

NOTES ON THE GENUS *LAMINOSIOPTES* MEGNIN, 1880 (ACARI, ASTIGMATA) WITH DESCRIPTION OF THREE NEW SPECIES

A. FAIN

Institute of Tropical Medicine, Antwerp, Belgium

Summary

The fowl cyst mite *Laminosioptes cysticola* (Vizioli, 1870), type of the genus *Laminosioptes* Megnin, 1880, is a cosmopolitan parasite found in the cellular subcutaneous tissues of turkeys and chickens. The genus *Laminosioptes* Mégnin is still monotypical. A second species, *L. hymenopterus* Jones & Gaud, 1962, has been attributed to this genus, but Lombert *et al.* (1979) have shown that it belongs in fact to the genus *Calamicoptes* Lukoschus & Lombert, 1979.

In the present paper, the genus *Laminosioptes* is redefined and its type species is redescribed. In addition, three new species, each representing a new subgenus in this genus are described: *Passeriella reticulata* subg.nov., sp.nov. from *Coccothraustes migratorius* (Passeriformes), *Columbietta collaris* subg.nov., sp.nov. from *Columbigallina minuta* (Columbiformes) and *Psittaciella myiopsittae* subg.nov., sp.nov. from *Myiopsitta monachus* (Psittaciformes). All these species were found under the skin of birds which had died in the Antwerp Zoo after a short time in captivity.

The holotypes of these new species are deposited in Institut royal des Sciences naturelles de Belgique, Brussels.

FAMILY LAMINOSIOPTIDAE Vitzthum, 1931

This family has been recently divided into two subfamilies: Laminosioptinae Vitzthum, 1931 (type genus *Laminosioptes* Mégnin, 1880) and Faino-

coptinae Lukoschus & Lombert, 1979 (type genus *Fainocoptes* Lukoschus & Lombert, 1979).

Genus *Laminosioptes* Mégnin, 1880

The new definition given below is based on the examination of *L. cysticola* and of the three new species described here.

Definition: Body small or very small, elongate and flattened dorso-ventrally. Dorsally there are three to five median punctate plates, the propodonal plate is very large and not limited laterally by a sclerotized stripe. Between these plates the cuticle is striated. Opisthogaster striated. The body is prolonged antero-laterally by a flat and thin membranous production covering the base of the legs I and of the gnathosoma. Epimerae I fused in a long sternum which is loosely fused behind with epimerae II, the latter being very long and nearly contiguous apically. Epimerae III either free or fused. Epimerae IV free. Vulva in an inverted Y, situated between coxae III, genital suckers absent. Epigynium small. Anus ventral. Bursa terminal, poorly sclerotized. Gnathosoma wider than long, without membranes. Palps very short. Chelicerae relatively well developed, movable digit with either one, two or three apical tines, according to the species. Legs I-II short, the tarsi with one or two pointed apical processes (not spines); the femur and genu are fused dorsally. Posterior legs longer than anterior legs with two apical processes sometimes poorly sclerotized. All the legs with a pedunculate sucker. In the male of *L. cysticola* the penis is

situated on the opisthogaster, the suckers of tarsi I-II are poorly developed and the solenidia of tarsi I-II are much longer than in the female.

Chaetotaxy (females): setae *vi*, *ve*, *sci*, *d1*, *d2*, *d3*, *cx I*, *ga* and *gm* always absent. The setae *se*, *h*, *l1* and *d5* are present in all the species and are long. The other setae (*d4*, *l2*, *l3*, *l4*, *sh*, *a*, *cx III*, *gp*) are inconstant and may be absent or represented only by their bases. *Legs*: On leg I all the setae are very short. On leg II the posterior seta of femur and genu, or only of femur, may be long. Tarsi III-IV may bear one long seta. Tarsus I with six small spines and two solenidia. Tarsus II as tarsus I but with one solenidium. Tarsi III-IV with four or five setae. Tibiae I-IV with a very short solenidium, which may be absent. Genua I-II with one or two setae. Femur I without setae, femur II with either one or no seta. Trochanters I-IV without setae.

The females of *L. cysticola* and of *L. collaris* are larviparous.

Type species: Sarcoptes cysticola Vizioli, 1870.

Division of genus *Laminosioptes*:

The genus *Laminosioptes* is divided here into four new subgenera with the following characters (females only):

1. *Laminosioptes* Mégnin, 1880: movable digit of chelicera with three tines; absence of long setae on the legs; epimera III free; presence of setae *l1* to *l5*, *d4*, *cx III* and *gp*; setae *sh* and *a* absent; setae *l5* very short; dorsum with three median and two paramedian plates.

Type species: Sarcoptes cysticola Vizioli, 1870

Hosts: Galliformes.

2. *Psittaciella* subg.nov.: movable digit of chelicera with two tines; with long setae on tarsi III-IV and on genu and femur II; setae *l2*, *l3*, *l4*, *d4* are lacking; setae *cx III*, *gp* and *a* present; setae *l5* long; epimerae III free; dorsum with four median plates and no paramedian plates.

