

Five new species of the open-holed trapdoor spider genus *Aname* (Araneae: Mygalomorphae: Anamidae) from Western Australia, with a revised generic placement for *Aname armigera*

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ABSTRACT – The open-holed trapdoor spider genus *Aname* L. Koch, 1873 is widely distributed throughout Australia, and currently contains 44 named species. Using a combination of morphological and molecular data, we describe five new species from the Wheatbelt, Mid-west and Goldfields regions of Western Australia: *A. exulans* sp. nov., *A. lillianae* sp. nov., *A. mccleeryorum* sp. nov., *A. phillipae* sp. nov. and *A. simoneae* sp. nov. The female holotype of *Aname armigera* Rainbow and Pulleine, 1918 from near Mullewa was examined and found to belong to the genus *Proshermacha* Simon forming the new combination *P. armigera* (Rainbow and Pulleine, 1918), comb. nov.

KEYWORDS: taxonomy, systematics, molecular phylogenetics

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INTRODUCTION

The open-holed trapdoor spider genus *Aname* L. Koch, 1873 is the most diverse anamid genus with 44 named species recorded from most regions of mainland Australia. The recent detection of a diagnostic morphological feature — the ventral asetose depression on the male pedipalpal tibia — and the inclusion of numerous species of *Aname* in a comprehensive molecular phylogenetic analysis, confirm that the genus as currently recognised is monophyletic. Although, two recent publications have described 15 new species from Western Australia (Castalanelli et al. 2020; Harvey et al. 2012), there are numerous undescribed species recognised using molecular and morphological data (Castalanelli et al. 2014; Harvey et al. 2018; MSH, JAH, unpublished data).

Although a full revision of the genus is currently beyond our capacity, we here describe five new species from the Wheatbelt, Mid-west and Goldfields regions of Western Australia. Three of these species share substantial morphological similarities with *A. whitei*

Castalanelli, Framenau, Huey and Harvey, 2020, a species from Western Australia recently described in a study focused on the Pilbara region (Castalanelli et al. 2020). During that study, morphologically similar specimens collected from the Goldfields and northern Wheatbelt regions of Western Australia were identified in the Western Australian Museum. Closer study of these specimens, and the acquisition of new sequence data, revealed them to represent three additional species, which can be distinguished from each other and from *A. whitei* in the divergent morphologies of the pedipalp of adult males, and sometimes also the spermathecae of females. We also describe two new species from the Mid-west region of Western Australia that possess distinct chevron patterns on the abdomen.

Finally, we also studied the female holotype of *A. armigera* Rainbow and Pulleine, 1918 from near Mullewa, as it occurs within the range of one of the new species. It was found to belong to the genus *Proshermacha* Simon, 1908. We redescribe and illustrate this species, although we have been unable to match males with the female.

MATERIALS AND METHODS

MORPHOLOGY

The specimens examined in this study are lodged in the Western Australian Museum, Perth (WAM), Queensland Museum, Brisbane (QM) and the Australian Museum, Sydney (AM), and are preserved in 75% ethanol. Auto-montaged images were taken at different focal planes (c. 20–30 images) with a Leica DFC500 digital camera attached to a Leica MZI6A stereo microscope, using Leica Application Suite (LAS) version 2.5.OR1 software.

Terminology follows Raven (1985a, 1985b) and Castalanelli et al. (2020). The following abbreviations are used: AME: anterior median eyes; ALE: anterior lateral eyes; PLE: posterior lateral eyes; PME: posterior median eyes. Pedipalp and leg measurements and ratios were calculated using the terminology and reference points defined by Castalanelli et al. (2020).

Morphological characters were scored using DELTA 1.4 (CSIRO, Canberra, Australia) (Dallwitz et al. 2010), which was also used to generate a natural language description that was subsequently edited further. The species are treated in alphabetical order.

The map was produced in ArcGIS version 10.1, with the distributions of each species superimposed over the local IBRA bioregions, as defined by Thackway and Cresswell (1995) and Environment Australia (2000). The map layers were accessed from <https://www.environment.gov.au/land/nrs/science/ibra> (access date 30 January 2020).

