

INCABATES HAMMER AND SETINCABATES GEN. NOV. (ACARIDA: CRYPTOSTIGMATA: HAPLOZETIDAE) FROM SOUTH AUSTRALIAN SOILS

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Summary

LEE, D. C. (1993) *Incabates* and *Setincabates* gen. nov. (Acarida: Cryptostigmata: Haplozetidae) from South Australian soils. *Trans. R. Soc. S. Aust.* 117(2), 77-85, 4 June, 1993.

Incabates Hammer is commented on and an allied genus, *Setincabates* gen. nov., established. Three new species are described from South Australian soils: *I. macronudus* sp. nov., *I. punctatus* sp. nov. and *S. hypersetosus* sp. nov. (type). *I. angustus* Hammer, previously known from New Zealand, is newly recorded from Australia and *I. medius* Hammer is newly regarded as its junior synonym. A key is given for the adults of these four species. This is the first record of *Incabates* from Australia. An African species previously grouped in *Incabates* is newly combined as *Muliercula longisaccula* (Mahunka).

KEY WORDS: *Incabates angustus* Hammer, *Incabates macronudus* sp. nov., *Incabates punctatus* sp. nov., *Setincabates hypersetosus* gen. nov., sp. nov., Haplozetidae, Acarida, soils, South Australia.

Introduction

The genus *Incabates* Hammer, 1961 and a similar undescribed genus are examined as part of an ongoing study of sarcoptiform mites sampled from nine florally diverse South Australian sites, and for which Lee (1987) provided an introduction to the relevant work on the advanced oribatid mites. The relevant mites are from soil and plant litter or moss under either savannah woodland, sclerophyll forest, mallee or coastal vegetation at only four of the sites.

Incabates is grouped in Haplozetidae Grandjean, 1936, which has been discussed by Lee & Shepherd (1990) in considering *Magnobates* Hammer, 1967. Relationships between *Incabates*, the new genus and some other haplozetid genera are discussed. *I. angustus* Hammer, 1967 is newly recorded from Australia, and two new species of *Incabates* and the new genus together with one new species are described.

Material and Methods

New material examined here, collected by the author, is deposited mostly in the South Australian Museum (SAMA), but also in the Natural History Museum, London (BMNH), the Field Museum, Chicago (FMNH) and the New Zealand Arthropod Collection, Land Care Research, Auckland (NZAC), whilst previously described material is deposited in the Zoological Museum, Copenhagen (ZMC). The morphological notational system follows Lee (1987), the somal chaetotaxy of which is summarised in Figs

2 and 3, with the total setae present in each file (e.g. 6Z) indicated by number coming first, whilst a particular seta (e.g. Z6) would have the number last. The venter and legs have been described only for *Incabates punctatus* because of their uniformity within the genus. The abbreviations for zoogeographical regions follow Lee (1970, Fig. 427). Descriptions of eggs are based on those still within the female soma. All material was examined using a Nomarski interference contrast device. All measurements are in micrometres (μ m) and were made using an eyepiece micrometer at $\times 250$ magnification.

Key to Australian *Incabates* and *Setincabates* species (adults)

1. Thirteen pairs of hysteronotal setae. Hysteronotal foramen F3 sacculate without narrow duct *Setincabates hypersetosus* sp. nov.
Ten pairs of hysteronotal setae or alveoli. Hysteronotal foramen F3 sacculate with narrow duct *Incabates*.
2. Hysteronotal setae represented only by alveoli. Tutorium absent *I. macronudus* sp. nov.
At least one pair of hysteronotal setae present. Tutorium present 3.
3. Six posterior small hysteronotal setal pair present (J5, J6; Z5, Z6; S5, S6). Anterior soma punctate *I. punctatus* sp. nov.
One posterior small hysteronotal setal pair present (J6). Anterior soma not punctate *I. angustus* Hammer.

Systematics

Incabates Hammer

Incabates Hammer, 1961, p. 108 (type species by monotypy: *Incabates nudus* Hammer, 1961); Coetzee, 1968, p. 25; Balogh & Balogh, 1984, p. 274; Luxton, 1985, p. 67; Corpuz-Raros, 1980; 174.

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Definition: Haplozetidae. Hysteronotum with 10 pairs (2J, 6Z, 2S) of short setae, microsetae or alveoli without their setae. Hysteronotal foramina with saecule bag-like, either tapering gradually to pore or with short narrow duct near pore. Dorsosejugal furrow entire. Translamella and prelamella absent, costate or lineate tutorium (between setae j1-z2) sometimes present. Rostral seta (j1) directly in front of lamellar seta (z1). Pteromorph movable, with clear weakly sclerotized basal line. Discidium triangulate. Tibia I with large solenidium (so2) on tubercle. Tibia II without distodorsal spur. Genu I and II with two setae (v absent). Trochanter IV usually with distodorsal process extended over femur IV (exception: *Incabates augustus*), distodorsal crown with only anterior angulate lobe, broad flange extending along entire venter of caput. Pretarsus with three claws, slimmer lateral claws with pointed tip.

General Morphology of Australian species: Soma length range for adults: 239-445 (for all species 239-496). Soma chaetotaxy: 2j, 2z, 1s; 2J, 6Z, 2S; 3L, 1II, 3III, 3IV; 4JZg, 1Sg; 2JZa, 3Sa. Leg chaetotaxy (solenidia in parentheses): I - 1, 5, 2(1), 4(2), 20(2); II - 1, 5, 2(1), 4(1), 16(2); III - 2, 3, 1(1), 3(1), 15; IV - 1, 2, 2, 3(1), 12. Alveoli of soma setae bounded by refractile ring, canal short and tapering without internal refractile ring. Pteromorph may lie close to pleural surface or be lifted away from it. Sub-bothridial flange present. Apodemes I, II, ventrosejugal and III present. Ventrosejugal gap not wider than genital orifice. Subpedal and circumpedal ridges merged into single continuous line. Slit-like pore Saf nearly longitudinal (less than 45° from longitudinal axis). Proximoventral spur on femur I without caput collar. Conspicuous ventral flanges on femora II, III, and IV, on femur II margin curved, not angulate.

