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New Observations on the Harpirhynchidae DUBININ, 1957 (Acari : Prostigmata). I. The subgenus *Harpirhynchus* (*Harpyrhynchoides*) FAIN, 1972

by A. FAIN

Summary

The subgenus *Harpirhynchus (Harpyrhynchoides)* FAIN, 1972 (Acari : Harpirhynchidae) is revised and the 18 species described by the author in 1972 are redescribed and depicted for the first time. A key, to both sexes, of this subgenus is given.
Key words : Systematics. Revision subgenus *Harpirhynchus (Harpyrhynchoides)*. Acari. Parasites. Birds.

Résumé

Le sous-genre *Harpirhynchus (Harpyrhynchoides)* FAIN, 1972 (Acari : Harpirhynchidae) est revisé et les 18 espèces décrites par l'auteur en 1972 sont redécrites et figurées pour la première fois. Une clé des espèces de ce sous-genre est donnée.
Mots clé : Taxonomie. Revision sous-genre *Harpirhynchus (Harpyrhynchoides)*. Acari. Parasites. Oiseaux.

Introduction

In 1972, I described a series of new taxa in the Harpirhynchidae (Acari, Prostigmata) and among them 31 new species, 3 new genera, 4 new subgenera, 3 new tribes and one new subfamily Harpypalpinae. These mites were collected from domestic or wild birds from various parts of the world. These descriptions were short but sufficient to recognize the species, but no figures were provided.
In 1975, following a request of Dr. W. MOSS, of the Academy of Natural Sciences, Philadelphia, U.S.A., I allowed Miss J.F. WOJCIK to visit my laboratory to sketch part of my collection of harpirhynchids. These drawings should have enabled Dr. MOSS to complete his study of this group of mites. To date, unfortunately, such a paper has not been published and I surmize that it will never be. The aim of the present work is to complete my first descriptions and to provide figures of these species.
It should be noted that in the meantime I described 4 new species of Harpirhynchidae (FAIN, 1976).
Among the species described by me in 1972, one, *H. diuca*, is considered here as a synonym of *H. zumpti*. Another species, *H. lamorali*, FAIN (1972), becomes a subspecies of *H. oenae*.
The Harpirhynchidae live in the skin, especially in the feather follicles of birds, however they also may invade the superficial corneous layers of the skin and cause mange. In natural conditions they are highly host specific. Until now these mites have been recorded from 172 species, in 47 families and 16 orders of hosts. The most parasitized avian family is the Fringillidae from which 34 species are known to harbor harpirhynchids (MOSS, 1979; MOSS & WOJCIK, 1978).
Some species may accumulate in the feather follicles and develop voluminous subcutaneous cysts, yellowish-orange in color. The cysts are located mainly on the breast and at the base of the wings. These parasitic cysts have been recorded for *Harpirhynchus nidulans* (NITZSCH, 1818; MEGNIN, 1877), *H. longipilus* (BANKS, 1905 & 1915), *H. brevis* (EWING, 1911; MORLEY & SCHILLINGER, 1937), *H. monstrosus* (FRITSCH, 1954) and *H. (Harpyrhynchoides) rosellacinus* (LAWRENCE, 1959c).

Material and methods

Origin of the material

Most of the species described in this paper were collected from birds freshly imported in the Zoo of Antwerp and which died during their quarantine.
Other species were collected by the late Dr. F. ZUMPT of Johannesburg, and Dr. F. LUKOSCHUS, Nijmegen or by myself in Belgium or in Central Africa.

Metric data in the descriptions of the species

In 1976, I proposed to use some metric data in the descriptions of harpirhynchids. These data are also used here but with a few modifications :

L : maximum length of the body up to the anterior extremity of the palpal tibia.

W : maximum width of the body at the level of the *sh* setae.
LS : length of the dorsal shield in the midline.
WS : maximum width of the dorsal shield.
LG : maximum length of the gnathosoma in ventral view from the base to the anterior extremity of the palptibia.
WG : maximum width of gnathosoma.
Length of setae : *ve*; *sci*; *sce*; *h*; *sh*; *g*, *g1*, *g2*, *g3*; *l5*; *icI*; *icIII*; *cxI* (see figures n° 1, 5, 6, 10).
Length and maximum width of solenidia of tarsi I (*ωI*) and II (*ωII*).
All our measurements are in micrometers.
Abbreviations : IRSNB : Institut royal des Sciences naturelles de Belgique; MRAC : Musée royal de l'Afrique Centrale, Tervuren.

REMARKS ON SOME MORPHOLOGICAL CHARACTERS IN THE SUBGENUS *HARPYRHYNCHOIDES*

1. Gnathosoma

It is strongly developed. Its shape and structure is fundamentally the same as in the Ophioptidae, living in the scales of snakes (FAIN, 1964). The palptarsus is completely ventral and much smaller than the palptibia and its internal part is prolonged apically forming a forked process visible from above. Palptibia very large bearing distally 3 strong curved spines (= Palpalae). One of these Palpalae is apical or ventroapical (PA), the two other are dorsal and situated close to the apex, one is internal (PI) the other external (PE). The PE has generally the same shape as the PI but is smaller, except in a few species where the PE is piliform (e.g. *H. coturnix* and *H. alectoris*) or rodlike (*H. zumpti*). On the dorsal surface of the basis capituli and situated laterally there is a pair of very small ovoid setae which are homologous with the "maxillary setae" (*ms*) described by ZACHVATKIN (1941) in the Acaridae.

2. Legs

In all the species of *Harpyrhynchoides* the legs I and II are normally developed, whilst the legs III and IV are strongly reduced and devoid of ambulacra. In both sexes the legs III end in 2 free segments. The legs IV end either by a single free segment (i.e. in the males of all the species and in the females of some species) or by 2 free segments (in the females of the other species).

Chaetotaxy of the legs (number of setae in both sexes) :

Legs I-II : trochanters 1-1; femora 2-2 (1 ventral and 1 anterodorsal; genua 3-3 (1 anterior, 1 dorsal and 1 anterodorsal); tibiae 5-5 (1 anterodorsal, 1 dorsal, 1 posterodorsal, 1 anteroventral and 1 posteroventral); tarsi 6-6 (2 ventral, 4 dorsal). Tarsus I also bears 2 rodlike eupathidiae (1 dorsal and 1 ventral), tarsus II bears 1 eupathidia.
In most of the species the dorsal seta of genua I-II is long, strong and finely pectinate. In some species (e.g. *H. coturnix* and *H. alectoris*) the genua only bear 2 setae, the dorsal are lacking. Some species have additional setae. In four species (*H. columbae*, *H. herodius*, *H. kakatoe* and *H. tyto*) the genua I-II bear 4 setae (2 dorsal, 1 ventral and 1 anterior) and amongst these species two (*H. columbae* and *H. herodius*) bear an additional long ventral seta on femora, set close to the normal ventral seta.
Legs III-IV : the free segments of these legs bear long or very long setae some much longer than the length of the body.

Solenidia :

The tarsi I and II bear each 1 solenidion (*ωI* and *ωII*).

3. Idiosoma

The setal nomenclature proposed for the Astigmata (FAIN, 1963) and extended later to several families of Prostigmata, among others the Cheyletidae (FAIN, 1979), has also been used for the Harpirhynchidae (FAIN, 1972 & 1976). In this family the chaetotaxy is strongly reduced, especially in the Harpirhynchinae, and it consists of the following setae : vertical external (*ve*), scapular internal (*sci*), scapular external (*sce*), humeral (*h*), subhumeral (*sh*), lateral 5 (*l5*), genital setae (*g*) (1 pair in female, 3 pairs in male); intercoxal I setae (*icI*); intercoxal III setae (*icIII*); coxal I setae (*cxI*). The *sh* are either dorsolateral or ventrolateral, in some species they are lacking. The *g* also are lacking in the female of some species. The setae *l5* are always lacking in the male.
The base of the gnathosoma bears, dorsolaterally, a pair of very small ovoid setae homologous of the maxillary setae (*ms*) described by ZACHVATKIN (1941) in the Acaridae (Astigmata). We agree with LOMBERT & MOSS (1983) that the pair of very small ovoid setae situated outside the stigmata are supracoxal setae (*scx*) and not *ve* as we believed previously. Consequently the setae that I designated as the *vi* are in fact the *ve*, and the *vi* are absent in the *Harpirhynchidae*.

Cuticular scales and verrucosities

In almost all the species the cuticle of the dorsum covering the coxae, especially the anterior coxae but also more rarely the posterior coxae, presents a shagreen aspect caused by the presence of micro-verrucosities. In some species this shagreen aspect is also present on the coxae of the anterior legs (e.g. in *H. modestus*) or on the ventral surfaces of the legs (e.g. in *H. leptoptilus*).

More distinct verrucosities or triangular cuticular scales are observed in about 25% of the species. These formations are located in 3 main areas of the venter, i.e. a median area between the coxae I and extending sometimes beyond the setae *icI* and two lateral areas corresponding with the anterior coxae.

DIVISION OF THE FAMILY HARPIRHYNCHIDAE DUBININ, 1957

This family has been divided into 2 subfamilies : Harpirhynchinae ans Harpypalpinae :

A. HARPIRHYNCHINAE DUBININ, 1957

Anterior legs either normal or reduced. Legs III and IV always reduced with only one or two free segments and lacking ambulacra. This subfamily is divided into 3 tribes :

Harpirhynchini FAIN, 1972

Type genus :
Harpirhynchus MEGNIN, 1877. Other genus *Harpyrhynchiella* FAIN, 1972.

1. The genus *Harpirhynchus* is divided in 4 subgenera :
   a. *Harpirhynchus* s. str.
      Type species : Sarcoptes nidulans NITZSCH, 1818 (? *Harpirhynchus nidulans* MEGNIN, 1877; ? *Harpirhynchus megnini* HEIM, 1892).
   b. *Harpyrhynchoides* FAIN, 1972.
      Type species : Harpirhynchus (Harpyrhynchoides) squamosus FAIN, 1972.
   c. *Anharpyrhynchus* FAIN, 1972
      Type species : Harpirhynchus monstrosus FRITSCH, 1954.
   d. *Neharpyrhynchus* FAIN, 1972
      Type species : Harpirhynchus plumaris FRITSCH, 1954.

2. Genus *Harpyrhynchiella* FAIN, 1972
   Type species : Harpirhynchus reductus FRITSCH, 1954.

Metharpyrhynchini FAIN, 1972

Type genus :
Metharpyrhynchus FAIN, 1972 (*type species : Metharpyrhynchus macrophallus* FAIN, 1972).

Perharpyrhynchini FAIN, 1972

Type genus :
Perharpyrhynchus FAIN, 1972 (*type species : Perharpyrhynchus jacana* FAIN, 1972).

B. HARPYPALPINAE FAIN, 1972

In both sexes the anterior and the posterior legs are normally developed and bear an ambulacrum (claws and empodium).

Type genus :
Harpypalpus DUBININ, 1957 (*type species : Harpirhynchus longipes* FRITSCH, 1954 (? syn. of *Harpirhynchus holopus* BERLESE & TROUESSART, 1889)). Other genus *Harpypalpoides* LOMBERT & MOSS, 1983.

GENUS *Harpirhynchus* MEGNIN, 1877

1. Spelling of the genus name *Harpirhynchus*

MEGNIN (1877) described *Harpirhynchus nidulans*, new genus and species for a mite collected in a skin cyst in an "Alouette" (= Lark), a fringillid bird, in France.
In 1878, he completed his description using not only the original spelling (pp. 424, 428, 431, 437, 438, 439, 440, 441) but also three other spellings for the genus name, i.e. *Harpyrynchus* (p. 421), *Harpirynchus* (p. 437) and *Harpyrhynchus* (p. 429), which obviously were typographic errors.
OUDEMANS (1907) assuming that all these names were invalid proposed the new name *Sarcoborus* to replace *Harpirhynchus*.
DOMROW (1991) surmizes that the species *Harpirhynchus nidulans* MEGNIN, 1877 may, or may not, be the same as *Sarcoptes nidulans* NITZSCH, 1818, in spite of the fact that both species were found in the same host-group (Fringillinae).

2. Characters and division of the genus *Harpirhynchus*

In both sexes the body is short and the female not sacciform. Legs I-II normal ending in 2 claws and a padlike empodium. Legs III in both sexes with 2 free segments, leg IV with 1 or 2 free segments in female and 1 free segment in male. Posterior legs without ambulacrum.
This genus has been divided into 4 subgenera. We will study here only the subgenus *Harpyrhynchoides* :

Subgenus *Harpirhynchus* MEGNIN, 1877

In both sexes the 3 palpalae are identical in shape but PE is narrower than PI or PA; they are thick, strongly curved and bear dorsally small pectinations. Legs III with 2 free segments of which the apical bears 7 long setae. Leg IV with 1 free segment bearing 7 long setae. Male with a long penis originating in the posterior part of the body. Genital orifice situated in the anterior quarter of the dorsum (from specimens of *H. nidulans* collected in a skin cyst from the typical host, *Alauda chloris*, in Switzerland).

Type species :
Sarcoptes nidulans NITZSCH, 1818 (= ? *Harpirhynchus nidulans* MEGNIN, 1877; ? *Harpirhynchus megnini* HEIM, 1892).

Subgenus *Harpyrhynchoides* FAIN, 1972

In both sexes the PA has not the same shape as the other palpalae. The PA is curved and bears dorsally one row of digitiform projections (3 to 12); the PI and PE are strong curved spines bearing generally 2 rows of triangular pointed pectinations. The PE is generally similar to PI but smaller. In some species the PE are piliform or rodlike and bear very small pectinations. Apical segment of leg III with never more than 5 setae, that of leg IV with not more than 4 setae except in the female of *H. amazonae* where the free segment of leg IV bears 5 setae. Male with genital opening situated in the posterior third of the dorsum. Penis originating in front of the genital opening.

Type species :
Harpirhynchus (Harpyrhynchoides) squamosus FAIN, 1972.

KEY TO THE SUBGENUS *HARPYRHYNCHOIDES* FAIN, 1972

FEMALES

Remarks :
1. The female of *H. asio* FAIN and *H. capitatus* FAIN are unknown.
2. *H. vercammeni* LAWRENCE insufficiently described is omitted here.
3. The species *H. tracheatus* FRITSCH, *H. capellae* FRITSCH, *H. numidae* LAWRENCE, *H. vercammeni* LAWRENCE, *H. rubeculinus* CERNY & SIXL, *H. anatum* FAIN & *H. psittaci* FAIN are represented only by the females and their inclusion in *Harpyrhynchoides* is therefore provisional.
4. *H. rosellacinus* LAWRENCE is not included in this key owing to the high variability of some of its characters.

1. Legs III and IV with two free segments. Scales or verrucosities on venter variably developed . . . . . Group A . 2
– Legs III with two free segments, legs IV with one free segment . . . . . Group B . 15
2. Preapical segment of leg III with 2 long setae. Genua I-II with 2 setae. PE piliform, much longer than PI and bearing very short pectinations 3
– Preapical segment of leg III with 1 long seta. Genua I-II with either 3 or 4 setae. PE not piliform and not longer than PI 4
3. L 360; W 315; LS 178; WS 210; *ve* 105; *sci* 110, *sce* 168; *h* 180. Solenidia of tarsi I-II thicker, PA with 8-9 teeth . *H. coturnix* FAIN, 1972
– L 315; W 290; LS 180; WS 240; *ve* 126; *sci* 123; *sce* 210; *h* 210. Solenidia of tarsi I-II narrow and short, 10 and 7 long. PA with 6-7 very narrow teeth . . . . . *H. alectoris* FAIN, 1972
4. Preapical segment of leg IV with a long seta. Absence of scales or verrucosities on venter 5
– Preapical segment of leg IV without a seta. Scales or verrucosities present or absent on venter 8
5. Apical segment of leg IV with 4 long setae. Venter without scales or verrucosities 6
– Apical segment of leg IV with 3 long setae . . 7
6. Lateral border of body between legs II and III with a thick and short pectinate seta . . . . . *H. numidae* LAWRENCE, 1959
– Lateral border of body between legs II and III without such seta . . . . *H. capellae* FRITSCH, 1954
7. Genua I-II with 3 setae. Femora I-II with 2 setae, of which one is a long ventral seta. Empodium of tarsi I-II with normal tenent hairs . . . . . *H. metropeliae* FAIN, 1972
– Genua I-II with 4 setae. Femora I-II with 3 setae, of which 2 very long ventral setae set close to each other. Empodium of tarsi I-II bearing very long tenent hairs (from specimens taken on a heron (*Ardea* sp.) in Belgium . . . . . (?) *H. herodius* BOYD, 1968
8. Apical segment of legs IV with 4 long setae. Genua I-II with 4 setae 9
– Apical segment of legs IV with 3 long setae. Genua I-II with either 3 or 4 setae 10
9. Femora I-II with 2 setae. Venter with scales restricted to the median area in front of setae *ic I* . . . . . *H. kakatoe* FAIN, 1972
– Femora I-II with 3 setae, of which 2 long ventral set close to each other. Venter with strongly developed scale-fields, a median one extending to behind setae *icI* and 2 lateral on coxae I and II . . *H. columbae* FAIN, 1972
10. Genua I-II with 4 setae, of which the dorsal is pectinate. Venter with numerous scales or verrucosities covering the anterior third of the median area and a large part of the lateral areas . . . . . *H. tyto* FAIN, 1972
– Genua I-II with 3 setae 11
11. Absence of scales and verrucosities on venter. Ventral striations weakly developed 12
– Venter with well-developed fields of scales or verrucosities. Ventral striations well developed 14
12. Genital setae lacking; *l5* very short (3 long); *ve* 80; *sci* 75; *sce* 90; *h* 87; *sh* 88. L 360; W 255; LS 150; WS 171. Solenidia of tarsus I and II conical, 6 long and 2,4 and 2,2 wide.

Ventral striations very poorly developed . . . . . *H. leptoptilus* FAIN, 1976
– Genital seta at least 10 long; *l5* 15-20 long. Ventral striation more developed 13
13. Dorsal seta of genua I-II with poorly distinct pectinations. L 330; W 290; LS 170; WS 165; *ve* 80; *sci* 104; *sce* 100; *h* 75; *sh* 75, *l5* 25-30; *g* 10 (from a specimen taken on the typical host in Belgium) . . . *H. tracheatus* FRITSCH, 1954
– Dorsal seta of genua I-II with longer pectinations. L 240; W 178; LS 120; WS 132; *ve* 90; *sci* 150; *sce* 110; *h* 120; *sh* 78; *g* 10 . . . . . *H. oenae* FAIN, 1972
14. Coxae I-II without lines. Ventral scales or verrucosities covering the median area between coxae I, in front of setae *icI* and a short part of the lateral areas in front of coxae II and III. Setae : *ve* 75; *sci* 42; *sce* 75; *h* 63; *sh* 60; *l5* 24; *g* 8 . . . . . *H. psittaculae* FAIN, 1972
– Coxae I-II with thick longitudinal lines. Median field of scales extending backwards to setae *icIII*. Laterally the scales or verrucosities cover a short area in front of coxae III, most of coxae III and IV and posterior part of the vulvar lips. Setae *ve* 90; *sci* 75; *sce* 120; *h* 120; *sh* 105; *l5* 13; *g* 30. . . . . *H. squamosus* FAIN, 1972
15. Preapical free segment of leg III with 2 long setae 16
– Preapical free segment of leg III with 1 long seta 18
16. Apical segments of legs III and IV with 5 and 4 setae respectively. L 306; W 258; LS 180; WS 216; setae *ve* 64; *sci* 48; *sce* 90; *h* 78; *sh* 95; *l5* 45; *g* 34. PA with 7-8 teeth. Solenidia *ωI* and *ωII* cylindroconical and pointed at apex. . . . . *H. psittaci* FAIN, 1972
– Apical segments of legs III and IV with 4 and 3 setae respectively 17
17. Setae *sci* and *sce* are thick spines with strong teeth. Palpalae very thick, the PI and PE with 2 or 3 rows of pectinations. L 470; W 400; LS 90 (in midline); WS 60. Setae *sh* and *g* present . . . . *H. cristagalli* BERLESE & TROUESSART, 1889
– All dorsal setae short and bearing short pectinations. Palpalae much smaller. L 312; W 250; LS 180; WS 210. Setae : *ve* 55; *sci* 16; *sce* 39; *h* 30; *l5* 22. PA with 6-7 teeth. Setae*sh* and *g* lacking . . . . . *H. anatum* FAIN, 1972
18. Apical segment of leg IV with 5 setae. Absence of scales or verrucosities on venter. PA long with 8-9 teeth. Setae *g* 36; *l5* 32; *ve* 90; *sci* 60.....*H. amazonae* FAIN, 1972
– Apical segment of leg IV with 4 setae. Scales and verrucosities on venter present only in *H. pectinifer* 19
19. PE piliform, much longer than PI and with very short pectinations . . . . . *H. rubeculinus* CERNY & SIXL, 1971
– PE is either a curved spine shorter than PI and bearing stronger pectinations or a thick rodlike seta not longer than PI and covered with numerous short pectinations 20
20. PA long with 10-12 teeth. Ventral striations variably developed 21
– PA short with 5-6 teeth. Ventral striations well developed 22
21. PE is a rodlike seta about as long as PI and bearing numerous small pectinations. Venter not scaly nor verrucose, but with well developed striations. LS 120; WS 186. Setae : *ve* 75; *sci* 72; *sce* 99; *h* 105; *sh* 90; *l5* 48; *g* is lacking; *ωI* and *ωII* curved, strongly attenuated at apex . . . . . *H. zumpti* FAIN, 1972
– PE is a curved spine shorter than PI and bearing a few thick pectinations. Venter without striations, scales or verrucosities. LS 180; WS 216. Setae : *ve* 51; *sci* 27; *sce* 69; *h* 81; *sh* 67; *l5* 18; *g* 10; *ωI* and *ωII* curved, strongly attenuated at apex . . . . . *H. lawrencei* FAIN, 1972
22. PE and PI with small pectinations. PA with 5 thick teeth. Small, but well distinct scales or verrucosities scattered on venter and also present dorsally between setae *ve*. Setae : *ve* 60; *sci*, *sce* and *h* 72 to 78; *l5* 21; *g* 15. Vulva without striated membrane (from a specimen taken from *Campethera cailliauti*, in Rwanda) . . . . . *H. pectinifer* LAWRENCE, 1959
– PE and PI with a few strong pectinations. Microverrucosities, hardly visible, on various areas of body or legs. Vulva partly covered by a large longitunally striated membrane . . . 23
23. Bases of setae *icIII* with a long posterior triangular lobe. Setae : *ve* 81; *sci* 80; *sce* 120; *h* 135; *sh* 126. . . . . *H. coxatus* FAIN, 1972
– Bases of setae *icIII* rounded or almost rounded. Setae : *ve* 108; *sci* 120; *sce* 135; *h* 120; *sh* 138 . . . . . *H. modestus* FAIN, 1976

