

## Two new species of phoretic deutonymphs (Acari, Astigmata) from Australian fleas

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### Summary

The following new taxa of mites (Acari) are described from their deutonymphal stages phoretic on fleas, which are parasitic on Australian mammals: *Psylloglyphus* (*Psyllobia*) n.subg. (type species: *Psylloglyphus foveolatus* FAIN & MASON, 1989), *Psylloglyphus* (*Psylloglyphus*) *australiensis* n. sp. (Winterschmidtidae) and *Psyllacarus subellipticus* n.g., n.sp. (Acaridae).

### Résumé

Les nouveaux taxa suivants (Acari) sont décrits d'après leur stade hypope phorétique sur des puces parasites de petits mammifères d'Australie: *Psylloglyphus* (*Psyllobia*) n.subg. (espèce type: *Psylloglyphus foveolatus* FAIN & MASON, 1989), *Psylloglyphus* (*Psylloglyphus*) *australiensis* n.sp. (Winterschmidtidae) and *Psyllacarus subellipticus* n.g., n.sp. (Acaridae).

### Introduction

Until now only one species of mite (Acari) phoretic on fleas was known from Australia, i.e. *Psylloglyphus foveolatus* FAIN & MASON, 1989, found on *Pygiopsylla hoplia* from *Rattus rattus* in Tasmania.

We describe herein a new genus and 2 new species in this group of mites, from Australia: *Psyllacarus* n.g. (Acaridae) represented only by the type species *P. subellipticus* n.sp., and *Psylloglyphus australiensis* n.sp. (Winterschmidtidae). Both species, represented only by their heteromorphic deutonymph (= hypopi), were found in phoretic association with several fleas parasitic on rodents or marsupials. This material was collected near Anglesea 38°23'S and 144°10'E (rainfall 659 mm/annum) and at Forrest 38°32'S and 143°43'E (rainfall 1030 mm/annum) (Victoria), from October 1989 to January 1990.

In addition to these new species, we also found new specimens of hypopi of the species *P. foveolatus*, recently described from Tasmania. They were collected from different hosts near Anglesea and Forrest. Moreover, we think now that *P. foveolatus* represents a new subgenus, *Psyllobia*, into the genus *Psylloglyphus* and we describe it herein. Most of the hypopi found on these fleas were located under the first abdominal sterna or terga, less often under the other abdominal segments or around the genital organs.

Some fleas were heavily infested and one of them bore more than 100 hypopi.

The measurements used here are in micrometers.

### FAMILY WINTERSCHMIDTIIDAE

Genus *Psylloglyphus* FAIN, 1966

Subgenus *Psyllobia* nov. subgen.

### Definition :

This new subgenus is known only from its deutonymphal stage. It differs from the typical genus by the following characters :

1. Presence on tarsi I and II of a saucerlike seta, instead of a foliate seta.
2. Basal seta of tarsi IV regularly foliate and not strongly dilated and curved in their basal half as in the typical subgenus.

### Type species :

*Psylloglyphus* (*Psylloglyphus*) *foveolatus* FAIN and MASON, 1989.

*Psylloglyphus* (*Psyllobia*) *foveolatus* was described from hypopi found on *Pygiopsylla hoplia*, JORDAN & ROTH-SCHILD, 1922, ex *Rattus rattus* (L.) caught close to Launceston, Tasmania.

