

PARASITES OF WESTERN AUSTRALIA  
VIII  
MYOBIIDAE PARASITIC ON MARSUPIALS  
(ACARI: PROSTIGMATA)

A. FAIN\*

and

F.S. LUKOSCHUS†

[Received 8 February 1978. Accepted 30 March 1978. Published 5 June 1979.]

ABSTRACT

The following new taxa are described from Australian Marsupials: *Australomyobia phascogale* sp.n. from *Phascogale calura*; *A. dasyurus* sp.n. from *Dasyurus hallucatus*; *A. dasyercus antechinus* subsp.n. from *Antechinus bilarni*. The male and the immature stages of *Australomyobia necopina* (Domrow, 1973), so far unknown, and *Acrobatobia queenslandica* Fain and Lukoschus, 1976 known only from a preliminary description, are described in detail and figured. A key to the *Australomyobia* spp. is given.

INTRODUCTION

In a previous paper we have studied the species of Myobiidae parasitic on bats. We deal now with the species that live on marsupials.

So far three species of Myobiidae have been described from Australian marsupials: *Australomyobia necopina* (Domrow, 1973), *Australomyobia dasyercus* Fain, 1973 and *Acrobatobia queenslandica* Fain & Lukoschus, 1976.

---

\*Institute of Tropical Medicine, Antwerp, Belgium.

†Department of Zoology, Catholic University of Nijmegen, The Netherlands.

In this paper we describe 2 new species and 1 new subspecies of the genus *Australomyobia* from various marsupials in Australia, mainly in the Western regions and we complete the description of *A. queenslandica*, which had only been briefly described.

FAMILY MYOBIIDAE Megnin, 1877

SUBFAMILY MYOBIINAE Megnin, 1877

TRIBE AUSTRALOMYOBIINI Fain, 1973

Genus *Australomyobia* Fain, 1973

Recently Fain (1978) has given a new and more complete description of this genus. We will only add here two remarks: 1) In the tritonymphs the legs I are symmetrical and the two pairs of coxal I setae are thick striated spines. 2) In the females the *l* 5 setae are thin and short and situated close to the *l* 4. In the males these setae are normally situated and in the nymphs they are distinctly ventral. 3) In the deutonymphs the trochanters IV bear a seta as in the tritonymph.

**Type species:** *Australomyobia dasycercus* Fain, 1973.

Key to the genus *Australomyobia*

- Females -

(N.B. The female of *A. dasyurus* is unknown)

1. Posterior claw of legs II-IV 12-15 $\mu$  long. Base of *sc i* setae 4-6 $\mu$  thick. Base of setae *d 1*, *d 2*, *l 2* with well-developed ventral expansion. Femur I 36 $\mu$  thick ..... 2
 

Posterior claw of legs II-IV 8-10 $\mu$  long. Base of *sc i* setae 15-18 $\mu$  thick. Base of setae *d 1*, *d 2*, *l 2* without ventral expansion. Femur I 42-48 $\mu$  thick ..... 3
2. The *g 1* setae are 120 $\mu$  long and 48 $\mu$  apart ..... *A. necopina* (Domrow, 1973)  
 The *g 1* setae are 80 $\mu$  long and 12 $\mu$  apart ..... *A. phascogale* sp. nov.
3. Setae *sc i* progressively attenuated posteriorly.  
 The *g 1* are 65 $\mu$  apart. Setae *ic 4* and *cx IV* not distinctly inflated basally ..... *A. dasycercus dasycercus*  
Fain, 1973

Setae *sc i* abruptly narrowed posteriorly. The *g 1* are 55 $\mu$  apart. Setae *ic 4* and *cx IV* distinctly inflated basally ..... *A. dasycercus antechinus* ssp. nov.

- Males -

(N.B. The male of *A. dasyercus dasyercus* and of *A. dasyurus* are unknown)

1. Genital plate bearing 3 external pairs of small setae and 3 internal pairs of much smaller and indistinct setae ..... 2

Genital plate bearing 3 external pairs of unequal conical spines, the posterior one being 9-10 $\mu$  long and 3,2 to 3,5 $\mu$  thick, and 3 internal pairs of very small setae ..... *A. dasyercus antechinus* ssp. nov.

2. Genital plate twice as wide (16 $\mu$ ) in its anterior half than in its posterior half (8 $\mu$ ), total length 21 $\mu$ . The *d 1* and *d 2* without ventral expansions ..... *A. necopina* (Domrow, 1973)  
Genital plate oval, longer (18 $\mu$ ) than wide (15 $\mu$ ).  
The *d 1* and *d 2* setae with ventral expansions ..... *A. phascogale* sp. nov.

