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LICE (PHTHIRAPTERA: BOOPIIDAE) PARASITIC ON MARSUPIALS

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ABSTRACT

A small collection of marsupial lice made by Dr F.S. Lukoschus in the Kimberley Division of Western Australia contains a new species of *Boopia* and of *Latumcephalum*, described below, and one known species of *Boopia* and one of *Paraboopia*.

DESCRIPTION OF MATERIAL

Genus *Boopia* Piaget, 1880

Two species of *Boopia* are present in the collection, both from members of the Dasyuridae: *B. uncinata* Harrison & Johnston, 1916 and the new species described below (see **Table 1** for host and localities).

Boopia occidua sp. nov.
(Figs 1-5, 15)

Type host: *Antechinus* cf. *bilarni* Johnston, 1954.

This species belongs to the *spinosa* species-group (Clay 1972:403, 1976:333-338) and the characters given in the former publication are not repeated here in the specific description. It is distinguished from the other known species of this group by the reduction of frontal seta 3 (Kéler† 1971, Fig. 100=seta 23, Clay 1969:5); by the absence, as in *spinosa*, of the pair of stout spinform setae each side of the venter of the head and the absence of a typical 'handle' (sens. Kéler) in the male copulatory apparatus.

Description

Head in many of the mounted specimens shows the deformation described by Kéler: 40, head measurements are therefore given only for those specimens without this deformation; breadth less than in other species. Dorso-lateral margin of head (**Fig. 1**) with postocular notch smaller but similar to that of *spinosa* (see Kéler: Fig. 111); this margin in *murrayi, greeni, aquilonia* and

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†All references to Kéler refer to Kéler 1971: 1-126.

lukoschusi as in *brevispinosa* (see Kéler: Fig. 107). Venter without a stout spiniform seta each side; seta 23 which in all the other species is stout and spiniform is here represented by a minute seta. Pronotum as in Kéler: Fig. 111 except that the minute central seta (dps 2, Clay 1969:5) and the inner of the two long marginal setae have been omitted. The prosternal plate in all the species normally has three postero-marginal setae spinform and of uniform length except *spinosus* in which the central one is thinner and longer or occasionally equal in length (not as shown in Kéler: Fig. 111‡) in addition the prosternal plate in all the species has two minute anterior setae and a long antero-marginal one each side and a varying number on the surface of the plate, 3-4 in this species. Meso- and metanotum as in Werneck & Thompson (1940: Fig. 42) with the addition of 2-3 minute setae; mesosternum with 4 long stout setae, metasternum with 3 + 3 setae, the anterior 1 + 1 being shorter and finer than the posterior 2 + 2. Trochanter, as in the whole group, with three ventral sensilla (Clay 1969. Fig. 13). Tergites without lateral sutures forming three plates. Male copulatory apparatus (**Figs 3-5**) distinct from other members of the group in the absence of an anterior "handle" and in the details of the vesicle sclerites. These sclerites may become somewhat distorted during preparation and appear different in different specimens. Gonapophysis, as in other members of the group, with an apical alveolar seta as described by Kéler:23 for *Boopia biseriata* Kéler, 1981 and not a spur as stated by Kéler: 41,42 for *brevispinosus* and *spinosus*. Actually a number of species of *Boopia* said by Kéler to have a gonapophysal spur appear to have a seta similar to that of *biseriata*. True spurs are found, for instance, in *Macropophilia clayae* Kéler, 1971 (Kéler: Fig. 113) and *Heteroduxus spiniger* (Enderlein, 1909) (Kéler: Fig. 119). Genital papilla elongated conical as in Kéler: Fig. 115, H, but with a more rounded head. Sensilla of tergite IX of female 3-4 each side. Inner edge of gonapophyses with sensilla as illustrated for *brevispinosus* in Clay 1972: Fig. 14.