Type species: Laminosioptes (Psittaciella) myiopsittae sp.nov.

Hosts: Psittaciformes.

3. *Columbietta* subg.nov.: movable digit of chelicera with a single tine; with long setae on tarsi III-IV and on genu and femur II; setae *l2* to *l4*, *d4*, *cx III*, *gp* and *a* lacking; setae *sh* present; epimerae III fused in the midline; dorsum with five median plates and without paramedian plates.

Type species: Laminosioptes (Columbietta) collaris sp.nov.

Hosts: Columbiformes.

4. *Passeriella* subg.nov.: movable digit of chelicera with a single tine; legs with a long seta only on femur II; setae *l4*, *d4*, *cx III*, *gp*, *a* lacking, seta *sh* present; epimerae III free; dorsum with three large median plates.

Type species: Laminosioptes (Passeriella) reticulata sp.nov.

Hosts: Passeriformes.

Remarks on subfamily Fainocoptinae Lukoschus & Lombert

This subfamily is distinguished from the Laminosioptinae by the following characters: body not prolonged anterolaterally and not covering the base of leg I and of gnathosoma, propodonal plate with sclerotized margins, absence of large punctate plates on hysteronotum, anus terminal, gnathosoma longer than wide, idiosomal chaetotaxy nearly complete, legs with long setae and solenidia, all trochanters with a seta.

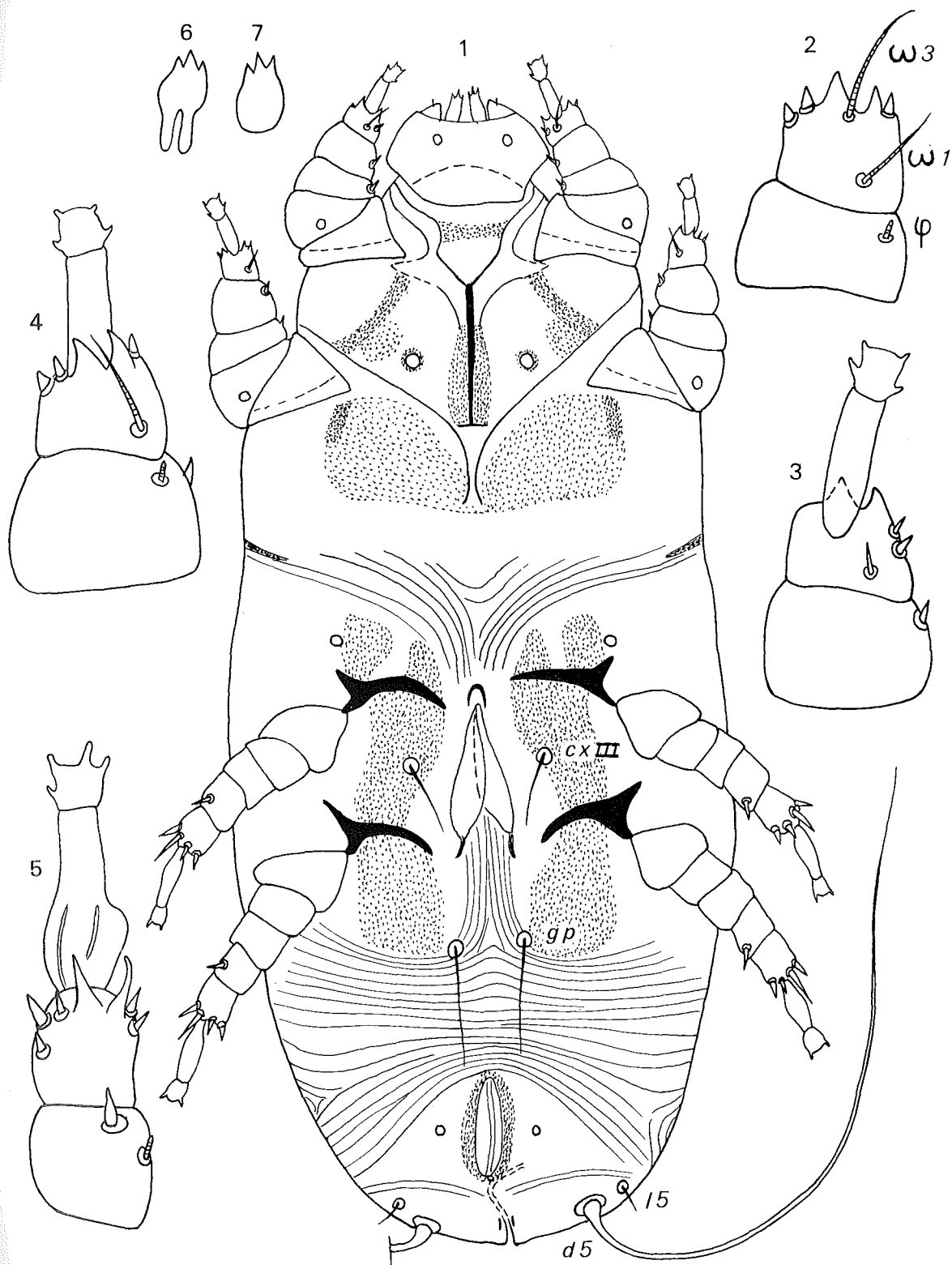
Key to the genus *Laminosioptes* (females)

