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Three new hyporheic water mite species from Australia (Acari: Hydrachnidia)

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ABSTRACT
Three new hyporheic water mite species are described from Australia, viz. *Wandesia minuta*, *Partidomomonia elongata* and *Mellamunda tasmanica*. With the description of these three species, some 50 hyporheic water mites species are known from Australia. In this paper the first *Partidomomonia* species for Tasmania is described, the third *Wandesia* species for Australia as well as the second species of the genus *Mellamunda*.

Key words: Taxonomy, *Wandesia*, *Partidomomonia*, *Mellamunda*

INTRODUCTION

The Australian water mite fauna is rich in hyporheic species. Thus far, 47 species of certain hyporheic origin are known, with four additional species of possible hyporheic origin (Smit 2007). However, this number might increase due to the fact that Cook (1986) described many new species which are a mixture of epigean and hyporheic species. Therefore the habitat of quite a number of species is not known with certainty. Moreover, many parts of Australia have not been examined for hyporheic water mites.
In this paper three new species will be described from Tasmania and Victoria.

METHODS

All material was collected by the author and this is not repeated in the text. The hyporheic water mites were collected with a pump according to Boulton et al (1992). This is an adapted Bou-Rouch pump, but much lighter, and therefore easier to use in the field. One hyporheic species was collected by hand-netting. Abbreviations used: PI-PV = palp segment 1-5; I-leg- 4-6 = first leg segments 4-6; TMAG = Tasmanian Museum and Art Gallery, Hobart; NMV = Museum Victoria, Melbourne; RMNH = Netherlands Centre for Biodiversity Naturalis, Leiden; NP = National Park; asl = above sea level.

RESULTS

Family Hydryphantidae Piersig
Subfamily Wandesiinae Schwoerbel
Genus *Wandesia* Schechtel, 1912
Wandesia (Pseudowandesia) minuta sp. nov.
(Figs. 1-4)

Material examined

Holotype male, Moleside Creek, Lower Glenelg NP, Victoria, Australia, 38°04.336'S 141°17.507'E, alt. 25 m asl, 3-iv-2008 (NMV).

Diagnosis

Idiosoma small (871 long), fourth coxal plates with a concave medial margin.

Description

Male: Idiosoma 871 long, dorsum without platelets, eyes absent. Third coxal plates rectangular, fourth coxal plates with a concave medial margin. Gonopore 96 long. Genital field with three pairs of acetabula, these not stalked. Genital field with a pair of sclerites with 7-8 stiff setae. Genital skeleton 987 long, proximal arms with minute papillae. Lengths of PI-PV: 22, 49, 28, 52, 26; palp stocky, especially PIV. Lengths of I-leg-4-6: 50, 62, 62. Lengths of IV-leg-5-6: 82, 68. Legs without swimming setae.
Female: Unknown.

