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THREE NEW UNUSUAL WATER MITES FROM AUSTRALIA (CHELICERATA: ACARINA: HYDRYPHANTIDAE, HYGROBATIDAE AND ATHIENEMANNIIDAE)

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Abstract

Harvey, M.S., 1988. Three new unusual water mites from Australia (Chelicerata: Acarina: Hydryphantidae, Hygrobatidae and Athienemanniidae). *Memoirs of the Museum of Victoria* 49: 355–361.

The following three new water mite taxa are described from south-eastern Australia. *Notopanisus vinnulus* sp. nov. (Hydryphantidae) from southern Tasmania; the genus was previously known only from southern South America. *Cookabates inermis* gen. et sp. nov. (Hygrobatidae) from Victoria and New South Wales; its closest relatives appear to be the "*Corticacarus*-like mites". *Mellamunda acares* gen. et sp. nov. (Athienemanniidae) from Victoria; it belongs to the previously monotypic subfamily Notomundamellinae.

Introduction

During recent years several new water mites have been collected from south-eastern Australia that represent either new genera or genera that have not yet been recorded from Australia. Three of these taxa are described below.

Specimens are lodged in the Museum of Victoria, Melbourne (NMV), Field Museum of Natural History, Chicago (FMNH) and the Canadian National Collection, Ottawa (CNC). Methods follow Harvey (1987).

Hydryphantidae

Notopanisus Besch

Notopanisus Besch, 1964: 92–Cook, 1974: 71–72 (Type species: *Notopanisus wetzeli* Besch, 1964, by original designation.)

Remarks. The genus *Notopanisus* was described by Besch (1964) for a single species, *N. wetzeli* Besch, which was collected in Valdivia Province, Chile and Rio Negro Province, Argentina. Cook (1980) subsequently collected a further specimen in Rio Negro Province. No other species of the genus have since been recorded in the literature, but during a recent field trip to Tasmania, a female belonging to the genus was recovered from interstitial waters at Little Florentine River, southern Tasmania. This site has already been shown by Cook (1986) to harbour many unusual and relictual water mites including *Australiothyas swaini* Cook, *Wandesia troma* Cook, *Australiotonia tolarda* Cook and *Guineaxonopsis australica* Cook. Although only a single female of *Notopanisus* was collected, it appeared that further material would not become available in the near future, so I have prepared this description to record the presence of the genus in Australia.

Besch (1964) noted small dorsalia in *N. wetzeli*, which was disclaimed by Cook (1974) who only recorded the presence of muscle attachment sites. The new species described below also lacks dorsalia.

Members of this genus appear to occur in heterogeneous microhabitats, as the holotype of *N. vinnulus* was taken from interstitial waters in a hole dug in a sandbar on the side of a creek, while all known specimens of *N. wetzeli* indicate its association with mosses (Besch, 1964, Cook, 1980).

