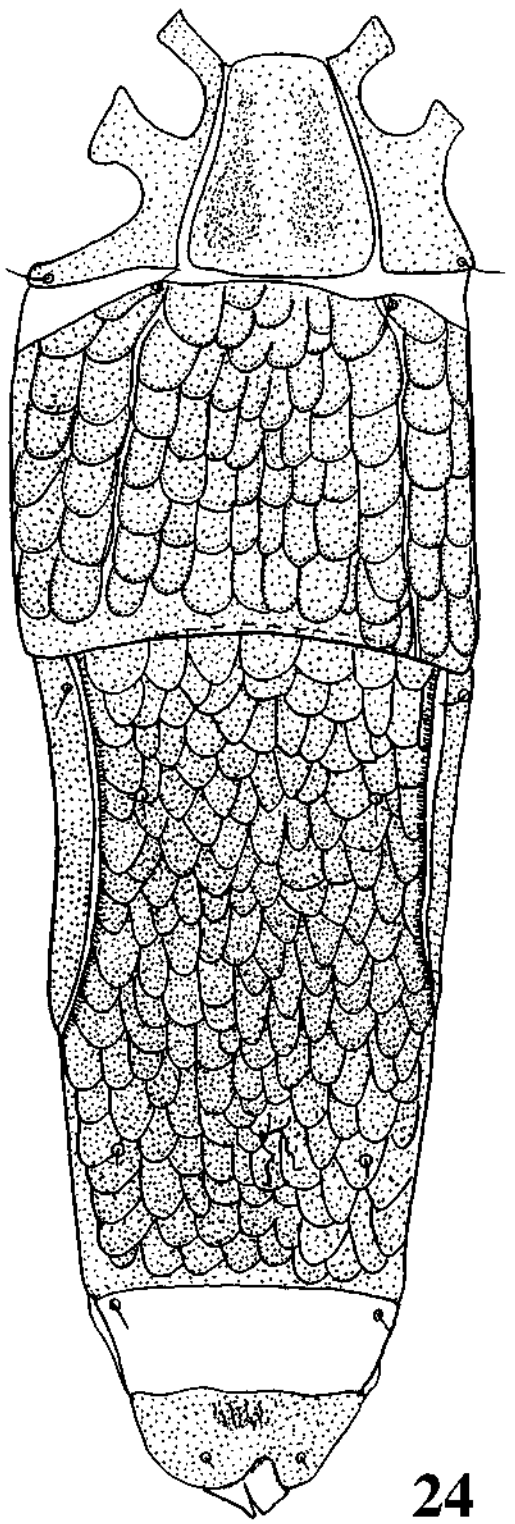
MALE (holotype). Body, including gnathosoma, 365 long and 125 maximum wide. *Dorsum*. Postscapular shield 100 long, almost completely covered with a scale-like pattern. Hysteronotal shield covered with a scale-like pattern from the anterior margin to the level of setae *d3*, 165 long. Posterior extremity of the opisthosoma and opisthosomal membrane triangular. *Venter*. Penis about 15 long. Postgenital shield and genital membranes lacking. Post-anal membrane relatively well developed. Epimeres III fused to each other and with coxal fields II. Epimeres IV with free projections. Legs III and IV 105 and 140 long, respectively. Tibio-tarsi III and IV, excluding ambulacrum, about 40 long. Solenidia of tibio-tarsi III and IV 8 and 40 long, respectively.

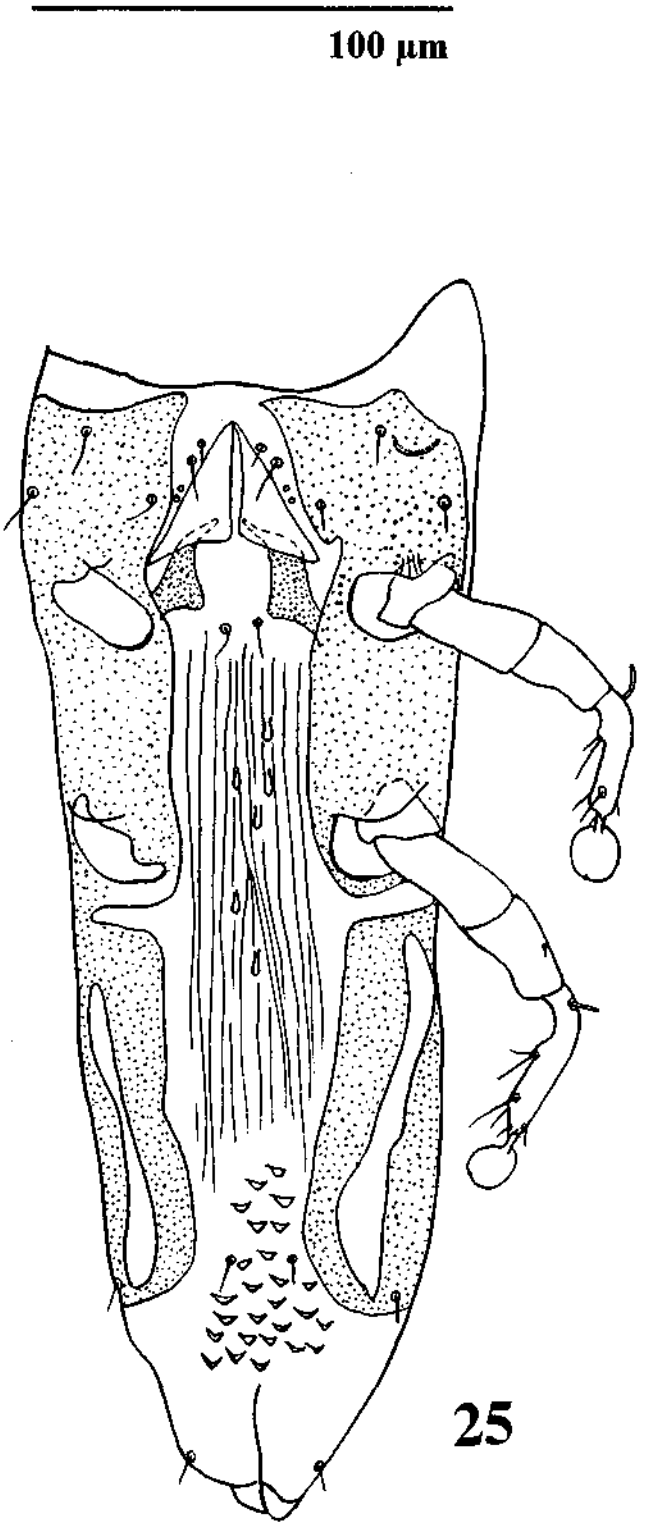


Figs 18-20. *Listrophoroides (Afrolistrophoroides) teinophallus* Fain, 1970. 18, 19, female, dorsal view (18), hysterosoma in ventral view (19); 20, aedeagus.



Figs 21-23. *Listrophoroides (Afrolistrophoroides)* spp, male. 21, 22, *Listrophoroides colomys* sp.n., dorsal view (21); hysterosoma in ventral view (22); 23, *Listrophoroides benoiti* Fain, 1970, aedeagus.





Figs 24, 25. *Listrophoroides (Afrolistrophoroides) colomys* sp. n., female. 24, in dorsal view; 25, hysterosoma in ventral view.

FEMALE (paratype). Body, including gnathosoma, 405 long and 115 wide. *Dorsum*. Postscapular shield 95 long, ornamentation as in the male. Hysteronotal shield 160 long, completely covered with a strong scale-like pattern. *Venter*. Lateral parts of the opisthosoma with two pairs of longitudinal sclerotized bands, without ornamentation. Median part of opisthosoma with a longitudinal striations, with a few tubercles in its anterior and with numerous ones in its posterior part. Posterior extremity rounded.
Differential diagnosis. This new species is intermediate between the *mastomys* and *hylomyscus* species groups. In both sexes of this species the postscapular shield is almost completely covered with scales (character of the *mastomys* group), however the penis of *L. colomys* sp. n. is short as in species of the *hylomyscus* group.
L. colomys sp. n. is closest to *Listrophoroides benoiti* Fain, 1970 from the same host in Zaire (*hylomys* group), but is easily distinguished from the latter species by the following characters: In both sexes of *L. colomys* sp. n. the posterior half of the hysteronotal shield is covered with a scale-like pattern. There are a few tubercles between the coxae IV in the female. The male of new species also differs from *L. benoiti* by the form of the aedeagus. In both sexes of *L. benoiti* the posterior half of the hysteronotal shield is devoid of ornamentation. There are not tubercles in the female. The aedeagus is as in Fig. 23.

Listrophoroides (Afrolistrophoroides) paraleggada sp. n.
Figs 26-29

Holotype: ♂? from *Mus musculoides* (Muridae), IVORY COAST, Gnekehoroke, other data unknown (MRAC).
Paratypes: 1♂, 2♀: from the same host species, IVORY COAST, Tai, other data unknown (MRAC, IRSNB). 1♂, 2♀: from the same host species, IVORY COAST, other data unknown (MRAC, IRSNB).

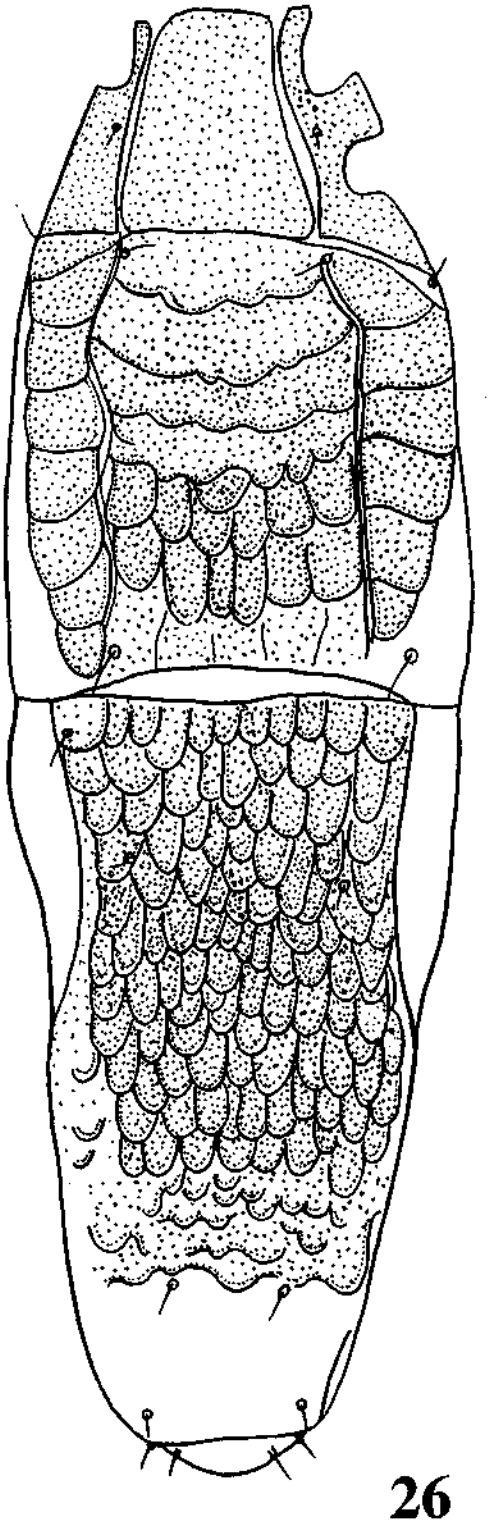
MALE (holotype). Body, including gnathosoma, 415 long and 115 maximum wide. *Dorsum*. Postscapular shield 120 long, with 4 widely rounded transversal lines in its anterior part and with a scale-like pattern in its posterior part. Hysteronotal shield completely covered with a scale-like pattern, 205 long. Opisthosomal membrane widely rounded. *Venter*. Penis about 15 long. Postgenital shield and genital membranes lacking. Post-anal membrane relatively well developed. Epimeres III fused to each other and with coxal fields II. Epimeres IV with free projections. Legs III and IV 100 and 115 long, respectively. Tibio-tarsi III and IV about 35 and 45 long, respectively, bearing hair-like setae. Solenidia of tibio-tarsi III and IV 8 and 25 long, respectively. FEMALE (paratype). Body, including gnathosoma, 500 long and 125 wide. *Dorsum*. Postscapular shield 140 long, ornamentation as in the male. Hysteronotal shield 250 long, completely covered with a strong scale-like pattern. Copulatory papilla normally developed. *Venter*. Lateral parts of the opisthosoma with two pairs of longitudinal sclerotized bands, covered with a strong scale-like pattern. Epigynium almost completely reduced. Median part of opisthosoma with a longitudinal striation, without scales. Posterior extremity rounded.
Differential diagnosis. This new species is closest to *L. leggada* Fain, 1970 from *Mus musculoides* from Ivory Coast (Fain 1970a, 1972a) but it differs from the latter species by the following characters: In both sexes of *L. parallegada* sp. n. the anterior part of the postscapular shield is covered with transversal lines. In the female the epigynium is reduced, the opisthogastral lateral bands are covered with a strong ornamentation in their posterior parts. In the male the setae *ai* are situated at the level of the anal slit. In both sexes of *L. leggada* the anterior part of postscapular shield is devoid of ornamentation (Fig. 30). In the female the epigynium is normally developed, the opisthogastral lateral bands are poorly ornamented in their posterior part. In the male the setae *ai* are situated in front of the level of the anal slit.