MOLECULAR METHODS

Seven genes were selected for this study, three mitochondrial DNA (mtDNA) genes (cytochrome *c* oxidase subunit I [*COI*], 12S rRNA [12S], and 16S rRNA [16S]), and four nuclear DNA (nDNA) genes (18S rRNA [18S], 28S rRNA [28S], Histone H3 [*H3*] and elongation factor 1-gamma [*EF1*]). These were the same genes used in Harvey et al. (2018) and all DNA extraction, amplification and sequencing methods follow the methods described therein. Sequences and workflows were managed with the Geneious software package (R9.0.5), using the LIMS Biocode plug-in (<http://www.mooreabiocode.org>).

As well as the new species described here, representative sequences were selected from 13 previously described species: *A. aragog* Harvey, Framenau, Wojcieszek, Rix and Harvey, 2012, *A. christineae* Castalanelli, Framenau, Huey, Hillyer and Harvey, 2020, *A. ellenae* Harvey, Framenau, Wojcieszek, Rix and Harvey, 2012, *A. grothi* Castalanelli, Framenau, Huey, Hillyer and Harvey, 2020, *A. kima* Castalanelli, Framenau, Huey, Hillyer and Harvey, 2020, *A. lorica* Castalanelli, Framenau, Huey, Hillyer and Harvey, 2020, *A. mainae* Raven, 2000, *A. marae* Harvey, Framenau, Wojcieszek, Rix and Harvey, 2012, *A. mellosa* Harvey, Framenau, Wojcieszek, Rix and Harvey, 2012, *A. pallida* L. Koch, 1873, *A. sinuata* Castalanelli, Framenau, Huey, Hillyer and Harvey,

2020, *A. watsoni* Castalanelli, Framenau, Huey, Hillyer and Harvey, 2020 and *A. whitei* Castalanelli, Framenau, Huey, Hillyer and Harvey, 2020 (Table 1). All of these sequences had been previously published in Harvey et al. (2018) and Castalanelli et al. (2020). The tree was rooted on *Hesperonatalius maxwelli* Castalanelli, Huey, Hillyer and Harvey, 2017, following Harvey et al. (2018), where it was demonstrated that *Hesperonatalius* was the sister lineage to *Aname*. Some of the new species described here had also been sequenced in previous publications (Castalanelli et al. 2014; Harvey et al. 2018), and GenBank was used as the source of these sequences. Each gene was aligned using the MAFFT plug-in in Geneious (Katoh et al. 2002), using the default settings. Coding genes were screened for stop codons by translating alignments, and sequences that exhibited stop codons were discarded. Ribosomal gene alignments had ambiguously aligned regions removed using G Blocks (Castresana 2000; Talavera and Castresana 2007), via the web tool (http://molevol.cmima.csic.es/castresana/Gblocks_server.html), with the settings allowing for gaps and larger blocks. Individual gene trees were built using the RaXML plug-in within Geneious Prime (Stamatakis 2006), with 1,000 bootstraps and using the Generalised time reversible with gamma correction (GTR+gamma) substitution model. The optional partitioning for the concatenated alignment was identified using Partition Finder, version 1.1 (Lanfear et al. 2012), treating each codon independently for coding genes. The optimal partitioning included three partitions; (1) 12S, 16S, *COI* positions 1 and 2, *EF1* position 3, and *H3* position 3; (2) 18S, 28S, *EF1* positions 1 and 2, *H3* positions 1 and 2; and (3) *COI* position 3. A Maximum Likelihood tree was constructed for the concatenated dataset using the RaxML plugin in Geneious Prime, with 1,000 bootstraps and GTR+gamma as the substitution model for all partitions. For the concatenated analysis, *Aname lorica*, *A. watsoni* and *A. whitei* sequences were chimeras of sequences published in Castalanelli et al. (2020), as no single specimen of these species was sequenced for every gene. Average interspecific and intraspecific p-distances were calculated for the *COI* gene using MEGA X (Kumar et al. 2018).

RESULTS AND DISCUSSION

MOLECULAR DATA

The concatenated Maximum Likelihood phylogeny included multiple specimens per species for four of the five species described in this study: *A. exulans*, *A. mcleeryorum*, *A. phillipae* and *A. simoneae*, where available, and reduced the other species to one or two specimens (Figure 1). All of these species were recovered as monophyletic, however, some with low support (*A. phillipae*, BS = 69 and *A. simoneae* BS = 72). Despite their distributions overlapping (Figure 151), the new species were not each other's closest relatives, with *A. exulans* and *A. mcleeryorum* sister to each other and most closely related to *A. mainae* from the Eyre Peninsula (South Australia). *Aname phillipae*, *A. simoneae* and

A. whitei formed a closely related clade, which was reflected in their very similar morphology. Overall, the topology presented here should be interpreted with caution as many more unsequenced and undescribed species are known, the inclusion of which could alter the relationships.