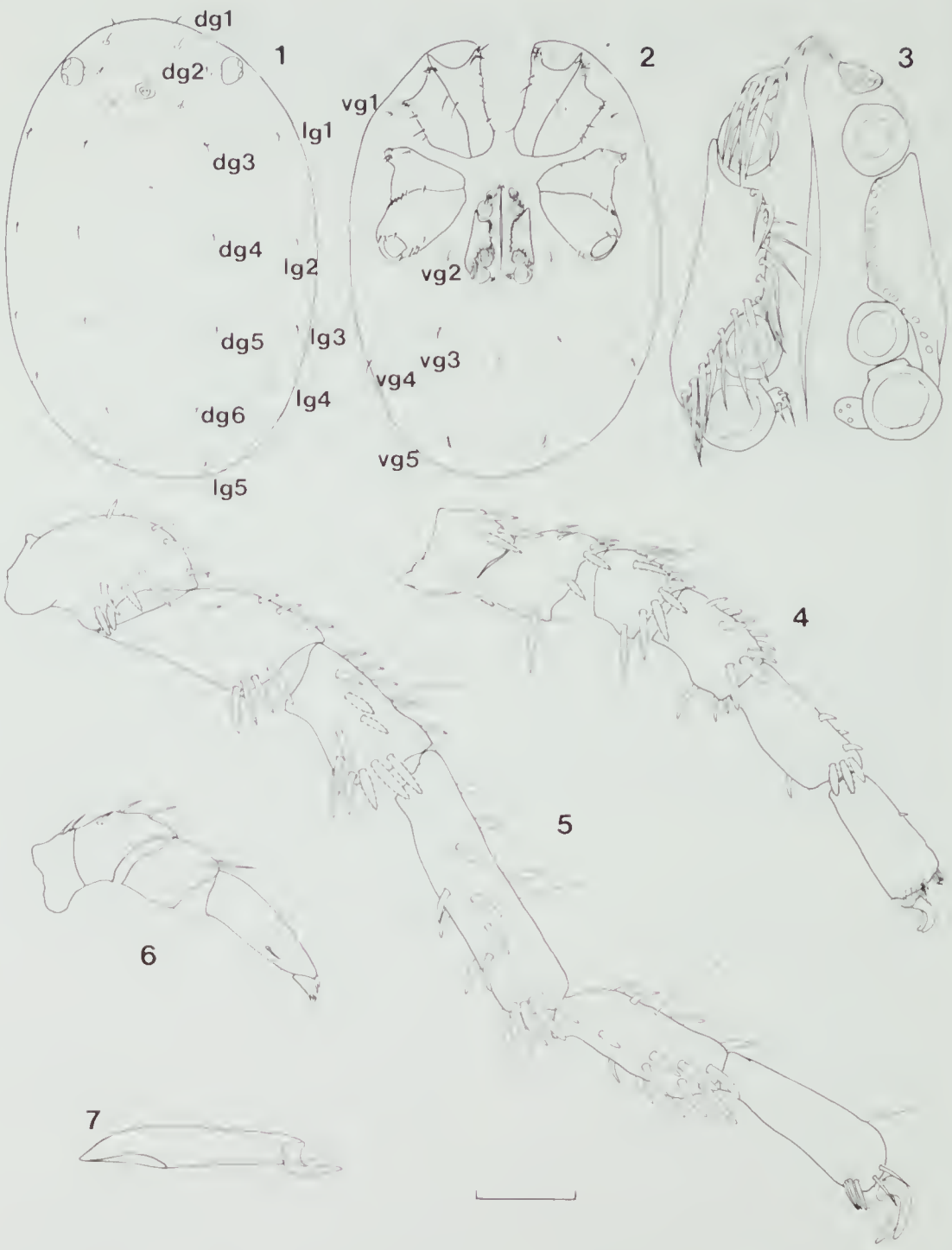
Notopanisus vinnulus sp. nov.

Figures 1–7

Type material. Holotype female, Little Florentine River, NE of Frodshams Pass, Tasmania, 42°14'S, 146°25'E, interstitial, M.S. Harvey and P.K. Lillywhite, 22 Nov 1986, NMV K745 (slide).

Diagnosis. lg4 anterior to dg6.

Description. Female: integument papillate. Lateral eyes on ocular tubercles; anterior-lateral eye about same size as posterior-lateral eye; postocularia slightly posterior to median eye, but well anterior to dg3; median eye with two dark eye-spots (Fig. 1). Six pairs of dorsoglandularia, five pairs of latcroglandularia and five pairs of ventroglan-



Figures 1–7. *Notopanisus vinnulus* sp. nov. Holotype female. Fig. 1, dorsal view. Fig. 2, ventral view. Fig. 3, genital field, setae on left side ommitted. Fig. 4, left leg I. Fig. 5, left leg IV. Fig. 6, left palp. Fig. 7, right chelicera. Scale line = 263 μm (Figs 1, 2), 66 μm (Fig. 3), 103 μm (Figs. 4–7).