Distribution: Peru (NTc), Japan (Pc), Philippines (Om), Australia (Aa), New Zealand (An), Fiji (Ap). All species from outside South Australia are from moist localities, often in moss, either in high altitude grassland or in forest or mangroves, and are sometimes arboreal. In South Australia all three species were collected from the sclerophyll forest site, which has the highest rainfall (annual mean in the range of 1150-1200 mm, mostly in winter), but *Incabates punctatus* sp. nov. was also collected from the two mallee sites which are dry (mean annual rainfall in the range of 350-500 mm).

Remarks: *Incabates* was considered allied to *Protaribates* Berlese, 1908 when it was established. More recently it has been allied to *Scheloribates* Berlese, 1908 (Corpuz-Raros 1980; Luxton 1985), to which it is similar in having a triangulate discidium, hysteronotal sacculate foramina that gradually taper to a pore, and, for some species, in having no tutorium (in species with a tutorium, it only costate). In contrast, *Incabates* has a derived character state, a hinged rather

than a fixed pteromorph as in scheloribatid genera, on the basis of which, Coetzer (1968) suggested that *Incabates* should be transferred to the Haplozetidae Grandjean, 1936. Because *Incabates* also has a derived trochanter IV (the distoventral crown with only an anterior lobe that extends along entire venter of caput), and if there is a lateral proteronotal ridge it is a tutorium rather than a prelamella ridge, this grouping in the Haplozetidae is followed here.

In current classifications of the Oripodoidea, the Haplozetidae are not closely allied to the Protoribatidae Balogh & Balogh, 1984, because of the importance given to the former family having derived sacculate hysteronotal foramina, rather than multiporose foramina; but both *Incabates* and *Protoribates* have derived hinged pteromorphs. The significance of particular character states and so the accepted relationships amongst oripodoid taxa, may well change considerably. In this paper it is considered that, since *Incabates* shares some character states with most genera of the more primitive Scheloribatidae Grandjean, 1933, character states that are derived in many members of the Haplozetidae (the discidium is rectangular, the tutorium is conspicuously laminate and hysteronotal sacculate foramina often have narrow ducts leading to their pores), it is more primitive than *Magnobates* Hammer, 1967 and the genera closely allied to it (Lee & Shepherd 1990).

In distinguishing *Incabates* from other genera, the following scheloribatid genera must be considered: *Muliercula* Coetzer, 1968, *Nannerlia* Coetzer, 1968 and *Styloribates* Jacot, 1934. These three genera can be regarded as derived within the Scheloribatidae because of character states of the proteronotum and trochanter IV. In general, members of the Scheloribatidae fold leg I against the soma so that the tarsus points downwards behind seta j1, lying behind the prelamella ridge, also trochanter IV is simple, with the crown confined to the distal end. In contrast, haplozetids and the three scheloribatid genera listed above, have a tutorium or subtutorium rather than a complete prelamella and, when the leg is folded, tarsus I can point forward between setae z1-j1, whilst on trochanter IV, the crown extends as a broad flange along the entire venter of the caput. Therefore, these three scheloribatid genera are only distinguished from the haplozetid *Incabates* by having fixed pteromorphs, which is sometimes a difficult character state to assess. Further studies may require that these four genera are either grouped into a new family or that the Scheloribatidae and Haplozetidae are merged.

The naming of a species, that is very similar to the type species of *Muliercula*, as ?*Incabates longisaccus* illustrates this confusion. It is here combined as *Muliercula longisaccata* (Mahunka, 1984) comb. nov., despite its lack of a tutorium and the presence of a partial prelamellar. This is partly because these

character states are variable in *Incabates*, and therefore the presence of a tutorium may not be diagnostic of *Muliercula*, but it is mainly because the pteromorph is only partially delineated from the hysteronotum by a clear furrow as described for *Muliercula*, where it is regarded as fixed, although ambiguously described by Coetzer (1968) as "pteromorphae immovably hinged". Because of the similarity between *Incabates* and *Muliercula*, despite their grouping in separate families, only the more extensive wing-like expansions of the lamellae of *M. longisaccula* and its occurrence in Africa support the new grouping.

In comparison to other haplozetid genera such as *Haplozetes* Willmann, 1935 and *Magnobates* Hammer, 1967, *Incabates* is regarded as primitive in having a triangulate discidium, as on oribatid and scheloribatid adults. Similarly it has only two setae on genu I and the alveolar canal of the somal setae is short and simple.

Incabates includes seven species: *I. angustus* Hammer, 1967 (= *I. medius* Hammer, 1971, syn. nov.) from Australia (Aa), New Zealand (An) and Fiji (Ap); *I. macronudus* sp. nov. from Australia (Aa); *I. major* Aoki, 1970 from Japan (Pc); *I. nudus* Hammer, 1961 from Peru (NTc) and Philippines (Om); *I. pahubaeus* Corpuz-Raros, 1980, from Philippines (Om); *I. punctatus* sp. nov. from Australia (Aa); *I. striatus* Corpuz-Raros, 1980, from Philippines (Om).

Incabates angustus Hammer

Incabates angustus Hammer, 1967, p. 43, 44, Fig. 57, 57a.
Incabates medius Hammer, 1971, p. 42, Fig. 49, 49a, syn. nov.