### DESCRIPTION OF THE SPECIES

1. *Australomyobia necopina* (Domrow, 1973)  
*Archemyobia necopina* Domrow, 1973: 131  
*Australomyobia necopina*, Fain, 1978: 195 comb.nov.

Fain (1978) has given new figures of the female of this species. We give here the first description of the male and the immature stages.

**Male (Fig. 5):** Body 345 $\mu$  long and 210 $\mu$  wide. **Dorsum:** genital orifice situated at 15 $\mu$  behind the *sc e* setae. There are 6 pairs of genital setae: 3 pairs of externals 5-6 $\mu$  long and 3 pairs of internals much smaller. Penis 130 $\mu$  long. The *v i* are very small; the *sc i* are thicker and longer (18 $\mu$ ) and situated close to the *sc e*. The *d 1* are shorter (63 $\mu$ ) than the *d 2* (70 to 87 $\mu$ ). **Venter:** as in the female, except that the long pair of *g 1* setae are absent here and that the *l 5* are long and terminal. Legs and gnathosoma as in the female.

**Tritonymph:** our specimen has been collected on the typical host from Australia (animal in the Leiden Museum). Idiosoma 485 $\mu$  long and 270 $\mu$  wide. **Dorsum:** *v e*, *sc e* and *sc i* with a thick, striated and toothed base, and a very narrow apical part. The *v i* are small and situated between the *sc i*. The *d 1* to *d 5* and *l 1* to *l 5* are present. **Venter:** coxal setae 2-2-1-0; the coxals I are striated, shell-shaped. The *ic 2*, *ic 3* and *ic 4* are stout and 33 $\mu$ , 34 $\mu$  and 45 $\mu$  long respectively. The *l 5* is ventral and 120 $\mu$  long. Legs I symmetrical. Legs II-IV with a 2 unequal claws, trochanters with 1 setae. Trochanter IV with 1 seta.

**Deutonymph:** from the same host as the tritonymph. Idiosoma 325 $\mu$  and 205 $\mu$  wide. Similar to the tritonymph but the coxal setae are 2-1-0-0, the *ic* 4 are only 27 $\mu$  long, the *l* 5 are 120 $\mu$  long.

**Protonymph:** same origin as tritonymph. Idiosoma 300 $\mu$  x 195 $\mu$ . Similar to the deutonymph except for the following characters: coxal setae 1-0-0-0; the *ic* 4 are missing; there are no setae on the trochanters II to IV. The *l* 5 are 120 $\mu$  long.

**Larva:** this specimen was collected on the typical host from Upper Allyn. Idiosoma 190 $\mu$  x 135 $\mu$ . Leg I-III as in protonymph. Idiosomal setae as in protonymph except that *d* 4, coxal I, *ic* 2 and *ic* 3 are missing.

**Prelarva:** the prelarva still included in the egg shell, is completely striated except in the anterior part of the dorsum which is bare. At the base of this bare area is a small median hook-like formation whose base is attached to two muscles inserted anteriorly. Ventrally, the anterior extremity presents a small rounded depression in which two short conical and sclerotized appendages are visible. These appendages are associated with deep-situated muscles and glandular organs.

#### Host and localities

1. This species has been described from female specimens collected on *Antechinus flavipes* (Waterhouse, 1838) (Dasyuridae), from Mount Magnificent, Australia. The holotype of this species is in the Australian National Insect Collection, Canberra.

The junior author collected several immatures and one male that belong to that species from the typical host specimen conserved in the Leiden Natural History Museum, collected in Australia, in March 1884.

From the same host, at Upper Allyn, N.S.W. 1.IX.1957, the junior author collected 4 females and 34 immature stages of the same species.