dularia present (Figs 1, 2); sclerites associated with glandularia crescent shaped (Figs 1-2); vg3 slightly anterior to anus and vg4 but not approaching genital flaps (Fig. 2); anus only partially surrounded by faint sclerites. Genital field (Fig. 3) with a pair of small sclerites anterior to first pair of acetabula, with five stout setae; genital flaps with mesal row of stout setae, third pair of acetabula lying over posterior edge of genital flap; three pairs of ovoid acetabula, third pair largest and on short stalks. Chelicera (Fig. 7) slender, cheliceral claw curved, with 8 short teeth; cheliceral lamella over half as long as claw, serrate. Palp (Fig. 6): tibia with a thickened sub-distal seta on medial surface and with distal extension. Legs (Figs 4, 5) without swimming setae; leg IV with tibia and tarsus reflexed and with single simple seta on telofemur, genu, tibia and tarsus. Pedal claws without serrations or dorsal tooth (Figs 4, 5).

Dimensions (μm): body 1224/771; capitulum length 287; chelicera length 262; genital field 268/192; palp: trochanter 48, femur 106, genu 58, tibia 157, tarsus 45; leg I: trochanter 83, basifemur 109, telofemur 93, genu 109, tibia 147, tarsus 147/64; leg IV: trochanter 182, basifemur 152, telofemur 159, genu 288, tibia 173, tarsus 206/70. *Etymology.* The specific epithet refers to the pleasure at finding a member of this genus in Australia (*vinnulus* Latin, delightful).

Remarks. This is the first member of the subfamily Thyasinae to be recorded from Australia, and it shows definite Gondwanan affinites. It differs from the only other described species of the genus, *N. wetzeli,* by the position of lg4 which is on approximately the same level as dg6 in *N. wetzeli,* yet is midway between the levels of dg5 and dg6 in *N. vinnulus.*

The paired spots of the median eye were observed and drawn before the specimen was cleared and slide mounted, but the pigment disappeared during the clearing process.

A map of the type locality was given by Jell and Stait (1985, fig. 1).

Hygrobatidae

Cookabates gen. nov.

Type species. Cookabates inermis sp. nov.

Diagnosis. Cookabates differs from all other hygrobatids in the form of the dorsal shield.

Description. Dorsal and ventral shields present; dorsal shield divided into 20 (♂) or 22 (♀) smaller platelets; 11 pairs of dorsoglandularia present; large antero-median plate bearing the postocularia. Genital field with 6 (♂), 7-9 (♀) pairs of acetabula (one or two are sometimes lost, or added); genital slit elongate, not heart-shaped. Palp: femur without ventral projection; tibia without ventral projection and mesal enlarged seta, usually without peg-like seta, but occasionally a very small seta is present. Tibia I without down-turned seta. Swimming setae absent.

Etymology. This genus is named for Prof. David Cook, in honour of his contributions to the taxonomy of Hydracarina, and is masculine in gender.

Remarks. The affinities of this genus are somewhat difficult to determine. The form of the dorsal shield, including 11 pairs of dorsoglandularia, indicate a relationship with *Corticacarus* Lundblad and its relatives which were united by Cook (1983) under "the *Corticacarus*–like mites". *Cookabates* lacks several character states and is thus distinctive:

(1) ventral projection of palpal femur absent; five genera of the group lack this projection (*Motasia* Lundblad, *Neocorticacarus* Lundblad, *Stylohygrobates* K. Viets, *Zelandobates* Hopkins and *Zelandobatella* Hopkins), as well as some species of *Corticacarus* (Cook, 1974, 1983).

(2) ventral projection of palpal tibia absent; only *Motasia* completely lacks this projection (Cook, 1974).

Interestingly, *Cookabates inermis* is similar to several described species of *Corticacarus* that further confuse the picture. *Corticacarus multiporus* Lundblad from Colombia is also polyacetabulate, but differs in possessing characters typical of *Corticacarus* (e.g. palpal modifications, and heart-shaped male gonopore) (Lundblad, 1953). The slit shaped openings of the dorsoglandularia of *C. inermis* resemble those of *Corticacarus cramerae* Cook and *C. cooki* (Imamura) (Cook, 1986).