Type material examined: *I. angustus*, lectotype ♀ (labelled "type" in vial of alcohol, three specimens recorded in original description) examined (ZMC), liverworts and small ferns, dead tree trunk, native forest, Waitakere National Park, North Island, New Zealand, M. Hammer, 1962. *I. medius*, lectotype ♀ (labelled type in vial of alcohol, two specimens recorded in original description) examined (ZMC), withered leaves, river bank, above mangroves, Corolevu, Vita Levu, Fiji Islands, M. Hammer, 1962.

Female: Soma oval, brown. Idiosomal length (original description from New Zealand: about 0.35 mm, from Fiji: about 0.305 mm), 335 (n = 1, New Zealand) or 318 (n = 25, Sclerophyll forest, 306-332). Leg lengths (femur-tarsus, Sclerophyll forest, for 320): I-142, II-127, III-108, IV-137. Tibial maximum heights (for 320): I-22, II-17, III-14, IV-14.

Protonotum with medium width rostrum. Integument smooth. Tutorium present, sometimes indistinct level with lamellar seta (z1). Sensory seta (z2) with globular caput longer than exposed stalk. Subbothridial flange inconspicuous. Posterior margin of bothridium raised to form tooth-like spur. Interlamellar

seta (j2) longer than distance j2 - z1. Hysteronotum with only one pair (J6) of noticeable small setae, nine pairs (J5, Z1-6, S5 and 6) of alveoli, possibly with small microsetae. Alveolus S5 posterior to Z5 (South Australian specimens) or anterior to Z5 (New Zealand specimens). Foramen F3 conspicuously larger and sometimes sacculus bilobed (South Australian specimens) or slightly larger, not bilobed (New Zealand specimens).

Idiosternal setae fine and short, coxite seta I3, III3 and IV3 (not illustrated as present by Hammer, 1967: Fig. 57a) longest. Integument smooth except for indistinct reticulations around ventroscapular apodeme and apodeme III. Discidium height less than 0.5 × height of pedotectum II, coxite seta IV3 near discidium base. Eggs subellipsoidal, exochorion smooth, mean size 151 × 72 (n = 7), length 48% of somal length, eggs per female - 1 (n = 3), or 2 (n = 2).

Legs short (median femur-tarsus length: 40% of somal length) with stout girth (mean maximum tibial height 50% of mean length). Trochanter IV anterior margin parallels posterior margin of femur IV caput, angulate distodorsally but without process extended over femur IV.

Male: Similar to female but idiosoma shorter, mean length, 293 (7, Sclerophyll forest, 283-303) or 319 (1, Savannah woodland).

Referred material: 12 females (SAMA N19911 - N19912), seven males (SAMA N19913 - N19919), plant litter, sparse moss and sandy soil, under sclerophyllous shrub amongst messmate stringybark (*Eucalyptus obliqua*), dry sclerophyll forest, near summit of Mt Lofty (34°59'S, 138°45'E), Cleland Conservation Park, 9.v.1974.

One male (SAMA N199120), grass, moss, plant litter and loamy soil, under manna gum trees (*Eucalyptus viminalis*), savannah woodland, Chambers Gully (34°58'S, 138°41'E), Cleland Conservation Park, 12.vi.1974.

Remarks: *Incabates angustus* was one of four species that have only a single pair of hysteronotal seta (J6), but one of the other three species, *I. medius* from Fiji, is here synonymised with it. The other two species, *I. striatus* with a striated integument and the stouter *I. nudus* with a much broader lamella, are easily distinguishable as separate species. The slim *I. angustus* and *I. medius* are very similar with the new material from South Australia having intermediate character states. *I. angustus* is 350 µm long, has hysteronotal seta S6 anterior to S5 and the interlamellar seta (j2) is about 0.75 × the length of the lamellar seta (z1). *I. medius* is 305 µm long, has hysteronotal seta S6 level with S5 and the interlamellar seta is about 0.5 × the length of the lamellar seta. The specimens from South Australia are similar in size to *I. medius*, have seta S6 posterior to S5, and the relative sizes of the interlamellar and lamellar setae are as *I. angustus*.