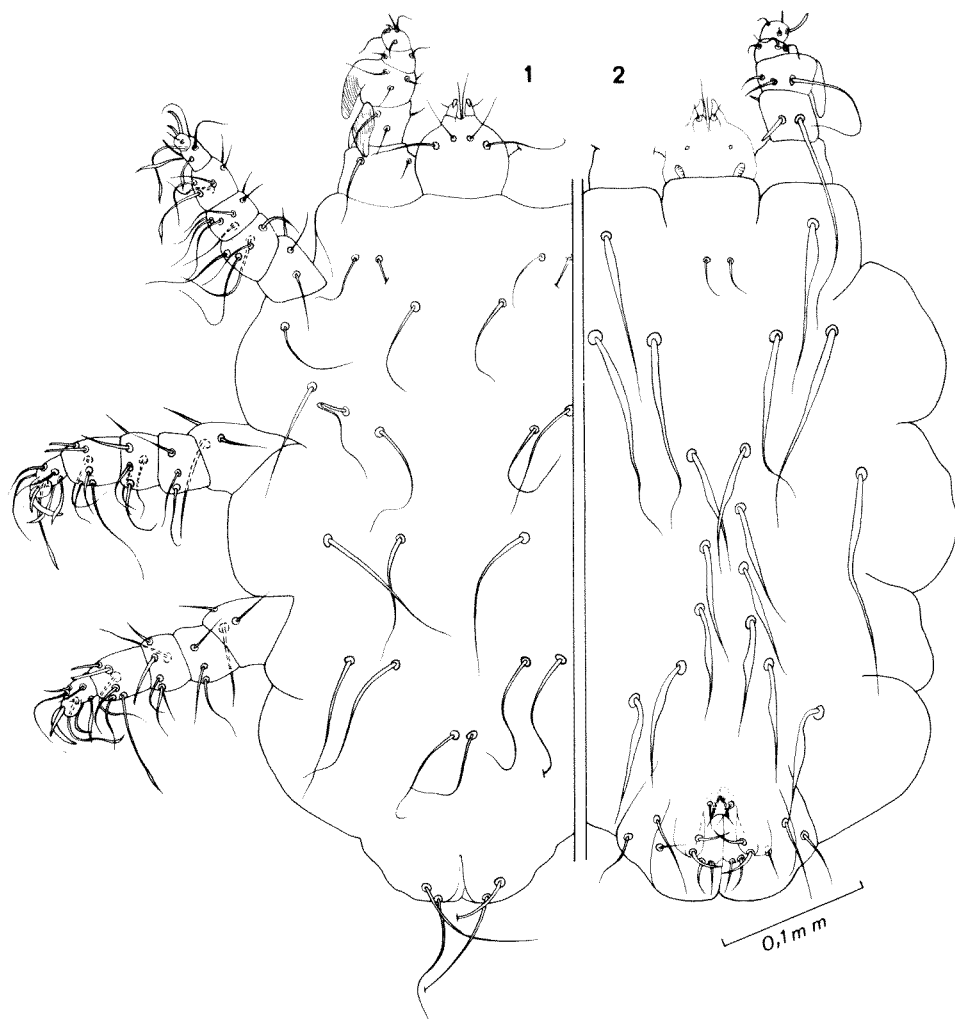
2. From Dr R. Domrow we received 2 nymphs from *Antechinus stuartii* Macleay, 1841, Powelton, Victoria, 15.II.1974.