The genetic distances recovered here demonstrate the difficulty of identifying a strict species level genetic threshold in *Aname*. The *COI* p-distances revealed intraspecific genetic distances as high as 8.98% in *A. simoneae*, and interspecific distances as low as 7.5% were recovered between *A. exulans* and *A. mcleeryorum* (Table 2).

MORPHOLOGY

As noted by Raven (1985a) and Castalanelli et al. (2020), the spermathecae of female *Aname* contain

significant interspecific variation. Indeed, the spermathecae of the closely related *A. exulans* and *A. mcleeryorum* described below exhibit consistent differences, despite these two species being sister-taxa and only 8% divergent on average for *COI*. In contrast, we were unable to differentiate between the females of three closely related species, *A. phillipae*, *A. simoneae* (described below) and *A. whitei*, described from the Pilbara (Castalanelli et al. 2020). As *A. phillipae* and *A. simoneae* have somewhat overlapping distributions (Figure 151), we were only able to assign females of this species group for which sequence data were available, as this represents the only guaranteed method for identifying females. The Western Australian Museum collection includes several females from the Coolgardie and Murchison IBRA bioregions that could not be identified to either species.

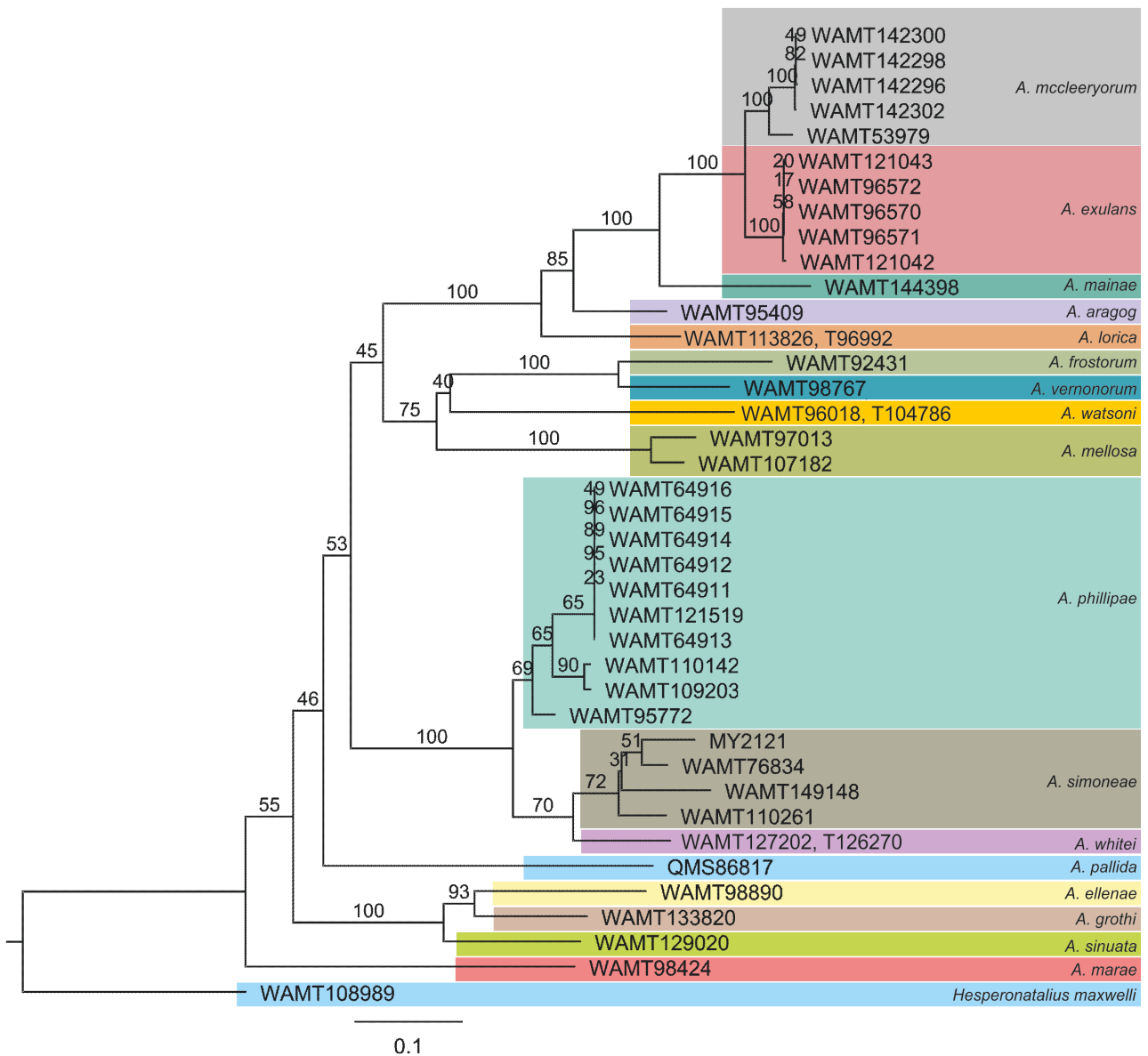


FIGURE 1 Maximum Likelihood phylogeny for the concatenated dataset. Values represent Bootstrap Values.

TABLE 1