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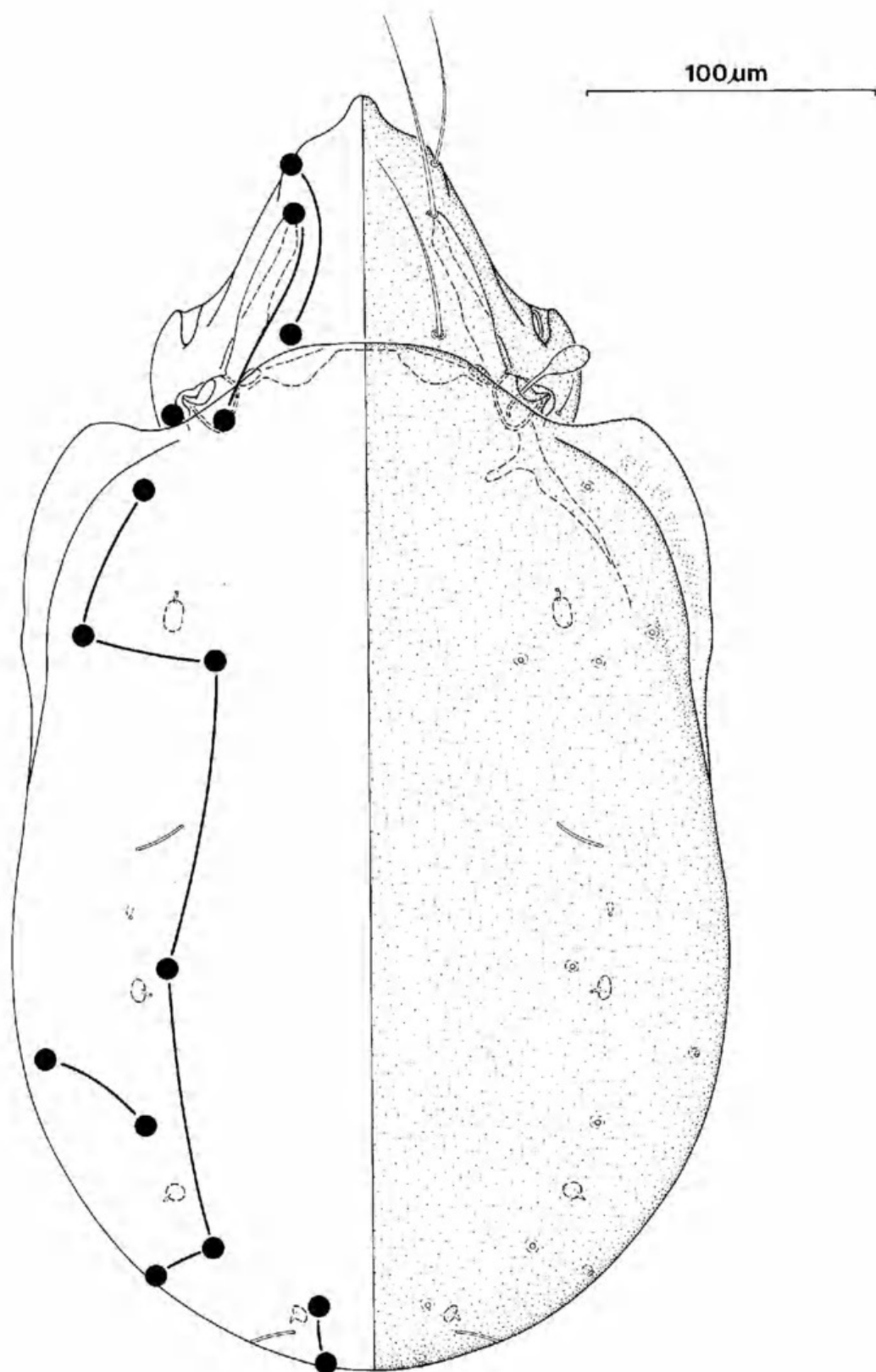


Fig. 1. *Incabates macronudus* sp. nov., female soma, notum.

These differences are here regarded as intraspecific variations within a species distributed across Australia, New Zealand and Fiji, and comparable with differences within *I. nudus* from Peru and the Philippines (Corpus-Raros 1980).

Incabates macronudus sp. nov.

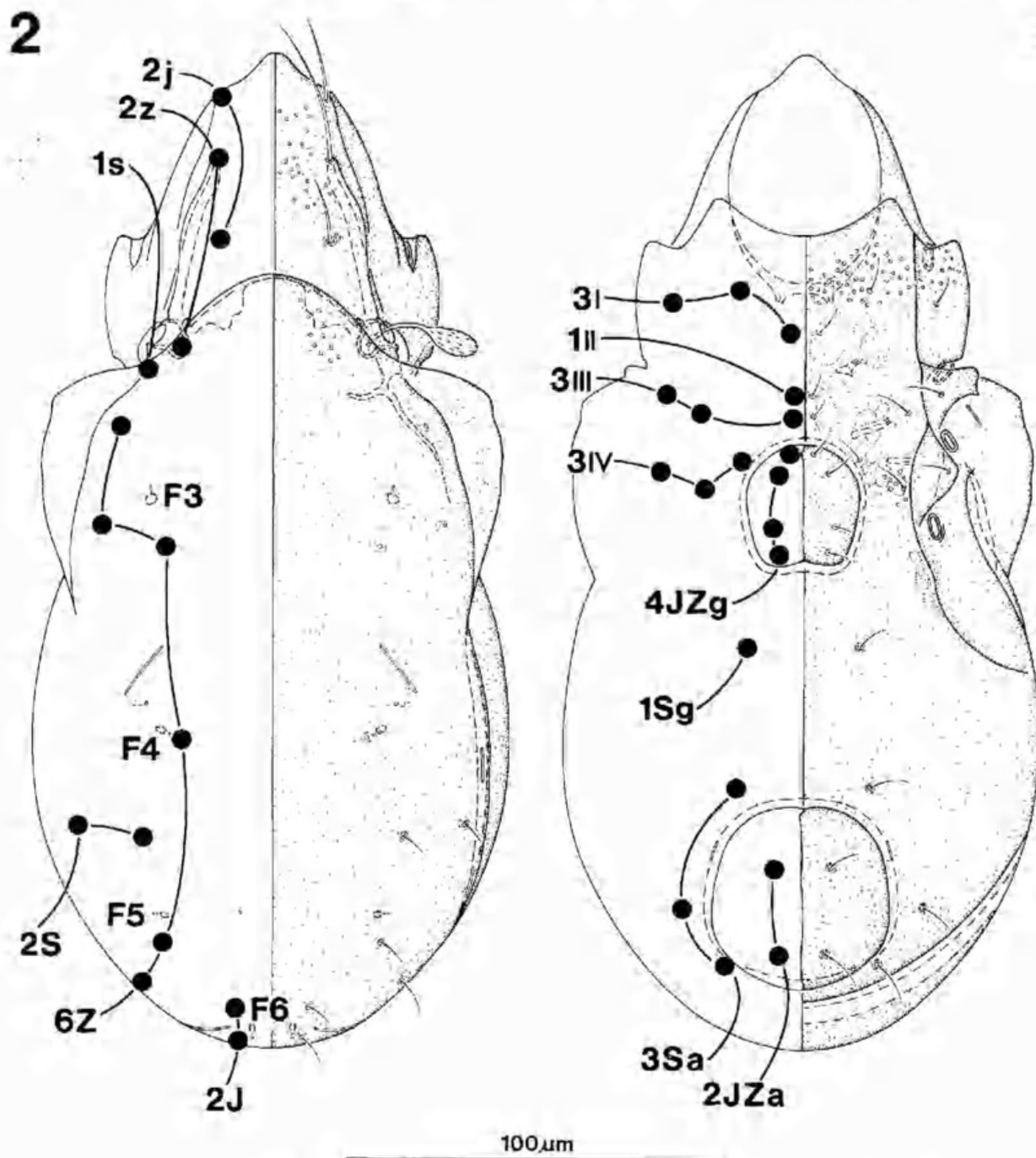
Type material

Holotype female (SAMA N199121), plant litter, sparse moss and sandy soil, under sclerophyllous shrub

amongst messmate stringybark (*Eucalyptus obliqua*), dry sclerophyll forest, near summit of Mt Lofty (34°59'S, 138°45'E), Cleland Conservation Park, 9.v.1974.