#### 2. *Australomyobia phascogale* sp. nov.

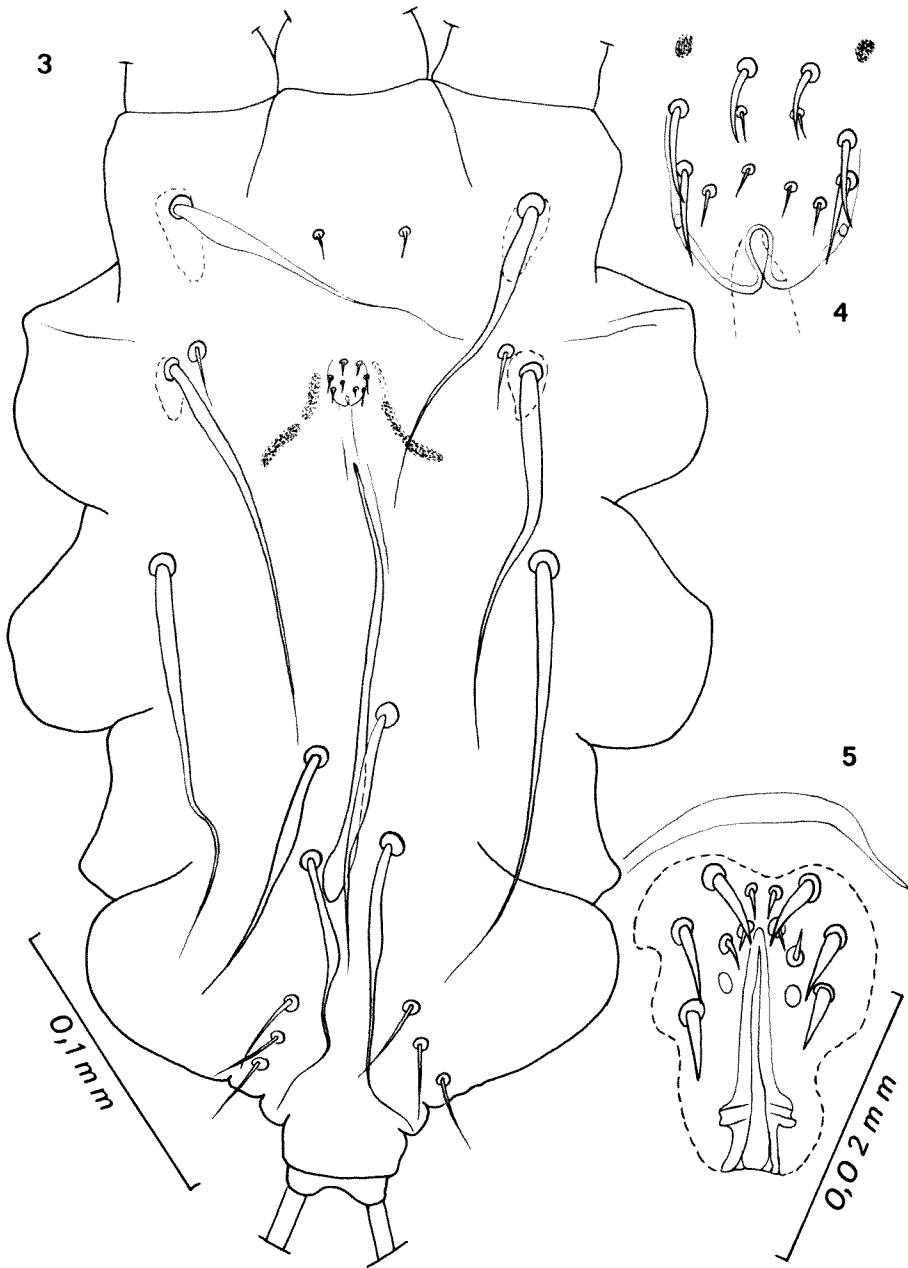
In the female of this species the small claws of legs II to IV are relatively long as in *A. necopina* (12 $\mu$ , 15 $\mu$ , 15 $\mu$  respectively). This species is however distinguished from the latter by the shape and the situation of the chaetotaxy. On the ventral surface the *g* 1 setae are much closer together (distance 12 $\mu$  instead of 48 $\mu$  in *A. necopina*); on the dorsum most of the setae show an inflation of the ventral surface more pronounced than in *A. necopina*. In this new species the setae of the legs are stouter than in the other species of the genus. The male is distinguished from those of *A. necopina* by a slightly different shape and structure of the genital plate, the greater size of the body, the different length and shape of some setae.

**Female (Fig. 1-2):** Holotype 525 $\mu$  long and 310 $\mu$  wide. **Dorsum:** the *v e*, *sc e*, *sc i*, *l 1*, *d 1* and *d 2* are 123 $\mu$ , 140 $\mu$ , 118 $\mu$ , 135 $\mu$ , 80 $\mu$  and 75 $\mu$ . Most of these setae are inflated ventrally in the posterior half of their thick basal part.

**Venter:** the *ic 4* and *cx IV* are not inflated basally. The *g 1* are 12 $\mu$  apart and 80 $\mu$  long. Legs: claws as in *A. necopina* but the small claws are a little longer than in that species. Leg I 120 $\mu$  long (from top of tarsus to base of trochanter); femur I 36 $\mu$  thick.



**Figs 1-2:** *Australomyobia phascogale* sp.n. Holotype female, venter and dorsum.



**Figs 3-5:** (figs 3-4) *Australomyobia phascogale* sp.n. Allotype male: (fig. 3) - dorsal view; (fig. 4) -genital area. (Fig. 5) *Australomyobia necopina* (Domrow). Male: genital area.

**Male (Fig. 3-4):** Allotype 390 $\mu$  long and 225 $\mu$  wide. **Dorsum:** genital plate longer than wide, bearing 6 pairs of small or very small setae. Penis 145 $\mu$  long. The *sc i* setae are thin and 15 $\mu$  long. The setae *d 1* and *d 2* are 75 $\mu$  and 90 $\mu$  long respectively and they are inflated as in the female. Legs as in the female.

#### **Host and locality**

On *Phascogale calura* Gould, 1844, Lake Grace, 16.XII.1960 (host n° 6163, in the Western Australian Museum) (Holotype and 7 paratypes female, allotype and 2 paratypes male, 26 immature paratypes).

Types in the Western Australian Museum, Perth. Paratypes in Field Museum of Natural History, Chicago; Department of Zoology, Catholic University, Nijmegen, Netherlands; Institute of Tropical Medicine, Antwerp, Belgium.

#### 3. *Australomyobia dasycercus* Fain, 1973

*Australomyobia dasycercus* Fain, 1973: 615; 1978: 195

This species has been described from *Dasycercus cristicauda*, Charlotte Waters, Central Australia (host n° 97.1.3.2., in the British Museum). It was only known from the female. The holotype is in the British Museum.