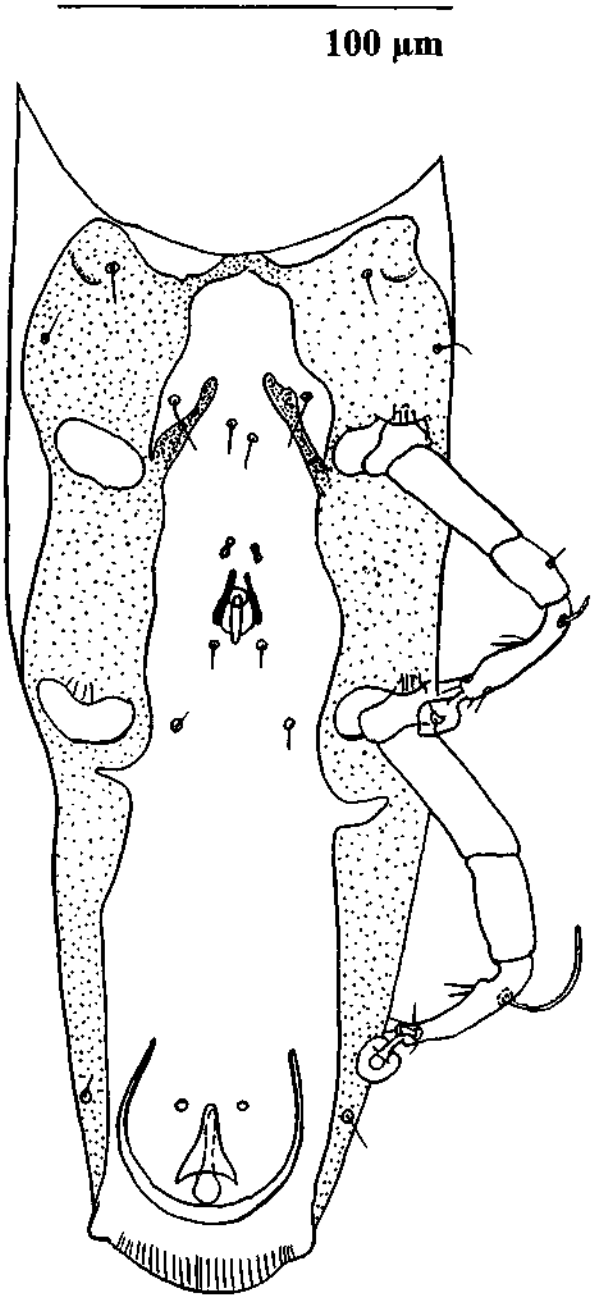
Subgenus **Olistrophoroides** Fain, 1972

Listrophoroides (Olistrophoroides) thallomys sp. n.
Figs 31, 32, 34, 35

Holotype: ♂ from *Thallomys paedulcus* (Muridae), SOUTH AFRICA, Northern Prov., Pietersberg, 18.VIII.1944 (TM). *Paratypes*: 7♂, 8♀ with the same data as holotype (MT, MRAC and IRSNB).

MALE (holotype). Body, including gnathosoma, 380 long and 150 maximum wide. *Dorsum*. Postscapular shield 105 long, with 6-8 transversal lines. Hys-





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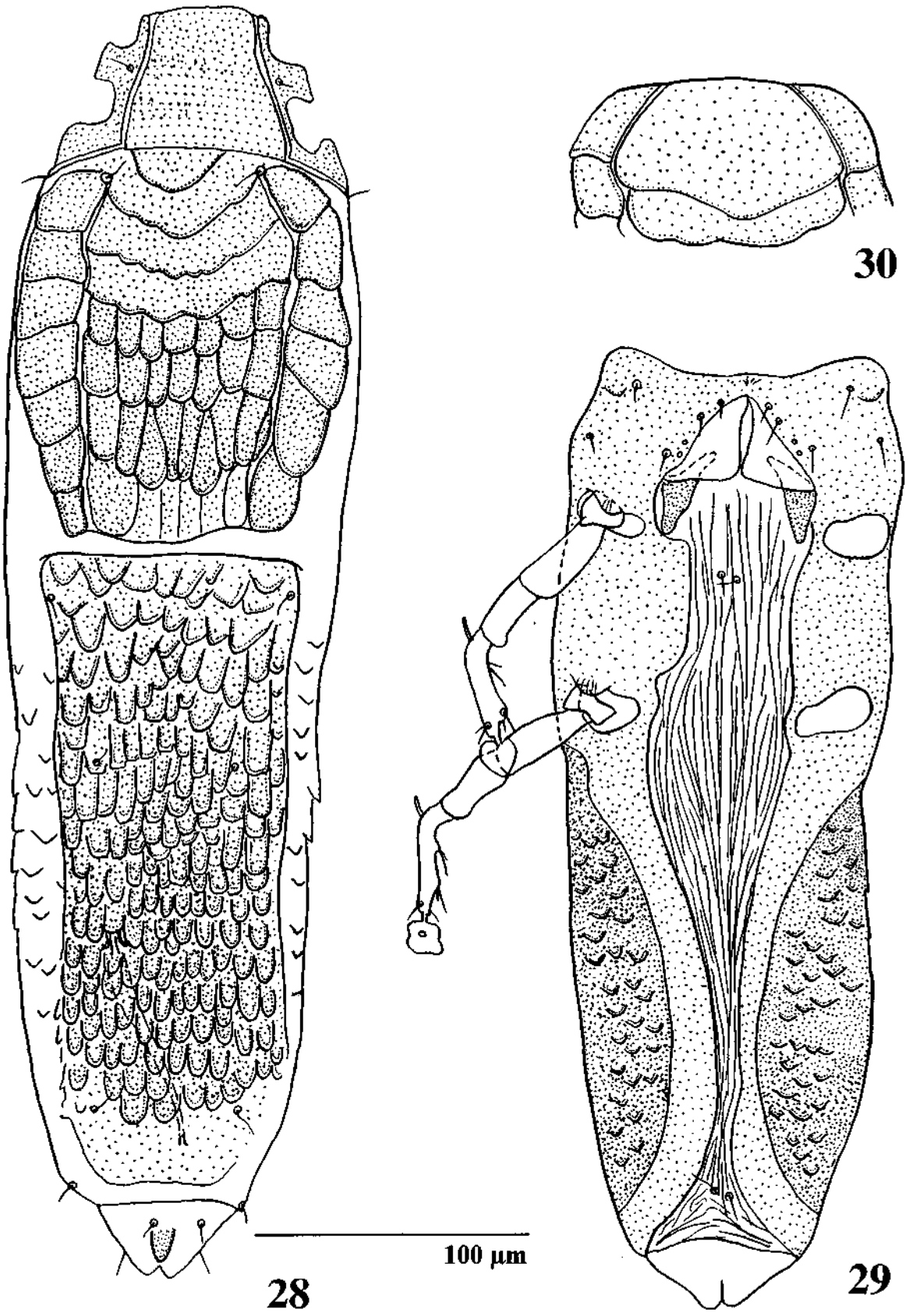
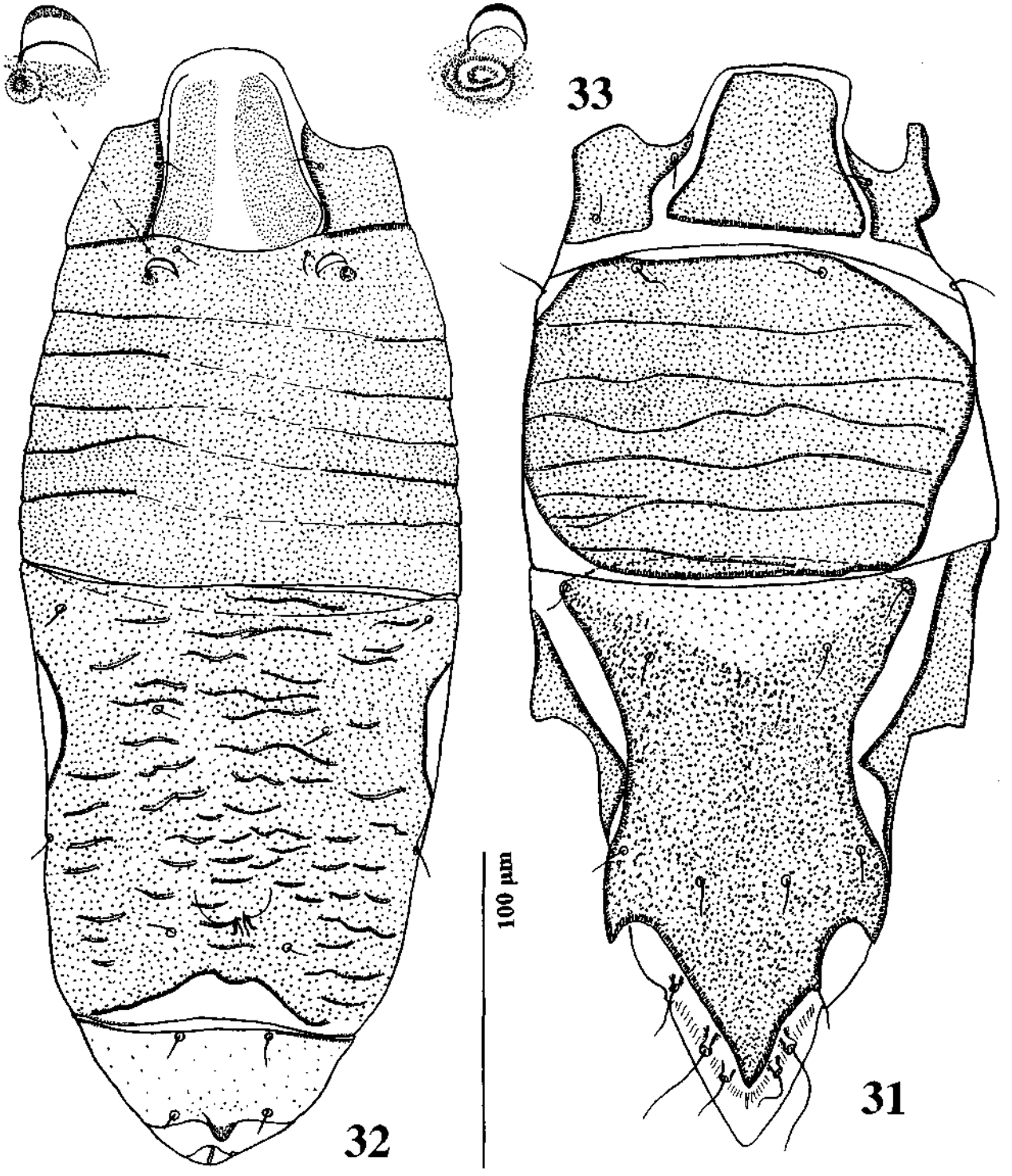
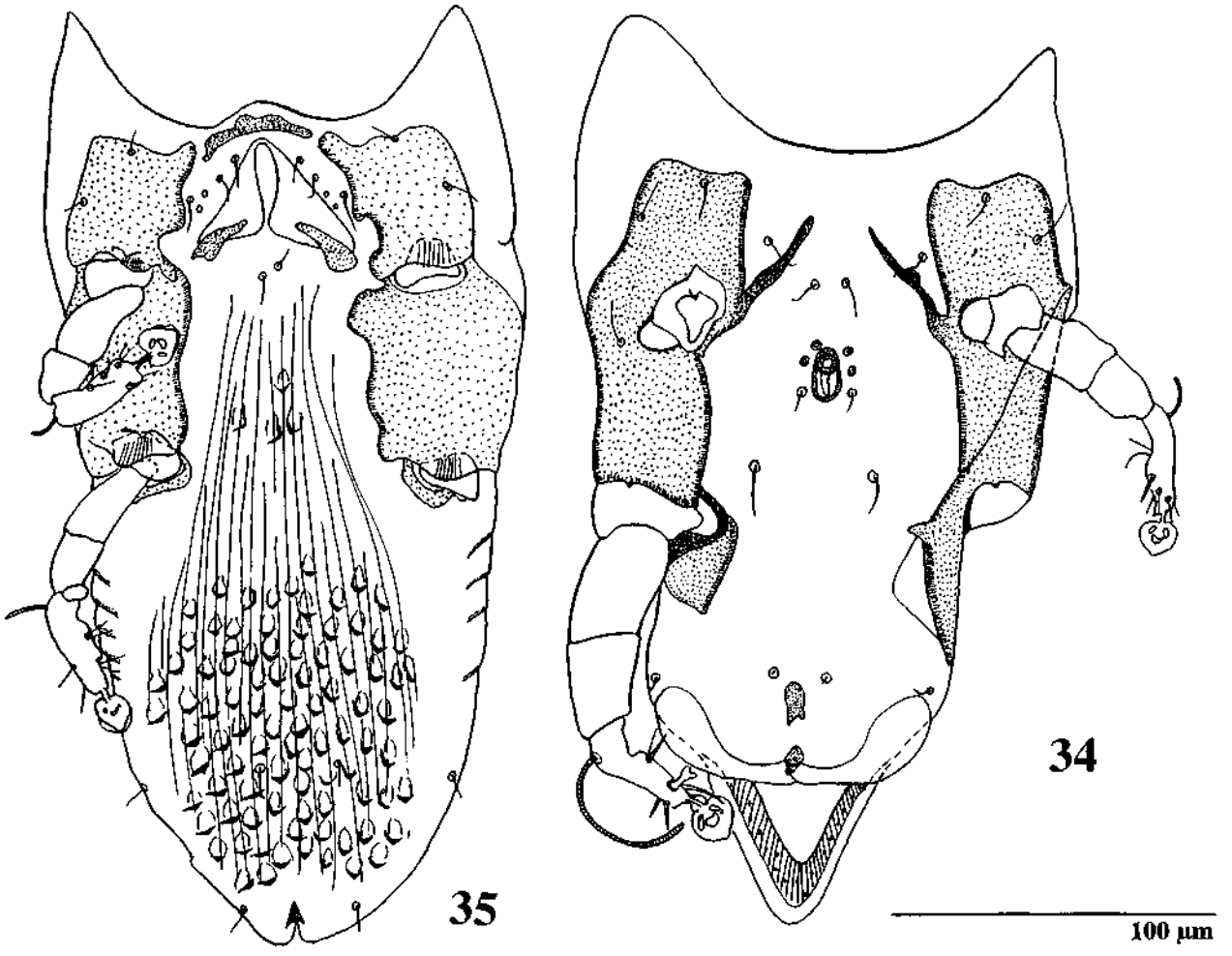
Figs 26, 27. *Listrophoroides (Afrolistrophoroides) paraleggada* sp. n., male. 26, dorsal view; 27, hysterosoma in ventral view.