MALES

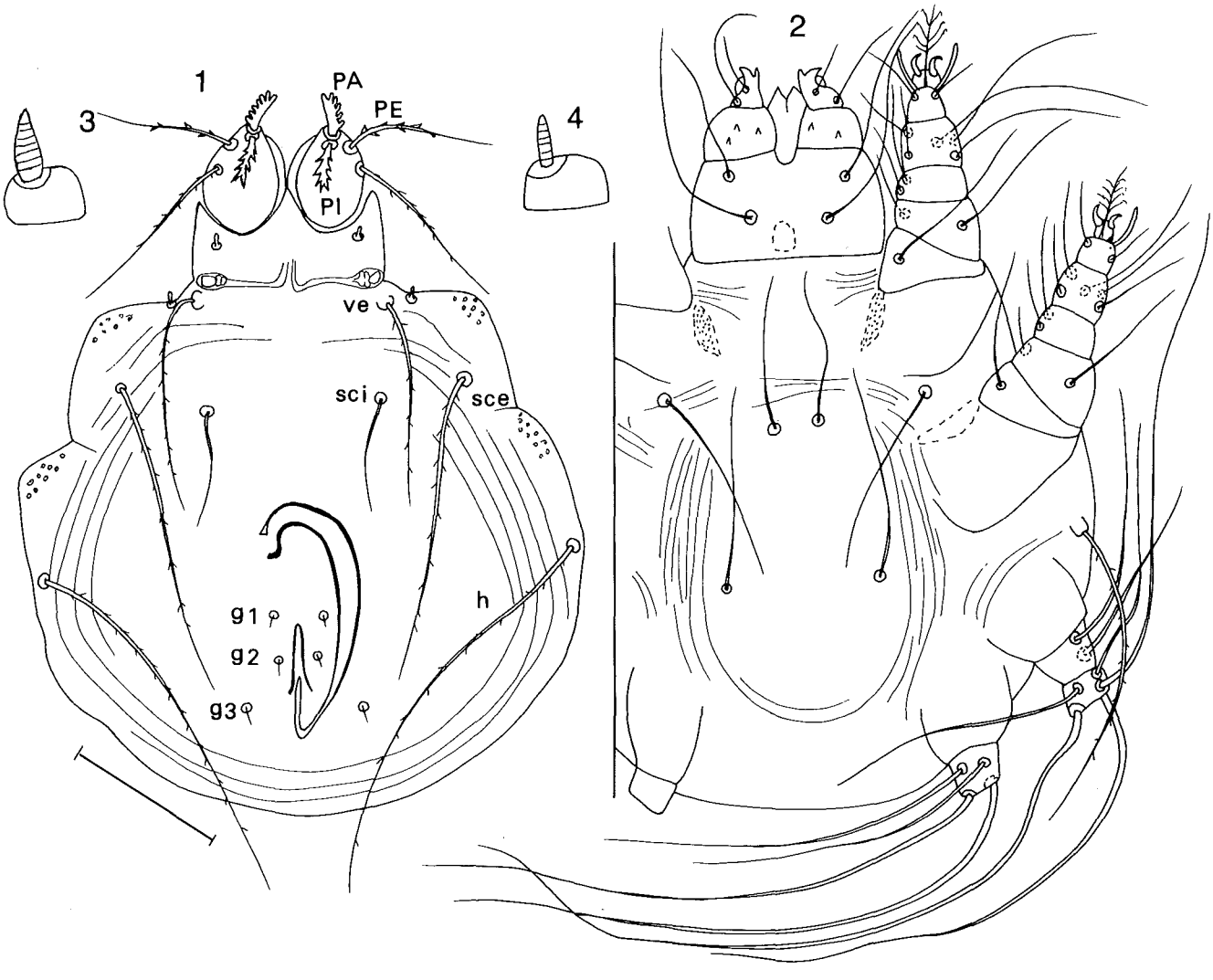
Remarks :

1. The males of the following species are unknown : *H. tracheatus* FRITSCH, *H. capellae* FRITSCH, *H. numidae* LAWRENCE, *H. vercammeni* LAWRENCE, *H. rubeculinus* CERNY & SIXL, *H. anatum* FAIN and *H. psittaci* FAIN.
2. The male of *H. rosellacinus* LAWRENCE highly variable, is not included in this key.

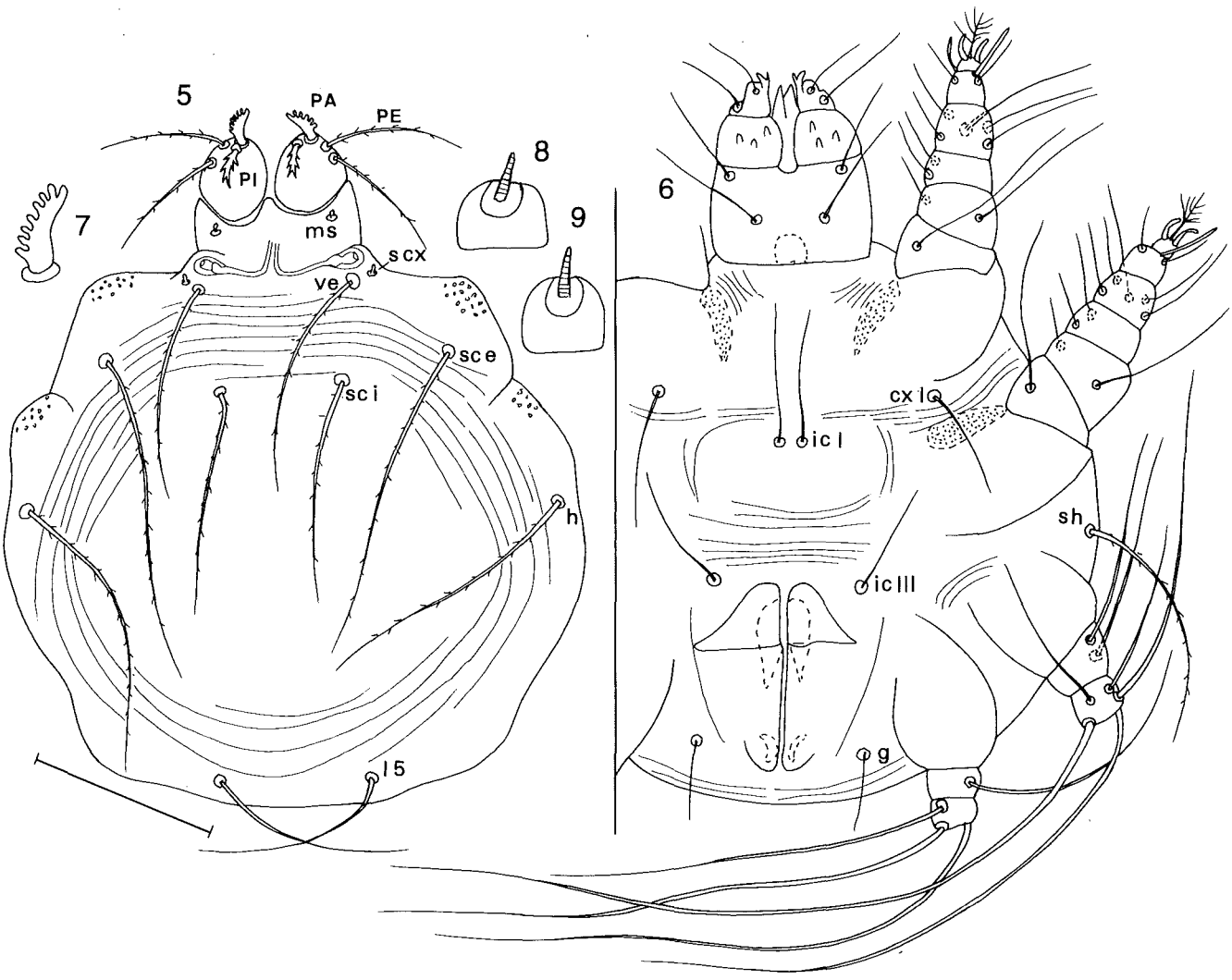
1. Preapical segment of leg III with 2 long setae . 2
– Preapical segment of leg III with 1 long seta . . 4

2. Apical segment of leg III with 4 setae. Apical segment of leg IV with 3 setae. Genua I-II with 3 setae. Palpalae very large, especially PA which bears 4 large teeth. PE strong, as long as PI . . . . . *H. cristagalli* BERLESE & TROUESSART, 1889
– Apical segment of leg III with 5 setae. Apical segment of leg IV with 4 setae. Genua I-II with 2 setae. Palpalae much smaller. PE piliform, longer than PI and with short pectinations 3
3. L 219; W 180; LS 135; WS 149. Setae : *ve* 69; *sce* 105; *h* 126; *sh* 66. The 2 posterior genital setae are 42-45 apart. Solenidia *ωI* inflated (9,5 long and 3,6 wide) . . . *H. coturnix* FAIN, 1972
– L 275-285; W 215; LS 180; WS 180. Setae : *ve* 120; *sce* 183; *h* 210; *sh* 100. The 2 posterior genital setae are 70-75 apart. Solenidia *ωI* narrow (11 long and 2 wide) . . . . . *H. alectoris* FAIN, 1972
4. Apical segment of leg IV with 4 long setae . . 5
– Apical segment of leg IV with 3 long setae . . 10
5. Genua I-II with 4 setae, the dorsal seta long, thick and pectinate. Venter with scales or verrucosities 6
– Genua I-II with 3 setae, the dorsal seta either smooth or pectinate. Venter without scales or verrucosities 7
6. Femora I-II with 2 setae. Ventral scales poorly developed . . . . . *H. kakatoe* FAIN, 1972
– Femora I-II with 3 setae, of which 2 long ventral set close to each other. Venter with well developed scales . . . *H. columbae* FAIN, 1972
7. Ventral striations present only in median ar a and posteriorly between coxae III-IV. LS 144; WS 156. Setae : *ve* 45; *sci* 30; *sce* 60; *h* 82; *sh* 75. Genital setae close to each other; *ωI* ovoid 12 long and 4,8 wide PA with 9-10 teeth. Male organ very short . . . . . *H. lawrencei* FAIN, 1972
– Ventral striations well developed 8
8. PA short with 5 thick teeth. PE almost straight, much shorter than PI and with a few short pectinations. Setae : L 219; W 186; LS 160; WS 150; *ve* 45; *sci* 40; *h* 60; *sh* 45; *ωI* 3,6 wide. Genital setae situated along 2 divergent lines, the posterior setae 35 apart. Sheath of penis 15 wide (from a specimen taken on *Campethera caillianti*, Rhodesia) . . . . . *H. pectinifer* LAWRENCE, 1959
– PA long, curved, with 8-9 teeth. PE not specially short, curved and with strong pectinations 9
9. Setae *sci* very thin, 20 long. The second pair of genital setae much closer to the posterior than to the anterior setae, the 3 pairs set on longitudinal subparallel rows. Sheath of penis 30 long. L 222; W 165; LS 132; WS 141; setae : *ve* 70; *ωI* 9 long and 4,2 thick; *ωII* cylindroconical, 7 long and 2 wide . . . . . *H. amazonae* FAIN, 1972
– Setae *sci* thicker, 42 long. The second and third pairs of genital setae set on a transverse line. Sheath of penis 75 long. L 240; W 189; LS 120; WS 111. Setae : *ve* 60; *ωI* and *ωII* narrow, strongly bent and ending apically in a very thin point . . . . . *H. zumpti* FAIN, 1972
10. Genua I-II with 4 setae, of which the dorsal is strong and pectinate 11
– Genua I-II with 3 setae, of which the dorsal is pectinate, except in *H. capitatus* 12
11. Femora I-II with 3 setae, of which the 2 ventral are long and set close to each other. Empodium with unusually long tenent hairs. Venter without scales or verrucosities (from specimens taken on *Ardea* sp., in Nederland) . . . . . (?) *H. herodius* BOYD, 1968
– Femora I-II with 2 setae. Empodium with tenent hairs of normal length. Venter with numerous scales and verrucosities . . . . . *H. tyto* FAIN, 1972
12. Venter with 3 large fields of scales : one antero-median between coxae I and two pairs of laterals behind coxae I and II. Solenidia of tarsus I very thick 13
– Venter without scales or verrucosities. Solenidia of tarsus I variable 15
13. Antero-median field of scales not extending behind setae *cxI*. Lateral fields relatively small, situated in front of coxae II and III. Coxae I-II without longitudinal lines. Setae : *sci* 16, very thin and smooth, *sce* and *h* 60; *sh* 45; *ωI* 9,6 long 7,2 thick PA with 6-8 teeth . . . . . *H. psittaculae* FAIN, 1972
– Anteromedian field of scales extending posteriorly far beyond setae *icI*, lateral fields more developed. Coxae I-II with thick longitudinal lines. Setae *sci* longer and thicker. PA with 5 teeth 14
14. Anteromedian field of scales extending posteriorly to setae *icIII*. All coxae with conspicuous rounded or elongate verrucosities. L 177; W 128; LS 114; WS 108. Setae : *ve* 65; *sci* pectinate 30; *sce* 85; *h* 85; *sh* 78. Genital setae forming 2 longitudinal rows, the 2^{d} pair slightly more internal than the other setae . . . . . *H. squamosus* FAIN, 1972
– Anteromedian field of scales arriving half way between setae *icI* and *icIII*. Anterolateral field large. L 240; W 180; LS 141; WS 147. Setae : *ve* 100; *sci* strong, pectinate 101; *sce* 105; *h* 108; *sh* 99. Genital setae set along two slightly divergent lines. . . . . *H. asio* FAIN, 1972

15. Ventral surface almost smooth except in 2 short areas poorly striated, one between coxae I, the other between coxae IV. L 219; W 180; LS 106; WS 138. Setae : *ve* 63; *sci* 33; *ωI* ovoid 9,5 x 4,7; *ωII* conical 7,2 x 2,3. Genital setae : the 2 anterior pairs on a transverse line and very close to each other, the posterior setae more lateral and 24 apart . . . . . *H. leptoptilus* FAIN, 1976
– Ventral surface almost completely striated . . . 16
16. Solenidia *ωI* almost ovoid (3,2 to 4,2 wide); *ωII* much narrower (1,3 to 2,2 wide). PA with 4-5 teeth 17
– Solenidia *ωI* narrow, cylindroconical (1,3 to 1,6 wide); *ωII* very narrow (1,2-1,3). PA with 3 thick teeth 19
17. L 231; W 183; LS 135; WS 140. Setae : *ve* 90; *sci* 75; *sce* 120; *h* and *sh* 135; *ωI* 9,5 x 3,2; *ωII* 14 x 1,5, tapering apically to a fine point. Genital setae relatively long, the second pair distinctly more median than the other pairs; the posterior setae 24 apart . . . . . *H. modestus* FAIN, 1976
– Body smaller (L maximum 177; W 140), setae shorter (maximum length : *ve* 69; *sci* 60; *sce* 68, *h* 90, *sh* 90). Setae *g* oriented differently 18
18. Setae : *ve* 66-69; *sci* 15-20, very thin. Sheath of penis 33 long. Genital setae set on 2 longitudinal, almost parallel rows, the median pair often slightly more internal than the other pairs. Solenidia : *ωI* 9,4 x 4,2; *ωII* 8,4 x 2,2 . . . . . *H. oenae* FAIN, 1972
– Setae : *ve* 60; *sci* 56; *h* and *sh* 90. Sheath of penis 66. Genital setae forming 2 divergent lines, the 2 posterior setae 36 apart; *ωI* 8 x 3,3; *ωII* cylindroconical 13 x 1,3 . . . . . *H. coxatus* FAIN, 1972



Figs 1-4. – Harpirhynchus (Harpyrhynchoides) coturnix *FAIN.* - *Male in dorsal view (1) and ventral view (2); ωI (3) and ωII (4). Scale line 50 μm (figs 1-2).*



Figs 5-9. – Harpirhynchus (Harpyrhynchoides) coturnix *FAIN*. - *Female in dorsal view (5) and ventral view (6); PA (7); ωI (8) and ωII (9). Scale line 100 μm (figs 5-6).*

19. L 219; W 153. Setae : *ve* 105; *sci* 42; *sce* 110; *h* 57; *sh* 126. Genital setae : anterior pair situated at 20 in front of the other pairs which are set on a slightly anteriorly convex line. Solenidia : *ωI* cylindroconical 11-12 x 1,3; *ωII* 15 x 1,2. . . . . *H. metropeliae* FAIN, 1972
– L 189; W 130. Setae : *ve* 90; *sci* broken; *sce* 82; *h* 100; *sh* 108. Genital setae set on 2 posteriorly divergent lines, the posterior setae 20 apart. Solenidia narrow : *ωI* 8-9 x 1,4; *ωII* 14 x 1,3 . . . . . *H. capitatus* FAIN, 1976

DESCRIPTION OF THE SPECIES

GROUP A

In this group the leg IV of the female includes two free segments.

1. *Harpirhynchus (Harpyrhynchoides) coturnix* FAIN, 1972

Male, holotype (figs 1-4) : L 219; W 180; LS 135; WS 149; LG 54; WG 66; *ve* 69; *sci* 39-45; *sce* 105; *h* 126; *sh* 66; genital setae on a curved line concave externally, the posterior setae much more apart (42-45) than the other setae; sheath of penis 84 long; PA with 6 teeth; PE piliform, pectinate, 36 to 50 long; *ωI* inflated 9,5 x 3,6; *ωII* 7,2 x 2. Ventral striations very poorly developed, without scales or verrucosities. Leg I-II with only 2 setae on genua. Apical segments of legs III and IV with 5 and 4 setae, subapical segment of leg III with 2 setae.

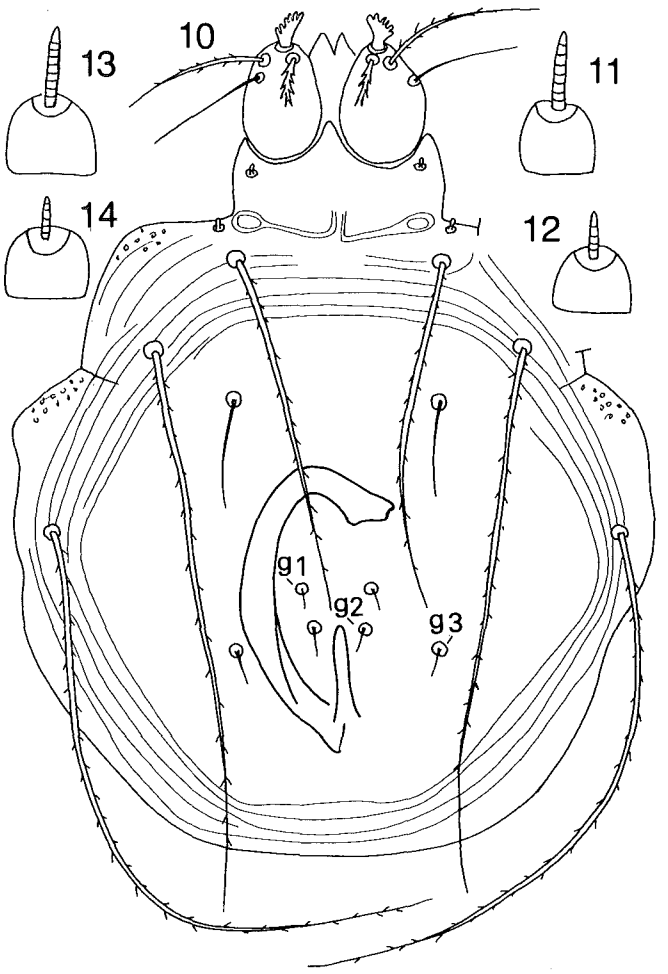
Female (figs 5-9) : L 360; W 315; LS 178; WS 210; LG 70; WG 92; *ve* 105; *sci* 110; *sce* 168 : *h* 180; *sh* 90; *l5* 115; *g* 32; PA with 8-9 teeth; PE as in the male; *ωI* 9 to 9,5 x 1,8 to 2; *ωII* 9 x 1,8. Ventral striations as in male; ventral scales or verrucosities lacking; chaetotaxy of leg

I-II as in the male; apical segments of legs III-IV and subapical segment of leg III as in the male.
This species is well characterized by the chaetotaxy of legs III-IV and of the genua of legs I-II and the piliform aspect of PE.

Host and locality :
Holotype and 6 paratypes male, 14 paratypes female and nymphs from *Coturnix delegorguei* (Galliformes, Phasianidae). This bird died in the Zoo of Antwerp, 28.IV.1967. Holotype in MRAC.

2. *Harpirhynchus (Harpyrhynchoides) alectoris* FAIN, 1972

Male, holotype (figs 10-12) : L 285; W 215; LS 180; WS 180; LG 63; WG 81; *ve* 120; *sci* 36; *sce* 183; *h* 219; *sh* 100; the median and posterior genital setae are situated on a slightly curved transverse line, the *g3* being 70-75 apart; sheath of penis 100 long. Chaetotaxy of legs as in *H. coturnix* but *ωI* and *ωII* cylindroconical, not inflated (*ωI* 11 x 2; *ωII* 8,4 x 1,3). PA with 6-7 teeth; Others characters as in *H. coturnix*.



Figs 10-14. – Harpirhynchus (Harpyrhynchoides) alectoris FAIN. - *Male in dorsal view (10); ωI (11); ωII (12). Female : ωI (13); ωII (14).*

Female (figs 13-14) : L 315; W 290; LS 180; WS 240; LG 69; WG 96; *ve* 126; *sci* 123; *sce* 210; *h* 210; *sh* 75; *l5* 100-120; *g* 21; PA with 7 teeth; *ωI* 10 x 1,3; *ωII* 8,2 x 1,3.
This species differs from *H. coturnix* mainly by the much larger size of the male, the different length of some setae, the thinner aspect of the solenidia in male and the different situation of the genital setae in male.

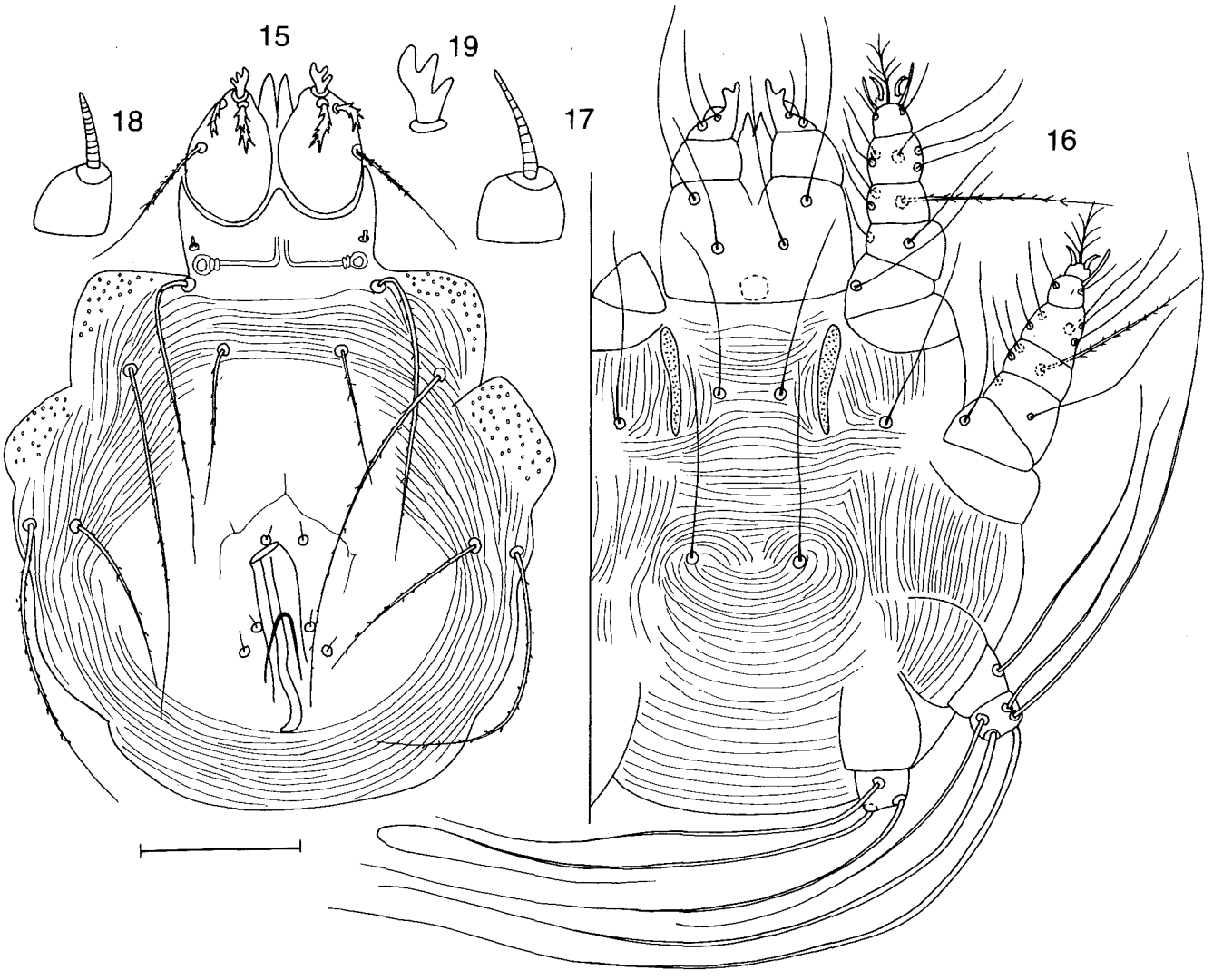
Host and locality :
Holotype and 3 paratypes male, 7 paratypes female, 3 nymphs all from *Alectoris graeca* (Galliformes, Phasianidae). This bird died in the Zoo of Antwerp, during its quarantine (16.VII.1965). Holotype in IRSNB.

