

NEW SPECIES OF WATER MITES FROM NEW GUINEA (ACARI: HYDRACHNIDIA, HALACARIDAE)

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ABSTRACT — The following new species are described from the Indonesia part of New Guinea: *Oxus litoralis*, *O. reticulatus*, *Limnesia longiseta*, *L. papuensis*, *L. pseudopatens*, *Procorticacarus minutus*, *Australiobates hyalinus*, *A. setosus*, *A. sylvestris* and *Arrenurus basegensis*. The following new species are reported for the fauna of New Guinea, i.e. *Limnochares australica* Cook, 1986, *Oxus orientalis* Walter, 1915, *Litarachna denhami* (Lohmann, 1909) and *Rhombognathus scutulatus* Bartsch, 1983. *Piona piersigi* (Daday, 1900) is redescribed.

KEYWORDS — water mites; Hydrachnidia; Halacaridae; new species; New Guinea

INTRODUCTION

Although the first paper on the water mites of New Guinea was published by Daday as early as 1901, it took more than eighty years before the second publication appeared. Imamura (1983) described two new species from Papua New Guinea. Oudemans (1905) described a new *Limnesia* species from New Guinea, but the (larval) specimen did not belong to the Hydrachnidia. The most comprehensive study was published by Wiles (1997b); he reported 75 species, while four genera (*Eylais*, *Hydrachna*, *Hydrodroma* and *Monatractides*) were not elaborated upon. Together with the publication of Smit (1996) from Waigeo, the total number of known species from New Guinea now stands at 79.

In March 2010 I made a collecting trip to Papua province (Indonesia), and visited the coastal area between Jayapura and Sentani, the surroundings of Wamena (including Pass Valley), the Nipsan district

in the central mountain range and Lake Habbema. A few specimens from other parts of New Guinea will be treated in this paper as well. Water mites of the genus *Monatractides* Viets are published in a separate paper (Pešić and Smit 2011). In this paper the remaining water mite genera will be treated.

MATERIALS AND METHODS

All but two specimens presented here were collected in Papua province, New Guinea, Indonesia. This is not explicitly stated for each species in the text of this paper, except for the new species described. All material was collected by the author, unless stated otherwise. Coordinates were obtained with a GPS. Numbers are given as males/females/deutonymphs or as adults/deutonymphs. The following abbreviations have been used: PI-PV = palp segment 1-5; I-leg-4-6 = fourth-sixth segments of first leg, BMNH = Nat-

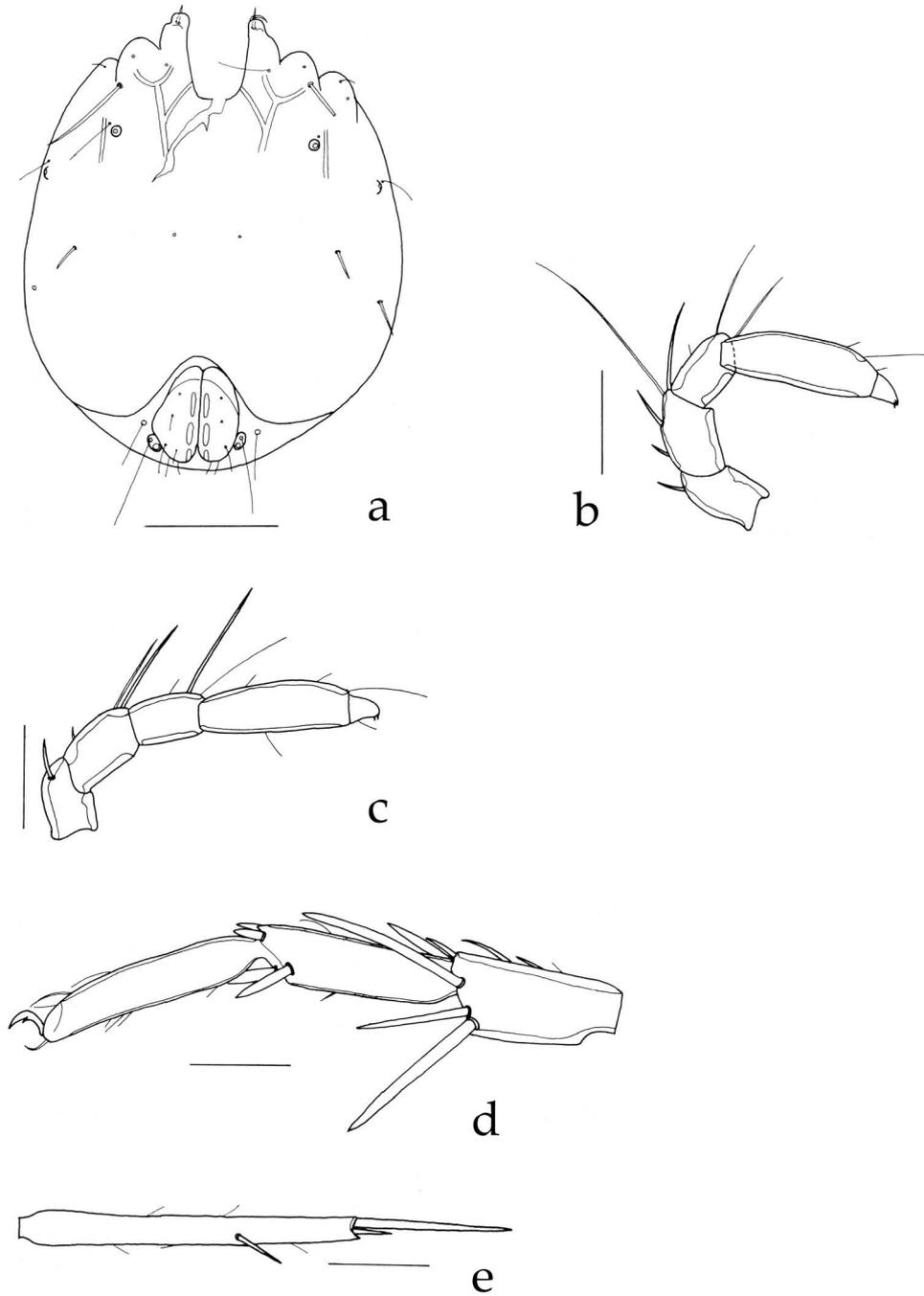


FIGURE 1: *Oxus litoralis* n. sp., holotype female: a – ventral view (Scale bar = 200 μ m); b – palp (Scale bar = 50 μ m); c – palp (Scale bar = 50 μ m); d – I-leg-4-6 (Scale bar = 50 μ m); e – IV-leg-6 (Scale bar = 50 μ m).

ural History Museum, London. All material will be lodged in the Netherlands Centre for Biodiversity Naturalis, Leiden. Measurements of paratypes are given in brackets. All measurements are in μm , measurements of palp and leg segments are of the dorsal margins.

SYSTEMATICS

FAMILY LIMNOCHARIDAE GRUBE, 1859

Genus *Limnochares* Latreille, 1796

Limnochares (Cyclothrix) australica Lundblad, 1941

Material examined — 4/0, Pool Kampung Loa, Nipsan district, 4°07.835' S; 139°38.285' E, alt. 1663 m a.s.l., 20-iii-2010; 25/0, Pool Kampung Ajamhe, Nipsan district, 4°06.799' S; 139°39.230' E, alt. 1670 m a.s.l., 22-iii-2010.

Remarks — The specimens from New Guinea are provisionally assigned to *L. australica*, as adults are difficult to identify. Variation in size and shape of legs segments, as well as genital field is large, and adults of the Indian *L. crinita* Koenike, 1898 cannot be distinguished from *L. australica* (Lundblad 1947, Cook 1967). However, based on larval morphology, Martin and Smit (2002) showed that the two are separate species. I collected at both pools water skaters (Insecta: Gerridae), but none were parasitized. Research on the larval morphology is needed to elucidate the status of this species from New Guinea. New for the fauna of New Guinea.

FAMILY OXIDAE K. VIETS, 1926

The genera *Oxus* and *Frontipoda* have been synonymized by Besch (1964), which is followed by Di Sabatino et al. (2009). Oxidae are a cosmopolitan family.

Genus *Oxus* Kramer, 1877

Thus far only two species have been reported from New Guinea (Wiles 1997b).

Oxus litoralis n. sp.
(Figure 1)

Material examined — Holotype female, Pandanus marsh Base G beach, Jayapura, Papua province, New Guinea, Indonesia, 2°31.445' S; 140°44.503' E, 30-iii-2010. Paratype female, same data as holotype.

Diagnosis — Coxal field with two pairs of glandularia, PI and PIV relatively long, PV stocky.

Description — Idiosoma 810 (729) long and 527 (486) wide. Coxal field confined to ventral part of idiosoma, leaving a wide dorsal, soft area; this dorsal area without sclerites. Dorsal glandularia and associated seta on same small sclerite. Tip of first coxal plates with a pair of slender, curved setae and a pair of straight setae. Coxal field with two pairs of acetabula (sensu Cook 1986)(Figure 1a). Genital field 140 long, with three pairs of acetabula. Excretory pore not sclerotized. Lengths of PI-PV: 27, 42, 38, 78, 16. PI and PIV relatively long, PV stocky (Figures 1b-1c). Lengths of I-leg-4-6: 78, 100, 110 (Figure 1d). Lengths of IV-leg-4-6: 108, 154, 164; distal seta of IV-leg-6 80 long (Figure 1e). Second, third and fourth legs with numerous swimming setae.

Etymology — Named for the type locality being situated along the coast.

Remarks — Four Australasian *Oxus* species have the coxal field with two pairs of glandularia (sensu Cook 1986), i.e. *O. australicus* Lundblad, 1947, *O. meridianus* Lundblad, 1947, *O. rosalindae* Wiles, 1997 and *O. tenuipes* Lundblad, 1947. The first three species have a stocky PIV, the latter has a similar long PIV but PI of the new species is much longer.

Oxus orientalis Walter, 1915

Material examined — 14/10, pool along road to Baliem Valley Resort, 4°04.070' S; 138°59.876' E, alt. 1662 m a.s.l., 25-iii-2010.

Description — Female: Lengths of PI-PV: 62, 68, 64, 97, 28. Lengths of I-leg-4-6: 138, 186, 156. Lengths of IV-leg-4-6: 224, 290, 306; distal seta of IV-leg-6 120.

Remarks — The specimens from New Guinea are morphologically similar to the specimens from New Caledonia and Australia, but differ in dimensions of palp and leg segments. Most dimensions of the specimens from New Guinea are larger, but