Female: Soma oblong, brown. Idiosomal length 446 ($n = 1$). Leg lengths (femur-tarsus for 446): I-178, II-163, III-142, IV-166. Tibial maximum heights (for 446): I-22, II-17, III-14, IV-14.

Proteronotum with narrow rostrum. Integument smooth. Sublamella obscured in dorsal aspect by laminar lamella. Tutorium absent. Sensory seta (z2)



Figs. 2, 3. *Incabates punctatus* sp. nov., female soma. 2, notum; 3, idiosternum

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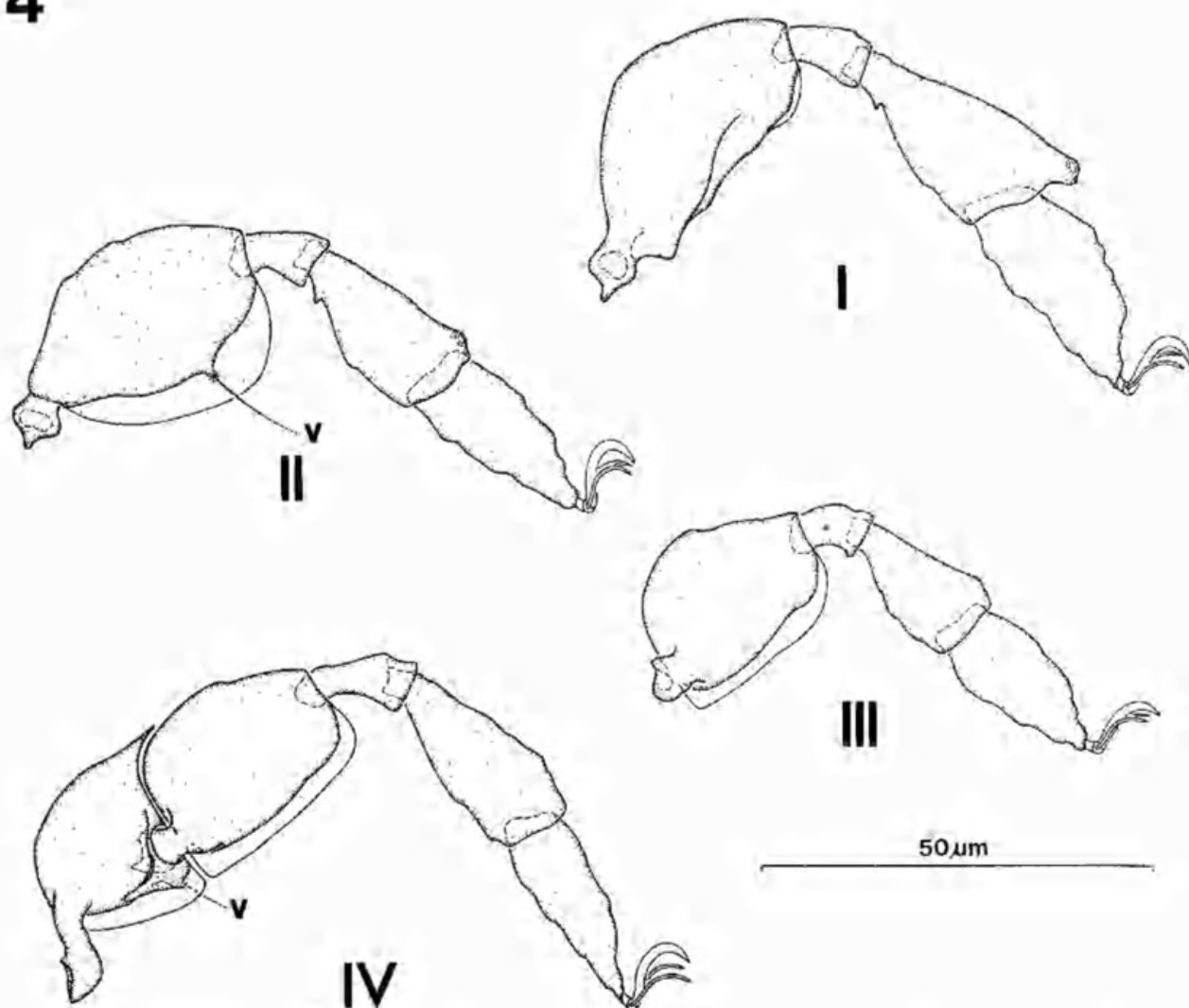


Fig. 4. *Incabates punctatus* sp. nov., female right legs I-IV, femur-pretarsus, also trochanter IV, posterior aspect. Only two setae illustrated (v = ventral).

clavate (caput may appear globular if viewed end on), caput subequal in length to exposed stalk. Subbothridial flange conspicuous. Posterior margin of bothridium raised to form tooth-like spur. Interlamellar seta (j_2) longer than distance j_2 - z_1 . Hysteronotum with no obvious setae. Alveoli form clear refractile rings, microseta recognised in Z2, may be present elsewhere. Extra alveolus between Z2 and Z3 on right side only. Foramina with conspicuously refractile sacculi, F3 oval and larger than other sacculi.