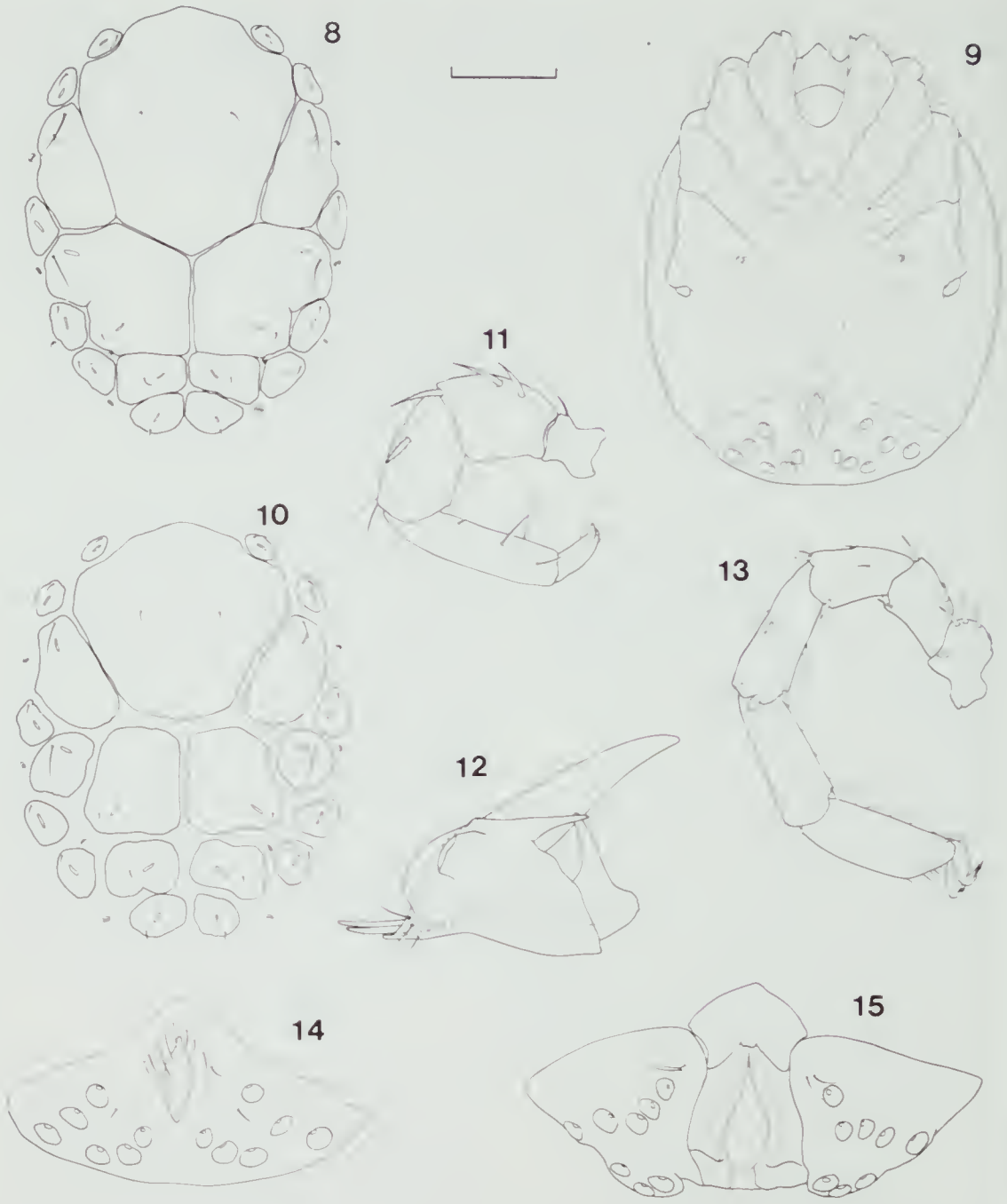
Cookabates inermis sp. nov.

Figures 8–15

Types. Holotype male, Taggerty River, 4.5 km ENE of Marysville, Victoria, 29 Apr 1985, P.S. Lake and R. St Clair, NMV K794 (slide).

