THE HYPOPIAL NYMPHS OF THE GENUS MARSUPIOPUS FAIN, 1968 (ACARINA: ASTIGMATA) INCLUDING FOUR NEW TAXA

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ABSTRACT

3 new species and 1 new subspecies of hypopi of the genus Marsupiopus Fain, 1968 (Glycyphagidae) are described from Australian mammals.

All these species were embedded in the hair follicles, except one which was found in the superficial layers of the skin and had produced thickening of the epidermis and hyperkeratosis.

INTRODUCTION

The hair follicles of numerous mammals harbour heteromorphic deutonymphs (=hypopi) belonging to various groups of mites (Fain, 1969).

All the hypopi that infest the hair follicles of Australian mammals belong to two genera: Marsupiopus Fain, 1968 and Alabidopus Fain, 1967.

Until now, the genus Marsupiopus was represented by only 3 species, all from Australia: Marsupiopus trichosuri Fain, 1968, from Trichosurus vulpecula; M. leporilli Fain, 1969, from Leporillus jonesi; and M. michaeli Fain, 1969, from Mesembriomys gouldi.

The first species of this genus was discovered in a marsupial, hence the name Marsupiopus, but later it appeared that Murinae also were infested with these hypopi.

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Recently the junior author discovered numerous specimens of this kind of hypopi in various Australian mammals preserved in alcohol in different museums. Among this material we found 3 new species and 1 new subspecies of hypopi of the genus *Marsupiopus*. They are described here.

These new species do not correspond exactly with the original definition of the genus. In *M. antechinus* sp. n. and *M. acrobates* sp. n. there is a distinct sejugal furrow, and a small anus is present inside the genital ring. We propose therefore to emend the scope of the genus *Marsupiopus* in order to include these new characters.

The genus *Marsupiopus* is known only from the hypopial stage. The life cycle is still unknown. All these hypopi live in the hair follicles, except one species (*M. myrmecobius*) which lives like most of the Sarcoptidae, in the corneous layers of the skin, especially in the hairless regions of the ears.

The genus *Marsupiopus* is the type genus of the subfamily Marsupiopinae Fain, 1968, which has been included in the Glycyphagidae Berlese, 1887, by Fain, 1968.

### KEY TO SPECIES AND SUBSPECIES OF THE GENUS *MARSUPIOPUS* (HYPOPI)

1. Femora I-II with a short thick spine... ... ... ... ... ... ... ... 2
   Femora I-II with a fine seta ... ... ... ... ... ... ... ... 5

2. Apical half of tarsi I-II with two thick spines
   ... ... ... ... ... ... ... ... ... ... *M. michaeli* Fain, 1969
   Apical half of tarsi I-II either with only thin setae or with one small ventral spine ... ... ... ... ... ... ... 3

3. Tibia I-II with 1 seta and 1 spine. Posterior region of hysterosoma with a small dorsal shield much wider than long. Solenidia alpha distinctly separated. Idiosoma rounded anteriorly. Pregenital longitudinal sclerite well developed... ... ... ... ... ... ... ... ... ... 4
   Tibia I-II with 2 spines. Hysteroma without dorsal shield. Solenidia alpha close together. Idiosoma ending anteriorly as a narrow cone. Pregenital sclerite very poorly developed ... ... ... ... ... ... ... ... ... ... *M. trichosuri* Fain, 1968

4. Tarsal claws: ... ... ... ...
   Tarsal claws present. Pretarsi ... ... ...

5. Genital ring: absent. Dorsal shield ... ... ...
   Genital ring: present. Dorsal shield reduced ... ...

6. Body 260μ: ... ... ...
   Tarsal claws: pretarsi 16μ. Tibia I-II ... ... ...
   Body 190μ: Tarsal claws: pretarsi 6-8μ. Tibia I-II ... ... ...
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   Body 190μ: Tarsal claws: pretarsi 6-8μ. Tibia I-II ... ... ...

This species has slightly different subspecies.

This new subspecies also present in *M. antechinus* sp. n. Average for 10 pts... ... ...
4. Tarsal claws I-II as long as their pretarsi
   ... ... ... ... ... ... ... ... ... M. leporilli leporilli

Tarsal claws I-II distinctly longer than their pretarsi
   ... ... ... ... ... ... ... ... ... M. leporilli pseudomys ssp. nov.

5. Genital ring longer than wide. Sejugal furrow absent. Dorsal surface with a long punctate shield
   ... ... ... ... ... ... ... ... ... M. myrmecobius sp. nov.

Genital ring wider than long. Sejugal furrow present. Dorsal shield either absent or much reduced ... ... ... ... ... ... ... ... ... 6

6. Body 260-280μ long. Distance alpha-alpha 16μ. Tarsi I 2.5 times longer than its maximum width. Posterior spines of tibiae and genua I-II strong and equal
   ... ... ... ... ... ... ... ... ... M. antechinus sp. nov.

Body 190-210μ long. Distance alpha-alpha 6-8μ. Tarsi I 1.4 times longer than its maximum width. Posterior spine of genua I-II much smaller than corresponding spine of tibiae I-II
   ... ... ... ... ... ... ... ... ... M. acrobates sp. nov.

1. Marsupiosus leporilli Fain, 1969

This species has been described from Leporillus jonesi, South Australia.

We have found this species in two new hosts. As these specimens are slightly different from the typical series we separate them as a new subspecies.

Marsupiopus leporilli pseudomys ssp. nov.