Idiosternal setae fine and short, setae I3 and Sal the longest, setae III3 and IV3 not located. Integument smooth except for indistinct reticulations around ventrosejugal apodeme and apodeme III. Genital seta JZg2 midway between JZg1 and JZg3, rather than closer to JZg1. Discidium height less than $0.5 \times$ height of pedotectum II, coxite seta IV3 not located. Egg

subellipsoidal, exochorion smooth, mean size 166×70 ($n = 4$), length 42% of somal length, four eggs in single female.

Legs short (median femur-tarsus length: 36% of somal length) with stout (mean maximum tibial height 39% of mean length). Trochanter IV with blunt process on angulate distodorsal margin which extends over femur IV.

Remarks: The name *macronudus* is from the Greek for 'large' and the Latin for 'naked' and refers to its body size and the absence of recognisable setae on the hysteronotum. *I. macronudus* is the only species known in *Incabates* with no easily observable hysteronotal seta (*I. nudus* has one pair) and with *I. major* it has a somal length greater than $440 \mu\text{m}$. Because there is only one specimen, it was not dissected, which may explain why some coxite setae (III3 and IV3) have not been located.

Incabates punctatus sp. nov.*Type material*

Types: Holotype female (SAMA N1987645), soil, plant litter and sparse moss under ridge-fruited mallee (*Eucalyptus incrassata*) clumps amongst broombush shrubs (*Melaleuca uncinata*), Ferries-McDonald Conservation Park (35°15'S, 139°09'E), 20.vi.1974. Paratypes, 45 females (SAMA N1987646 – N1987654, N199122 – N199142, five – BMNH, five – FMNH, five – NZAC) and 55 males (SAMA N1987655 – N1987671, N199143 – N199165, five – BMNH, five – FMNH, five – NZAC), as holotype.

Female: Soma oval, brown. Idiosomal length 259 (n = 25, Mallee broombush, 249–267), 257 (n = 2, Mallee heath, 256, 258) or 260 (n = 3, Sclerophyll forest, 252–267). Leg lengths (femur-tarsus, Mallee broombush, for 262): I-113, II-98, III-82, IV-105. Tibial maximum heights (for 262): I-16.5, II-13, III-11.5, IV-13.

Proteronotum with medium breadth rostrum. Integument punctate anterior to seta *f*₂. Sublamella mainly obscured in dorsal aspect by laminar lamella. Costate tutorium present. Sensory seta (*z*₂) clavate, caput subequal in length to exposed stalk. Subbothridial flange conspicuous. Posterior margin of bothridium raised to form small single or double tooth-like spur. Interlamellar seta (*f*₂) shorter than distance *f*₂–*z*₁. Hysteronotum without obvious setae anteriorly (*Z*₁, *Z*₂, *Z*₃, *Z*₄) but microsetae recognised for *Z*₁ and *Z*₂, whilst posterior small setae (*J*₅, *J*₆, *Z*₅, *Z*₆, *S*₅, *S*₆) present. Integument punctate anterior to pteromorphs. Foramina with conspicuously refractile saccule, *F*₃ spherical and larger than other saccules.

Idiosternal setae fine and short, variable relative lengths, but *I*₁, *I*₂, *J*₂*g*₃ always shortest. Integument with indistinct reticulate sculpturing and punctate in coxisternal region. Genital seta *J*₂*g*₂ closer to *J*₂*g*₁ than *J*₂*g*₃. Discidium height more than 0.5 × height of pedotectum II, coxite seta *I*₃ level with, and close to apex. Egg subellipsoidal, exochorion smooth, mean size 132 × 64 (n = 13), length 49% of somal length, usually one egg per female (n = 14), two eggs in single female.

Legs short (median femur-tarsus length: 38% of somal length) with very stout girth (mean maximum tibial height 51% of mean length). Trochanter IV with sharp process on angulate distodorsal margin which extends over femur IV.

Male: Similar to female but idiosomal shorter, mean length, 239 (25, Mallee broombush, 226–252), 249 (5, Mallee heath, 238–250), 251 (3, Coastal, 250–253) or 247 (3, Sclerophyll forest, 244–252).

Referred material: Three females (SAMA N1987672, N199174, N199175) and five males (SAMA N199176 – N199180), sand, plant litter, under Banksia shrubs (*Banksia ornata*), amongst other sclerophyllous shrubs and sparse brown stringybark mallee (*Eucalyptus*

bxteri), Tamboore Homestead (35°57'S, 140°29'E), or Mt Rescue Conservation Park, 4.vii.1974.

Three males (SAMA N199171 – N199173), soil, plant litter and sparse grass under coastal wattle (*Acacia tophorae*), Piccaninnie Ponds Conservation Park (38°03'S, 140°57'E), 3.vii.1974.

Three females (SAMA N199166 – N199168), two males (SAMA N199169, N199170), plant litter, sparse moss and sandy soil, under sclerophyllous shrub amongst messmate stringybark (*Eucalyptus obliqua*), dry sclerophyll forest, near summit of Mt Lofty (34°59'S, 138°45'E), Cleland Conservation Park, 9.v.1974.

Remarks: The name *punctatus* is from the Latin for 'dotted' and refers to what may be small pits on anterior parts of the soma, which are more extensive than in other species. Also *I. punctatus* is unique within the genus in lacking four anterior pairs of hysteronotal setae (microsetae may be present), whilst the posterior six pairs have small setae, that are relatively long for *Incabates*. *I. pahabaeus* Corpus-Raros, 1980 is similar but without such a clear difference in size between the two groups of setae. Also, on *I. pahabaeus*, the interlamellar setae are much longer and the hysteronotal slit-shaped pore *h*₃ is short and not as long as seta *J*₆.