Specimens sequenced for the molecular phylogenetic analysis (see Figure 1). Unless stated otherwise, the locations are situated in Western Australia, and specimens are lodged in the Western Australian Museum (WAM) and Queensland Museum (QM).

Taxon	Specimen	Registration number	Locality	12S	16S	18S	28S	COI	EF1	H3
Genus: <i>Aname</i>										
<i>Aname exulans</i> sp. nov.										
	Holotype male	WAM T96570	West Wallabi Island, Houtman Abrolhos, 28°27'24"S, 113°41'05"E	-	-	-	-	KJ745434	-	-
	Paratype male	WAM T96571	West Wallabi Island, Houtman Abrolhos, 28°27'24"S, 113°41'04"E	-	-	-	-	KJ745435	-	-
	Male	WAM T96572	East Wallabi Island, Houtman Abrolhos, 28°26'24"S, 113°44'07"E	-	-	-	-	KJ745436	-	-
	Paratype male	WAM T121042	West Wallabi Island, Houtman Abrolhos, 28°29'S, 113°41'E	MG799896	MG799962	MG800035	MG800112	MG800165	MG800236	MG800298
	Paratype male	WAM T121043	West Wallabi Island, Houtman Abrolhos, 28°29'S, 113°41'E	MT603532	MT604151	MT604134	MT604145	MT611173	MT623661	MT623670
<i>Aname mccleryorum</i> sp. nov.										
	Holotype male	WAM T53979	Chapman Valley, 28°30'S, 114°47'E	MT603527	MT604146	MT604125	MT604135	MT611168	-	MT623663
	Juvenile	WAM T142296	Lesueur National Park, c. 380 m N. of University Track, 30°09'02"S, 115°14'09"E	MT603528	MT604147	MT604130	MT604139	MT611169	-	MT623671
	Paratype female	WAM T142298	Lesueur National Park, University Track, western end, 30°09'33"S, 115°12'14"E	MT603529	MT604148	MT604131	MT604136	MT611170	-	MT623672
	Juvenile	WAM T142300	Lesueur National Park, 30°10'54"S, 115°15'01"E	MT603529	MT604148	MT604132	MT604137	MT611171	-	MT623672