1. All the legs with only very short setae. Setae *l1* to *l5* and *d4* present, *l5* very short. Movable digit of chelicera with three tines. Dorsum with three large median and two small paramedian punctate plates Subgenus *Laminosioptes* Mégnin, 1880 (One species: *L. (L.) cysticola* (Vizioli, 1870))

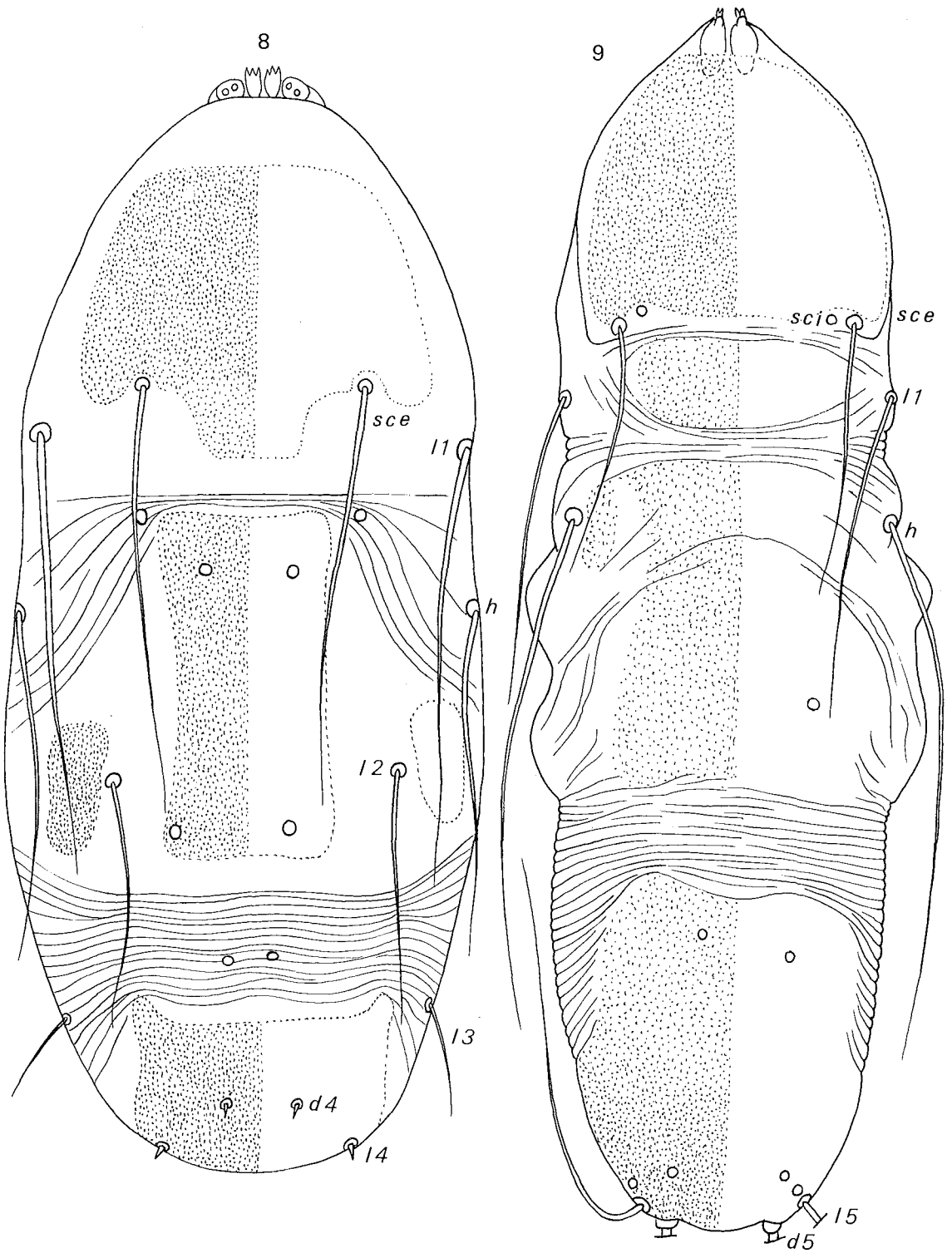
At least femur II with a long seta. Setae *l4* and *d4* absent. Movable digit of chelicera with one or two tines. Dorsum with only median plates 2

