

PARASITES OF WESTERN AUSTRALIA

II

NASAL MITES FROM BIRDS (ACARINA: RHINONYSSIDAE, DERMANYSSIDAE, EREYNETIDAE AND CYTODITIDAE)

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and

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ABSTRACT

Fifteen species of nasal mites (Acarina) from birds are reported from Western Australia. Amongst them 6 species are new and are described.

INTRODUCTION

Nasal mites from birds have been extensively studied in Australia by Domrow (1969). All these investigations were made in Eastern Australia, especially in Queensland. The western regions of Australia have apparently not been explored.

During the Kimberley expedition in Western Australia in 1976, one of us (F.S.L.) collected nasal mites belonging to 15 different species. Amongst these species 6 are new and are described herein.

The width of the body utilized here is the maximum width. The abbreviations utilized in the descriptions of Mesostigmata are those proposed by Fain & Hyland (1962).

The types of the new species are deposited in the Western Australian Museum, Perth. Paratypes are in the Field Museum of Natural History, Chicago, U.S.A. and in the collection of authors.

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ORDER MESOSTIGMATA

FAMILY RHINONYSSIDAE TROUESSART, 1895

GENUS *PTILONYSSUS* BERLESE & TROUESSART, 1889

PTILONYSSUS GLICIPHILAE DOMROW, 1966

The typical host of this species is *Lichmera indistincta* (Vigors & Horsfield) (Meliphagidae, Passeriformes), from Queensland. Our specimens were found in the same host from four localities, in W. Australia: Beagle Bay, 21 to 24.VIII.1976 (18 females, 3 nymphs); Beverley Springs, 23.IX.1976 (18 females and 7 nymphs); Brooking Springs, 7.X.1976 (12 females, 5 nymphs); Mitchell Plateau, 17.X.1976 (5 females).

PTILONYSSUS EMBERIZAE FAIN, 1956

This species was described from *Emberiza flaviventris* Stephens, in Rwanda. Domrow recorded this species from *Hirundo rustica* Linnaeus and *Erythrura gouldiae* (Gould) in Queensland. Our specimens were found in *Poephila bichenovii* (Vigors & Horsfield), Mount Hart, W. Australia, 13.IX.1976 (2 females), which is a new host record.

PTILONYSSUS ASTRIDAE FAIN, 1956

This species was described from *Lagonosticta rubricata congica* Sharpe (Ploceidae, Estreldinae, Passeriformes), Rwanda.

We have found it in the nares of *Lonchura castaneothorax* (Gould), from Mount Hart, W. Australia, 13.IX.1976 (15 females, 5 males and 7 nymphs and 1 larva). This is a new host record.

PTILONYSSUS CRACTICI DOMROW, 1964

This species was known from various Cracticidae (Passeriformes) in Queensland, including *Cracticus nigrogularis* (Gould). Our specimens were found in this host from Beagle Bay, W. Australia, 26.VIII.1976 (3 females).

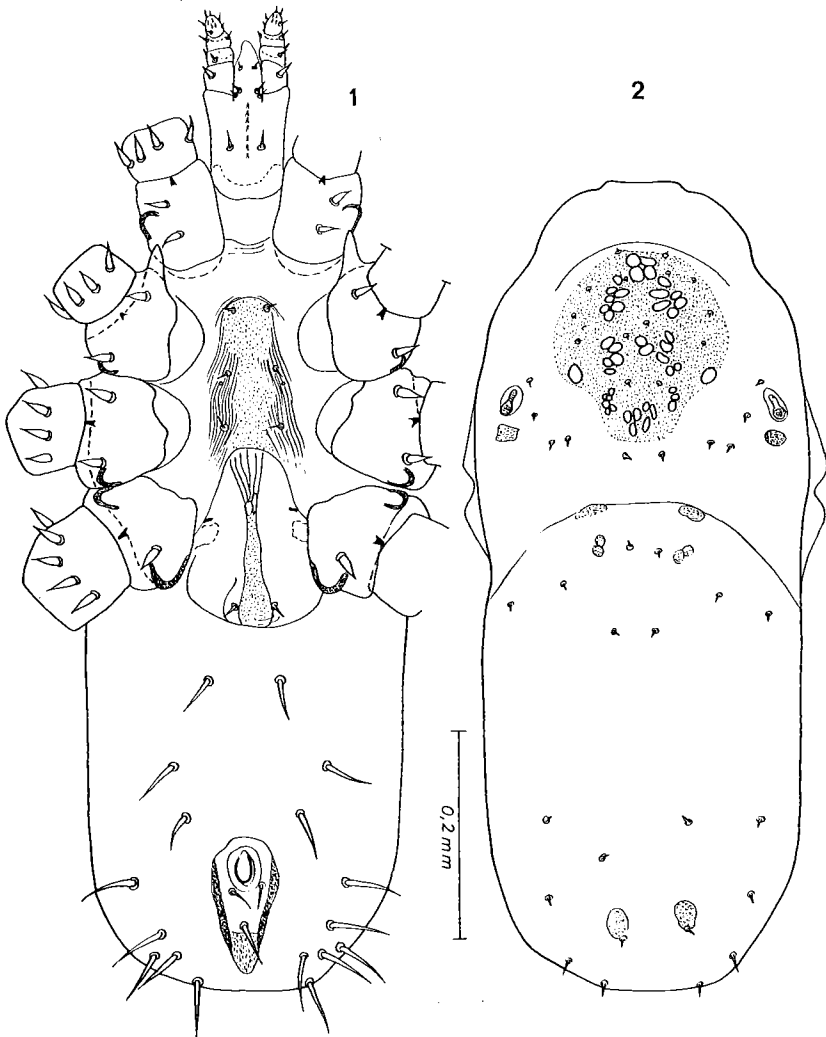
PTILONYSSUS GRALLINAE DOMROW, 1964

This species was described from *Grallina cyanoleuca* (Latham), in Queensland. Our specimens were found in the nares of the typical host in Napier Range, W. Australia, 29.VIII.1976 (29 females and 6 nymphs).