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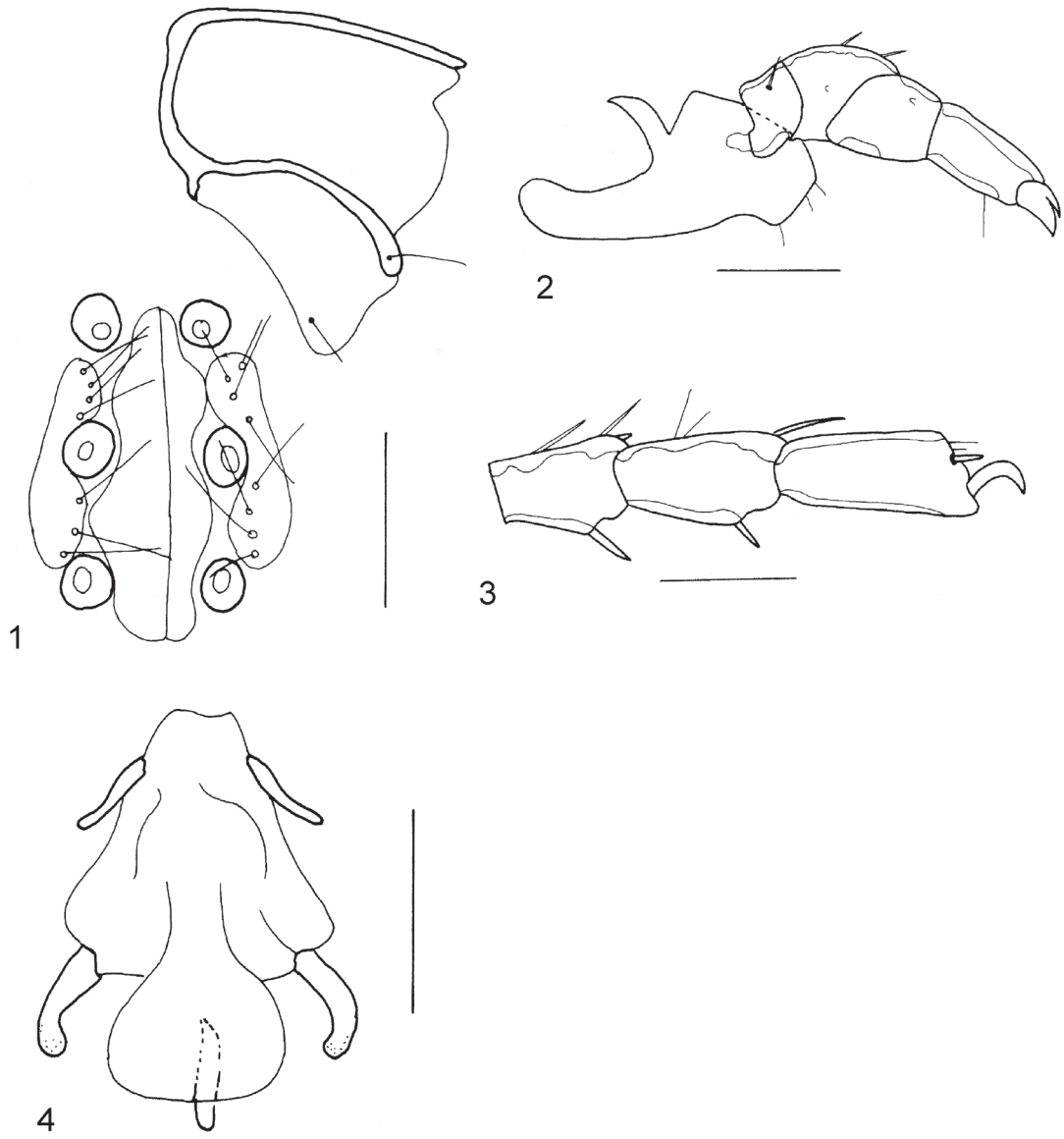


Figs 1-4 - *Wandesia minuta* sp. nov., holotype male: 1 = genital field + third and fourth coxae; 2 = palp; 3 = I-leg-4-6: 4 = genital skeleton. Scale bars 50 µm.

Etymology

Named for its relatively small size.

Remarks

Thus far, 13 species of the subgenus *Pseudowandesia* (K.O. Viets 1987; www.watermite.org viewed on February 1, 2012) are known worldwide. The subgenus has been found in Europe, Argentina, India, Australia and Siberia, including two from Australia: *W. glareosa* Weigmann & Schminke, 1970 and *W. troma* Cook, 1986. All known species are much larger (>1400) than the new species described here. The two known Australian species have the fourth coxal plates with a convex medial margin and the medial margin of the third coxal plates is relatively much larger. Moreover, *W. troma* has a slender palp, while the male of *W. glareosa* has a genital field with two pairs of setal sclerites.

Although the holotype has not been collected with a groundwater pump, it is certainly of hyporheic origin. Most wandesiine species live in interstitial habitats (Cook 1974). Under large stones one can find small-scale exchange of the stream and the hyporheic zone (Boulton et al 2010).

Family Momoniidae K. Viets
Genus *Partidomomonia* Cook, 1983

Thus far, four *Partidomomonia* species are known, one from New Zealand (Cook 1983) and three from Australia (Harvey 1990; Smit 2007). The Australian species were reported from Victoria (two species) and Queensland (one species). The first species from Tasmania is described below.

Partidomomonia elongata sp. nov.
(Figs. 5-10)

Material examined

Holotype male, Franklin River, hyporheic, at crossing with road A10, Franklin-Gordon Wild Rivers NP, Tasmania, Australia, 42°12.916'S 146°01.170'E, 26-iii-2008 (TMAG). Paratypes: one male (RMNH), one female (TMAG), same data as holotype; one male, Apsley River, hyporheic, at waterhole, Douglas Apsley NP, Tasmania, Australia, 41°51.758'S 148°11.186'E, 28-iii-2008 (RMNH).

Diagnosis

Idiosoma elongated, distance of anterior pair of acetabula and central pair of acetabula larger than distance between two posterior pairs, PIV stocky, I-leg-5 and -6 slender.