Chaetotaxy of the Abdomen

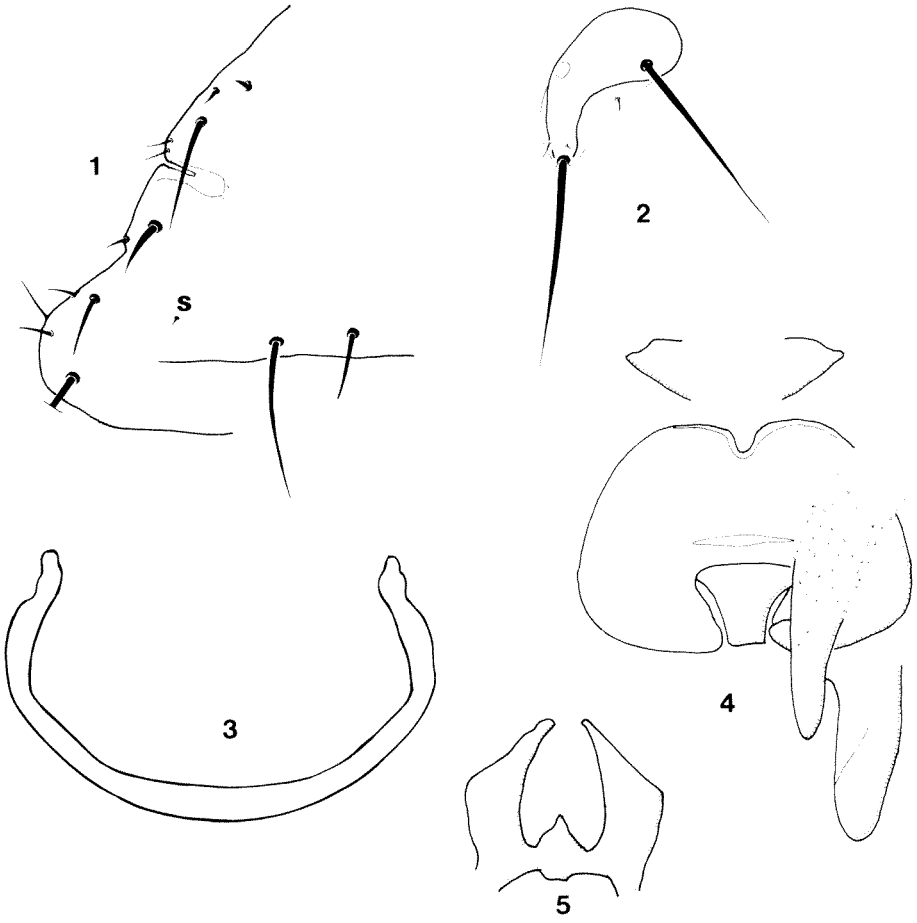
Terga with single row of setae: II, 1 + 4 + 1; III-VIII, 2 + 4 + 2, the inner of the two outer setae on VIII being finer than the other of the pair; last segment, ♂ 3-5 each side, one being longer and stouter than the rest, and 5-6 fine setae centrally, ventral to these a row of 5-7 similar setae; posterior margin with 1 + 1 setae; ♀ 4-5 each side; supraanal margin 4 + 4 short setae. Sternum II, 4 and 2 fine, short setae each side; III-VIII with two irregular rows: III-VII, 8 in the posterior row, 2-5 in the anterior row; VIII, 6-7 posteriorly, 3-5 anteriorly; last segment, ♂ three pairs arranged horizontally, the posterior pair being marginal. Vulva with 10 setae, thickness and length as shown in Fig. 16; postgenital setae 10 each side with 4 posterior more median setae.

‡One specimen of the new species has the central seta abnormally shorter and finer than the outer two.

Lateral setae present on IV-VII of approximate uniform length and thickness (**Fig. 2**). Postspiracular complex: II as in Clay 1976: Fig. 3, but one or both of the two smaller setae each side of the stout seta may be shorter and finer; III-IV, 1-2 short, fine setae each side of trichobothrium, in some specimens one of these may be longer and thicker; V-VIII as in **Fig. 2**, with the setae each side of the postspiracular setae longer and thicker on VIII.

Dimensions (in mm)

Temple width, ♂, 0.35 (2); ♀, 0.35-0.36 (2). Head length, ♂, 0.21-0.22 (2); ♀, 0.21-0.22 (2). Pronotum width, ♂, 0.32-0.33 (5); ♂, 0.32-0.34 (4). Total length, ♂, 1.27-1.28 (2); ♀, 1.35-1.50 (2).



Figs 1-5: *Boopia occidua* sp. nov., 1; head ♂ (dorsal), s, seta 23. 2; lateral plate, segment V. 3-5: Parts of ♂ copulatory organ (drawn to same scale). 3; mesosomal arch. 4; central and lateral sclerites, dorsal view. 5; central sclerite (ventral).