Figs 28-29. *Listrophoroides (Afrolistrophoroides)* spp., female. 28, 29, *Listrophoroides paraleggada*, dorsal view (28), hysterosoma in ventral view (29); 30, *Listrophoroides leggada* Fain, 1970, anterior part of postscapular shield.



Figs 31-33. *Listrophoroides (Olistrophoroides)* spp. 31, 32, *L. thallomys* sp. n., male in dorsal view (31), female in dorsal view (32); 33, *L. lemniscomys* Radford, 1940, scutal organ of female.



Figs 34, 35. *Listrophoroides (Olistrophoroides) thallomys* sp. n. 34, male hysterosoma in ventral view; 35, female hysterosoma in ventral view.

teronotum completely covered with the hysteronotal shield. Hysteronotal shield 165 long without ornamentation, bearing a pair of well developed lateral triangular retrorse projections behind the level of the setae *l3*. Posterior border of the opisthosoma and opisthosomal membrane triangular. Setae *l5* 35 long. *Venter*. Penis about 15 long. Post-anal membrane well developed. Postgenital shield lacking. Epimeres III and IV with free projections. Legs III and IV 80 and 110 long, respectively.

FEMALE (paratype). Body, including gnathosoma, 400 long and 135 wide. *Dorsum*. Postscapular shield 110 long, with 5-7 transversal lines, which are almost not visible in its median part. Scutal organs as in Fig. 32, situated laterally near to the setae *sci*. Distance between these organs 45. Hysteronotal shield 140 long, almost completely covered with a strong ornamentation. Copulatory papilla poorly developed. *Venter*. Epigynium well developed. Hysterosoma longitudinally striated, with numerous triangular scales in its posterior half. A small group of 4-5 scales present at the level of coxae IV.

Differential diagnosis. This new species belongs to the *lemniscomys* species group including 10 species (Fain 1972a, Fain *et al.* 1986). In both sexes of this group the dorsal shields are normally sclerotized; and in the females the scutal organs are ovoidal. Within *lemniscomys* group the new species is closest to *Listrophoroides lemniscomys* Radford, 1940 from Afrotropical rodents of the family Muridae, mostly *Lemniscomys striatus* and *L. griseldai* (Fain 1972a, Fain *et.al.* 1986). *L. thallomys* sp. n. is easily distinguished from it by the following characters: In the male of *L. thallomys* sp. n. the hysteronotal shield bears a pair of large lateral triangular retrose projections. In the females the hysterogaster

between the coxae III and IV bears a few median triangular scales, the scutal organ is as in Fig. 32. In the male of *L. lemniscomys* the hysteronotal shield has no lateral triangular projections. In the female the hysterogaster between coxae III and IV is devoid of scales, the scutal organ is as in Fig. 33.

Listrophoroides (Olistrophoroides) oenomiphilus sp. n.
Figs 36-40

Holotype: ♂ from *Oenomys hypoxanthus* (Muridae), RWANDA, Butare (= Astrida), XI.1955, A. Fain (MRAC).
Paratypes: 2♂, 2♀: with the same data as the holotype (MRAC and IRSNB).

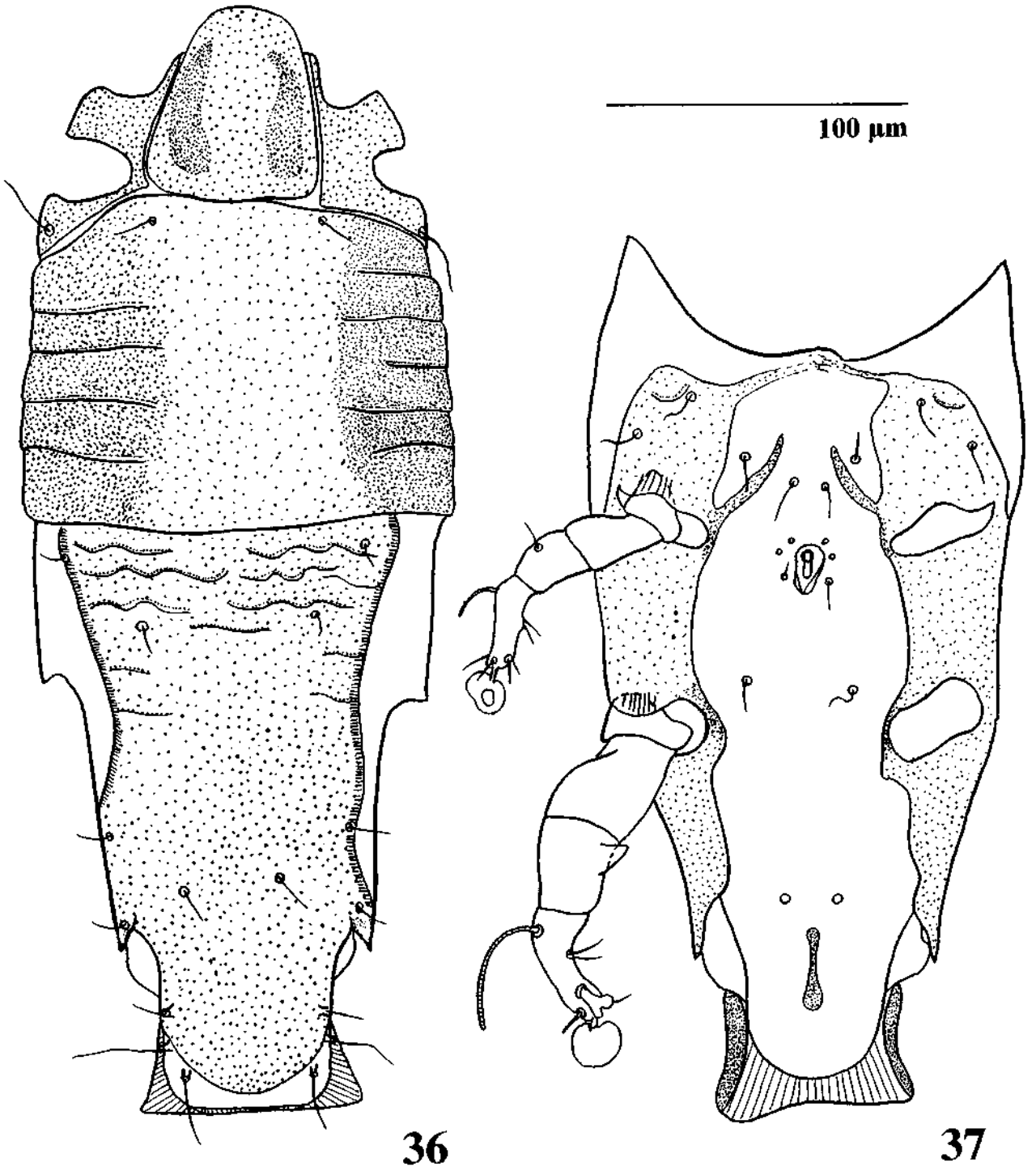
MALE (holotype). Body, including gnathosoma, 405 long and 140 maximum wide. *Dorsum*. Postscapular shield 100 long, with 5-6-lines situated in lateral parts, median part of this shield without ornamentation. Hysteronotal shield, 180 long with ornamentation between its anterior margin and the level of the setae *d2*, bearing pair of well developed lateral triangular projections behind the level of setae *l3*. Posterior extremity of the opisthosoma widely rounded. Opisthosomal membrane trapezoidal. Setae *l5* 35 long. *Venter*. Penis about 12 long. Postgenital shield lacking. Post-anal membrane poorly developed. Epimeres III almost fused to each other and with coxal fields II. Epimeres IV with free projections. Legs III and IV 85 and 115 long, respectively. Solenidia of tibio-tarsi III and IV 15 and 50 long, respectively.
FEMALE (paratype). Body, including gnathosoma, 450 long and 150 wide. *Dorsum*. Postscapular shield 125 long, ornamented as in the male. Scutal organs as in Fig. 38, situated laterally near the setae *sci*. Hysteronotal shield 165 long, completely covered with a strong ornamentation. Copulatory papilla poorly developed. *Venter*. Epigynium well developed. Hysterosoma longitudinally striated, with numerous triangular scales situated in its median part.
Differential diagnosis. This new species belongs to the *lemniscomys* species group. Within this group it is closest to *Listrophoroides caudatus* Fain, 1970 from *Lemniscomys striatus* in Ivory Coast (Fain 1972a). *L. oenomiphilus* sp. n. differs from the latter species by the following characters: In the male of *L. oenomiphilus* sp. n. the hysteronotal shield is covered with an ornamentation in its anterior part, the epimeres III are not completely fused to each other and with coxal fields II. In the female the opisthogaster between the coxae III and IV bears triangular scales. In the male of *L. caudatus* the hysteronotal shield is devoid of ornamentation, the epimeres III are completely fused to each other and with coxal fields II. In the female the opisthogaster between coxae III and IV is devoid of triangular scales.