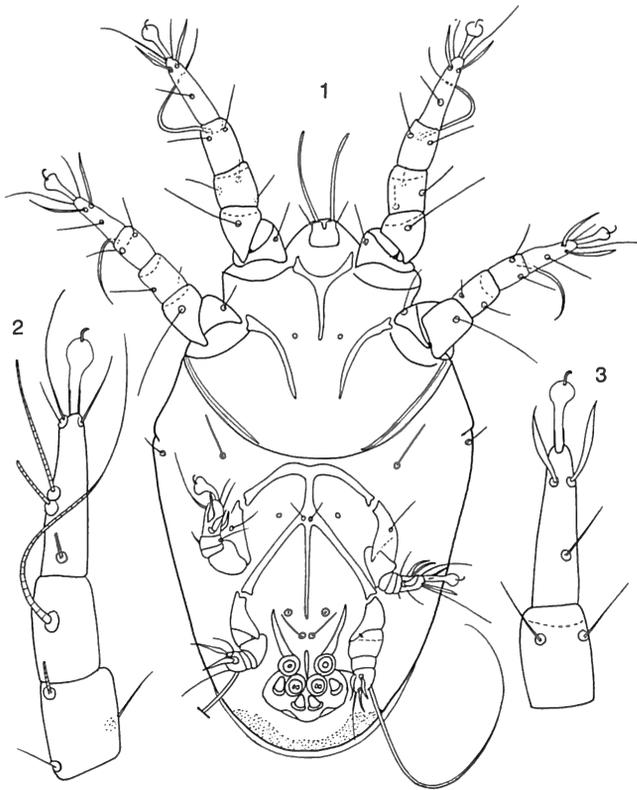
We have now found several new specimens of this species in Victoria, from the following hosts :

1. *Pygiopsylla hoplia* (♂), the typical host, ex *Rattus lutreolus* GRAY, ♀, near Forrest, Victoria : 8 hypopi.
2. *Acanthopsylla r. rothschildi* (RAINBOW, 1905) (♀), ex *Antechinus stuartii* Macleay (♂), near Anglesea : 4 hypopi.
3. *Bibikovana rainbowi* (Rothschild, 1908) (♀) ex *Rattus fuscipes* Waterhouse (♀), near Anglesea : 5 hypopi.

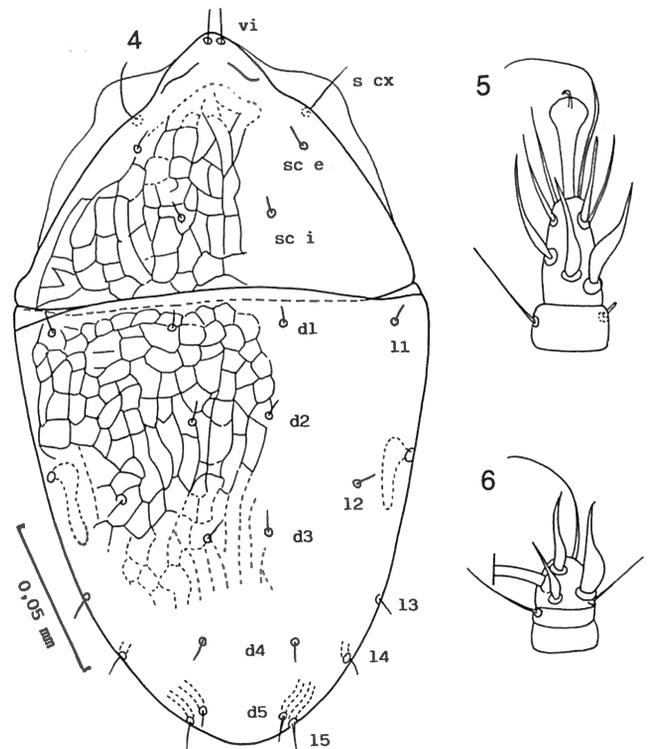
### *Psylloglyphus* (*Psylloglyphus*) *australiensis* nov. spec.

*Hypopus*, holotype (figs. 1-6) :

Length and width of idiosoma 195 × 118. Length and



Figs. 1-3. *Psylloglyphus (Psylloglyphus) australiensis n.sp. Hypopus*, in ventral view (1); apical segments of leg I in dorsal (2) and ventral view (3).



