

New species of mites parasitic on the skin of birds (Acari Epidermoptidae and Dermationidae)

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Summary

Two new epidermoptid (Epidermoptidae) and seven dermationid (Dermationidae) species belonging to five different genera are described here: *Rallepidermoptes rallicola* sp. n. from *Gallinula chloropus* (Gruiformes: Rallidae) from the Netherlands, *Myialges (Metamicrolichus) pelecani* sp. n. from *Pelecanus occidentalis* (Pelecaniformes: Pelecanidae) from Galapagos Islands (Epidermoptidae); *Passeroptes lamprotornis* sp. n. from *Lamprotornis purpuropterus* (Passeriformes: Sturnidae) from Africa, *Passeroptes ampeliceps* sp. n. from *Ampeliceps coronatus* (Passeriformes: Sturnidae) from Thailand, *Passeroptes turdoides* sp. n. from *Turdoides jardineii* (Passeriformes: Orthonychidae) from South Africa, *Passeroptes hirundiphilus* sp. n. from *Hirundo nigrita* and *Riparia cineta* (Passeriformes: Hirundinidae) from Democratic Republic Congo, *Passeroptes oenanthe* sp. n. from *Oenanthe oenanthe* (Passeriformes: Prunellidae) from the Netherlands, *Paradermation colii* sp. n. from *Colius striatus* (Coliiformes: Coliidae) from Rwanda and *Psittophagoides brotogeris* sp. n. from *Brotogeris versicolorus* (Psittaciformes: Psittacidae) from Brazil (Dermationidae). The type series of *Passeroptes dermicola* (TROUESSART, 1886), type species of the genus *Passeroptes* FAIN, 1964, is re-examined and redescribed and the two subspecies *P. dermicola cyanerpis* FAIN, 1965 and *P. dermicola lamprocolii* FAIN, 1965 are raised here to the species level.

Keywords : Taxonomy. Acari. Epidermoptidae. Dermationidae. Birds.

Introduction

Astigmatid parasitic mites of the families Epidermoptidae and Dermationidae are permanent parasites living on the skin of birds. Mites of these families have been recorded from all major groups of recent birds except ratites (FAIN, 1965; GAUD & ATYEO, 1996). Some representatives of these families cause various mange-like diseases in their hosts (FAIN, 1965). These families, commonly referred together with the family Knemidokoptidae to as the epidermoptid complex, form a clear monophyletic branch within the feather mite superfamily Analgoidea (DABERT & MIRONOV, 1999).

A complete revision and the creation of a new taxonomic concept of the epidermoptoid mites were made by FAIN (1965). This taxonomic system was almost completely accepted in the recent generic revision of feather mites of the World with only a few additions (GAUD & ATYEO, 1996). Recently, a new subfamily, Otocoptoidinae, with

the single genus *Otocoptoides* FAIN et BOCHKOV, 2001 has been established within the Epidermoptidae (FAIN & BOCHKOV, 2001).

The family Epidermoptidae at the present time includes three genera and about 35 species. These mites display a great diversity in their morphological appearances and in the forms of parasitism that they cause. The females of some taxa of this family use other parasites of birds, louseflies (Diptera: Hippoboscidae) and chewing lice of the families Menoponidae and Laemo-bothriidae (Mallophaga) for their transportation. This phoresy on fast moving or flying parasitic insects allows epidermoptids to reach the bodies of new hosts and by this way to extend their geographical range.

The family Dermationidae presently includes eight genera and about 45 species. These mites are rather motile parasites. They are well adapted for attaching at the skin by means of relatively large ambulacral discs and various hook-like structures on the ventral surface of their legs (FAIN, 1965). At the present time, only 80 species of these two

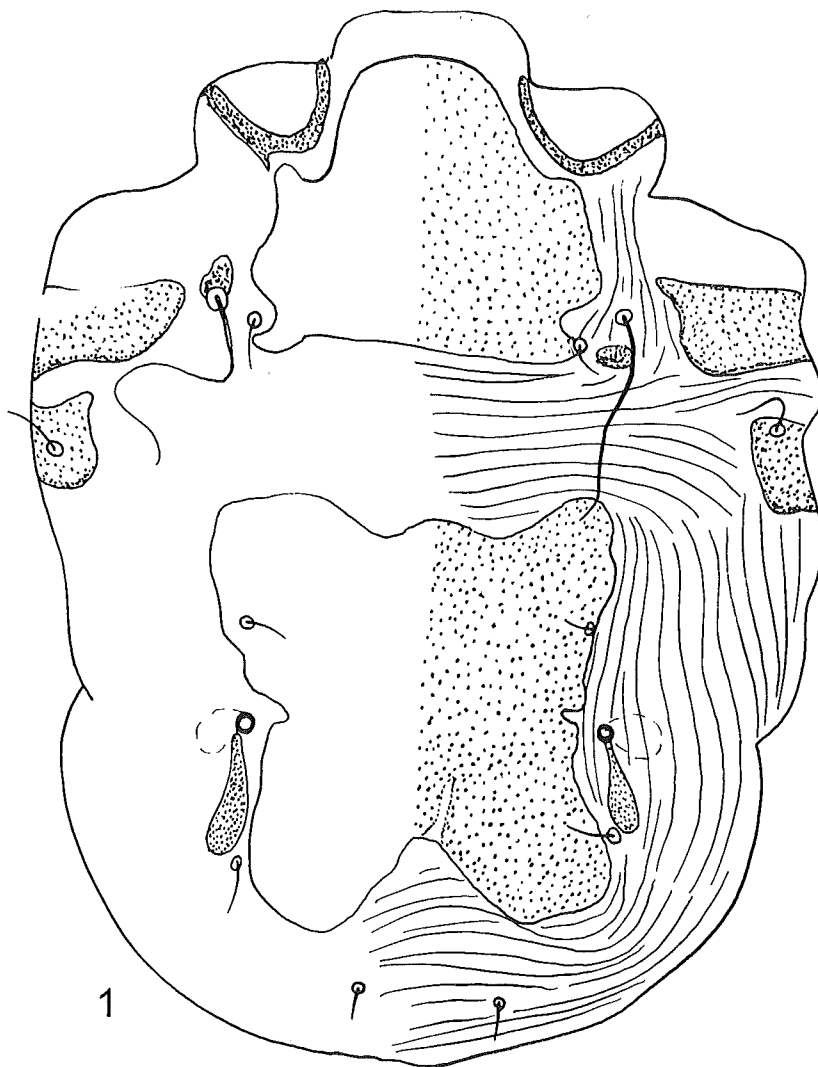


Fig 1. Female of *Rallepidermoptes rallicola* n. sp. in dorsal view. Scale line 100 μ m.

families have been recognized. It is worthy of note that only a few papers dealing with epidermoptoid mites have been published after the publication of the FAIN's monograph (1965) i.e., (LUKOSCHUS *et al.*, 1969; FAIN & ATYEO, 1975; FAIN *et al.*, 1973; FAIN & GAUD, 1975; FAIN *et al.*, 1987).

The examination of material deposited in the collection of the Institut royal des Sciences naturelles de Belgique, Bruxelles allows us to discover also two new epidermoptid and seven dermationid species belonging to five genera. The present paper deals with the descriptions of these species. In addition, the type series of *Passeroptes dermicola* (TROUESSART, 1886), type species of the genus *Passeroptes* FAIN, 1964 is re-examined and the two subspecies *P. dermicola cyanerpis* FAIN, 1965 and *P. dermicola lamprocolii* FAIN, 1965 are raised here to the species level.

The nomenclature of idiosomal setae follows FAIN (1965). All the measurements in descriptions are given in micrometres (μ m). The Latin names of birds follow the checklist of HOWARD and MOORE (1991). Deposition of typical material: In the Musée royal de l'Afrique Centrale (Tervuren, Belgium) for the mites from Afrotropical birds and in the Institut royal des Sciences naturelles de Belgique (Bruxelles) for those from other countries.

Systematics

FAMILY EPIDERMLOPTIDAE TROUESSART, 1892

Genus *Rallepidermoptes* FAIN, 1965

1. *Rallepidermoptes rallicola* sp. n. (Figs 1, 2)

Female (holotype). Total length 285 (gnathosoma included). *Gnathosoma* with very



Fig 2. Female of *Rallepidermoptes rallicola* n. sp. in ventral view. Scale line 100 μ m.

small rounded backwardly directed processes on the ventral surface. *Idiosoma* broadly oval, 275 long and 185 wide, its striation scarcely visible. Sejugal furrow almost invisible. *Dorsum*. Propodosomal shield 85 long in median line, its maximum width 90, with an almost straight posterior margin. Setae *sce* situated on small platelets widely separated from this shield, *sci* situated free on striated cuticle. Laterocoxal and humeral sclerites well developed. Maximum length of hysterosomal shield 100, maximum width 95, its posterior margin with median incision 20 long. Ratio between maximal length of the hysterosomal shield and length of its median incision 5 : 1. Hysterosomal shield flanked in its posterior part by a pair of small and narrow plates, 20 long and 5 wide. *Venter*. Epimeres I and epigynium contiguous, length of epigynium 35. Epimeres II to IV free. Lengths of setae: *sce* 65, *sci* 6, *h* 70, *sh* 25, *l1* 8, *l2* and *l3* 15, *l4* 15, *l5* 200, *d4* and *d5* 5, *ai* and *ae* 15. *Leg* chaetotaxy typical for the genus.

Male. Unknown.

DIFFERENTIAL DIAGNOSIS : This new species is closely related to *Rallepidermoptes schoutedeni* (FAIN, 1965) from *Laterallus melanophaius* (Gruiformes: Rallidae) from South America. In the female of both species, hysteronotal shield is flanked by a pair of small plates. It differs from *R. schoutedeni* by the proportions of these plates (length/width 4 : 1) and by the length of posterior median incision of the hysterosomal shield (20 long), the tip of this incision remains far from the level of oil gland orifices. In *R. schoutedeni*, the ratio length/width of plates flanking the hysterosomal shield is 1.2 : 1, the median incision of hysterosomal shield is 65 long and its tip is situated in front of the orifices of oil glands.

MATERIAL EXAMINED : Female holotype from *Gallinula chloropus* (Gruiformes: Rallidae), the Netherlands, Nijmegen, 13. I. 1967 (Coll. F.S. LUKOSCHUS).

ETYMOLOGY : The species name *rallicola* refers to the family name of the host.

Genus *Myialges* TROUESSART, 1906

Subgenus *Metamicrolichus* FAIN, 1965

2. *Myialges (Metamicrolichus) pelecani* sp. n.

(Figs 3-4)

Male (holotype). Total length, including gnathosoma, 430 (460 in one paratype). *Idiosoma* 365 (400) long and 330 (365) wide. All shields

devoid of ornamentation. *Dorsum*. Propodosomal shield very broad, 140 long in median line, maximum width 215. There are 2 well-developed hysterosomal shields, about 175 long and 80 wide, carrying setae *l2*. Setae *l3* and orifices of oil glands situated on the striated cuticle off this shield. Setae *d2* and *d3* lacking. Posterior lobes and adanal suckers completely lacking. *Venter*. Epimeres I convergent and arriving very close together in the median line, but not really contiguous, their posterior parts divergent; epimeres II to IV free. All coxae with punctate shields. Anal shields hypertrophied and strongly sclerotized, with chitinous crest. Lengths of setae: *sce* 166, *sci* 85, *h* 165, *sh* 90, *l1* 140, *l2* 150, *l3* 140, *l4* 100, *l5* 250, *d4* 160, *d5* 215, *ai* 85 and *ae* 65. *Legs*. Anterior legs thick and conical, tarsi ending in a small and slightly re-curved process. Posterior tarsi with a forked apico-ventral process. All pulvilli bilobate. Trochanters I and II without an anterior process. Chaetotaxy typical for the genus.

Female. Unknown.

DIFFERENTIAL DIAGNOSIS : The male of this new species differs from all the other species of the subgenus *Metamicrolichus* by the large paired hysterosomal shields.

MATERIAL EXAMINED : Male holotype and a single male paratype from *Pelecanus occidentalis* (Pelecaniformes: Pelecanidae), Galapagos Islands, no other data.

ETYMOLOGY : The species name *pelecani* refers to the generic name of the host.

FAMILY DERMATIONIDAE FAIN, 1965

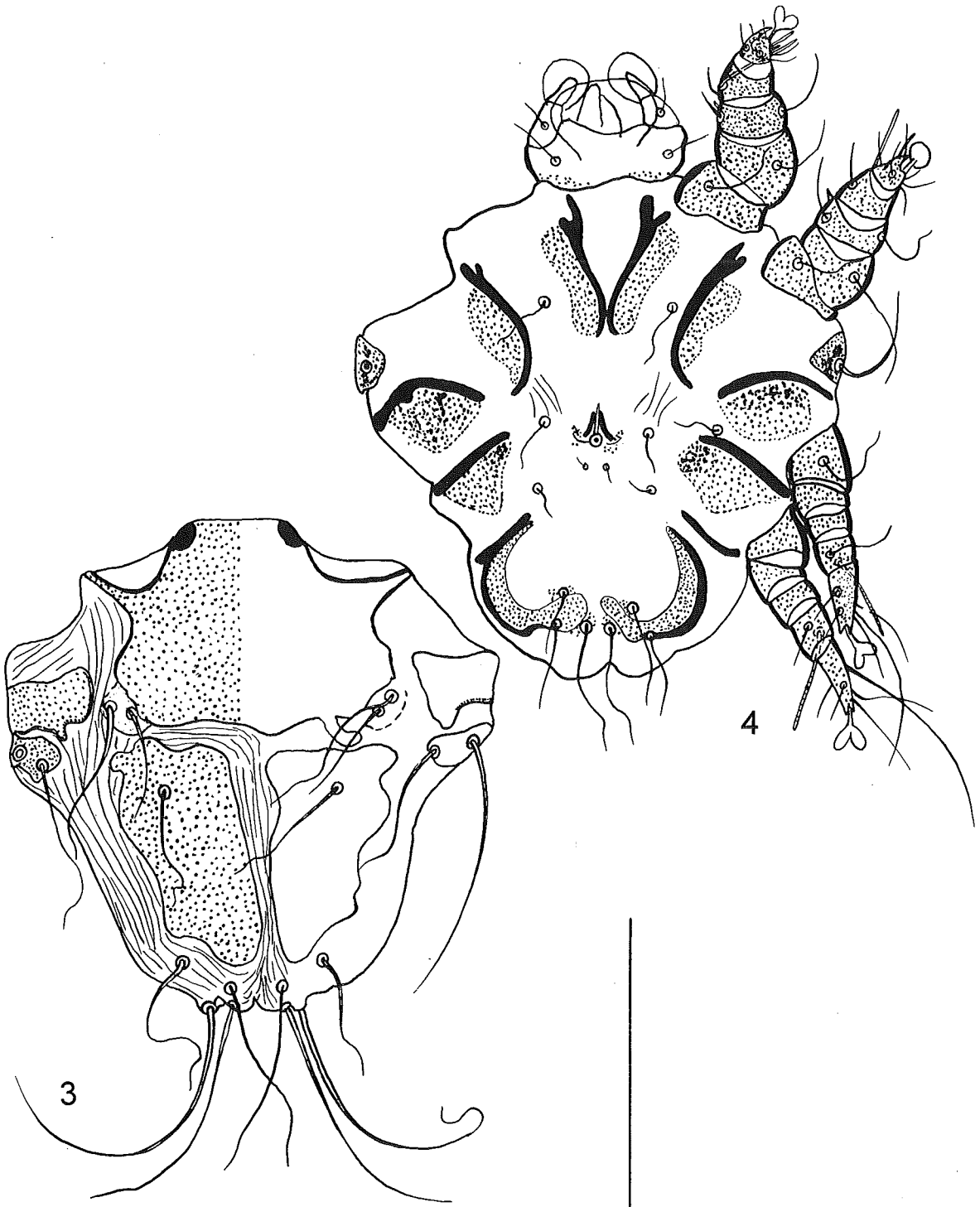
Genus *Passeroptes* FAIN, 1964

3. *Passeroptes dermicola* (TROUESSART, 1886)

(Figs 5-10)

MATERIAL EXAMINED. Lectotype female, 4 female and 2 male paralectotypes from *Passer domesticus* (Passeriformes: Ploceidae), France (Coll. E. TROUESSART). Female from the type host, Louvain-la Neuve, Belgium (Coll. A. FAIN). Female from the type host, Zoo of Antwerp (Coll. A. FAIN).