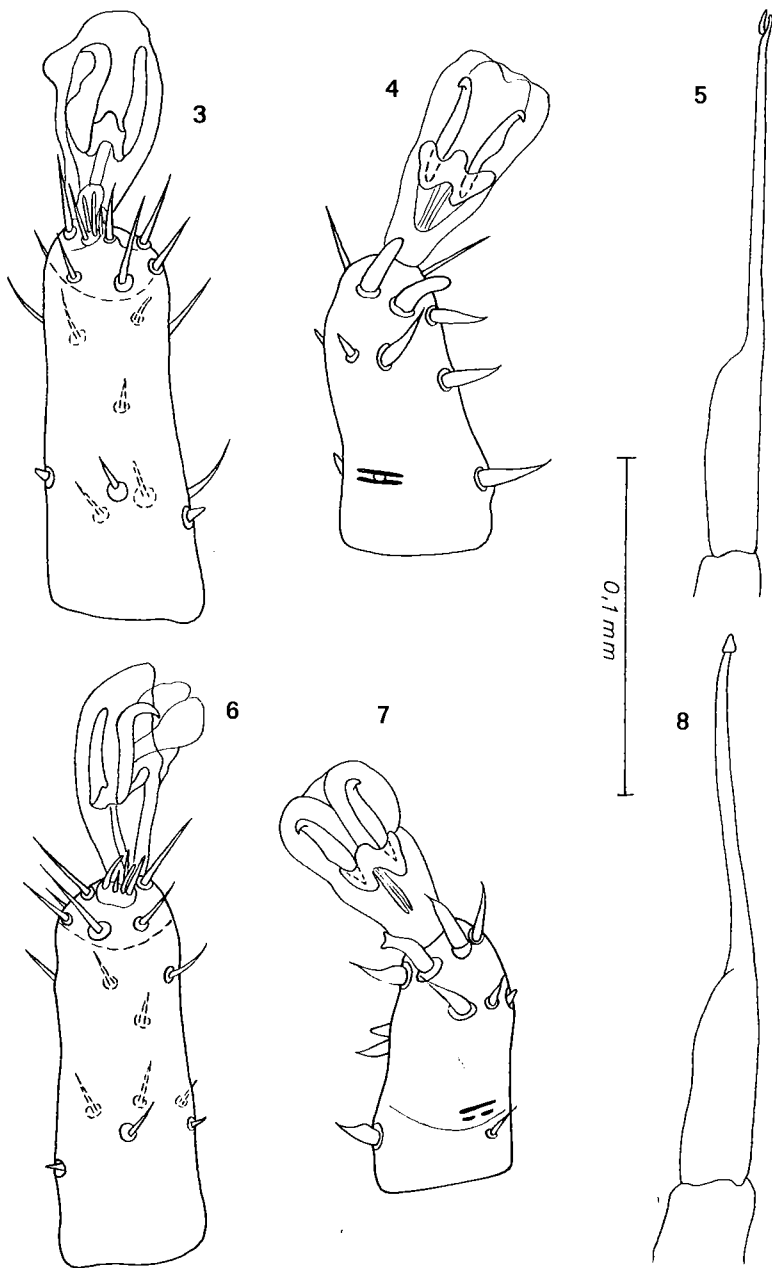
PTILONYSSUS CONDYLOCOXA SP. NOV.

This species is well characterized by the presence on coxae I-IV of rounded ventral anterior or posterior processes.

Female (holotype) (Figs 1-5): Lld 690 μ ; Wid 270 μ ; LPP 180 μ ; WPP 180 μ ; LSP 120 μ ; WSP 45 μ ; LGP 156 μ ; WGP 30 μ ; LAP 126 μ ; WAP 63 μ ; LG 186 μ ; WG 84 μ ; LP 80 μ ; LCH 170 μ . Length of cheliceral bulb 60 μ . width of cheliceral bulb 18 μ .



Figs 1-2: *Ptilonyssus condylocoxa* sp. nov. Female. Fig. 1 — Venter. Fig. 2 — Dorsum.



Figs 3-8: Figs 3-5: *Ptilonyssus condylocoxa* sp. nov. Female. Fig. 3 — Tarsus I. Fig. 4 — Tarsus IV. Fig. 5 — Chelicera.

Figs 6-8: *Ptilonyssus conopophilae* sp. nov. Female. Fig. 6 — Tarsus I. Fig. 7 — Tarsus IV. Fig. 8 — Chelicera.

Dorsum: Prodosomal plate rounded anteriorly, abruptly narrowed posteriorly, bearing 7 pairs of very small setae. Small punctate plate behind spiracle. All setae of podosoma very small. Opisthonotum bearing small spines, anterior region slightly produced into two lobes. Two small paramedian pygidial shields, each carrying a short spine.

Venter: Sternal shield poorly sclerotized, irregular in shape. Genital shield narrow, with the two genital setae near its posterior extremity. Opisthogaster bearing in its posterior half 7 pairs of strong setae 45μ long. Anterior anal setae situated at the level of posterior border of anus and much smaller than the third anal seta. Gnathosoma: palps slightly shorter than the gnathosomal base.

Legs: Coxae I-IV with unequal rounded ventral projections or lobes; on coxa I there is a rounded poorly distinct posteroventral projection; on coxa II there is a strong anterior triangular lobe and a less distinct rounded posterior projection; coxa III with two small rounded lobes, one anterior and one posterior; coxa IV as on coxa III but with larger lobes. All coxae and trochanters with ventral conical spines 6 to 9μ wide, ending in a short filament. Anterior setae of legs III-IV are short spines. Tarsi II-IV with two apicoventral thick spines, the anterior truncate, the posterior pointed.

Male: The only male specimen is in the moulting stage and still enclosed in its nymphal skin. It is therefore difficult to study.