Figs. 4-6. *Psylloglyphus (Psylloglyphus) australiensis n.sp. Hypopus* in dorsal view (4); apical segments of leg III (5) and leg IV (6).

width of 5 paratypes:  $180 \times 99$ ;  $182 \times 106$ ;  $189 \times 107$ ;  $195 \times 116$ ;  $201 \times 108$ . Body more or less spindle shaped, attenuated at both extremities. Sejugal furrow well developed, the propodonotum is 75 long. *Dorsum* with a well-developed network extending over the greatest part of the propodonotum, but poorly developed anteriorly, and covering about the two anterior thirds of the hysteronotum. Lengths of setae: *vi* 10; *sc e* 9,5; *sc i* 5; *s cx* 15; *d1* to *d5* and *11* to *14* 5 to 7; *15* 10. *Venter*: palposoma 9 long and 11 wide with solenidia *alpha* 33 long and a pair of very thin setae. Sternum short. Epimera III and IV fused in the midline, forming a thick anterior arch slightly concave in its middle. There is a long median longitudinal pregenital sclerite originating at the epimera III and extending to the level of *gm* setae. Suctorial plate 35 wide. Diameter of anterior suckers 7.5, that of posterior suckers 7.2. Lateral conoids at the level of posterior suckers. Lengths of tarsi I-IV: 26-19-12-6. Claws I to III: 3.2 long, pretarsi 12 long. Tarsus IV ending into a long apical seta 130 long. Chaetotaxy of legs: Tarsi I and II with 6 setae (4 simple and thin and 2 foliate); tarsus III with 8 setae of which 3 are simple (one is 30 long) and 5 foliate (2 or 3 of them abruptly inflated and curved in their basal half), tarsus IV with 6 setae (3 foliate with base inflated and curved and 3 simple. Solenidiotaxy: Tarsi 3-1-0-0. Tibiae I with a long solenidion  $\phi$  twisted in S (55 long). Tibiae II with  $\phi$  regularly curved and 30 long.

*Host and locality* :

*Holotype* hypopus from *Pygiopsylla hoplia* JORDAN & ROTHSCHILD (♀), ex *Rattus lutreolus* GRAY (♀) from Forrest, Victoria.

*Paratypes* : 17 hypopi, with the same data as the holotype; 5 hypopi from the same flea but from *Rattus fuscipes* WATERHOUSE (♂), near Anglesea; 2 hypopi from the same species of flea (♀) but from *Antechinus stuartii* MACLEAY (♂), near Forrest; 40 hypopi from several specimens of *Bibikovana rainbowi* (ROTHSCHILD, 1908) (♀), from *Rattus fuscipes* (♀), in Forrest; 1 hypopus from *Bibikovana rainbowi* from *Rattus lutreolus* (♂), near Anglesea; 1 hypopus from *Acanthopsylla r. rothschildi* (♀), ex *Antechinus stuartii* (♂), near Anglesea; 3 hypopi from *Macropsylla hercules* ROTHSCHILD, 1905 (♀), ex *Rattus lutreolus* (♂), near Forrest.

Holotype and 3 paratypes in Queensland Museum, South Brisbane. Paratypes in British Museum (Nat. Hist.) and in Institut royal des Sciences naturelles de Belgique.

*Remarks* :

This new species is closest to *Psylloglyphus (Psylloglyphus) crenulatus* FAIN & BEAUCOURNU, 1984. It differs from it in the following characters :

1. Posterior margin of body regular, without denticulations.
2. Size of body smaller ( $180$  to  $210 \times 105$  to  $118$ , for  $207$  to  $219 \times 119$  to  $120$  in *P. crenulatus*).

3. Network on dorsum not confined to a median band, but extending laterally.
4. Solenidion of tarsus II relatively shorter (30, for 40-50 in *P. crenulatus*).

**FAMILY ACARIDAE**  
Genus *Psyllacarus* nov. gen.

*Definition :*

This genus is known only from the deutonymphal stage. It resembles superficially *Paraceroglyphus* FAIN & BEAUCOURNU, 1973, described from fleas, but differs from it by the following characters :

1. Epimera III widely separated in the midline (contiguous or close together in *Paraceroglyphus*).
2. Solenidion  $\omega 2$  approximately as long as  $\omega 1$  and  $\omega 3$  ( $\omega 2$  is lacking in *Paraceroglyphus*).
3. Tarsi I-II with a saucerlike seta, replacing a foliate seta (absent in *Paraceroglyphus*).