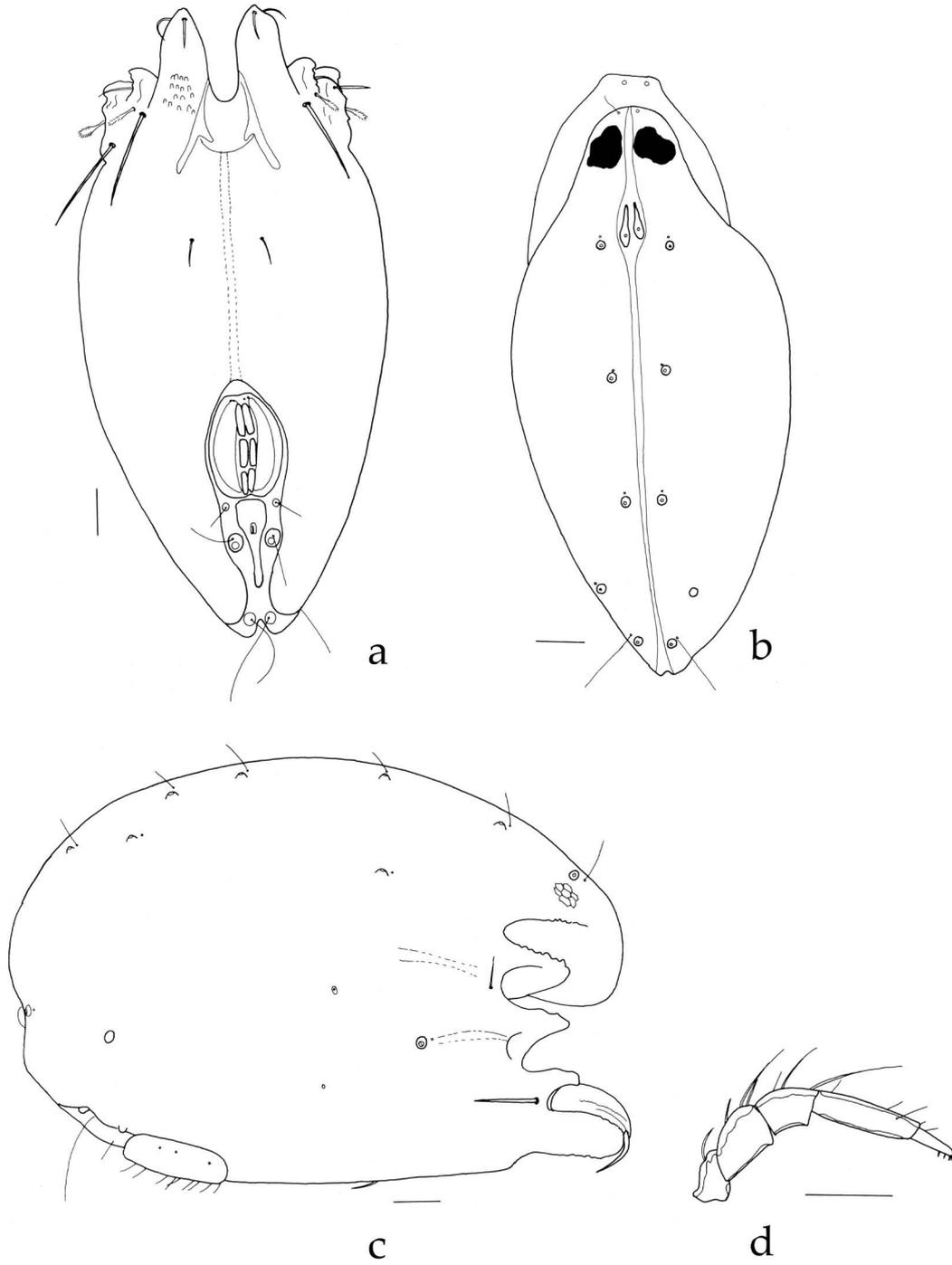


FIGURE 2: *Oxus reticulatus* n.sp., holotype male: a – ventral view; b – dorsal view; c – lateral view; d – palp. (Scale bar = 50 μ m).

length of IV-leg-5 is intermediate between specimens from New Caledonia and Australia. As there is much variation in lengths of leg segments (Cook 1986), I assigned the specimens from New Guinea to *O. orientalis*. There are two more species known with only one pair of glandularia on the coxal field (sensu Cook 1986), i.e. *O. pictus* (Daday, 1898) from India and *O. dahli* Piersig, 1903 from the Bismarck Archipelago and Aru Islands. Both species have a very shallow genital bay compared to *O. orientalis*. New for the fauna of New Guinea.

Oxus reticulatus n. sp.
(Figure 2)

Material examined — Holotype male, unnamed creek, forest near UNCEN, Abepura, 2°34.794' S; 140°39.292' E, alt. 234 m a.s.l., 31-iii-2010. Paratypes: one male, one female, same data as holotype.

Diagnosis — Coxae with a reticulate pattern; excretory pore on a long platelet; median strip without glandularia.

Description — Male: Idiosoma laterally compressed, 680 (616) long, 308 wide and 456 (429) high. Coxae expanded and occupying most of idiosoma except a narrow median dorsal strip (Figure 2b); this dorsal strip without glandularia but with a pair of postocularia on elongated platelets. Tip of first coxal plates with a pair of long, stout setae (Figure 2a). Coxal plates with a distinct reticulate pattern, especially visible anteriorly, in ventral view appearing scaly. Second and third coxal plates with a distinct pinnate setae. Eleven pairs of glandularia (sensu Cook 1986) incorporated in the expanded coxal area (Figure 2c). Coxae ventrally without a distinct suture line. Genital field with three pairs of acetabula, 110 long and 82 wide. Excretory pore on an elongated platelet. Length of PI-PV: 32, 32, 38, 60, 26; PIV slender (Figure 2d). Length of I-Leg-4-6: 80, 84, 82. Length of IV-leg-4-6: 80, 80, 122; distal seta of IV-leg-6 80 long. Claws without a comb. Second, third and fourth legs with numerous swimming setae.

Female: Idiosoma 689 long and 417 wide (width not measured). Morphology as in male. Genital

field 108 long. Lengths of PI-PV: 28, 34, 38, 60, 28; palp as in male. Lengths of I-leg-5-6: 80, 87. Lengths of IV-leg-4-6: 76, 116, 122; distal seta of IV-leg-6 72 long. Legs as in male.

Etymology — Named for the reticulated pattern on the coxal area.

Remarks — The combination of coxae with a reticulate pattern, excretory pore on an elongated platelet and a dorsal median strip without glandularia is characteristic for the new species. A number of Australian species and one species from New Guinea have the excretory pore on a platelet (i.e. *O. grenada* (Cook, 1986), *O. tasmanica* (Cook, 1986), *O. neotasmanica* (Cook, 1986), *O. zunova* (Cook, 1986) and *Oxus michellae* (Wiles, 1997)), but in none of these species this platelet is elongated, while the reticulate pattern is absent.

Oxus rosalingae Wiles, 1997

Material examined — 0/0/1, *Sphagnum*-pool near Lake Habbema, 4°08.039' S; 138°41.735' E, alt. 3353 m a.s.l., 26-iii-2010.

Remarks — The nymph agrees well with the description of Wiles (1997b), who described the species from Lake Habbema itself. It has IV-leg-6 with a very long distal seta, and the stout setae of I-leg-4 are also long.

FAMILY PONTARACHNIDAE KOENIKE,
1910

Genus *Litarachna* Walter, 1925

Litarachna denhami (Lohmann, 1909)

Material examined — 7/7/0, Marine littoral, Base G beach, Jayapura, 2°31.352 S; 140°44.544 E, 30-iii-2010.

Remarks — A widespread species, known from Australia (Western Australia), the Red Sea, South Africa, South Korea and India (K. Viets 1959, Wiles et al. 2002, Smit 2003, Pešić et al. 2008, 2009). The shape of palp of the specimens from New Guinea is similar to those of Australia, its dimensions are intermediate between specimens from the Red Sea

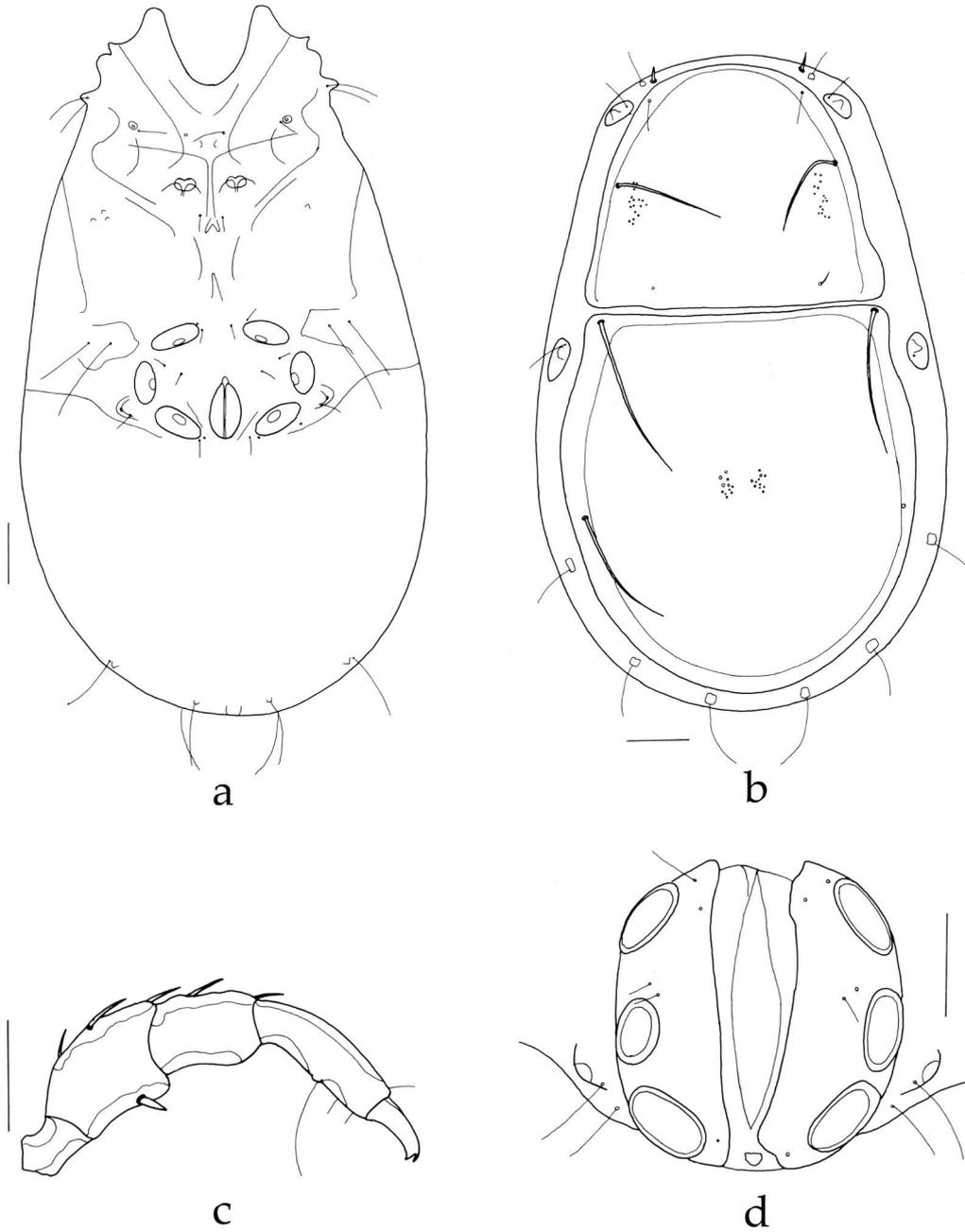


FIGURE 3: *Limnesia longiseta* n. sp., holotype male: a – ventral view; b – dorsal view; b – palp; c – genital field. Scale bar = 50 μ m.