3. *Harpirhynchus (Harpyrhynchoides) capellae* FRITSCH, 1954

This species was described from 2 females collected from *Capella gallinago* (Charadriiformes, Scolopacidae), near Erlangen, Germany. I have not seen specimens of this species but according to the original description and figures the female belongs to our group A. From the figures it appears that the 3 palpalae are curved and narrow shortly pectinate spines, the dorsal setae are relatively short, the venter is devoid of striations and scales, and the chaetotaxy of legs I-II is normal. The subapical segments of legs III-IV bear 2 and 1 setae and the apical segments 5 and 4 respectively.

4. *Harpirhynchus (Harpyrhynchoides) numidae* LAWRENCE, 1959b

This species is known only from the holotype female, collected from *Numida meleagris* (Phasianidae), Africa, and deposited in the collection TROUESSART (Paris). According to the original description the leg III is composed of 3 segments and leg IV of 2 segments, which should mean that leg III has 2 free and leg IV 1 free segment. Indeed, the fig. n°2 shows the presence of 2 free segments on leg III, the subapical bearing 1 seta and the apical 5 setae. The striation is less clear on leg IV whose apical segment bears 5 setae at one side and 4 at the other side, but there is an additional seta at the base of this segment which suggests that there is a preapical free segment. The figure n° 1 does not throw more light on this situation. A characteristic feature of this species is the presence of a pair of very short thick and curved pectinate setae, laterally in front of coxae III. The PI and PE are relatively thin and smooth spines. Provisionally I will place this species in the group A.



Figs 15-19. – Harpirhynchus (Harpyrhynchoides) metropeliae FAIN. - *Male in dorsal view (15) and ventral view (16); ωI (17); ωII (18), PA (19). Scale line 50 μm (figs 15-16).*

5. *Harpirhynchus (Harpyrhynchoides) metropeliae* FAIN, 1972

Male, holotype (figs 15-19) : L 219; W 153; LS 108; WS 108; LG 57; WG 60; *ve* 105; *sci* 42; *sce* 110; *h* 57; *sh* 126; anterior pair of genital setae far in front of the second pair (distance 20); second and third pair close to each other, the posterior setae being 33 apart; sheath of penis 57 long; PA short, with 3 strong teeth; PI spinose with strong pectinations; PE similar to PI but smaller; *ωI* cylindroconical 11,5 x 1,3; *ωII* cylindroconical 15 x 1,2. Ventral striations very well developed; venter without scales or verrucosities. Chaetotaxy of legs I-II normal. Apical segments of legs III-IV with 5 and 3 setae respectively; subapical segment of leg III with 1 seta.

Female, allotype (figs 20-23) : L 310; W 264; LS 129; WS 160; LG 75; WG 90; *ve* 125; *sci* 120; *sce* 129; *h* 110; *sh* 132-138; *l5* 12; *g* 90; PA with 4 teeth; PE and PI as in the male; *ωI* cylindroconical 9,5 x 1,3; *ωII* cylindroconical 13 x 1,4. Ventral striations well developed, without scales or verrucosities. Chaetotaxy of legs I-III and of apical segment of leg IV as in the male. Preapical segment of leg IV with 1 seta.

Amongst the other species of group A, *H. metropeliae* is distinguished mainly by the shape of PA, the arrangment of genital setae in male, the narrow shape of *ωI* and *II* in male (see key).

Host and locality :

Holotype and 2 paratypes male, allotype and 9 paratypes female and 4 nymphs from *Metropelia caeciliae* (Columbiformes, Columbidae). This bird died in Zoo of Antwerp, during its quarantine. Other paratypes : 2 males, 1 female and 5 nymphs from the same data but on 7.XII.1965 and 1 paratype female with same date but on 22.IV.1966. Holotype in IRSNB.

6. *Harpirhynchus (Harpyrhynchoides) capitatus* FAIN, 1976

This species is only represented by the holotype male. It has been described and depicted in 1976. I complete here some of the metric data.

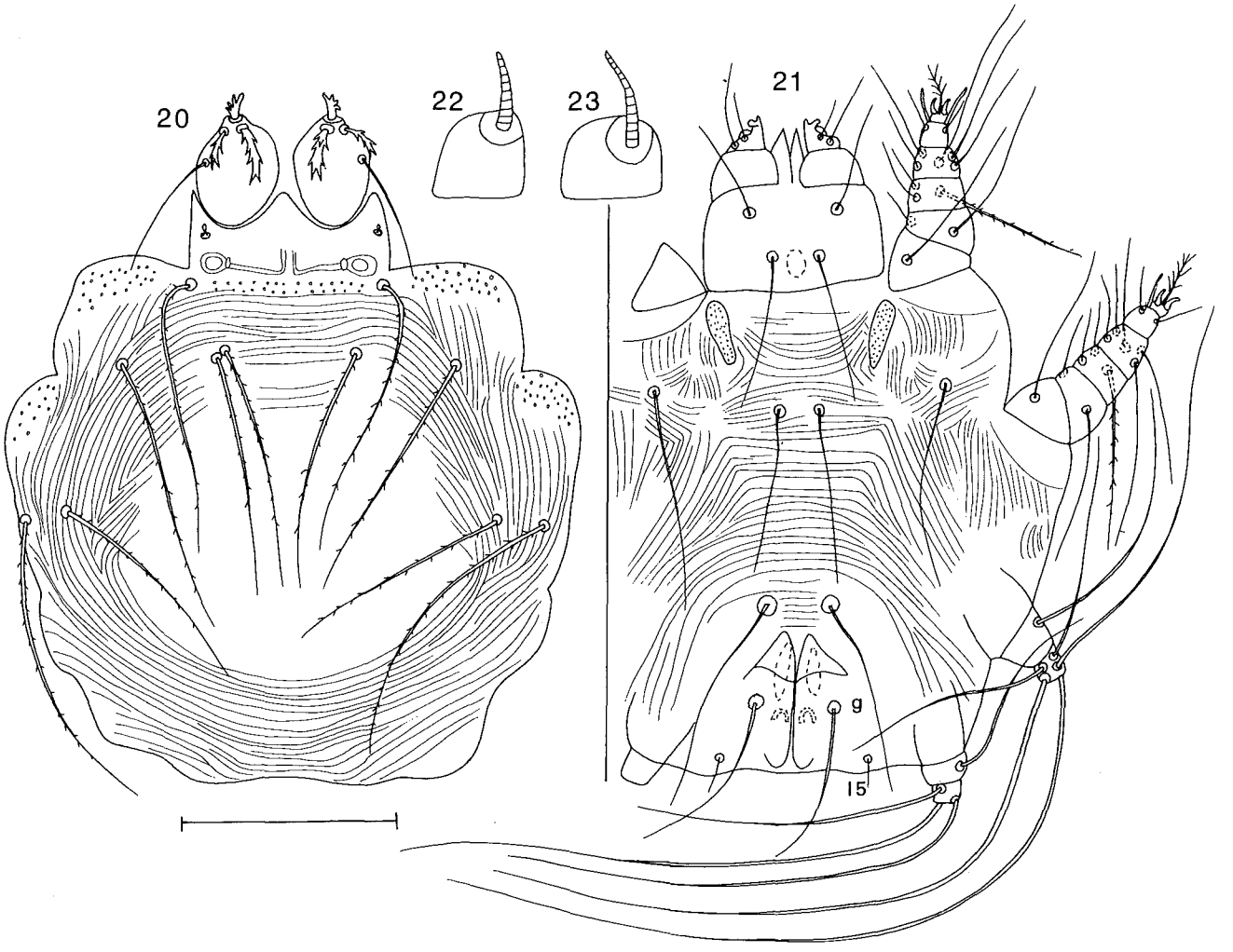
Male, holotype : L 189; W 130; LS 105; WS 84; *ve* 90; PA with 3 teeth; genital setae arranged along 2 divergent rows, the posterior setae are 20 apart; sheath of penis 48 long. Ventral striations well developed, scales lacking.

Host and locality :
Holotype male from *Columbina talpacoti* (= *Columbigallina talpacoti*) (Columbiformes, Columbidae). This bird died in the Zoo of Antwerp on 10.III.1964. Holotype in IRSNB.

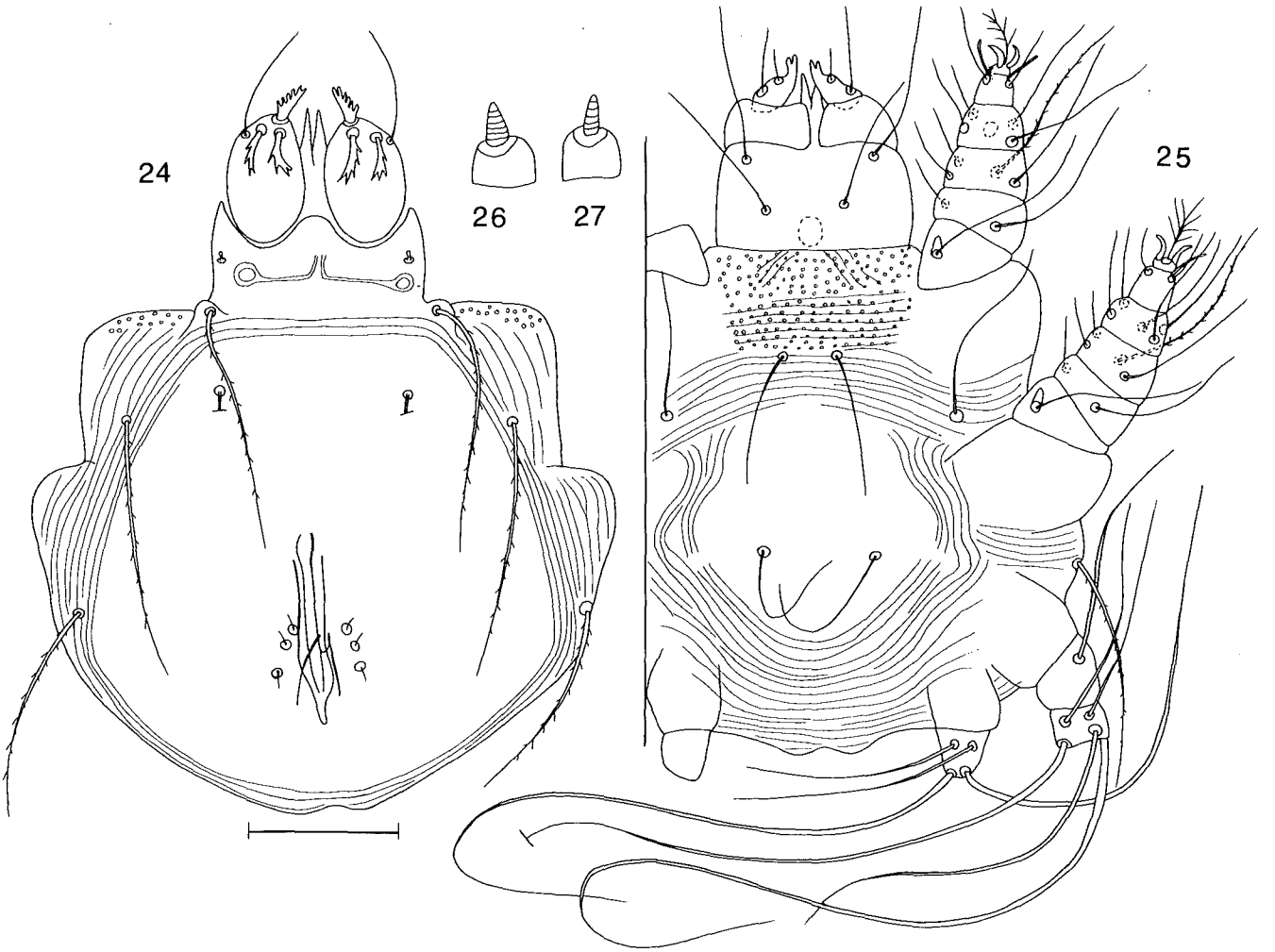
7. *Harpirhynchus (Harpyrhynchoides) herodius* BOYD, 1968

? *Harpirhynchus butorides* BOYD, 1968

H. herodius was described from specimens taken on a heron *Ardea herodius* (Ciconiiformes, Ardeidae), Massachusetts, U.S.A. In the same paper, BOYD described a second species, also from a heron, *Butorides virescens*, from the same area. This second species appears very close or identical to *H. herodius*.
In 1976, I received from Dr. F. LUKOSCHUS numerous specimens of harpirhynchids that the had collected on *Ardea cinerea*, in Arnhem, Nederland (27.XII.1976). These specimens resemble closely *H. herodius*. In both sexes the genua I-II bear 4 setae, the femora 3 setae, of which 2 long ventral set close to each other. In the female the legs III-IV present 2 free segments and in the male only the leg III present 2 free segments.



Figs 20-23. – Harpirhynchus (Harpyrhynchoides) metropeliae *FAIN*. - *Female in dorsal view (20) and ventral view (21); ωI (22); ωII (23). Scale line 100 μm (figs 20-21).*



Figs 24-27. – Harpirhynchus (Harpyrhynchoides) kakatoe *FAIN.* - *Male in dorsal view (24) and ventral view (25); ωI (26) and ωII (27). Scale line 50 μm (figs 24-25).*

A characteristic feature of all these specimens from herons is the shape of the empodium which bears exceptionally long tenent hairs.

8. *Harpirhynchus (Harpyrhynchoides) tracheatus* FRITSCH, 1954

This species is known only from female specimens taken from *Buteo buteo* (Falconiformes, Accipitridae), near Erlangen, Germany. We found 9 females of this species on the same host from Luxembourg (April 1965).

The female of that species belongs our group A. We give here the metric data of these specimens : L 330; W 290; LS 170; WS 165; LG 84; WG 96; *ve* 80; *sci* 104; *sce* 100; *h* 75; *sh* 75; *l5* 25-30; *g* 10-12; *ωI* and *ωII* cylindroconical, the first measures 9 x 2,4, the second 9,5 x 2,2. PA with 5 teeth; PI and PE with thick pectinations. Preapical free segments of leg III and IV with I and 0 seta, apical segment of these legs with 5 and 3 setae respectively. Ventral striations poorly developed without scales.

9. *Harpirhynchus (Harpyrhynchoides) kakatoe* FAIN, 1972

Male, holotype (figs 24-27) : L 239; W 165; LS 156; WS 160; LG 62; WG 72; *ve* 80; *sci* broken; *sce* 80; *h* 80; *sh* 75; the 3 pairs of genital setae arranged on two divergent lines; sheath of the penis 49 long; PA with 6-7 teeth; PE similar to PI but smaller, *ωI* 11 x 4,5; *ωII* 8,4 x 3,5. Venter partly striated. The median area comprised between coxae I and setae *icI* is densily verrucose. Genua I-II with 4 setae. Presence of a small triangular lobe at the bases of the trochanteral setae I-II. Apical segments of legs III-IV with 5 and 4 setae respectively; preapical segment of leg III with 1 seta.

Female, allotype (figs 28-31) : L 300; W 255; LS 180; WS 214; LG 75; WG 96; *ve* 90-100; *sci* 90; *sce* 100; *h* 90; *sh* 81; *l5* 6; *g* 10; PA with 6 teeth; PE and PI curved spines with thick pectinations; *ωI* 8 x 2,5; *ωII* 7,5 x 2,5. Ventral striations relatively well developed; verrucose area as in male. Legs I-II as in male. Chaetotaxy of legs III-IV as in male but the preapical segment of leg IV is present and bare.

This species is distinguished from the other species of group A in both sexes by the presence of a verrucose area confined to the antero-median region between coxae I, the presence of 4 setae on genua I-II and 2 setae on femora I-II; in the female the absence of setae on preapical segment of leg IV.

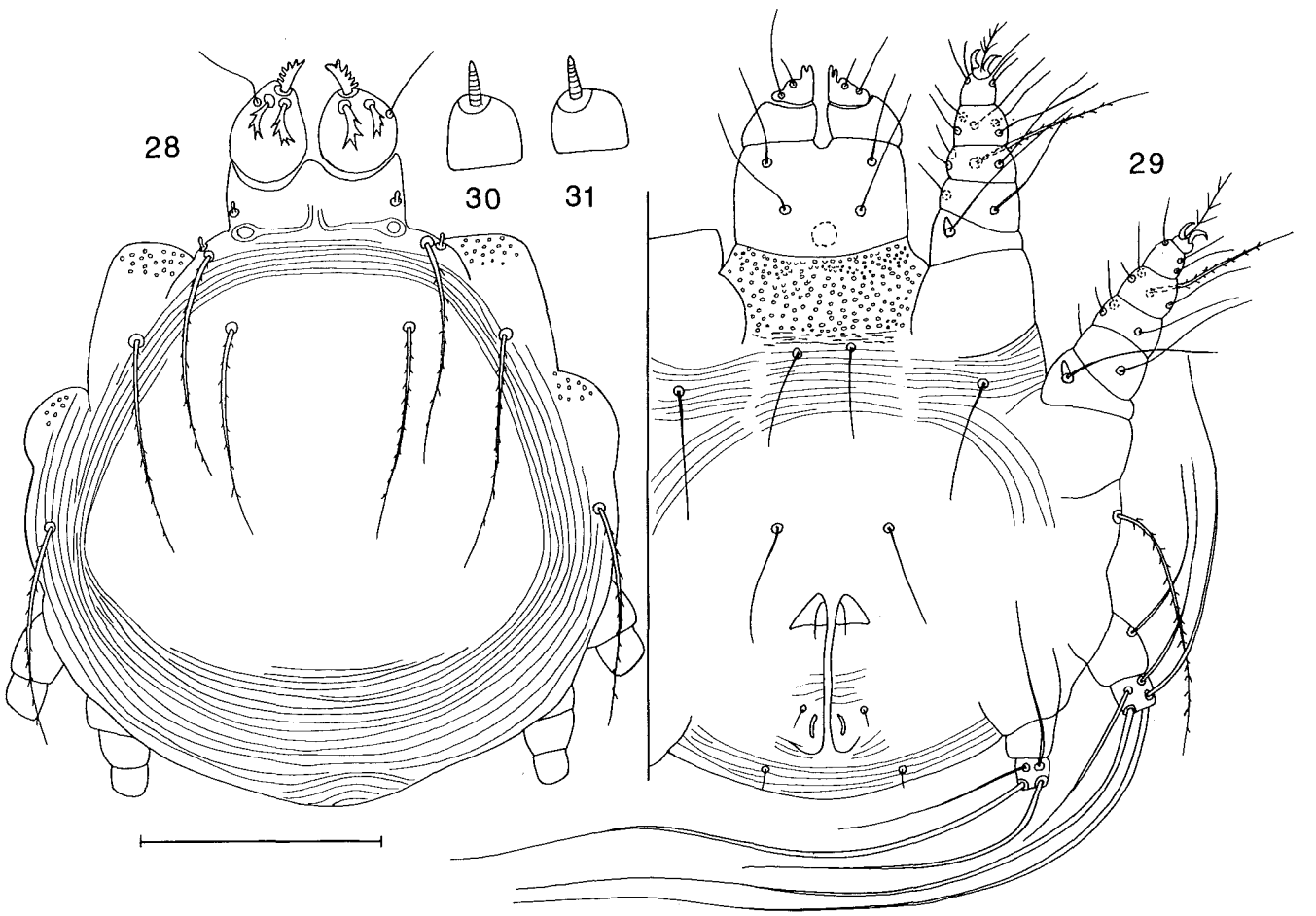
Host and locality :

Holotype and 1 paratype male, allotype and 2 paratypes female from *Kakatoe* sp. (Psittaciformes, Psittacidae). This bird died in the Zoo of Antwerp during its quarantine. Holotype in IRSNB. Domrow (1991) recorded this species from *Kakatoe galerita* (South Australia); the mites had caused skin tumors in the bird.