This new genus is more close to *Lackerbaueria* ZACHVATKIN, 1941, but however it is distinguished from it mainly by the shape of the epimera III and IV, which are free in this new genus while they are fused in the midline in *Lackerbaueria*. Other characters are the presence of only one long seta on tarsus IV (instead of 2 very long setae, 150 and 250 long respectively in *Lackerbaueria cribratissima* ZACH, 1911, the type species of this genus) and the absence of barbed setae on the legs (in *L. cribratissima* the tibial, genual and some tarsal setae are barbed).

*Type species :*

*Psyllacarus subellipticus* nov. spec.

***Psyllacarus subellipticus* nov. spec.**

*Hypopus*, holotype (figs. 7-13) :

Body ellipsoidal. Idiosoma 219 long and 153 wide. Length and width in 5 paratypes : 216 × 150; 225 × 165; 234 × 170; 240 × 180; 249 × 185. *Dorsum* covered by 2 finely punctate shields. Sejugal furrow well developed; the cuticle along the furrow bears incomplete transverse lines. A small snout is present and bears the *vi* setae. Orifices of oil glands situated between setae *h* and *l3*. Lengths of setae : *vi* 25; *ve*, *sc i* and *sc e* 9-10; hysteronotal setae 5 to 7, except *l5* which is 12 long. *Venter* : Sternum short. Epimera III fused to epimera IV forming closed coxal fields III widely separated in midline. At both sides a short sclerite starting from the coxal arch runs postero-internally but does not reach the midline. Suctorial plate 60 wide. Diameter of anterior suckers 7, of posterior suckers 12. Lateral conoids at the same level as the posterior suckers. Setae *cx I*, *cx III* and *gp* are conoids. Palposoma 18 long and 13 wide; solenidia *alpha* 30 long. The palposoma bears in addition 2 pairs of very thin setae. Lengths of tarsi I-IV : 28-25-15-18. Claws I-IV 12 long. Chaetotaxy of legs : Tarsi with 9-9-8-8 setae. Tarsus I and II with one saucerlike, 5 foliate and 3 simple setae. Tarsi III with 7

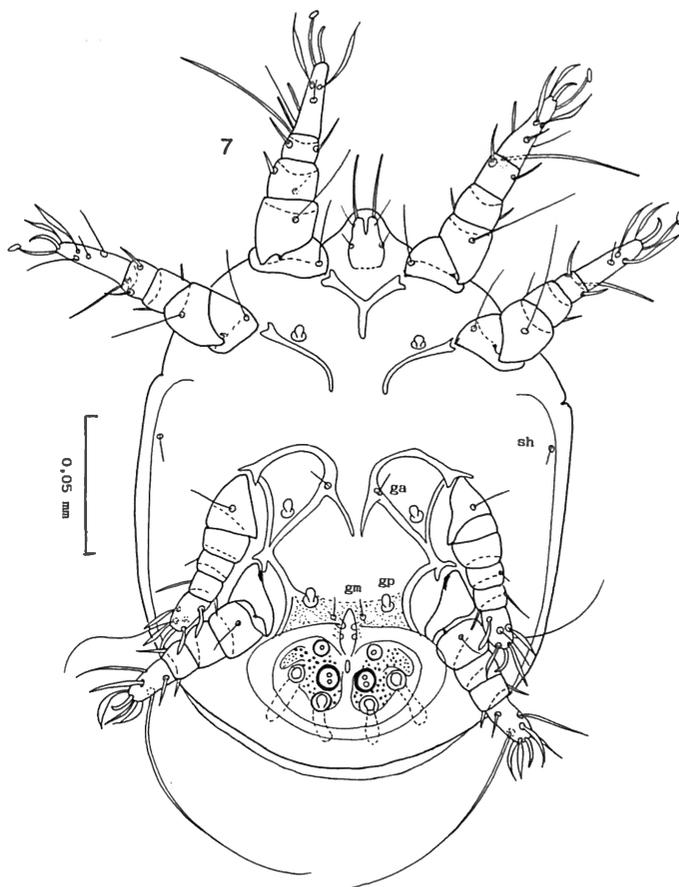


Fig. 7. *Psyllacarus subellipticus* n.sp. *Hypopus* in ventral view.