REMARKS. In the revision of the family Epidermoptidae (FAIN, 1965), the species *Passeroptes dermicola* was described from the typical material (5 females and 2 males housed in the Museum d'Histoire Naturelle, Paris). This species had been collected from *Passer domesticus*



Figs 3-4. *Myialges (Metamicrolichus) pelecani* n. sp. Male in dorsal view (3) and in ventral view (4). Scale line 100 μ m.

in France, from an unknown locality.

In the monograph of FAIN (1965) a lectotype female and an allotype male (= paralectotype) were designated among this typical material. The allotype male was redescribed and redepicted (Figs 142 and 144). The lectotype female was redescribed but not depicted owing to the poor

condition of this specimen (loss of some setae). The female that was depicted in this monograph did not belong to the type series but was a specimen that we had taken from a *Passer domesticus*, which died in the Zoo of Antwerp, Belgium (and not in the "City" of Antwerp as related in the monograph). This female was in very good

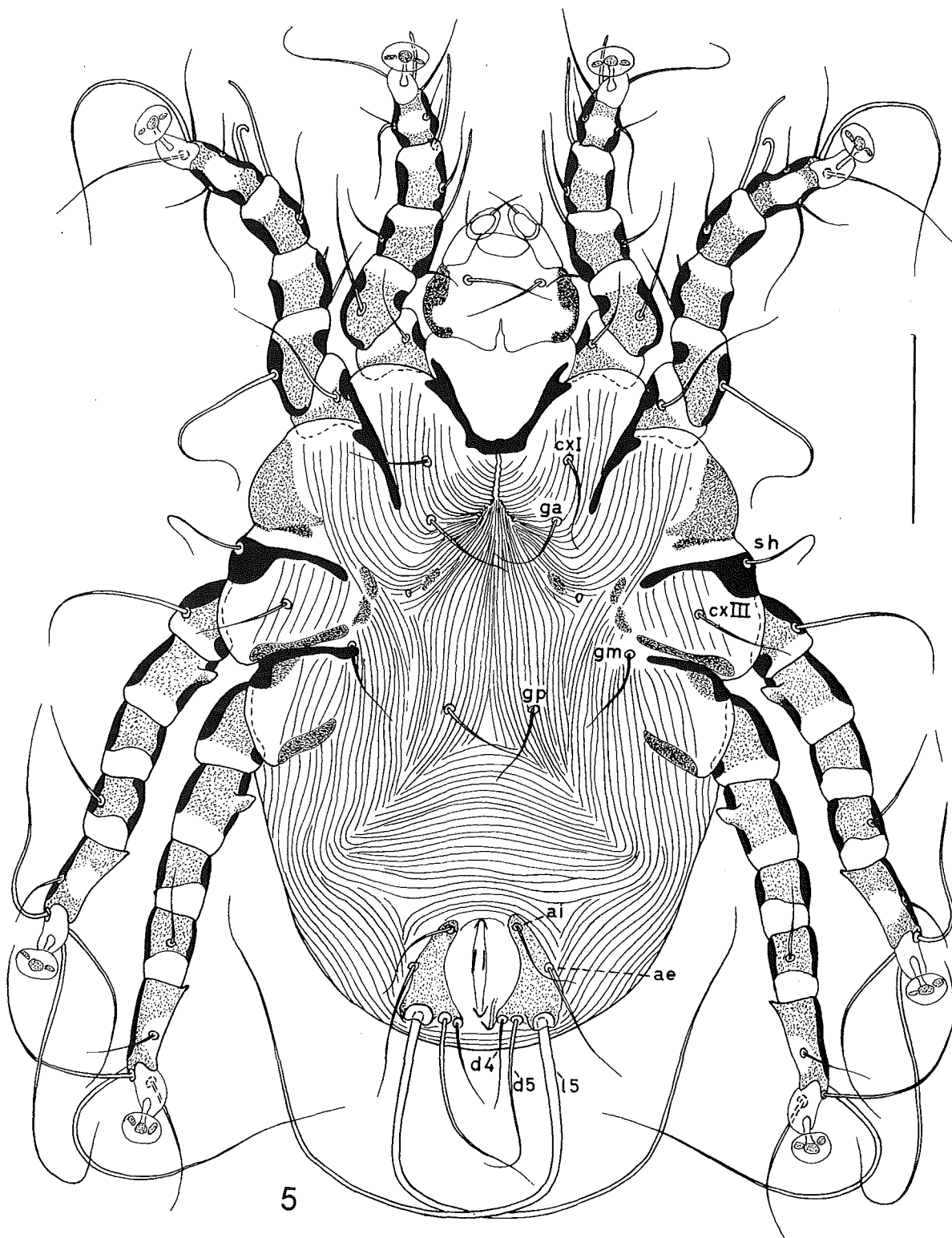


Fig. 5. Female of *Passeroptes dermicola* TROUBESSART in ventral view. Specimen from a sparrow from the Zoo of Antwerp. Scale line 0.05 mm (From FAIN, 1965: Fig. 141).

condition and resembled very closely the lectotype in all the characters (e.g. shape and size of dorsal shields, chaetotaxy of idiosoma, shape of epimera and of coxae etc ...). It differed only by the presence of the setae *l2* (lacking in the 4 typical

females) and the slightly longer tarsi (see below).

We have examined numerous passeriform birds of different families, which died during their quarantine or had spent some time in the Zoo. A part of them were parasitized by a *Passeroptes* sp.

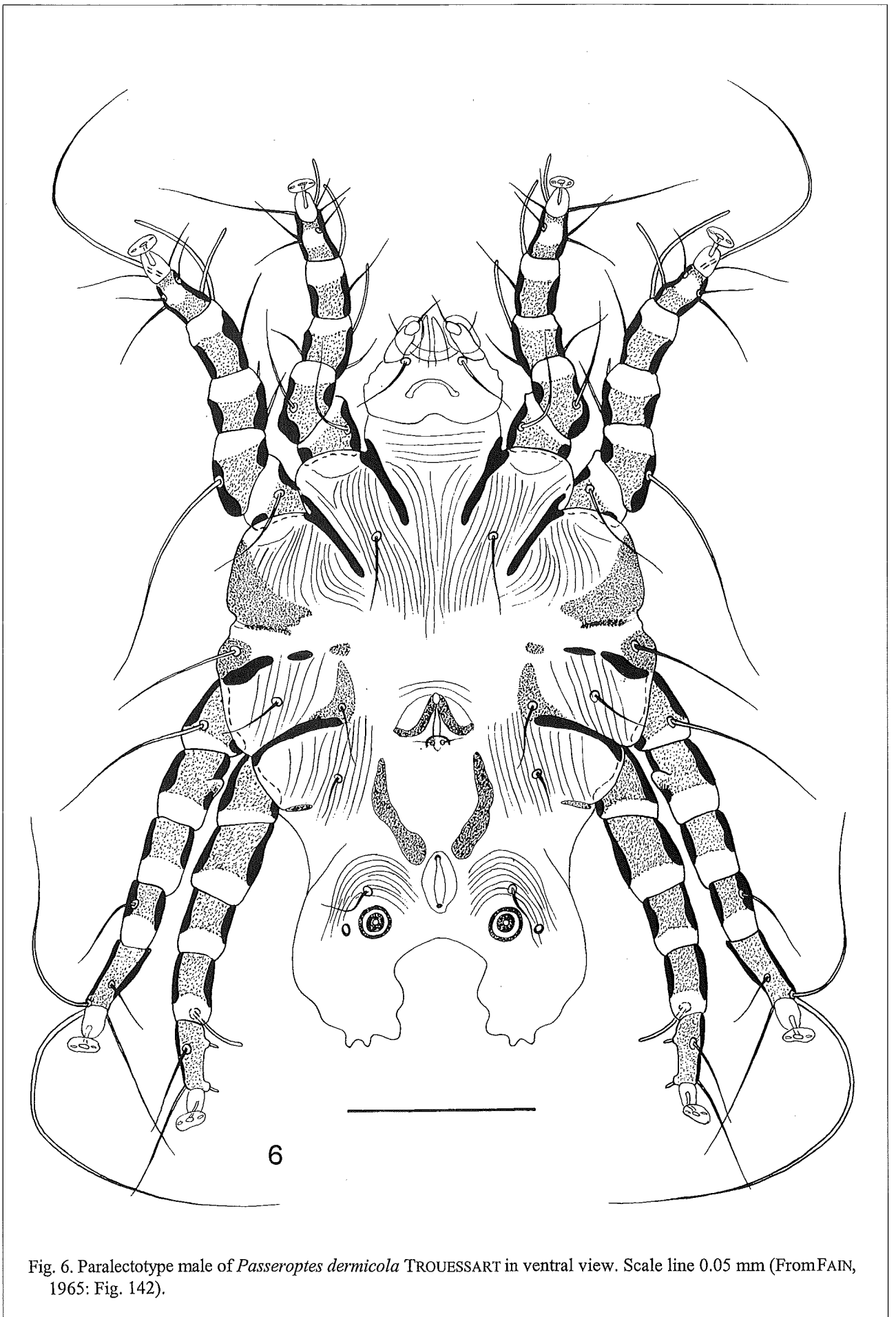
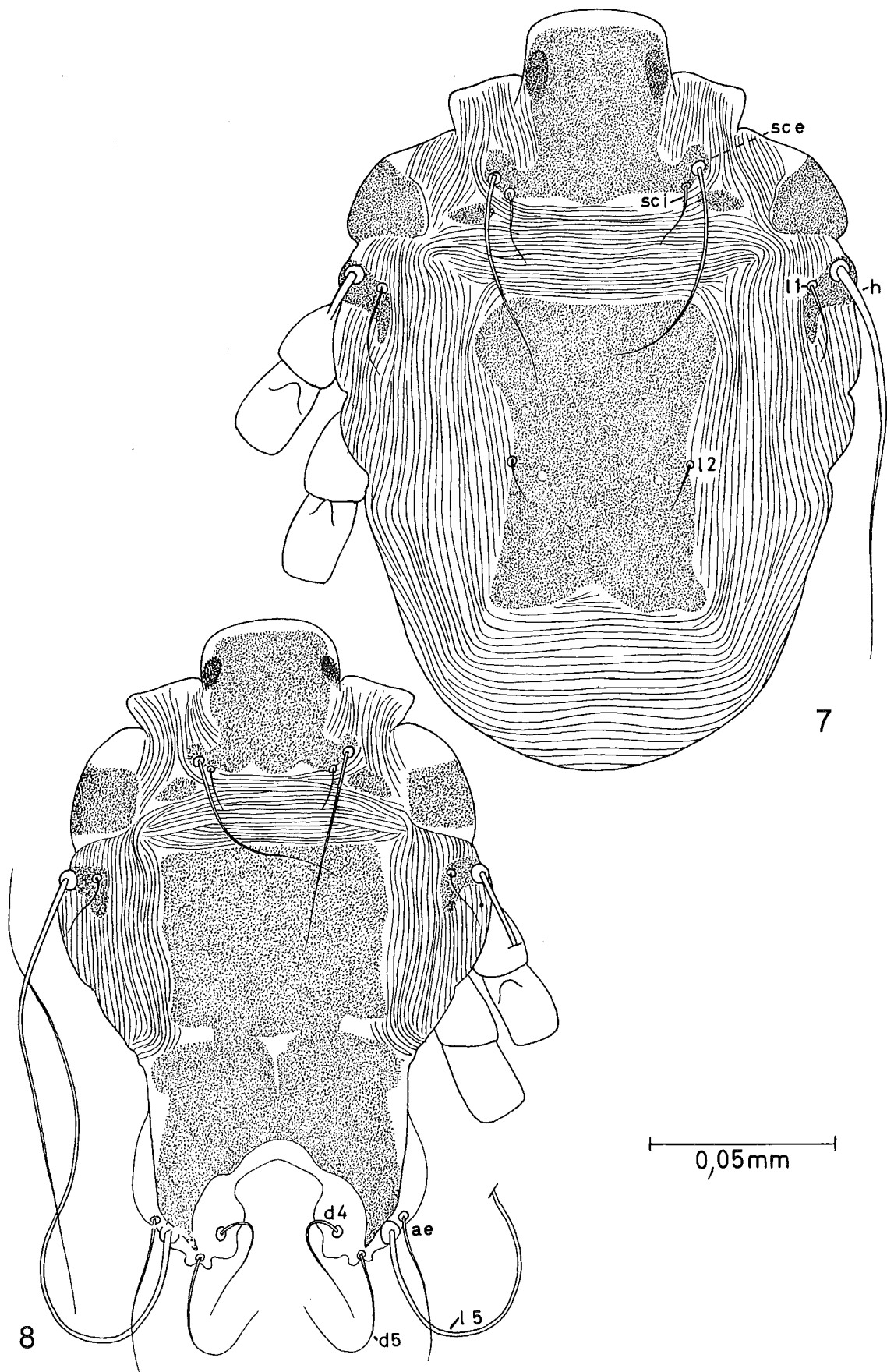
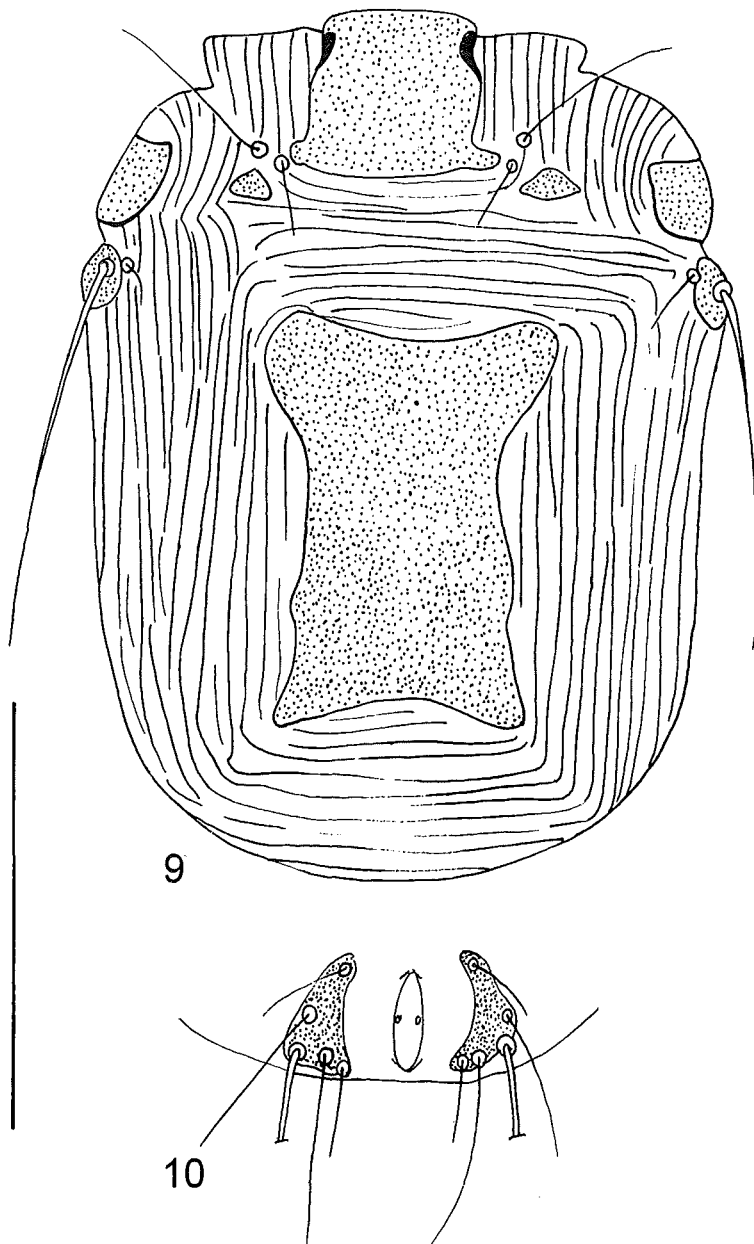


Fig. 6. Paralectotype male of *Passeroptes dermicola* TROUSSERT in ventral view. Scale line 0.05 mm (From FAIN, 1965: Fig. 142).