Material Examined

9♂, 4♀ from *Antechinus* cf. *bilarni* Johnson, 1954 from Mitchell Plateau and Brooking Springs, Western Australia, Kimberley Division.

Holotype: ♂ in the Western Australian Museum, WAM 79.1583 from the type host species Field Museum of Natural History, Chicago, 2844, Brooking Springs (18°01'30"S, 125°42'30"E).

Paratypes: 8♂, 4♀ from the host and localities as given above.

Genus *Latumcephalum* Le Souëf, 1902

Four species, including the new species described below, are known from species of *Macropus* and *Wallabia*. It is now realized that some of the characters which prove to be diagnostic are shown in Werneck & Thompson (1940) and Kéler (1971) and were not discussed in Clay (1974); these are now included in a comparative manner in the description of the new species.

Described species of *Latumcephalum* and their hosts are:

L. macropus Le Souëf, 1902
Macropus dorsalis (Gray, 1837) Unconfirmed.

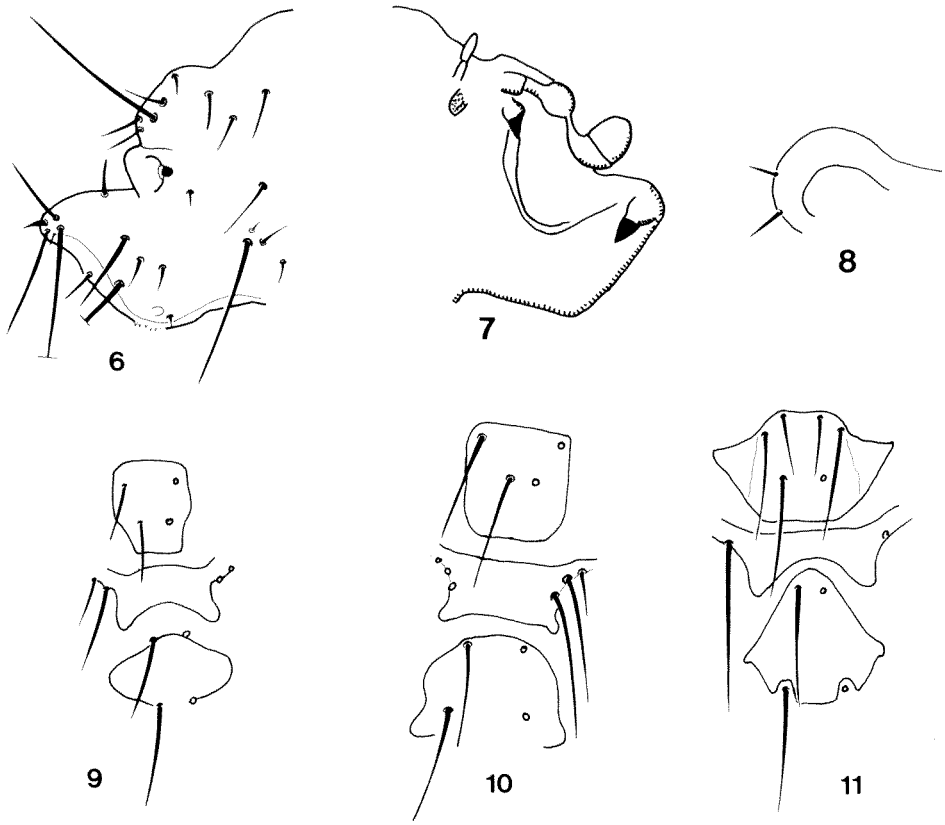
L. lesouefi Harrison & Johnston, 1916
Wallabia bicolor (Desmarest, 1804).