Subgenus **Alistrophoroides** Fain, 1972

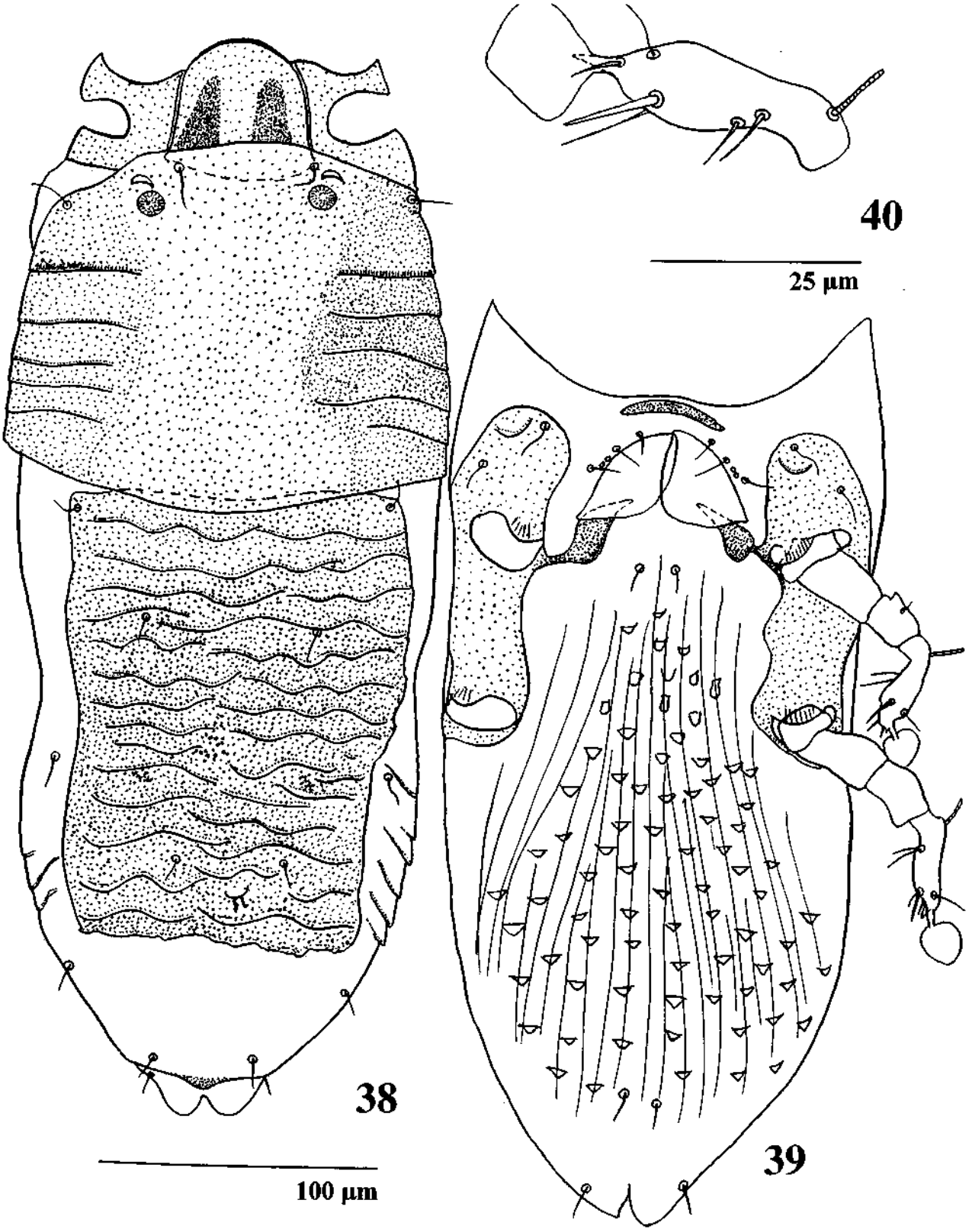
Listrophoroides (Alistrophoroides) aethomys sp. n.
Figs 41-44

Holotype: ♂ from *Aethomys bocagei* (Muridae), CONGO, Pointe Noire, X. 1962, F. Lukoschus (MRAC).
Paratypes: 4♂, 3♀: with the same data as the holotype (IRSNB, ZIN).

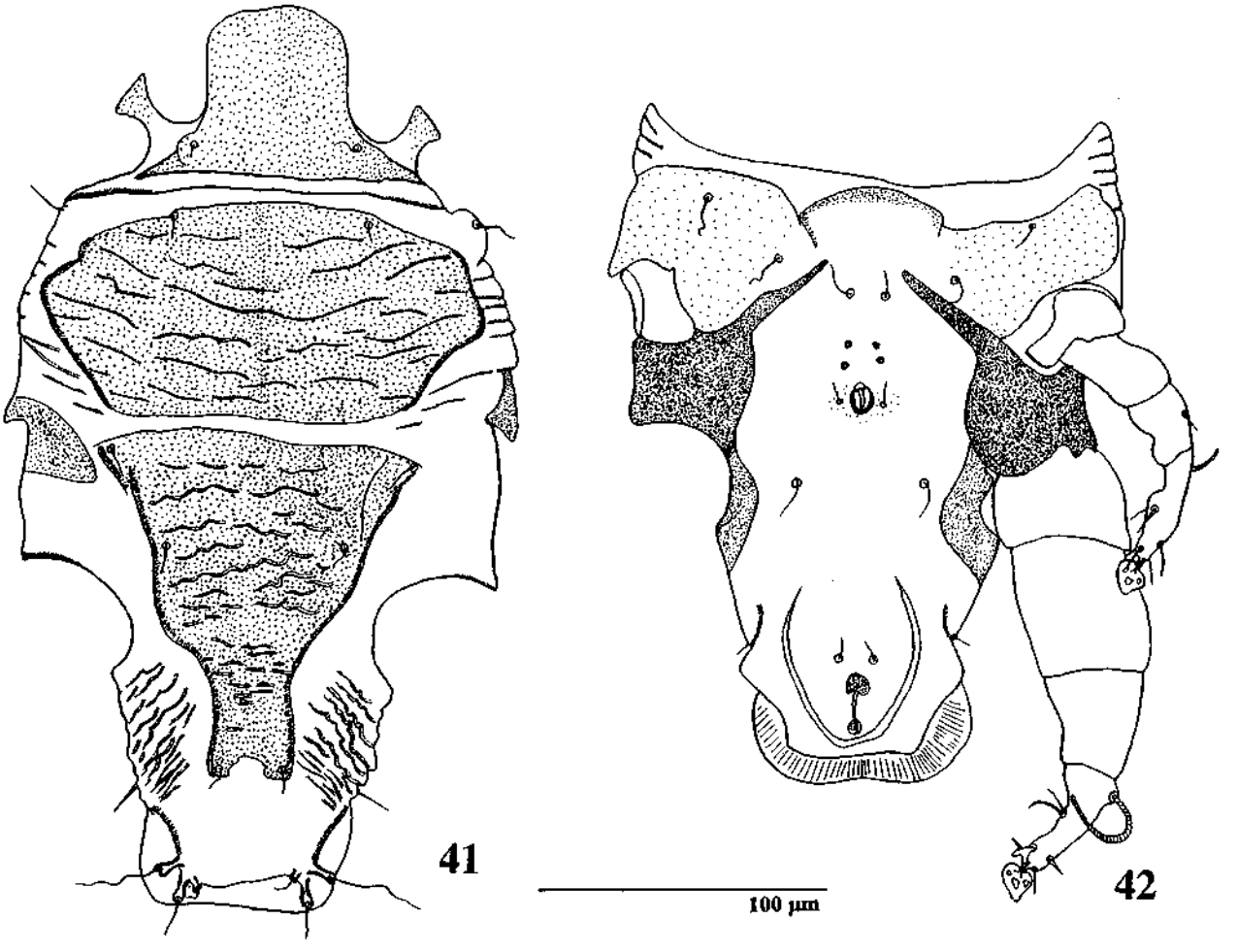
MALE (holotype). Body, including gnathosoma, 340 long and 165 maximum wide. *Dorsum*. Postscapular shield 85 long, with numerous short transverse lines. Ornamentation of the hysteronotal shield similar to the postscapular one. This shield shorter and narrower than the hysterosoma, 110 long. Posterior margin of the hysteronotal shield situated at the level of the setae *d3*. Hysterosoma with a pair of posterolateral scale-like areas, situated in the posterior third of the hysteronotal shield. Posterior extremity and opisthosomal membrane more or less truncate with rounded corners. Setae *l5* 35 long. *Venter*. Penis about 6 long. Post-anal membrane poorly developed. Postgenital shield lacking. Epimeres III and IV with free projections. Legs III 100 long, legs IV hypertrophied, 145 long and twice as thick as legs III.
FEMALE (paratype). Body, including gnathosoma, 365 long and 150 wide. *Dorsum*. Scapular shield without ornamentation. Postscapular shield 90 long, with 16 transversal lines arranged in 4 groups. Hysteronotal shield 150 long, almost without ornamentation, only small lateral areas behind level of setae *d2* covered with a scale-like pattern. Copulatory papilla poorly developed. *Venter*. Epigynium well developed. Hysterosoma with numerous triangular scales in its posterior half and a few scales in its median part, between coxae IV.
Differential diagnosis. This new species differs from the other three species known in the subgenus



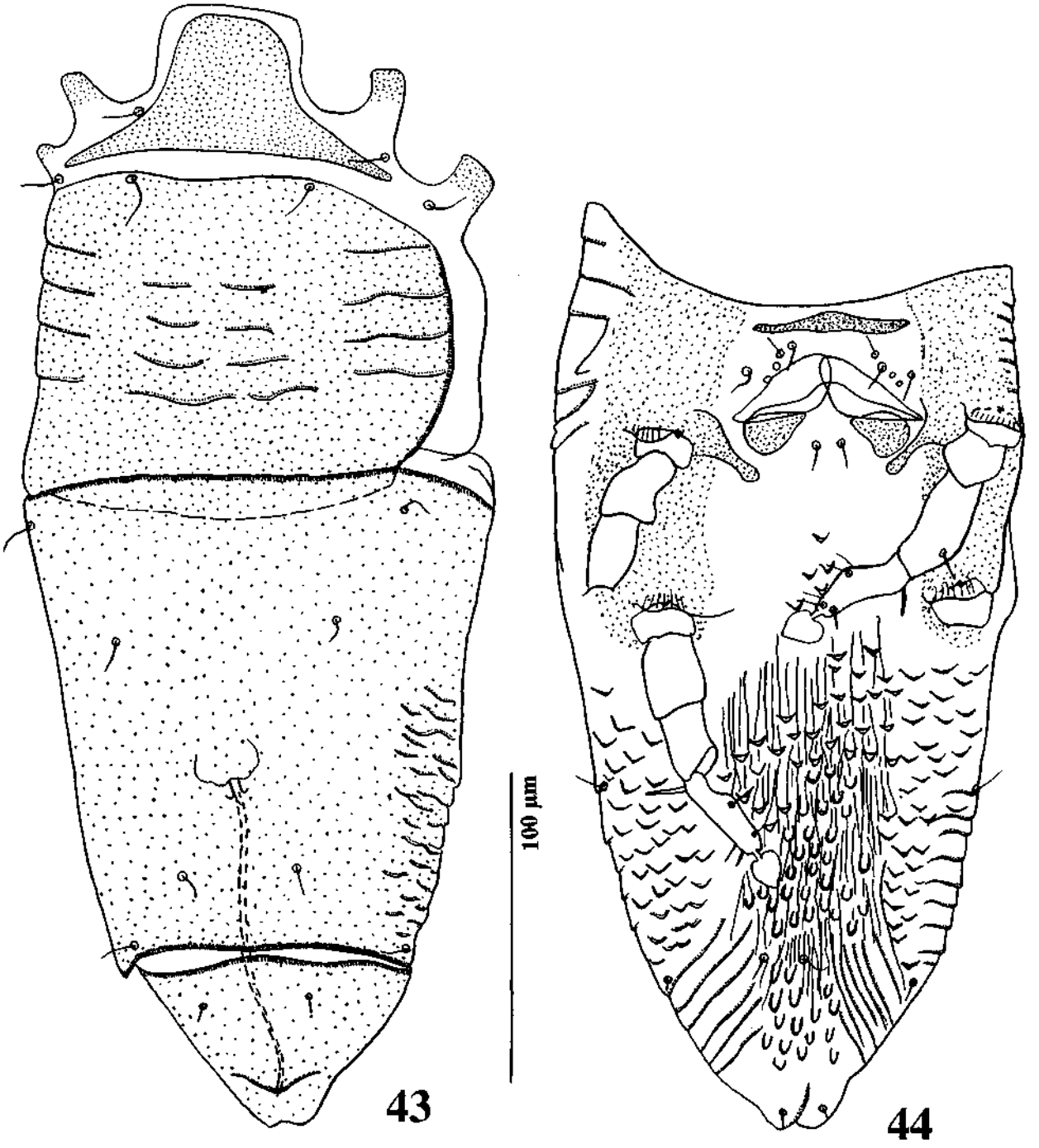
Figs 36-37. *Listrophoroides (Olistrophoroides) oenomiphilus* sp. n., male. 36, dorsal view; 37, hysterosoma in ventral view.