2. Femur and genu II, and tarsi III-IV with a long seta. Seta *l5* long. Dorsum with four or five punctate plates 3

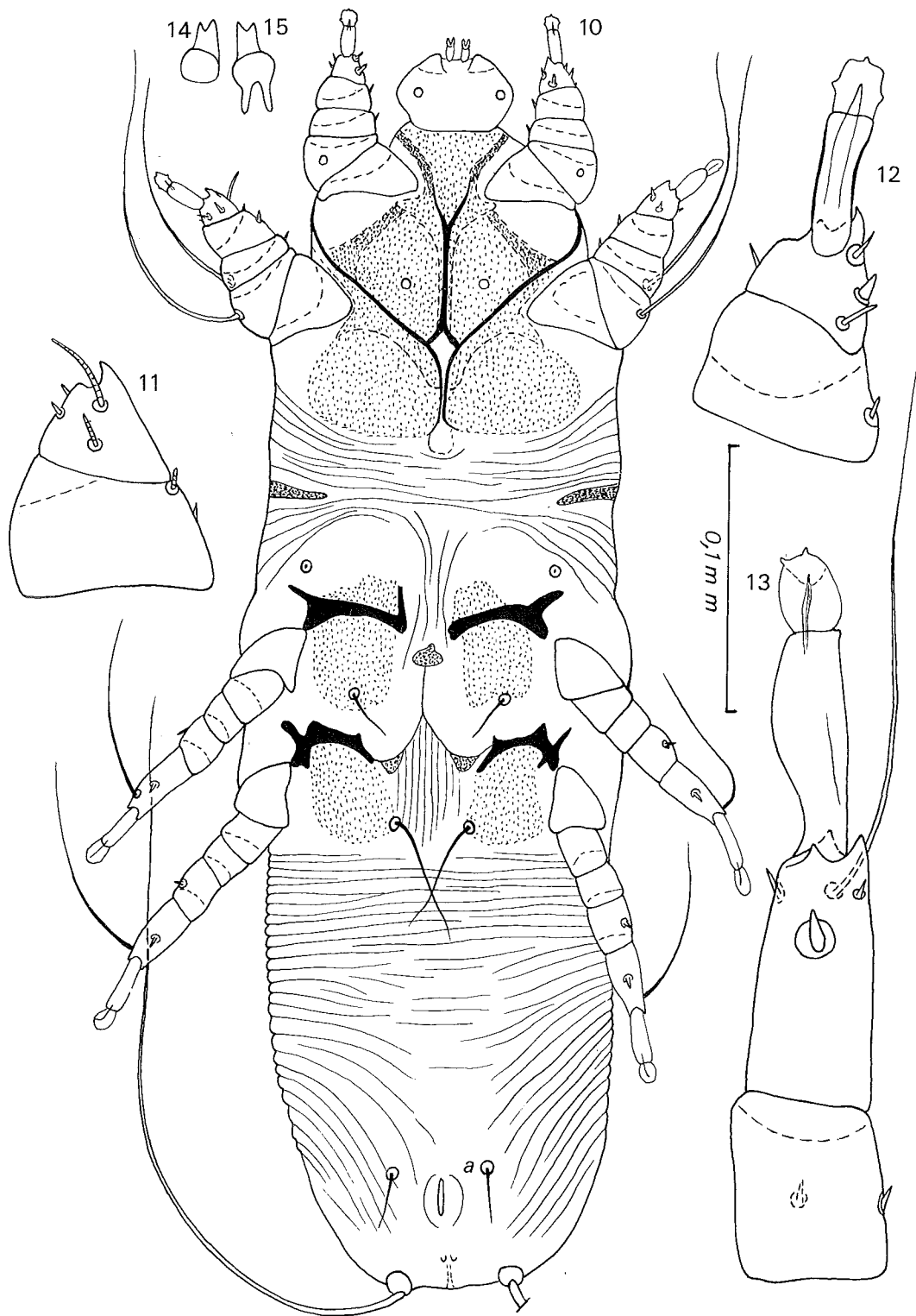
Only the femur II with a long seta, all other segments of legs I-IV with very short setae. Seta



Figs. 1-7. *Laminosioptes cysticola* (Vizioli, 1870), female: 1, ventral view; 2-3; tarsus and tibia I dorsally and ventrally; 4, tarsus and tibia II dorsally; 5, tarsus and tibia III dorsolaterally; 6-7, movable digit of chelicera dorsally and ventrally.



Figs. 8-9. Dorsum of females: 8, *Laminosioptes cysticola* (Vizioli, 1870) and 9, *Laminosioptes (Psittaciella) myiopsittae* n. sp.



Figs. 10-15. *Laminosioptes (Psittaciella) myiopsittae* n. sp., female holotype: 10, ventrally; 11-12, tarsus and tibia I dorsally and ventrally; 13, tarsus and tibia III ventrally; 14-15, movable digit of chelicera ventrally and dorsally.

l 5 very short. Dorsum with three large punctate plates, posterior ones with a network pattern. Moveable digit of chelicera with a single tine Subgenus *Passeriella* subg.nov.

(One species: *L.(P.) reticulata* sp.nov.)

3 .Epimerae III fused in the midline. Movable digit of chelicera with one tine. Gnathosoma followed by a distinct 'neck'. Dorsum with five dorsal median punctate plates. Setae *cx III*, *g p* and *a* absent, setae *sh* present Subgenus *Columbietta* subg.nov.