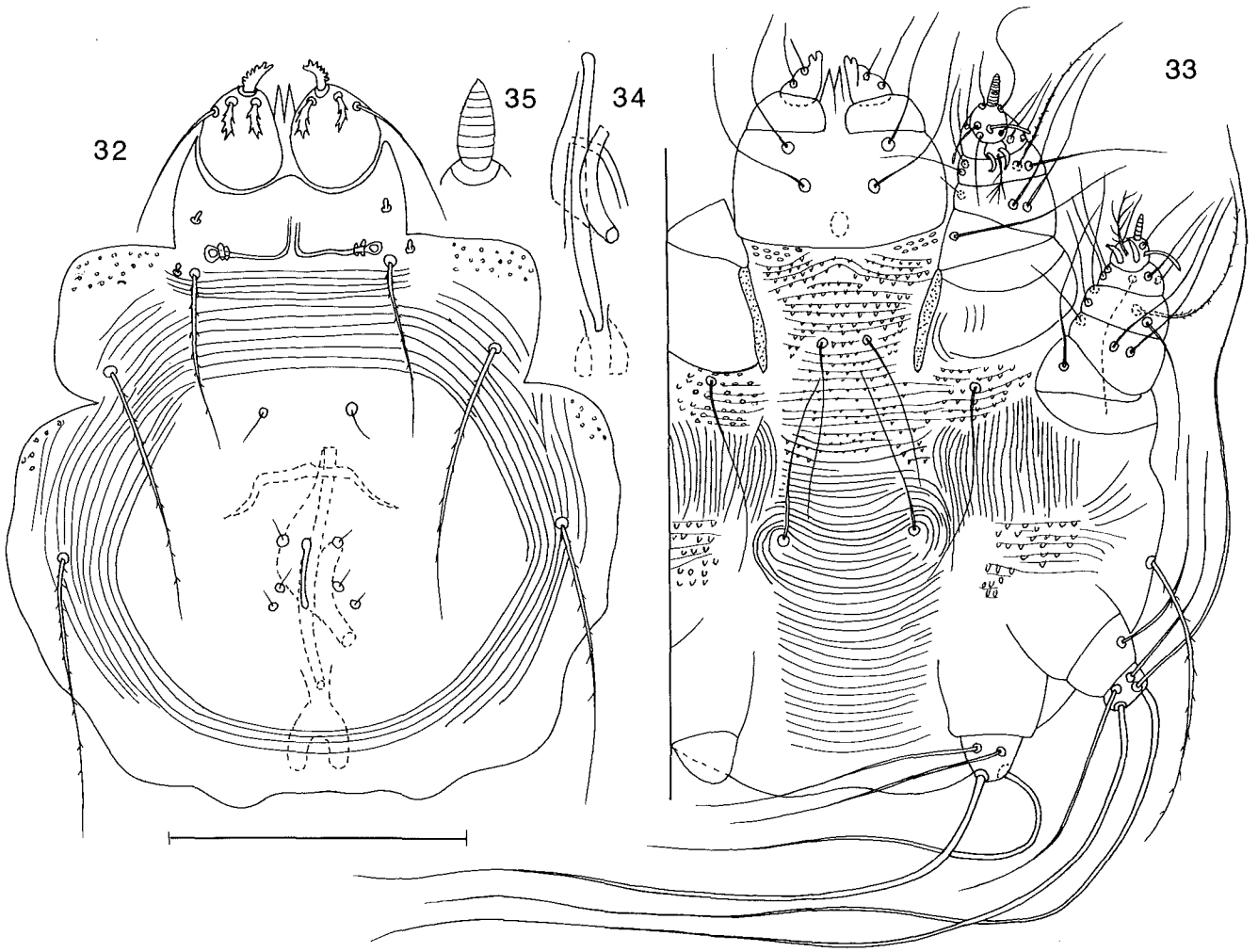
10. *Harpirhynchus (Harpyrhynchoides) columbae* FAIN, 1972

Male, holotype (figs 32-35) : L 240; W 190; LS 138; WS 150; LG 62; WG 79; *ve* 80; *sci* 15 (very thin); *sce* 87; *h* 100; *sh* 93; median pair of genital setae closer to posterior pair than to anterior pair; posterior setae 27 apart; penis 78 long, sheath 50 long; PA with 7 teeth; PI and PE are curved pectinate spines; *ωI* 10,8 x 3,6; *ωII* 7,2 x 1,8. Venter striated with large median scaly or verrucose areas extending posteriorly beyond setae *icI* and laterally to the coxal areas. The bases of coxae III bear several rows of verrucosities. Coxae II longitudinally striated. Chaetotaxy of legs I-II : genua with 4 setae, femora with 3 setae of which 2 long ventral set close to each other. Apical segments of legs III-IV with 5 and 4 long setae respectively; subapical segment of leg III with 1 long seta. Empodium with short tenent hairs.

Female, allotype (figs 36-39) : L 285; W 225; LS 150; WS 168; LG 69; WG 83; *ve* 82; *sci* 129; *sce* 120; *h* 120;



Figs 28-31. – Harpirhynchus (Harpyrhynchoides) kakatoe FAIN. - *Female in dorsal view (28) and ventral view (29); ωI (30) and ωII (31). Scale line 100 μm (figs 28-29).*



Figs 32-35. – Harpirhynchus (Harpyrhynchoides) columbae FAIN. - *Male in dorsal view (32) and ventral view (33); male organ (34); ωI (35). Scale line 100 μm (figs 32-33).*

sh 110; *l5* 18; *g* 23; *ωI* 8,4 x 2,2; *ωII* 7,2 x 2. Venter with scaly or verrucose striations as in the male. Chaetotaxy of legs I-II-III as in the male. Apical free segment of leg IV with 4 setae, preapical segment without setae. Empodium as in male.

This species is well characterized, in the male by the very long penis, in both sexes by the presence on legs I-II of 4 setae on the genua and 3 setae on the femora; moreover the venter bears numerous scales or verrucosities. In *H. herodius* BOYD the legs I-II also bear these same setae but in this species the venter is devoid of scales or verrucosities and the leg empodium bears very long tenent hairs.

Host and locality :

Holotype male, allotype and 7 paratypes female and 5 immatures all from *Columba livia domestica* (Columbiformes, Columbidae), originating from Bouillon, South of Belgium (coll. A. FAIN). This bird had been preserved in alcohol in the IRSNB since 1936. Four paratypes female and 4 nymphs were collected from *Columba palumbus*, from Arbre, near Namur, Belgium (coll. J.M. JADIN, 15.III.1967). Holotype in IRSNB.

11. *Harpirhynchus (Harpyrhynchoides) tyto* FAIN, 1972

Male, holotype (figs 40-44) : L 216; W 162; LS 129; WS 135; LG 57; WG 63; *ve* 95; *sci* 45; *sce* 80; *h* 84; *sh* 80; genital setae on 2 divergent lines; sheath of penis 42 long; PA with 5-6 teeth; PI and PE are thick curved spines with strong pectinations; *ωI* ovoid 12 x 7; *ωII* shorter and narrower 9 x 2,5. Venter almost completely striated except the anterior part of coxae I-II which bear thick longitudinal lines. Small scales and verrucosities as in *H. columbae*. Genua I-II with 4 setae, the other segments with normal chaetotaxy; legs III and IV as in *H. columbae* except that apical segment of leg IV bears only 3 setae.

Female, allotype (figs 45-48) : L 270; W 205; LS 150; WS 174; LG 75; WG 84; *ve* 84; *sci* and *sce* are in complete; *h* 85; *sh* 85; *l5* 12; *g* 5; PA with 6 teeth; *ωI* conical 8,4 x 3; *ωII* 7,2 x 2,2. Venter as in the male. Chaetotaxy of legs as in the male except that leg IV has only one free segment.

This species is related to *H. columbae* by some characters (ventral scale fields, chaetotaxy of legs I-II-III, PI and PE) but it differs from it in both sexes by the presence of only 3 setae on apical segment of leg IV and 2 setae on femora I-II, the smaller number of teeth on PA; the shape and the size of the solenidia; the much stronger *sci* in male etc...

Host and locality :

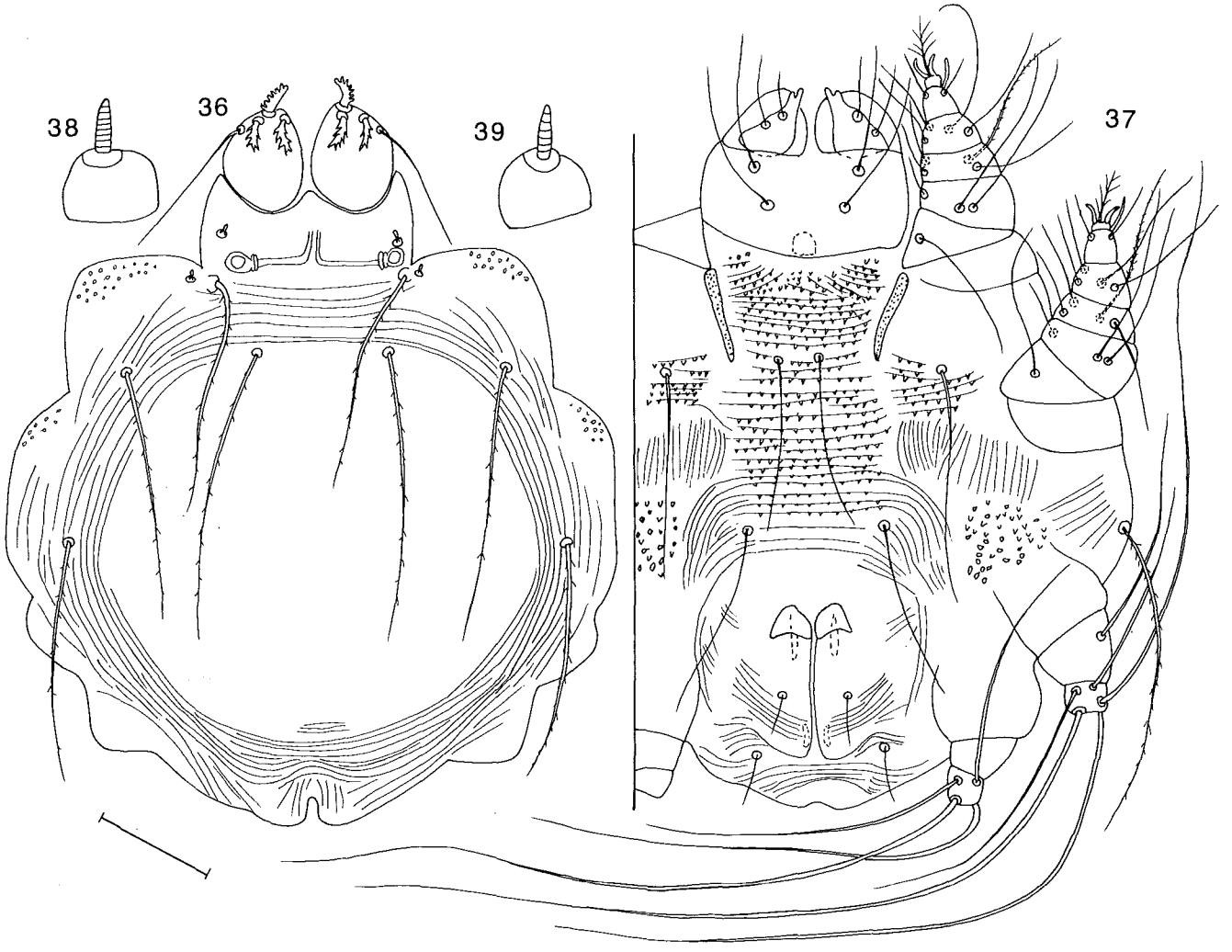
Holotype and 2 paratypes male, allotype female and 4 nymphs, all from *Tyto alba* (Strigiformes, Tytonidae), from Crupet, near Namur, Belgium (coll. J.M. JADIN, 15.IX.1963). Holotype in IRSNB.

12. *Harpirhynchus (Harpyrhynchoides) leptoptilus* FAIN, 1976

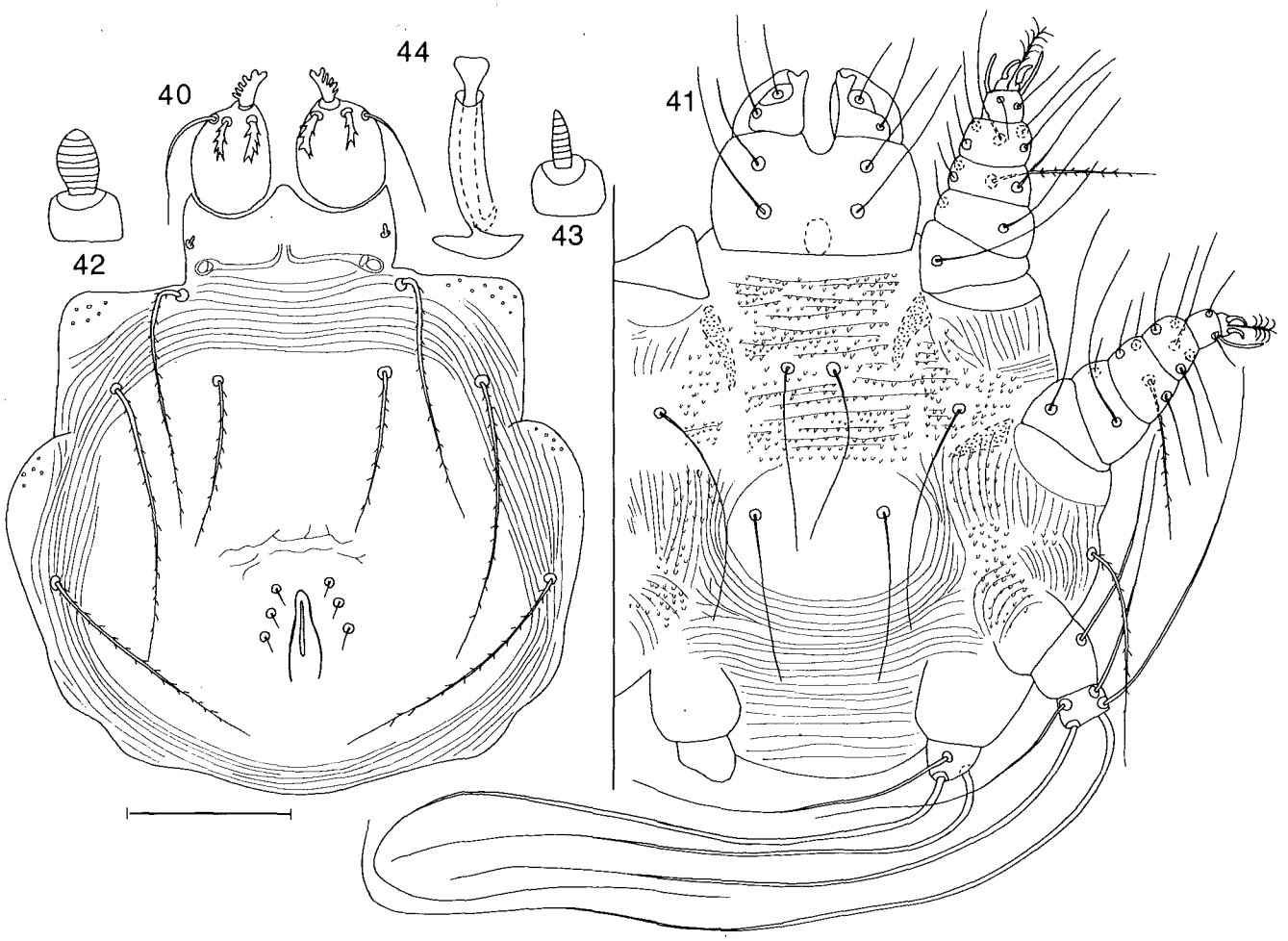
This species has been described and depicted in a previous paper. We complete here some of the metric data.

Male, holotype : L 219; W 180; LS 106; WS 138; LG 63; WG 69; *ve* 63; *sci* 33; *sce* 61; *h* 68; *sh* 63; the anterior and median genital setae are on a transverse line, the posterior setae are 24 apart; length of penis sheath 65; PA with 6-7 teeth; PI and PE curved and with strongly pectinate spines; *ωI* 9,5 x 4,7; *ωII* 7,2 x 2,3. Ventral striations very poorly marked and scales and verrucosities are lacking. Chaetotaxy of anterior legs normal. Chaetotaxy of legs III-IV as in *H. tyto*.

Female, allotype : L 360; W 255; LS 150; WS 171; LG 78; WG 90; *ve* 80; *sci* 75; *sce* 90; *h* 87; *sh* 88; *l5* 3; *g* vestigial; PA with 7 teeth; PI-PE, ventral striations and



Figs 36-39. – Harpirhynchus (Harpyrhynchoides) columbae *FAIN*. - *Female in dorsal view (36) and ventral view (37); ωI (38) and ωII (39). Scale line 50 μm (figs 36-37).*



Figs 40-44. – Harpirhynchus (Harpyrhynchoides) tyto FAIN. - *Male in dorsal view (40) and ventral view (41); ωI (42); ωII (43); male organ (44). Scale line 50 μm (figs 40-41).*

chaetotaxy of legs I-II as in the male. Chaetotaxy of legs III-IV as in *H. tyto*.

This species is characterized in both sexes by the very poor development of the ventral striations, in the male by the unique situation of the genital setae, in the female by the vestigial aspect of setae *g* and the very short *l5*.

Host and locality :

Holotype male, allotype and 9 paratypes female, from a Marabou Stork *Leptoptilos crumeniferus* (Ciconiiformes, Ciconiidae). This bird died in the Zoo of Antwerp during its quarantine (14.V.1965). Holotype in MRAC, paratype in IRSNB.

13. *Harpirhynchus (Harpyrhynchoides) oenae* FAIN, 1972

Male, holotype (figs 49-52) : L 168; W 130; LS 105; WS 100; LG 48; WG 45; *ve* 66-69; *sci* thin, 15-20; *sce* 80; *h* 75; *sh* 68; genital setae forming 2 rows either parallel or slightly converging posteriorly; sheath of penis 33 long; PA short and thick, with 4 teeth; PE and PI are thick spines with strong pectinations; *ωI* very thick 9,4 x 4,2; *ωII* thinner 8,4 x 2,2. Venter with well-developed striations; scales or verrucosities lacking; chaetotaxy of legs I-II normal; of legs III-IV as in *H. tyto*.

Female, allotype (figs 53-56) : L 240; W 178; LS 120; WS 132; LG 69; WG 73; *ve* 90; *sci* very tick 150; *sce* 110; *h* 120; *sh* 78; *l5* 15-18; *g* 12-15; PA with 6 teeth; PI and PE are strong curved pectinate spines, the PE being smaller than PI; *ωI* cylindroconical 8,2 x 2,3; *ωII* 8,4 x 2. Striations of venter as in the male; scales lacking. Chaetotaxy of legs I-II-III and of apical segment of leg IV as in the male. Preapical segment of leg IV without a seta.

This species is characterized in the male, by the situation of genital setae, the shape of PA short and strong and with a few teeth, the ovoid shape of *ωI*, the very

short and thin *sci*; in the female by the very strong and long seta *sci*.

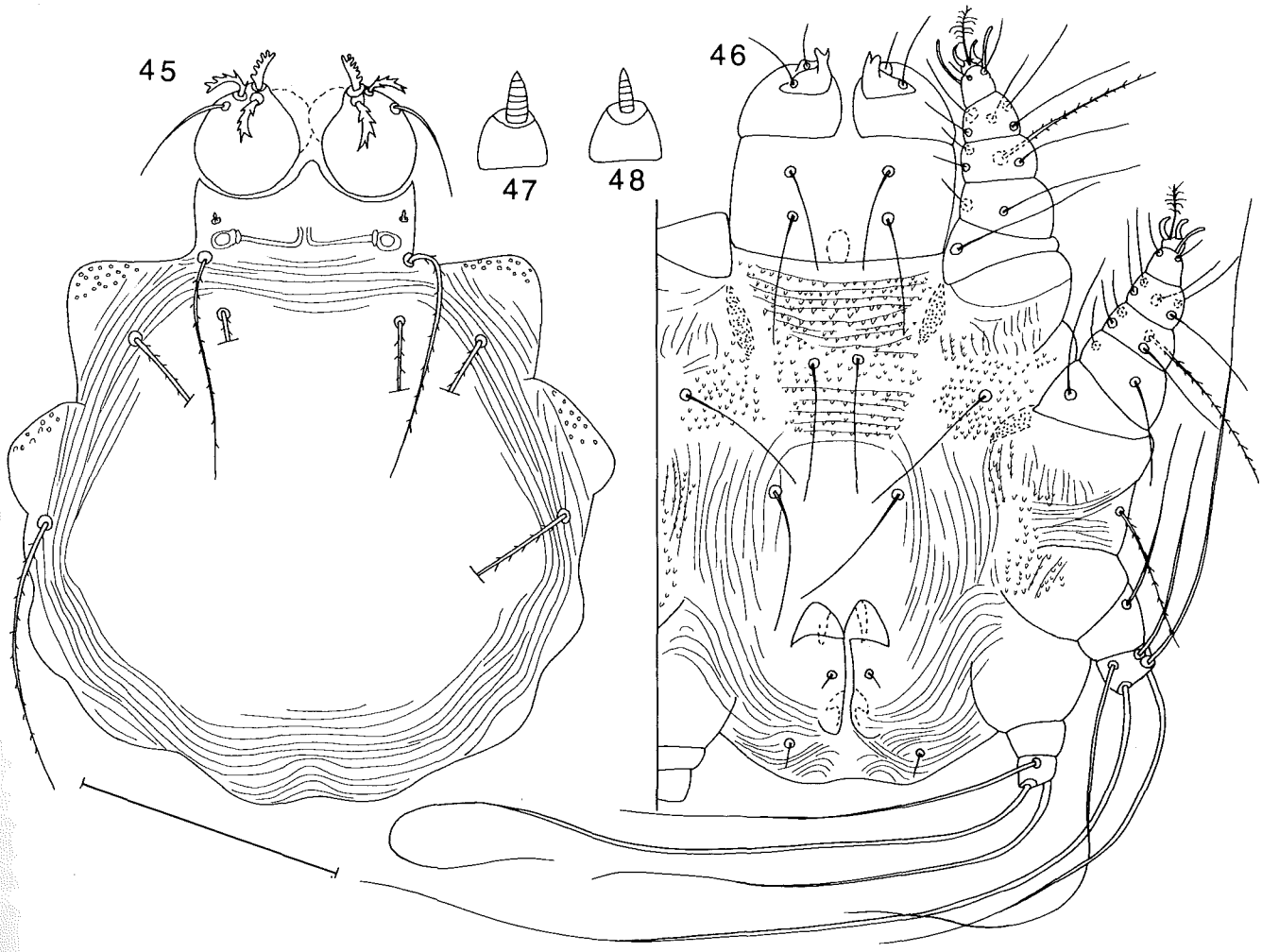
Host and locality :
Holotype and 1 paratype male, allotype and 1 paratype female from *Oena capensis* (Columbiformes, Columbidae). This bird died in the Zoo of Antwerp, during its quarantine (15.III.1967); 4 paratypes female with the same data but on 12.IV.1967. Holotype in MRAC.

Harpirhynchus (Harpyrhynchoides) oenae lamorali FAIN, 1972, nov. stat.

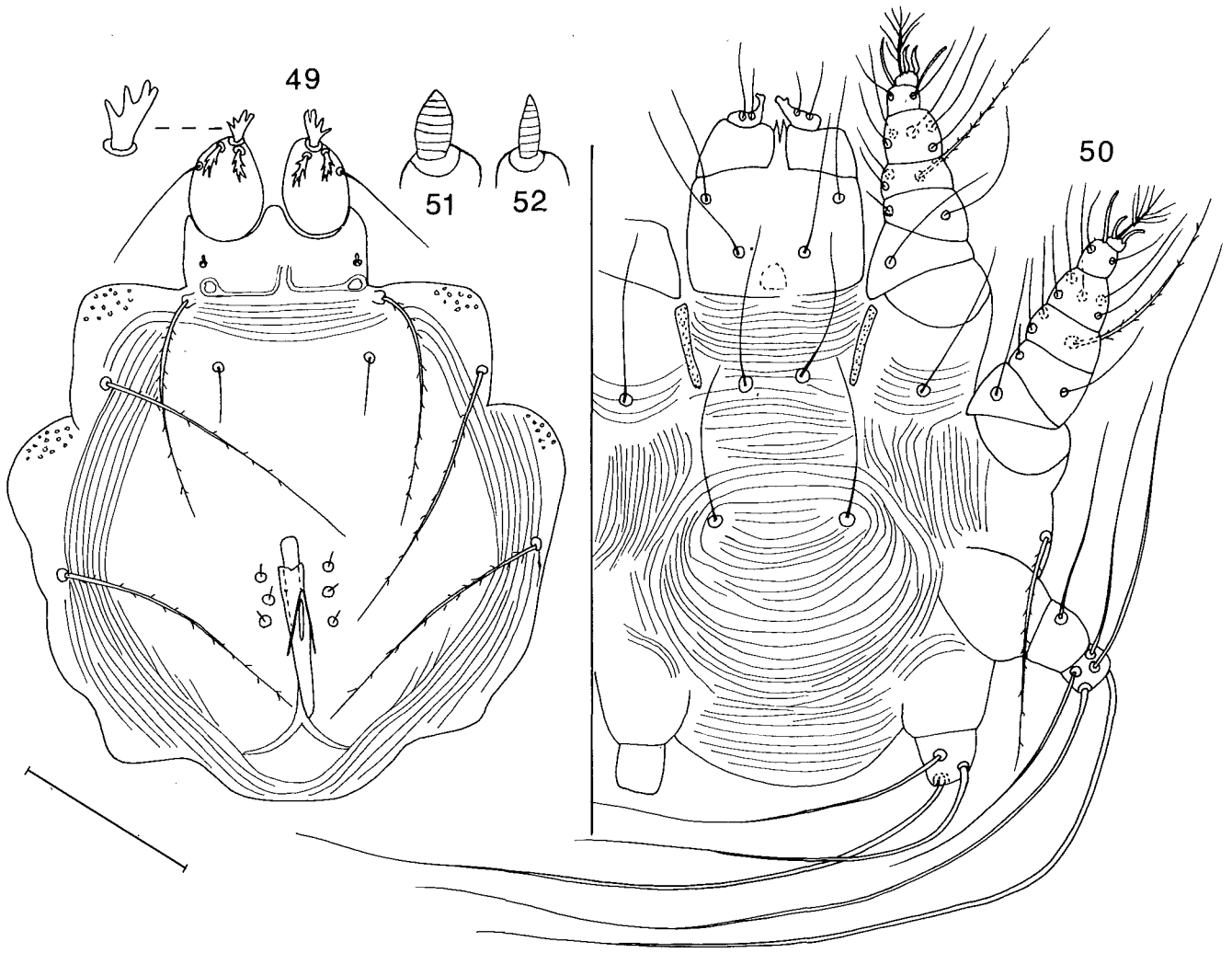
H. lemorali FAIN, 1972 was described as a distinct species. I think now that the differences between *H. lamorali* and *H. oenae* are not sufficient to justify the species rank and I propose to maintain it as a subspecies of *H. oenae*.