Taxon	Specimen	Registration number	Locality	12S	16S	18S	28S	COI	EF1	H3
<i>Aname philippae</i> sp. nov.	Paratype female	WAM T142302	Coorow-Green Head Road, 30°03'47"S, 115°10'44"E	MT603531	MT604150	MT604133	MT604138	MT611172	-	MT623674
	Holotype male	WAM T110142	Deception Hill, 111.15 km NNW. of Koolyanobbing, 29°51'56"S, 119°16'37"E	-	MT604160	MT604128	MT604141	-	MT623659	MT623668
	Paratype male	WAM T95772	S. of Kambalda, 31°34'03"S, 121°44'42"E	-	-	-	MT604143	-	-	MT623667
	Paratype male	WAM T109203	Deception Hill, 93.10 km NNW. of Koolyanobbing, 30°02'06"S, 119°16'28"E	-	MT611177	-	-	MT604159	-	-
	Male	WAM T64911	Lord Nelson [mine], 10.3 km SSW. of Black Hill, site LN03, 28°09'36"S, 119°30'36"E	-	MT604152	MT604126	MT604140	-	MT623657	MT623664
	Male	WAM T64912	Lord Nelson [mine], 10.3 km SSW. of Black Hill, site LN03, 28°09'36"S, 119°30'36"E	-	MT604153	-	-	-	-	MT623665
	Male	WAM T64913	Lord Nelson [mine], 10.3 km SSW. of Black Hill, site LN03, 28°09'36"S, 119°30'36"E	-	-	-	-	-	MT623658	-
	Male	WAM T64914	Lord Nelson [mine], 10.3 km SSW. of Black Hill, site LN03, 28°09'36"S, 119°30'36"E	-	MT604154	-	-	-	-	-
	Male	WAM T64915	Lord Nelson [mine], 10.3 km SSW. of Black Hill, site LN03, 28°09'36"S, 119°30'36"E	-	MT604155	-	-	-	-	-
	Male	WAM T64916	Lord Nelson [mine], 10.3 km SSW. of Black Hill, site LN03, 28°09'36"S, 119°30'36"E	-	MT604156	-	-	-	-	-
Male	WAM T121519	Mt Ida, 80 km NW. of Menzies, 29°11'01"S, 120°25'18"E	-	-	-	-	-	-	MT623662	-

Taxon	Specimen	Registration number	Locality	12S	16S	18S	28S	COI	EF1	H3
<i>Aname simoneae</i> sp. nov.	Holotype male	WAM T110261	21 km S. of Laverton, 28°47'34"S, 122°25'53"E	-	MT604158	MT604129	MT604144	MT611175	MT623660	MT623669
	Paratype female	WAM T149148	c. 41.5 km SSE. of Menzies, 30°04'21.91"S, 121°10'35.75"E	-	-	-	-	MT611176	-	-
	Juvenile	WAM T76834	Wanjarrri, 53.3 km S. of Lake Way homestead, site YAK07B, 27°24'24"S, 120°36'42"E	-	MT604157	MT604127	MT604142	MT611174	-	MT623666
<i>Aname aragog</i> Harvey, Framenau, Wojcieszek, Rix and Harvey, 2012	Unknown	MY2121	N. of Leonora S28.10172 E121.90417 (Hedin and Bond 2006)	KY015478	KY015978	DQ639832	KY017209	KY017804	-	KY018318
	Female	WAM T95409	Jimblebar minesite, 35 km E. of Newman, 23°22'44"S, 120°15'27"E	KY214181	KY241234	KY241250	KY241265	KJ745403	MG800219	KY241287
	Holotype male	WAM T98890	Aquila Onslow, 24.9 km SE. of Onslow, 21°46'56"S, 115°17'40"E	KY214186	KY241238	KY241255	KY241270	JQ772138	-	KY241291
<i>Aname frostorium</i> Castalaneli, Framenau, Huey, Hillyer and Harvey, 2020	Paratype male	WAM T92431	11 km SSE. of Whim Creek Hotel, 20°55'11.4"S, 117°51'40.6"E	MN634950	-	-	-	-	-	-
	Holotype male	WAM T133820	Great Sandy Desert, 90 km SW. of Wangkatjungka, 19°32'30"S, 125°24'06"E	MN634958	MN634775	MN634925	MN634748	MN635075	-	MN635127
<i>Aname lorica</i> Castalaneli, Framenau, Huey, Hillyer and Harvey, 2020	Paratype male	WAM T113826	Barrow Island, 20°41'32"S, 115°25'54"E	MN634945	MN634841	MN634935	MN634733	-	MN635140	MN635093
	Male	WAM T96992	Barrow Island, 20°49'35"S, 115°26'44"E	-	-	-	-	MN635038	-	-
<i>Aname mainae</i> Raven, 2000	Female	WAM T144398	South Australia: Corner of Flinders Highway and Talia Caves Road, 33°17'25"S, 134°49'23"E	MN634938	MN634859	-	MN634735	MN635077	-	MN635092