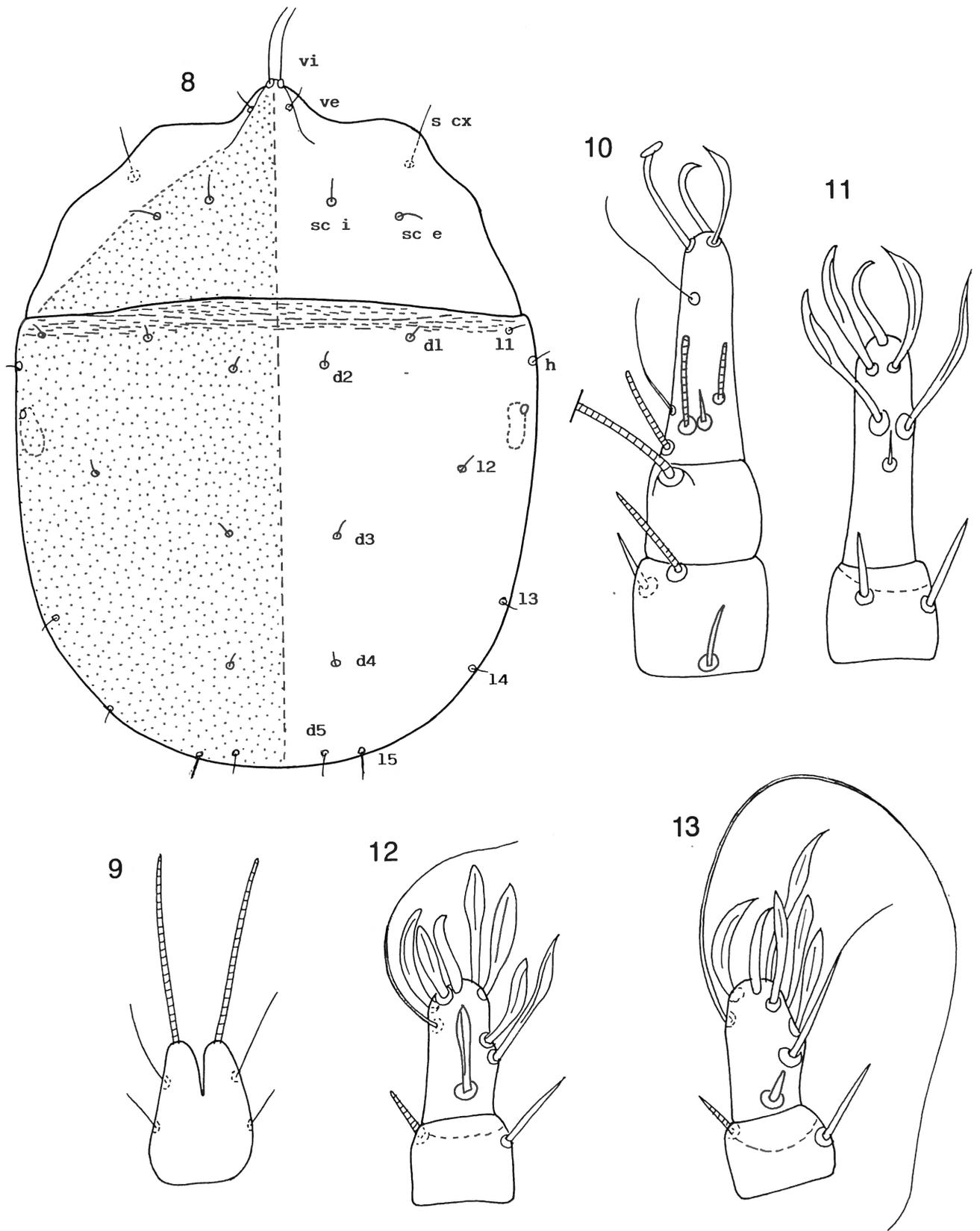
foliate setae and 1 simple seta 60 long. Tarsi IV with 1 simple seta about 25 long, 1 very long (120) simple seta, 1 short spine and 5 foliate setae. Tibiae with 2-2-1-1 thick, spinous setae. Solenidiotaxy : Tarsi I-IV with 3-1-0-0 solenidia. Tarsus I with  $\omega 1$ ,  $\omega 2$  and  $\omega 3$  well developed, subequal in length (12-13);  $\omega 1$  with apex slightly bulbous. Tibiae with one solenidion. Genua with 1-1-0-0 solenidia.