Male, holotype not separable from *H. oenae* except that the fork prolonging the male organ is distinctly longer.
Female, paratype : L 255; W 205; LS 120; WS 129; *ve* 80-85; *sci* 105, not inflated; *sce* 92; *h* 105; *sh* 87; *l5* 15; *g* 30; PA with 5 teeth.
This subspecies differs from the typical form in the female mainly by the shorter length of *sci* and *h* and the longer *g*, the shape of PA with 5 teeth.

Host and locality :
Holotype and 2 paratypes male, allotype female from *Turtur tympanistria* (= *Tympanistria tympanistria*). This bird died in the Zoo of Antwerp (19.VI.1967). Holotype and paratypes in MRAC.



Figs 45-48. – Harpirhynchus (Harpyrhynchoides) tyto FAIN. - *Female in dorsal view (45) and ventral view (46); ωI (47); ωII (48). Scale line 100 μm (figs 45-46).*



Figs 49-52. – Harpirhynchus (Harpyrhynchoides) oenae FAIN. - *Male in dorsal view (49) and ventral view (50); ωI (51); ωII (52). Scale line 50 μm (figs 49-50).*

14. *Harpirhynchus (Harpyrhynchoides) psittaculae* FAIN, 1972

Male, holotype (figs 50-60) : L 195; W 153; LS 113; WS 117; LG 52; WG 62; *ve* 60; *sci* 10-15; *sce* 60; *h* 60; *sh* 45; genital setae placed along 2 longitudinal slightly divergent lines, however, in the holotype the median seta is slightly more external at one side. PA with 7-8 teeth; PI and PE are curved spines with thick pectinations; *ωI* ovoid 9,6 long and 7,2 wide; *ωII* 7,2 x 4,2. Ventral striations poorly developed. Venter with 5 scaly fields, one median between coxae I and not extending behind setae *icI*, and 4 smale fields in front of coxae II and of coxae III. Chaetotaxy of legs I-II normal, that of legs III-IV as in *H. tyto*.

Female allotype (figs 61-64) : L 264; W 225; LS 141; WS 170; LG 60; WG 81; *ve* 75; *sci* 42; *sce* 75; *h* 63; *sh* 60; *l5* 24; *g* 8-10; PA, PI and PE as in the male; ventral striations and fields of scales as in the male. Chaetotaxy of legs I-IV as in the female of *H. oenae*.

This species is characterized in both sexes by the shape of PA, with 7-8 teeth, the distribution of the scale areas and the striations on venter, in the male by the very short and thin setae *sci*, the shortly ovoid shape of *ωI* and the orientation of the genital setae.

Host and locality :
Holotype and 1 paratype male, allotype and 6 paratypes female from *Psittacula alexandri* (Psittaciformes, Psittacidae) (28.IX.1967); 2 paratypes female from the same host (3.IX.1965); and 2 paratypes (1 male, 1 female and nymphs) from *Psittacula cyanocephala* (8.I.1965). All these birds died in the Zoo of Antwerp during their quarantine. Holotype in IRSNB.

15. *Harpirhynchus (Harpyrhynchoides) squamosus* FAIN, 1972

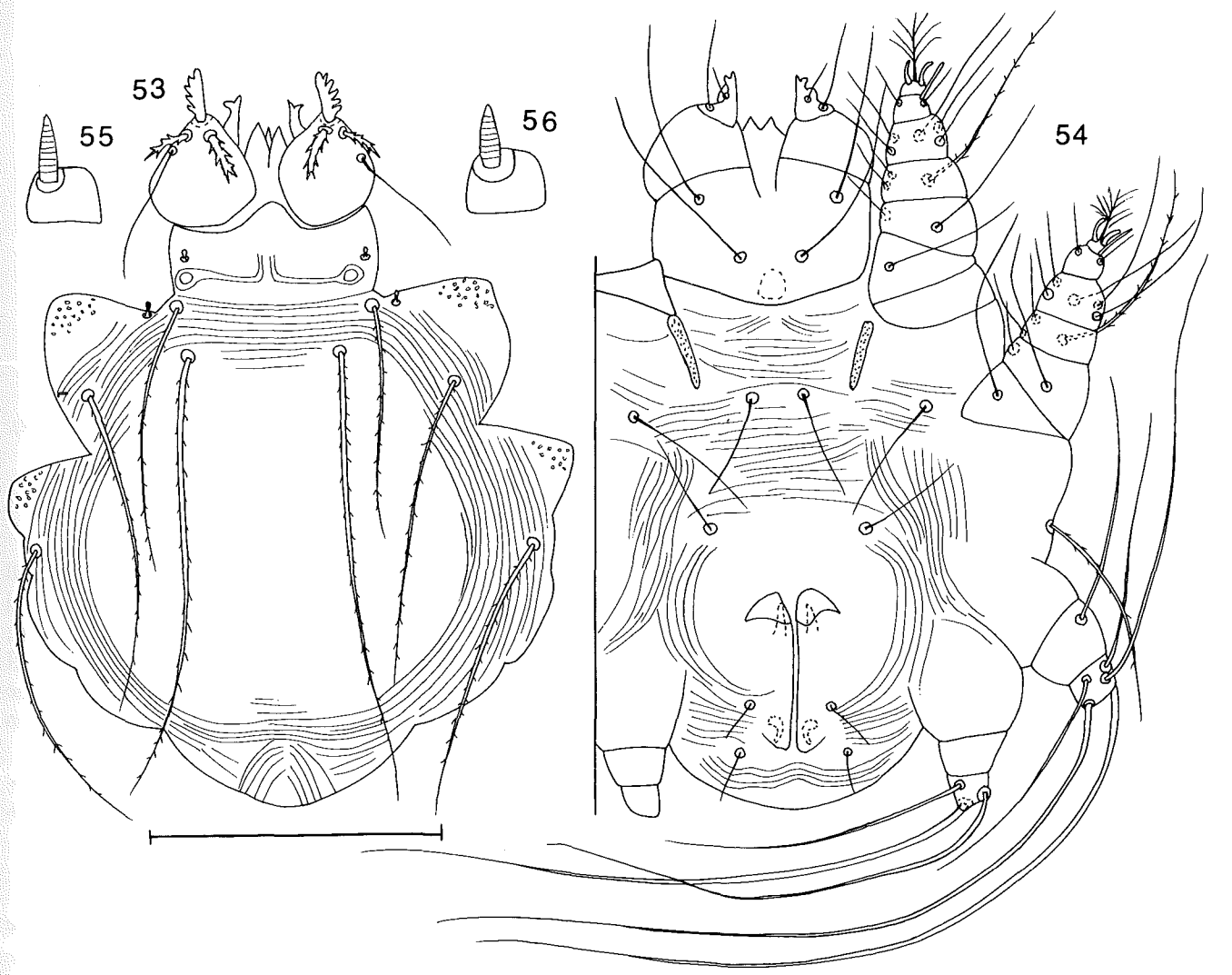
Male, holotype (figs 65-68) : L 177; W 128; LS 114; WS 108; LG 51; WG 54; *ve* 65; *sci* 30; *sce* 85; *h* 85; *sh* 78; genital setae along longitudinal curved lines concave outside, the posterior setae 30 apart; sheath of penis 30 long and 18 wide; male organ deeply forked posteriorly; PA with 5 teeth; PI and PE are curved pectinate spines; *ωI* 8,5 x 4,2; *ωII* 11 x 1,8 to 2. Venter with numerous striations in the median area behind setae *icIII* and thick longitudinal striations on coxal areas I-II. Median area between gnathosoma and setae *icIII* covered with small cuticular scales; laterally behind coxae I and II and covering a large part of coxae III-IV there are numerous rounded or oval verrucosities. Chaetotaxy of legs as in *H. oenae*.

Female, allotype (figs 69-72) : L 246; W 198; LS 122; WS 156; LG 61; WG 67; *ve* 90; *sci* 75; *sce* 120; *h* 120; *sh* 105; *l5* 13; *g* 30-35; PA with 7-8 teeth; PI and PE as in the male; *ωI* 7,2 x 2,4; *ωII* 9 x 2. Venter with striations, scales and verrucosities as in the male, and in addition the vulvar lips bear elongate verrucosities. Chaetotaxy of legs as in female of *H. oenae*.

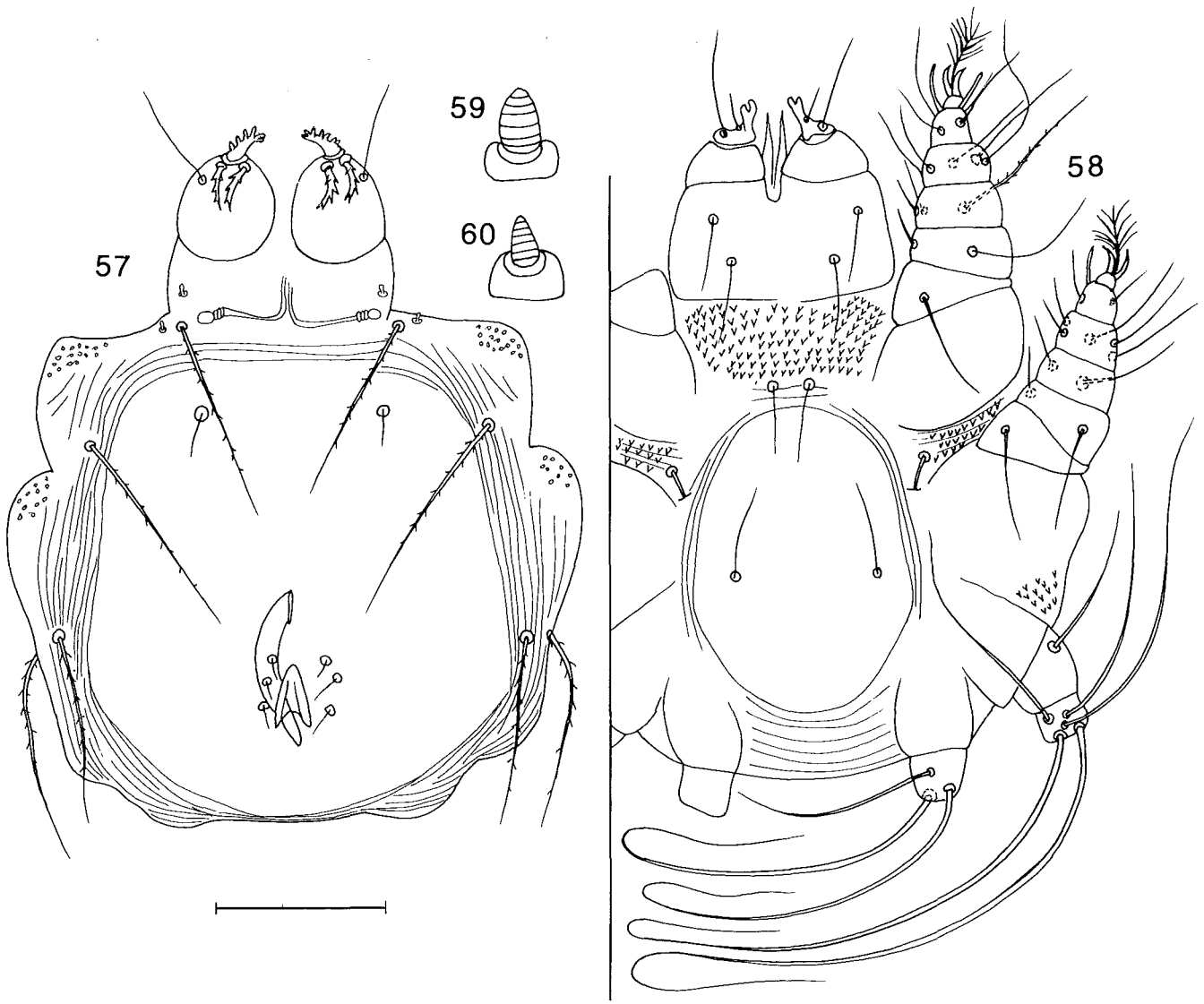
This species is well distinguished from the other species of group A, in both sexes, by the great extension of the ventral scaly fields; in the male by the very thick, ovoid shape of *ωI*.

Host and locality :

Holotype and 2 paratypes male, allotype and 3 paratypes female, from *Psittacula cyanocephala* (Psittaciformes, Psittacidae). This bird died in the Zoo of Antwerp during its quarantine (8.V.1964). Holotype in IRSNB.



Figs 53-56. – Harpirhynchus (Harpyrhynchoides) oenae FAIN. - *Female in dorsal view (53) and ventral view (54); ωI (55); ωII (56). Scale line 100 μm (figs 53-54).*



Figs 57-60. – Harpirhynchus (Harpyrhynchoides) psittaculae FAIN. - *Male in dorsal view (57) and ventral view (58); ωI (59); ωII (60). Scale line 50μm (figs 57-58).*

GROUP B

This group includes all the species of which the leg IV in the female consists of only one free segment. Are also included in this group the species only represented by male specimens.

16. *Harpirhynchus (Harpyrhynchoides) asio* FAIN, 1972

Male, holotype (figs 73-76) : L 240; W 180; LS 141; WS 147; LG 60; WG 75; *ve* 100; *sci* 101; *sce* 105; *h* 108; *sh* 99; genital setae on 2 diverging lines, the posterior setae 24 apart; PA with 6 teeth; PI and PE are strong curved and pectinate subequal spines; *ωI* 12 x 5,2; *ωII* 9 x 2,5. Venter with striations well developed : the median area of venter behind gnathosoma is covered with small triangular or rounded scales; this area extends beyond setae *icI* until half the distance between *icI* and *icIII*; laterally the scales cover a large area inside the coxae II and more posteriorly there are a few scales inside the coxae II and on coxae IV. Chaetotaxy of legs I-IV as in *H. oenae*.

This species resemble *H. tyto* but it differs from it by the presence of only 3 setae on genua I-II (for 4 in *H. tyto*), and the length of some setae, especially the *sci*.

Host and locality :

Holotype male and 1 paratype male still enclosed in the nymphal stage, from *Asio otus otus* (Strigiformes, Strigidae), in Balen Neet, near Antwerp, Belgium (coll. A. FAIN, in November 1964). The mites were found in the superficial layers of the skin. Holotype in IRSNB.

17. *Harpirhynchus (Harpyrhynchoides) psittaci* FAIN, 1972

Female, holotype (figs 77-80) : L 306; W 258; LS 159; WS 216; LG 84; WG 81; *ve* 64; *sci* 48; *sce* 90; *h* 78; *sh* 95; *l5* 45; *g* 34; PA with 7-8 teeth; PI and PE are strong curved pectinate spines; *ωI* and *ωII* subequal cylindro-conical, 10 long and 2 maximum wide, slightly curved and ending in a very delicate point. Venter with striations marked only in some places of the median part of the body; the coxae being devoid of striations. Scales absent on idiosoma, but a few scales are present on ventral surface of gnathosoma. Chaetotaxy of legs I-II normal. Legs III : apical and preapical segments with 5 and 4 setae respectively; legs IV : apical segment with 4 setae.

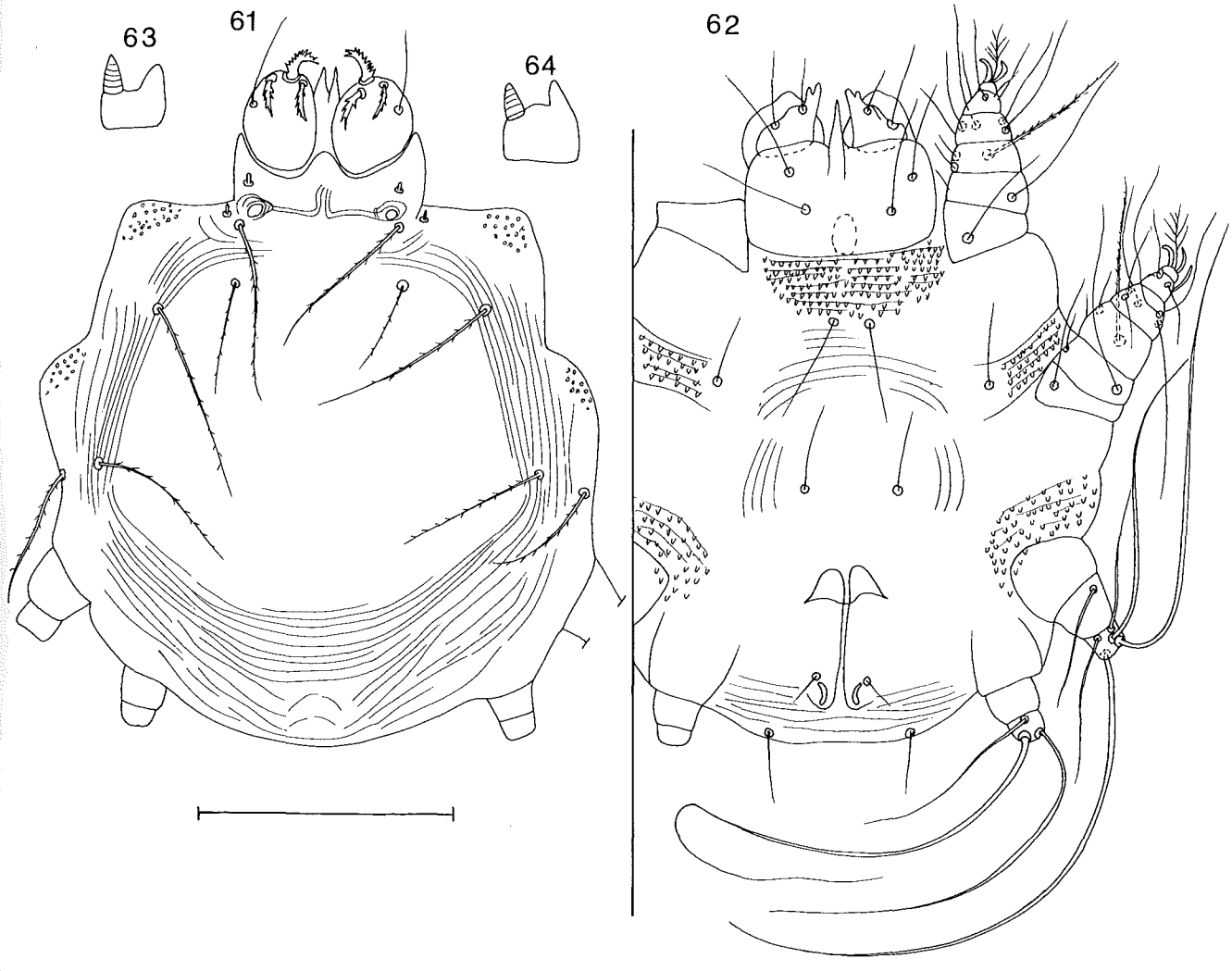
This species is characterized by the chaetotaxy of legs III and IV which is unique in the group B; other characters are the short dorsal setae, the shape of the solenidia and the aspect of the venter.

Host and locality :

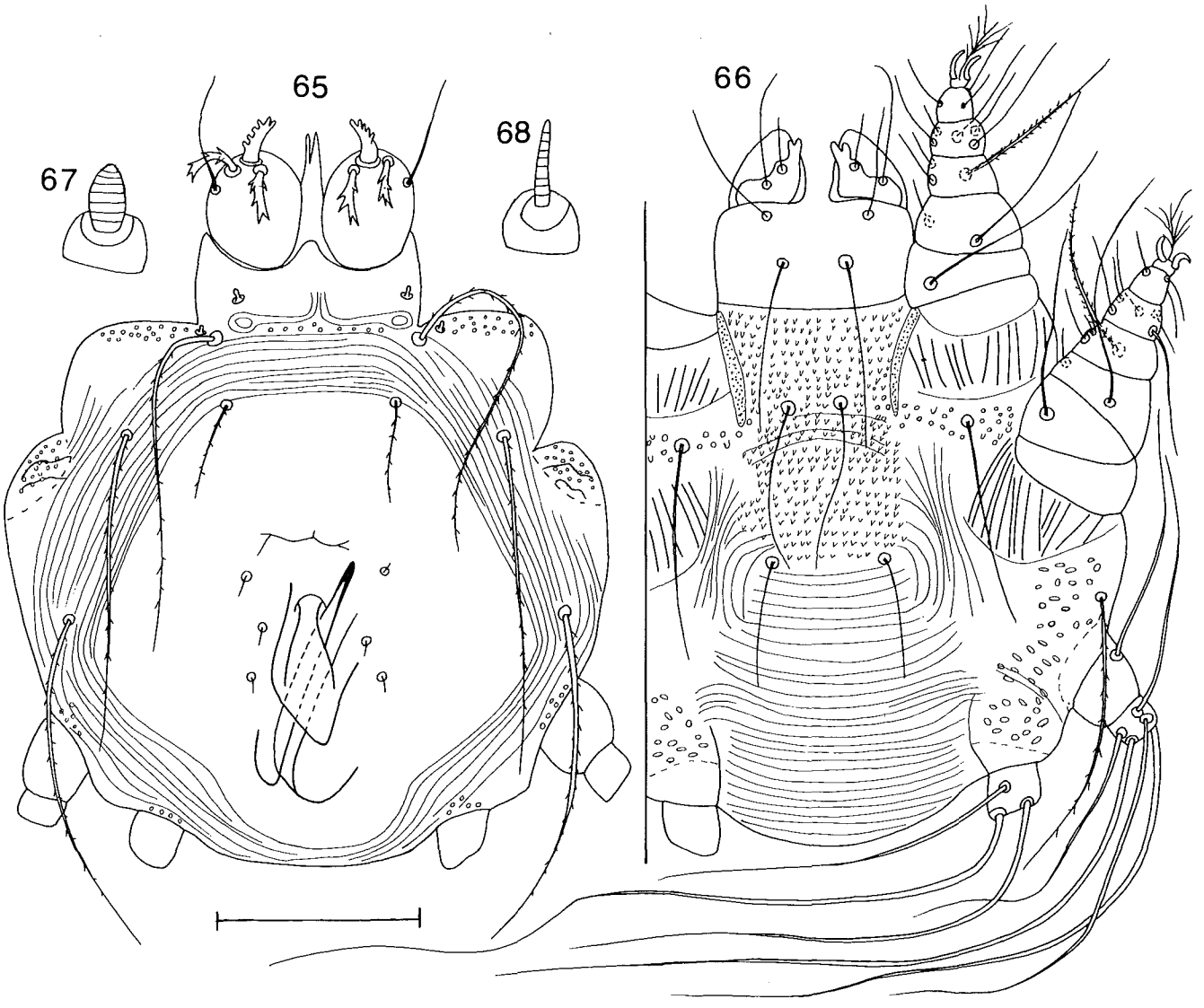
Holotype female and 1 nymph from *Psittacus erithacus* (Psittaciformes, Psittacidae) (coll. A. FAIN, 6.VIII.1963). This bird died in the Zoo of Antwerp, during quarantine. Two other females not separable from the holotype, were found on *Poicephalus senegalus* (22.II.1969), also from the Zoo of Antwerp. Holotype in MRAC.