(One species: *L.(C.) collaris* sp.nov.)

Epimerae III separate in midline. Movable digit of chelicera with two tines. Gnathosoma without distinct 'neck'. Dorsum with four median punctate plates. Setae *cx III*, *g p* and *a* present, setae *sh* absent Subgenus *Psittaciella* subg.nov.

(One species: *L.(P.) myiopsittae* sp.nov.)

1. *Laminosioptes (Laminosioptes) cysticola* (Vizioli, 1870)

Fain (1956) recorded this species from *Gallus gallus*, in Butare, Rwanda, and discussed the resemblances between genus *Laminosioptes* and the Gastronysidae parasitic on bats. In the same paper figures were given of the legs and the chelicerae in *Laminosioptes cysticola*.

I have also found this species in the partridge (*Pternistis afer*) in Rwanda and in *Gallus gallus* in Belgium (present work) and give here a new description and new figures of the female of this species (Figs. 1-8).

Two females from a chicken from Belgium measure $261 \times 120 \mu$ and $270 \times 123 \mu$ (to the tips of palps), two from partridges from Rwanda measure $255 \times 118 \mu$ and $250 \times 120 \mu$. The dorsum bears three large median and two small paramedian punctate plates. Striations are visible specially between the two median hysteronotal shields. Venter as described above for the genus. Coxae I with incomplete shields, coxae II-IV with well formed shields. *Gnathosoma* much wider than long, produced laterally. Movable digit of chelicera with three slightly unequal tines. *Legs*: tarsi I-II with two conical apical processes, six short spines or spinose setae and two (tarsus I) or one (tarsus II), solenidia. Tarsi III-IV with two elongate dorsal

processes and five small spines. All tarsi with a pedunculate sucker bearing four small membranous prolongations. All tibiae with a small spine and a very small solenidium. *Idiosomal chaetotaxy*: Setae *sc e*, *l 1*, *l 2*, *h* and *d 5* long and strong; setae *d 4* and *l 4* are very short spines; setae *cx III* and *g p* very thin, and 20 and 30 μ long respectively; *l 5* very short and thin. Seta *l 3* is either a small spinelet or a thin seta 20-30 μ long, in some specimens there is a spinelet at one side and a thin long seta at the other side. The other setae (*v i*, *v e*, *sc i*, *d 1*, *d 2*, *d 3*, *s h*, *a*, *cx I*, *g a* and *g m*) are lacking.

2. *Laminosioptes (Psittaciella) myiopsittae* sp.nov.

Only the female is known. It is distinguished from *L.(L.) cysticola* by the presence of a long seta on femur and genu II and on tarsi III-IV, the presence of *a* setae, the great length of seta *l 5* and the structure of dorsal plates.

Female (Figs. 9-15): Holotype 405 μ long (gnathosoma included but not the chelicerae) and 121 μ wide. The paratype is 400 μ long and 123 μ wide. *Dorsum* with four unequal punctate median shields, the rest of cuticle is striated. *Venter*: epimerae and vulva as in *L. cysticola*. All coxae with punctate plates. Anus small, without a sclerotized ring. Movable digits of chelicerae with two tines. *Legs*: tarsi I-II as in *L. cysticola*; tarsi III-IV with two (? or three) pointed apical processes, three small spines and one long dorsoapical seta. Tibiae as in *L. cysticola*. Genua I-IV with 1-2-0-0- setae. Femora 0-1-0-0 setae.