Description

Male: Idiosoma pale yellow, ventrally 713 (713-778) long and 462 (458-559) wide, dorsally 652 (656-721) long. Dorsum with two unpaired plates, three larger pairs plates and five smaller paired plates. Large posterior unpaired plate 373 (365-397) long and 300 (292-356) wide; eyes present, lying below integument. Anterior coxal plates extending beyond anterior idiosoma margin. Suture lines of coxae indistinct. Genital field with three pairs of acetabula lying in the gonopore, distance of anterior pair of acetabula and central pair of acetabula larger than distance between two posterior pairs. Gonopore 80 long. Lengths of PI-PV: 21, 62, 36, 72, 44. PIV stocky and ventrally expanded, with a short, stout seta and a thin seta. Lengths of I-leg-4-6: 54, 254, 207. I-leg-5 and -6 relatively slender, claw 118 long, heavy posteroventral setae distanced. Lengths of IV-leg-4-6: 162, 227, 174. Legs without swimming setae.

Female: Idiosoma pale yellow, ventrally 770 long and 535 wide, dorsally 705 long. Dorsum with two unpaired plates, three larger pairs plates and five smaller paired plates. Large posterior unpaired plate 389 long and 348 wide; eyes present, lying below integument. Anterior coxal plates extending beyond anterior idiosoma margin. Suture lines of coxae indistinct. Genital field with three pairs of acetabula lying on a separate sclerite, distance of anterior pair of acetabula and central pair of acetabula larger than distance between two posterior pairs. Gonopore 150 long. Lengths of PI-PV: 24, 66, 40, 76, 46; palp as in male. Lengths of I-leg-4-6: 90, 271, 235; first leg as in male. Lengths of IV-leg-4-6: 162, 219, 170.

Etymology

Named for the elongated idiosoma.

Remarks

The new species is close to *Partidomomonia blythi* Harvey, 1990 (in parentheses data of *P. blythi*), but differs in its larger size (less than 450), the configuration on the acetabula (acetabula equidistant from each other) and I-leg-5 longer than I-leg-6 (same length). Both *P. cabanandra* Harvey, 1990 and *P. tertia* Smit, 2007 have a slender PIV and a less elongated idiosoma shape, while in *P. tertia* the lateroglandularia 5 are fused with the large posterior dorsal plate (free in the new species).

Family Athienemanniidae K. Viets
Subfamily Notomundamellinae Cook
Mellamunda Harvey, 1988

Revised diagnosis

Male genital field with 5-6 acetabula lying in the gonopore and 3-9 acetabula fused with the ventral shield. Eyes not lying in capsules but below the integument. See further Harvey (1988). IV-leg not or slightly modified.

Mellamunda tasmanica sp. nov.
(Figs. 11-16)

Material examined

Holotype male, Franklin River, hyporheic, at crossing with road A10, Franklin-Gordon Wild Rivers NP, Tasmania, Australia, 42°12.916'S 146°01.170'E, 26-iii-2008 (TMAG).