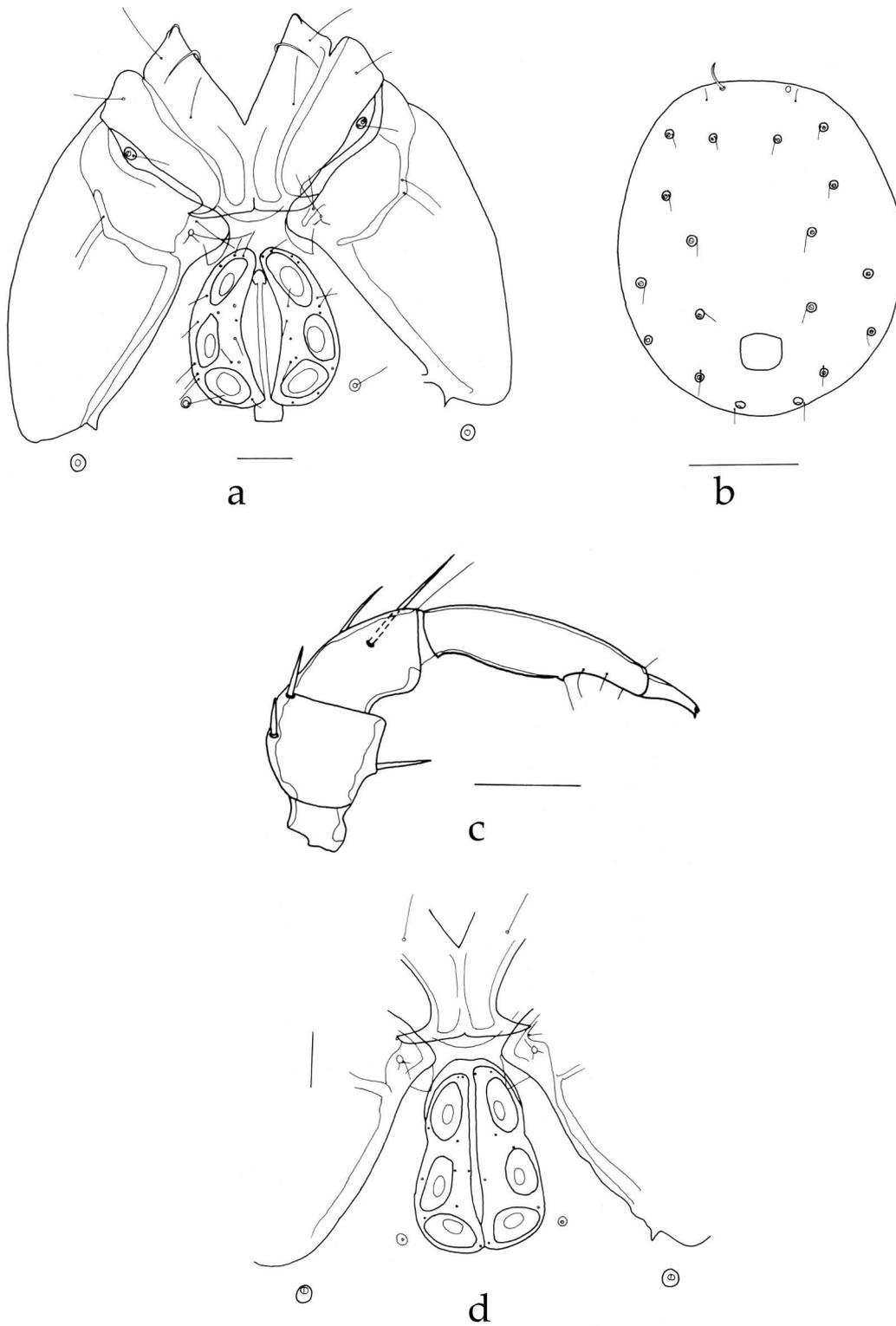


FIGURE 4: *Limnesia papuensis* n. sp., holotype male: a – ventral view; b – dorsal view; c – palp; d – ventral view. Scale bar = 50 μ m.

and Australia. PI-PV of a male from this study measure 18, 80, 36, 97, 44. New for the fauna of New Guinea.

FAMILY LIMNESIIDAE THOR, 1900

Genus *Limnesia* Koch, 1836

Limnesia (Limnesia) baderi (Imamura, 1983)

Material examined — 2/1/0, River Pos 7, Sentani, 2°33.740' S; 140°30.784' E, alt. 103 m a.s.l., 9-iii-2010; 1/1/0, River Yabawi, upstream of Harapan, 2°34.216' S; 140°33.723' E, alt. 120 m a.s.l., 28-iii-2010; 5/2/0, River Kamp Walker, near UNCEN, Abepura, 2°34.202' S; 140°38.886' E, alt. 144 m a.s.l., 31-iii-2010.

Remarks — A hyporheic species (Imamura 1983), found in gravel deposits of streams. Thus far only reported from Papua New Guinea.

Limnesia (Limnesia) longiseta n. sp.
(Figure 3)

Material examined — Holotype male, Bion River, upstream, Pass Valley, Papua province, New Guinea, Indonesia, 3°51.513' S; 139°05.570' E, alt. 2007 m a.s.l., 15-iii-2010. Paratype: one female, same data as holotype.

Diagnosis — Dorsal setae very long; acetabula elongated, lying in an arc in the male.

Description — Male: Idiosoma dorsally 530 long and 328 wide, pear-shaped, colourless to pale-yellow. Dorsum with two large plates, anterior plate 188 long and 244 wide, posterior plate 296 long and 284 wide, each plate with two pairs of setae. Posterior plate with two pairs of very long setae, anterior plate with only posterior pair very long (Figure 3b). Suture lines of coxae indistinct. Posterior part of ventrum sclerotized. Glandula *Limnesiae* in the middle of third coxae, associated setae posterior of these glandularia (Figure 3a). Genital field fused with ventrum, with three pairs of acetabula lying in an arc; gonopore 52 long. Acetabula elongated, anterior acetabulum 40 long and 16 wide. Lengths of PI-PV: 15, 70, 44, 72, 30. Ventral

margin of PII with an anteriorly placed stout seta, ventral margin of PIV with two short setae and one long seta on a small tubercle (Figure 3c). Lengths of I-leg-4-6: 72, 88, 64. Lengths of IV-leg-4-6: 84, 102, 76; IV-leg-6 with a distal setae, 58 long. Claws of first, second and third legs large with a small clawlet, without claw blade. Legs without swimming setae.

Female: Idiosoma dorsally 583 long and 354 wide, ventrally 648 long. Dorsum with two large plates, anterior plate 218 long and 258 wide, posterior plate 340 long and 308 wide. Anterior plate with three pairs of setae, middle pair enlarged. Posterior plate with two pairs of enlarged setae. Female in many aspects similar to male, only differing in size and genital field. Genital field with three pairs of acetabula lying on the genital flaps (Figure 3d). Acetabula elongated, anterior acetabulum 42 long and 18 wide. Lengths of PI-PV: 18, 70, 60, 82, 38; palp as in male. Lengths of I-leg-4-6: 82, 92, 80. Lengths of IV-leg-4-6: 80, 96, 100; IV-leg-6 with a distal seta 42 long. Legs as in male.

Etymology — Named for the long dorsal setae.

Remarks — The new species is close to *Limnesia baderi*, but differs in size (the male of *L. baderi* is dorsally 429 long), the long setae (short in *L. baderi*) and the acetabula are elongated (rounded in *L. baderi*) and are lying in an arc (behind each other).

Limnesia (Limnesia) papuensis n. sp.
(Figure 4)

Material examined — Holotype male, unnamed creek, UNCEN forest, Abepura, Papua province, New Guinea, Indonesia, 2°34.925' S; 140°39.173' E, alt. 177 m a.s.l., 31-iii-2010. Paratypes: 8/4/0, same data as holotype; 2/3/0, unnamed creek UNCEN forest, Abepura, Papua province, New Guinea, Indonesia, 2°34.794' S; 140°39.292' E, alt. 234 m a.s.l., 31-iii-2010.

Diagnosis — First coxae fused, ventral margin of PII with a long seta on a small tubercle, posterior ventral seta of PIV on a small tubercle, IV-leg-6 without distal seta.

Description — Male: Idiosoma lineated, 624 (470 – 672) long and 526 (377 – 502) wide. Dorsally with

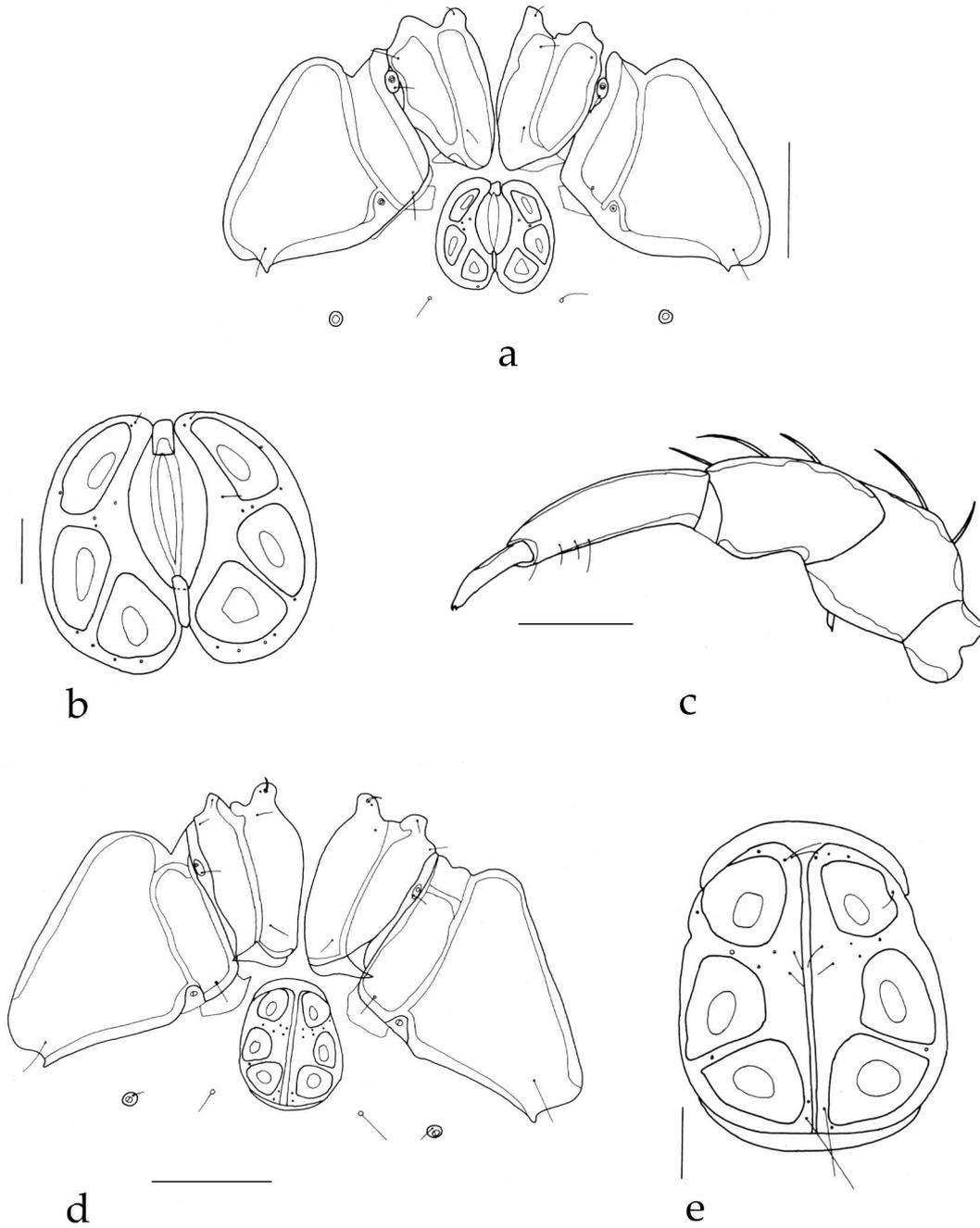


FIGURE 5: *Limnesia pseudopatens* n. sp.. Holotype male: a – ventral view (Scale bar = 200 μm); b – genital field (Scale bar = 50 μm); c – palp (Scale bar = 50 μm). Paratype female: d – ventral view (Scale bar = 200 μm); e – genital field (Scale bar = 50 μm).

a posterior, slightly rectangular to rounded platelet (Figure 4b), 80 (55 – 74) long and 68 (70 – 82) wide. Idiosoma colour yellowish, coxae light reddish. Gnathosomal bay V-shaped. First coxae fused medially. Anterior coxae with short apodemes, third coxae with short secondary sclerotization. Glandula Limnesiae located on third coxae, associated setae close to Glandula Limnesiae (Figure 4a). Genital field 144 long and 136 wide with three pairs of acetabula. Genital flaps bean-shaped; pre- and post-genital sclerite small, the latter largest. Lengths of PI-PV: 16, 51, 71, 112, 32. Ventral margin of PII with an anteriorly directed seta on a very small tubercle; most anterior seta of ventral margin of PIV on a small tubercle (Figure 4c). Lengths of I-leg-4-6: 88, 98, 92. Lengths of IV-leg-4-6: 130, 136, 142; IV-leg-6 without a distal seta. First, second and third legs with a claw with clawlet and without claw blade. Third and fourth legs with numerous swimming setae. Excretory pore smooth.

Female: Idiosoma lineated, 656 (535 – 770) long and 498 (462 – 599) wide. Dorsally with a posterior, slightly rectangular to rounded platelet, 71 (64 – 72) long and 74 (70 – 74) wide. Coxal field as in male. Genital field pear-shaped with three pairs of acetabula (Figure 4d), 174 long and 116 wide. Lengths of PI-PV: 22, 74, 70, 114, 32; palp as in male. Lengths of I-leg-4-6: 88, 94, 92. Lengths of IV-leg-4-6: 134, 130, 142; IV-leg-6 without distal seta. Legs as in male. Excretory pore smooth.