18. *Harpirhynchus (Harpyrhynchoides) anatum* FAIN, 1976

Female, holotype (figs 81-84) : L 312; W 250; LS 180; WS 210; LG 70; WG 84; *ve* 55; *sci* 16; *sce* 39; *h* 30; *sh* completely absent and without pilous bases; *l5* 22 (dor-



Figs 61-64. – Harpirhynchus (Harpyrhynchoides) psittaculae *FAIN.* - *Female in dorsal view (61) and ventral view (62); ωI (63); ωII (64). Scale line 100 μm (figs 61-62).*



Figs 65-68. – Harpirhynchus (Harpyrhynchoides) squamosus *FAIN*. - *Male in dorsal view (65) and ventral view (66); ωI (67); ωII (68). Scale line 50 μm (figs 65-66).*

sal); *g* completely lacking; *icI* and *icIII* very short; PA long with 10-11 teeth (difficult to see owing to the bad orientation of this spine); PI and PE very unequal in size; *ωI* and *ωII* cylindroconical, with blunt apex, 12 x 1,6 and 8,4 x 2 respectively. Venter smooth, except 5 to 6 striations behind the vulva. Scales lacking. Chaetotaxy of legs I-II normal. Legs III with 2 setae on preapical segment and 4 on the apical segment; apical segment of leg IV with 3 setae. The tenent hairs of the empodium are bifid at their extremity and end into small funnel-like structures.

This species differs markedly from all the other species of group B by the following characters : the unique chaetotaxy of legs III and IV; very short dorsal setae; absence of *sh* and *g*; very short *icI* and *icIII*; the shape of PA.

Host and locality :

Holotype female from *Anas querquedula* (Anseriformes, Anatidae). This bird died in the Zoo of Antwerp during the quarantine (6.VIII.1963). Holotype in MRAC.

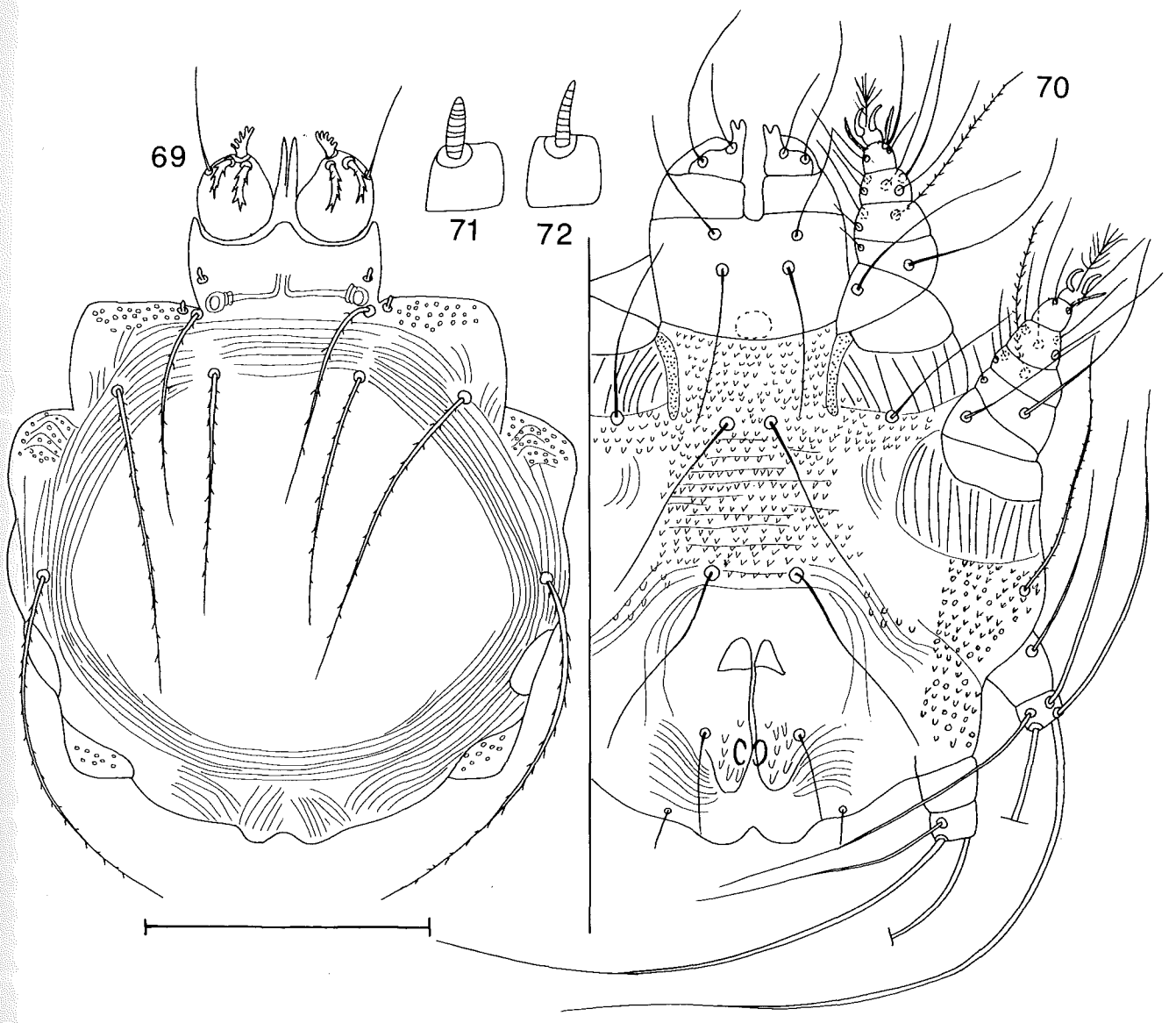
19. *Harpirhynchus (Harpyrhynchoides) cristagalli* BERLESE & TROUESSART, 1889

BERLESE & TROUESSART described the female of this species from *Colius striatus* (Coliiformes, Coliidae), South Africa. LAWRENCE (1959c) completed this description from a female collected from the typical host in Pietermaritzburg, and gave the first drawings. We were able to examine several females and males

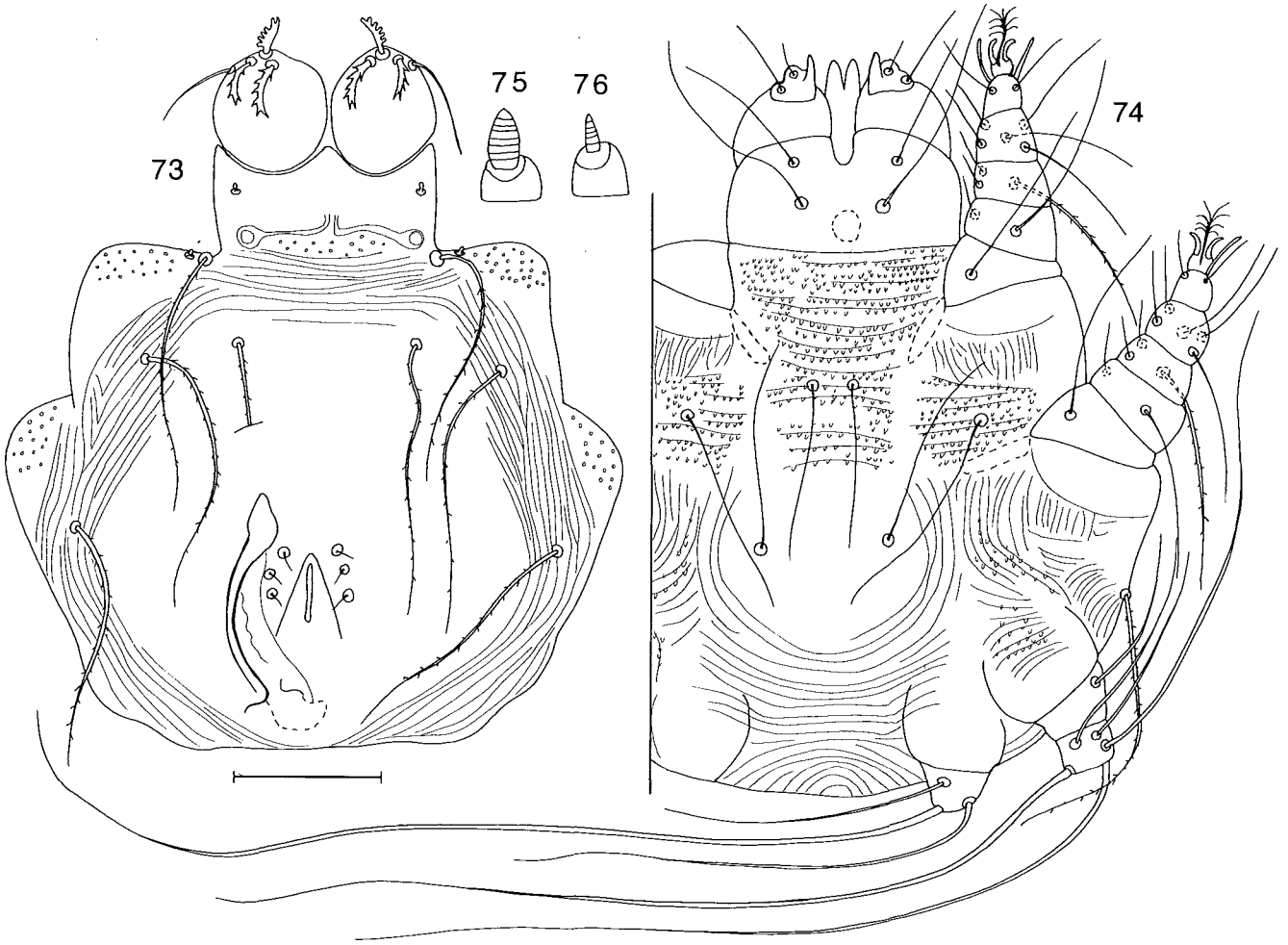
collected by Dr. F. LUKOSCHUS, from *Colius colius*, in Namibia (26.X.1980). The females correspond perfectly with the descriptions of that species. In the male all the dorsal setae are normal but have rather thick pectinations, the PA are much larger than in the female and present 4 very powerful teeth; the genital aperture is close to the posterior extremity and the 3 pairs of genital setae are unequal, the posterior pair being longer (10-12) than the others which are microsetae. Venter completely striated without scales or verrucosities (as in female). Chaetotaxy of legs I-II normal, as in the female. Legs III-IV as in the female : 2 setae on preapical segment of leg III, and 4 and 3 setae repectively on apical segments of legs III-IV.

20. *Harpirhynchus (Harpyrhynchoides) amazonae* FAIN, 1972

Male, holotype (figs 85-88) : L 222; W 165; LS 132; WS 141; LG 60; WG 68; *ve* 70; *sci* 20 (very thin); *sce* 75; *h* 63; *sh* 63; genital setae situated along 2 longitudinal almost parallel lines, but the median setae closer to posterior than to anterior setae; setae *g3* 20 apart; sheath of penis 30 long; PA long with 8-9 teeth; PI and PE inequal in length with rather short pectinations; *ωI* about 9 long and 4,2 wide; *ωII* 7 x 2. Ventral striations well developed in the median region from gnathosoma to posterior border of body; scales or verrucosities lacking. Chaetotaxy of legs I-II normal. Chaetotaxy of legs III-IV as in *H. columbae*.



Figs 69-72. – Harpirhynchus (Harpyrhynchoides) squamosus FAIN. - *Female in dorsal view (69) and ventral view (70); ωI (71); ωII (72). Scale line 100 μm (figs 69-70).*



Figs 73-76. – Harpirhynchus (Harpyrhynchoides) asio FAIN. - *Male in dorsal view (73) and ventral view (74); ωI (75); ωII (76). Scale line 50 μm (figs 73-74).*

Female, allotype (figs 89-93) : L 300; W 210; LS 159; WS 183; LG 74; WG 88; *ve* 90; *sci* 60; *sce* 90; *h* 93; *sh* 93; *l5* 32; *g* 36; PA, PI and PE as in the male; *ωI* conical 7,5 x 2,2; *ωII* 7 x 2. Striations on venter rather well developed; scales or verrucosities absent. Chaetotaxy of legs as in the male except that the apical segment of leg IV bears 5 setae.

This species is distinguished from the other species of group B by the following characters : in the female by the presence of 5 setae on apical segment of leg IV, in the male by the arrangment of the genital setae, the very short and very thin *sci*; in both sexes by the shape of PA with 8-9 teeth.

Host and locality :
Holotype and 2 paratypes male, allotype and 9 paratypes female and immatures from *Amazona aestiva* (Psittaciformes, Psittacidae) (coll. A. FAIN, July 1965). This bird died in the Zoo of Antwerp, during quarantine. Other paratypes from the same host species but on 4.III.1967 (1 male) and on 31.VII.1964 (1 female). Holotype in IRSNB.

21. *Harpirhynchus (Harpyrhynchoides) lawrencei* FAIN, 1972

Male, holotype (figs 94-97) : L 220; W 171; LS 144; WS 156; LG 60; WG 63; *ve* 45; *sci* 30; *sce* 60; *h* 82; *sh* 75; genital setae on a longitudinal row and very close to each other; sheat of penis short, curved; PA long with 9-10 teeth; PI and PE are curved and pectinate unequal spines; *ωI* very thick, 12 x 4,8; *ωII* 7,2 x 2,3. Ventral striations confined to a short median area between coxae III-IV; scales or verrucosities lacking. Chaetotaxy of legs I-II normal; on legs III the preapical segment with 1 seta, the apical with 5 setae, on legs IV the apical seta with 4 setae.

Female, allotype (figs 98-101) : L 300; W 240; LS 180; WS 216; LG 66; WG 81; *ve* 51; *sci* thin, 27; *sce* 69; *h* 81; *sh* 67; *l5* 18; *g* 10; PA long with 10-12 teeth; PI and PE as in in male; *ωI* cylindroconical 8,5 x 2,4; *ωII* 7,2 x 1,5. Venter without striations, scales or verrucosities. Chaetotaxy of legs I-IV as in the male.

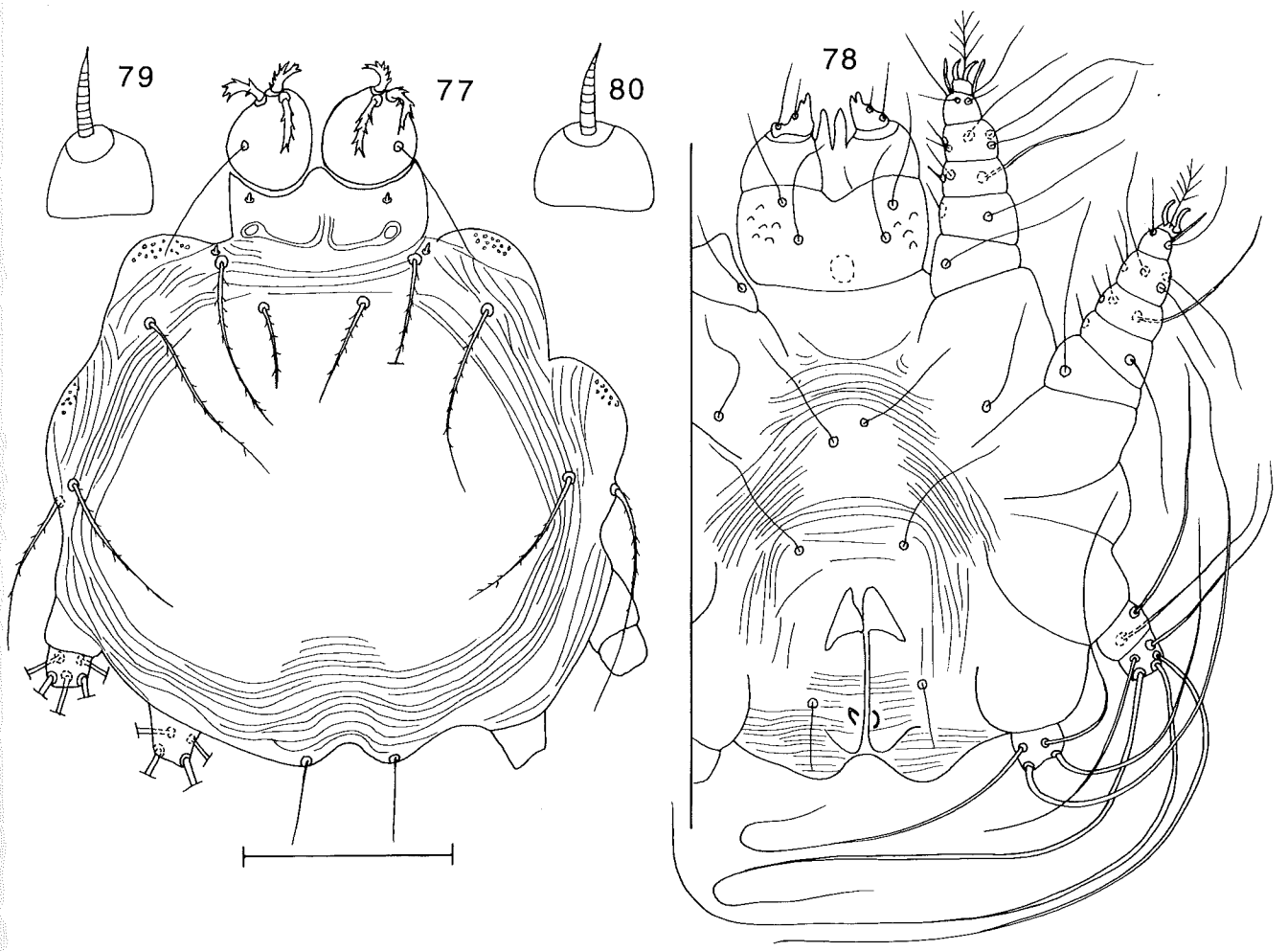
This species differs from the other species of group B by the following characters : in both sexes the dorsal setae are short, especially *sci*, the PA are long with 10-12 teeth; the ventral surface has very few (in male) or no striations (in female) and no scales or verrucosities. In the male the genital setae are close to each other, the male organ is short; the *ωI* is strongly inflated.
Host and locality :

Holotype male, allotype and 1 paratype female from *Nandayus nenday* (Psittaciformes, Psittacidae). This bird died in the Zoo of Antwerp during quarantine (8.IX.1964). Types in the IRSNB.

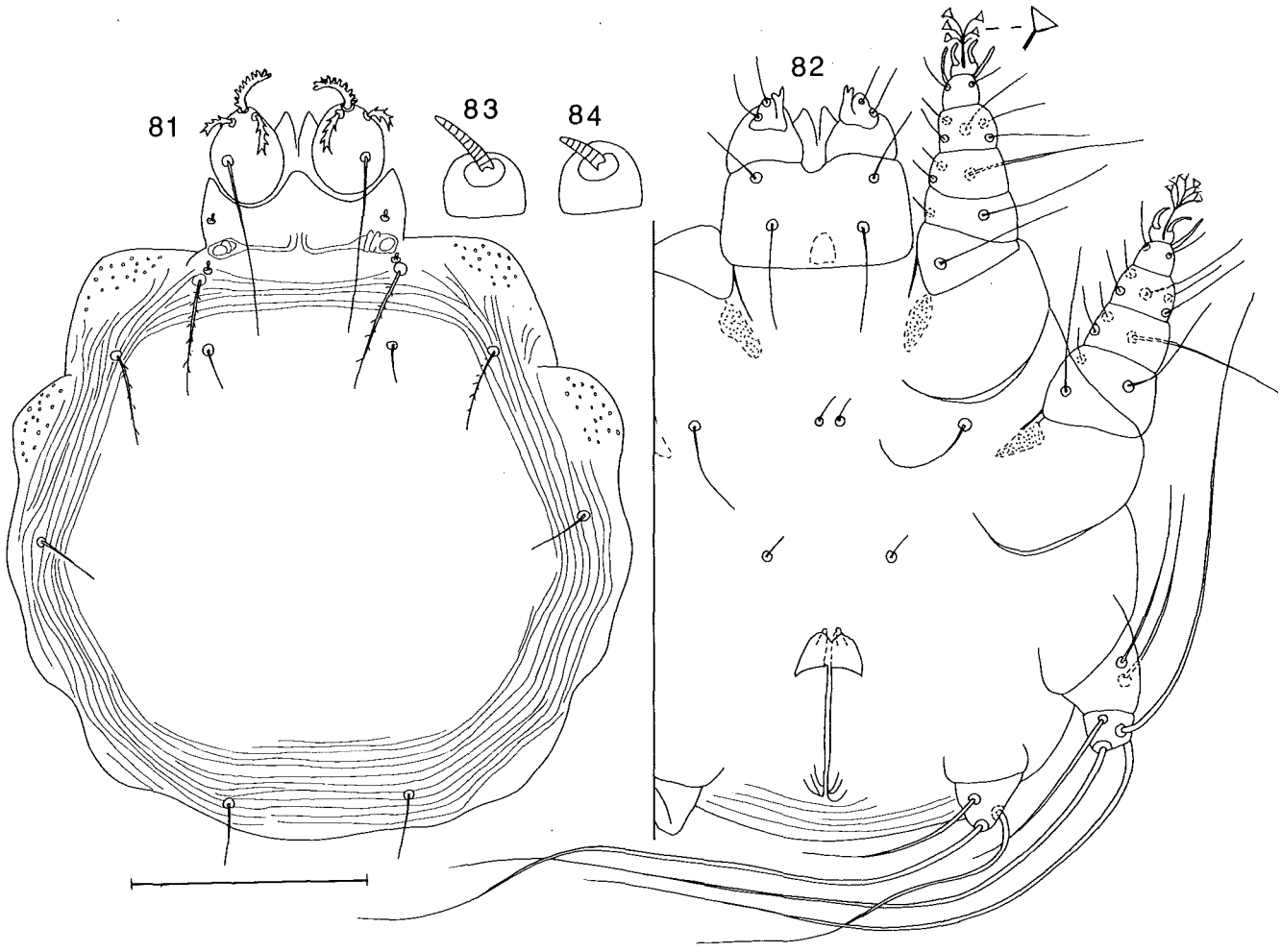
22. *Harpirhynchus (Harpyrhynchoides) coxatus* FAIN, 1972

Male, holotype (figs 102-105) : L 177; W 135; LS 108; WS 110; LG 45; WG 51; *ve* 60; *sci* 56; *sce* 66; *h* 90; *sh* 90; genital setae along 2 strongly divergent lines, the posterior setae 36 apart; sheath of penis 66 long; PA with 5-6 thick teeth, PE and PI are thick curved and pectinate spines; *ωI* (in a paratype) about 8 x 3; *ωII* 13 x 1,3. Venter completely striated except coxae III and IV which are smooth, coxae I-II with unconspicuous striations; posterior half of coxa I with a punctate transverse band. Internal process of palptarsus strongly developed. Chaetotaxy of legs I-II normal; subapical and apical segments of legs III with 1 and 5 setae respectively; apical segment of leg IV with 3 setae.