Figs 38-40. *Listrophoroides (Olistrophoroides) oenomiphilus* sp. n., female. 38, in dorsal view; 39, hysterosoma in ventral view; 40, tibiotarsus IV in dorsal view.



Figs 41, 42. *Listrophoroides (Alistrophoroides) aethomys* sp. n., male. 41, dorsal view; 42, hysterosoma in ventral view.



Figs 43, 44. *Listrophoroides (Alistrophoroides) aethomys* sp. n., female. 43 dorsal view; 44 hysterosoma in ventral view.

Alistrophoroides by the hypertrophied legs IV in the male. These legs are hypertrophied also in the males of some species in the subgenus *Arboricolichus* Fain, 1972. However, all the species of the latter subgenus have a pair of sclerotized bands in the anterior part of the postscapular shield. These bands are lacking in *L. aethomys* sp. n. Within the subgenus *Alistrophoroides* this new species is closer to *L. hulstaerti* Fain, 1972 from *Oenomys hypoxanthus* (Muridae) in Zaire (Fain 1972a). *L. aethomys* sp. n. is easily distinguished from this species as follows: In both sexes of *L. aethomys* sp. n. the prescapular shield has no scutal organs. In the male the dorsum of the hysteronotum bears a pair of lateral scaly areas. In the females the postscapular shield is ornamented in the median part, but the hysteronotal shield has no ornamentation in its median part. In both sexes of *L. hulstaerti* the prescapular shield bears the scutal organs. In the male the hysteronotum is devoid of lateral scale areas. In the females the postscapular shield has no ornamentation in the median part, but the hysteronotal shield is ornamented in its median part.

Subgenus **Macroscelistrophoroides** subg. n.

DIAGNOSIS. Body subcylindrical. Legs III and IV situated ventrally. Epimeres II fused and their clasping membranes are close to each other. There are two large lateral postscapular shields. Scutal organs lacking. Hysteronotal shield well developed.
FEMALE. Epigynium and copulatory papillae well developed. Opisthogaster venter without sclerotized bands.
MALE. Oil glands well developed with sclerotized opening.
Differential diagnosis. This new subgenus is closest to the subgenera *Alistrophoroides* and *Arboricolichus*. It differs from these subgenera by the widely divided postscapular shield in the both sexes and by the well developed and hardly sclerotized oil-glands orifices in the male.
This subgenus includes only the type species *L. petrodromi* sp. n.

Listrophoroides (Macroscelistrophoroides) petrodromi sp. n.
Figs 45-48

Holotype: ♂ from *Petrodromus tetradactylus* (Macroscelididae), SOUTH AFRICA, Zululand, Falsbaybush, 26.XII.1920 (TM).

Paratypes: 6♂, 9♀: with the same data as the holotype (TM, MRAC, IRSNB, ZIN).

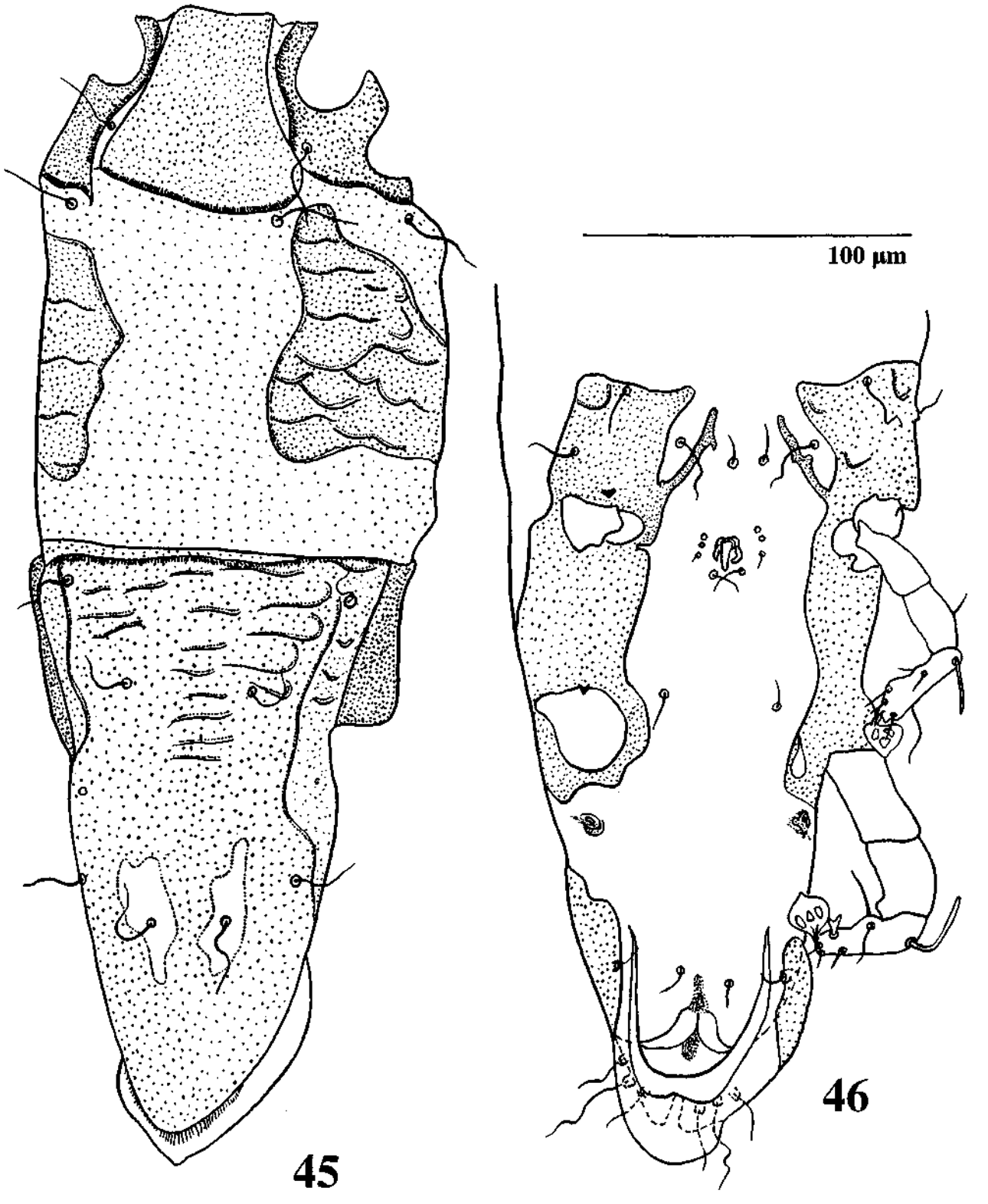
MALE (holotype). Body, including gnathosoma, 400 long and 135 maximum wide. *Dorsum*. Postscapular shields 80 long, with ornamentation. Hysteronotal shield 180 long, covering completely the hysteronotum, with ornamentation in its anterior third. Setae *d3* situated on small unsclerotized areas. Oil glands well developed and sclerotized. Posterior extremity and opisthosomal membrane rounded. Setae *l5* 30 long. *Venter*. Penis about 10 long. Postgenital shield lacking. Post-anal membrane well developed. Epimeres III without projections. Epimeres IV with free projections. Legs III and IV 85 and100 long, respectively.
Female (paratype). Body, including gnathosoma, 465 long and 135 wide. *Dorsum*. Prescapular shield without ornamentation. Postscapular shield 115 long, ornamented as in the male. Hysteronotal shield 180 long, completely covered with ornamentation. Its posterior border deeply concave. Copulatory papilla well developed. *Venter*. Epigynium well developed. Hysterosoma with numerous rounded or triangular scales in its posterior half and a few scales situated in median part of opisthosoma, behind the level of coxae III.

Subgenus **Lemurlistrophoroides** Fain 1972

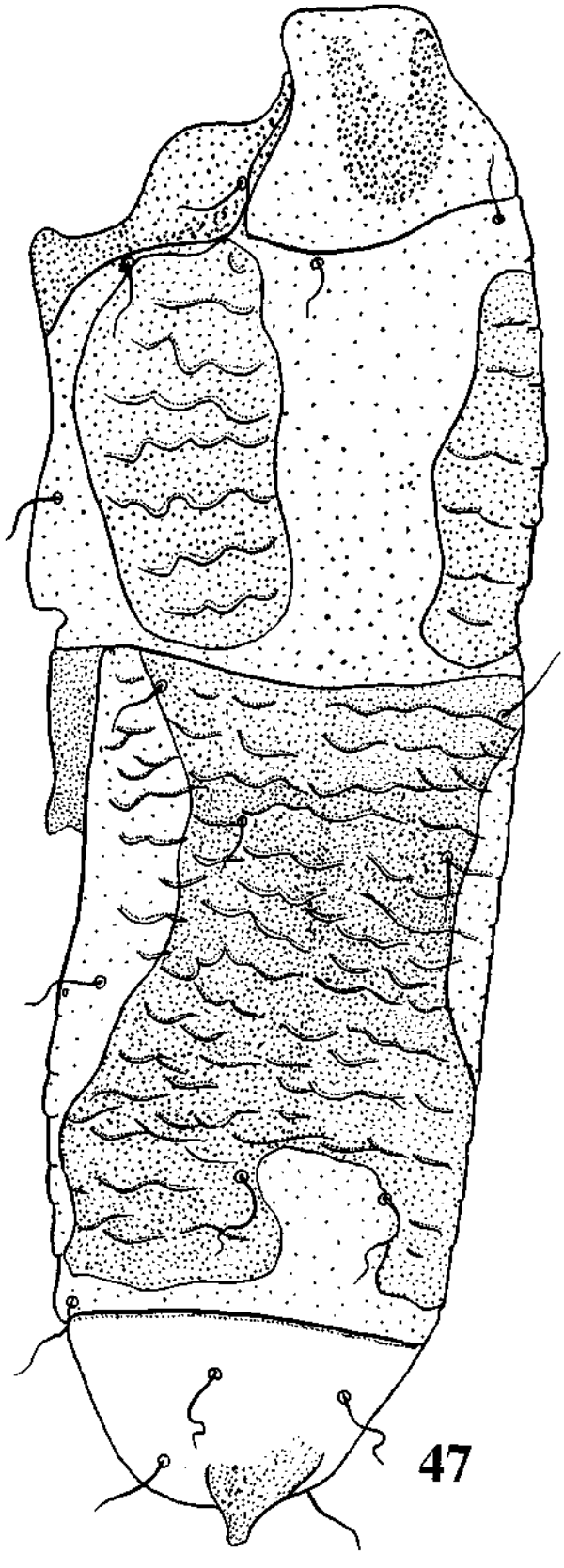
Listrophoroides (Lemurlistrophoroides) lepilemur sp. n.
Figs 49-52

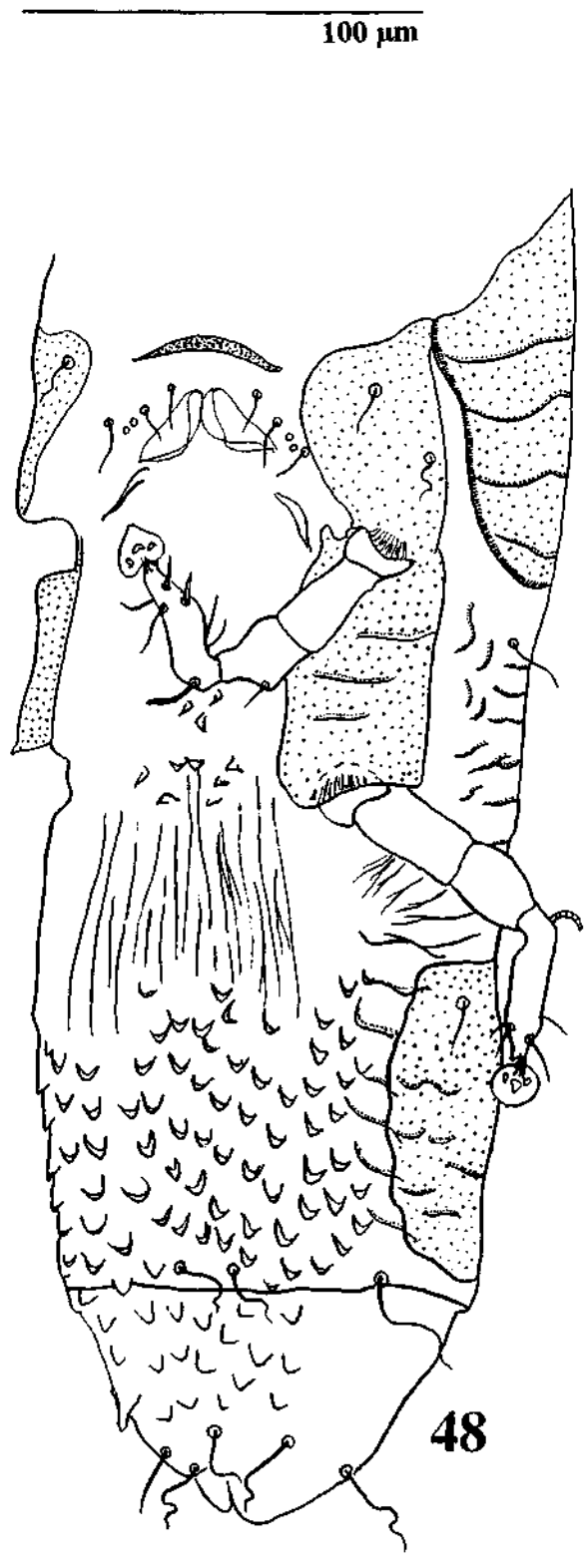
Holotype: ♂ from *Lepilemur leucopus* (Lemuridae), MADAGASCAR: Tolagnaro Prov. Tolagnaro (= Fort Dauphin), 22.I.1994, Boncart (MRAC).
Paratype: ♀: with the same data as the holotype (MRAC).