Figs. 7-8. *Passeroptes dermicola* TROUESSART. Female in dorsal view (from a sparrow that died in the Zoo of Antwerp) (7); paralectotype male in dorsal view (8). Scale line 0.05 mm (From FAIN, 1965: Figs. 143 and 144).



Figs 9-10. Female of *Passeroptes dermicola* TROUESSART (paralectotype n° 2). Dorsal view (9); anal area (10). Scale line 100 μ m.

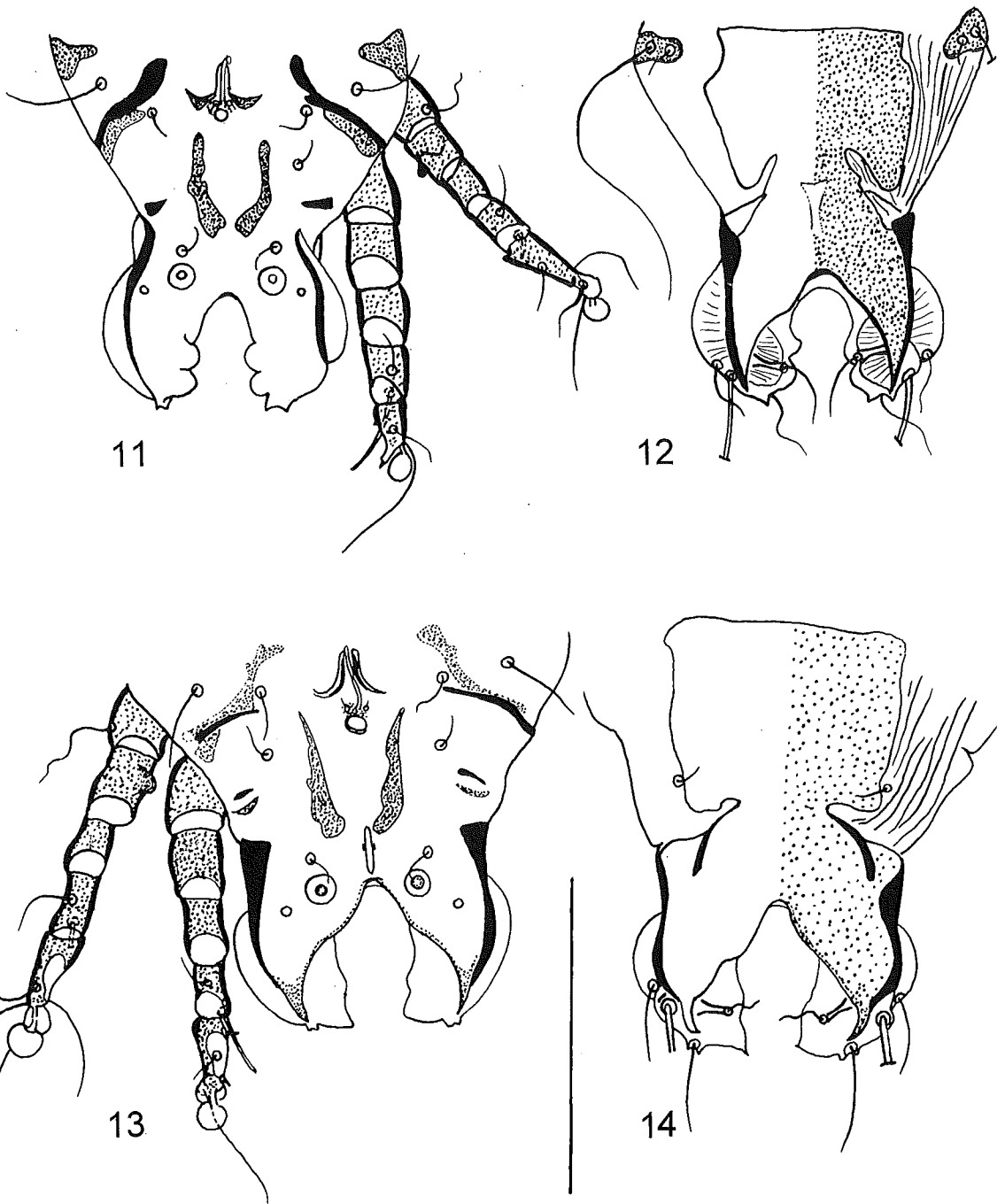
very close to *P. dermicola*. Generally the *l2* were represented but many of them were devoid of these setae. We think therefore that this character is of low importance in the identification of that species.

We reproduce here the figures published in the monograph (female collected in the Zoo, Figs 142 and 144) and a new figure of the dorsal surface and the anal region of the paralectotype of female, n° 2.

We also give here the main measurements in 3 females of *P. dermicola*. The first measurements are those of the paralectotype n° 2, the second (into brackets) are from a female collected from a domestic sparrow in Louvain-la Neuve, Belgium, and the third are those from a female which died in

the Zoo (into brackets):

Total length of body including gnathosoma: 204 (200, 220); maximum width of idiosoma 125 (120, 140). Hysteronotal shield: length in midline 78 (81, 80), maximum width 54 (60, 56), minimum width 40 (43, 46). Distance between bases of setae *sce* 48 (45, 52). Length of setae: *sce* 42 (45, 54), *sci* 14 (9, 12), *h* 120 (95, 90), *sh* 30 (33, 39), *ai* 23 (25, 17), *ae* 30 (30, 35), *d4* 16 (18, 19), *d5* 45 (30, 38) and *l5* 160 (150, 170). Length of tarsi I-IV 18, 18, 21, 21 (18, 18, 20, 20 and 21, 21, 28, 28). The females from the type series and from Louvain-La Neuve were devoid of *l2* setae, that from the sparrow of the Zoo bear these setae.



Figs 11-14. Male hysterosoma of *Passeroptes* spp. *P. cyanerpi* FAIN: ventral view (11) and dorsal view (12); *P. lamprocolii* FAIN: ventral view (13) and dorsal view (14). Scale line 100 μ m.

4. *Passeroptes cyanerpi* FAIN, 1965 stat. n. (Figs 11-12)

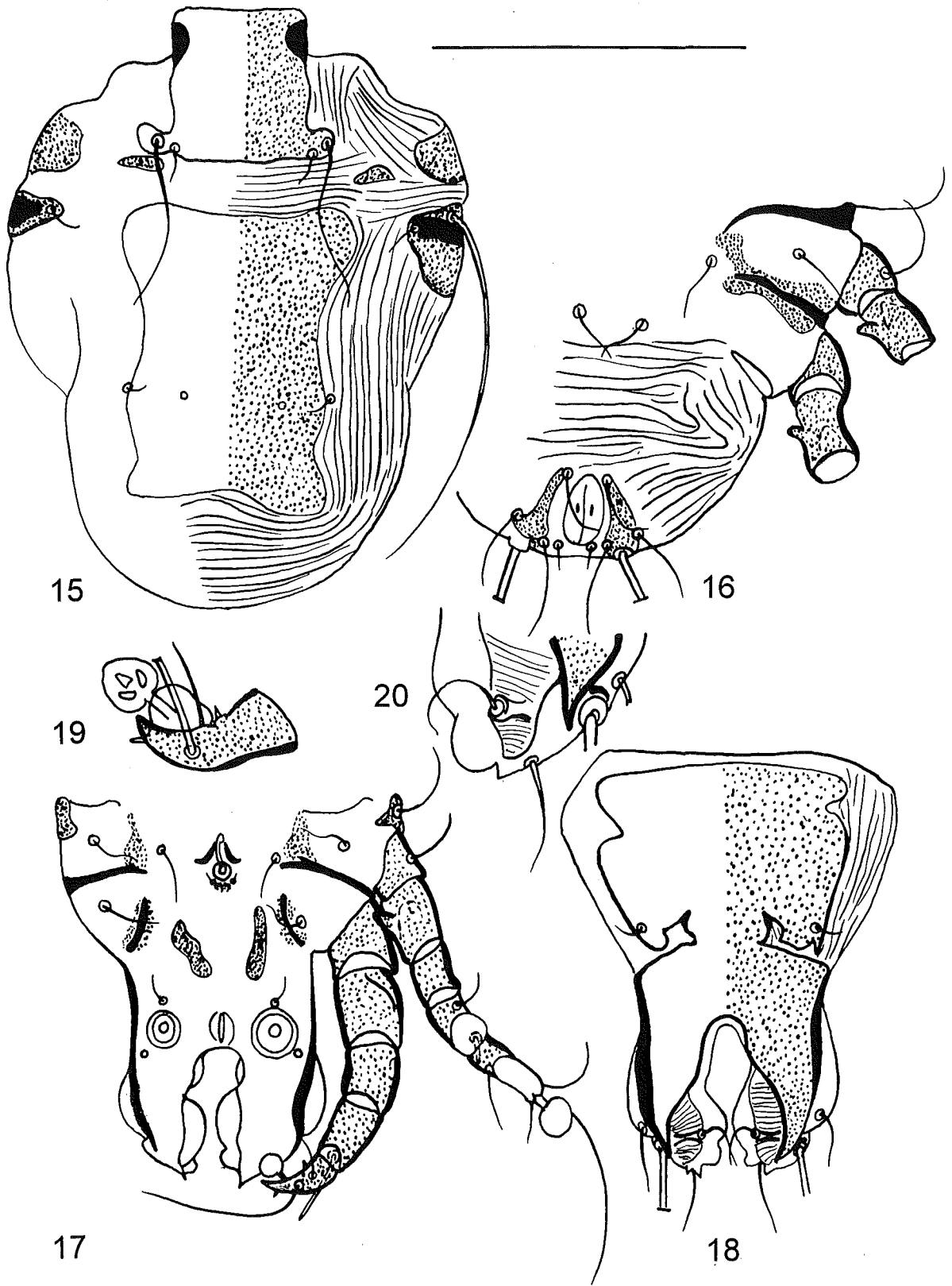
MATERIAL EXAMINED: Male holotype, 10 female and 3 male paratypes from *Cyanerpes cyanea* (Passeriformes: Coerebidae), Brazil, died in Antwerp Zoo. V. 1963 (Coll. A. FAIN).

REMARKS. This species differs from *P. dermicola* in both sexes, by the constant presence of the setae *l2*; in the female, by the fusion of the

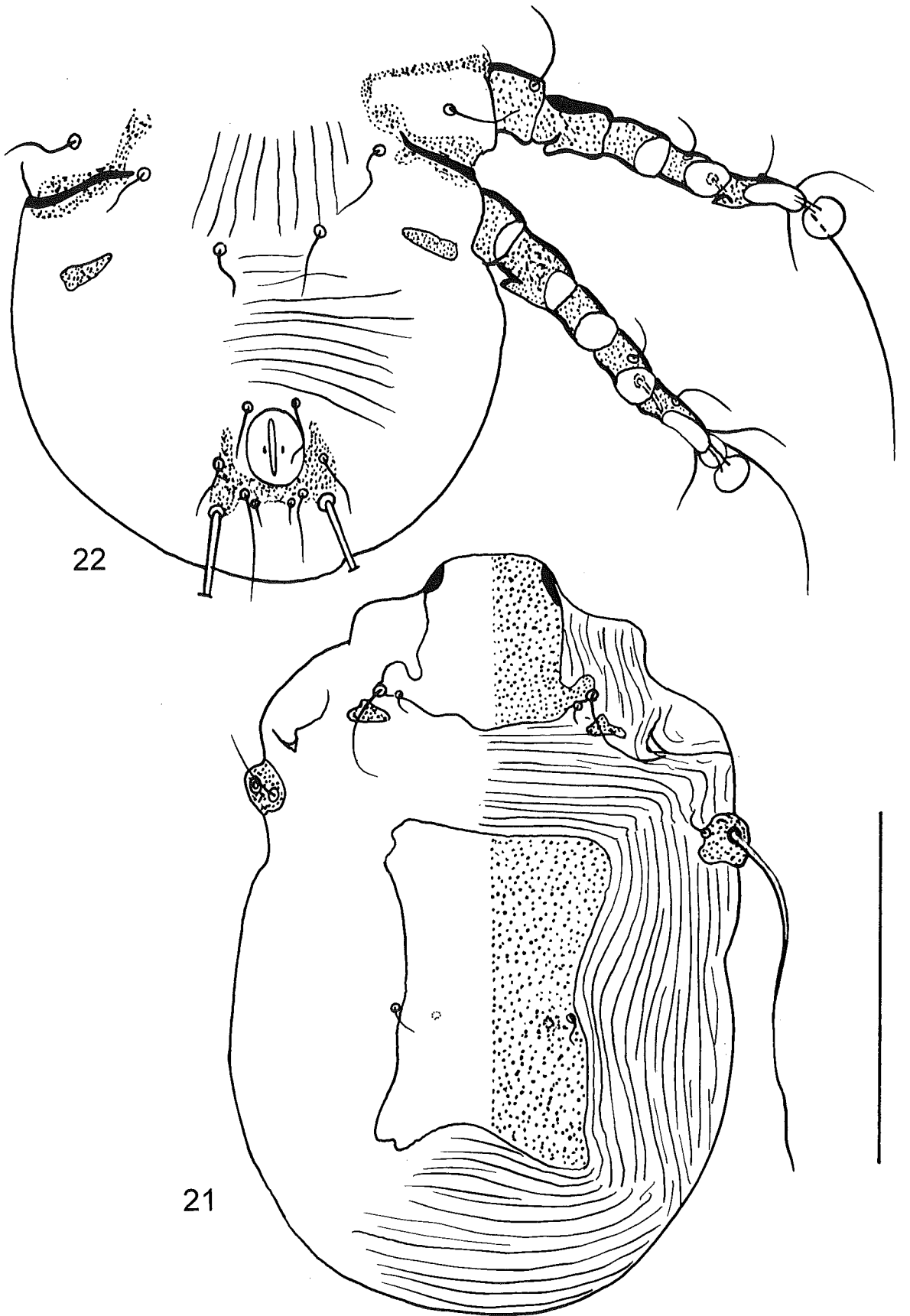
epimeres III and IV; in the male, by the shape of interlobar membrane (Fig. 11-12), the more oblique shape of the postero-lateral incisions of the hysterosomal shield and by the elongate and distinctly bent internally apex of the tarsi IV.