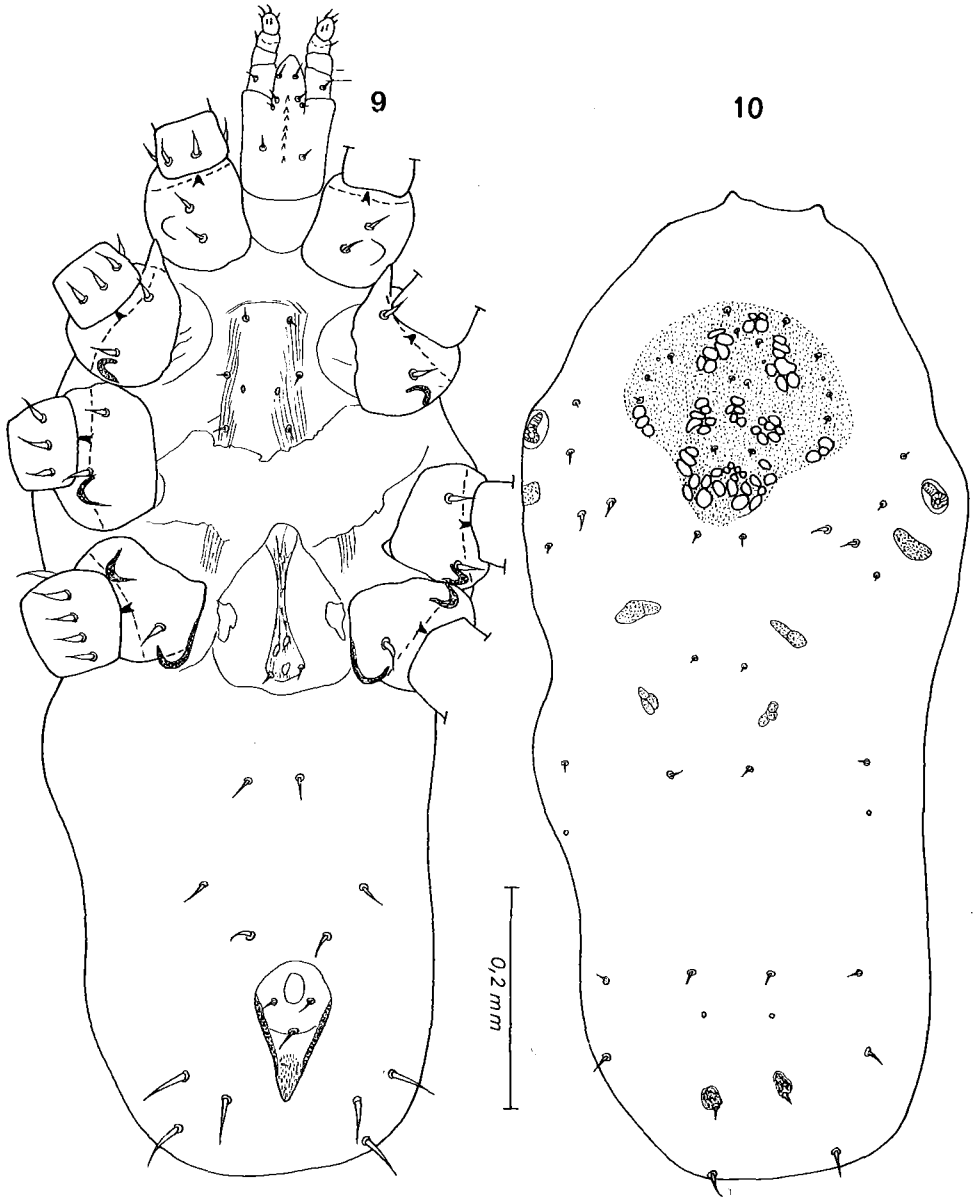
Host and Locality

In the nares of *Ramsayornis fasciatus* (Gould), Beverley Springs, 23.IX.1976. Holotype and 9 female paratypes, one male in moulting stage and three nymphs.

PTILONYSSUS CONOPOPHILAE SP. NOV.

This species, as in *P. condylocoxa*, with a rounded projection on the ventral surface of the coxae II to IV. It is distinguished from that species by the following characters: greater size of 2 pairs of setae situated close to the posterolateral corners of the podosomal shield, podosomal shield wider than long; differently shaped coxal and tarsal setae; smaller number and size of posteroventral setae of opisthosoma; different shape of apicoventral spines of tarsi II-IV; very poor development of sternal shield; smaller length of genital plate.

Female (holotype) (Figs 6-10): LId 840μ ; WId 390μ ; LPP 190μ ; WPP 210μ ; LGP 135μ ; WGP 32μ ; LAP 120μ ; WAP 66μ ; LG 162μ ; WG 84μ ; LP 75μ ; LCH 175μ . Cheliceral bulb: length 63μ , width 18μ .



Figs 9-10: *Ptilonyssus conopophilae* sp. nov. Female. Fig. 9 — Venter. Fig. 10 — Dorsum.

Dorsum: Podosomal plate rounded anteriorly, abruptly narrowed posteriorly, bearing 7 pairs of very small setae. The two setae situated on cuticle at both sides of podosomal shield, at its posterior level, are spinous

and larger than the other podosomal setae. A small punctate plate behind spiracles; two very small paramedian pygidial shields each with a short spine.

Venter: Sternal area very poorly sclerotized. Genital shield narrow, widening in posterior part where it bears the two genital setae. Anterior anal setae situated at level of the posterior border of anus. Gnathosoma relatively small.

Legs: Coxa II with a strong antero-ventral triangularly sclerotized process and a posteroventral rounded and shorter process; coxa IV with two ventral rounded processes, a small anterior and a large posterior; coxa III with similar but smaller processes. Setae of coxae I-IV inflated basally and strongly narrowed apically. Anterior surfaces of legs III-IV with triangular spines. Tarsi II-IV with two apicoventral asymmetrical spines, an anterior bifid and a posterior very finely attenuated apically.

Male: unknown.

Host and Locality

Holotype female from *Conopophila picta* (Meliphagidae, Passeriformes), Napier Downs, 3.IX.1976.

Three female paratypes from *Conopophila rufogularis* (Gould), Brooking Springs, 1.X.1976.

One female paratype from *Poephila guttata* (Vieillot), Brooking Springs, 2.X.1976. This might be an accidental host for this species.

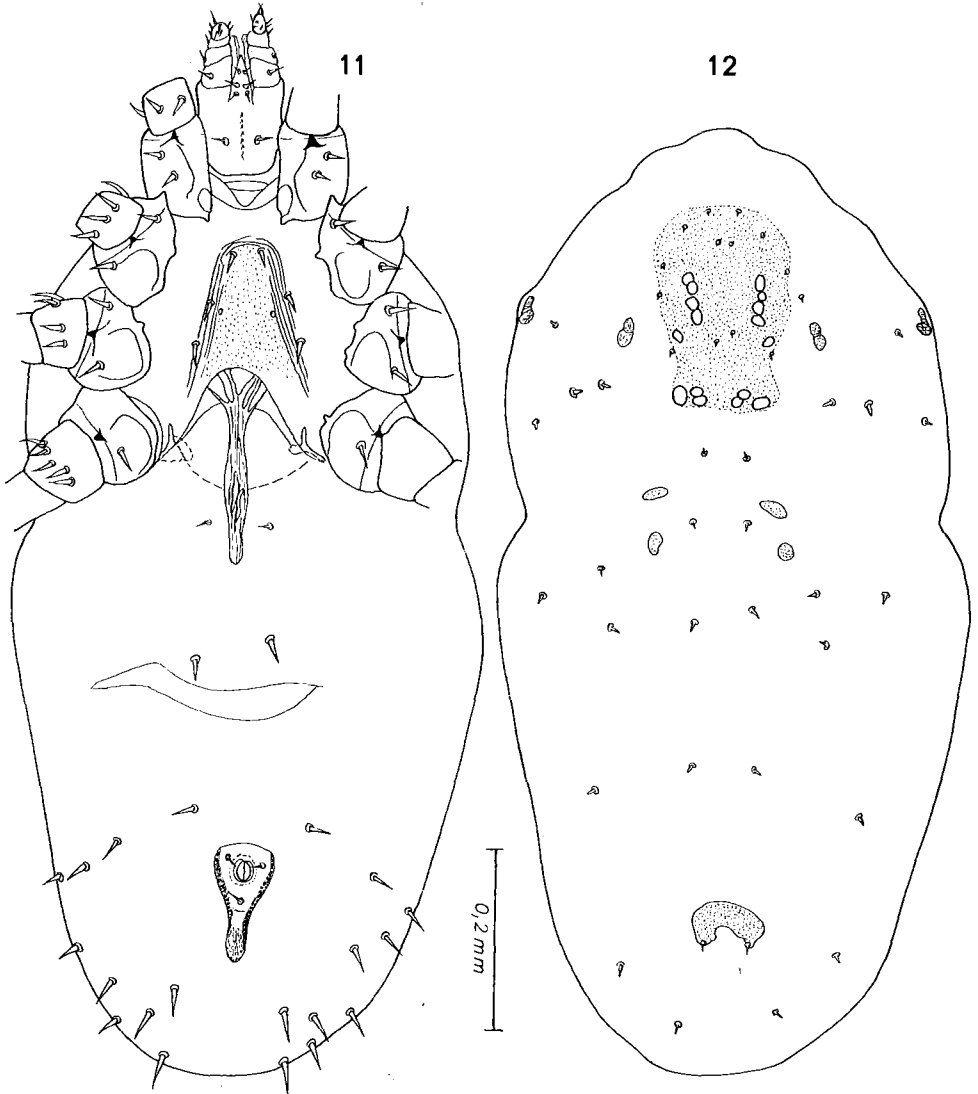
PTILONYSSUS PSEUDOTHYMANZAE SP. NOV.

