A new species of Monoscutidae (Arachnida, Opiliones) from the wheatbelt of Western Australia

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Abstract – Megalopsalis linnaei sp. nov. is described from the Wheatbelt region of Western Australia. Though most similar to species of Monoscutidae (Opiliones) previously assigned to the Megalopsalidinae, M. linnaei lacks the significant sexual dimorphism previously regarded as characteristic of the subfamily.

INTRODUCTION
The family Monoscutidae Forster 1948 (Arachnida, Opiliones) is widespread in New Zealand and southern and eastern Australia (Forster 1949; Taylor 2004). The New Zealand fauna has been further investigated taxonomically (Forster 1944, 1948, 1964; Taylor 2004) than the Australian fauna (Forster 1949; Hickman 1957), and about two-thirds of the currently recognised species of Monoscutidae are from New Zealand (Taylor 2004). The presence of long-legged harvestmen in Western Australia was first recorded by Forster (1950), but he was unable to identify any species due to only having juvenile specimens on hand. Kauri (1954) described two species from the Porongorups region of Western Australia, Spinicrus minimum Kauri 1954 and S. porongorupense Kauri 1954.

The two subfamilies of Monoscutidae currently recognised, Monoscutinae Forster 1948 and Megalopsalidinae Forster 1949, were both originally described as separate subfamilies in the Phalangiidae. They were united as the subfamily Megalopsalinae [sic] in the Neopilionidae by Šilhavý (1970), before being raised to family level as Megalopsalididae by Martens (1976). The Monoscutinae have been characterised by being heavily sclerotised and lacking significant sexual dimorphism (Forster 1948). The Megalopsalidinae, in contrast, are not as heavily sclerotised and exhibit significant sexual dimorphism, with the male more sclerotised and the male chelicerae enlarged, sometimes considerably longer than the body (Taylor 2004). The recent discovery of a sclerotised species of Monoscutidae with enlarged chelicerae in the male (Taylor 2008) was the first threat to the integrity of these two previously quite distinct subfamilies. The description here of a new non-sclerotised species most similar to other species placed in Megalopsalidinae, but lacking significant sexual dimorphism, further highlights the need for a reassessment of divisions within the Monoscutidae.

METHODS
Specimens were sourced from the collection of the Western Australian Museum (WAM), examined under 70% ethanol using a Leica MZ6 stereo microscope and drawn with the aid of a camera lucida. Colours are described in alcohol. Measurements were taken of the holotype and paratypes (18 males and 8 females) using a graticule. Where not all specimens in a paratype vial were measured, the number measured is indicated. Other specimens listed below were not measured. Measurements are given as means in millimetres, with standard deviations in parentheses. Genitalia were removed using a pair of forceps and examined under an Olympus BH-2 compound microscope mounted in K-Y® brand jelly as described in Cokendolpher and Sissom (2000). Genitalia and pedipalp specimens were examined using SEM microscopy after drying in sequential washes of increasing concentrations of ethanol to 100%, followed by washing in hexamethyl-disilazane (HMDS) and air-drying as described by Nation (1983).

SYSTEMATICS
Family Monoscutidae Forster 1948

Megalopsalis Roewer 1923
Macropsalis Sørensen 1886; 54 (junior homonym of Macropsalis Sclater 1866).
Megalopsalis Roewer 1923: 866 (replacement name for Macropsalis Sørensen 1886).
Type species
Macropsalis serritarsus Sørensen 1886, by monotypy.
Diagnosis

Male prosoma not significantly sclerotised. Patella of pedipalp with large rounded apophysis present in both sexes, densely covered in plumose setae.

Remarks

*Megalopsalis serritarsus* has not been redescribed since its original publication, and a wide variety of species have since been assigned to *Megalopsalis* that do not particularly resemble the type species (Forster 1944). The diagnosis above is based on Sørensen's (1886) original description and observations of comparable specimens from the collection of the Australian Museum (AMS), and is provisional only. Most significantly, the genitalia of *Megalopsalis* serritarsus remain undescribed. Many of the New Zealand species assigned to *Megalopsalis* do not comply with this diagnosis, having small triangular pedipalp apophyses without a dense covering of setae (Taylor 2004), and probably represent a different taxon.

*Megalopsalis linnaei* sp. nov.

Figures 1–14

Material examined

**Holotype**

**Australia**: *Western Australia*: δ, Lake Gounter Nature Reserve (site KN 13), 32°23′48″S 118°49′06″E, 19 May – 22 Sept. 1998, wet pitfalls, P. Van Heurck, CALM Survey (WAM T72981).

**Paratypes**


Other specimens examined


Diagnosis

*Megalopsalis linnaei* differs from all other
Monoscutidae in its lack of both heavy sclerotisation and enlarged chelicerae in the male. The male is also distinguished from all other monoscutid species by its frontal cheliceral apophysis. The female is distinguished from all other Monoscutidae by the round opening at the anterior of the genital operculum.