MALE (holotype). Body, including gnathosoma, 465 long and 185 maximum wide. *Dorsum*. Prescapular shield weakly ornamented. Postscapular shield 100 long, completely ornamented with a scale-like pattern. There is a pair of sclerotized bands in its lateral parts. Hysteronotal shield 215, almost completely covered with a scale-like pattern, excluding most posterior area, behind level of setae *l3*. Posterior extremity widely rounded. Setae *l5* 30 long. *Venter*. Penis about 15 long, curved laterally. Post-anal membrane normally developed. Postgenital

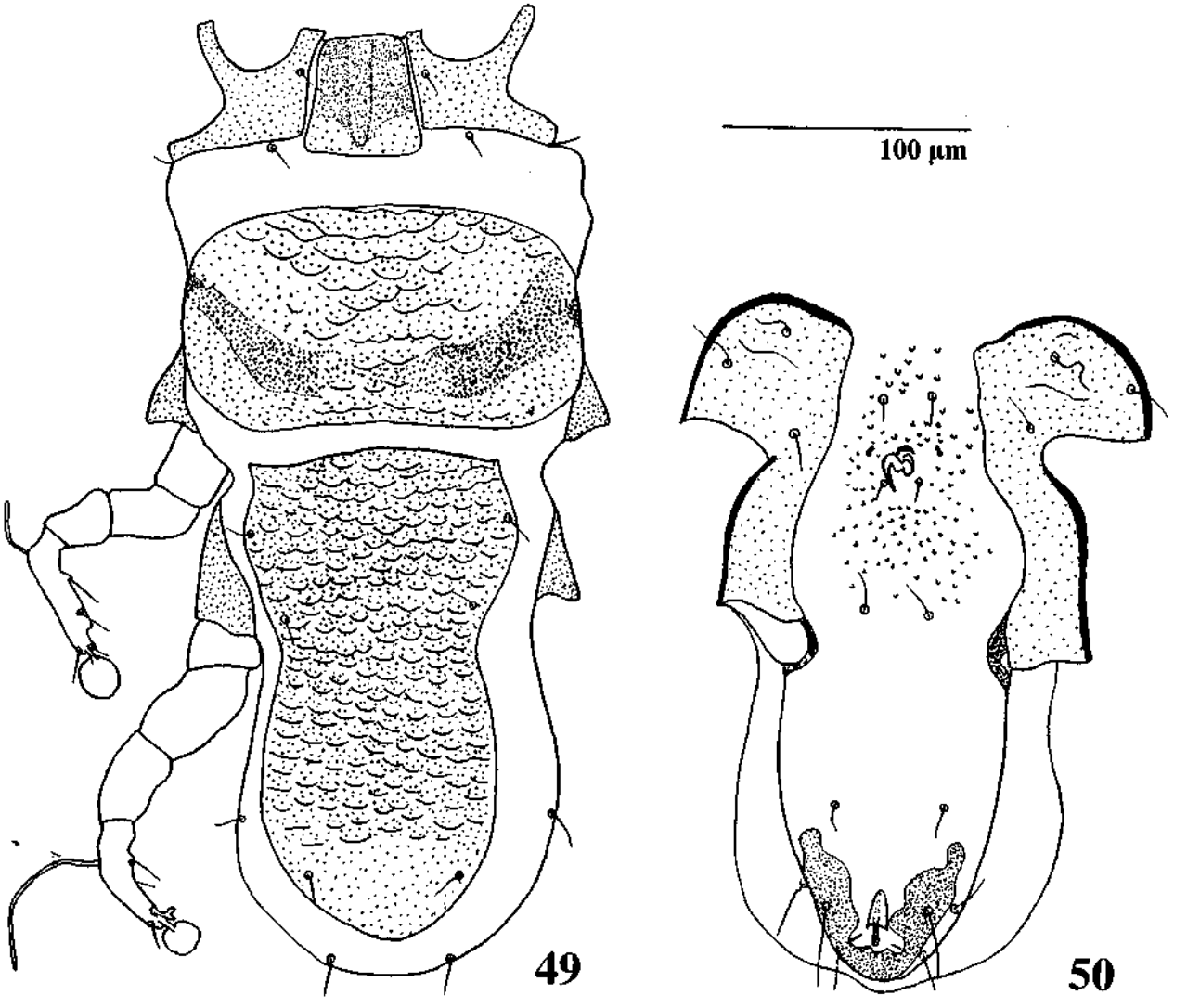


Figs 45, 46. *Listrophoroides (Macroscelistrophoroides) petrodromi* sp. n., male. 45, dorsal view; 46, hysterosoma in ventral view.

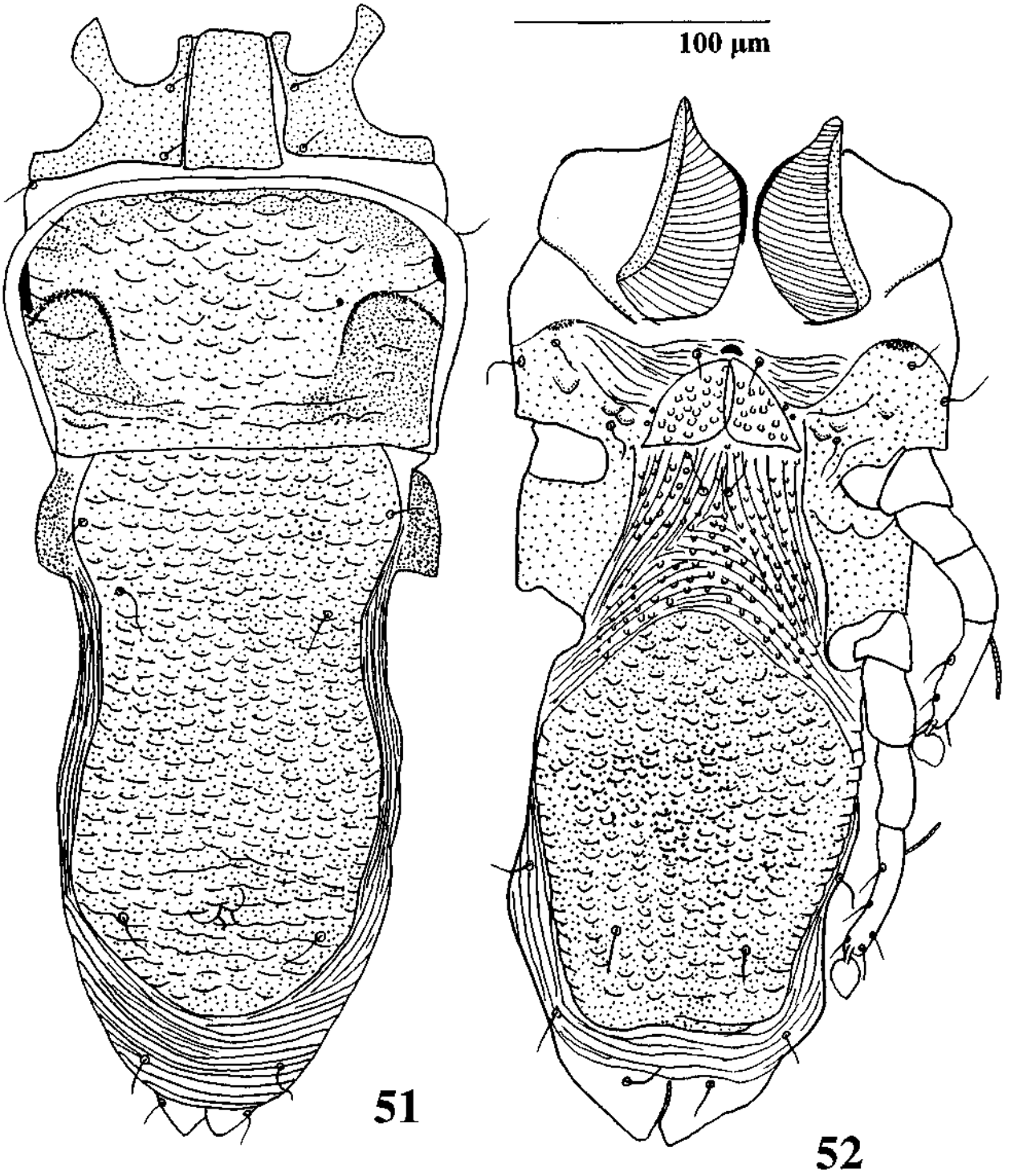




Figs 47, 48. *Listrophoroides (Macroscelistrophoroides) petrodromi* sp. n., female. 47, dorsal view; 48, hysterosoma in ventral view.



Figs 49, 50. *Listrophoroides (Lemurlistrophoroides) lepilemur* sp. n., male. 49, dorsal view; 50, hysterosoma in ventral view.



Figs 51, 52. *Listrophoroides (Lemurlistrophoroides) lepilemur* sp. n., female. 51, dorsal view; 52, hysterosoma in ventral view.

shield lacking. Coxal fields III and IV without projections. Hysterogaster between coxal fields III and IV with small nodules. Opisthogaster sclerotized only in its posterior part, behind level of setae *ai*. Its areas between levels of setae *gp* and *ai* without pattern. Legs III and IV 130 and160 long, respectively. Tibio-tarsi III and IV 50 long. Solenidia of tibio-tarsi III and IV 35 and 65 long, respectively. Female (paratype). Body, including gnathosoma, 515 long and 195 wide. *Dorsum*. Prescapular shield without ornamentation. Postscapular shield 110 long, verricous. There are strongly sclerotized areas in posterio-lateral parts and transversal sclerotized band near the anterior margin of this shield. Hysteronotal shield 230 long, completely covered with ornamentation. Its posterior border widely rounded. *Venter*. Epigynium small. There are numerous nodules under vulvar lips. Hysterogaster covered with numerous tubercules behind coxal fields III and IV. Coxal fields III with a few scales. Opisthogaster covered with large opisthogastric shield. This shield 190 long, bears a scale-like pattern, its anterior margin triangular, with rounded corners, its posterior margin slightly concave.

Differential diagnosis. This new species is closest to *L. dauphinensis* Fain, 1970 from Madagascar lemurs *Lepilemur ruficaudatus, Hapalemur olivaceus* and *Avahi laniger* (Fain 1970b, 1976b) but it differs from the latter species by the following characters: In the female of *L. lepilemur* sp. n. the lateral sclerotized areas of the postscapular shield are large, wide as long. In the male the anterior half of the opisthogaster is devoid of ornamentation. In the female of *L. dauphinensis* the lateral sclerotized areas of the postscapular shield are band-like in shape. In the male the anterior half of opisthogaster is covered with a scale-like pattern.