Etymology — Named for its occurrence in Papua province.

Remarks — The new species is close to *L. buruensis* Viets, 1923 and *L. argelooi* Smit, 1996, but differs in having the first coxae fused medially (lying close to each other but not fused in *L. buruensis* and *L. argelooi*), the Glandula Limnesiae are located in the middle of the third coxae (similar in *L. argelooi* but in posteromedial corner in *L. buruensis*). Moreover, PIV of *L. buruensis* is more slender, while both *L. argelooi* and *L. buruensis* lack the small setal tubercle of PIV.

Limnesia (Limnesia) pseudopatens n. sp.
(Figure 5)

Material examined — Holotype male, brown forest pool, along road Yoka – outlet Lake Sentani, Papua province, New Guinea, Indonesia, 2°40.737' S; 140°36.230' E, alt. 104 m a.s.l., 29-iii-2010. Paratypes: 3/4/4, same data as holotype.

Diagnosis — Ventral margin of PII with a broad, posteriorly directed stout seta, which is contracted at its tip.

Description — Male: Idiosoma 1327 (1166 – 1286) long and 1025 (1075 – 1166) wide, colour of chitinous parts and legs lilac. Dorsal platelets absent. First coxal plates not fused medially. Glandula Limnesiae lying in an indentation between third and fourth coxal plates, associated setae in the middle of third coxal plates, near medial margin. Anterior coxal plates with short apodemes, third coxal plates medially with secondary sclerotization (Figure 5a). Genital field bean-shaped, with three pairs of acetabula, acetabula large and occupying most area of genital field (Figure 5b). Genital field 186 long and 211 wide. Pre-genital sclerite short, post-genital sclerite more elongate. Lengths of PI-PV: 18, 72, 80, 90, 44. Ventral margin of PII straight, with a broad, distally contracted seta, this seta directed posteriorly. PIV anteriorly with four setae near ventral margin, PV narrow (Figure 5c). I-leg-4-6: 122, 154, 138. Lengths of IV-leg-4-6: 219, 206, 178; IV-leg-6 with a long, distal seta (88 long, pinnate at tip) and four shorter pinnate setae. Third and fourth legs with numerous swimming setae. Excretory pore not sclerotized.

Female: Idiosoma soft, 1286 (1206 – 1668) long and 1029 (965 – 1407) wide, colour of chitinous parts and legs lilac. Dorsal platelets absent. First coxal plates not fused medially. Glandula Limnesiae lying in an indentation between third and fourth coxal plates, associated setae in the middle of third coxal plates, near medial margin. Anterior coxal plates with short apodemes, third coxal plates medially with secondary sclerotization (Figure 5d). Genital field with three pairs of acetabula, acetabula large and occupying most area of genital field (Figure 5e). Prae- and post-genital sclerites long and narrow. Lengths of PI-PV: 14, 72, 87, 94, 42. Ventral margin of PII straight, with a broad, distally contracted seta, this seta directed posteriorly. PIV with

two setae, and more anteriorly two small setae lying close to each other, PV narrow. Lengths of I-leg-4-6: 126, 162, 122. Lengths of IV-leg-4-6: 259, 239, 202; IV-leg-6 with a distal seta, 101 long. Third and fourth legs with numerous swimming setae. Excretory pore not sclerotized.

Deutonymph: Idiosoma 595 – 868 long and 486 – 656 wide. As adult, with provisional genital field with two fused pairs of acetabula. Ventral margin of PII without seta.

Etymology — Named for its similarity with *Limnesia patens* Viets, 1935.

Remarks — The new species is very close to *Limnesia patens* from Java (Viets 1935) and India (Cook 1967), and differs only in the shape of the palp. The stout seta of the ventral margin of PII is broad and contracted distally in the new species, while in *L. patens* it is not contracted. Moreover, the longest dorsal setae of PII is longer in *L. patens* (length 56 in female, 42 in *L. pseudopatens*), while PIV is much stronger bowed in *L. patens*. Another very similar species is *Limnesia szalayii* Viets, 1955 from northern Australia. The latter species has a dorsal platelet, while PIV is more narrowed distally.

FAMILY HYGROBATIDAE KOCH, 1842

Hygrobates hamatus K. Viets, 1935

Material examined — 7/16/2, unnamed creek, UNCEN forest, Abepura, 2°34.925' S; 140°39.173' E, alt. 177 m a.s.l., 31-iii-2010; 1/2/0, unnamed creek UNCEN forest, Abepura, 2°34.794' S; 140°39.292' E, alt. 234 m a.s.l., 31-iii-2010.

Remarks — A widespread species, known from India (Cook 1967), Java and Sumatra (K. Viets 1935) and Australia (Cook 1986). Reported by Wiles (1997) from Papua New Guinea and Papua province (Irian Jaya), Indonesia).

Genus *Procorticacarus* K.O. Viets, 1978

Members of the genus *Procorticacarus* from Australia were initially described as a subgenus of *Corticacarus* Lundblad, 1936. The subgenus *Procorticacarus*, to which all Australasian species belong,

was raised to a full genus by Harvey (1998). The genus *Procorticacarus* is only known from the Australasian region, with 22 species reported from Australia (Harvey 1998, Smit 2001), and nine from New Guinea (Wiles 1990, 1994).

Procorticacarus aureatus (Wiles, 1990)

Material examined — 0/1/0, Mulun stream, Pass Valley, 3°51.599' S; 139°05.876' E, alt. 1970 m a.s.l., 12-iii-2010; 0/1/0, Bion River, upstream, Pass Valley, 3°51.294' S; 139°05.733' E, alt. 1962 m a.s.l., 15-iii-2010; 1/0/0, Bion River, upstream, Pass Valley, 3°51.513' S; 139°05.570' E, alt. 2007 m a.s.l., 15-iii-2010.

Remarks — Previously reported from Papua New Guinea and Papua province ("Irian Jaya"), Indonesia (Wiles 1990, 1994).

Procorticacarus irelandi (Wiles, 1994)

Material examined — 1/0/0, Musaik stream, Pass Valley, 3°50.912' S; 139°05.775' E, alt. 2010 m a.s.l., 12-iii-2010; 0/4/0, Unnamed creek crossing road to Pass Valley, 3°52.629' S; 139°04.684' E, alt. 2264 m a.s.l., 13-iii-2010; 1/0/0, Wanggolem stream, Pass Valley, 3°50.883' S; 139°08.229' E, alt. 2025 m a.s.l., 16-iii-2010; 1/1/0, unnamed creek UNCEN forest, Abepura, 2°34.794' S; 140°39.292' E, alt. 234 m a.s.l., 31-iii-2010.

Remarks — Previously reported from Papua New Guinea and Papua province ("Irian Jaya") by Wiles (1994).

Procorticacarus kingi (Wiles, 1991) (Figure 6)

Material examined — 0/1 (juvenile)/0, Bion River, Pass Valley, 3°51.267' S; 139°05.789' E, alt. 1955 m a.s.l., 11-iii-2010.

Remarks — Previously reported from Papua New Guinea (Wiles, 1991, 1994). The female specimen from Papua province has a differently shaped pre-genital sclerite (Figure 6). Moreover, the dorsal plates are more angular and with less interspace. However, the specimen is juvenile, and differences may be related to this.

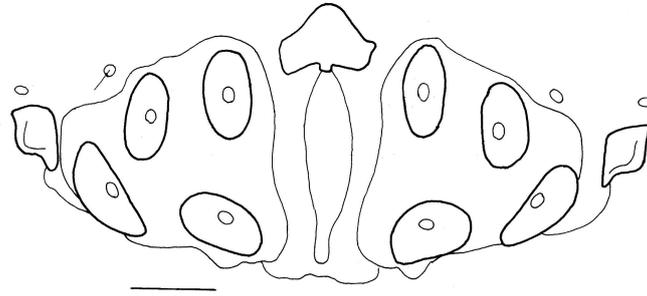


FIGURE 6: *Procorticacarus kingi* Wiles, female, genital field.

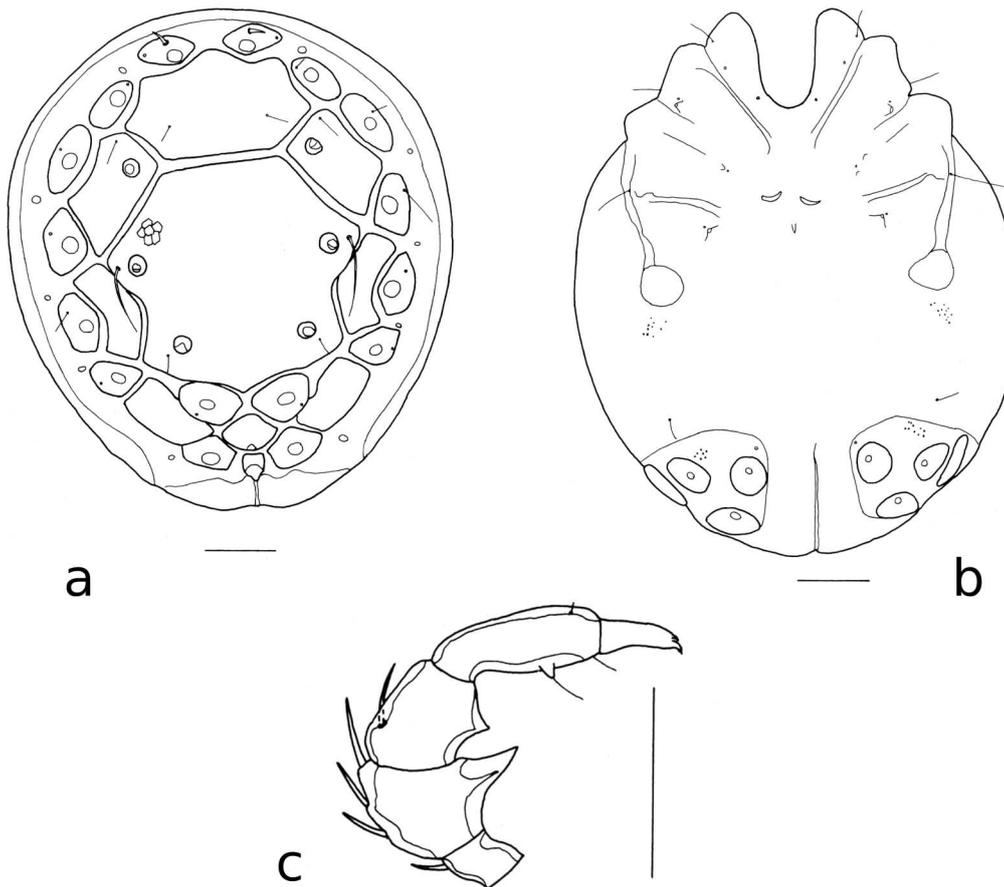


FIGURE 7: *Procorticacarus minutus* n. sp., holotype female: a – dorsal view; b – ventral view; c – palp. Scale bar = 50 μ m.