Female, allotype (figs 106-109) : L 255; W 210; LS 129; WS 195; LG 63; WG 75; *ve* 81; *sci* 80; *sce* 120; *h* 135; *sh* 126; *l5* 10; *g* 24; PA with 6 rather strong teeth;



Figs 77-80. – Harpirhynchus (Harpyrhynchoides) psittaci FAIN. - *Female in dorsal view (77) and ventral view (78); ωI (79); ωII (80). Scale line 100 μm (figs 77-78).*



Figs 81-84. – Harpirhynchus (Harpyrhynchoides) anatum FAIN. - *Female in dorsal view (81) and ventral view (82); ωI (83); ωII (84). Scale line 100 μm (figs 81-82).*

PE and PI very strong with thick pectinations, the PI distinctly longer than the PE; *ωI* and *ωII* subequal, cylindroconical 12 x 1,3; base of *icIII* setae with a characteristic triangular lobe; a conspicuous longitudinal striated membrane incised posteriorly is present between setae *icIII* and the setae *g*. Cuticle of venter as in the male but coxae II-IV are not striated, and the coxae I present a punctate transverse band. Median process of palptarsus as in the male. Chaetotaxy of legs I-IV as in the male except that apical segment of leg IV bears 4 setae.

H. coxatus is distinguished from the other species of group B by the following characters : in the female by the presence of a large longitudinaly striated membrane between setae *icIII* and *g*; the presence of a triangular lobe on the bases of setae *icIII*, the long and narrow solenidia I-II; in the male by the rather long *sci* setae, the long sheath of penis; in both sexes by the great development of the internal process of palptarsus and the shape of PI and PE.

Host and locality :
Holotype male, allotype and 7 paratypes female from *Columbina talpacoti* (= *Columbigallina talpacoti* (Columbiformes, Columbidae) (10.III.1964). Paratypes from other Columbidae : 3 females from *Columbina cruziana* (29.XII.1964); 5 males and 4 females (paratypes) from *Scardafella squamata* (19.IV.1966 and 24.VI.1966). All these birds died in the Zoo of Antwerp during their quarantine. Types in IRSNB.

23. *Harpirhynchus (Harpyrhynchoides) modestus* FAIN, 1976

This species has been described previously. We complete here some metric data.

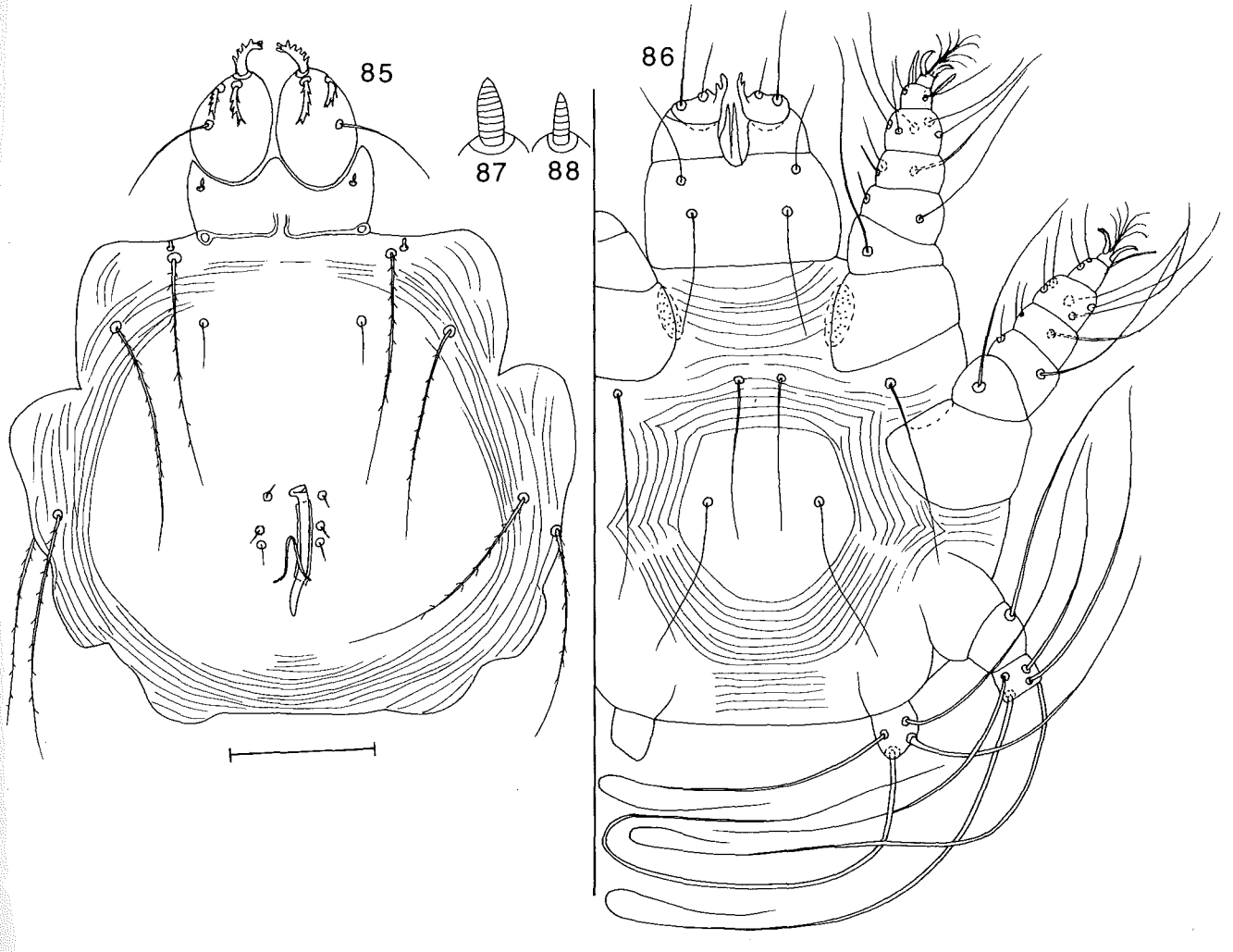
Male, holotype : L 231; W 183; LS 135; WS 140; LG 54; WG 63; *ve* 90; *sci* 75; *sce* 120; *h* and *sh* 135; the second genital setae are distinctly more median than the 2 other pairs; the posterior setae 24 apart; sheath of

penis 78 long; PA with 4 to 5 thick teeth; PI and PE strong curved spines with thick pectinations; *ωI* about 4 tick; *ωII* cylindroconical, narrow, strongly attenuated towards the apex. Ventral striations well developed in middle, between the coxae and on coxae I to III. Micro-verrucosities well developed on coxae dorsally and ventrally, in the dorsolateral areas of dorsum and between setae *ve*.

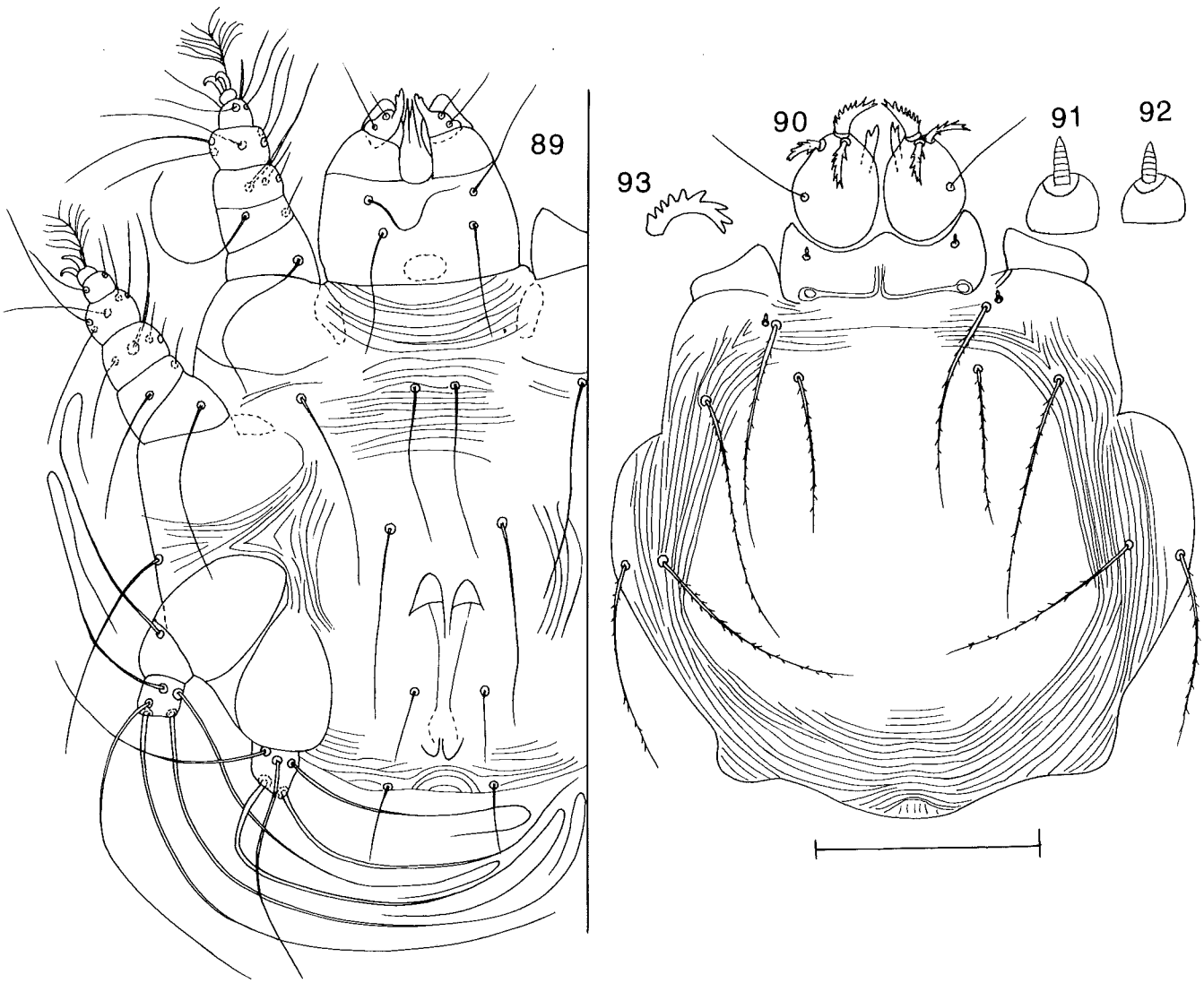
Female, allotype : L 300; W 225; LS 135; WS 180; LG 60; WG 84; *ve* 108; *sci* 120; *sce* 135; *h* 120; *sh* 138; *l5* 12; *g* 25-30; PA with 5-6 teeth; *ωI-II* thin, cylindroconical ending into a very thin prolongation. Micro-verrucosities present on coxae I-III dorsally and ventrally. Vulva partly covered by a large striated membrane as in *H. coxatus*. Lobe at bases of setae *icIII* vestigial or absent, the setae *sh* had been inadvertently omitted in the original figure (FAIN, 1976).

This species resembles closely *H. coxatus*. It differs from it in the male by the much larger size of the body and of the dorsal shield, the greater length of the dorsal setae, the situation of the genital setae not on divergent lines but with second pair of setae much more median than the others; the smaller distance between *g3* (24 instead of 38 in *H. coxatus*); the shape of PA with only 4-5 teeth; the presence of striations on coxae II-III. The female presents a striated membrane covering the vulva as in *H. coxatus*, it differs, however from this species by the larger size of the body and of most of the setae, the very poor development or the complete absence of the lobe at the bases of *icIII*.

Host and locality :
Holotype and 3 paratypes male, and 4 paratypes female from *Metriopelia caeciliae* (14.IV.1967); allotype female from the same host (22.IV.1966); 12 paratypes (9 males and 3 females) from the same host (19.VI. 1967). All these birds died in the Zoo of Antwerp during quarantine. Types in the IRSNB.



Figs 85-88. – Harpirhynchus (Harpyrhynchoides) amazonae *FAIN*. - *Male in dorsal view (85) and ventral view (86); ωI (87); ωII (88). Scale line 50 μm (figs 85-86).*



Figs 89-93. – Harpirhynchus (Harpyrhynchoides) amazonae FAIN. - *Female in ventral view (89) and dorsal view (90); ωI (91); ωII (92); PA (93). Scale line 100 µm (figs 89-90).*

24. *Harpirhynchus (Harpyrhynchoides) zumpti* FAIN, 1972

= *Harpirhynchus (Harpyrhynchoides) diuca* FAIN, 1972 **Syn. nov.**

We think now that *H. diuca* FAIN, 1972 is a synonym of *H. zumpti*.

Male, holotype (figs 110-113) : L 240; W 189; LS 120; WS 111; LG 48; WG 54; *ve* 60; *sci* 42; *sce* 70; *h* 78; *sh* 75; second and third pairs of genital setae almost on the same transverse line and situated at 15 of the anterior pair of genital setae; sheath of penis 75 long; PA with 8-9 teeth; PI and PE with relatively long pectinations, especially PE which bears, in its apical half 2 or 3 long fingerlike pectinations; *ωI* and *ωII* relatively narrow, curved and ending apically in a very thin point. Ventral striations well developed, without scales or verrucosities. Chaetotaxy of legs I-II normal, that of legs III-IV as in *H. lawrencei*.

Female, allotype (figs 114-118) : L 135; W 255; LS 120; WS 186; LG 63; WG 81; *ve* 75; *sci* 72; *sce* 99; *h* 105; *sh* 90; *l5* 48; *g* is lacking; PA with 10-12 teeth; PE rodlike, as long as PI but with very small pectinations; *ωI* and *ωII* as in the male. Venter with striations well developed but without scales or verrucosities. Chaetotaxy of legs as in the male.

This species is characterized, in the male, by the long sheath of the penis, the situation of the genital setae, the shape of the *ωI* and *ωII*, similar as in the female (curved, non dilated and ending in to a thin point), the

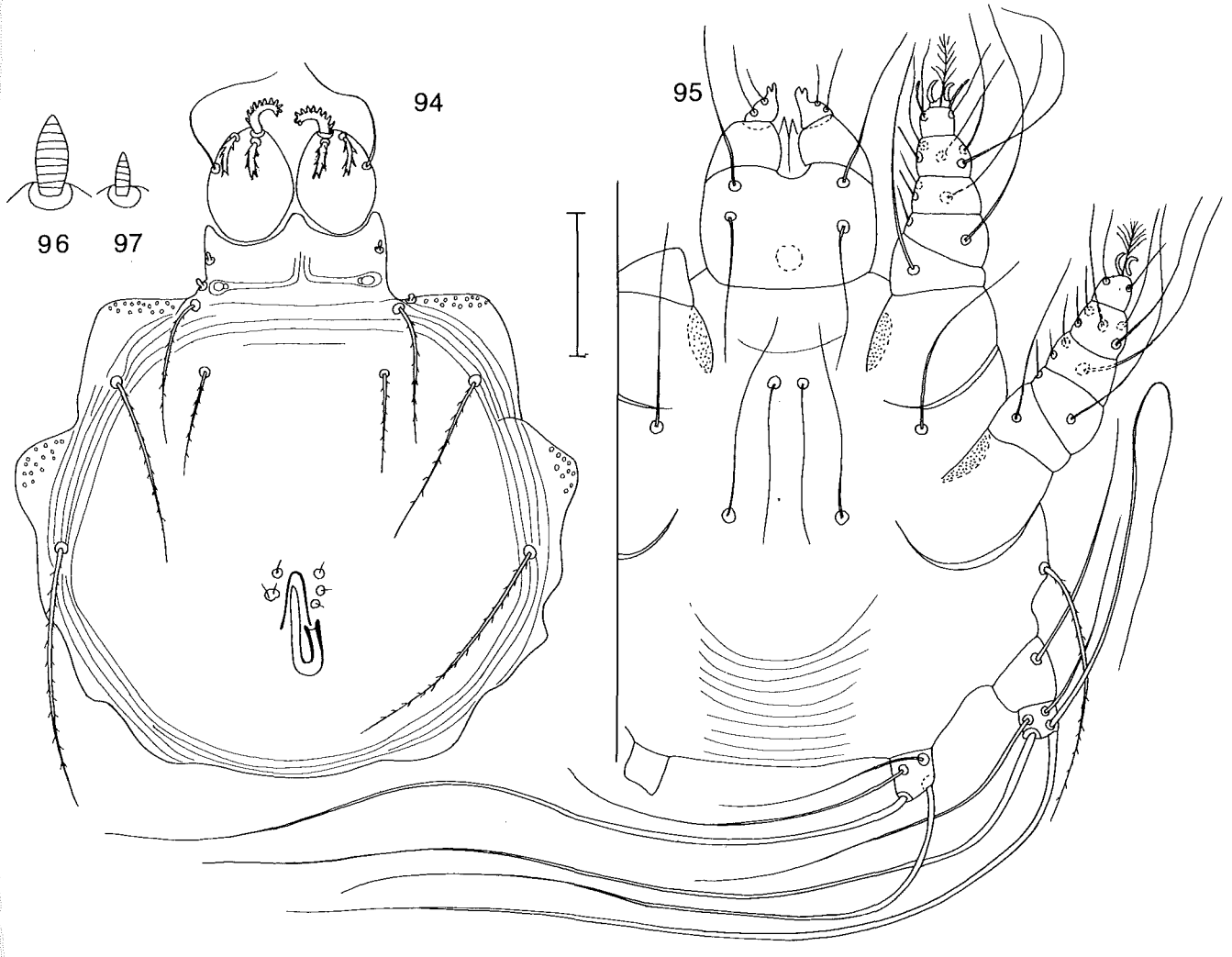
well developed striations and the absence of scales on the venter. In the female by the shape of PE, which is rodlike with small pectinations, very different from that of the male, the great number of teeth on PA etc... Curiously enough this species presents in the same time a marked sexual dimorphism in the shape of the PE and a clear homeomorphism in the shape of the solenidia.

Host and locality :
1. Holotype and 1 paratype male, allotype and 3 paratypes female, all from *Eremopterix leucotis* (Passeriformes, Alaudidae), from Mafeking, South Africa (coll. F. ZUMPT, 6.VIII.1964); other paratypes from the same host and the same collection but in Bloemhof, South Africa (10.VIII.1964) : 6 males, 9 females, nymphs and larvae. Holotype in MRAC.
2. Two males, 3 females and nymphs from *Diuca diuca* (Passeriformes, Emberizidae, Thraupinae). This bird died in the Zoo of Antwerp, during its quarantine (26.X.1965).

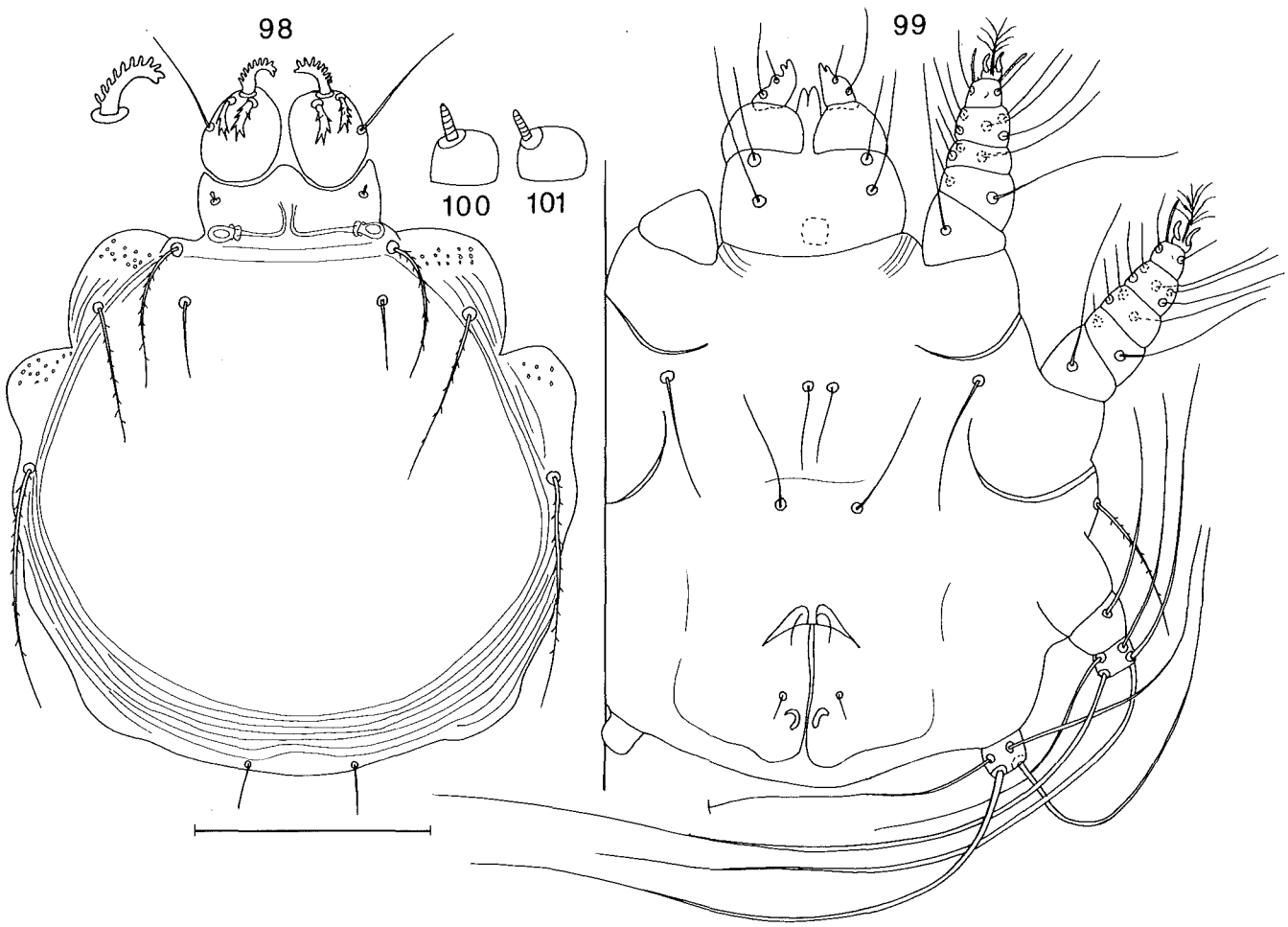
25. *Harpirhynchus (Harpyrhynchoides) pectinifer* LAWRENCE, 1959

Male (specimen from *Campethera cailliauti*, from Kariba, Rhodesia) (figs 122-126) : L 219; W 186; LS 160; WS 150; LG 57; WG 69; *ve* 45; *sci* 40; *sce* 58; *h* 60; *sh* 45; PA with 5 teeth; PE short, straight with small pectinations; PI stronger with slightly thicker pectinations; genital setae along 2 divergent lines; posterior genital setae 35 apart; *ωI* conical twice as long as wide (7,2 x 3,6); *ωII* conical 7,2 long and 2,4 thick. Striations well developed on venter but there are no scales and no verrucosities. Chaetotaxy of legs as in *H. lawrencei*.