5. *Passeroptes lamprocolii* FAIN, 1965 (Figs 13-14)

MATERIAL EXAMINED: Female holotype, 5 female and 4 male paratypes from *Lamprocolius*



Figs 15-20. *Passeroptes lamprotornis* n. sp. Female in dorsal view (15); opisthosoma of female in ventral view (16); hysterosoma of male in ventral view (17) and dorsal view (18); tarsus IV of male in lateral view (19); end of male opisthosomal lobe in dorsal view (20). Scale lines 100 μ m (Figs 15-18) and 50 μ m (Figs 19-20).



Figs 21-22. Female of *Passeroptes ampeliceps* n. sp. Dorsal view (21); opisthosoma in ventral view (22). Scale line 100 μ m.

chloropterus (Passeriformes: Sturnidae), Africa, died in Antwerp Zoo, 19.VII.1963 (Coll. A. FAIN). Type in the Museum of Tropical Africa, Tervuren, Belgium.

REMARKS. This species differs from *P. dermicola* in both sexes, by the constant presence of the setae *l2*; in the female, by the fusion of the epimeres III and IV; in the male, by the shape of interlobar membrane (Fig. 13-14).

6. *Passeroptes lamprotornis* sp. n. (Figs 15-20)

Female (holotype). Total length, including gnathosoma, 280 (260-285 in 12 paratypes). *Idiosoma* 260 (250-270) long and 180 (170-185) wide. All shields devoid of ornamentations. *Dorsum*. Propodosomal shield 65 long in median line, maximum width 85. Setae *sce* and *sci* both situated on posterior lateral projections of the propodosomal shield. There is a pair of small additional propodosomal plates, triangular in shape. Hysterosomal shield rectangular, widened in its anterior fourth, maximum length 115, width 90. Setae *l2* present. *Venter*. Epimeres III completely joined to epimeres IV by a narrow chitinous band. Anal shields well sclerotized and developed, setae *ai*, *a e d4*, *d5* and *l5* all situated on these shields. Lengths of setae: *sce* 65, *sci* 10, *h* 150, *sh* 25, *ll* 10, *l2* 5, *l5* 250, *d4* 15, *d5* 25, *ai* 25 and *ae* 30. *Legs*. Femora III and IV with 2 relatively small backwardly-directed processes, one dorsal and one intero-ventral. Trochanters I and II without processes. Chaetotaxy typical for the genus. Solenidion *omega* 1 of tarsi I lacking.

Male. Total length, including gnathosoma, 200-210 (in 3 paratypes). *Idiosoma* 180-195 long and 130-135 wide. All shields devoid of ornamentation. *Dorsum*. Propodosoma as in the female. Propodosomal shield 50 long in median line and maximally 65 wide. Metapodosomal part of the hysterosomal shield with anterior border straight; shape of its postero-lateral incisions very complicate (Fig. 18). Setae *l2* present. *Venter*. Epimeres II to IV free. Aedeagus short not protruding through the genital aperture. There are 2 pairs of adanal shields. Opisthosomal lobes well developed, 45 long. Shape of interlobar membrane as in Fig. 20. Lengths of setae: *sce* 70, *sci* 9, *h* 130, *sh* 40, *ll* 8, *l2* 7, *l5* 215, *d4* 30, *d5* 40, *ai* 10 and *ae* 35. *Legs*. Legs III and IV subequal in length, about 120 long. Retrorse processes on the femora III slightly smaller than in the female; femora IV devoid of such processes. Tarsi IV curved with pointed apex. Solenidion *omega* 1 of tarsi I lacking.

DIFFERENTIAL DIAGNOSIS : This new species is closely related to *Passeroptes ampeliceps* by the fused epimeres III and IV in the female, by the presence of two pairs of adanal shields in the male and by the presence of the setae *l2* in both sexes. It differs from this species by the curved tarsi IV with pointed apices in the male.

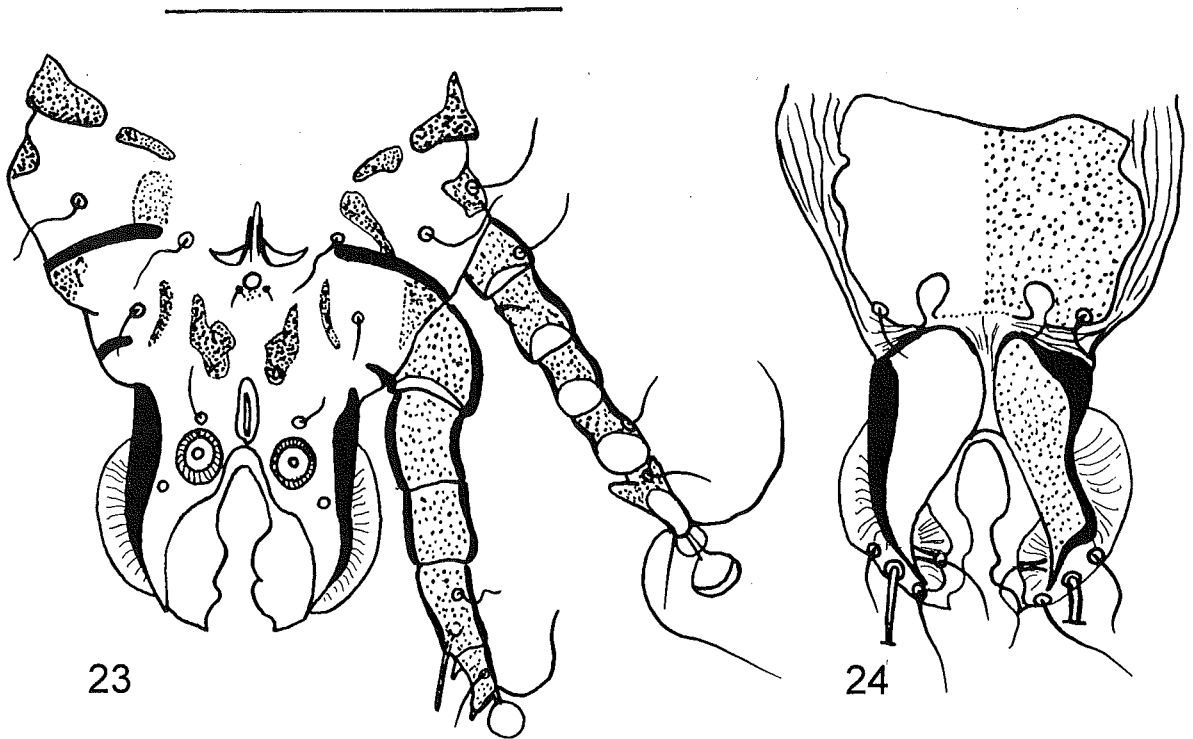
MATERIAL EXAMINED: Female holotype, 12 female and 3 male paratypes from *Lamprotornis purpuropterus* (Passeriformes: Sturnidae), Africa, Kigali, 1. I. 1956 (Coll. A. FAIN).

ETYMOLOGY : The species name *lamprotornis* refers to the generic name of the host.

7. *Passeroptes ampeliceps* sp. n. (Figs 21-24)

Male (holotype). Total length, including gnathosoma, 250, 245 (in one paratype). *Idiosoma* 225 long (220) and 150 (145) wide. All shields devoid of ornamentation. *Dorsum*. Maximum length of propodosomal shield 50 in median line, maximum width 60. Metapodosomal part of the hysterosomal shield with anterior border straight; its postero-lateral incisions bulbous (Fig. 24). Setae *l2* present. *Venter*. Epimeres II to IV free. Aedeagus short not protruding through the genital aperture. There are 2 pairs of adanal shields. Opisthosomal lobes well developed, 40 long. Shape of interlobar membrane as in Fig. 24. Lengths of setae: *sce* 50, *sci* 10, *h* 125, *sh* 35, *ll* 9, *l2* 5, *l5* 200, *d4* 20, *d5* 30, *ai* 10 and *ae* 20. *Legs*. Legs III and IV subequal in length, about 125 long. Retrorse processes on femora III weakly developed; the femora IV devoid of such processes. Tarsi IV straight, their apices elongated and distinctly bent internally. Solenidion *omega* 1 of tarsi I lacking.

Female. Total length, including gnathosoma, 280-290 (in 6 paratypes). *Idiosoma* 260-270 long and 175-185 wide. All shields devoid of ornamentations. *Dorsum*. Length of propodosomal shield 60 in median line, maximum width 85. Setae *sce* and *sci* both situated on posterior lateral projections of the propodosomal shield. There is a pair of small triangular propodosomal additional plates. Hysterosomal shield rectangular, widened in its anterior fourth, maximum length 105, width 90. Setae *l2* present. *Venter*. Epimeres III completely joined to epimeres IV by means of a narrow chitinous band. Anal shields well sclerotized and developed, setae *ae d4*, *d5* and *l5* all situated on this shields, setae *ai* situated off these shield. Lengths of setae: *sce* 30-35, *sci* 5, *h* 140, *sh* 35, *ll*



Figs 23-24. Male hysterosoma of *Passeroptes ampeliceps* n. sp. Ventral view (23) and in dorsal view (24). Scale line 100 μ m.

8, *l2* 7, *l5* 230, *d4* 15, *d5* 40, *ai* 25 and *ae* 30. *Legs*. Femora III and IV with 2 relatively small backwardly-directed processes, one dorsal and one intero-ventral. Trochanters I and II without processes. Chaetotaxy typical for the genus. Solenidion *omega* 1 of tarsi I lacking.

DIFFERENTIAL DIAGNOSIS : This new species is closely related to *Passeroptes cyanerpis* and *P. lamprocolii* by the fusion of the epimeres III and IV in the female and by the presence of the setae *l2* in both sexes. It differs from these species in the male, by the bulbous-like lateral incisions of the hysterosomal shield and by the two pairs of adanal shields; in the female, by the short (30-35) setae *sce* and by the place of setae *ai* off the anal shields.

MATERIAL EXAMINED : Male holotype, 6 female and one male paratypes from *Ampeliceps coronatus* (Passeriformes: Sturnidae), Thailand, died in Antwerp Zoo, 3. III. 1967 (Coll. A. FAJN).

ETYMOLOGY : The species name *ampeliceps* refers to the generic name of the host.

8. *Passeroptes turdoides* sp. n. (Figs 25-28)

Female (holotype). Total length, including gnathosoma, 225 (200-225 in 3 paratypes). *Idiosoma* 200 (180-200) long and 150 (150-155)

wide. All shields devoid of ornamentations. *Dorsum*. Length of propodosomal shield 65 in median line, maximum width 60. Setae *sce* and *sce* very short, both situated on posterior lateral projections of the propodosomal shield. There is a pair of small additional triangular propodosomal plates. Hysterosomal shield roundly rectangular, widened in its anterior third, maximally 100 long and 75 wide. Setae *l2* lacking. *Venter*. Epimeres III completely joined with epimeres IV by a narrow chitinous band. Anal shields well sclerotized and developed, setae *ai*, *ae*, *d4*, *d5* relatively short and *l5* -whip-like all situated on these shields. Lengths of setae: *sce* 8, *sci* 6, *h* 70, *sh* 25, *l1* 6, *l5* 130, *d4* 5, *d5* 30, *ai* 15 and *ae* 20. *Legs*. Femora III and IV with well developed retrorse processes on their ventral side and poorly developed rounded processes on dorsal side. Length of this ventral process 15, ratio between its and the femora III-IV lengths 1.5 : 1. Trochanters I and II with a very small conical process. Chaetotaxy typical for the genus. Solenidion *omega* 1 of tarsi I lacking.

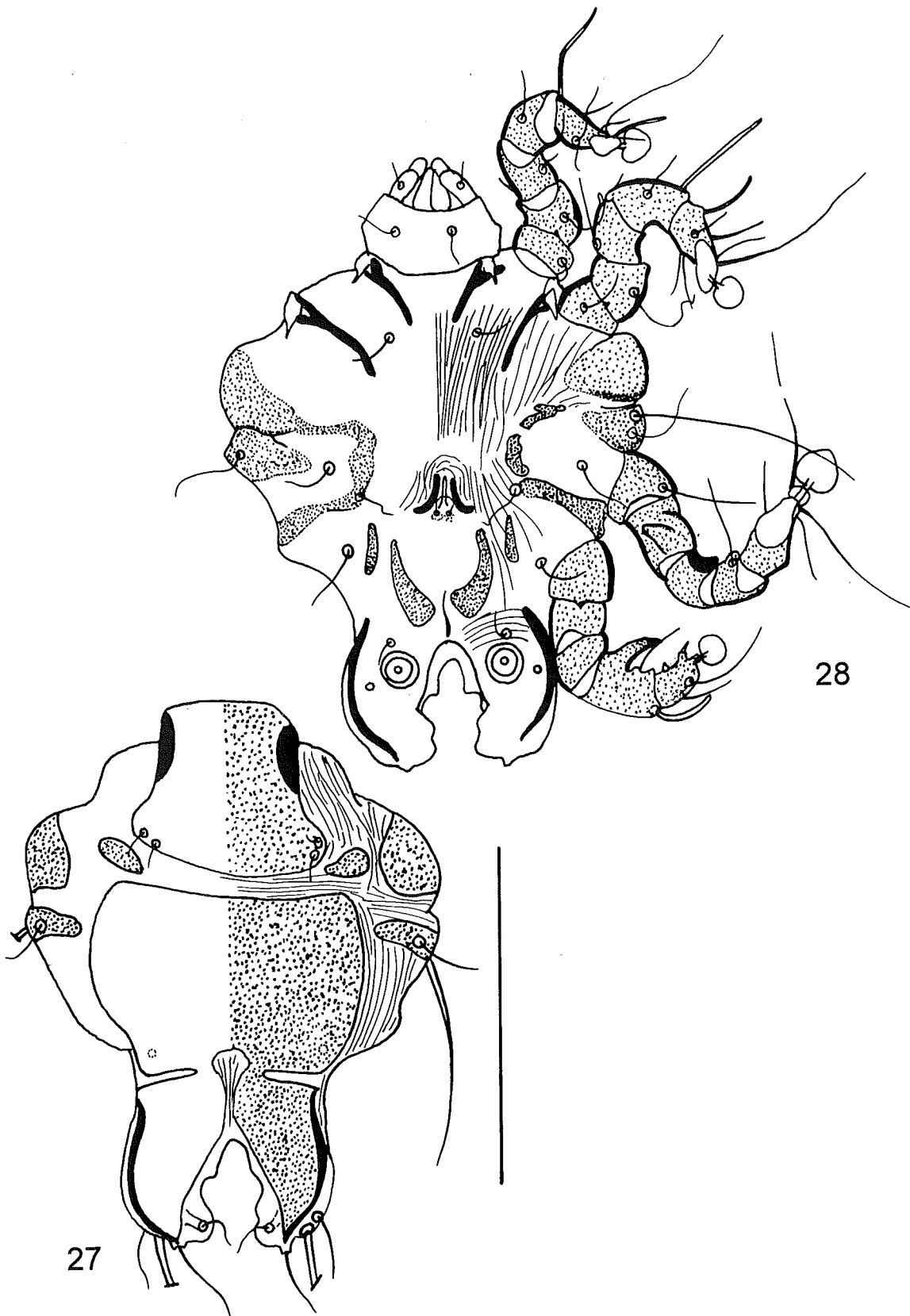
Male. Total length 190 (gnathosoma included). *Idiosoma* 165 long and 125 wide. All shields devoid of ornamentation. *Dorsum*. Propodosoma as in the female. Length of propodosomal shield 45 in median line, maximum width 55. Metapodosomal part of the hysterosomal shield with lateral border



Figs 25-26. Female of *Passeroptes turdoides* n. sp. Dorsal view (25); ventral view (26). Scale line 100 μ m.

strongly convex, and deep posterior incisions. Setae *l2* lacking. *Venter*. Epimeres III completely joined with epimeres IV by means of a narrow chitinous

band. Aedeagus relatively short not protruding through the genital aperture. There are 2 pairs of adanal shields, the first pair of these shields



Figs 27-28. Male of *Passeroptes turdoides* n. sp. Dorsal view (27); ventral view (28). Scale line 100 μ m.

represented by small sclerotized patches, the second one - in shape of relatively narrow bands enlarged in their posterior parts with widely rounded angles.