We have found on *Antechinus bilarni* several specimens which agree rather closely with *A. dasycercus*, except for several small differences, which justify the erection of a new subspecies.

#### *Australomyobia dasycercus* ssp. *antechinus* subsp. nov.

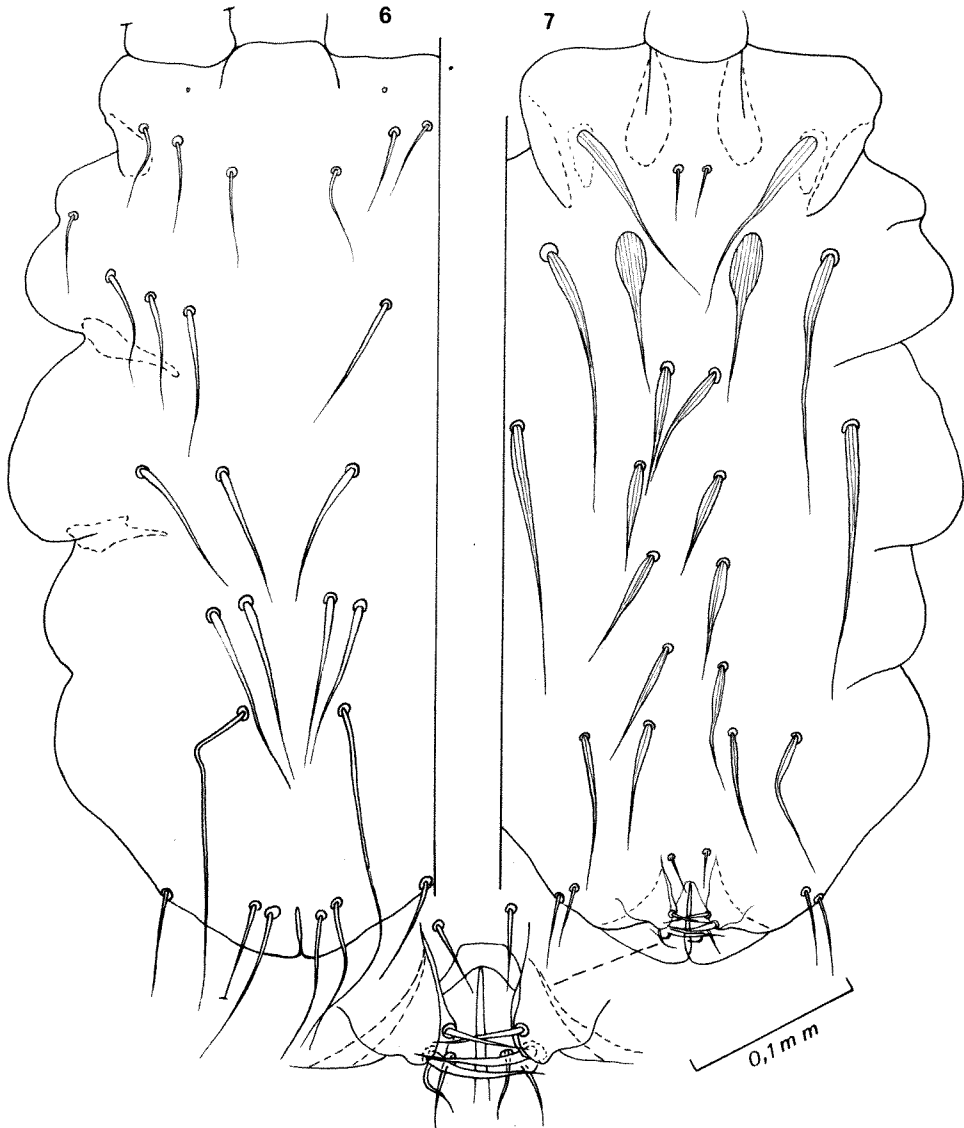
This subspecies is distinguished from the typical form in the female by the shape of the *sc i* setae which are more abruptly narrowed in their median part; the shape of the *ic 4* and *cx IV* setae more inflated basally; the situation of the *ic 4* and of *g 1* more close together; and the smaller length of the *d 1* and *d 2* setae.