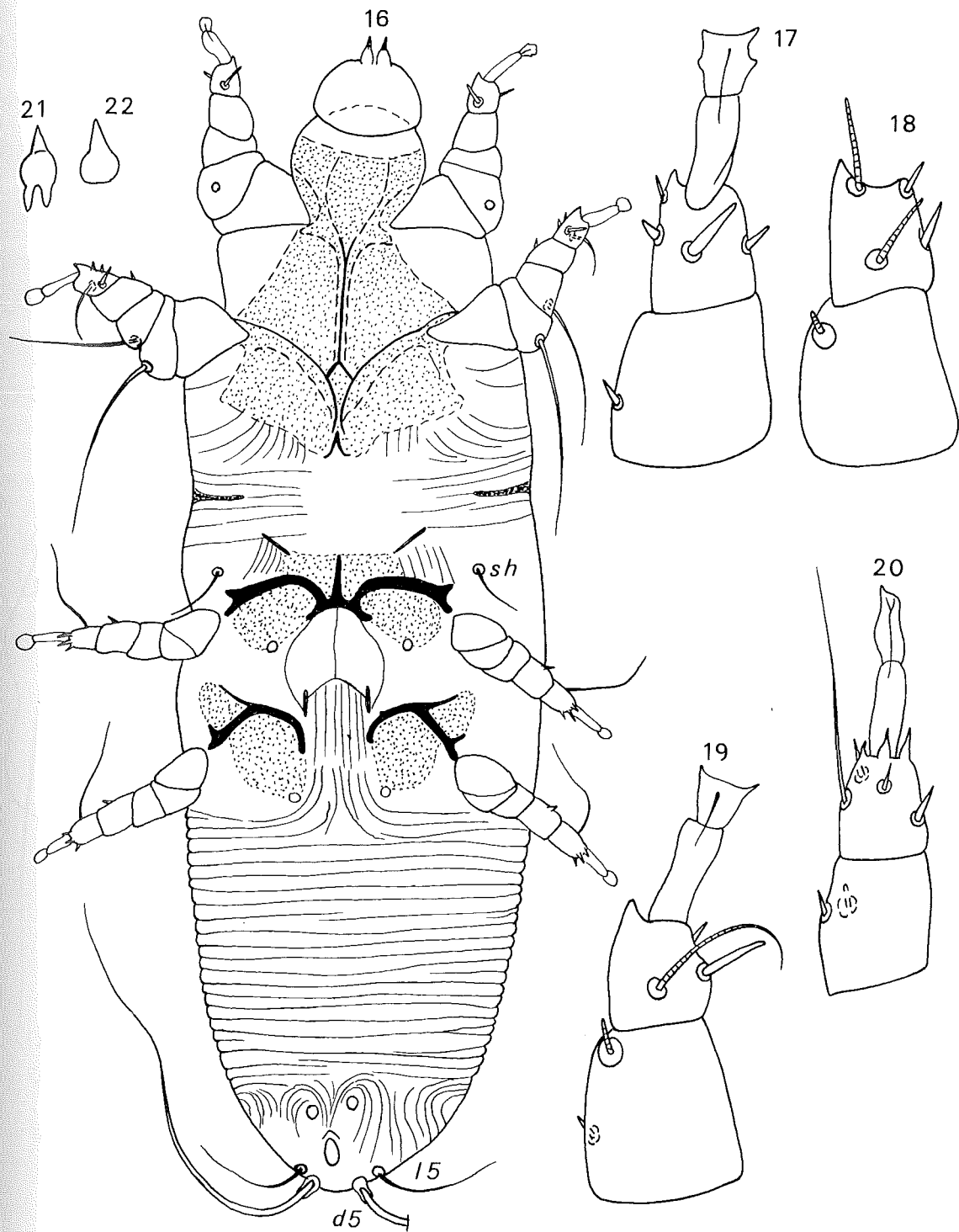
Idiosomal chaetotaxy: Setae *sc e*, *l 1*, *h*, *l 5*, *d 5* are long or very long. Setae *cx III* thin, 15 μ ; setae *g p* thicker 40 μ . Setae *a* very thin and short. All the other setae are lacking.

Host and locality

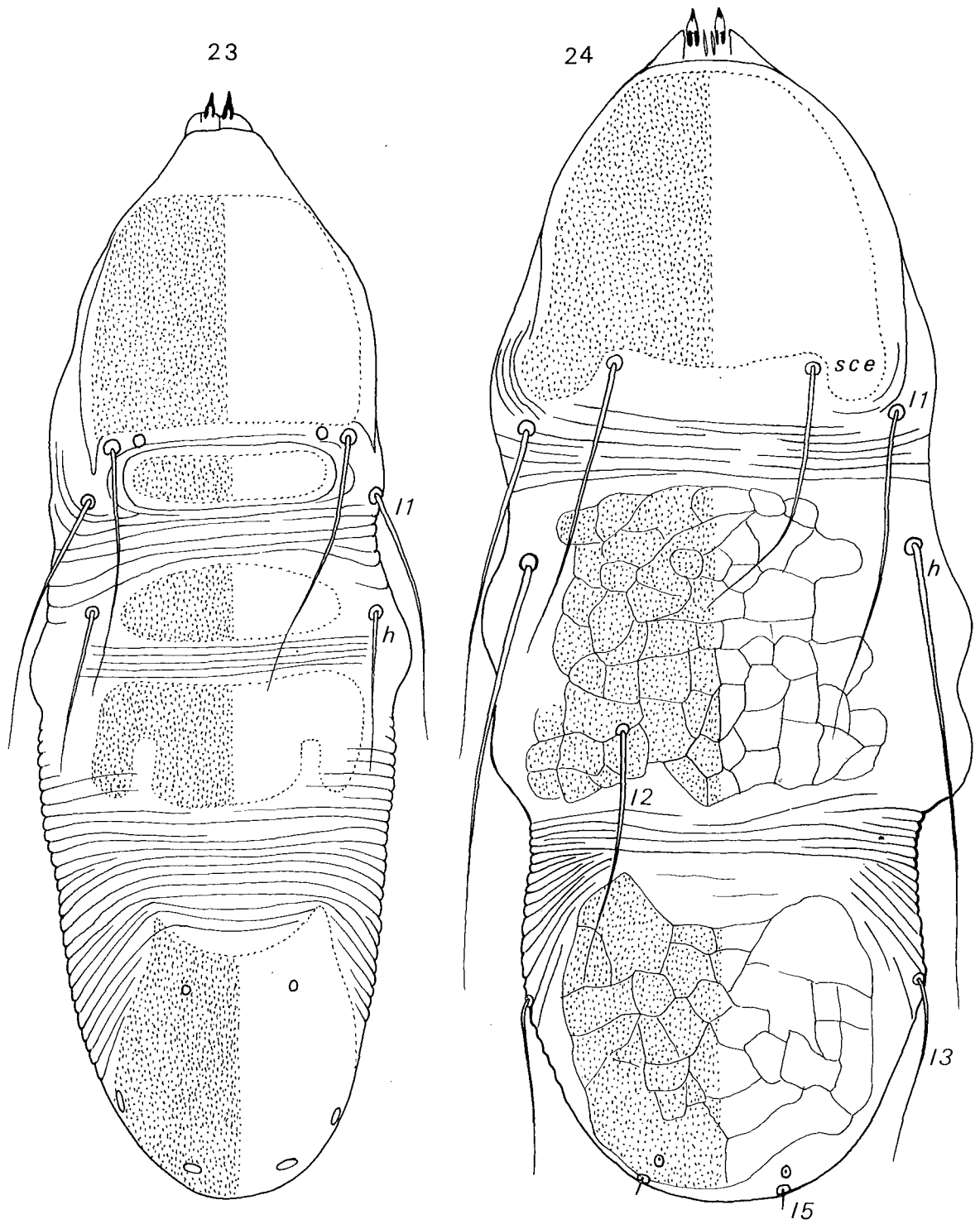
In the subcutaneous tissues of the leg of *Myiopsitta monachus* (Psittacidae), which died in the Antwerp Zoo, 22nd Oct., 1968 (Coll. A.F.). Holotype and one paratype females.