This species is distinguished from *Ptilonyssus thymanzae* Domrow (1964) mainly by the following characters: presence at both sides of posterior corners of propodosomal shield of two pair of setae much stronger than the other dorsal setae; different shape of the podosomal shield which is wider in its posterior half and bears more setae; greater number of opisthogastral setae; cheliceral bulb relatively shorter compared to total length of chelicerae.

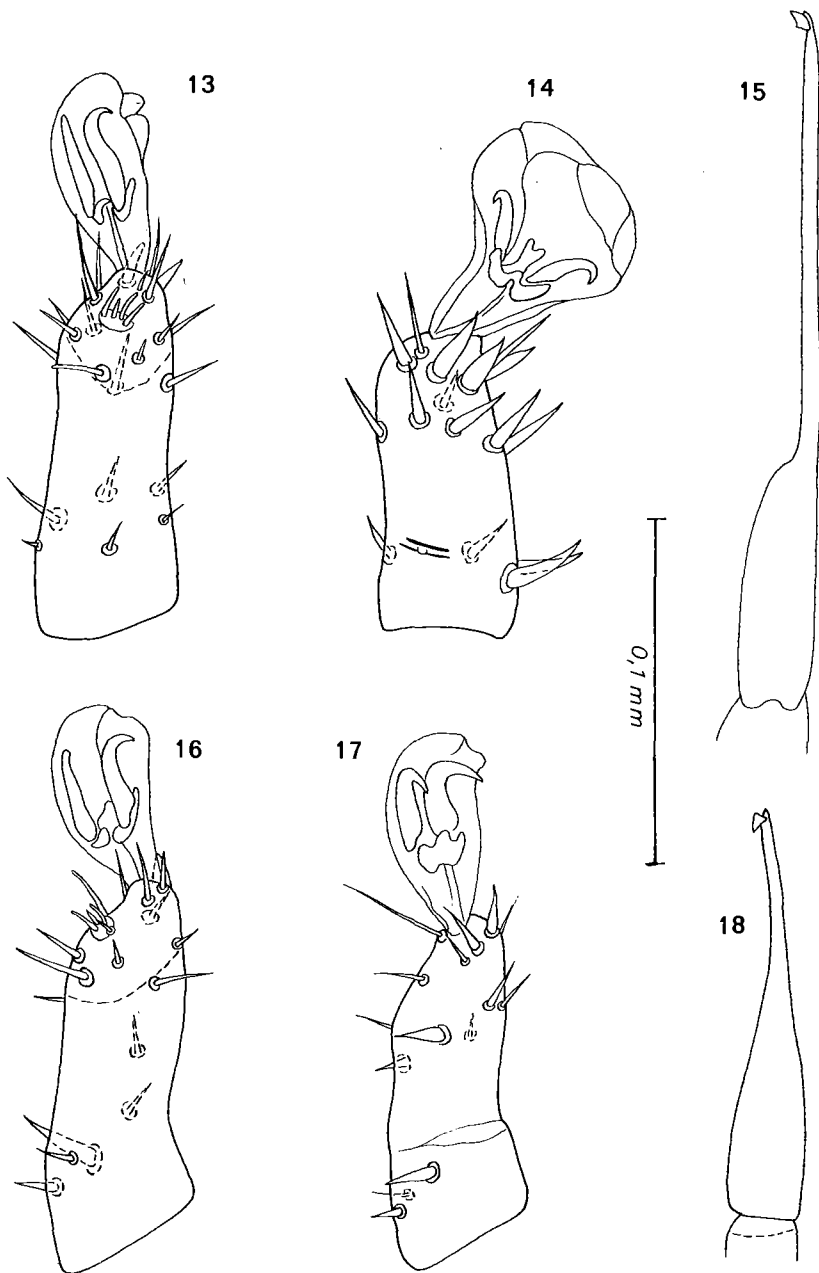
Female (holotype) (Figs 11-15): LId 1038 μ ; Wid 460 μ ; LPP 210 μ ; WPP 150 μ ; LpP 45 μ ; WpP 75 μ ; LGP 200 μ ; WGP 21 μ ; LAP 123 μ ; WAP 66 μ ; LG 192 μ ; WG 90 μ ; LP 86 μ ; LCH 210 μ . Length of cheliceral bulb 70 μ ; width of cheliceral bulb 21 μ . Podosomal plate distinctly narrowed in posterior half and bearing 6 pairs of small setae. At each side of the shield a small accessory shield longer than wide. At both sides of posterior corners of median shield 2 pairs of spines, 12 μ long with a blunt apex. Opisthosoma

bearing short setae with rounded apices except the posterolateral setae which are longer and pointed.

Venter: Sternal shield punctate, the two posterior pairs of sternal setae situated on the soft cuticle. Opisthosomal setae conical, strong. Anterior anal setae at level of anterior border of anus.



Figs 11-12: *Ptilonyssus conopophilae* sp. nov. Female. Fig. 11 — Venter. Fig. 12 — Dorsum.



Figs 13-18: Fig. 13-15 — *Ptilonyssus pseudothymanzae* sp. nov. Female. Fig. 13 — Tarsus I. Fig. 14 — Tarsus IV. Fig. 15 — Chelicera.