Taxon	Specimen	Registration number	Locality	12S	16S	18S	28S	COI	EF1	H3
<i>Aname marae</i> Harvey, Framenau, Wojcieszek, Rix and Harvey, 2012	Holotype male	WAM T98424	Tom Price powerlines, 4 km NW. of Tom Price, 22°41'10"S, 117°44'56"E	KY214185	-	KY241254	KY241269	JQ772144	-	KY241290
<i>Aname mellosa</i> Harvey, Framenau, Wojcieszek, Rix and Harvey, 2012	Paratype male	WAM T97013	Jinayri, c. 65 km NW. of Newman, 22°51'10"S, 119°16'34"E	KY214184	KY241237	KY241253	KY241268	JQ772134	-	-
<i>Aname pallida</i> L. Koch, 1873	Male	WAM T107182	Fortescue Marsh, 22°18'26.28"S, 119°12'57.24"E	MG799892	MG799958	MG800030	MG800107	KJ744651	MG800231	MG800294
<i>Aname sinuata</i> Castalanelli, Framenau, Huey, Hillyer and Harvey, 2020	Female	QM S86817	Queensland: Prosperpine, Thompson Creek, 20°30'S, 148°34'E	KY214179	KY241230	-	-	KY241278	-	KY241283
<i>Aname vernorum</i> Castalanelli, Framenau, Huey, Hillyer and Harvey, 2020	Paratype male	WAM T129020	Cape Lambert, 3 km N. of Wickham, 20°38'56"S, 117°08'47"E	MN634957	MN634758	MN634924	MN634745	MN635073	MN635131	MN635099
<i>Aname watsoni</i> Castalanelli, Framenau, Huey, Hillyer and Harvey, 2020	Paratype female	WAM T98767	Aquila Onslow, 24.9 km SE. of Onslow, 21°46'56"S, 115°17'40"E	MG799887	MG799953	MG800025	MG800102	MG800161	MG800226	MG800290
<i>Aname whitei</i> Castalanelli, Framenau, Huey, Hillyer and Harvey, 2020	Paratype male	WAM T96018	Jimblebar, c. 35 km E. of Newman, 23°22'52"S, 120°10'24"E	MN634960	MN634776	MN634929	MN634750	-	-	MN635125
<i>Aname whitei</i> Castalanelli, Framenau, Huey, Hillyer and Harvey, 2020	Holotype male	WAM T104786	8 km W. of Newman, 23°23'01.35"S, 119°38'52.06"E	-	-	-	-	MN635068	-	-
<i>Aname whitei</i> Castalanelli, Framenau, Huey, Hillyer and Harvey, 2020	Juvenile	WAM T127202	78.2 km NW. of Newman, 23°01'11"S, 119°03'36"E	-	MN634900	MN634928	MN634726	-	MN635134	MN635108
<i>Aname whitei</i> Castalanelli, Framenau, Huey, Hillyer and Harvey, 2020	Female	WAM T126270	114 km NW. of Newman, 22°36'52"S, 118°57'18"E	-	-	-	-	MN635083	-	-
Genus: <i>Hesperonatalius</i> <i>Hesperonatalius maxwelli</i> Castalanelli, Huey, Hillyer and Harvey, 2017	Paratype male	WAM T108989	Lake MacLeod, 24°28'33.9"S, 113°31'32.7"E	KY214190	KY241244	KY241259	KY241275	KJ744690	MG800233	KY241293

SYSTEMATICS

Family Anamidae Simon, 1889

Genus *Aname* L. Koch, 1873

Aname L. Koch, 1873: 465. Type species: *Aname pallida* L. Koch, 1873, by monotypy.

Dekana Hogg, 1902: 138 (synonymised by Raven, 1981: 328). Type species: *Dekana diversicolor* Hogg, 1902, by original designation.

Sungenia Rainbow and Pulleine, 1918: 162 (synonymised by Raven, 1981: 328). Type species: *Chenistonia (Dekana) atra* Strand, 1913, by monotypy.

Dolichosternum Rainbow and Pulleine, 1918: 168 (synonymised by Raven, 1981: 328). Type species: *Dolichosternum attenuatum* Rainbow and Pulleine, 1918 (junior synonym of *Ixamatus distinctus* Rainbow, 1914), by monotypy.

DIAGNOSIS

Species of *Aname* can be distinguished from all other anamids by the presence of prominent asetose ventral depression on the male pedipalpal tibia (Figures 15, 44, 73, 104, 133).

Aname exulans

Harvey and Huey, sp. nov.

Figures 2–30

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Aname 'MYG067': Castalanelli 2014: fig. 3.