3. *Laminosioptes (Columbietta) collaris* sp.nov.

This species is characterized by the presence of a



Figs. 16-22. *Lammosiopes (Columbietta) collaris* n.sp.; female holotype: 16, ventrally; 17-18, tarsus and tibia I ventrally and dorsally; 19, tarsus and tibia II dorsolaterally; 20, tarsus and tibia III laterally; 21-22, movable digit of chelicera dorsally and ventrally.



Figs. 23–24. Dorsum of females: 23, *Laminosioptes (Columbietta) collaris* n.sp.; 24, *Laminosioptes (Passeriella) reticulata* n.sp.

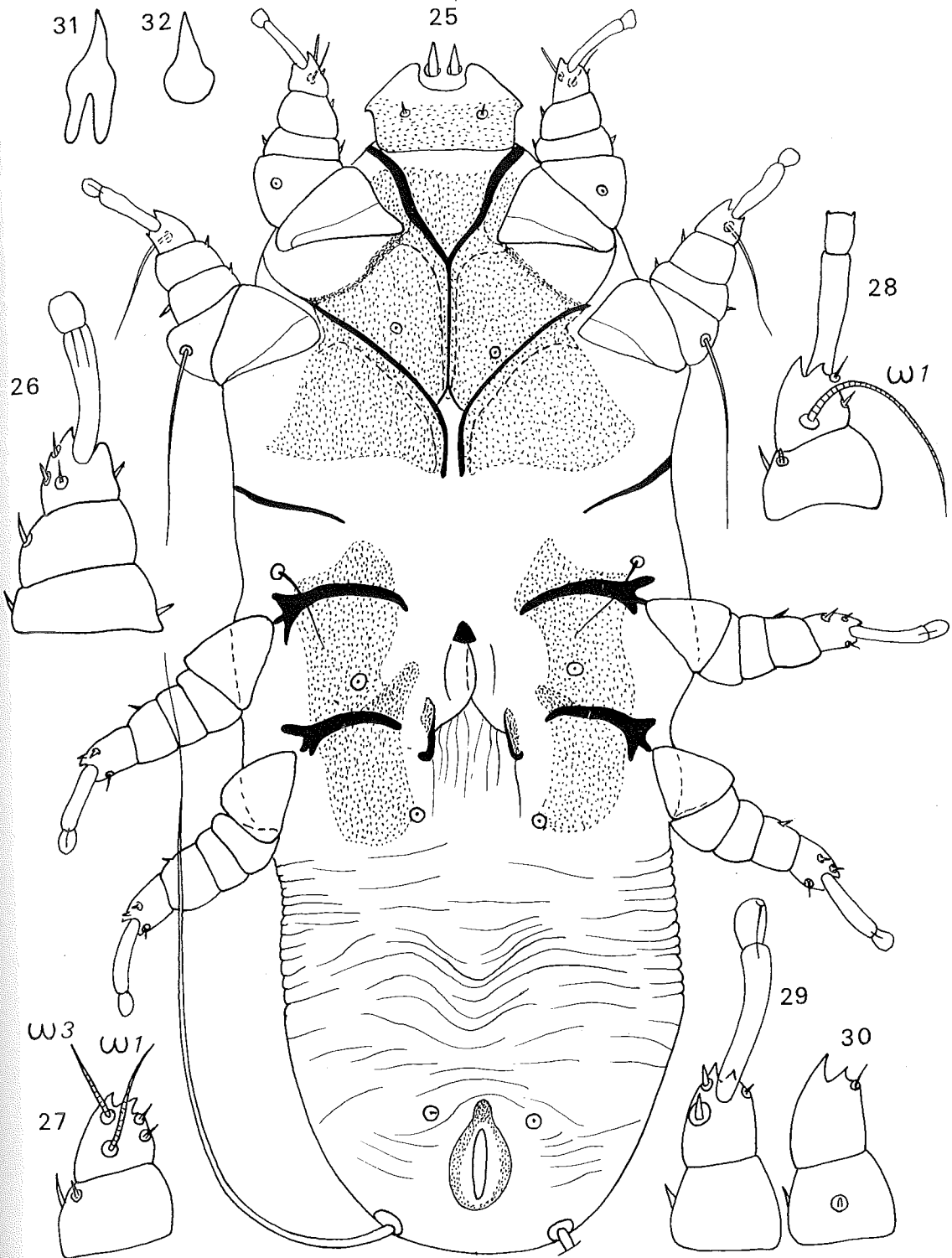


Fig. 25-32. *Laminosioptes (Passeriella) reticulata* n.sp., female holotype: 25, ventrally; 26-27, tarsus and tibia I ventrally and dorsally; 28, tarsus and tibia II dorsally; 29-30, tarsus and tibia III ventrally and dorsally; 31-32, movable digit of chelicera dorsally and ventrally.

distinct neck and the fusion of epimerae III in the midline. Only the female and nymphs are known.

Female (Figs. 16–23): Holotype 303 μ long and 97 μ wide (gnathosoma included). Dorsum with five median plates separated by striations. *Venter*: A rather long neck is present. All coxae punctate. Epimerae III fused in midline with each other and with epigynium. Anus small without a punctate ring. Movable cheliceral digit with one tine. *Legs*: tarsus I with only one pointed apical process, six short setae and two short solenidia; tarsus II and I but with one solenidion. Tarsi III–IV with four short setae and two (or three) pointed processes. Tibiae as in *L. cysticola*. Genu I with one seta, genu II with one short and one long seta. Femora I, III, IV without setae, femur II with a long seta.

Idiosomal chaetotaxy: Setae *sc e*, *l 1*, *h*, *l 5* and *d 5* are long or very long; setae *sh* is thin and 16 μ long. All the other idiosomal setae are lacking.

Host and locality

In subcutaneous tissues of *Columbigallina minuta* (Columbiformes) which died in Antwerp Zoo, 25 March, 1966. Holotype and two paratype females, three paratype nymphs (Coll. A.F.).

4. *Laminosioptes (Passeriella) reticulata* sp.nov.