Opisthosomal lobes well developed, 35 long and widely spreading as in Fig. 27. Lengths of setae: *sce* 7, *sci* 5, *h* 65, *sh* 25, *ll* 4, *ls* 130, *d4* 15, *d5* 25,

ai 3 and *ae* 15. *Legs*. Legs IV 65 long, a little shorter but distinctly thicker than legs III 70 long. Retrorse processes on femora III slightly smaller than in the female; the femora IV devoid of such processes. Tibia IV with a strong subbasal chitinous process directed apically. Chaetotaxy typical for the genus. Solenidion *omega* 1 of tarsi I lacking.

DIFFERENTIAL DIAGNOSIS : This new species is closely related to *Passeroptes eulabis* FAIN, 1965 from *Eulabes javana* (Passeriformes: Sturnidae) from Indonesia. In the females of both species, the setae *sce* and *d5* are very thin and short (less than 10), the femora III and IV carry well-developed backwardly directed processes. In the males, the legs IV are much thicker than the legs III and there are two pairs of adanal shields. It differs from *P. eulabis* by the following characters. In the female *P. turdoides*, the ventral processes on the femora III and IV are extremely large, the setae *l2* are lacking and the anal shields are well developed and bear the setae *ai*. In the male, the setae *l2* are lacking, the tibiae IV bear a strong process. In the female *P. eulabis*, the ventral processes on the femora III and IV are large but not hypertrophied, the setae *l2* are present and the anal shields are relatively short, the setae *ai* are situated off this shields. In the male, the setae *l2* are present, the tibiae IV are devoid of process.

MATERIAL EXAMINED : Female holotype, 3 female and one male paratypes from *Turdoides jardineii* (Passeriformes: Orthonychidae), South Africa, Transvaal Zeerust, VI. 1967 (Coll. F. ZUMPT).

ETYMOLOGY : The species name *turdoides* refers to the generic name of the host.

9. *Passeroptes hirundiphilus* sp. n. (Figs 29-32)

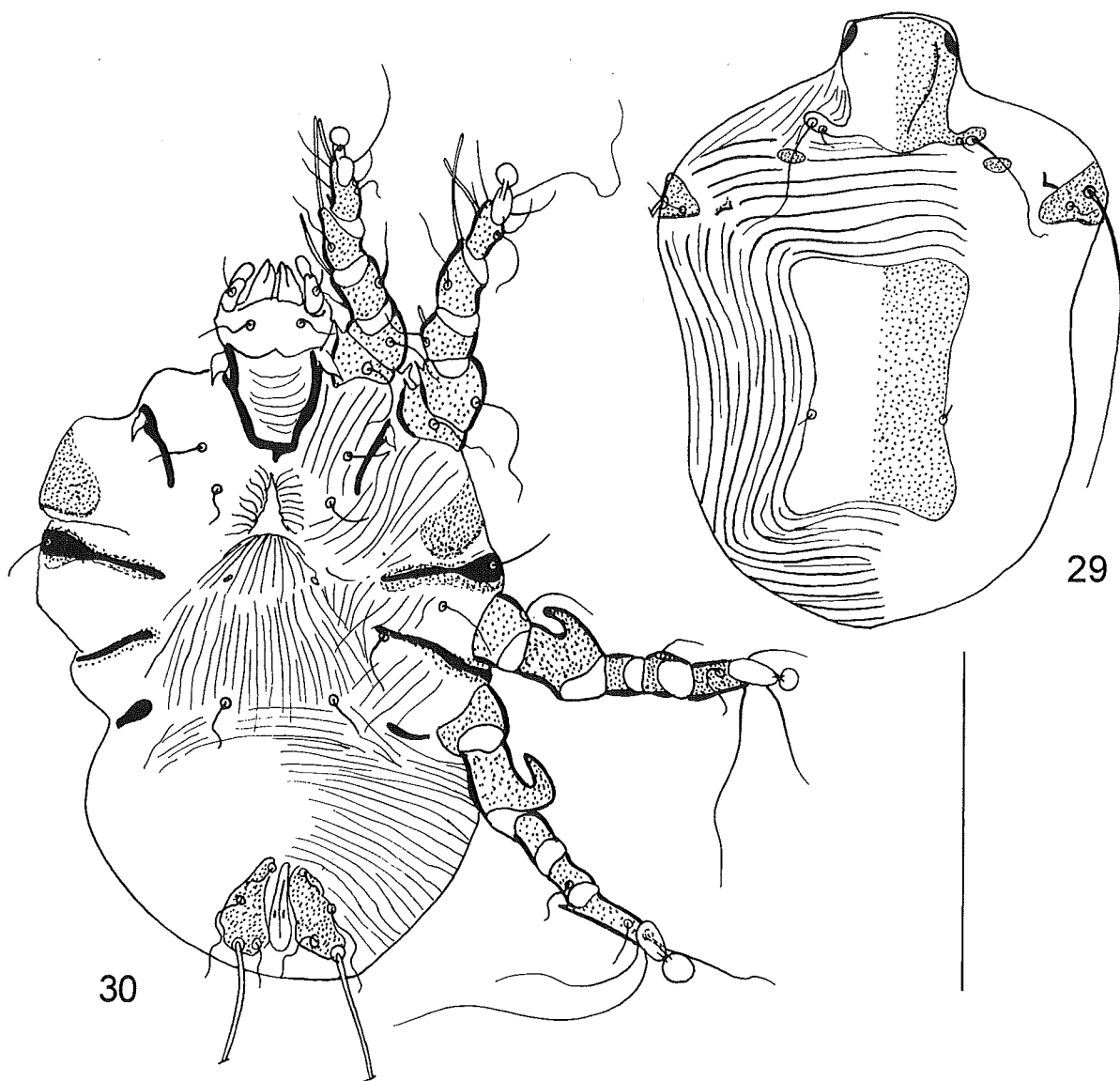
Female (holotype). Total length 205 (gnathosoma included). *Idiosoma* 195 long and 150 wide. All shields devoid of ornamentations. *Dorsum*. Length of propodosomal shield 45 in median line, maximum width 60. Setae *sce* and *sci* situated on very narrow posterior lateral projections of the propodosomal shield. There is a pair of small additional propodosomal triangular plates. Hysterosomal shield roundly rectangular, with slightly excavated margins, 85 long and 55 wide. Setae *l2* present. *Venter*. Epimeres II to IV free. Anal shields well sclerotized and developed, setae *ai*, *ae* *d4*, *d5* relatively short and *l5* -whip-like all situated on these shields. Lengths of setae: *sce* 50, *sci* 6, *h* 110, *sh* 35, *ll* 8, *l2* 6, *l5* 165, *d4* 4, *d5* 10,

ai 6 and *ae* 18. *Legs*. Femora III and IV with a well developed retrorse process on their ventral side and a poorly developed rounded process on dorsal side. Trochanters I and II with distinctly developed conical process. Coxae II with a small finger-like projection directed apically. Chaetotaxy typical for the genus. Solenidion *omega* 1 of tarsi I present, very small.

The male specimen described below was found on another swallow species than the female. However, we think that all these specimens belong to one species because some other common characters: the presence of short solenidion *omega* 1 on the tarsi I, the distinctly developed conical processes of the trochanters I and II, the finger-like projections of the coxae II and the hypertrophied processes of the femora III.

Male. Total length 165 (gnathosoma included). *Idiosoma* 150 long and 95 wide. All shields devoid of ornamentation. *Dorsum*. Propodosoma as in the female. Length of propodosomal shield 35 in median line, maximum width 37. Metapodosomal part of the hysterosomal shield with lateral border much sinuous, and deep posterior incisions secondarily divided into an anterior large incision and a posterior much smaller. Setae *l2* present. *Venter*. Epimeres II free, epimeres III and IV connected by weakly sclerotized band. Aedeagus relatively short not protruding through the genital aperture. There is a single pair of narrow adanal shields in shape as in Fig. 31. Opisthosomal lobes as in Fig. 31, well developed, 35 long. Lengths of setae: *sce* 40, *sci* 4, *h* 115, *sh* 35, *ll* and *l2* 4, *l5* 150, *d4* 10, *d5* 20, *ai* 3 and *ae* 15. *Legs*. Legs III and IV subequal in length (about 85), but the legs IV little thicker. Ventral retrorse processes on the femora III very strong, femora IV devoid of such processes. Tibia IV without processes. Chaetotaxy typical for the genus. Solenidion *omega* 1 of tarsi I present, very small.

DIFFERENTIAL DIAGNOSIS : This new species is closely related to *Passeroptes cecropis* FAIN, 1965 from *Cecropis abyssinica unitatis* (Passeriformes: Hirundinidae) from Rwanda (only females are known). In the females of both species, the anterior surface of the trochanters I and II with a chitinous finely attenuated process. The female of this new species differs from *P. cecropis* by the following characters. In *P. hirundiphilus* sp. n., the anterior surface of the coxae II bears a finger-like process directed apically, the setae *ae* and *d5* are short, about 18 and 20 long, respectively, the ventral retrorse process of the femora III and IV is hypertrophied. In *P. cecropis*, the anterior surface



Figs 29-30. Female of *Passeroptes hirundiphilus* n. sp. Dorsal view (29); ventral view (30). Scale line 100 μ m.

of the coxae II is devoid of processess, the setae *ai* and *d5* are long, about 35 and 150 long, respectively, the ventral retrorse process of femora III and IV are well developed, but not hypertrophied.

Finally, this new species is also closed to *Passeroptes temenuchi* FAIN, 1965 from *Temenuchus pagodarum* and *Sturnus vulgaris* (Passeriformes: Sturnidae) from India and USA, respectively, by the presence of finger-like process on the coxae II and a small solenidion *omega* 1 on the tarsi I. It differs from *P. temenuchi* in both sexes, by the larger process of the femora III and by the free epimeres III and IV; in the male, by a single pair of adanal shields and by the absence of process on the tibia IV. In both sexes of *P. temenuchi*, the process of the femora III is not hypertrophied, the epimeres III and IV are

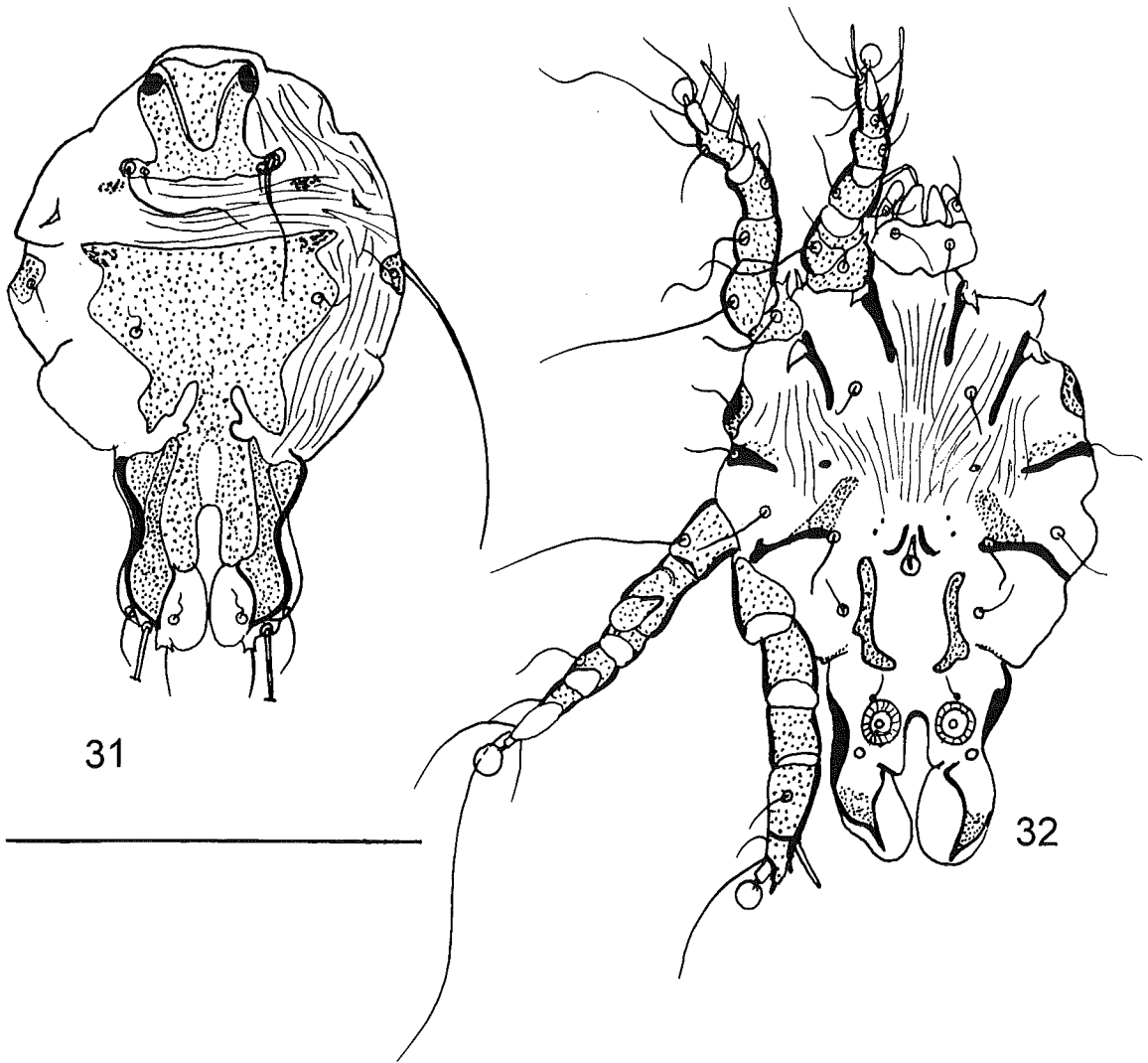
connected by the sclerotized band; in the male, there are two pairs of adanal shields and the process on the tibia IV is present.

MATERIAL EXAMINED : Male holotype from *Hirundo nigrita* (Passeriformes: Hirundidae), Congo, 14.II.1965. Coll. A. FAIN. Female paratype from *Riparia cineta* (Passeriformes: Hirundinidae), Rwanda, Akanyaru river, 1956 (Coll. A. FAIN).

ETYMOLOGY : The species name *hirundiphilus* refers to the family name of the host.