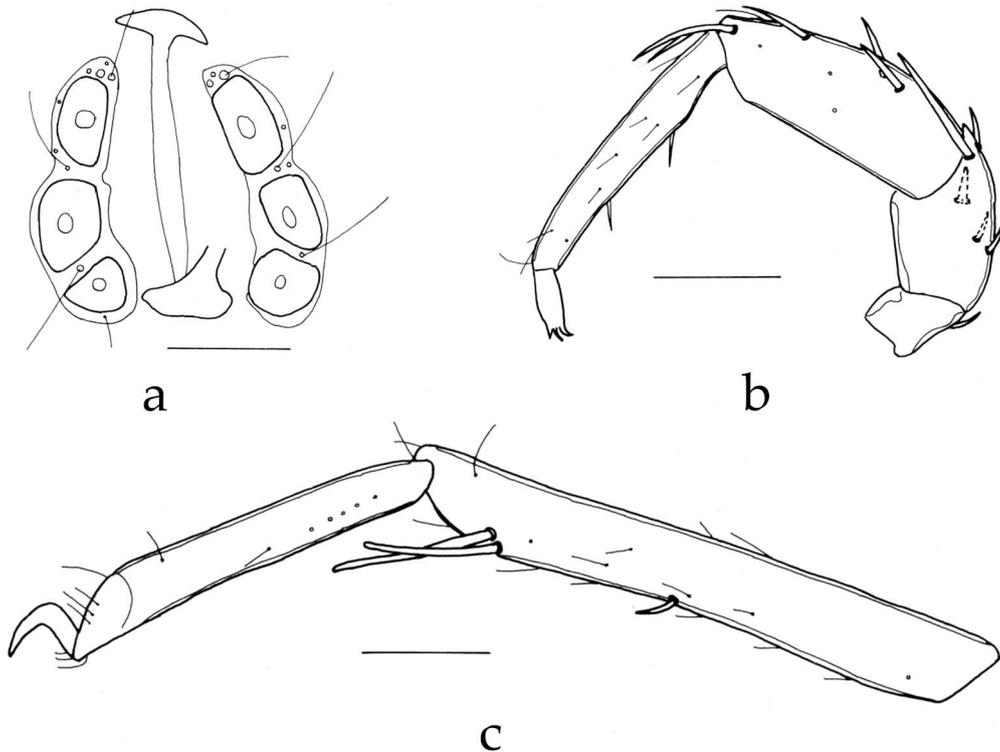


FIGURE 8: *Australiobates bruijini* Wiles, female: a – genital field; b – palp; c – I-leg-5-6. Scale bar = 50 μ m.

Procorticacarus minutus n. sp.
(Figure 7)

Material examined — Holotype female, Unnamed creek crossing road to Pass Valley, Papua province, New Guinea, Indonesia, 3°52.849' S; 139°04.194' E, alt. 2253 m a.s.l., 13-iii-2010. Paratype: female, Unnamed creek crossing road to Pass Valley, Papua province, New Guinea, Indonesia, 3°52.629' S; 139°04.684' E, alt. 2264 m a.s.l., 13-iii-2010.

Diagnosis — Small species, with a characteristic configuration of dorsal plates and platelets: two large plates flanked by ten pairs of smaller plates. Posterior large plate flanked by a pair of curved plates.

Description — Female: Idiosoma dorsally 348 (324) long and 308 (283) wide, ventrally 373 (373) long. Idiosoma soft, finely lineated ventrally. Dorsum with two large plates, flanked by ten pairs

of smaller plates, anteriorly a pair of preocular platelets, posteriorly a single excretory plate (Figure 7a). Posterior large plate with a reticulate pattern, flanked by a pair of curved plates. Associated setae of large posterior plate long. First coxal plates extending beyond anterior idiosoma margin. Suture lines of coxal plates obliterated. Coxoglandularia 4 located on fourth coxal plates, close to suture lines of third and fourth coxal plates (Figure 7b). Genital plates with four acetabula, one of these lying more posterolaterally and can, therefore, not be seen completely in ventral view. Lengths of PI-PV: 15, 31, 32, 44, 22; PII ventrally with a large extension, PIII ventrally with a small tooth, PII and PIII without ventral denticles; PIV ventrally with a small setal tubercle (Figure 7c). Lengths of I-leg-4-6: 48, 50, 46. Lengths of IV-leg-4-6: 74, 78, 68. Legs without swimming setae. The holotype females has two large eggs, 198 in diameter. Male: Unknown.

Etymology — Named for its small size.

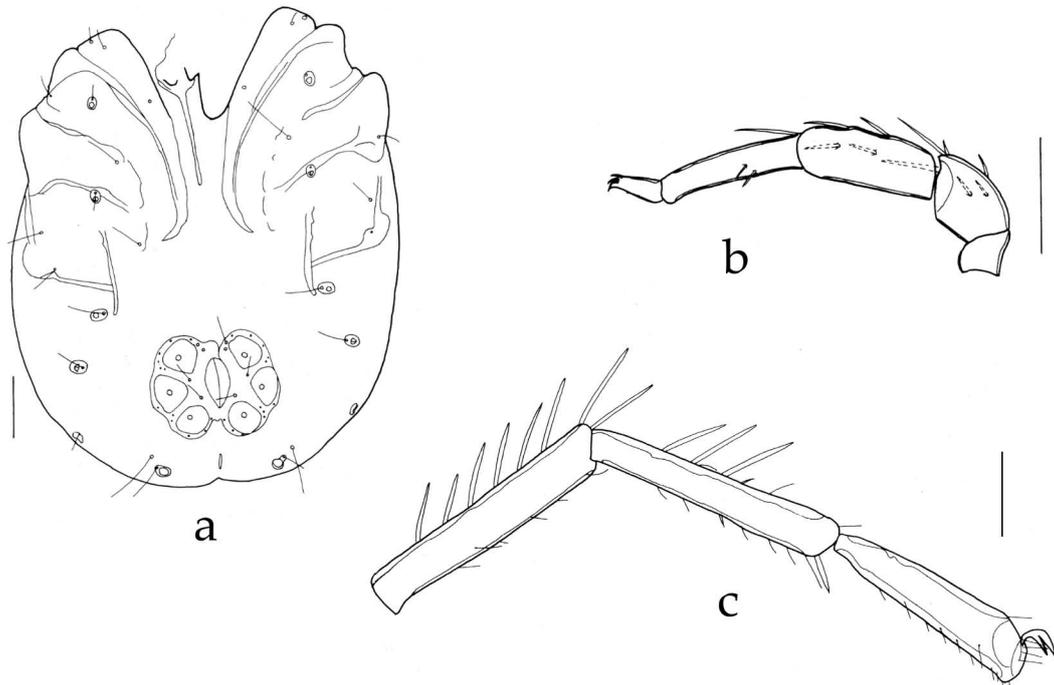


FIGURE 9: *Australiobates hyalinus* n. sp., holotype male: a – ventral view; b – palp; c – IV-leg-4-6. Scale bar = 50 μ m.

Remarks — The new species is well characterized by the configuration of the dorsal plates and platelets. The absence of ventral denticles of PII and PIII is rare within the genus, only shared by the Australian *P. angulicoxalis* (K.O. Viets, 1978).

Genus *Australiobates* Lundblad, 1941

The genus *Australiobates* has a Gondwanan distribution, known from Australia (19 species), New Zealand (four species), South Africa (one species) and South America (seven species). From New Guinea nine species are known (Wiles 1997a).

Australiobates (Australiobates) archboldi Wiles, 1997

Material examined — 10/10/0, River Pos 7, Sentani, 2°33.740 S 140°30.784 E, alt. 103 m a.s.l., 9-iii-2010; 5/5/2, Uwe River, Wamena, 4°06.521' S; 138°56.310' E, alt. 1668 m a.s.l., 24-iii-2010; 0/1/0, River Yabawi, upstream of Harapan, 2°34.216' S; 140°33.723' E, alt. 120 m a.s.l., 28-iii-2010; 1/0/0, River Kamp Walker, near UNCEN, Abepura,

2°34.202' S; 140°38.886' E, alt. 144 m a.s.l., 31-iii-2010.

Remarks — Previously reported from Papua New Guinea and Papua province ("Irian Jaya") by Wiles (1997a). Characteristic for the species are the curved distoventral setae of I-leg-5, one of these blunt, the other pointed

Australiobates (Australiobates) bruijini Wiles, 1997 (Figure 8)

Material examined — 0/1/0, River Rumei, Waigeo, New Guinea, 13-x-1993, leg. M. Argeloo.

Remarks — In the slender palp (Figure 8b), I-leg-5 with two slender stout setae of which is longer than the other (Figure 8c) and the genital field with the acetabula lying almost in a line (Figure 8a), the specimen from Waigeo matches the description by Wiles (1997a). Thus far, the species has been reported from Papua New Guinea and Papua province ("Iran Jaya"), Indonesia.

Australiobates (Australiobates) hyalinus n. sp. (Figures 9–10)

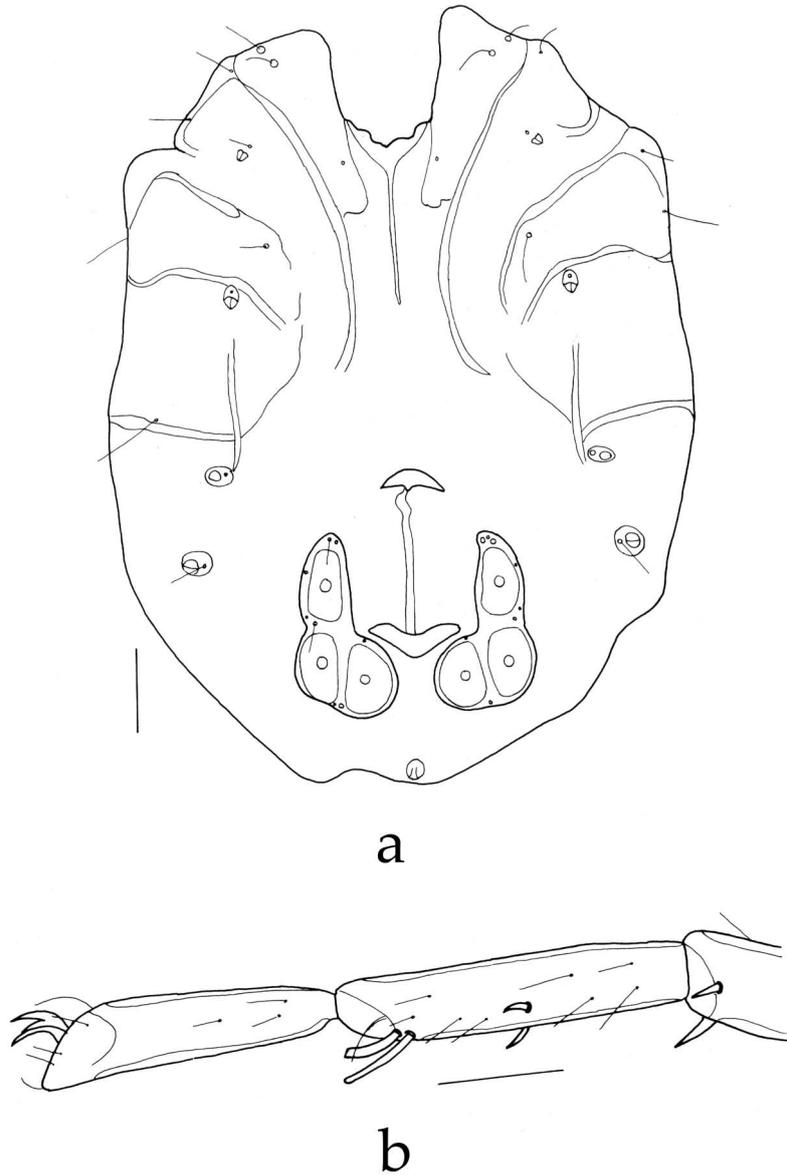


FIGURE 10: *Australiobates hyalinus* n. sp., paratype female: a – ventral view; b – I-leg-5-6. Scale bar = 50 μ m.

Material examined — Holotype male, Bion River, upstream, Pass Valley, Papua Province, New Guinea, Indonesia, 3°51.294' S; 139°05.733' E, alt. 1962 m a.s.l., 15-iii-2010. Paratypes: 1 male, 2 females, same data as holotype; one male, two females, Bion River, Pass Valley, 3°51.267' S; 139°05.789' E, alt. 1955 m a.s.l., 11-iii-2010; one female, Mulun stream, Pass Valley, 3°51.599' S; 139°05.876' E, alt. 1970 m a.s.l., 12-iii-2010; one female, Bion River, upstream, Pass Valley, 3°51.513' S; 139°05.570' E, alt. 2007 m a.s.l., 15-iii-2010; one male, two females, Bion River, upstream, Pass Valley, 3°51.513' S; 139°05.570' E, alt. 2007 m a.s.l., 15-iii-2010.

Diagnosis — Legs with a row of hyaline setae, especially on fourth leg.