L. greeni Clay, 1974
Macropus rufogriseus (Desmarest, 1817).

Latumcephalum tenax sp. nov.
(Figs 6-14, 16-17)

Type Host: *Macropus agilis* (Gould, 1842)

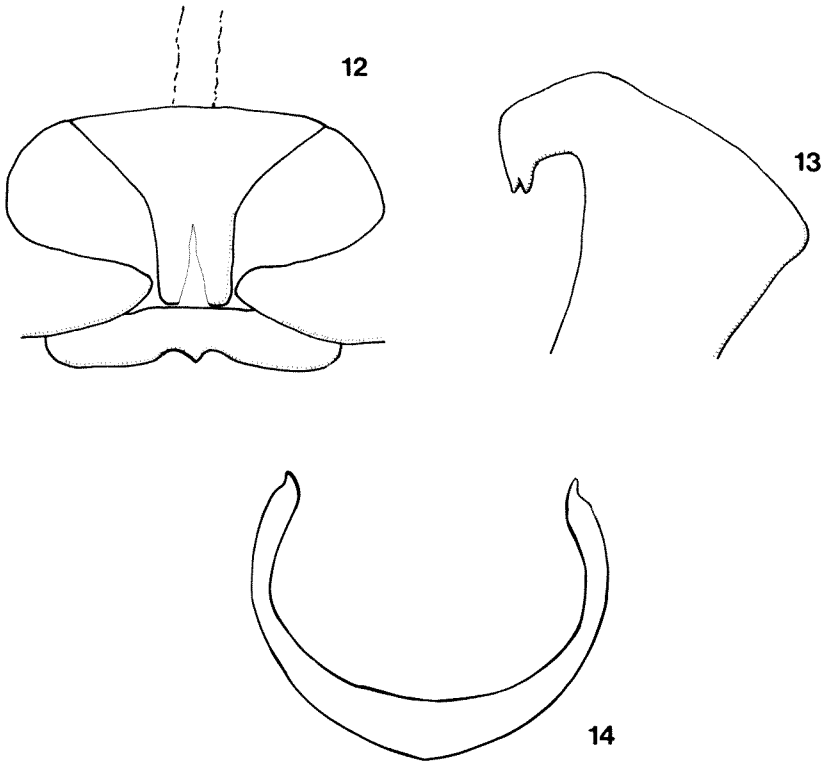
The four species are distinguished from each other by the shape and size of the head, especially in the shape of the area lying between the preocular and postocular slits, this being large and rectangular in *macropus* and *greeni* and triangular and bluntly pointed in *lesouefi* and the new species (**Fig. 6**). The two latter species can be separated by the presence in *tenax* of a long lateroventral seta on segment III and by its smaller size. The venter of the head has three thickened areas (**Fig. 7**): one on the anterior temple angle, one near the base of the antenna and one near the base of the maxillary palp; the area on the temple usually has a well developed projection which is reduced in *greeni;* the antennal area has a small point, best developed in *tenax* and *lesouefi;* and the third area is small but definite in *macropus* and *tenax* and minute to absent in the other two species. A small colourless projection on the dorsal posterior temple angle is well marked in *lesouefi* and *macropus* but weak and small in the other two species; the ocular seta of *tenax*, unlike that of the other species, is short and blunt-ended.



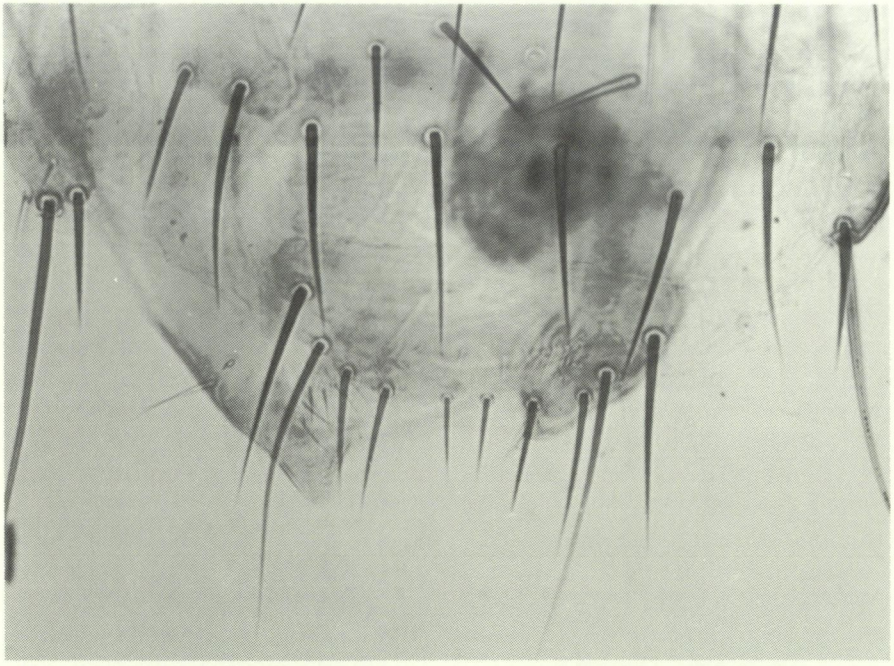
Figs 6-11: 6-8; *Latumcephalum tenax* sp. nov., 6; head ♂ (dorsal). 7; head ♂ (ventral) to show sclerotized projections. 8; mesonotal wart. 9-11; *Latumcephalum* spp., thoracic sternal plates (some setae shown by alveolus only). 9; *L. tenax*. 10; *L. lesouefi*. 11; *L. greeni*.