MATERIAL EXAMINED

Holotype

Australia: Western Australia: ♂, West Wallabi Island, Houtman Abrolhos, 28°27'24"S, 113°41'05"E, 10 January 2008, dry pitfall trap, R. Teale, Z. Hamilton, R.A. How (WAM T96570^{DNA}).

Paratypes

Australia: Western Australia: 3 ♀, North Island, Houtman Abrolhos, 28°18'S, 113°36'E, 27 August 1974, Aquinas Boys College (WAM T10124–10126); 1 ♀, North Island, Houtman Abrolhos, 28°18'S, 113°36'E, 3 August 1976, R. Prince (WAM T47464); 2 ♂, West Wallabi Island, Houtman Abrolhos, 28°27'24"S, 113°41'04"E, 11 January 2008, dry pitfall trap, M.A. Cowan, D. Kamien (WAM T96571^{DNA}, T96576); 1 ♂, West Wallabi Island, Houtman Abrolhos, 28°28'04"S, 113°41'13"E, 11 February 2012, dry pitfall trap, C.A. Stevenson, M.A. Cowan, P. Spencer, P. Kendrick (WAM T120851); 1 ♂, West Wallabi Island, Houtman Abrolhos,

28°29'S, 113°41'E, 10 February 2012, C. Stevenson (WAM T121042^{DNA}); 2 ♂, same data except 7 February 2012 (WAM T121043^{DNA}, T121044).

Other material

Australia: Western Australia: 1 ♂, 1 juvenile, East Wallabi Island, Houtman Abrolhos, 28°26'24"S, 113°44'07"E, 10 January 2008, dry pitfall trap, R. Teale, Z. Hamilton, R.A. How (WAM T96572^{DNA}, T96575); 4 ♂, 1 juvenile, West Wallabi Island, Houtman Abrolhos, 28°27'24"S, 113°41'05"E, 8–11 November 2005, dry pitfall trap, R.A. How, et al. (WAM T77027); 1 juvenile, Houtman Abrolhos, East Wallabi Island, 28°26'S, 113°43'E, 9 December 1968, A.R. Main (WAM T147673).

DIAGNOSIS

Aname exulans is easily distinguished from all other named species of *Aname* by the abdominal colour pattern which comprises a pale background, a dark median stripe and several indistinct chevrons (Figures 9, 27).