Description — Male: Idiosoma finely lineated, 348 (340 – 365) long and 300 (284) wide (measured dorsally). Idiosoma without platelets or reticulation. Gnathosoma with a long anchoral process. Coxoglandularia 4 near suture line of third and fourth coxal plates. Posterior apodemes of fourth coxal plates long (Figure 9a). Genital field with three pairs of acetabula, anteromedially with three setae. Genital field 86 long and 106 wide, gonopore 40 long. Lengths of PI-PV: 18, 44, 62, 64, 24; PIV with two small setae near ventral margin, lying close to each other (Figure 9b). Lengths of I-leg-4-6: 100, 104, 75; IV-leg-5 anteroventrally with two curved setae, one of these truncated. Lengths of IV-leg-4-6: 160, 156, 114. Fourth legs with hyaline setae: IV-leg-3-6 with 7, 8, 3 and 0 of these setae, respectively (Figure 9c). Second and third legs with less hyaline setae. Swimming setae absent.

Female: Idiosoma finely lineated, 478 (383 – 535) long and 356 (308 – 446) wide (measured dorsally). Idiosoma without platelets or reticulation. Gnathosoma with a long anchoral process. Coxoglandularia 4 near suture line of third and fourth coxal plates. Posterior apodemes of fourth coxal plates long (Figure 10a). Genital field with three pairs of acetabula, triangular in shape, extending well posterior of post-genital sclerite. Gonopore 112 long, pre-genital sclerite 40 wide, post-genital sclerite 60 wide. Lengths of PI-PV: 28, 58, 88, 92, 28; palp as in male, but small setae near ventral margin of PIV

more distanced of each other. Lengths of I-leg-4-6: 134, 126, 96; first leg as in male, anteroventrally with two curved setae, one of these truncated (Figure 10b). Lengths of IV-leg-4-6: 202, 200, 150. Legs with hyaline setae, especially on the fourth leg: IV-leg-3-6 with 7, 9, 3 and 0 of these setae, respectively. Other legs with only a few hyaline setae. Swimming setae absent.

Etymology — Named for the hyaline setae of the legs.

Remarks — The presence of hyaline setae on the dorsal margin of the legs is characteristic for the new species. *Australiobates plumosa* Wiles, 1997 has somewhat similar setae, but these are more numerous and plumose.

Australiobates (Australiobates) longisetus Wiles, 1997

Material examined — 1/1/0, River Pos 7, Sentani, 2°33.740' S; 140°30.784' E, alt. 103 m a.s.l., 9-iii-2010.

Remarks — Wiles (1997a) named the species *A. longiseta*, but as the gender of the genus is masculine, the name should be *A. longisetus*. The species has been reported previously from Papua New Guinea and Papua province ("Irian Jaya"), Indonesia (Wiles 1997a).

Australiobates (Australiobates) plumosus Wiles, 1997

Material examined — 0/3/0, River Kamp Walker, near UNCEN, Abepura, 2°34.202' S; 140°38.886' E, alt. 144 m a.s.l., 31-iii-2010.

Remarks — The species has been reported previously from Papua New Guinea and Papua province ("Irian Jaya"), Indonesia (Wiles 1997a).

Australiobates (Australiobates) reticuloides Wiles, 1997

Material examined — 1/1/0, Bion River, Pass Valley, 3°51.267' S; 139°05.789' E, alt. 1955 m a.s.l., 11-iii-2010; 3/0/0, Musaik stream, Pass Valley, 3°50.912' S; 139°05.775' E, alt. 2010 m a.s.l., 12-iii-2010; 0/1/0, Uwe River, Wamena, 4°06.521' S; 138°56.310' E, alt. 1668 m a.s.l., 24-iii-2010; 1/0/0, Unnamed creek uphill of Wamena, along road to Lake Habbema, 4°07.285' S; 138°53.146' E, alt. 2034 m a.s.l., 25-iii-2010.

Remarks — The species has been reported previously from Papua New Guinea and Papua province ("Irian Jaya"), Indonesia (Wiles 1997a). The species has a variable idiosoma pattern. In most species the idiosoma has a distinct reticulate pattern, but in some specimens only a coarse lineation is visible.

Australiobates (Australiobates) reticulatus Wiles, 1997

Material examined — 2/3/0, Bion River, Pass Valley, 3°51.267' S; 139°05.789' E, alt. 1955 m a.s.l., 11-iii-2010; 0/1/0, Mulun stream, Pass Valley, 3°51.599' S; 139°05.876' E, alt. 1970 m a.s.l., 12-iii-2010; 0/2/0, Bion River, upstream, Pass Valley, 3°51.513' S; 139°05.570' E, alt. 2007 m a.s.l., 15-iii-2010; 0/1/0, Uwe River, Wamena, 4°06.521' S; 138°56.310' E, alt. 1668 m a.s.l., 24-iii-2010.

Remarks — Wiles (1997a) named the species *A. reticulata*, but as the gender of the genus is masculine, the name should be *A. reticulatus*. The species has been reported previously from Papua New Guinea and Papua province ("Irian Jaya"), Indonesia (Wiles 1997a).

Australiobates (Australiobates) setosus n. sp.
(Figure 11)

Material examined — Holotype female, Maraut River, Vogelkop, New Guinea, 3-xii-1996, leg. M. Argeloo.

Diagnosis — Ventral margin of PIV with 3-4 stiff, thin setae, besides the two stout setae.

Description — Female. Idiosoma 526 long dorsally and 421 wide, ventral length 583. Idiosoma without platelets or reticulation. Gnathosoma with a long anchoral process. Coxoglandularia 4 near suture line of third and fourth coxal plates. Posterior apodemes of fourth coxal plates long (Figure 11a). Genital field with three pairs of acetabula, these occupying most of the area of the genital field and lying in an arc. Lengths of PI-PV: 38, 90, 124, 134, 34. PIV slender, ventral margin of PIV with 3-4 stiff, thin setae, besides the two stout setae. PII and PIII with 3-4 short, stout setae near or on dorsal margin (Figures 11b, 11c). Lengths of I-leg-4-6: 227, 267, 143. I-leg-5 anteroventrally with two closely inserted, relatively blunt setae (Figure 11d). Lengths

of IV-leg-4-6: 324, 318, 198. All legs with numerous short, fine setae, swimming setae absent. Male: Unknown.

Etymology — Named for the relatively many setae on PIV.

Remarks — The new species is somewhat close to *A. bruijni* Wiles, 1997, but this species lacks the stiff setae of the ventral margin of PIV, and the genital field is more slender, with the posterior acetabulum not extending posteriorly of the gonopore.

Australiobates (Australiobates) sylvestris n. sp.
(Figure 12)

Material examined — Holotype female, small forest stream near UNCEN (= Cenderawasih University), Abepura, Papua province, New Guinea, Indonesia, 2°34.794' S; 140°39.292' E, alt. 234 m a.s.l., 31-iii-2010. Paratypes: one male, 2 females, same data as holotype.

Diagnosis — I-leg-5 anteroventrally with two pointed setae; PIV ventrally with two blunt setae.

Description — Female: Idiosoma 575 (494 – 559) long and 445 (421 – 470) wide (measured dorsally). Idiosoma without platelets or reticulation. Gnathosoma with a long anchoral process (somewhat shifted in the illustrated holotype as a result of mounting). Coxoglandularia 4 near suture line of third and fourth coxal plates. Posterior apodemes of fourth coxal plates long (Figure 12a). Genital field 116 long, with three pairs of acetabula, these occupying most of the area of the genital field and lying in an arc. Lengths of PI-PV: 38, 76, 104, 100, 28; PIV ventrally with two well separated, blunt setae (Figure 12b). Lengths of I-leg-4-6: 160, 168, 110; I-leg-5 anteroventrally with two pointed setae (Figure 12c). Lengths of IV-leg-4-6: 251, 275, 160. Swimming setae absent.

Male: Idiosoma 380 long and 300 wide (measured dorsally). Idiosoma without platelets or reticulation. Idiosoma without platelets or reticulation. Gnathosoma with a long anchoral process. Coxoglandularia 4 near suture line of third and fourth coxal plates. Posterior apodemes of fourth coxal plates long. Genital field 70 long and 74 wide, with three pairs of acetabula, anteriorly with 3-4 small setae (Figure 12d). Lengths of PI-PV: 26, 48, 64, 66,

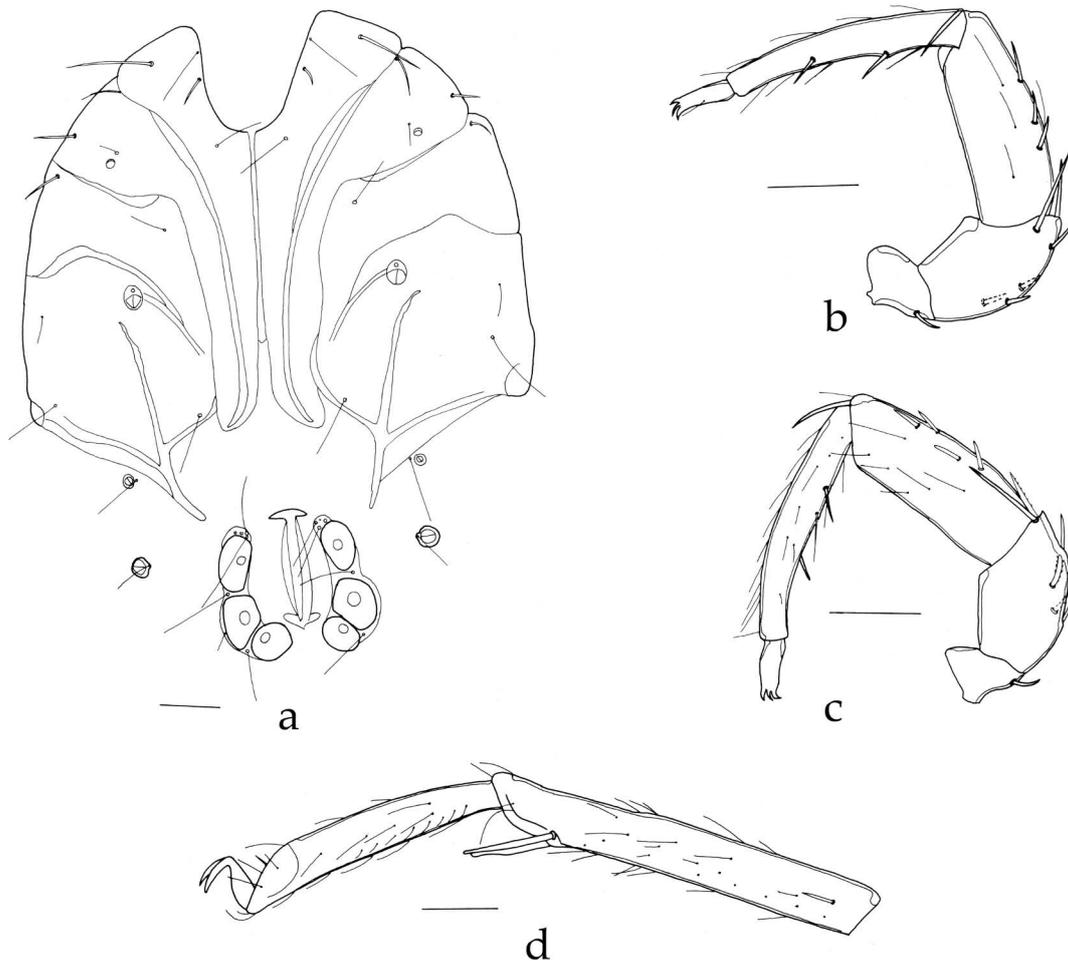


FIGURE 11: *Australiobates setosus* n. sp., holotype female: a – ventral view; b – palp; c – palp; d – I-leg-5-6. Scale bar = 50 μ m.

18; palp as in female. Lengths of I-leg-4-6: 104, 110, 80. Lengths of IV-leg-4-6: 170, 182, 108. Legs as in female.

Etymology — Named for its occurrence in the forest.

Remarks — No other *Australiobates* species from New Guinea has I-leg-5 with anteroventral acute setae and PIV with blunt setae. The only Australian species with the combination of these characters are *A. ombatus* Cook, 1986 (PIV more slender and PV has large downturned setae) and *A. rudagus* Cook, 1986 (PIV with heavy ventral setae).