**Female (Fig. 6-7):** Holotype 520 $\mu$  long and 315 $\mu$  wide. **Dorsum:** the setae *v e*, *sc e*, *sc i*, *l 1*, *d 1*, *d 2* are 120 $\mu$ , 150 $\mu$ , 90 $\mu$ , 150 $\mu$ , 72 $\mu$  and 60 $\mu$  long respectively. The basal half of *sc i* setae is 17-18 $\mu$  thick. **Venter:** coxal setae 2-3-1-1. All the *ic* are long. The *ic 4* are 42 $\mu$  apart. The *g 1* are very long (180 $\mu$ ). The small claws of legs II, III and IV are equal or subequal and 9 to 10 $\mu$  long. Leg I 120 $\mu$  long (from tip of tarsus to base of trochanter); femur I 21 $\mu$  thick. **Chaetotaxy of the legs II-IV:** Trochanters 3-3-3. Femora 5-3-3. Genua 7-7-7. Tibiae 6-6-6. Tarsi 7-6-6.

**Male (Fig. 8-9):** Allotype 420 $\mu$  long and 210 $\mu$  wide. **Dorsum:** genital orifice at 5-10 $\mu$  behind the level of *sc e* setae. Genital plate bearing 3 internal pairs of very small setae and 3 external pairs of thick but short spines. Penis 170 $\mu$  long, very thin apically and with one loop in its apical third. The *d 1* and *d 2* setae are 75 $\mu$  and 105 $\mu$  long respectively. The *d 3*, *d 4* and *l 4* are very thin and subequal in length (28-34 $\mu$ ). **Venter:** as in the female except that the *g 1* are missing and that the *ic 4* are much wider apart (distance *ic 4* - *ic 4* = 60 $\mu$ ).

**Host and locality**

On *Antechinus bilarni* Johnson, 1964, Beverley Springs, 20.IX.1976 (host n° 2746) (holotype and 1 paratype female, allotype and 2 paratypes female, and 17 immature paratypes); 22.IX.1976 (host n° 2789) (16 immature paratypes). From Brooking Springs, 30.IX.1970 (host n° 2845) (20 immature paratypes).



**Figs 6-7:** *Australomyobia dasycercus antechinus* ssp.n. Holotype female, venter and dorsum.



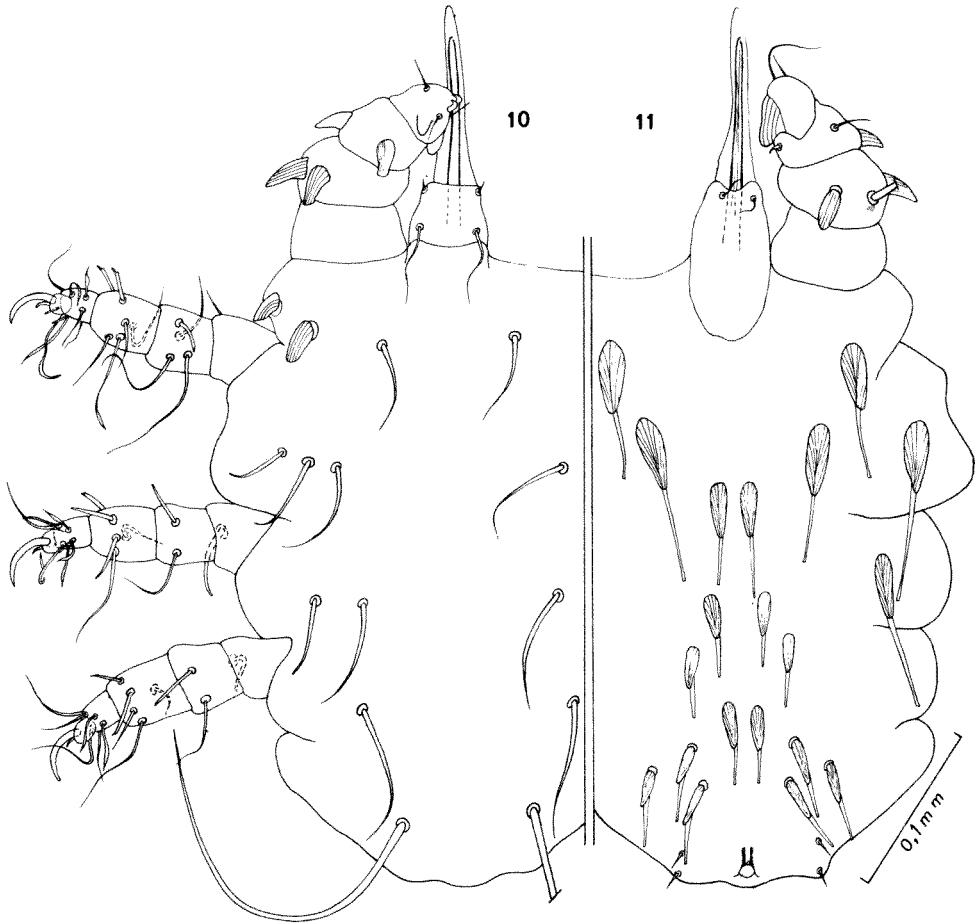


**Figs 8-9:** *Australomyobia dasycercus antechinus* ssp.n. Allotype male: (fig. 8) - dorsal view; (fig. 9) - genital area.