This species is represented by a female and a nymph. It is characterized by the presence of only one tine on the movable cheliceral digit, the presence of a long seta on femur II and not on genu II and the presence of three large median dorsal shields.

Female (Figs. 24–32): Holotype 299 μ long and 118 μ wide (gnathosoma included). Dorsum with three large plates, the two posterior ones bearing a distinct network pattern. *Venter*: epimerae III

separate, there is no distinct neck behind the gnathosoma. Movable digit of chelicera with a single tine. Anus with a sclerotized ring. *Legs*: tarsi I–II as in *L. cysticola*, except that the solenidion of tarsus II is longer than in that species. Tarsi III–IV with two pointed apical processes and four short or very short setae. Tibiae as in *L. cysticola*. Genua I–II with two very short spinelets. Femur I without seta. Femur II with a long seta.

Idiosomal chaetotaxy: the setae *sc e*, *l 1*, *h* and *d 5* are long or very long; setae *l 3* are much shorter; seta *l 2* is long and present only at one side; *a* are microsetae; *sh* is thin and 20–25 μ long. All the other setae are lacking.

Host and locality

In subcutaneous tissues of *Coccothraustes migratorius* (Passeriformes). This bird died in the Antwerp Zoo, 22nd Nov., 1968 (Coll. A.F.). Holotype female and two paratype nymphs.

References

- Baker, E.W. & Wharton, G.W. (1952) *An Introduction to Acarology*. New York: MacMillan Company, 464 pp.
- Fain, A. (1956) Une nouvelle famille d'Acariens endoparasites des chauves-souris: Gastronyssidae Fam. Nov. *Annales de la Société Belge de Médecine Tropicale*, **36**, 87–98.
- Jones, J & Gaud, J. (1962) The description of *Laminosioptes hymenopterus* n. sp. (Sarcoptiformes) from the American crow. *Acarologia*, **4**, 391–395.
- Lombert, H.A.P.M., Kethley, J.B. & Lukoschus, F.S. (1979) *International Journal of Acarology*, **5**, 103–110.
- Lukoschus, F.S. & Lombert, H.A.P.M. (1979) Parasites of Western Australia. VII. Observations on quill wall mites (Acarina: Astigmata). *Records of the West Australian Museum*, **7**, 265–286.

Accepted for publication 30th April, 1980.