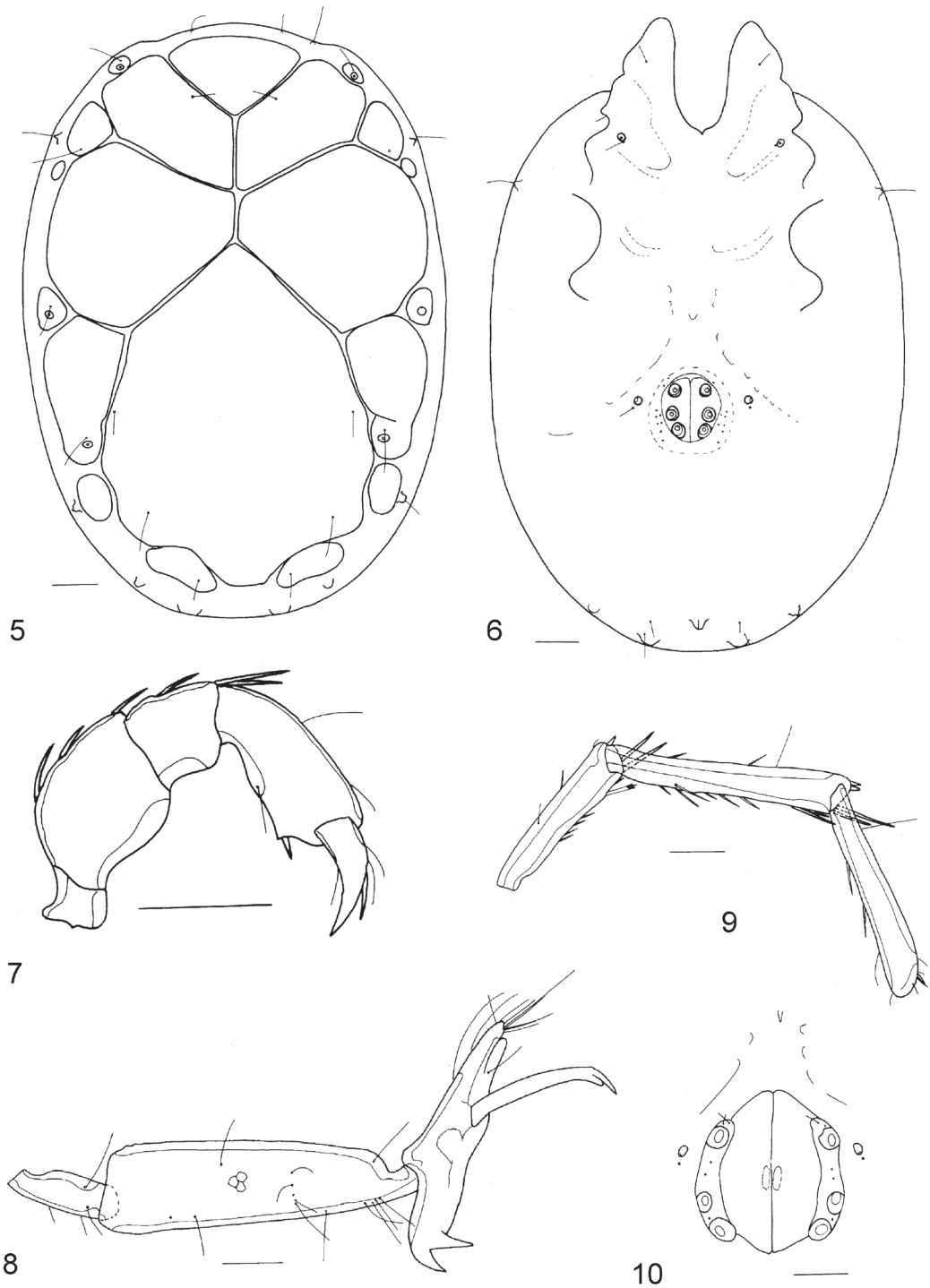
Diagnosis

Male genital field with six pairs of acetabula lying in the gonopore and three pairs fused with the ventral shield.

Description

Male: Idiosoma brownish, dorsal and ventral shields present. Ventrum 640 long, dorsum 640 long, width of idiosoma 397. Dorsal shield complete, 518 long and 348 wide, with three pairs of glandularia. Eyes not in capsules but lying below the integument. First coxal plates extending beyond anterior idiosoma margin. Suture lines of coxae indistinct, lateral suture lines obsolete. First and second coxae fused, third and fourth coxae medially close to each other. Genital field with six pairs of acetabula lying in the gonopore and three pairs of acetabula fused with the ventral shield. Ventroglandularia 2 absent, only accompanying seta present. Lengths of PI-PV: 30, 74, 48, 78, 32. PII with three setae in anterodorsal corner, PIII with a long seta on medial side, PIV rotated (and therefore not completely visible in illustrations) with one very long seta and one shorter seta, PV blunt. Lengths of I-leg-4-6: 86, 120, 108; I-leg-5 ventrally with two long, thin setae. Lengths of III-leg-3-6: 62, 80, 116, 96; III-leg-3 and -4 expanded ventrally, latter segment with two stout setae and one hyaline spatulate seta. Lengths of IV-leg-5-6: 176, 154. Legs without swimming setae, although IV-leg-5 and -6 ventrally with 4-6 long, thin setae.

Female: Unknown.