4. *Australomyobia dasyurus* sp. nov.

We have found on *Dasyurus hallucatus*, from two localities in Western Australia, 39 nymphs (tritonymphs and deutonymphs) belonging to the genus *Australomyobia*. These specimens differ from the trito- and deutonymphs of *A. necopina* and *A. dasyercus* by the following characters: the shape of the *vi* setae which are very thick, striated and similar to the *ve* setae, the larger the size of the body and the greater length of the *ic* setae. We think, therefore, that these specimens belong to a new species.

**Tritonymph (Fig. 10-11):** Holotype 390 $\mu$  long and 270 $\mu$  wide (idiosoma). Dorsal setae thick, striated and toothed. The *vi* setae are similar to the *ve* and situated between the *sc i*. Same number of dorsal setae as in tritonymph of *A. necopina*.



Figs 10-11: *Australomyobia dasyurus* sp.n. Holotype tritonymph, venter and dorsum.

**Venter:** coxal setae 2-2-1-0. The coxals I are thick and striated. The *ic 2 - ic 4* are thick and  $60\mu$ ,  $72\mu$  and  $70-75\mu$  respectively.

**Deutonymph:** Idiosoma  $348\mu$  long and  $290\mu$  wide. Characteristics identical to the tritonymph, except that the coxal setae are less numerous 2-1-0-0.

#### **Hosts and localities**

From *Dasyercus hallucatus* Gould, 1842, from Mitchell Plateau, 20-21.X.1976 (animal n° 3041 and 3056) (holotype, 5 paratype tritonymphs, and 1 paratype deutonymph); from Mount Hart, 11.IX.1976 (animal n° 2691) (29 deutonymph paratypes).

#### **Genus *Acrobatobia* Fain and Lukoschus, 1976**

This genus is distinguished from the genus *Australomyobia* in the female, by the following characters:

1. Tarsus and tibia I distinctly reduced.
2. The *ve* and *sci* foliate-striate, very large at their base, and with a very fine and short posterior prolongation.
3. Genital hooks abnormally large.
4. All the segments of leg II, except the tarsus, bear one or two strongly striated spines. Legs III-IV with spines on some segments.
5. Claws II very small and subequal. Claws III-IV strongly unequal.
6. Presence of a pair of short, cylindrical cuticular prolongations on the lateral surface of the opisthosoma.

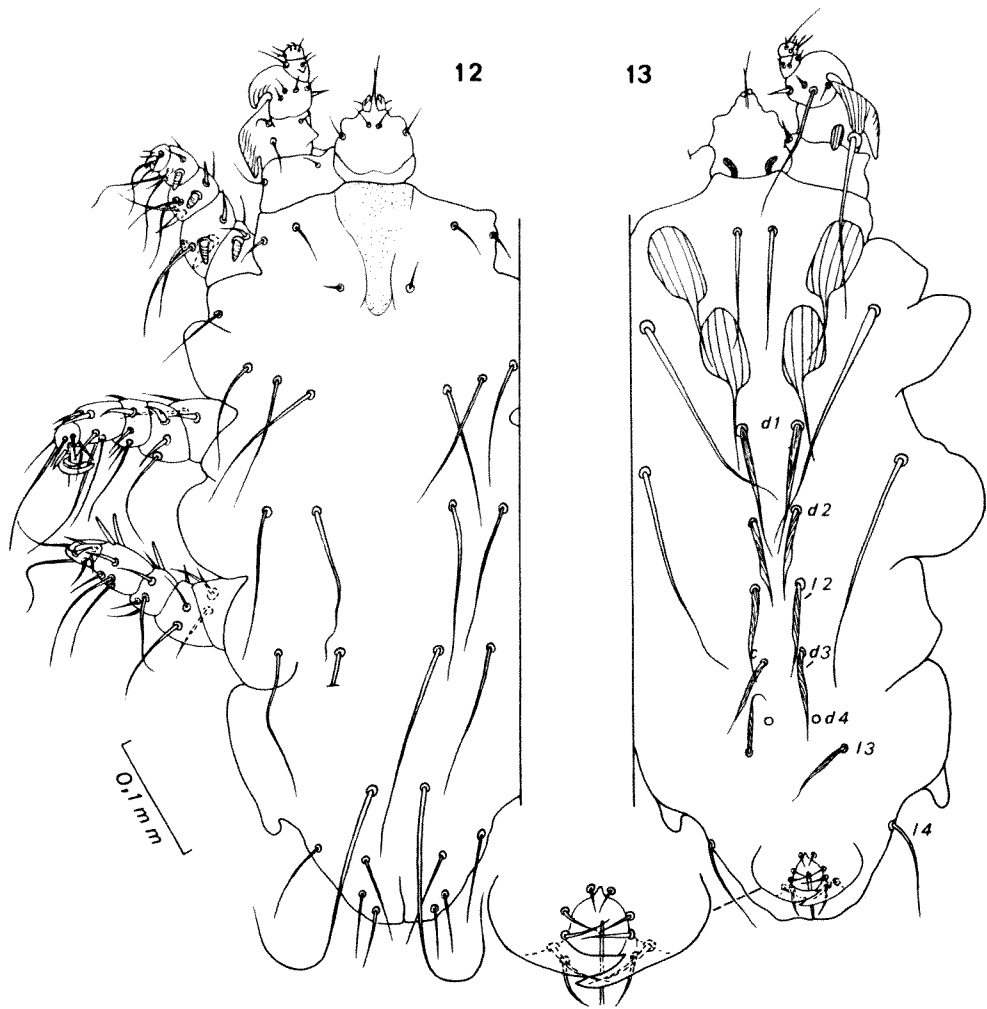
In the tritonymphs and deutonymphs the setae *ve* and *sci* are identical to those of the female. The deutonymphs have only one pair of coxals I. Trochanteral setae of legs II-IV in tritonymph 1-2-2; in deutonymph 1-2-1.