Paratypes: Victoria: 1 male, 2 females, same data, NMV K795-797 (slides); 1 male, 1 female, same data, FMNH (slides); 1 males, 3 females, Taggerty River, 3 km ENE of Marysville, 29 Apr 1985, P.S. Lake and R. St Clair, NMV K798-801 (1 male, 1 female in fluid, remainder on slides); 1 male, 1 female, same data, CNC (slides); 4 females, Whitehouse Creek, 8 km ENE of Marysville, 26 Nov 1985, P.S. Lake and R. St Clair, NMV K804-807 (slides).

New South Wales: 1 female, Thredbo River, 12 km downstream of Thredbo sewage works, Kosciusko National Park, 29 Jan 1983, M.E. McKaige, NMV K808



Figures 8–15. *Cookabates inermis* sp. nov. Figs 8, 9, 12–14, holotype male. Figs 10, 11, 15, paratype female, K804. Fig. 8, dorsal shield. Fig. 9, ventral shield. Fig. 10, dorsal shield. Fig. 11, right palp. Fig. 12, capitulum, lateral view. Fig. 13, right leg 1. Fig. 14, genital field. Fig. 15, genital field. Scale line = 103 μm (Figs 8, 9), 143 μm (Fig. 10), 66 μm (Figs 11, 13, 14), 54 μm (Fig. 12), 92 μm (Fig. 92).

(slide), 2 males, Thredbo River, at Thredbo sewage works, Kosciusko National Park, 28 Jan 1983, M.E. McKaige, NMV K809-810 (slides); 1 male, same data except 22 Sep 1983, NMV K811 (fluid).

Other material examined. 1 male, Acheron River, 10 km N of Warburton, 18 March 1983, S. Schreiber, NMV (slide, dorsum lost).

Diagnosis. As for genus.

Description. Dorsal and ventral shields present; dorsal shield divided into 20 (♂), 22 (♀) platelets as in Figs. 8, 10, with 11 pairs of dorsoglandularia (most anterior pair incorporated into ventral shield and not figured), the openings of which are slit shaped; ventral shield entire, glandularia of fourth coxae slightly posterior to suture line between third and fourth coxae; capitulum with slightly downturned anterior extension (Fig. 12); genital field of male (Fig. 14) with 6 pairs of acetabula (occasionally reduced to 4 or 5), arranged in two diagonal rows of three; genital field of female (Fig. 15) with 7–9 pairs of acetabula (occasionally reduced to 6 or increased to 10), arranged in two groups. Palp (Fig. 11): femur and tibia without ventral projection; tibia usually without peg-like seta, but occasionally a small seta is present; tibia with two hair-like setae sub-distally. Legs: tibia I without downturned seta (Fig. 13); without swimming setae.

Dimensions (μm) male (female): dorsal shield 384–422/296–318 (467–489/370–461), large antero-median plate 210–250/198–218 (237–288/240–300), ventral shield 424–454/333–346 (512–672/416–544); capitulum 103–115 (115–150); chelicera 186–214 (256–269); genital field plate width 225–237 (281–397); palp: trochanter 24–30 (32–35), femur 48–56 (65–81), genu 52–57 (72–83), tibia 72–80 (100–118), tarsus 35–37 (40–46); leg I: trochanter 56–64 (65–76), basifemur 49–73 (60–87), telofemur 67–70 (73–89), genu 90–101 (102–122), tibia 94–104 (104–121), tarsus 101–109 (108–120); leg IV: trochanter 84–99 (102–129), basifemur 60–70 (68–83), telofemur 78–95 (92–108), genu 115–128 (132–154), tibia 129–141 (152–186), tarsus 131–140 (136–161).

Etymology. The specific epithet refers to the lack of a ventral tubercle on the palpal femur and tibia (*inermus*, Latin, unarmed, defenceless).

Athienemanniidae

Mellamunda gen. nov.

Type species. Mellamunda acares sp. nov.

Diagnosis. Mellamunda is the only known water mite in which both males and females possess acetabula within the gonopore and incorporated into the ventral shield.