10. *Passeroptes oenanthe* sp. n. (Figs 33-37)

Male (holotype). Total length 205 (gnathosoma included). *Idiosoma* 190 long and 120 wide. All shields devoid of ornamentation. *Dorsum*. Length



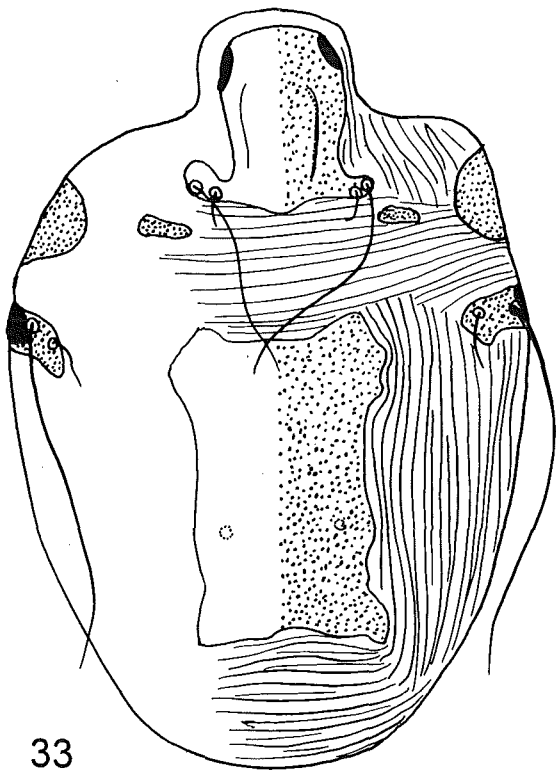
Figs 31-32. Male of *Passeroptes hirundiphilus* n. sp. Dorsal view (31); ventral view (32). Scale line 100 μ m.

of propodosomal shield 50 in median line, maximum width 45. Metapodosomal part of the hysterosomal shield with lateral border much sinuous. Setae *l2* lacking. *Venter*. Epimeres II-IV free. Adeagus 35 long, protruding through the genital aperture. There is a single pair of narrow adanal shields in shape as in Fig. 34. Opisthosomal lobes as in Fig. 37, well developed and widely separated from each other, 35 long. Lengths of setae: *sce* 50, *sci* 5, *h* 100, *sh* 25, *ll* 6, *l5* 165, *d4* 25, *d5* 35, *ai* 15 and *ae* 25. *Legs*. Legs III and IV subequal in length (about 95). Ventral retrorse processes on the femora III poorly developed, femora IV devoid of such processes. Tibia IV without processess. Chaetotaxy typical for the genus. Solenidion *omega* 1 of tarsi I present, very small.

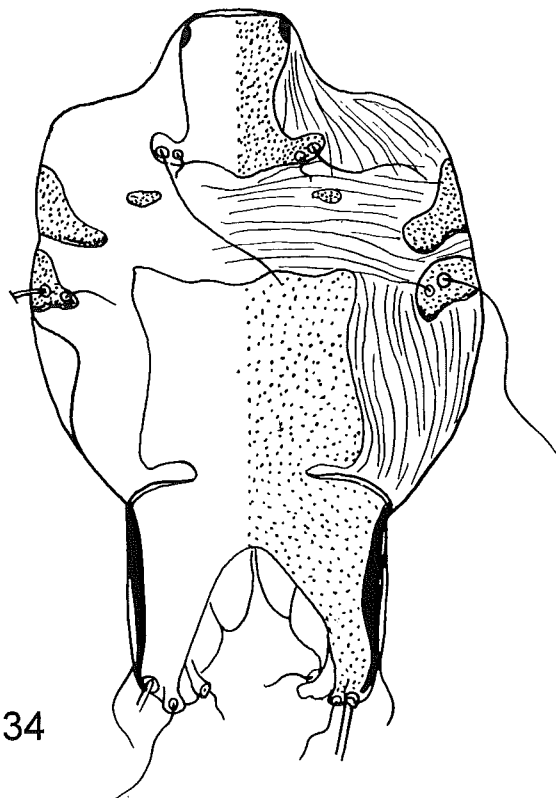
Female. Total length, including gnathosoma, 225-240 (in 7 paratypes). *Idiosoma* 200-215 long and 140-160 wide. All shields devoid of ornamentations. *Dorsum*. Length of propodosomal

shield 50 in median line, maximum width 45. Setae *sce* and *sce* situated on very narrow posterior lateral projections of the propodosomal shield. There is a pair of small additional propodosomal plates, triangular in shape. Hysterosomal shield almost roundly rectangular, with relatively parallel lateral margins and slightly excavated transversal margins, maximally 80 long and 60 wide. Setae *l2* lacking. *Venter*. Epimeres II to IV free. Anal shields well sclerotized and developed, narrowed in their anterior parts, setae *ai*, *ae* *d4*, *d5* relatively short and *l5* -whip-like all situated on this shields. Lengths of setae: *sce* 60, *sci* 5, *h* 100, *sh* 5, *ll* 10, *l5* 200, *d4* 8, *d5* 20, *ai* 16 and *ae* 25. *Legs*. Femora III and IV with very short retrorse process on their ventral and dorsal sides. Trochanters I and II and coxae II without projections. Chaetotaxy typical for the genus. Solenidion *omega* 1 of tarsi I present, very small.

DIFFERENTIAL DIAGNOSIS : This new species is closely related to *Passeroptes temenuchi* by the



33



34

Figs 33-34. *Passeroptes oeanthe* n. sp. Female in dorsal view (33); male in dorsal view (34). Scale line 100 μ m.

presence of a small solenidion *omega* 1 on the tarsi I. It differs from *P. temenuchi* in both sexes, by the absence of the setae *I2*, the small ventral process of the femora III and by the free epimeres III and IV; in the male, by a single pair of adanal shields and by the absence of process on the tibia IV. It also differs from *P. hirundiphilus* sp. n. by the absence of small apical projections on ventral surface of the trochanters I and II in both sexes.

MATERIAL EXAMINED : Male holotype and 7 female paratypes from *Oeanthe oeanthe* (Passeriformes: Prunellidae), the Netherlands, Nijmegen, 24. VIII. 1966 (Coll. F. LUKOSCHUS).

ETYMOLOGY : The species name *oeanthe* refers to the generic name of the host.

Genus *Paradermation* FAIN, 1964

11. *Paradermation colii* sp. n. (Figs 38-41)

Female (holotype). Total length 230 (gnathosoma included). *Gnathosoma* with a pair of small lateral spines. *Idiosoma* 205 long and 155 wide. All shields devoid of ornamentations. *Dorsum*. Length of propodosomal shield 65 in median line, maximum width 60, its posterior margin almost triangular with a small median incision. Setae *sce* and *sce* situated on this shield.

There is a pair of small additional propodosomal plates. Hysterosomal shield with an irregular posterior border, maximum length 65, width 75. There is a pair of two small hysterosomal plates. *Venter*. Epimeres II to IV free. Anal shields well sclerotized and developed, setae *ai*, *ae d4*, *d5* and *I5* all situated on these shields. Lengths of setae: *sce* 85, *sci* 15, *h* 105, *sh* 50, *II* 40, *I2* 50, *I3* 25, *I5* 150, *d4* 35, *d5* 75, *ai* 25 and *ae* 25. *Leg* rather slender and long. Posterior tarsi narrow with a small interno-basal process. Tibia I and II with delicate transparent spine on the ventral surface. All genua and femora with a small ventral retrorse process. Trochanters I and II with distinctly developed conical process on the ventral surface. Coxae II with a small finger-like projection directed apically. Chaetotaxy typical for the genus.

Male. Total length 205 (gnathosoma included). *Idiosoma* 190 long and 140 wide. All shields devoid of ornamentation. *Dorsum*. Propodosoma as in the female. Length of propodosomal shield 50 in median line, width 45. Anterior part of the hysterosomal shield with the anterior corners prolonged laterally into rounded projections, the anterior border excavated. Setae *I2* and *I3* present. *Venter*. Epimeres II to IV free. Aedeagus relatively short not protruding through the genital aperture. There is a single pair of narrow adanal shields as in

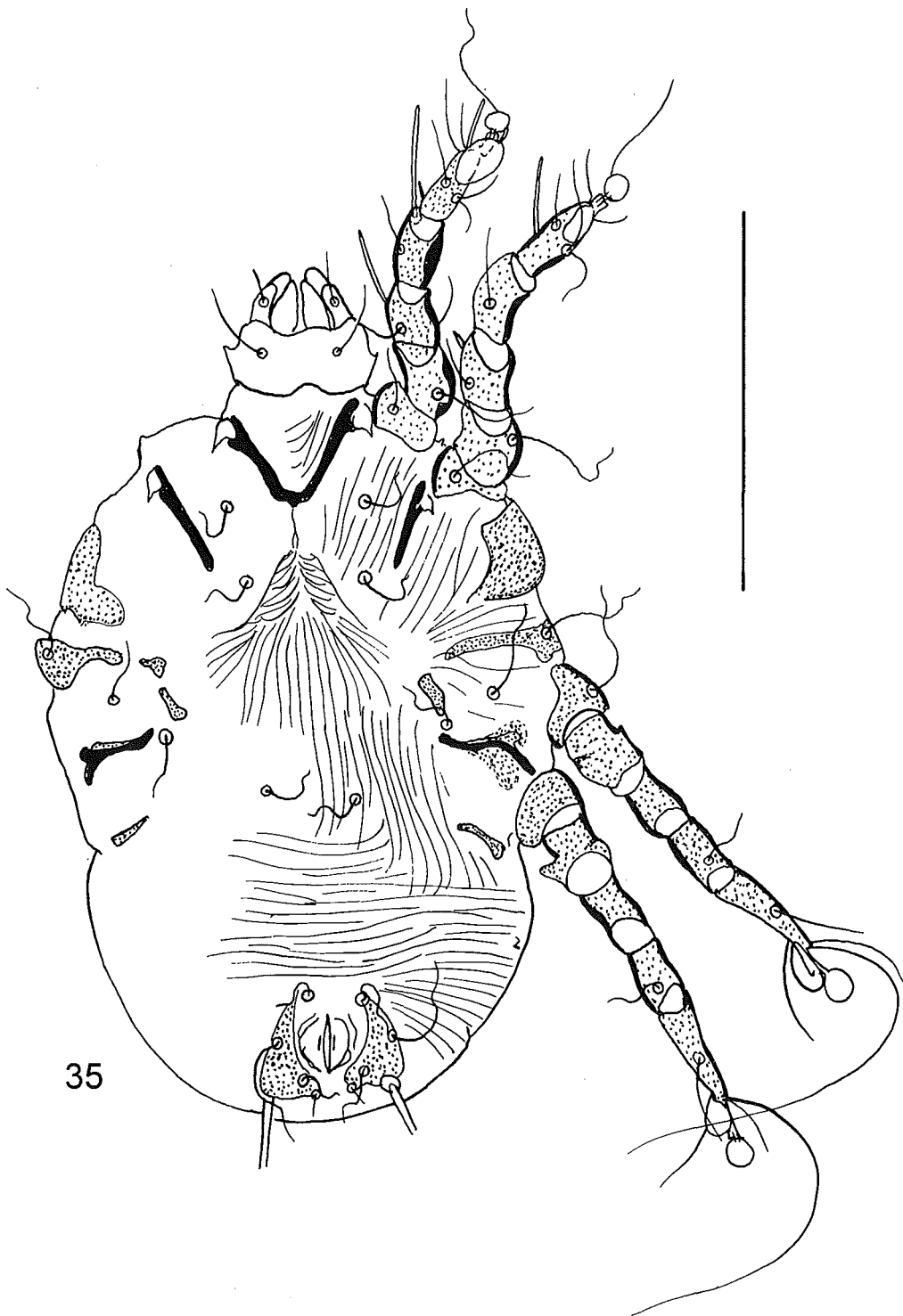
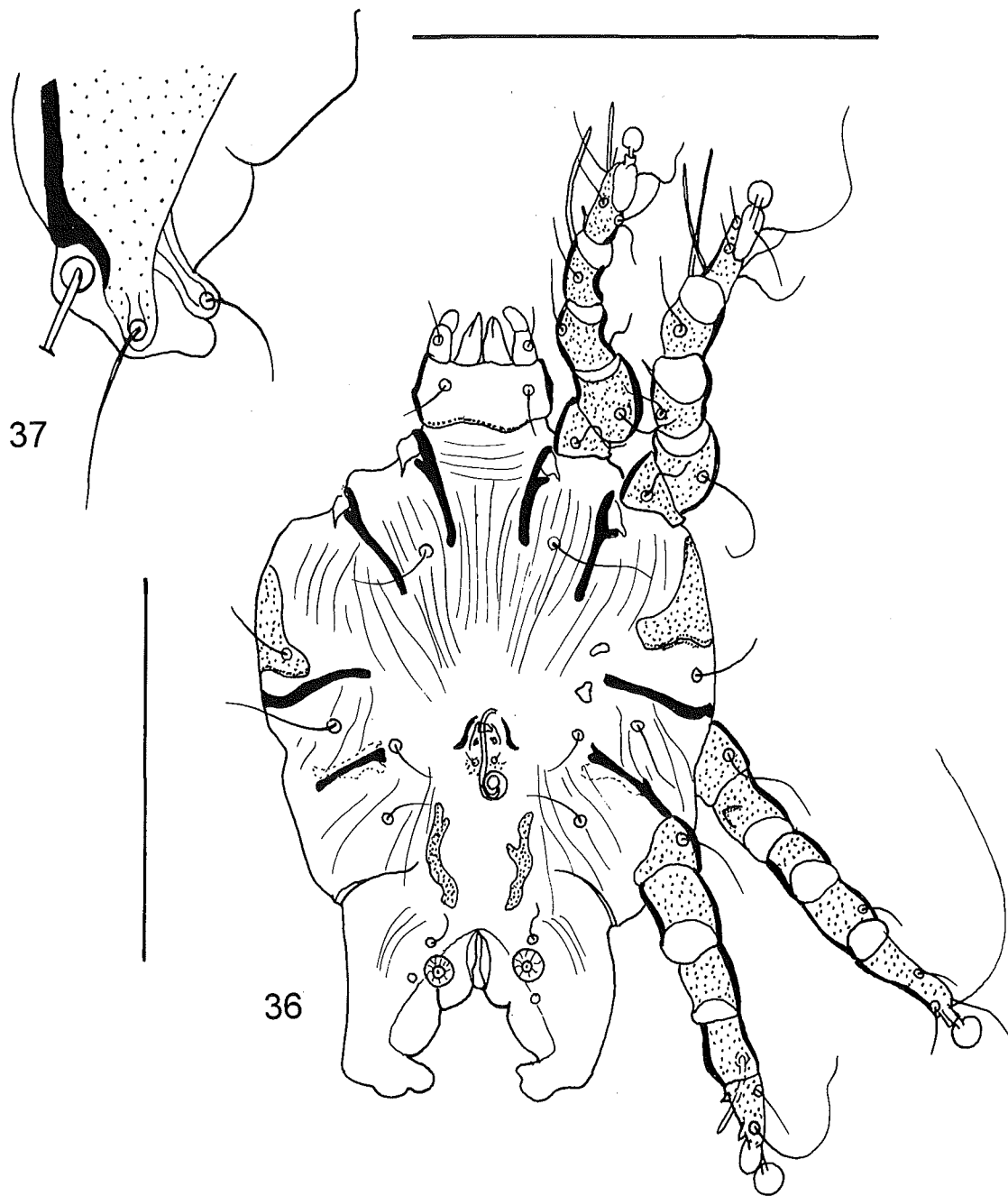


Fig. 35. Female of *Passeroptes oenanthe* n. sp. Ventral view. Scale line 100 μ m.

Fig. 38. Opisthosomal lobes as in Fig. 39, well developed, and converging to each other, 50 long. Lengths of setae: *sce* 70, *sci* 7, *h* 130, *sh* 60, *ll* 70, *l2* 35, *l3* 30, *l5* 165, *d4* 30, *d5* 35, *ai* 10 and *ae* 20. *Legs*. As in the female, except tibia III and IV without ventral retrorse processes and tibia, genua and femora III and IV with a small triangular crest on their antero-lateral surface.

DIFFERENTIAL DIAGNOSIS : This new species is

closely related to *Paradermation intercalatum* FAIN, 1965 from *Richmondia cardinalis* (Passeriformes: Fringillidae) from Central America. In the females of both species are almost not distinguished from each other, their hysteronotum bears one large median shield and two small lateral plates. The male of this new species differs from *P. intercalatum* by the following characters. In *P. colius* sp.n., the adanal



Figs 36-37. Male of *Passeroptes oeanthe* n. sp. Ventral view (36); end of opisthosomal lobe in dorsal view (37). Scale lines 100 μ m (Fig. 36) and 50 μ m (Fig. 37).

shields are narrow, with rounded angles, the opisthosomal lobes are converging to each other and the tibiae I and II bear a small retrorse process. In *P. intercalatum*, the adanal shields are triangular in shape, the opisthosomal lobes are widely separated from each other (Fig. 42) and the tibiae I and II are devoid of retrorse processes.