**Type species:** *Acrobatobia queenslandica* Fain and Lukoschus, 1976.

*Acrobatobia queenslandica* Fain and Lukoschus, 1976: 180

Only the female and immatures are known.

**Female (Fig. 12-13):** Holotype  $645\mu$  long and  $330\mu$  wide. **Dorsum:** setae *ve* and *sci* foliate-striate with a base  $33-36\mu$  wide, and a very narrow posterior prolongation. The *vi*  $90\mu$  long, the *se* and *ll* narrow and long. The *dl*, *d2*, *l2* with a distinct ventral expansion. Genital lobes very large. **Venter:** coxal setae 2-3-1-1. The *ic 2* to *ic 4* and the coxals II-IV are very long. The *gl* are  $240\mu$  long. The opisthosoma bears laterally a pair of short, cylindrical cuticular prolongations. Legs II: with a big striated spine on the trochanter, 2 striated spines on femur and genu and one striated spine on the tibia. Leg I  $135\mu$  long (from base of trochanter to apex of tarsus), femur I  $45\mu$  wide.



Figs 12-13: *Acrobotia queenslandica* Fain & Lukoschus. Holotype female, venter and dorsum.

**Host and locality**

On *Acrobates pygmaeus* (Shaw, 1793) from Armidale, Australia, 1916 (animal in the Smithsonian Collection) (holotype female); from Queensland, 11.VII.1893 (animal in the Hamburg Museum Collection (9 nymphs) and from Sydney, 27.V.1911 (animal in the Hamburg Collection) (4 nymphs).

Type: in the U.S.N.M.

## ACKNOWLEDGEMENTS

This paper results from the combined Western Australian Field Program 1976-1977 between the Field Museum of Natural History, Chicago, and the Western Australian Museum, Perth. The participation of a mammal group was made possible by the generous gift of Mr William S. Street, Ono, Washington, and the aid of grant R87-111 by the Netherlands Organization for the Advancement of Pure Research (ZWO).

Dr D. Kitchener, Western Australian Museum, Perth; Dr A.M. Husson, Rijksmuseum van Natuurlijke Historie, Leiden; Dr H.M. Setzer, U.S. National Museum of Natural History, Washington and Dr H. Schliemann, Zoologisches Museum, Hamburg have provided facilities to the junior author for studying alcohol-preserved mammals in their collections.

## REFERENCES

- DOMROW, R. (1973)—The genus *Archemyobia* Jameson in Australia (Acari: Myobiidae). *J. Aust. Ent. Soc.* 12: 131-133.
- FAIN, A. (1973)—Nouveaux taxa dans la famille Myobiidae (Acarina: Trombidiformes) *Rev. Zool. Bot. Afr.*, 87(3): 614-621.
- FAIN, A. (1978)—Mites of the family Myobiidae from mammals in the collection of the British Museum (Nat. Hist.) (Acarina: Prostigmata). *Bull. Brit. Mus. (Nat. Hist.) Zoology* 33(3): 193-229.
- FAIN, A. & LUKOSCHUS, F.S. (1976)—Observations sur les Myobiidae parasites d'insectivores avec description de taxa nouveaux. *Acta Zool. Path. Antverp.*, 66: 121-188.