Description. Dorsal and ventral shields present; dorsal shield entire; with three pairs of dorsoglandularia; ventral shield with lateral carinae near third coxae. Genital field with 5 (♂), 8 (♀) pairs of acetabula lying within the gonopore, the opening of which in the male is crenulate, a further 9 (♂), 5–7 (♀) pairs in ventral shield. Palp: tibia greatly expanded and twisted inwards. Male genu III with distal lobed extension; leg IV not modified. Swimming setae absent.

Etymology. The generic name is derived from the European genus *Mundamella*, and is feminine.

Remarks. The Athienemanniidae is one of the smallest water mite families and contain only eight described species in five genera, *Mundamella* K. Viets, *Stygohydracarus* K. Viets, *Chelonindeopsis* K. Viets, *Phreatohydracarus* Tanasachi and Motas, and *Notomundamella* Cook (Cook, 1974, 1986). All except the last are included in the Athienemanninae; *Notomundamella* was recently described by Cook (1986) and placed in a separate subfamily, the Notomundamellinae. A further genus *Africasia* K. Viets, currently included in the Arrenuridae, may belong to the Athienemanniidae (Cook, 1986). The new genus and species described here has certain affinities with *Notomundamella*, but differs such that the definition of the subfamily must be altered as follows.

Revised diagnosis of Notomundamellinae. Males with acetabula lying within gonopore and incorporated into ventral shield. Females either with acetabula lying within gonopore (*Notomundamella*) or lying within gonopore and incorporated into ventral shield (*Mellamunda*). Male genu III with distal extension.

Mellamunda acares sp. nov.