Genus *Dropursa* Cook, 1986

Dropursa babinda Cook, 1986

Material examined — 0/1/0, unnamed creek crossing road to Pass Valley, 3°52.849' S; 139°04.194' E, alt. 2253 m a.s.l., 13-iii-2010; 0/2/0, unnamed creek crossing road to Pass Valley, 3°52.629' S; 139°04.684' E, alt. 2264 m a.s.l., 13-iii-2010; 0/2/0, River Yabawi, upstream of Harapan, 2°34.216' S; 140°33.723' E, alt. 120 m a.s.l., 28-iii-2010; 1/1/0, stream near Kampung Kleublouw, between Jayapura and Sentani, 2°35.249' S; 140°35.187' E, alt. 82 m a.s.l., 28-iii-2010; 0/1/0, River Kamp Walker, near UNCEN, Abepura, 2°34.202' S; 140°38.886' E, alt. 144 m a.s.l., 31-iii-2010.

Remarks — Reported previously from New Guinea (Papua New Guinea and Irian Jaya, Indonesia) by Wiles (1997a,b). Also known from Australia

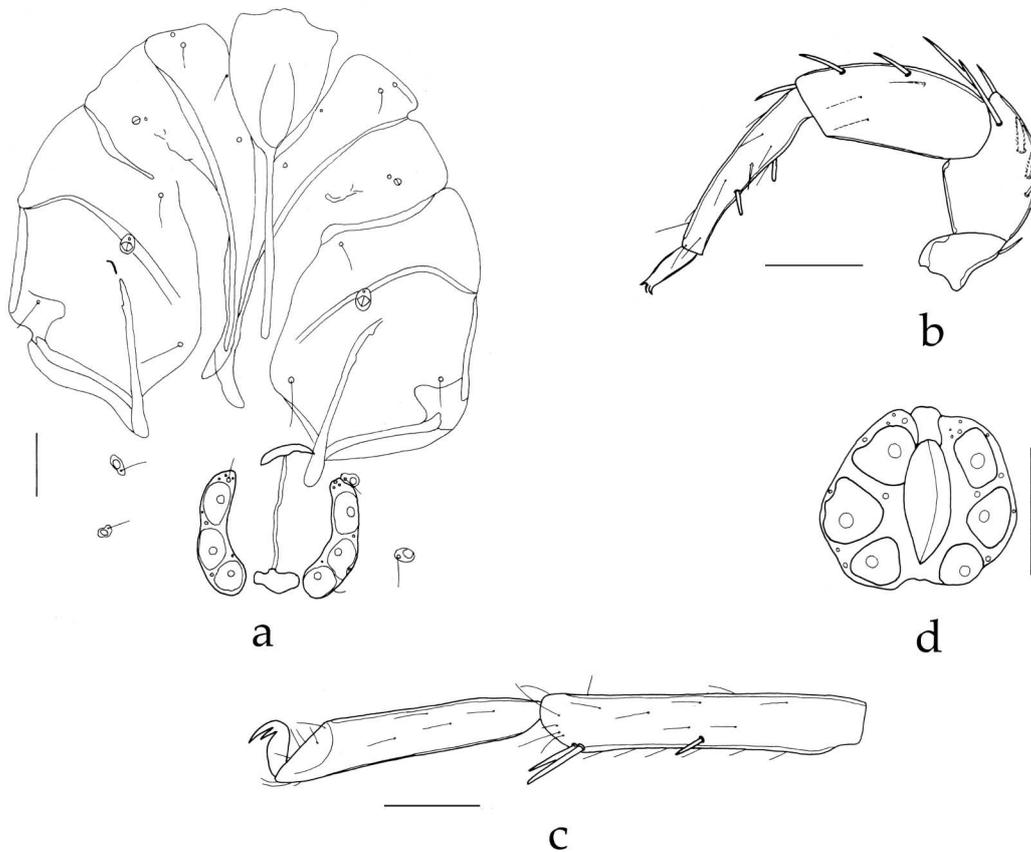


FIGURE 12: *Australiobates sylvestris* n. sp., holotype female: a – ventral view; b – palp; c – I-leg-5-6. Paratype male: d – genital field. Scale bar = 50 μ m.

(Cook 1986).

FAMILY PIONIDAE THOR, 1900

Genus *Piona* Koch, 1842

Piona piersigi (Daday, 1900)
(Figures 13–14)

Material examined — 9/26/9, brown forest pool, along road Yoka – outlet Lake Sentani, Papua province, 2°40.737' S; 140°36.230' E, alt. 104 m a.s.l., 29-iii-2010; 6/2/2, Pandanus marsh Base G beach, Jayapura, 2°31.445' S; 140°44.503' E, 30-iii-2010.

Description — Male: Idiosoma 830 long and 616 wide, chitinized parts reddish to purple. Anterior coxal plates with a short apodeme. Third + fourth

coxal plates medially close but not touching (Figure 13a). Gonopore 52 long, on a platelet with two pairs of acetabula; anterior margin of this platelet distinct, posterior margin indistinct. The remaining 12 pairs of acetabula are lying free in the idiosoma (Figure 13b). Excretory pore touching gonopore platelet, but in other specimens distanced from this platelet. Lengths of PI-PV: 32, 130, 78, 130, 48. Ventral margin of PII convex, with two heavy, relatively short setae medially and three heavy setae near or on dorsal margin; PIII medially with one relatively short, heavy seta and two setae near or on dorsal margin; PIV ventrally with three setal tubercles, lying close to each other (Figure 13c). Lengths of I-leg-4-6: 164, 190, 186 (the latter till tip of segment). Dorsal seta of III-leg-6 extended (Figure 13d). Lengths of IV-leg-4-6: 86, 150, 190. Legs with less swim-

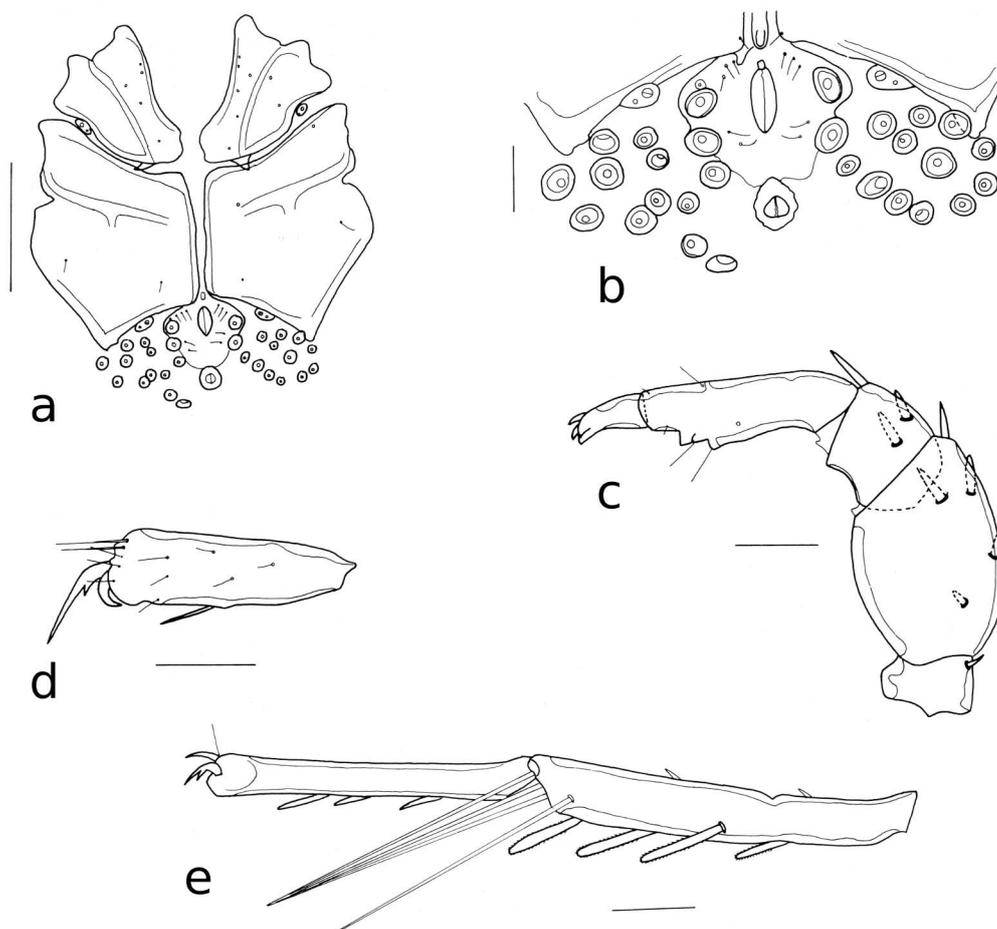


FIGURE 13: *Piona piersigi* (Daday), male: a – ventral view; b – genital field; c – palp; d – III-leg-6; e – IV-leg-5-6. Scale bar = 50 μ m.

ming setae compared to female, e.g. IV-leg-5 with four and IV-leg-4 with three swimming setae (Figure 13e). All legs with numerous heavy setae.

Female: Idiosoma 778 – 1266 long and 624 – 1065 wide; colour of chitinized parts as in male. Medial distance of third + fourth coxal plates large (Figure 14a). Genital plates more or less curved, with anteriorly two acetabula on a platelet, posteriorly 7 – 12 acetabula on a platelet and in between 1 – 2 acetabula lying free in the idiosoma (Figure 14b). Pre-genital sclerite 92 wide, postgenital sclerite 84 wide. Lengths of PI-PV: 36, 136, 66, 134, 42. Ventral margin of PII convex, with two short, heavy setae medially and one on dorsal margin (broken off in illustrated palp). PIII with three heavy setae (one seta

lost in illustrated palp). Ventral margin of PIV with two small, setal tubercles, well distanced from each other; third ventral seta on a small tubercle, which is lying more distanced from ventral margin (Figure 14c). Lengths of I-leg-4-6: 170, 203, 211 (the latter till tip of segment). Lengths of IV-leg-4-6: 211, 243, 194. All legs with numerous swimming setae and numerous heavy setae.

Remarks — The illustrations of Daday (1901) are very sketchy, and therefore new illustrations are provided. Daday (1901) reported the species from German New Guinea, nowadays Papua New Guinea.

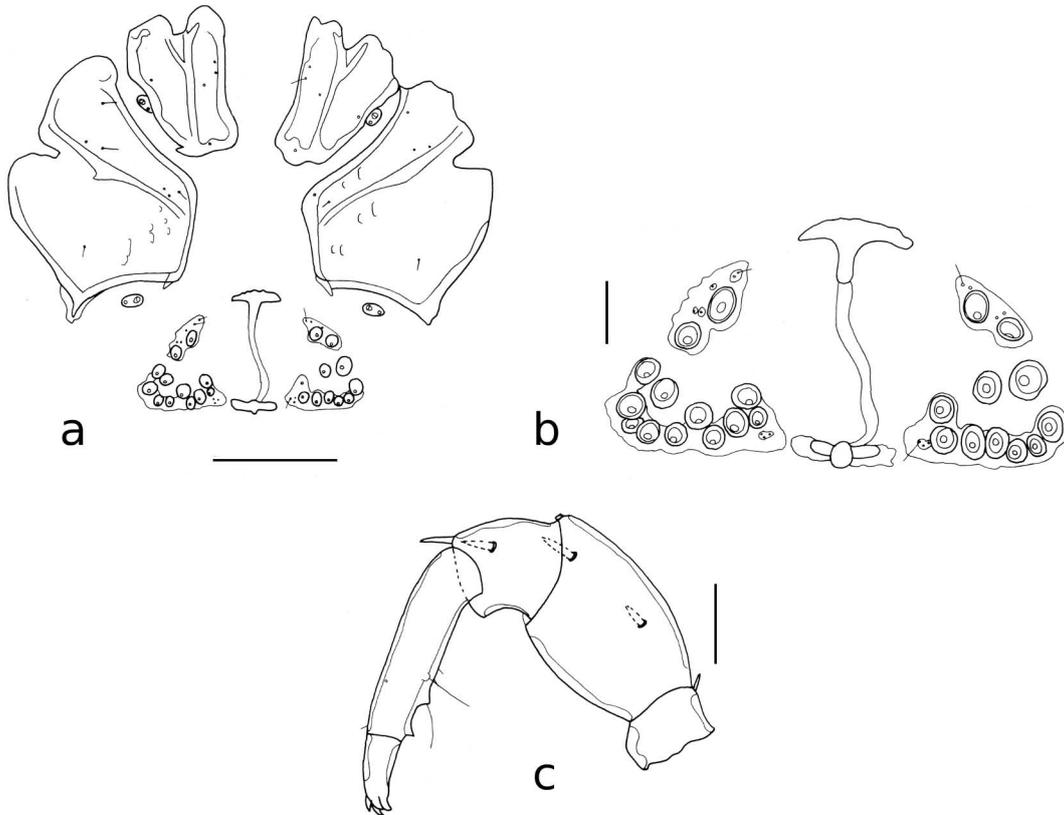


FIGURE 14: *Piona piersigi* (Daday), female: a – ventral view; b – genital field; c – palp. Scale bar = 50 μm .