Figs 16-18 — *Ptilonyssus pentagonicus* sp. nov. Female. Fig. 16 — Tarsus I. Fig. 17 — Tarsus IV. Fig. 18 — Chelicera.

Legs: Coxa II with a small triangular anterior process. Coxae I to IV with spines; the anterior setae of legs III-IV are strong spines.

Male: unknown.

Host and Locality

Holotype and 4 female paratypes in the nares of *Meliphaga flavescens* (Gould), Beverley Springs, 17.IX.1976.

We attribute provisionally to *P. pseudothymanzae* 3 specimens (2 females and 1 larva) which differ from this species by the following characters: setae of legs and gnathosoma distinctly smaller, podosomal shield narrower. These specimens were collected in the nares of *Melithreptus albogularis* Gould, Mitchell Plateau, W. Australia, 17.X.1976.

PTILONYSSUS PENTAGONICUS SP. NOV.

This species is characterized by the shape of the podosomal shield roughly pentagonal, the shape of cheliceral bulbs progressively attenuated anteriorly and the chaetotaxy of the tarsi II-IV bearing several thin setae. It is distinguished from *P. myzanthae* Domrow (1964) by the pentagonal shape of the podosomal shield, the rectangular shape of the gnathosomal base, and the presence of a median pygidial plate.

Female (Figs 16-20): LI_d 555 μ ; WI_d 345 μ ; LPP 170 μ ; WPP 169 μ ; LpP 40 μ ; WpP 68 μ ; LGP 100 μ ; WGP 12 μ ; LAP 106 μ ; WAP 45 μ ; LG 135 μ ; WG 78 μ ; LP 60 μ ; LCH 123 μ . Cheliceral bulb length 60 μ , width 16-18 μ .

Dorsum: Podosomal plate roughly pentagonal, bearing 7 pairs of short setae. Spiracle without posterior shield. All podosomal and opisthosomal setae very short. Pygidial plate wider than long.

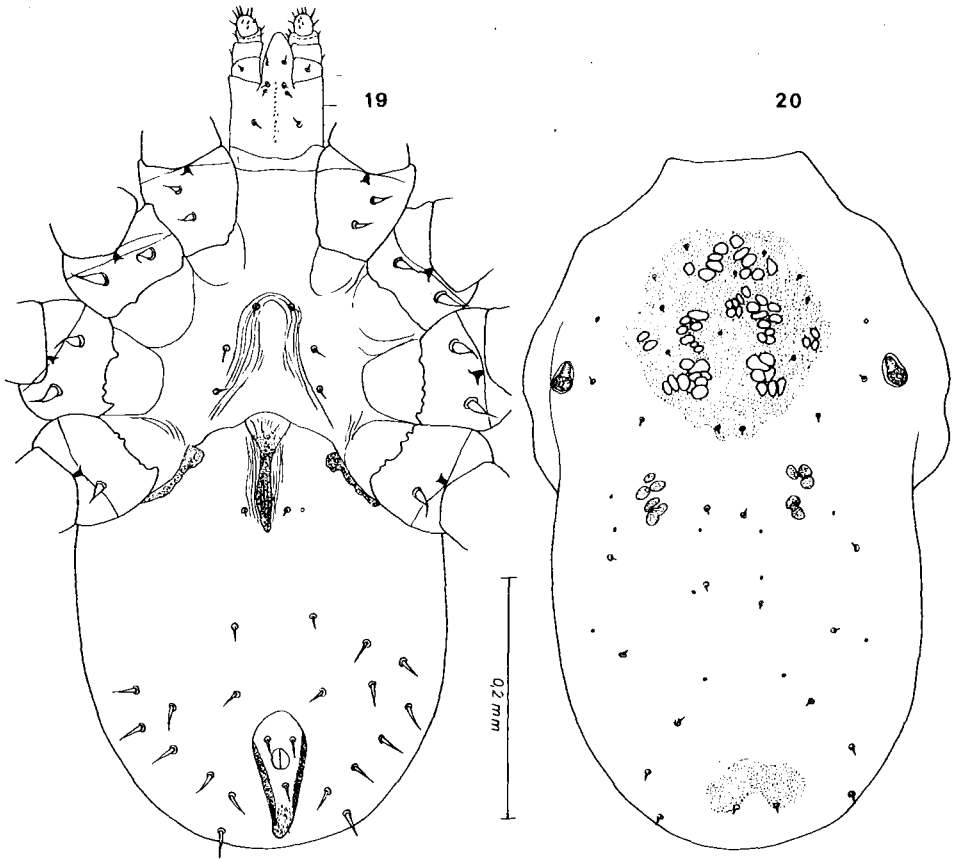
Venter: Sternal shield narrow, poorly sclerotized. Genital setae off the genital shield. Anal shield with anterior setae far in front of anus. Posterior setae strong, 15-25 μ long. Gnathosoma: Cheliceral bulb progressively attenuated anteriorly, gnathosomal base rectangular, bearing a pair of very short and thin setae.

Legs: Coxal setae ovoid, very thick, presenting a very thin prolongation. Claws strong.

Male: unknown.

Host and Locality

Holotype and 5 female paratypes from *Manorina flavigula* (Gould), Mount Hart, 10.IX.1976.



Figs 19-20: *Ptilonyssus pentagonicus* sp. nov. Female. Fig. 19 — Venter. Fig. 20 — Dorsum.

GENUS *STERNOSTOMA* BERLESE & TROUESSART, 1889

STERNOSTOMA GLICIPHILAE DOMROW, 1966

This species is known only from female specimens found in *Lichmera indistincta* (Vigors & Horsfield), in Queensland.

We have found in *Ramsayornis fasciatus* (Gould) at Beverley Springs, 23.IX.1976, a male that we attribute to this species. This specimen bears

two dorsal shields, a podosomal very large and an opisthosomal rectangular and longer than wide. These two shields present a well-marked network pattern similar to that in the female described by Domrow. The same network is visible in the small sternal and genital shields. Tarsi II-IV with 7 narrow cylindrical ventral setae. In the female of *S. gliciphilae* these setae are shorter and not cylindrical. Gnathosoma as in the female but with base shorter. It is possible that this male represents a new species. We prefer to regard it provisionally as *S. gliciphilae* until new material becomes available.

GENUS *MESONYSSOIDES* FAIN & NADCHATRAM, 1962

MESONYSSOIDES APROSMICTI DOMROW, 1964

This species has been described from the nares of *Aprosmictus erythrop-terus* (Gmelin) (Psittacidae), Queensland. Our specimens were collected in the same host from Napier Downs, W. Australia, 3.IX.1976 (8 females, 2 males, 1 nymph and 1 larva).

GENUS *MESONYSSUS* FAIN, 1960

MESONYSSUS GEOPELIAE FAIN, 1964

This species has been described from *Geopelia striata striata* (Linnaeus), from Malaya.