Female (specimen from *Campethera cailliauti*, from Gisagara, Rwanda) (figs 119-121) : L 300; W 240; LS 150; WS 200; LG 74; WG 84; *ve* 60; *sci* 60; *sce* 75; *h* 78; *sh* 65; *l5* 25; *g* 15-18; *ωI* and *ωII* straight, cylindro-conical 11 x 2,2 and 8,4 x 2 respectively; PA with 5-6 teeth; PE and PI as in the male but stronger. Venter with



Figs 94-97. – Harpirhynchus (Harpyrhynchoides) lawrencei FAIN. - *Male in dorsal view (94) and ventral view (95); ωI (96); ωII (97). Scale line 50 µm (figs 94-95).*



Figs 98-101. – Harpirhynchus (Harpyrhynchoides) lawrencei FAIN. - *Female in dorsal view (98) and ventral view (99); ωI (100); ωII (101). Scale line 100 μm (figs 98-99).*

well-developed thick striations, extending to almost all the surface; at some places these striations bear short poorly developed scales. Chaetotaxy of legs as in the male.

This species is clearly distinct from *H. zumpti* by important characters, e.g. shape of PA, with only a few teeth, shape of PE similar in both sexes, shape of the solenidia different in both sexes, situation of genital setae in male etc...

Host and locality :
The type host is *Campethera abingoni* (Piciformes, Picidae), from Transvaal, South Africa. Our specimens were found on *Campethera cailliauti*, from Rhodesia (coll. F. ZUMPT) (male specimen) and from Gisagara, Rwanda (coll. A. FAIN, XII.1954) (female specimen).

26. *Harpirhynchus (Harpyrhynchoides) rubeculinus* CERNY & SIXL, 1971

The species is known only from female specimens found from *Erithacus rubecula* (Passeriformes, Muscicapidae, Saxicolinae), from Austria.
In this species the PE is piliform, barbed and longer than PI, as in our *H. coturnix* and *H. alectoris*. It is, however, clearly distinct from these species by several important characters, i.e. the presence of only one segment on leg IV and of 1 seta on preapical segment of legs III; the presence of 4 setae on genua I-II (insted of 2 setae in our species).

27. *Harpirhynchus (Harpyrhynchoides) vercammeni* LAWRENCE, 1959

This species was described from 2 females taken on *Centropus toulou grillii* (Cuculiformes, Cuculidae),

from Luvungi, Ruzizi, Kivu, Zaïre (coll. P.G. VERCAMMEN-GRANDJEAN, May 1954).

The description is insufficient and does not mention the number of segments on the posterior legs.According to the original description the palpalae are particularly thick "much larger than in *H. pectinifer*" and bear several rows of pectinations, the solenidia are dagger-like, longer and not as broad as in that species. This species is provisonally included in our group B.

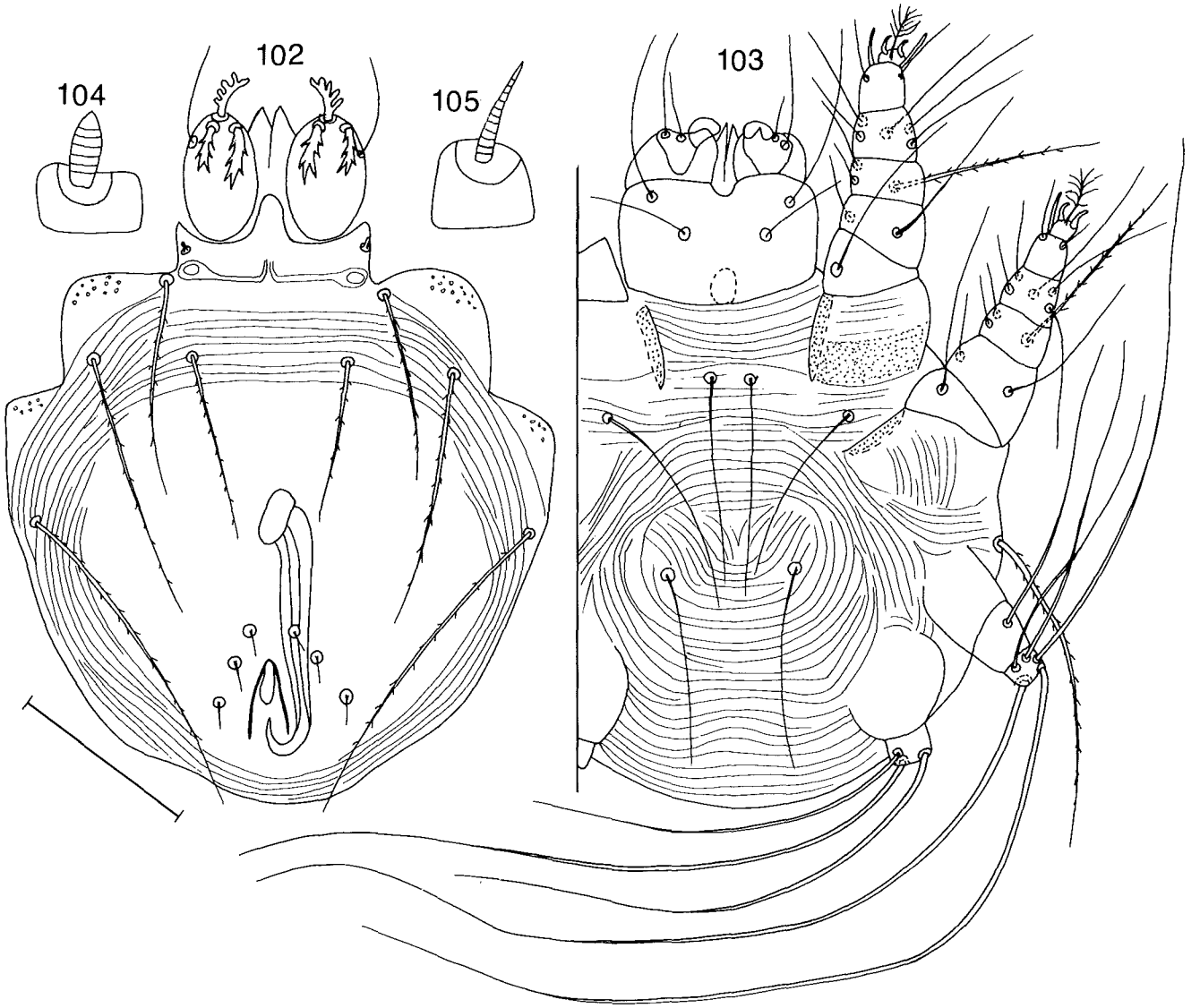
28. *Harpirhynchus (Harpyrhynchoides) rosellacinus* LAWRENCE, 1959

This species was described from a series of 33 females and immatures taken from a cyst in the skin of the parakeet *Platycercus eximius* (Psittaciformes, Psittacidae), at Sydney, and deposited in the collection TROUESSART (Paris).

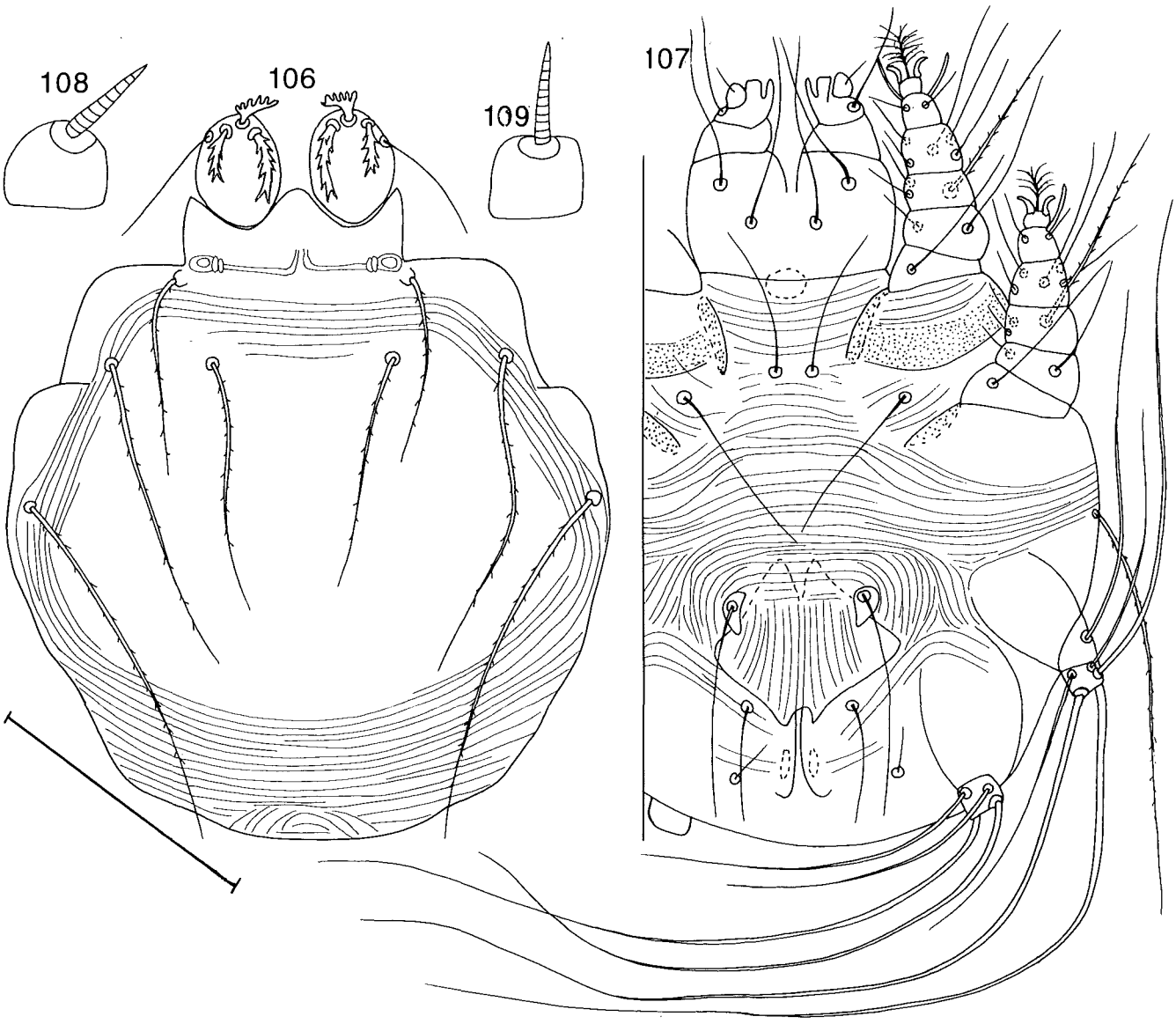
FILLIPICH & DOMROW (1985) and DOMROW (1991) again recorded the presence of this species in Australia from the following new hosts : *Glossopsitta concinna, Trichoglossus chlorolepidotus* and *T. moluccanus* (Psittacidae).

In 1992, I received from Dr. Roy MASON, Tasmania, numerous females and 4 males of this species that he had collected from a cutaneous cyst of a Swift Parrot, *Lathamus discolor*, in Tasmania. We give here the main metric data of these specimens :

Male : L 225; W 171; LS 126; WS 135; LG 66; WG 73; *ve* 54; *sci* 12 (very thin); *sce* 60; *h* 60; *sh* 39; genital setae on two slightly divergent lines, the second pair



Figs 102-105. – Harpirhynchus (Harpyrhynchoides) coxatus *FAIN.* - *Male in dorsal view (102) and ventral view (103); ωI (104); ωII (105). Scale line 50 μm (figs 102-103).*



Figs 106-109. – Harpirhynchus (Harpyrhynchoides) coxatus *FAIN*. - *Female in dorsal view (106) and ventral view (107); ωI (108); ωII (109). Scale line 100 μm (figs 106-107).*

closer to the anterior than to the posterior pair; posterior setae 25 apart; PA with 11-13 teeth; PI of the same shape as PE but much longer and thicker; *ωI* and *ωII* cylindrical or cylindroconical, 10-11 x 1,2-1,3. Venter with few striations and without scales or verrucosities. Chaetotaxy of legs I-II normal.

Female : L 330; W 255; LS 153; WS 198; *ve* 60; *sci* 69; *sce* 75; *h* 57; *sh* 45; *l5* 30; *g* is a microsetae or is reduced to a point; PA relatively very long, with 12-13 teeth; PI and PE as in the male; *ωI* 10 x 1,7; *ωII* 10 x 1,6. Chaetotaxy of legs I-II normal. Legs IV with one free segment.

Chaetotaxy of the legs III and IV in both sexes : The number of setae on these legs is highly variable and generally not the same on the right and on the left leg.

In the female the subapical segment of leg III is generally devoid of setae but it may carry one seta either at one or at both sides. The same variability is observed for the apical segment of this leg (bearing from 3 to 5 setae) or for the single segment of leg IV (2 or 3 setae). Similar variations are observed in the male.

We give here the number of setae on the right leg and on the left leg (the latter between brackets) in 8 females and 4 males. The first two numbers refers to leg III, the third to leg IV :

Females : 0-5-3 and (0-5-3); 0-5-3 and (1-5-2); 1-4-3 and (0-5-3); 1-5-2 and (0-4-3); 1-5-2 and (0-4-3); 0-5-2 and (0-4-3); 0-5-2 and (0-5-2); 0-5-3 and (0-4-3).

Males : 0-3-2 and (0-5-3); 0-4-3 and (0-4-4); 0-5-3 and (0-3-3); 1-4-3 and (0-4-3).

The cause of this tendency to a reduction of these setae is not known but one may surmise that it is in relation with the cystic habitat which lowers the need for these long setae and on the contrary favors the selection of strains where these setae are progressively reduced in number and in size.

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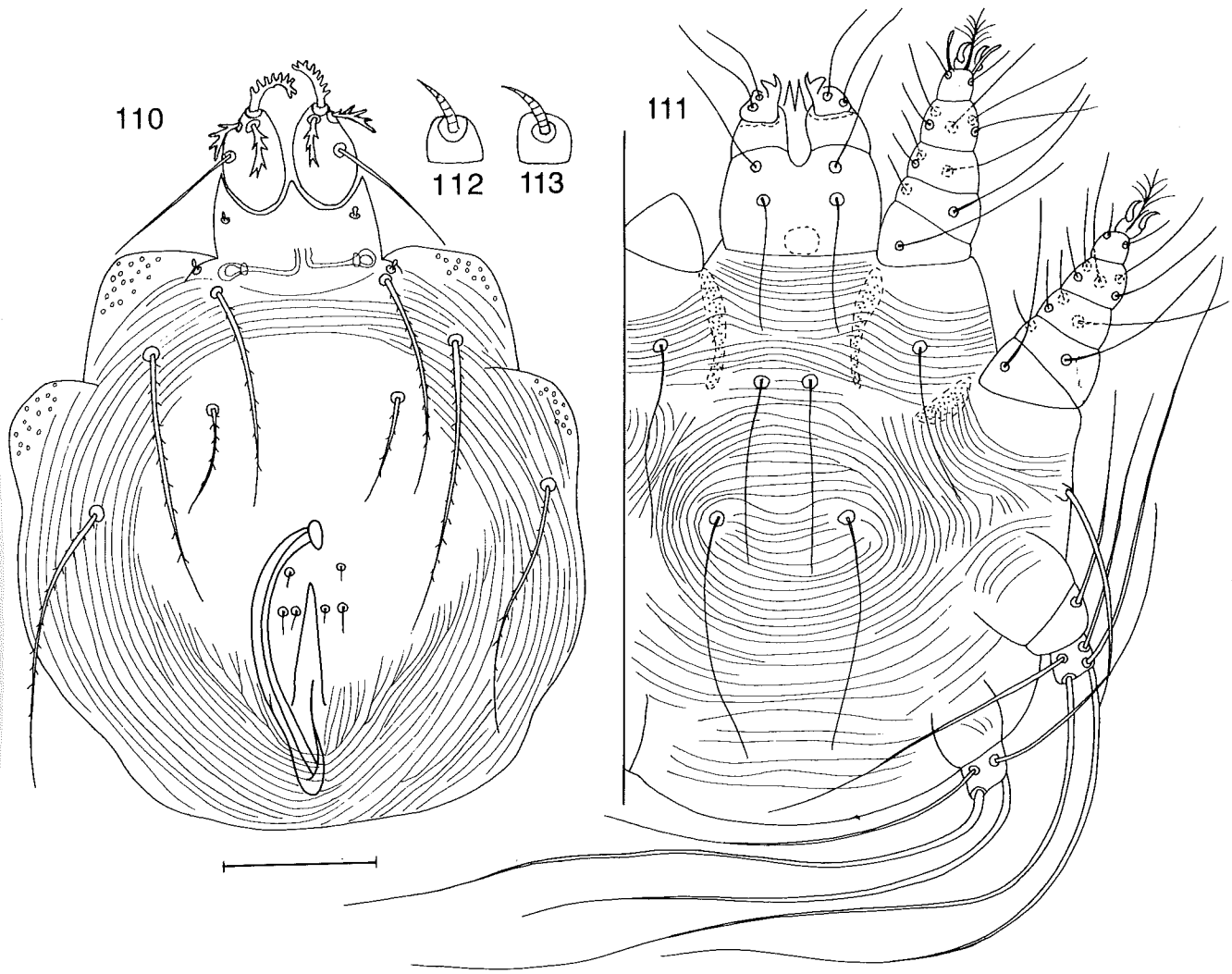
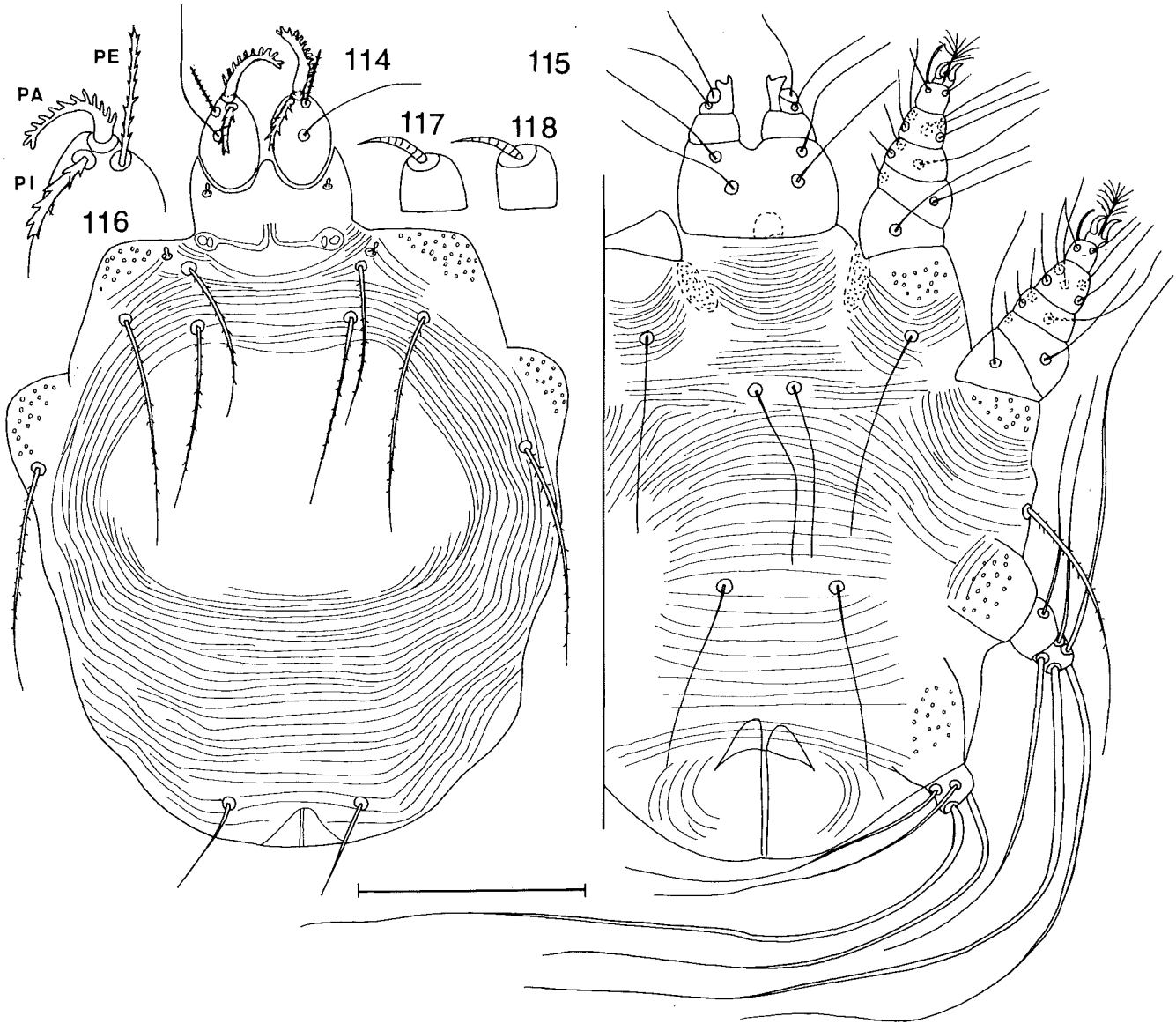
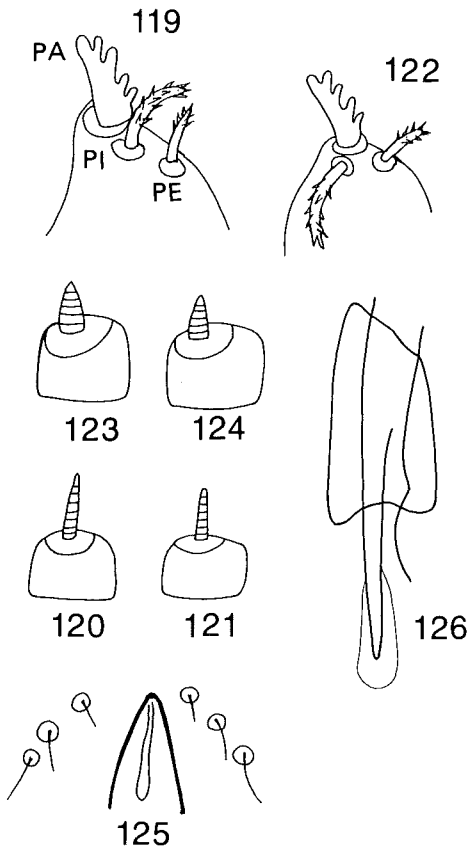


Figs 110-113. – Harpirhynchus (Harpyrhynchoides) zumpti *FAIN.* - *Male in dorsal view (110) and ventral view (111); ωI (112); ωII (113). Scale line 50 μm (figs 110-111).*



Figs 114-118. – Harpirhynchus (Harpyrhynchoides) zumpti *FAIN*. - *Female in dorsal view (114) and ventral view (115); PA, PI, PE (116); ωI (117); ωII (118). Scale line 100* µm *(figs 114-115).*



Figs 119-126. – Harpirhynchus (Harpyrhynchoides) pectinifer LAWRENCE. - *Female : Palpalae (119) : ωI (120); ωII (121). Male : Palpalae (122); ωI (123); ωII (124); genital region (125); penis and sheath (126).*

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