FAMILY ARRENURIDAE THOR, 1900

Genus *Arrenurus* Dugès, 1834

The water mite genus *Arrenurus* is the most species-rich genus of all water mites, with some 950 species known worldwide. Thus far, only seven *Arrenurus* species have been described from New Guinea (Daday 1901; Wiles 1997b).

Arrenurus (*Arrenurus*) *basegensis* n. sp. (Figure 15–16)

Material examined — Holotype male, Pandanus marsh Base G beach, Jayapura, Papua province, New Guinea, Indonesia, 2°31.445' S; 140°44.503' E, 30-iii-2010. Paratypes: fore females, same data as holotype.

Diagnosis — Male with a scissor-shaped petiole with a pair of stout setae near its base; hyaline mem-

brane broad. Female with the idiosoma truncated posteriorly and narrow genital plates.

Description — Male: Idiosoma bluish, 849 long (including petiole), 656 long till tip of pygal lobes; width of idiosoma 551. Anterior margin of idiosoma slightly concave. Dorsal shield incomplete, 356 long. D4 on a hump with hyaline tip, distanced from each other. Cauda short, pygal lobes distinct (Figure 15a). Hyaline membrane broad, laterally bluntly pointed. Petiole long, scissor-shaped, with a pair of stout setae near its base, anterior part split in two; in lateral view posteriorly slightly upturned (Figure 15b). Genital plates long and bowed, extending to lateral idiosoma margin, visible in dorsal view (Figure 15c). Lengths of PI–PV: 26, 56, 52, 64, 37; PII medially with four setae (Figure 15d). Lengths of I-leg-4-6: 110, 90, 84; dorsal and ventral margin of I-leg-6 (and also II-leg-6) with numerous fine, long setae. Lengths of IV-leg-4-6: 184, 72, 104;

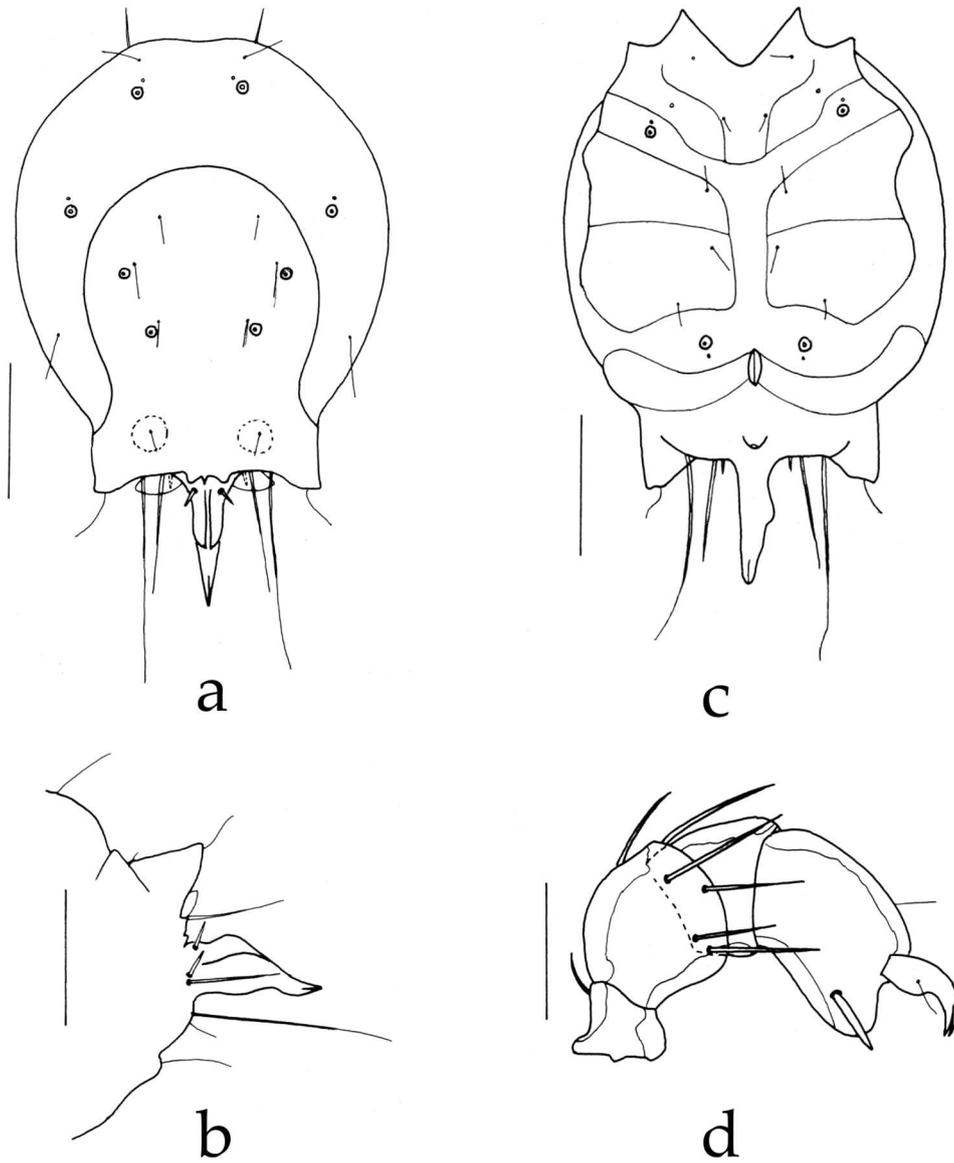


FIGURE 15: *Arrenurus basegensis* n. sp., holotype male: a – dorsal view. Scale bar = 200 µm; b – lateral view petiole. Scale bar = 50 µm; c – ventral view. Scale bar = 200 µm; d – palp. Scale bar = 50 µm.

IV-leg-4 without spur, but with an anterior triangular extension. Third and fourth legs with numerous swimming setae.

Female: Idiosoma 1053 (915 – 992) long and 900 (782 – 867) wide, very dark brown. Anterior margin of idiosoma almost straight, posteriorly truncated. Dorsal shield complete, 672 long and 510 wide. First coxal plates not extending to anterior idiosoma margin. Medial margin of third coxal plates larger than medial margin of fourth coxal plates. Medial distance of third + fourth coxal plates about 1.5 times width of gonopore valve. Genital plates long and very narrow (Figure 16). Gonopore with large sclerotized patches, covering gonopore almost completely. Lengths of PI-PV: 36, 80, 51, 104, 53; PII medially with two slender setae and more near dorsal margin one stout seta. Lengths of I-leg-4-6: 144, 148, 130. Lengths of IV-leg-4-6: 178, 162, 138. Second, third and fourth legs with numerous swimming setae.

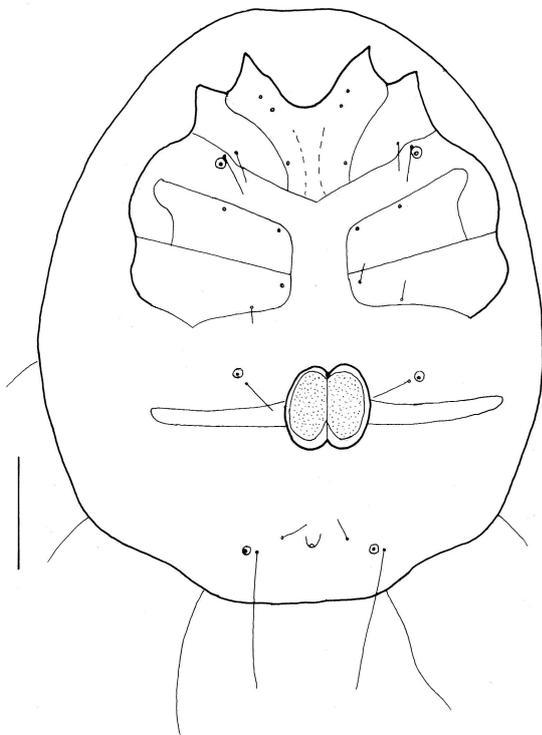


FIGURE 16: *Arrenurus basegensis* n. sp., paratype female: ventral view. Scale bar = 200 μ m.

Etymology — Named after the type locality, Base G beach near Jayapura.

Remarks — In the collection from the type locality two types of females are present. The larger females have the gonopore with large sclerotized patches, a phenomenon very frequently found in the subgenus *Arrenurus*. They are therefore assigned to the new species. The smaller females have the gonopore without sclerotized patches. The new species is well characterized by the shape of the petiole. Some Oriental *Arrenurus* species, i.e. *A. kurtvoetsi* Lundblad, 1969, *A. liberatus* Walter, 1929 and *A. confinis* Lundblad, 1969 also have the base of the petiole with two stout setae, but the shape of the petiole is very different from the new species.

Arrenurus (Micruracarus) foiorum Wiles, 1997
(Figure 17)

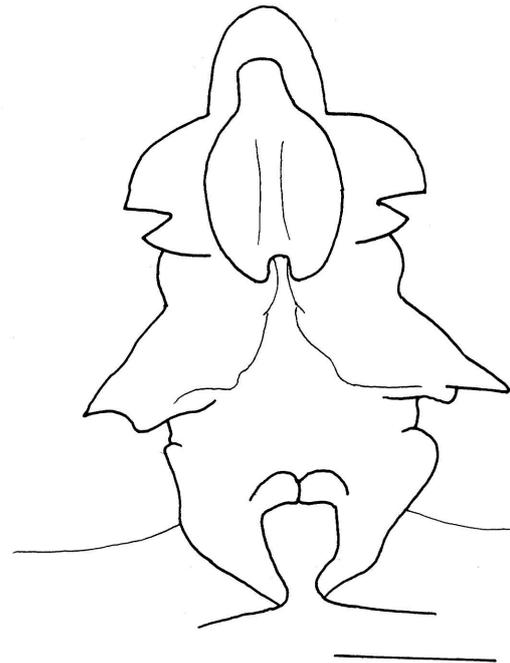


FIGURE 17: *Arrenurus foiorum* Wiles, male: detail of dorsum. Scale bar = 50 μ m.

Material examined — Holotype: male, Lake Kutubu near R.[iver] Sorrel, 10-vii-1988, Papua New Guinea, leg. P.R. Wiles (slide A197, BMNH);

paratype: same location (slide A197, BMNH) [Slide A197 labelled *Arrenurus foii* and Holotype, but two males present. The male with the palp not detached and with the dorsum visible in the slide is considered by me as the holotype, the other male therefore considered a paratype]. Other material. 2/0/0, Pandanus marsh Base G beach, Jayapura, Papua province, New Guinea, Indonesia, 2°31.445' S; 140°44.503' E, 30-iii-2010.

Remarks — Reported previously from Papua New Guinea by Wiles (1997b). The male have a peculiar structure on the dorsum (Figure 17), which is somewhat variable in shape.

FAMILY HALACARIDAE MURRAY, 1877

Rhombognathus scutulatus Bartsch, 1983

Material examined — 1/0, Marine littoral, Base G beach. Jayapura, 2°31.352' S; 140°44.544' E, 30-iii-2010.

Remarks — One of the most widespread halacarids, known from the Indian Ocean and the western Pacific Ocean (Bartsch in litt.). New for the fauna of New Guinea.

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