Genus **Bathyergolichus** Fain, 1970

Bathyergolichus cryptomys sp. n.
Fig. 53

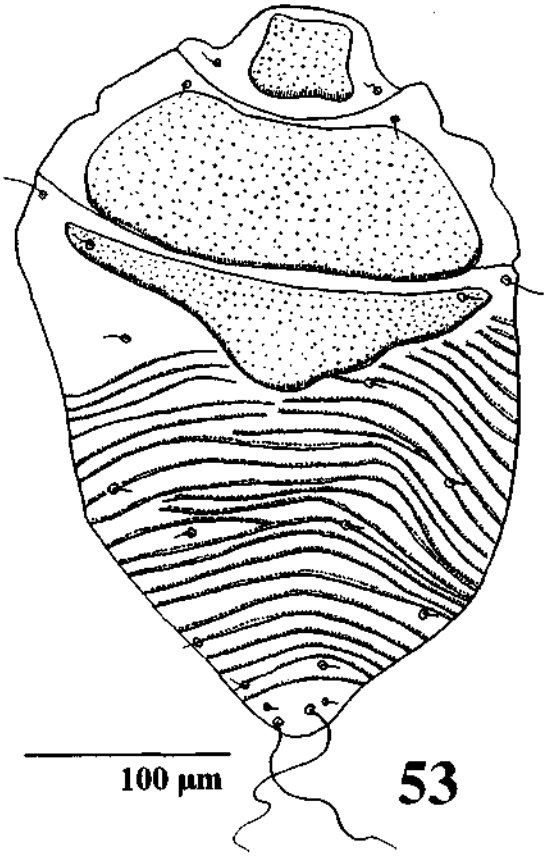


Fig. 53. *Bathyergolichus cryptomys* sp. n., female in dorsal view.

Holotype: ♂ from *Cryptomys hottentotus* (Bathyergidae), SOUTH AFRICA, Natal Prov., Umdoni Park, 27.VII.1975, K.M. Kuyper (MRAC).
Paratype: ♀: 16.VII.1975, with the same data as the holotype (IRSNB).

FEMALE (holotype). Body, including gnathosoma, 380 long and 235 wide. *Dorsum*. Postscapular shield 130 long. Hysteronotal shield present, 70 long. Setae *l5* 150 long. Hysterosoma behind the hysteronotal shield striated. *Venter*. Sternum short, not reaching the level of epimeres II. Epimeres II free; epimeres III fused with epigynium; epimeres IV without projections. Opisthosoma completely striated. Anus ventral.
Differential diagnosis. This new species clearly differs from the other three species known in the genus by the relatively well developed hysteronotal shield in the female. In the other species this shield is reduced or is represented by a pair of small sclerotized patches near the setae *d2* (*B. zumpti* Lawrence, 1956).

Genus **Caenolestolichus** g. n.

DIAGNOSIS. Body relatively flat. Prescapular and postscapular shields completely reduced in both sexes. Membranes of coxal apodemes I and II normally developed and closely situated to each other. Posterior membranes more than 2.5 larger than anterior ones. Complete set of idiosomal setae present. Trochanters I-II and IV without setae, trochanters III bearing 1 seta.
FEMALE. Hysteronotal shield well developed, but deeply concave in its anterior and posterior parts, like butterflies wings. Idiosomal surface without scales. Epigynium poorly developed. Copulatory papilla absent. Solenidia of tarsi III and IV situated in basal parts of the segments.
MALE. Hysteronotal shield well developed and deeply excavated in its anterior part. Genital suckers poorly developed. Epimeres III and IV fused in midline. Setae *ae* hair-like. Opisthosomal membrane poorly developed. Legs IV hypertrophied, their femora with crests on inner side, tarsi IV curved. Solenidia of tibio-tarsi III situated in basal part of the segment, solenidia of tibio-tarsi IV situated in the middle part of segment.
Differential diagnosis. This new genus is clearly distinguished from the other genera associated with South American marsupials i.e. *Dromiciolichus* Fain, 1970 and *Didelphoecius* Fain, 1970 by the absence of the prescapular and postscapular shields in both sexes, by the absence of teeth on the idiosomal surface of the female and by the poor development of the suckers in the male.
This genus includes only the type species ***C. lukoschusi*** sp. n.

Caenolestolichus lukoschusi sp. n.
Figs 54-59

Holotype: ♂ from *Caenolestes fuliginosus* (Caenolestidae), ECUADOR: Pichincha Prov., Chillogallo, 8900 feet 6.VI.1980, R. Voss (UMMZ). *Paratypes*: 3 ♂ and 4♀ with the same data as the holotype (UMMZ, IRSNB, ZIN).
The mites were collected by Dr F. Lukoschus from rats housed in the University of Zoology, Ann Arbor, Michigan, USA (UMMZ).

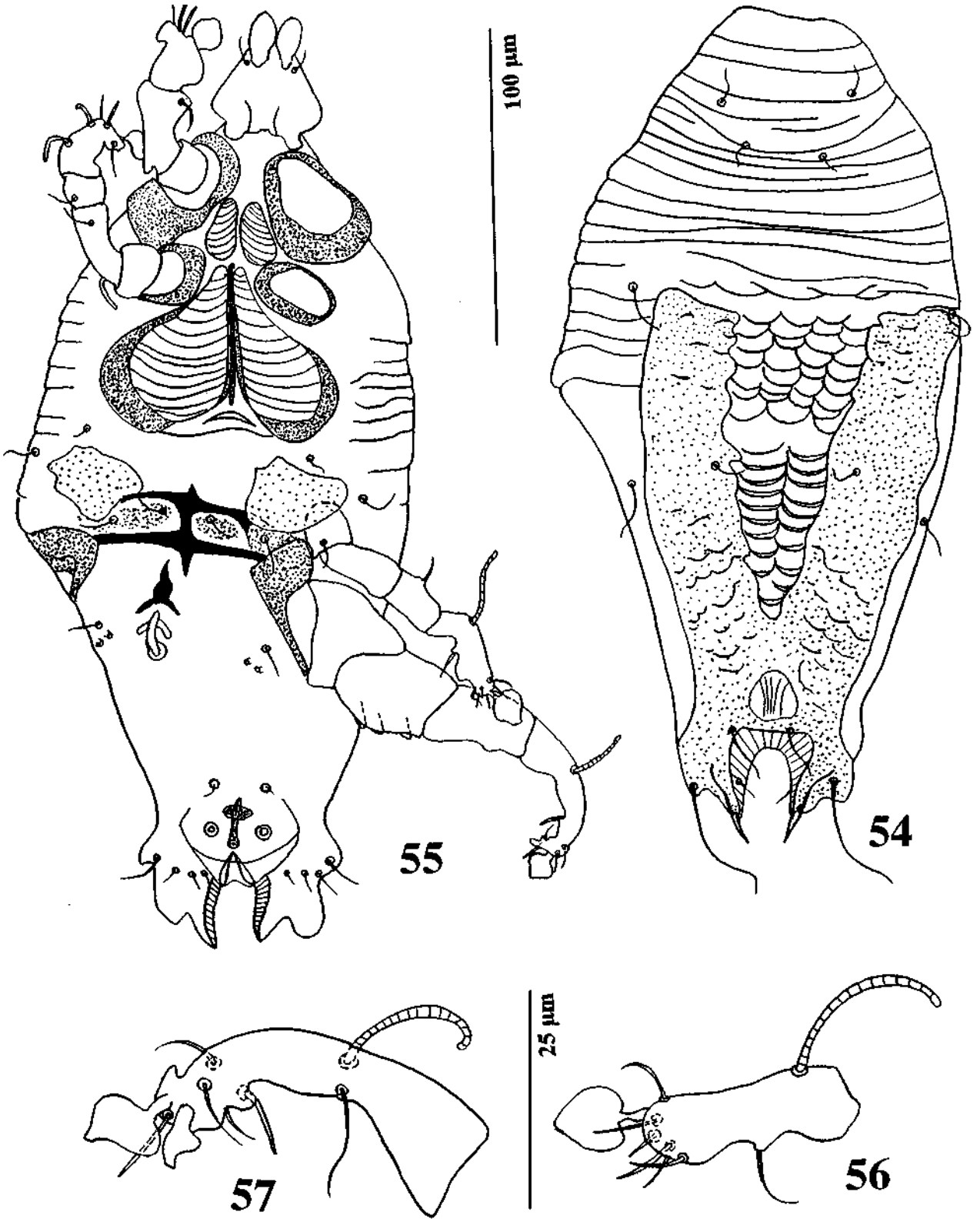
MALE (holotype). Body, including gnathosoma, 300 long and 125 wide. *Dorsum*: Propodosoma striated. Hysteronotal shield 165 long, slightly ornamented and deeply excavated in its anterior part. Length of this excavation 100 long. Setae *l5* 50 long. Setae *d5* thickened. Posterior extremity deeply concave. Length of this excavation 25. *Venter*. Penis 15 long. Legs III 85 long, legs IV 125 long. Femora IV with 3 well developed crests on their inner surface. Tibio-tarsi IV curved, 50 long. Solenidia of tibio-tarsi III and IV 30 and 25 long, respectively.
FEMALE (paratype). Body, including gnathosoma, 325 long and 125 wide. *Dorsum*. Hysteronotal shield 115 long. Length of its anterior excavation 65. Length of bridge between lateral parts of hysteronotal shield 25. Setae *d2* situated on the shield. Distance between setae *d3* 65. *Venter*. Legs III and IV about 85 long.
Etymology. This species is named in honour of the late Dr. F. Lukoschus who collected the mites.

Genus **Austrochirus** Womersley, 1943

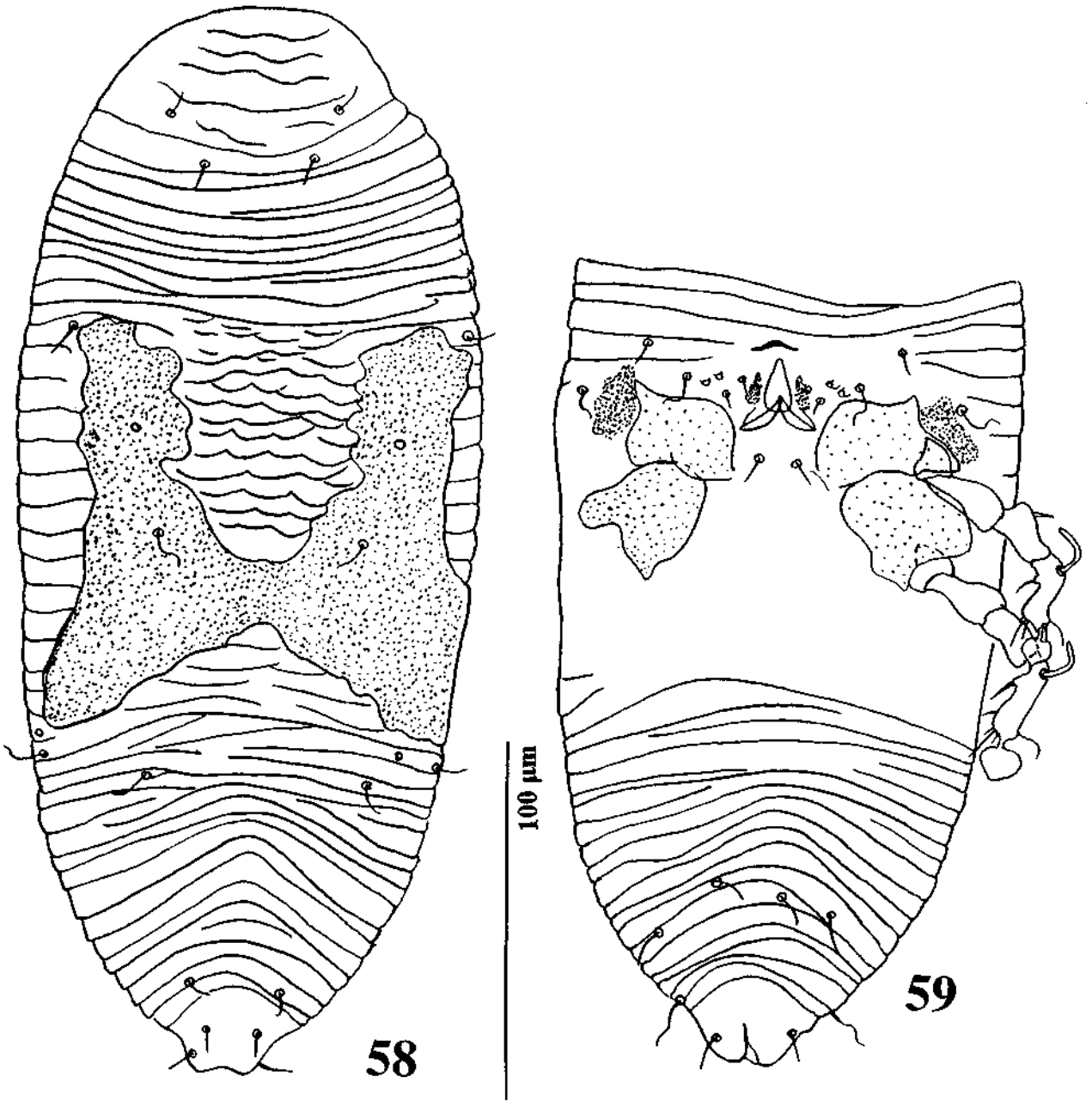
Subgenus **Austrochirus** s. str.