Genus Setincabates gen. nov.

Type-species: *Setincabates hypersetosus* sp. nov.

Definition: Haplozetidae. Hysteronotum with 13 pairs (4*J*, 6*Z*, 3*S*) of medium-sized setose setae. Hysteronotal foramina with saccule bag-like, gradually tapering to pore. Dorsosejugal furrow entire. Translamella, prelamella and tutorium absent. Rostral seta (*r*₁) directly in front of lamellar seta (*z*₁). Pteromorph movable, with clear weakly sclerotized basal line. Discidium triangulate. Tibia I with large solenidium (*so*₂) on tubercle. Tibia II without distodorsal spur. Genus I and II with two setae (*v* absent). Trochanter IV with distodorsal process extended over femur IV, distodorsal crown with only anterior angulate lobe, broad flange extending along entire venter of caput. Pretarsus with three claws, slimmer lateral claws with pointed tip.

Distribution: Australia (Aa). Only record from South Australia, at site which amongst those sampled has the highest rainfall.

Remarks: The name *Setincabates* has the prefix *Set*, an abbreviation of the Latin seta for 'bristle or hair', and refers to the presence of more hysteronotal setae on the single included species than on members of the similar *Incabates* and other haplozetine genera with short or medium-sized setae. The haplozetine *Flagellabates* Mahunka, 1978 with long hysteronotal setae has 14 pairs of hysteronotal setae. Some other subfamilies included in Haplozetidae by Balogh & Balogh (1984) have similarly numerous hysteronotal

setae. Members of the Peloribatinae, all of which have long hysteronotal setae, have either 14 pairs or, in *Acutozetes* Balogh, 1970, 13 pairs of hysteronotal setae (possessing six not five setae in file *J*). The only other haplozetid species with more than 10 pairs of hysteronotal setae are members of the *Pilobates* Balogh, 1960 (Pilobatinae) with 14 pairs and six pairs of genital setae and a straight, transverse complete ventrosejugal apodeme and one species of *Rostrozetes* Sellnick, 1925 (Rostrozetinae) with 14 pairs and a short fissure-like pore *h*/3 similar in length to the hysteronotal foramina. The character states of *Setincabates* recognised here as distinguishing it from *Incabates* are probably primitive.

Setincabates hypersetosus sp. nov.

Type material

Types: Holotype female (SAMA N199181), plant litter, sparse moss and sandy soil, under sclerophyllous shrub amongst messmate stringybark (*Eucalyptus obliqua*), dry sclerophyll forest, near summit of Mt Lofty (34°59'S, 138°45'E), Cleland Conservation Park, 9.v.1974. Paratypes, 21 females (SAM N199182 – N199196, two – BMNH, two – FMNH, two – NZAC) and 21 males (SAM N199197 – N1991111, two BMNH, two – FMNH, two – NZAC), as holotype.

Female: Soma oval, brown. Idiosomal length 264 (22, 254–275). Leg lengths (femur-tarsus for 267): I-122, II-104, III-86, IV-110. Tibial maximum heights (for 267): I-19, II-13, III-13, IV-14.

Proteronotum with broad rostrum. Integument smooth except for punctuations on gnathosternum between postoral setae. Sublamella mainly obscured in dorsal aspect by laminar lamella. Tutorium not present, although short ridge present around base of rostral setae (*j*1). Sensory seta (*z*2) clavate, with long ellipsoidal caput more than twice length of exposed stalk. Sub-bothridial flange conspicuous. Posterior margin of bothridium rounded without tooth-like spur. Interlamellar seta (*j*2) about $\times 2$ distance *j*2-*z*1. Hysteronotum with 14 pairs of small setae (*5J*, *6Z*, *3S*). Foramina with small oval refractile sacculle without parallel sided duct, all similar in size.

Idiosternal setae fine and short, peripheral setae longer, *I*2 and *JZa*3 longest. Integument with indistinct reticulate sculpturing in coxisternal region. Genital seta *JZg*2 closer to *JZg*1 than *JZg*3. Discidium height less than $0.5 \times$ height of pedotectum II, coxite seta *IV*3 near, but posterior to apex. Egg subellipsoidal, exochorion smooth, mean size 132×65 ($n = 4$), length 49% of somal length, one egg per female.

Legs short (median femur-tarsus length: 40% of somal length) with very short girth (mean maximum tibial height 54% of mean length). Trochanter IV with short sharp process on angulate distodorsal margin which just extends over femur IV.

Male: Similar to female but idiosoma shorter, mean length, 239 (21, 244–285).

Remarks: The name *hypersetosus* is the Latin for 'bristly' or 'setose' with the Greek prefix for 'beyond' or 'over' and refers to the unusually extensive hysteronotal setation compared with members of genera similar to *Setincabates*.