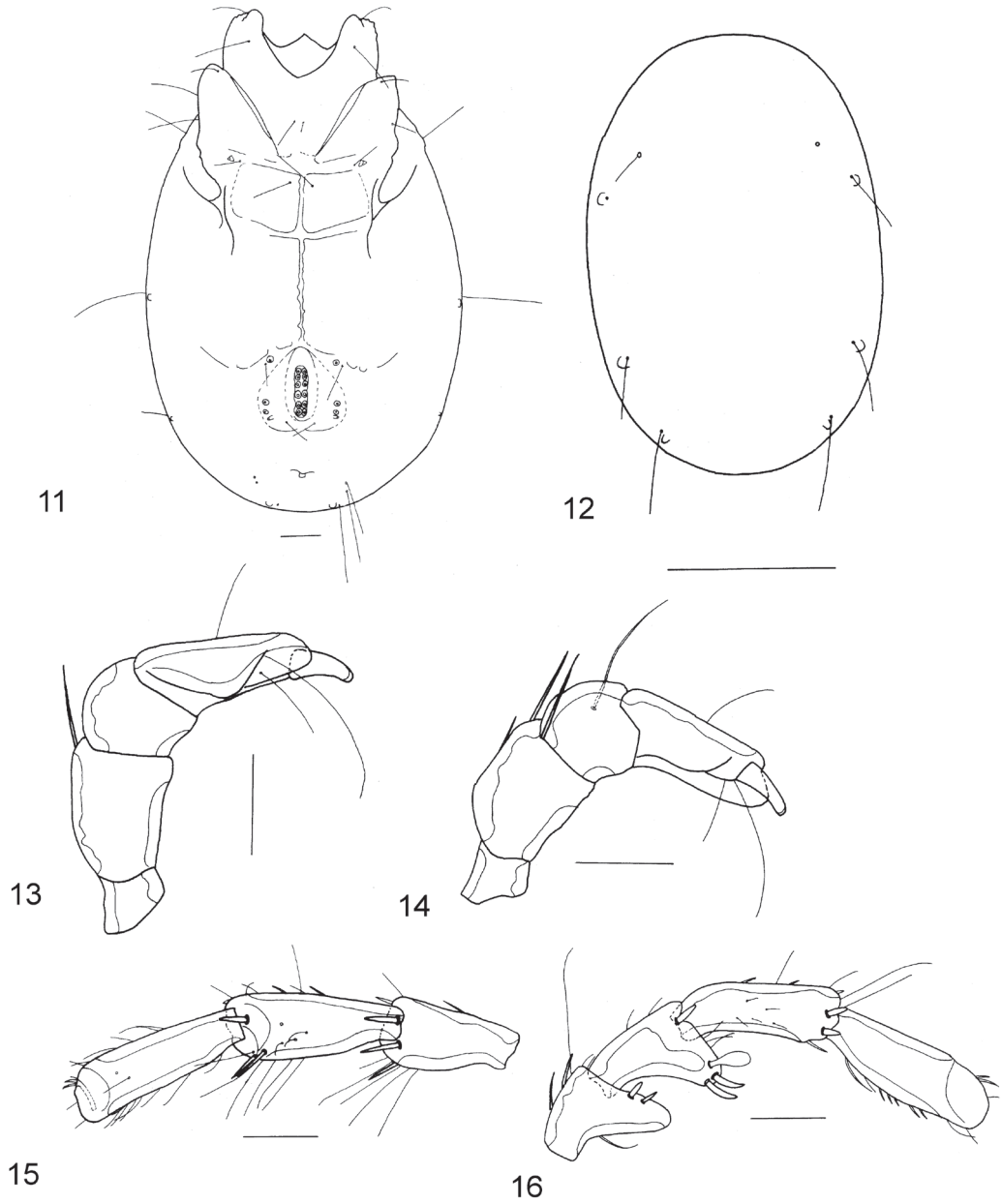
Figs 5-10 - *Partidomomonia elongata* sp. nov., holotype male 5-9, paratype female 10; 5 = dorsal view; 6 = ventral view; 7 = palp; 8 = I-leg-4-6; 9 = IV-leg-4-6; 10 = genital field. Scale bars = 50 μm.

Etymology

Named for its occurrence on Tasmania.

Remarks

This is the second species of the genus, the other one is *M. acares* Harvey, 1988. The new species differs from the latter in the number of acetabula, five acetabula lying in the gonopore and nine acetabula fused with the ventral shield in *M. acares*. Moreover, the shape of the ventral expansion of III-leg-4 is different in *M. acares* (more angular), and so is the shape of the setae of this extension (compare fig. 25 of Harvey 1988 with fig. 16). Although the new species was collected with a groundwater pump, the presence of eyes and coloration might indicate that it is an epigean species.



Figs 11-15 - *Mellamunda tasmanica* sp. nov., holotype male: 11 = ventral view; 12 = dorsal view; 13 = palp; 14 = palp; 15 = I-leg-4-6; 16 = III-leg-3-6. Scale bars 11, 13-16 = 50 µm, 2 = 200 µm.

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