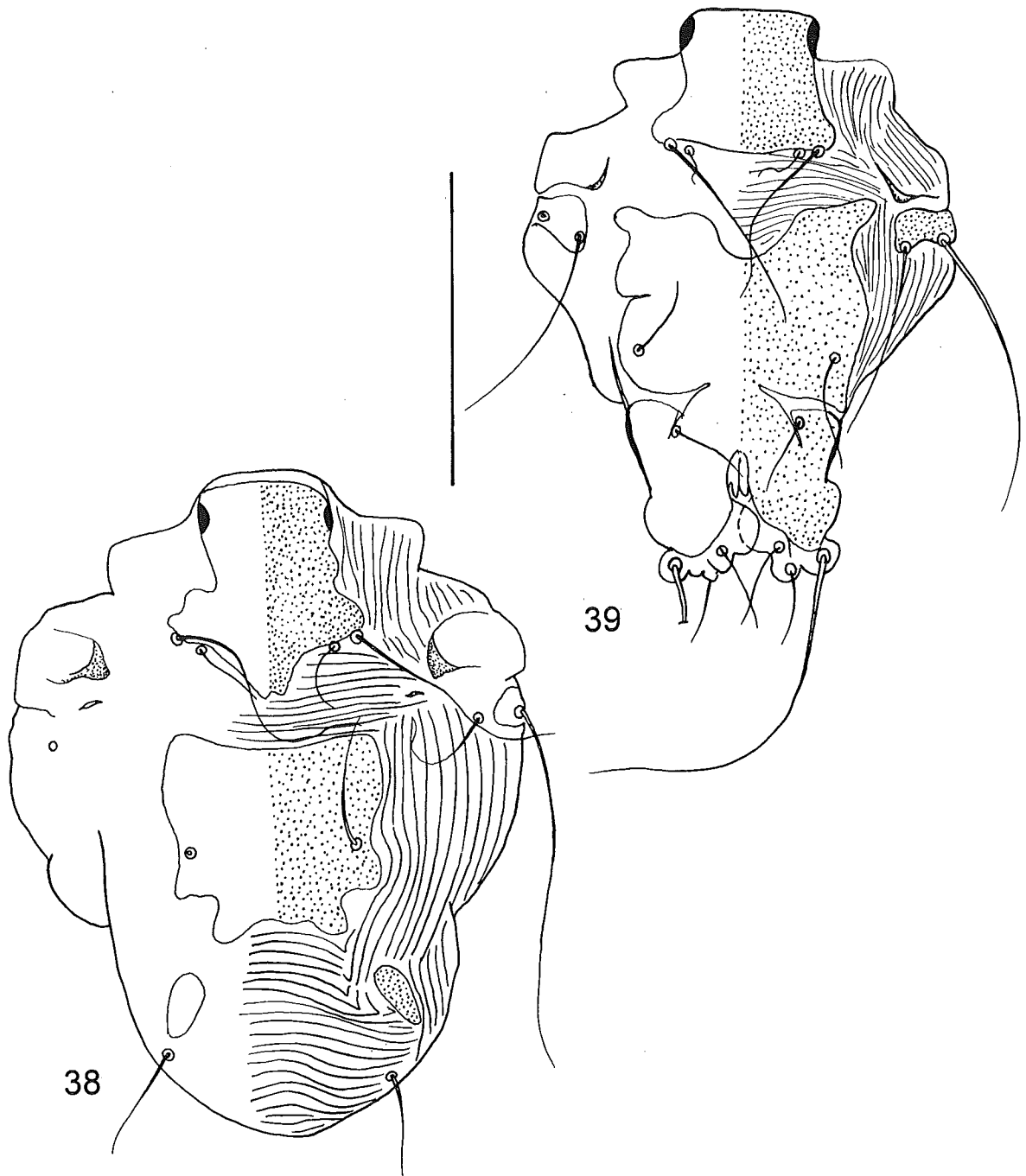
MATERIAL EXAMINED : Female holotype and male paratype from *Colius striatus* (Coliiformes: Coliidae), Rwanda, Butare, 17.IV.1966 (Coll. A. FAIN).

ETYMOLOGY : The species name *colii* refers to the generic name of the host.

Genus *Psittophagoides* FAIN, 1964

13. *Psittophagoides brotogeris* sp. n.
(Figs 43-46)

Male (holotype). Total length 215, including gnathosoma (200-220 in 5 paratypes). *Idiosoma* 210 (200-210) long and 130 (125-140) wide. All shields covered with distinct punctation. *Dorsum*. Length of propodosomal shield 35 in median line,

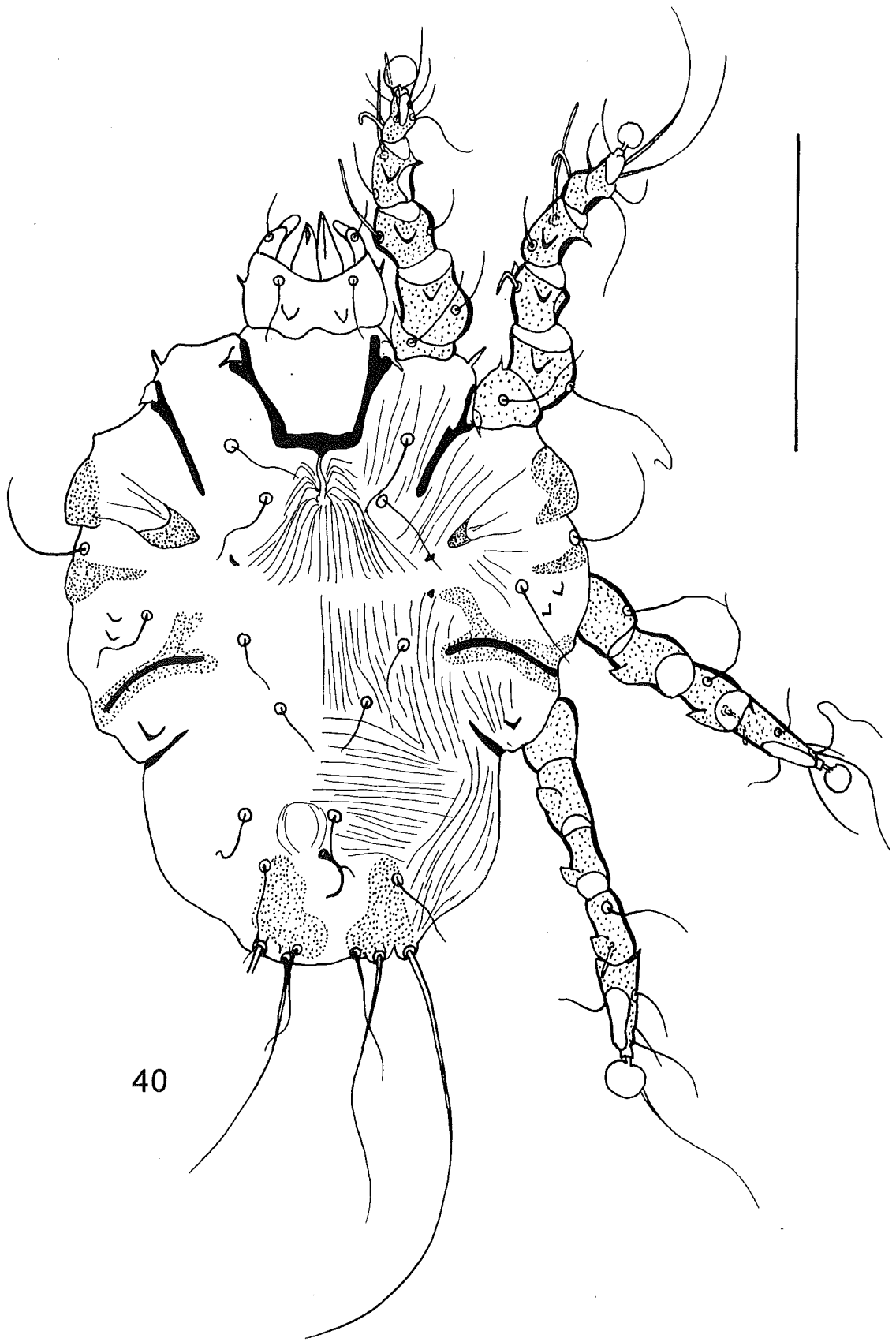


Figs 38-39. *Paradermation colii* n. sp. Female in dorsal view (38); male in dorsal view (39). Scale line 100 μ m.

maximum width 40. Lateral projections of this shield horizontally directed. Additional propodosomal shields lacking. Setae *sci* situated on this shield, immediately behind the setae *sce*. Hysterosomal shield well developed, its posterior part ornamented. Setae *l3* lacking. *Venter*. Aedeagus short not protruding through the genital aperture. There is a single pair of well-developed adanal shields (Fig. 45). Opisthosomal lobes as in Fig. 44, well developed, with well-developed membranes, 55 long. Posterior apices of interlobar membrane festooned. Lengths of setae: *sce* 65, *sci*

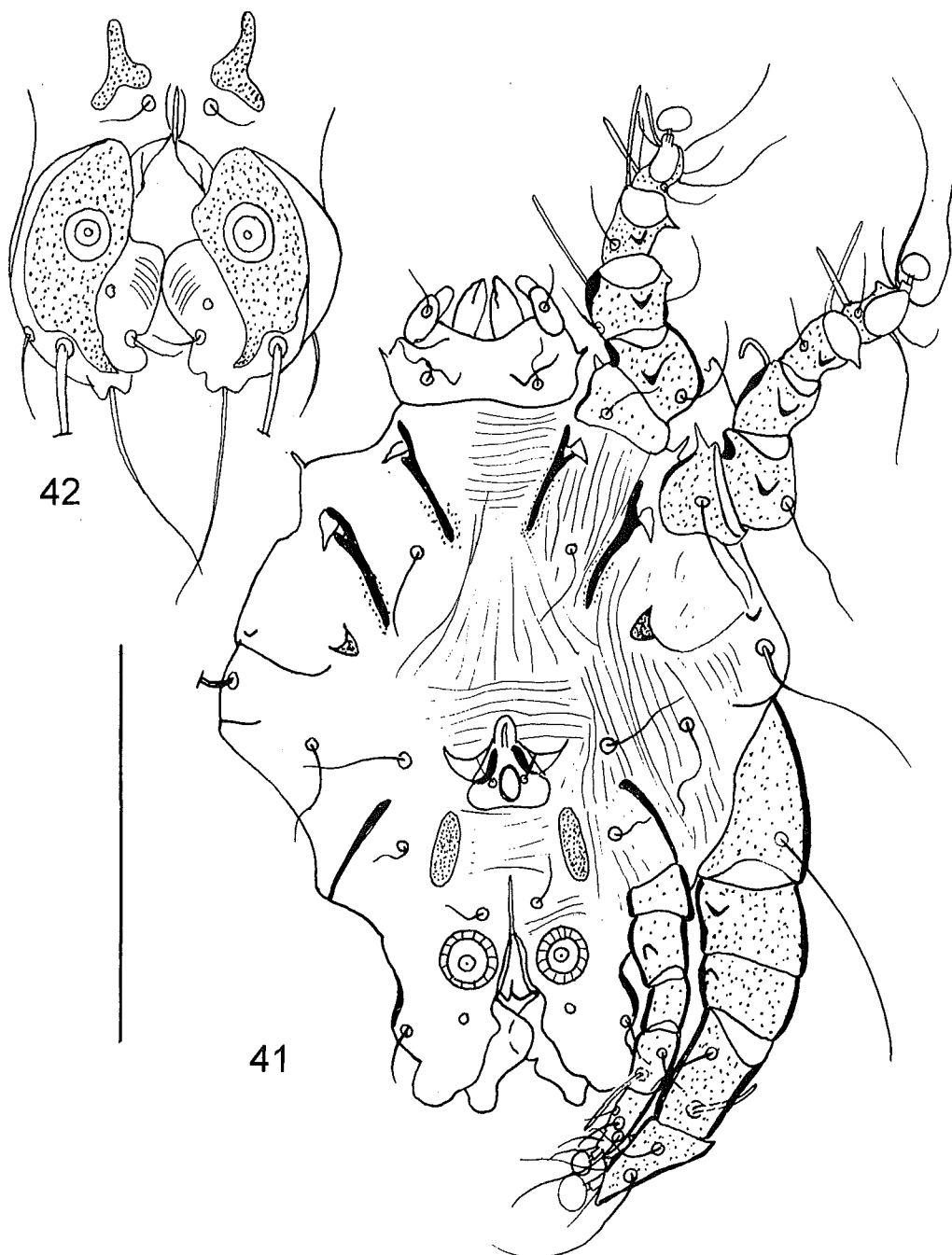
15, *h* 115, *sh* 65, *ll* 12, *ls* 150, *d4* and *d5* about 35, *ai* 12 and *ae* 20. *Legs*. Ratio between length of the legs III and IV 1 : 1.7. Legs III much broader than legs IV, tarsi not reduced. Epimera III and IV fused by chitinous bands. Hooks or retrorse processes lacking on the legs, only ventral surface of the tibiae I and II with a delicate and transparent process and tarsi III with 2 re-curved claw-like processes.

Female. Total length, including gnathosoma, 215-235 (in 12 paratypes). *Gnathosoma* with a pair of small lateral spines. *Idiosoma* 190-215 long and



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Fig. 40. Female of *Paradermation colii* n. sp. In ventral view. Scale line 100 μ m.