5

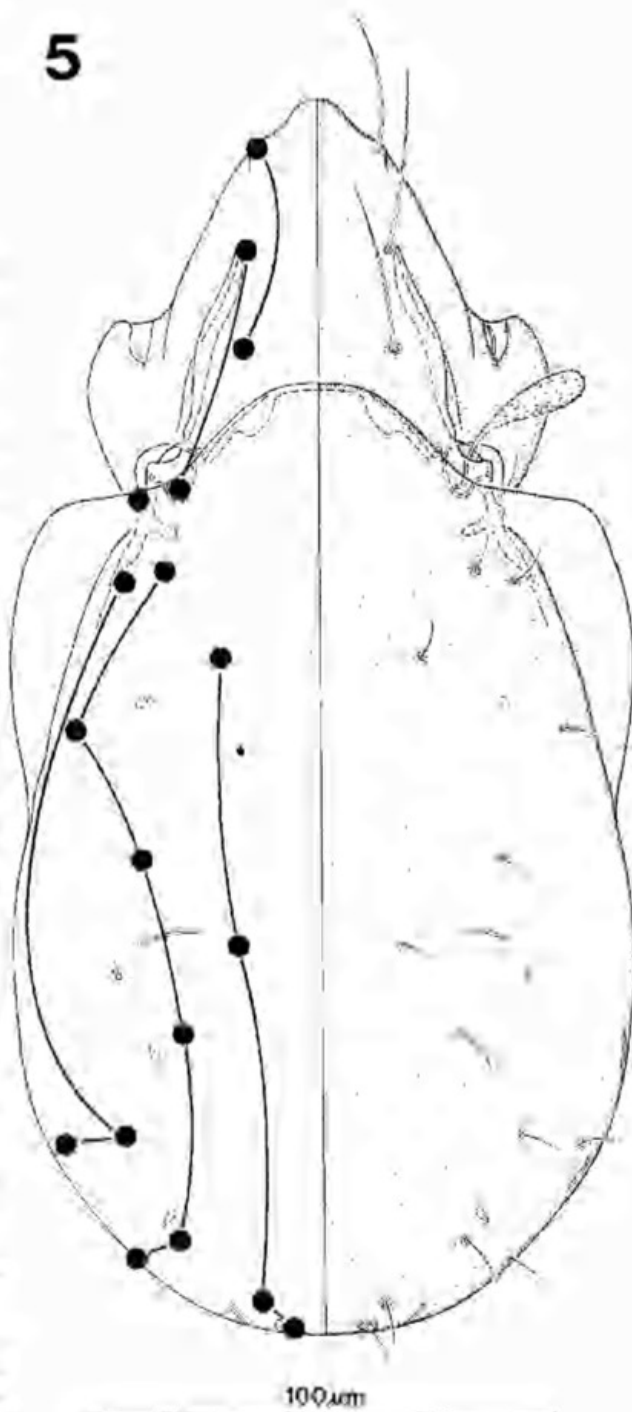


Fig. 5. *Setincabates hypersetosus* gen. & sp. nov., female soma, notum.

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References

- AOKI, J. (1970) Description of Oribatids Mites collected by smoking of trees with insecticides. I. Mt Ishizuchi and Mt Odaigatara. *Bull. natn. Sci. Mus., Tokyo* **13**, 585-602.
- BALOGH, J. (1960) Descriptions complementaires d'Oribates (Acari) d'Angola et du Congo Belge. *Publ. cult. Co. Diam. Ang. Lisboa* **51**, 89-105.
- (1970) New oribatids (Acari) from New Guinea. II. *Acta zool. hung.* **16**, 291-344.
- & BALOGH, P. (1984) Review of the Oribatulioidea Thor, 1929 (Acari: Oribatei). *Acta zool. hung.* **30**, 257-313.
- BERLESE, A. (1908) Elenco di generi e specie nuovi. *Redia* **5**, 1-15.
- COETZER, A. (1968) New Oribatulidae Thor, 1929 (Oribatei, Acari) from South Africa, new combinations and a key to the genera of the family. *Mems Inst. Invest. cient. Mocamb., Sér. A*, **9**, 15-126.
- CORPUZ-RAROS, L. A. (1980) Philippine Oribatei (Acarina) V. *Scheloribates* Berlese and related genera (Oribatulidae). *Kalikasan, Phil. J. Biol.* **9**, 169-245.
- GRANDJEAN, F. (1933) Études sur le développement des Oribates. *Bull. Soc. zool. Fr.* **58**, 30-61.
- (1936) Observations sur les Oribates (10e serie). *Bull. Mus. natn Hist. natur., Paris* (2) **8**, 246-253.
- HAMMER, M. (1961) Investigations on the oribatid fauna of the Andes Mountains, Part II. Peru. *Biol. Skr.* **13**, 1-157, 43 pls.
- (1967) Investigations on the oribatid fauna of New Zealand, Part II. *Ibid.* **20**, 1-70, 40 pls.
- (1971) On some oribatids from Viti Levu, the Fiji Islands. *Ibid.* **16**, 1-60, 35 pls.
- JACOT, A. P. (1934) Some Hawaiian Oribatoidea (Acarina). *Bull. Bernice P. Bishop Mus.* **121**, 1-99, 16 pls.
- LEE, D. C. (1970) The Rhodacaridae (Acari: Mesostigmata); classification, external morphology and distribution of genera. *Rec. S. Aust. Mus.* **16**, 1-219.
- (1987) Introductory study of advanced oribatid mites (Acarida: Cryptostigmata: Planofissurae) and a redescription of the only valid species of *Constrictobates* (Oripodoidea). *Ibid.* **16**, 35-42.
- & SHEPHERD, K. J. (1990) *Magnobates* (Acarida: Cryptostigmata: Haplozetidae) from South Australian soils. *Trans. R. Soc. S. Aust.* **114**, 179-186.
- LUXTON, M. (1985) Cryptostigmata (Arachnida: Acari) — a concise review. *Fauna N.Z.* **7**, 1-106.
- MAHUNKA, S. (1978) Neue und interessante Milben aus dem Genfer Museum XXXIV. A compendium of the Oribatid (Acari) Fauna of Mauritius, Reunion and the Seychelles Is. II. *Revue suisse Zool.* **90**, 709-724.
- (1984) Oribatids of the Eastern Part of the Ethiopian Region (Acari). V. *Acta zool. hung.* **30**, 87-136.
- WILLMANN, C. (1935) Faunistisch-ökologische Untersuchungen im Anningergebiet IV. Die Milbenfauna. I. Oribatei. *Zool. Jb. Syst.* **66**, 331-344.



1993. "Incabates Hammer and Setincabates gen. nov. (Acarida: Cryptostigmata: Haplozetidae) from South Australian soils." *Transactions of the Royal Society of South Australia, Incorporated* 117, 77–85.

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