Domrow (1969) found it in Queensland, in three new hosts: *Geopelia striata placida* Gould, *G. humeralis* (Temmink) and *G. cuneata* (Latham).

We collected one female specimen from *Geopelia striata placida* at Port Warrender, 31.X.1976.

FAMILY *DERMANYSSIDAE* KOLENATI, 1859

GENUS *HATTENA* DOMROW, 1963

HATTENA PANOPLA DOMROW, 1966

The unusual genus *Hattena* has been created by Domrow to accommodate a new species *H. erosa* Domrow, 1963 found on a bird from Mt Kinabalu, Borneo.

In 1966, Domrow described a second species in this genus, *H. panopla* from the nasal cavities of *Lichmera indistincta* (Vigors & Horsfield), from Australia.

The systematic position of this specialized genus is difficult to ascertain. Domrow (1963) placed *H. erosa* in or close to the Dermanyssidae. Later, Domrow (1966) in describing *H. panopla* noted 'it is a little difficult to decide if this specimen is a blattisociine or a platyseine'.

We place this genus provisionally in the Dermanyssidae; however, it does not correspond exactly with the definitions for the different subfamilies composing this family as given by Evans & Till (1966).

Hattena panopla was only known from the holotype female. We have found in the typical host, at Beagle Bay (21 and 23.VIII.1976), 4 female specimens, 3 males and one nymph belonging to this species. This mite is probably not a true parasite, but merely a flower mite transported phoretically by birds. We give below a description of the male.

Male: Idiosoma 540 μ long and 360 μ wide. Dorsal shield larger than in female bearing 26 pairs of setae and without lateral incisions. Sternigenital shield widely separated from ventrianal shield; the latter rounded and bearing one pair of ventral setae plus the 3 anal setae. Coxae II and III with one and two strong spines respectively. A strong spine present on ventral surface of tibia, genu and femur of legs II and III. Rows of denticles are present on apical margins of most of the leg segments. They are particularly developed on coxae II. Gnathosoma: as in female. A short *pilus dentilis* is present. Spermatodactyl 45 μ long, relatively narrow.

ORDER PROSTIGMATA

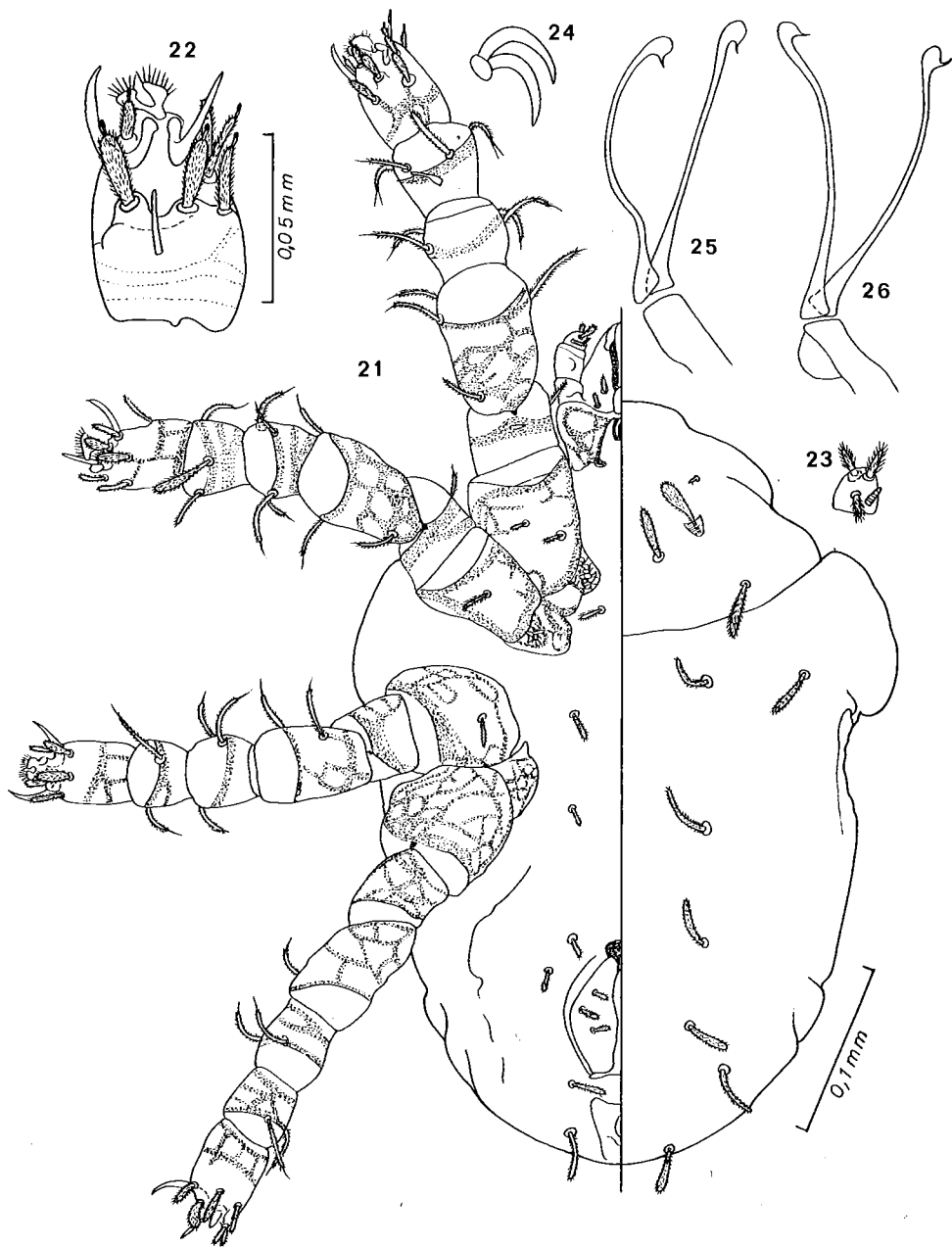
FAMILY EREYNETIDAE OUDEMANS, 1931

GENUS *BOYDAIA* WOMERSLEY, 1953

BOYDAIA (BOYDAIA) PODARGI SP. NOV.

This species belongs to the 'spatulata' group (see Fain 1971). The coxae bear 2-1-1-0 setae, the femora I and IV bear 7 and 2 setae respectively. This combination of characters exists in 3 species: *B. spatulata* Fain, *B. mimi* Fain & Hyland and *B. saxicolae* Fain. This species is however distinguished from the latter, in the female by the shape of the sensillae which are strongly inflated and by the great length of most of the body and leg setae; in the larva by the different shape of the claws.

Female (Figs 21-23): Holotype 480 μ long, including gnathosoma and 315 μ wide.