Thorax of *tenax*. Pronotum as in *macropus* (Kéler: Fig. 130) and as in the other species has 6-7 marginal setae each side, 2 of which are long and stout, 2 + 2 lateral submarginal and 1 + 1 minute more central setae. Mesonotal warts (**Fig. 8**) with thickened outer rim absent in the other species with the possible exception of *macropus*, but material of this species in too poor condition to be certain; the outer seta of the warts finer and less spiniform than in *lesouefi* and *greeni*. Metanotum, as in the other species, with 10-12 setae of medium length and a varying number of short fine setae; the reduction in number of the longer setae is due to the outer of the 2 + 2 central marginal stae being short and fine in some specimens. Thoracic sternal plates as **Figs 9-11** (*macropus* see Werneck & Thompson (1940: Fig. 61); *greeni* with two extra prosternal setae. Second femur of male with a stout spiniform seta as in *macropus* and *lesouefi*. Trochanter with three ventral sensilla.

Male copulatory apparatus (**Figs 12-14**) similar to that of the other species (Kéler: Figs 133-134), but differs in the shape of the mesosomal arch and details of the vesical plates; armature of the genital sac composed of finer particles than in the other species (**Figs 16-17**). Details of female genital sclerites not clear in single available female, but a well marked arched lunula present. Gonopohyses with apical seta and 5-6 (number not clear in single female) outer lateral setae; inner and supraanal margin with row of 8 minute setae each side of midline. Shape of genital papilla similar to Kéler: Fig. 115 J, but somewhat more elongated. Abdominal spiracles with aperture noticeably smaller in *macropus* than in the other species: ratio of diameter, *macropus: greeni: tenax: lesouefi:* 1 : 1.7 : 1.8 : 2.0.



Figs 12-14: *Latumcephalum tenax*, parts of ♂ copulatory organ, 12; central sclerites, h, 'handle', length: range 0.066-0.084 mm. 13; lateral sclerite. 14; mesosomal arch (same scale as Clay 1974: Figs 2-4).



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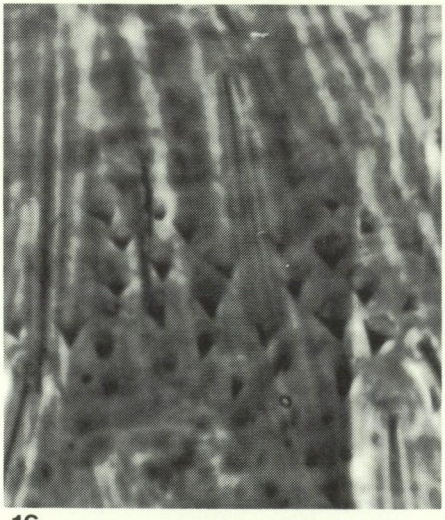

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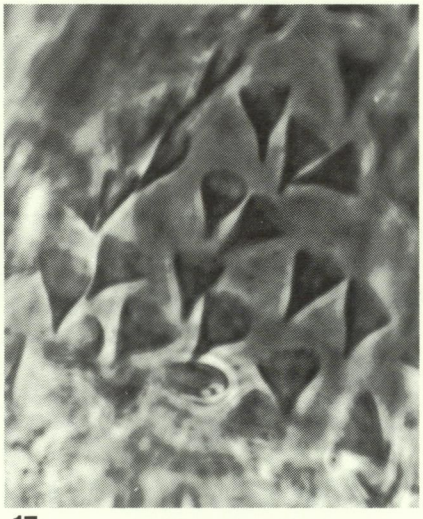

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Figs 15-17: 15; *Boopia occidua* sp. nov., vulval setae. 16-17; armature of genital sac. 16; *Latumcephalum tenax* sp. nov. 17; *L. greeni* Clay.