Austrochirus (Austrochirus) peroryctes sp. n.
Figs 60-62

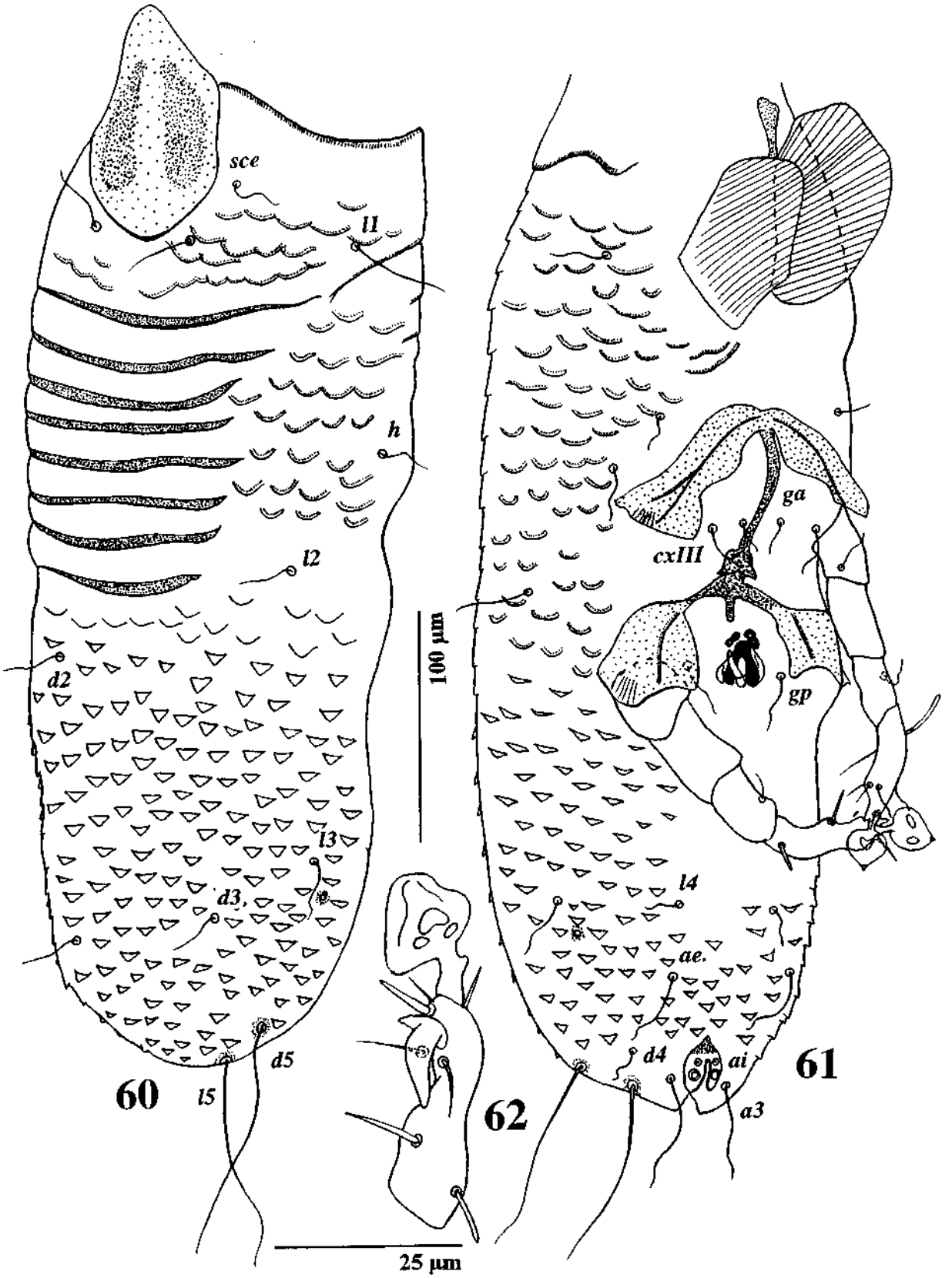
Holotype: ♂ from *Peroryctes raffrayanus* (Peroryctidae) (rat n°?52642, BBM-NG), PAPUA-NEW GUINEA, Morobe Prov., Saruwaged Range, 2.VIII.1966 (BMH).



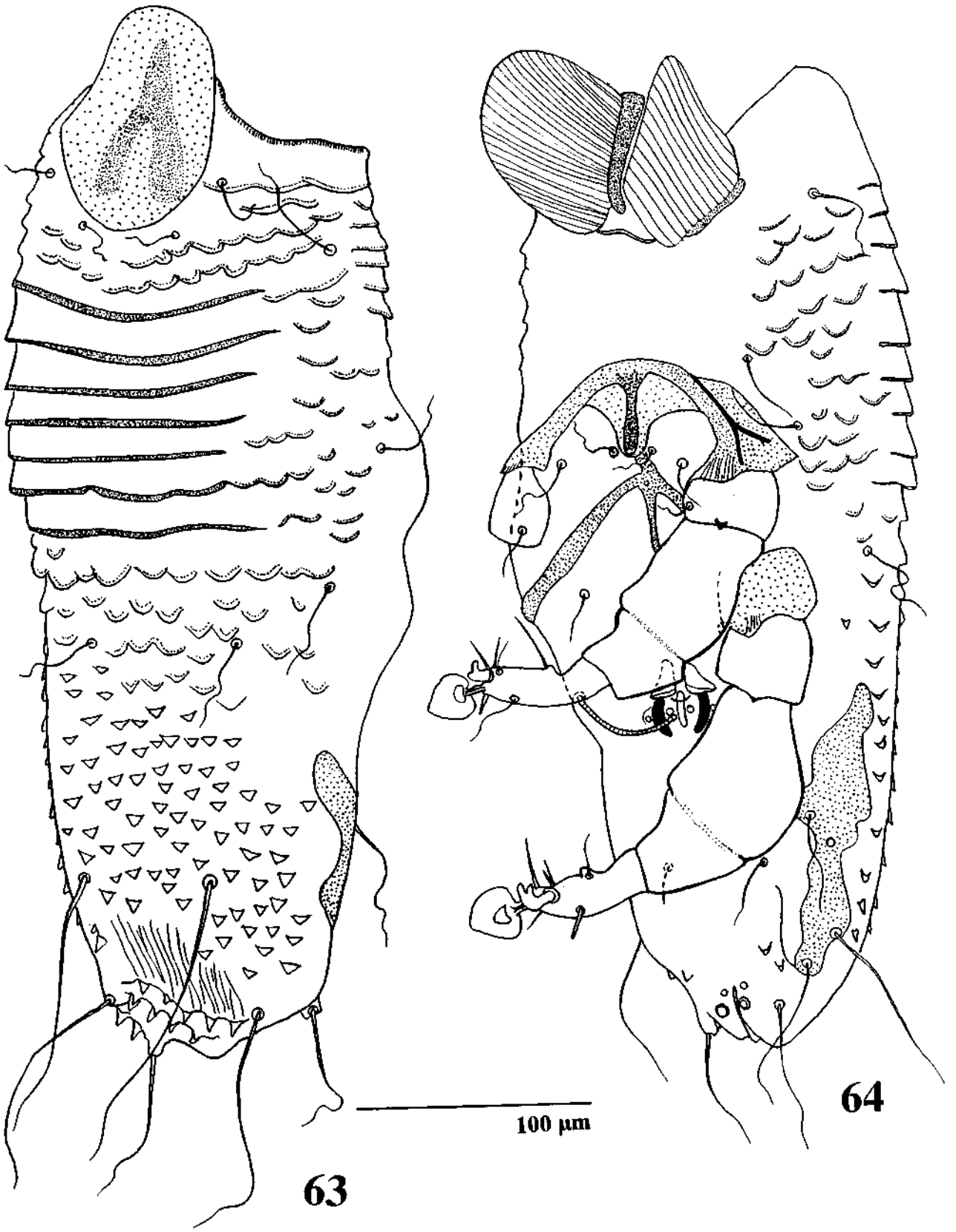
Figs 54-57. *Caenolestolichus lukoschusi* g. n., sp. n., male. 54, dorsal view; 55, ventral view; 56, tibiotarsus III in lateral view; 57, tibiotarsus IV in lateral view.



Figs 58, 59. *Caenolestolichus lukoschusi* g. n., sp. n., female. 58, dorsal view; 59, ventral view.



Figs 60-62. *Austrochirus (Austrochirus) peroryctes* sp. n., male. 60, dorsal view; 61, ventral view; 62, tibiotarsus IV in ventral view.



Figs 63, 64. *Austrochirus (Austrochiroides) dubininae* sp. n., male. 63, dorsal view; 64, ventral view.

Paratype: ♂: with the same data as the holotype (IRSNB).

MALE (holotype). Body, including gnathosoma, 525 long and 165 wide. *Dorsum*. Propodosoma covered with a scale-like pattern. Postscapular shield represented by 7 transverse lines. Hysteronotal shield completely lacking. Opisthonotum covered with numerous triangular scales. *Venter*. Postgenital sclerite lost. Opisthogaster with scales in its posterior third. Legs III and IV subequal in length. Femora and genua IV not fused. Length of setae: *l1* 33, *l5* and *d5* about 100, *a3* 40 and *ae* 50, *sci*, *sce*, *h*, *l2* and *d2* about 15.

Differential diagnosis. This new species is closely related to *Austrochirus squamiferus* Fain, 1970 from *Perameles natusa* (Peramelidae) in Australia (Fain 1970a, 1972) but differs from it by the following characters: In *A. peroryctes* sp. n. the setae *h*, *d2*, *d3* and *l2* are short, the postgenital shield is lost, the opisthogaster bears scales in the posterior third. In *A. squamiferus* the setae *h*, *d2*, *d3* and *l2* are long (longer than 60), the postgenital shield is well developed, the opisthogaster lacks scales.

Subgenus **Austrochiroides** Fain, 1970

Austrochirus (Austrochiroides) dubininae sp. n. Figs 63, 64

Holotype: ♂ from *Peroryctes raffrayanus* (Peroryctidae) (rat n°?52642, BBM-NG), PAPUA-NEW GUINEA, Saruwaged Range, 2.VIII.1966 (BMH).

MALE (holotype). Body, including gnathosoma, 400 long and 125 wide. *Dorsum*. Propodosoma covered with a scale-like pattern. Postscapular shield represented by 7 transverse lines. Hysteronotal shield with a pair of lateral sclerotized bands, 25 wide, bearing setae *l4*, *d5* and *ae*. Opisthonotum covered with numerous scales except in its postero-median part which is striated and without scales. *Venter*. Postgenital shield lacking. Opisthosoma almost without scales except for 2-3 scales situated near the setae *a3*. Legs III and IV hypertrophied, their femora and genua almost fused in the median part. Length of setae: *d2* 25, *d3* 100, *d4* 45, *d5* 65, *l2* 35, *l3* 10, *l4* 35, *l5* 130, *ae* 35 and *a3* 50.

Differential diagnosis. This new species is closest to *Austrochirus mcmillani* Domrow, 1961 from Australian marsupials of the family Peramelidae (Domrow 1961, Fain 1972b) but it differs from it by the following characters: In *Austrochirus dubininae* sp. n. the hysteronotum is covered by scales, the setae *l4* are 2 times shorter than *d5* and slightly shorter than *d4*. In *A. mcmillani* the hysteronotum is devoid of scales, the setae *l4* are 1.5 times longer than *d5* and more than 7 times longer than *d4*.

Etymology. This species is named in honour of Dr. H. Dubinina, Zoological Institute, Russian Academy of Sciences, St. Petersburg, Russia.

Acknowledgements. For this research Dr. A. V. Bochkov was beneficiary of a grant from the Belgian Federal Services for Scientific, Technical and Cultural Affairs.

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