Figs 21-26: *Boydala podargi* sp. nov. Fig. 21-23 — Female. Fig. 21 — Female in ventral (left) and dorsal (right) view. Fig. 22 — Tarsus I of leg. Fig. 23 — Tarsus of palp. Fig. 24-26 — Claws of larva. Fig. 24 — Leg I. Fig. 25 — Leg II. Fig. 26 — Leg III.

Dorsum: Sensillae inflated, club-shaped, 33 μ long and 9 μ wide. All dorsal setae finely barbed, very slightly spindle-shaped, 27 to 36 μ long, except the *ve* which is very short.

Venter: There are 3 pairs of *ic* setae, 5 pairs of *g* setae (3 pairs of *gm* and 2 pairs of *ge*) and 2 pairs of anal setae (for the nomenclature of these setae, see Fain 1970). Vulvar slit 105 μ long. Legs with a well-developed network pattern and bearing long barbed setae. The setae of femur I are 18 to 39 μ long. The ventral setae of tibiae I-IV are 35-38 μ long. Pulvilli as in *Boydaia spatulata*. Chaetotaxy of legs (I-IV): Coxae 2-1-1-0. Trochanters 1-1-0-0. Femora 7-4-3-2. Genua 4-4-3-3. Tibiae 5-3-2-3. Tarsi 12-8-7-7. Gnathosoma with two pairs of setae. Palps with three segments, the apical segment bears 3 barbed setae and a solenidion.

Male: unknown.

Larva (Figs 24-26): We have only a larval skin. Leg I with normal and small claws. Legs II-III with two long and narrow modified claws with a small recurved hook-like apex.

Host and Locality

Holotype and 8 female paratypes and one larval skin, from the nares of *Podargus strigoides* (Latham), Beagle Bay, 24.VIII.1976.

ORDER ASTIGMATA

FAMILY CYTODITIDAE OUDEMANS, 1908

GENUS *CYTODITES* MEGNIN, 1877

CYTODITES GEOPELIAE SP. NOV.

This species is distinguished from the other species in the genus in both sexes by the very great size of the gnathosoma and the structure of the membranous ambulacra.

Female (Figs 27-30): Holotype 470 μ long (gnathosoma included) and 315 μ wide (maximum width). In two paratypes these measurements are 460 x 315 μ and 465 x 330 μ .

Dorsum: Cuticle of idiosoma behind the gnathosoma with faint transverse striations often interrupted. In swollen specimens these striations become indistinct. No punctations nor papillae on cuticle of body. Anterior part of idiosoma recovering gnathosoma with a distinct punctation, the base of this punctate area is more strongly sclerotized and deeply incised. Copulatory papilla subterminal. Bursa short.

Venter: Cuticle soft, without punctation or verrucosity. Epimerae I fused into a short sternum; other epimerae free. Epimera IV distinctly forked apically. Vulva forms an inverted Y. Anus subterminal ventral. Gnathosoma very large and rounded anteriorly, $108\ \mu$ long and $87\ \mu$ wide, its dorsal and ventral surfaces punctate; mouth cavity with a sclerotized structure in the shape of a network. Legs relatively well developed; all the tarsi shorter than the corresponding tibiae, bearing relatively long, curved and strongly attenuated apical spines; all these spines are enveloped by a short membrane bearing at its apex a small claw.