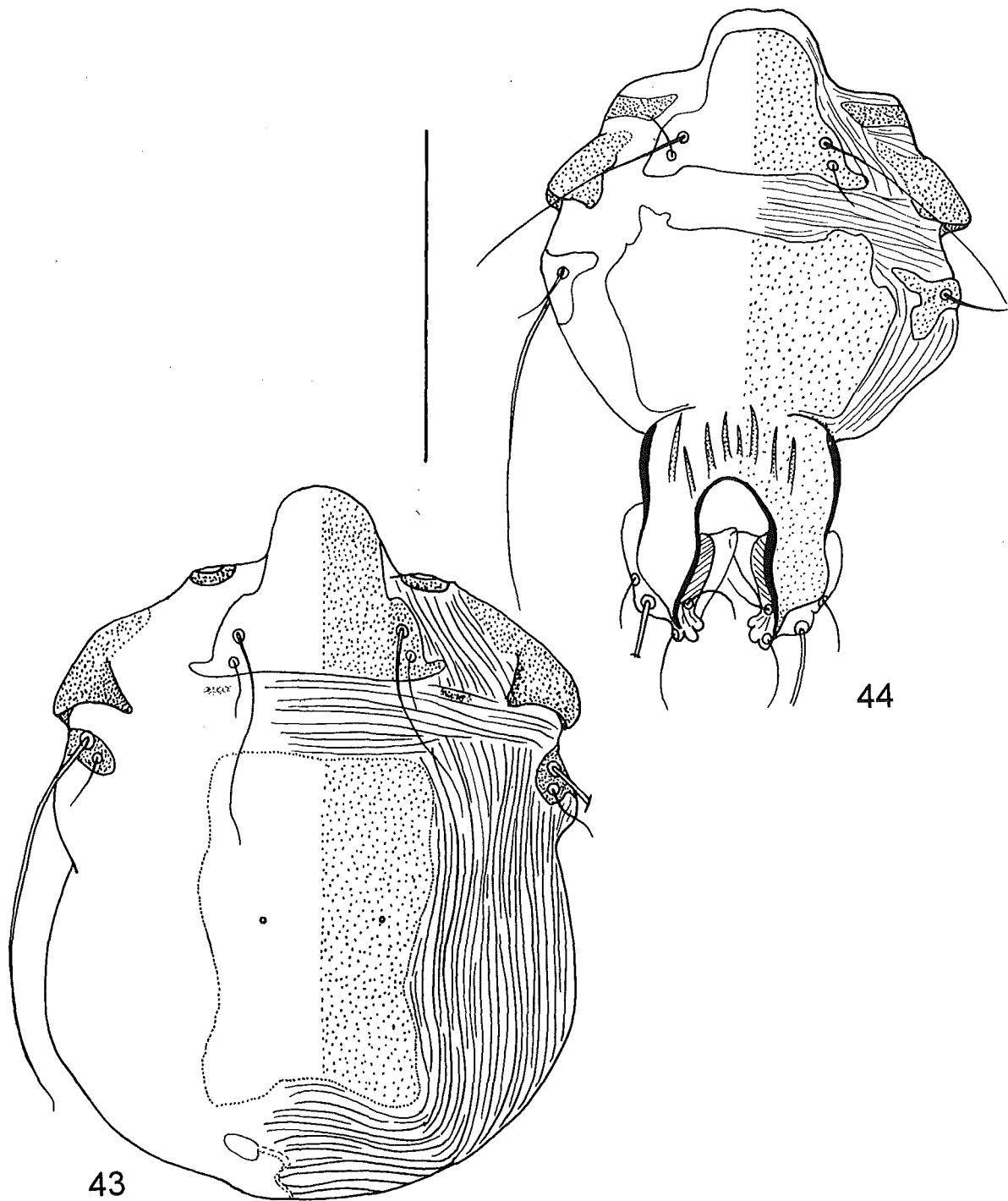


Figs 41-42. Males of *Paradermation* spp. *P. colii* in ventral view (41); opisthosomal lobes of *P. intercalatum* FAIN in ventral view (42). Scale lines 100 μ m (Fig. 41) and 50 μ m (Fig. 42).

155-165 wide. All shields devoid of ornamentations but distinctly punctated. *Dorsum*. Length of propodosomal shield 60 in median line, maximum width 85, its posterior projections horizontally directed. Additional propodosomal shields vestigial or lacking. Setae *sci* situated on this shield, immediately behind the setae *sce*. Maximum length of hysterosomal shield 110, width 70. Setae *l2* and *l3* lacking. *Venter*. Epimeres II to IV free. Anal shields poorly developed, not reaching the setae *ai*, only setae *d4* and *l5* situated on this shields.

Lengths of setae: *sce* 65, *sci* 12, *h* 100, *sh* 45, *l1* 10, *l5* 150, *d4* 15, *d5* 40, *ai* and *ae* 18. Legs. All tarsi with a pedunculate pulvillus. Hooks or retrorse processes lacking on the legs, but ventral surface of the tibiae I and II with a delicate and transparent process.

DIFFERENTIAL DIAGNOSIS : This new species is closely related to *Psittophagoides agapornis* FAIN, 1964 from *Agapornis roseicollis* (Psittaciformes: Psittacidae) from South Africa. In both species, the setae *sce* are situated anteriorly and only very



Figs 43-44. *Psittophagoides brotogeris* n. sp. Female in dorsal view (43); male in dorsal view (44). Scale line 100 μ m.

slightly external to *sci*. In the female, the posterior margin of the hysterosomal shield is entire. It differs from *P. agapornis* by the following characters. In both sexes of *Ps. brotogeris* sp. n., the posterior lateral projections of propodosomal shield are directed transversely. In male, the posterior part of hysterosomal shield is covered with ornamentation, the opisthosomal lobes are as in Fig. 44, the epimeres III and IV are fused. In

both sexes of *P. agapornis*, the posterior lateral projections of propodosomal shield are retrorse. In the male, the posterior part of hysterosomal shield is devoid of ornamentation, the opisthosomal lobes as in Figs 47-48, the epimeres III and IV are free.

MATERIAL EXAMINED : Male holotype, 12 female and 5 male paratypes from *Brotogeris versicolorus* (Psittaciformes: Psittacidae), Brazil, died in Antwerp Zoo, 28.IX.1965 (Coll. A. FAIN).

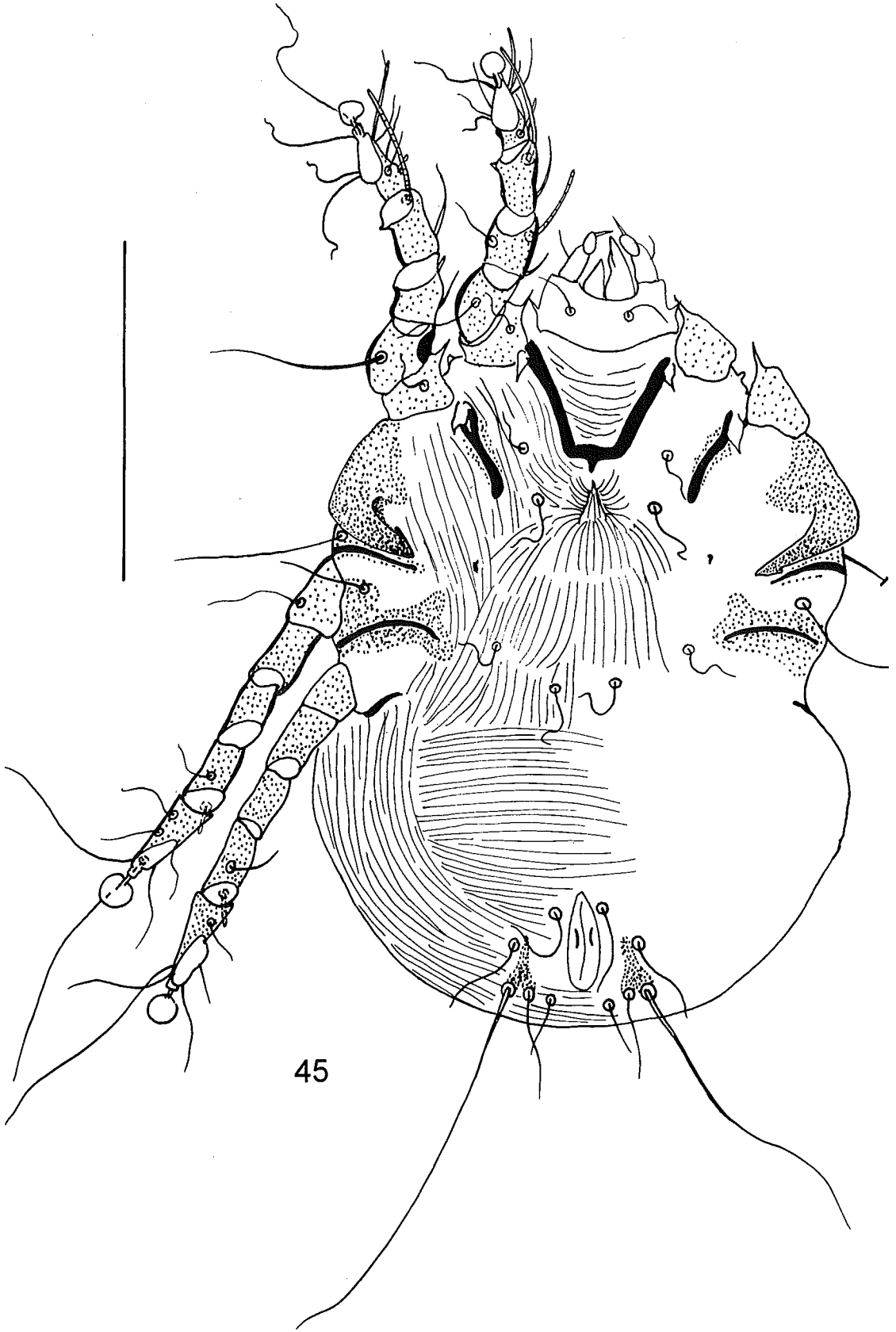
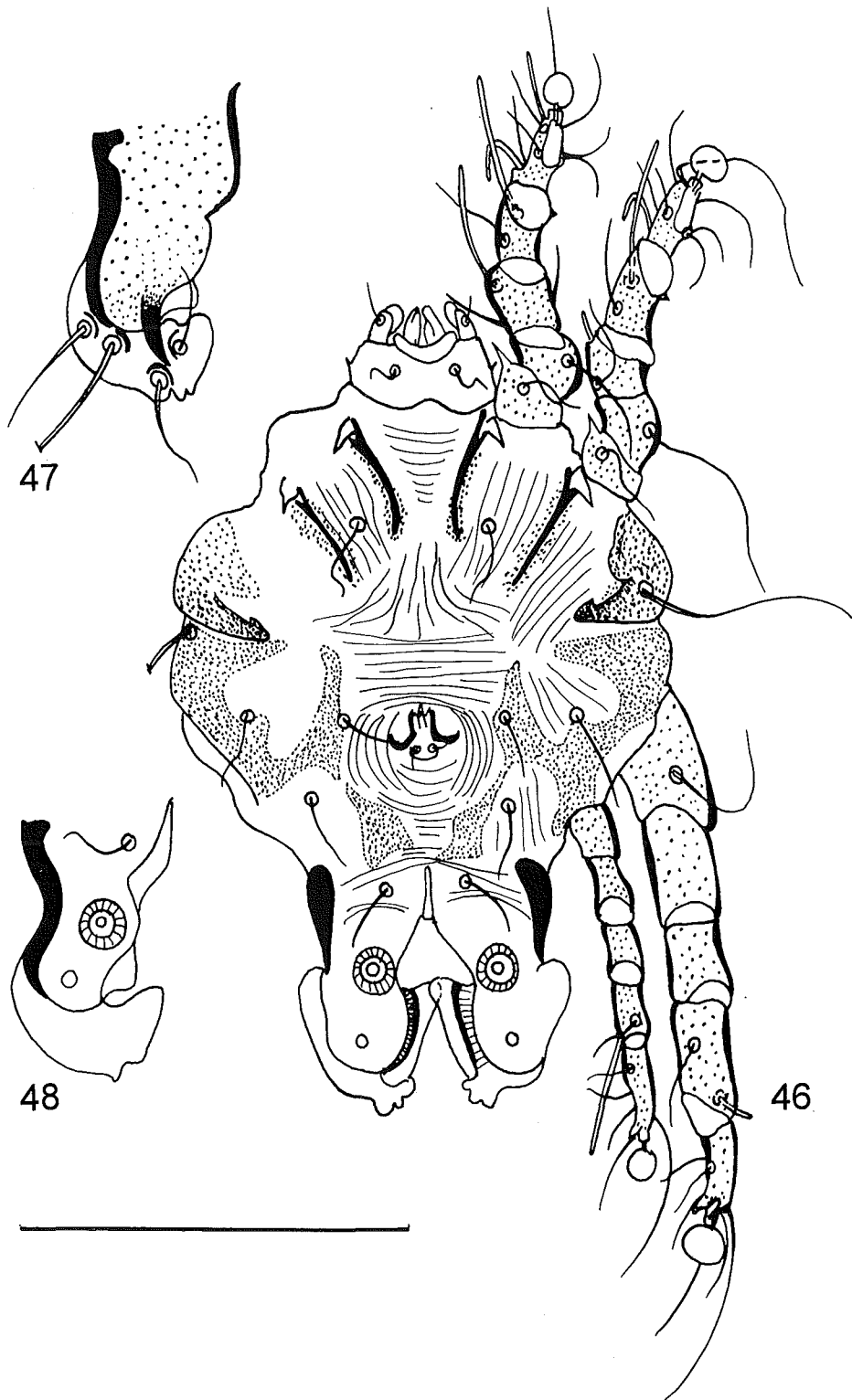


Fig. 45. Female of *Psittophagoides brotogeris* n. sp. in ventral view. Scale line 100 μ m.



Figs 46-48. Males of *Psittophagoides* spp. *P. brotogeris* n. sp. in ventral view (46); opisthosomal lobes of *P. agapornis* FAIN in dorsal view (47) and in ventral view (48). Scale line 100 μ m.

ETYMOLOGY : The species name *brotogeris* refers to the generic name of the host.

BOCHKOV was supported by an INTAS grant (YSF 2002-0116).

Acknowledgements

We thank Dr M. JUDSON, Museum National d'Historie Naturelle Paris, for the loan of the typical material of TROUËSSART. For this research Dr. A. V.

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Zoogéographie et écologie des Melittidae ouest-paléarctiques, étude d'un cas particulier dans les Pyrénées-Orientales (France)

2001, Faculté universitaire des Sciences agronomiques de Gembloux

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Résumé

Les Melittidae, comme l'ensemble des Apoidea, occupent une position clé dans les écosystèmes. Ils participent de manière prépondérante à la pollinisation des plantes entomophiles. Les Melittidae sont particulièrement remarquables par leurs choix floraux très ciblés. En effet, la majorité des espèces appartenant à ce taxon est oligolectique voire monolectique. La coévolution plante-insecte est ici manifeste. Malheureusement, cette famille est très mal connue. Avant une quelconque analyse, il fallait donc synthétiser l'ensemble des données bibliographiques et muséologiques se rapportant à ce groupe. À partir de ces données, plusieurs outils sont construits. D'une part, une clé de détermination originale est établie pour l'ensemble des espèces de la région Ouest-Paléarctique. D'autre part, suit un catalogue annoté où sont repris leurs différents synonymes, les sources d'informations utilisées, les pays dans lesquels elles sont recensées et les différentes données recueillies sur leur biologie. Au bout de ce travail, on a dénombré 3 genres et 38 espèces dans la région Ouest-Paléarctique : *Melitta* (17 spp.), *Macropis* (3 spp.) et *Dasypoda* (18 spp.). Pour comprendre leurs dynamiques, une carte de distribution est réalisée pour chaque espèce. De même, une carte reprenant la diversité spécifique de chaque pays est construite pour chacun des trois genres. Plusieurs conclusions zoogéographiques peuvent ainsi être tirées. On peut notamment définir plusieurs centres de richesse autour du bassin méditerranéen. Il s'agit principalement de l'Espagne et des Balkans.

S'intéressant de plus près à la faune espagnole et française, on remarque que les Pyrénées jouent un rôle de barrière semi-perméable pour la faune de Melittidae. En effet, apparemment, la totalité des espèces recensées en France le sont aussi en Espagne. Au contraire, plusieurs espèces localisées en Espagne semblent incapables de franchir la chaîne de montagne. Pour comprendre cette dynamique, des prospections ont été entreprises dans la région des Pyrénées-Orientales. Elles confirment la plupart des données déjà acquises et en apportent de nouvelles éclairant la problématique de cette dynamique.

Abstract

Like all Apoidea, the Melittidae have a key position in the ecosystems. They contribute mainly to the pollinisation of entomophilous plants. The Melittidae are particularly remarkable to their specific floral choice. Indeed, many species of this taxon are oligolectic to monolectic. In this case, the coevolution plant-insect are evident. Unfortunately, this family isn't well known. Before any analysis, we have to synthesize bibliographic and museum data's taxon. With this data, several tools are constructed. A determination key is made to the all species of ouest-paleartic Melittidae and a catalog with synonyms, origin data, lands where the species are listed and biology data, is also made. The study lead to count 3 genera and 38 species in the Owest-Paleartic region : *Melitta* (17 spp.), *Macropis* (3 spp.) et *Dasypoda* (18 spp.). To the understanding of their dynamics, a distribution map is realised for all species. Moreover, a map