*Hosts and localities :*

*Holotype* hypopus from the flea *Macropsylla hercules* ROTHSCHILD, 1905 (♂), ex *Rattus lutreolus* (♂), from Anglesea, Victoria.

*Paratypes* : 13 hypopi with the same data as the holotype; 15 hypopi from the same flea species (♀) but from *Rattus fuscipes* (♀) near Anglesea; 11 hypopi from the flea *Bibikovana rainbowi* (♀) ex *Rattus fuscipes* (♀) near Anglesea; 28 hypopi from *Bibikovana rainbowi* (♂), ex *Rattus lutreolus* (♂) from Anglesea; 23 hypopi from *Bibikovana rainbowi* (♀) ex *Rattus fuscipes* (♀), near Forrest; one hypopus was found on *Acanthopsylla r. rothschildi* (♀) from *Rattus lutreolus* (♂), near Anglesea.

Holotype and 4 paratypes in Queensland Museum, South Brisbane; 2 paratypes in the British Museum, Natural History. All the other paratypes in the Institut royal des Sciences naturelles de Belgique.



Figs. 8-13. *Psyllacar subellipticus* n.sp. Hypopus in dorsal view (8); palposoma (9); apical segments of leg I in dorsal (10) and ventral (11) view; apical segments of legs III (12) and IV (13) in lateral view.

## References

- FAIN, A., 1977. *Notiopsyllops segermanae* g.n., sp.n. a new hypopus (Acarina : Acaridae), phoretic on an avian flea *Notiopsylla kerguelensis* (TASCHENBERG, 1880). *Bulletin et Annales de la Société royale belge d'Entomologie*, 113 : 32-35.
- FAIN, A. & BEAUCOURNU, J.C., 1973. Description de trois nouveaux hypopes d'Anoetidae phorétiques sur des puces de mammifères. *Acarologia*, 15 : 514-520.
- FAIN, A. & BEAUCOURNU, J.C., 1984. *Psylloglyphus crenulatus* sp.n. nouvel hypope (Acari, Saproglyphidae) phoretique sur une puce d'oiseau, *Notiopsylla kerguelensis* (TASCHENBERG, 1880). *Bulletin et Annales de la Société royale belge d'Entomologie*, 120 : 99-104.
- FAIN, A. & MASON, R.W., 1989. A new heteromorphic deutonymph (Acari, Winterschmidtiiidae) phoretic on the flea *Pygiopsylla hoplia* JORDAN and ROTHSCILD in Australia. *Australian entomological Magazine*, 16 : 43-46.
- ZACHVATKIN, A., 1941. Fauna of U.S.S.R. Arachnoidea. Vol. VI, n° 1 Tyroglyphoidea (Acari). *Zoological Institute of Academy of Sciences U.S.S.R.*, new. ser. 28, 474 pp. (In Russian).

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## Corrigenda

In our papers (FAIN, 1977 and FAIN & BEAUCOURNU, 1984, see above) we had assigned Marian or Mariannes Is. as the typical locality for both *Notiopsyllops segermanae* FAIN, 1977 and its host *Notiopsylla kerguelensis* TASCHENBERG, 1880. Actually the true locality for this species, and for its host, is Marion Island in the Subantarctic Region.