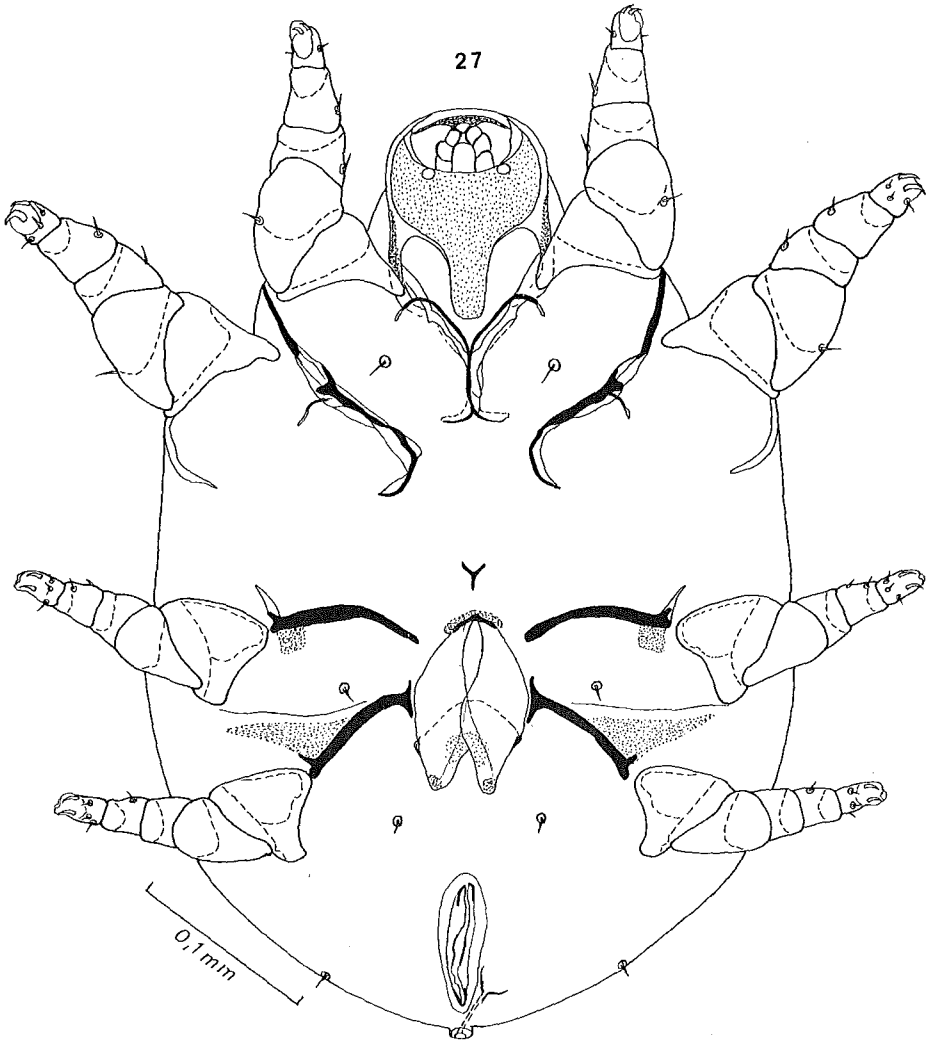
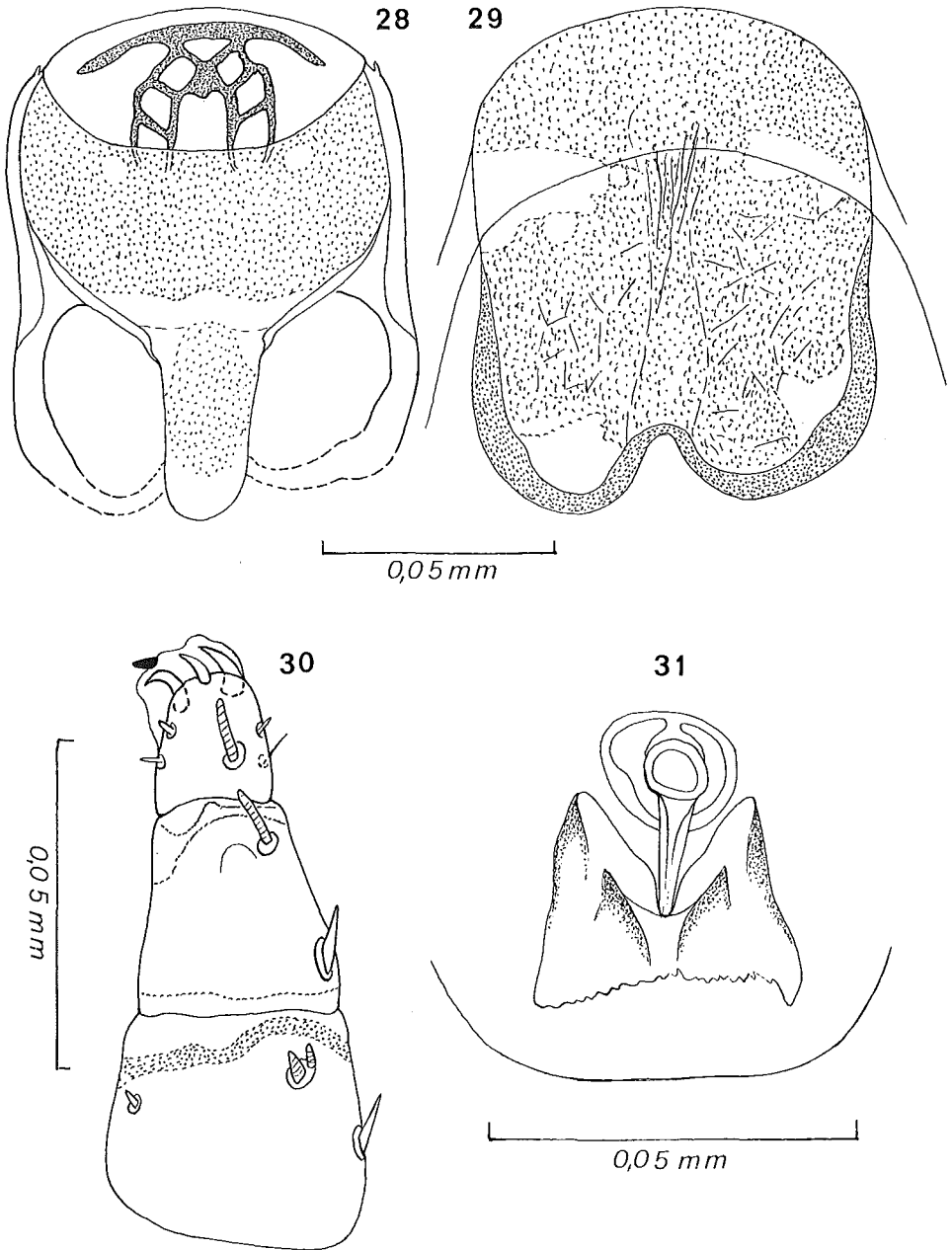


Fig. 27: *Cytodites geopelae* sp. nov. Female in ventral view.



Figs 28-31: *Cytodites geopeliae* sp. nov. Fig. 28-30 — Female. Fig. 28-29 — Gnathosoma in ventral (28) and dorsal (29) view. Fig. 30 — Genu, tibia and tarsus I. Fig. 31 — Male: Aedeagus.

Male (Fig. 31): Allotype 480 μ long and 330 μ wide. Dorsal surface of body, gnathosoma and legs as in the female.

Venter: Epimera IV not forked apically. Genital organ as in *Cytodites amandavae* but relatively wider.

Systematic position of *Cytodites geopeliae*: This species is close to *C. tympanistriae*. It is however clearly distinguished from this species in the female by the following characters: gnathosoma relatively much larger, with dorsum entirely punctate and a different ventral pattern; idiosoma without verrucous areas; legs longer; differently shaped ambulacrar membranes of tarsi which bear a small apical claw; forked shape of epimerae IV.

Host and Locality

Holotype and 2 female paratypes, allotype and one male paratype from the trachea of *Geopelia humeralis* (Temminck), from Beagle Bay, 25.VIII.1976.

ACKNOWLEDGEMENTS

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REFERENCES

- DOMROW, R. (1963)—New records and species of Austromalayan laelapid mites. *Proc. Linn. Soc. N.S.W.* 88: 199-220.
- DOMROW, R. (1964)—Fourteen species of *Ptilonyssus* from Australian birds (Acarina: Laelapidae). *Acarologia* 6: 595-623.
- DOMROW, R. (1966)—Some mites of Australian birds. *Proc. Linn. Soc. N.S.W.* 90: 190-217.
- DOMROW, R. (1969)—The nasal mites of Queensland birds (Acari: Dermanyssidae, Ereyneidae and Epidermoptidae). *Proc. Linn. Soc. N.S.W.* 93: 297-426, pls XXX-XXXI.
- FAIN, A. (1956)—Les acariciens de la famille Rhinonyssidae Vitz. parasite des fosses nasales d'oiseaux au Ruanda-Urundi. *Revue Zool. Bot. afr.* 53: 131-157.

- FAIN, A. (1964)—Nouveaux Rhinonyssidae et Ereyneidae parasites nasicoles d'oiseaux (Acarina Mesostigmata et Trombidiformes). *Revue Zool. Bot. afr.* 70: 29-39.
- FAIN, A. (1970)—Nomenclature des poils idiosomaux et description de trois espèces nouvelles dans la famille Ereyneidae (Trombidiformes). *Acarologia* 12: 314-325.
- FAIN, A. (1971)—Clé et liste des espèces du genre *Boydaiia* Womersley (Ereyneidae: Trombidiformes). *Acarologia* 13: 98-112.
- FAIN, A. & BAFORT, J. (1964)—Les acariens de la famille Cytoditidae (Sarcoptiformes). Description de sept espèces nouvelles. *Acarologia* 6: 504-528.
- FAIN, A. & HYLAND, K. (1962)—The mites parasitic in the lungs of birds. The variability of *Sternostoma tracheacolum* Lawrence, 1948, in domestic and wild birds. *Parasitology* 52: 401-424.