This new subspecies is distinguished from the typical series by the size of the claws I-II which are distinctly longer than their pretarsi. Besides, the cuticle is less sclerotised than in M. l. leporilli. It is to be noted that there are 2 small punctate areas laterally at the level of coxae III. These areas are also present in M. l. leporilli. Holotype hypopus 295μ long and 166μ wide. Average for 10 paratypes: 311μ long (288-336μ) and 154μ wide (154-182μ).
Hosts and localities

On *Pseudomys hermannsburgensis*, Hermannsburg, Central Australia, 1910 (holotype and 40 paratypes). The mites were embedded in the hair-follicles. Host specimen in the Senckenberg Museum, Frankfurt.

On *Rattus fuscipes*, Australia, 1869 (10 paratypes) (Coll. F.S. Lukoschus). Host specimen in the Rijksmuseum, Leiden. 5 paratypes in the Natural History Museum, Leiden; other paratypes in the Western Australian Museum, Perth, and in the collections of the authors.

2. *Marsupiopus myrmecobius* sp. nov.

This species is clearly distinguished from the 3 previously described species by the genital ring being longer than wide (cf. wider than long in the other 3 species), the presence of a simple hair on the femora I-II, and the great length of the tarsal claws I and II. In addition it is distinguished from *M. michaeli* Fain by the absence of a spine on tarsi I-II.

![Figs 1-2: Marsupiopus myrmecobius sp. n. Hypopus (holotype). Dorsum (fig. 1) and venter (fig. 2).](image-url)
Hypopus (Fig. 1-5): Holotype 360μ long and 240μ wide. Average for 10 paratypes: 355μ long (336-374μ) and 237μ wide (221-250μ). Dorsal surface with a punctate shield covering most of the median region of the dorsum. This shield lacking in lateral and posterior regions of the dorsum. Sejugal furrow absent. Epimera I fused into V. Genital ring longer than wide and bearing membranous prolongation backwards. A small anus is present. Pregenital sclerite fused to epimera IV. Palposoma indistinct. Solenidia alpha narrow, close to one pair of simple setae, the other pair of setae situated more laterally. Tarsus I much longer (27μ) than wide (7μ). Claws I-II 18μ long, longer than the pretarsi. Femora I-II with a thin seta.

Host and locality:

On Myrmecobius fasciatus, Katoomba, N.S.W., Australia, 2.V.1906. The mites were enclosed in the corneous layers of the skin, especially the hairless region of the ears. They had produced thickening of the epidermis and hyperkeratosis. Host specimen (No. 12240) in the Senckenberg Museum, Frankfurt (holotype and 40 paratypes). Holotype and 13 paratypes in the Senckenberg Museum, Frankfurt; other paratypes in the Western Australian Museum, Perth, and in the collections of the authors.

3. Marsupiopus antechinus sp. nov.

In this new species the femora I-II bear simple setae, as in M. myrmecobius. It is distinguished from this species by the presence of a distinct sejugal furrow, and by the genital ring being wider than long.

Hypopus (Fig. 6-10): Holotype 260μ long and 175μ wide. Dorsum with a small punctate area in the posterior region. A distinct sejugal furrow present. Epimera I fused into a Y. Palposoma distinct, bearing 2 solenidia and 4 simple setae. Pregenital sclerite formed of two narrow longitudinal lines. Genital ring wider than long with slight lateral prolongations directed forwards. Femora I-II with setae simple. Tibiae and genua I-II with strong spines. Tarsi I-II 21μ long and 8μ wide. Claws I-II 9μ long, distinctly longer than the pretarsi.

Host and localities

From the hair follicles of Antechinus flavipes, Australia, March 1884. Host specimen in the Museum of Leiden, Netherlands (holotype and 1 paratype).

From the same host, Wandanian, N.S.W. (4 paratypes); Atherton Tableland, Queensland, 30.VII.1921 (2 paratypes); Ebor, N.S.W., 5.II.1921 (6 paratypes); Milton, N.S.W., 20.VII.1920 (1 paratype). These specimens
were collected from mammals in the Smithsonian Museum, Washington, by the junior author.


Figs 3-8: Marsupiopus myrmecobius sp. n. Hypopus (holotype). Tarsus, tibia and genu I dorsally (fig. 3). Leg III (fig. 4) and IV (fig. 5). Marsupiopus antechinus sp. n. Hypopus (holotype). Tarsus, tibia and genu I dorsally (fig. 6). Leg III (fig. 7) and IV (fig. 8).

Figs 9-10: Marsupiopus venter (fig. 14).

This species from this spec...
4. Marsupiopus acrobates sp. nov.

This species has a distinct sejugal furrow as in M. antechinus. It differs from this species by the much smaller size of the body, the broader tarsi I-II, and the unequal size of the spines on tibiae and genua I-II.

Hypopus (Fig. 11-13): Holotype 195μ long, 120μ wide. In 3 paratypes the length is 210μ, 190μ and 195μ. Sejugal furrow well developed. In the anterior part of the dorsum there are several irregular transverse grooves. Palposoma well developed, rounded, with alpha solenidia short (5μ) and close together (distance alpha-alpha 7μ) and 2 pairs of short hairs. Pregenital median sclerite strongly sclerotised. Pregenital ring wider than long, with 2 globulous setae bifid apically. Tarsus I 13μ long and 8.5μ maximum width; tarsus II a little longer (15μ) and narrower (7.5μ). Claws I-II 7.5μ long. Tibiae and genua I-II with 1 narrow setae and 1 spine, the spine of the tibia being 2 to 3 times thicker than that of the genu.
Host and locality

On Acrobates pygmaeus, Armidale, N.S.W., Australia. The mites were embedded in the hair follicles. Host specimen (No. 221347; collected by C.M. Hoy, 1916) in the Smithsonian Museum (holotype and 8 paratypes). Holotype and 3 paratypes in the U.S. National Museum, Washington; other paratypes in the Western Australian Museum, and in the collections of the authors.

REFERENCES