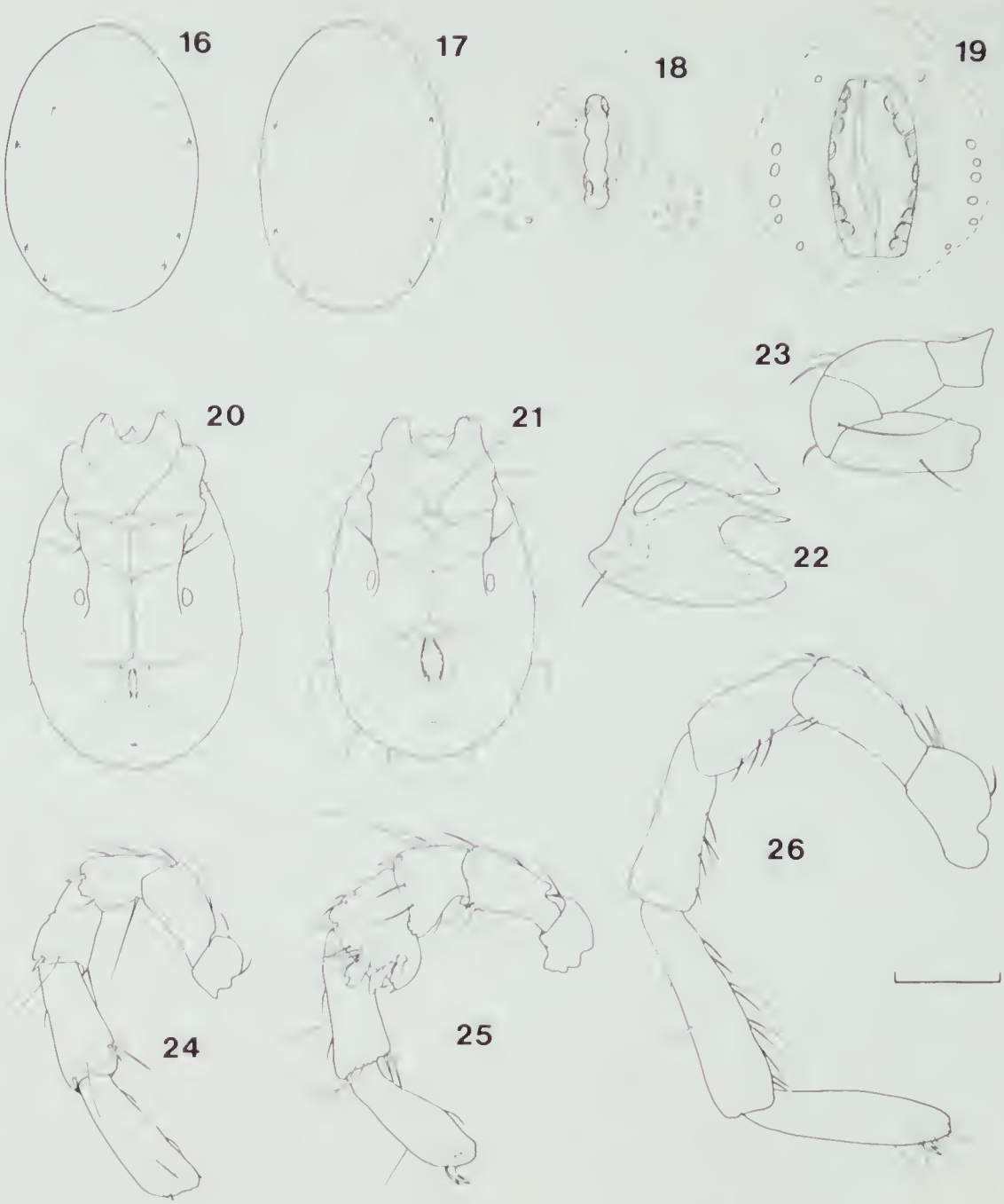
Figures 16–26

Types. Holotype male, Thomson River at Forestry Track C6 (Thomson River Study site 12la), Victoria, 3 Mar 1981, collected by staff of Biological Survey Department, NMV K826 (slide).

Paratype: Victoria: 1 female, Thomson River, 7 km NNW of Walhalla, at Narrows Ganging Station (Thomson River Study site T15), 3 Mar 1981, collected by staff of Biological Survey Department, NMV K827 (slide).

Diagnosis. As for genus.

Description. Dorsal and ventral shields present; dorsal shield entire (Figs 20, 21); three pairs of dorsoglandularia, posterior two pairs of male slightly closer together than those of female; postocularia anterior to dorsoglandularia, those of female fu



Figures 16–26. *Mellamunda acares* sp. nov. Figs 16, 18, 20, 22–26, holotype male. Figs 17, 19, 21, paratype female. Fig. 16, dorsal shield. Fig. 17, dorsal shield. Fig. 18, genital field. Fig. 19, genital field. Fig. 20, ventral shield. Fig. 21, ventral shield. Fig. 22, capitulum, lateral view. Fig. 23, left palp. Fig. 24, left leg I. Fig. 25, left leg III. Fig. 26, right leg IV. Scale line = 177 μm (Figs 16, 17, 20, 21), 44 μm (Figs 18, 19, 22–23), 66 μm (Figs 24–26).

ther lateral than those of male; capitulum anteriorly acute in lateral view (Fig. 22); chelicera stout; anterior coxae extending beyond body proper; pair of glandularia present between genital field and fourth coxae; genital field of male (Fig. 18) with five pairs of acetabula within gonopore, plus a further nine pairs on ventral shield, margin of gonopore crenulate; genital field of female (Fig. 19) with eight pairs of acetabula within gonopore, plus a further 5–7 pairs on ventral shield. Palp (Fig. 23): genu with one long seta on external face; tibia enlarged and twisted. Legs (Figs 24–26): without swimming setae; male genu III with large ventral projection with three large setae on anterior face; male telofemur III with smaller ventral projection, without enlarged setae; male leg IV not modified.

Dimensions (μm) male (female): dorsal shield 486/331 (493/314), ventral shield 603/366 (582/384); capitulum 77 (110); chelicera 83 (?); genital field 50/10 (78/38); palp: trochanter 17 (19), femur 52 (62), genu 34 (41), tibia 60 (70), tarsus 13 (25); leg I: trochanter ? (51), basifemur 52 (58), telofemur 64 (58), genu 69 (66), tibia 90 (77), tarsus 102 (?); leg IV: trochanter 90 (70), basifemur 96 (77), telofemur 90 (70), genu 109 (97), tibia 160 (125), tarsus 138 (122).

Etymology. This species in named for its small size (*acares* Greek, small).

Remarks. The collection sites were discussed by Malipatil and Blyth (1982).

Acknowledgements

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