**Description**

**Male**

Prosoma length 1.24 (0.12), width 2.15 (0.16). Carapace white with brown ticking and scattered darker brown patches; smooth. Ocularium white with brown ticking, unarmed. Ozopore large, easily visible from above, with flanking lobes. Bright white lateral areas on prosoma and dorsum of first two opisthosomal segments. Medial zone of first two segments, and all of third and fourth segments of dorsum of opisthosoma dark brown. Posterior of opisthosoma white ticked with brown medially and bright white laterally. Spiracle with branched covering spines arising from anterior margin. Genital operculum without circular opening on anterior margin. Interior of genital operculum with sclerotised recess for penis. Chelicerae: Segment I 0.83 (0.10), segment II 1.56 (0.09). White with brown patches; unarmed; large frontal apophysis on anteriodistal face of segment II (Figure 3). Outer edge of fingers
smoothly convex (Figure 4). Pedipalps: Femur 1.77 (0.10), patella 0.92 (0.06), tibia 1.17 (0.05), tarsus 2.04 (0.12). Femur, patella and tibia white with tan patches; tarsus tan. All segments unarmed. Femur to tibia with dense plumose setae medially, fewer non-plumose setae laterally (Figures 8–9). Tarsus with plumose setae over proximal two-thirds, non-plumose setae and aciculate ornamentation over distal third. Large rounded distal apophysis on patella and distal medial bulge on femur and tibia (see Figures 6–7). Tarsal claw without ventral teeth. Legs: Femora 2.95 (0.23), 5.90 (0.39), 2.97 (0.29), 4.44 (0.22); patellae 1.12 (0.08), 1.46 (0.11), 0.99 (0.05), 1.01 (0.07); tibiae 2.77 (0.25), 5.32 (0.38), 2.45 (0.20), 3.18 (0.15). Femora unarmed; femora and patellae with longitudinal rows of setae. Tibiae with longitudinal rows of setae and densely covered with aciculate ornamentation. Tibia I with increased density of setae ventrally. Tibiae not pseudosegmented. Penis: (Figures 11–14) Heavily sclerotised; shaft flattened dorsoventrally. Glans at ~90° from shaft; all four bristle groups well-developed, with right bristle groups significantly larger than left-hand groups. Left side of glans-shaft junction with plate-like dorsolateral process (Figure 13). Glans laterally compressed, subrectangular in left lateral view to triangular in right lateral view, torted anti-clockwise in distal view. Pores on glans on raised papillae (Figure 14). Stylus attached at right distal end of glans, strongly recurved back onto glans.

Female: (Figure 1) Prosoma length 1.33 (0.17), width 2.40 (0.15). As for male except for following: Genital operculum with circular medial opening on anterior margin (Figure 10). Chelicerae: (Figure 5) Segment I 0.72 (0.07), segment II 1.62 (0.06). No frontal apophysis on second segment (Figure 5). Pedipalps: Femur 1.71 (0.07), patella 0.89 (0.09), 1.26 (0.06), tarsus 2.29 (0.12). Legs: Femora 2.06 (0.10), 4.08 (0.18), 1.91 (0.10), 3.12 (0.16); patellae 0.96 (0.08), 1.31 (0.06), 0.90 (0.05), 0.99 (0.03); tibiae 2.12 (0.12), 4.15 (0.10), 1.84 (0.10), 2.44 (0.09).

Remarks

Despite its distinctiveness from other Monoscutidae, most of the notable features of *Megalopsalis limnaei* are unique to this species, and so uninformative about its relationships. It is similar to Monoscutinae in having small male chelicerae and relatively short legs (Forster, 1948). However, the absence of significant sclerotisation, the distinct separation dorsally of the prosoma from the opisthosoma, and the
large ozopore easily visible from above with distinct flanking lobes are more characteristic of the Megalopsalidinae. The spiracle of the current species is comparable to those illustrated by Hunt (1990) for Western Australian species of *Megalopsalis*, while the spiracle of an undescribed Australian species of Monoscutinae was illustrated by Hunt (1990) with spines on the posterior margin. The genera of Megalopsalidinae are mostly poorly defined, and might be expected to change in composition in the future (Taylor, 2004). Due to the similarity of the pedipalp of the new species to that of *Megalopsalis* serritarsus, it is provisionally included in *Megalopsalis* pending a more thorough analysis of its relationships.

**Etymology**

Named after Carl Linnaeus to commemorate the 250th anniversary of the publication of the 10th edition of *Systema Naturae* (Linnaeus, 1758), regarded as the initial publication for binomial nomenclature in animals (International Commission on Zoological Nomenclature 1999).

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**REFERENCES**


Linnaeus, C. (1758). *Systema Naturae per regna tria naturæ, secundum classes, ordines, genera, species, cum characteribus, differentiis, synonymis, locis*. Tomus I.


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