Abdominal Chaetotaxy

Tergal setae§ similar in the four species except that *macropus* is distinguished in having the 4 central setae of segments III-VIII in the upper row, whereas in the other species these are in the lower row (with occasionally 4 setae in the upper row, see below). There may be a number of fine short setae which are not included in the following tergal counts, which include all four species except where stated. Tergocentral setae II, 4; III-VIII, lower row 4, except *macropus* ♂, ♀ which has 6; III-VIII, upper row, *macropus* ♂, ♀ 4; upper row in the other species ♂, ♀: III, 4-6; IV, 5-6; V, 6-7; VI, 5-7; VII, 3-4. IX with single row: ♂ *tenax* 3 + 3, outer seta each end long and stout; *greeni*, 3 + 3 inner two setae the longest; ♀ *tenax*, *macropus* and *lesouefi*, 5-6 + 5-6, outer seta long and stout. Laterotergal setae II and VIII, 1 long seta except *greeni* in which on II the seta is minute and on VIII a single seta varying from medium to minute; III-VII, *tenax* and *lesouefi*, 2 long to medium setae each side, *macropus* and *greeni* 1 long with 1-2 short fine setae, which may vary from minute to medium in *greeni*. Sternum ♂ *tenax* II, 4; III-VIII two rows (the upper row given first, small, fine setae omitted), III, 4/10; IV, 4-5/9-10; V, 4-6/10-11, VI, 4-5/10; VII, 4-5/9-11; VIII, 5-6/6-7. ♀ II, 4; III, 3/4; IV, 4/4; V, 4/6; VI, 5/7; VII, 5/7; VIII, 4/6, IX, 4/5. Vulva: 8 marginal setae, one of which each side is long and stout, the remainder short and fine. Lateroventral II, all species 0; III, *tenax* 1, others 0; IV-VI, 2 except *greeni* which has 1 with 2 of varying lengths at its base; VII, all 1; VIII, all 0. There is usually a short, fine seta associated with the longer ones, which is some specimens may take the place of one of the long seta. Postspiracular setae II-VIII long with 2-3 fine setae near the base.

Dimensions

2♂, 1♀ of *tenax* (in mm): Temple width ♂ 0.37-0.38, ♀ 0.33. Head length ♂, 0.19-0.21, ♀ 0.18. Pronotum width ♂, 0.20-0.21, ♀ 1.95. Abdomen width ♂, 0.54-0.55, ♀ 0.52. Total length ♂ 1.10-1.20, ♀ 1.12. Breadth of ♂ head of *macropus:* 0.41; *lesouefi:* 0.46; *greeni:* 0.51.

Material Examined

2 ♂ from *Macropus agilis* (Gould), Western Australia, Napier Downs. 5.IX.1976, Field Museum of Natural History, Chicago, 2673. 1 ♂, 1 ♀ from the same host, Western Australia, Beverley Springs. 18.IX.1976, Field Museum of Natural History, Chicago, 2725.

Holotype: ♂ in the Western Australian Museum, WAM 79.1584 from the above host from Napier Downs (17°14'20"S, 124°13'40"E).

Paratypes: 2♂, 1♀ with data as given above.

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§Clay, 1974:2 line 24, for III-IV read III-VI

TABLE 1

Host-parasite list of Phthiraptera collected by Dr F.S. Lukoschus in Western Australia

Marsupial Host‖	Genera & Species of Boopiidae
Dasyuridae	
Antechinus cf. *bilarni* Johnston, 1954 5 tubes, see above for localities	*Boopia occidua* sp. nov.
Dasyurus hallucatus Gould, 1842 6 tubes from the following localities: Mitchell Plateau (2), Mount Hart (3), Port Warrender (1)	*Boopia uncinata* Harrison & Johnston, 1916 Formerly known from this host (see Kéler: 35)
Macropodidae	
Macropus agilis (Gould, 1842) 2 tubes, see above for localities	*Latumcephalum tenax* sp. nov.
Macropus robustus Gould, 1841 1 tube from Brooking Springs	*Paraboopia flava* Werneck & Thompson, 1940. Type host.

I am grateful to Mr John Calaby for advice on host names.

‖Name of hosts as given by Kirsch & Calaby, 1977. Localities in the Kimberley Division of Western Australia.

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