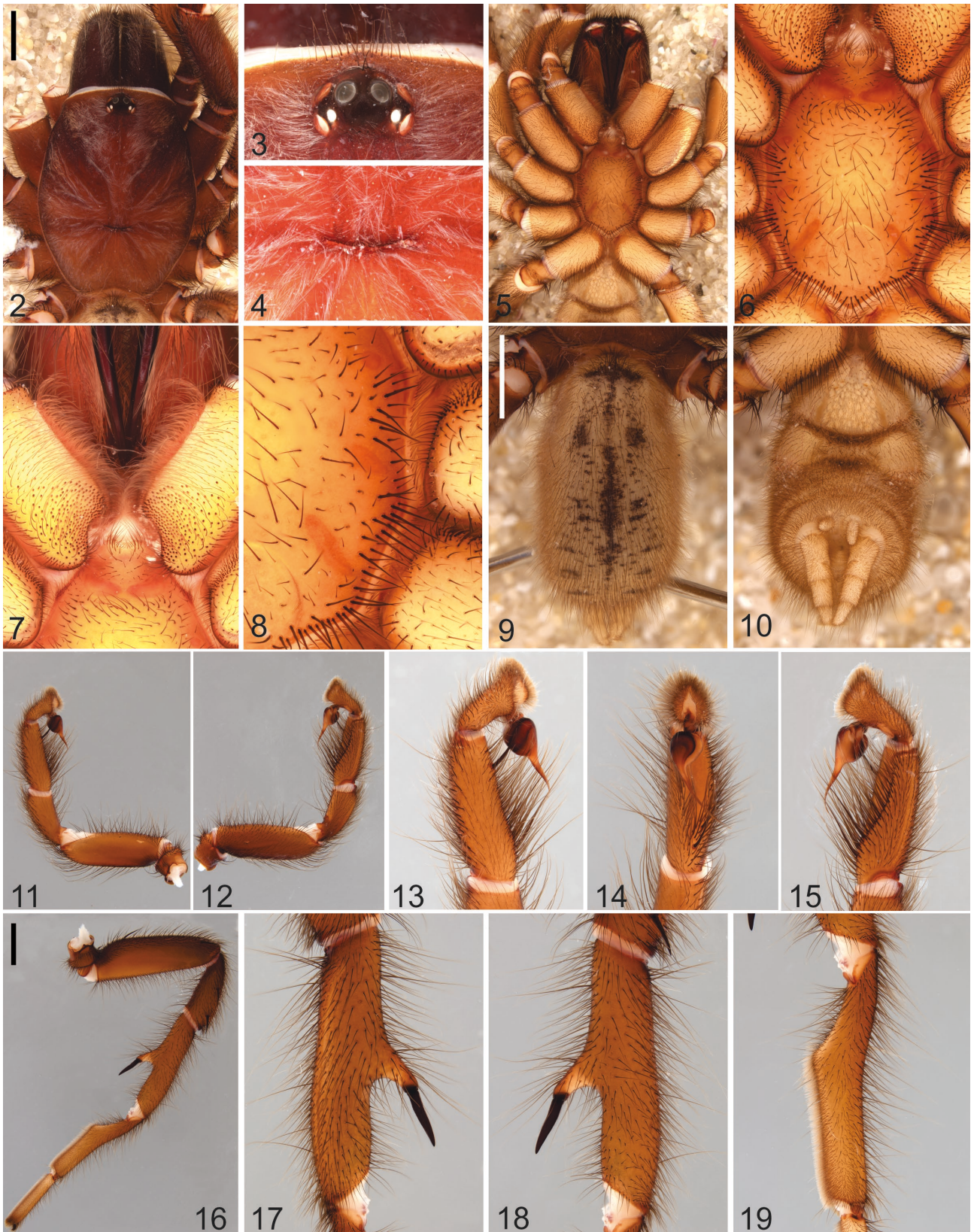
Aname exulans most closely resembles *A. mccleryorum* as the females of both species have distinct chevron patterning on the abdomen. However, the abdomen has a dark median stripe and several indistinct chevrons in *A. exulans* (Figure 27) but is diffusely grey on a light background in *A. mccleryorum* (Figures 85, 90). Males of *A. exulans* differ from *A. mccleryorum* in the shape of the pedipalp including the longer tibial depression and the longer and straighter embolus (Figures 13–15). Females differ by the coiled and distally bifurcate spermathecal lobes (Figures 29, 30), which are short and slightly curved in *A. mccleryorum* (Figures 87, 88).

DESCRIPTION

Male: based on holotype (WAM T96570)

Colour (in alcohol): Carapace anterior brown-yellow fading to yellow-brown posteriorly; legs brown, some segments with longitudinal pale stripes, tarsi paler; chelicerae uniformly dark red-brown; abdomen dorsally pale yellow-brown with black median stripe and several indistinct chevrons, and ventrally pale yellow-brown.

Cephalothorax: Carapace (Figure 2) 1.26 × longer than broad; with sparse fine setae, silver hairs present, with brown bristles dorsally. Clypeal edge protruding medially. Fovea slightly procurved (Figure 4). Eyes on distinct mound (Figure 3); from above, anterior eye row slightly procurved, posterior eye row slightly recurved; AME about same size as ALE; ALE and AME the largest; PME smallest; eye group length 0.7, width 1.2. Chelicerae with broad dorsal strip of black setae, and two thinner lateral strips of smaller black setae; rastellum absent; promargin of tooth row with 9 teeth, retromargin with 6 teeth. Labium fused to sternum (Figure 7); without cuspules. Maxillae (Figure 7) with 220 cuspules, located on basal third. Sternum (Figure 6): oval, posteriorly pointed; 1.18 × longer than broad;



FIGURES 2–19 *Aname exulans* sp. nov., holotype male (WAMT96570): 2) cephalothorax, dorsal view; 3) ocular region; 4) fovea; 5) cephalothorax, ventral view; 6) sternum, ventral view; 7) maxillae and labium, ventral view; 8) left sigilla, ventral view; 9) abdomen, dorsal view; 10) abdomen, ventral view; 11) left pedipalp, prolateral view; 12) left pedipalp, retrolateral view; 13) left pedipalp, tibia and tarsus, prolateral view; 14) left pedipalp, tibia and tarsus, ventral view; 15) left pedipalp, tibia and tarsus, retrolateral view; 16) left leg I, prolateral view; 17) left leg I, tibia I, retrolateral view; 18) left leg I, tibia I, prolateral view; 19) left leg I, metatarsus I, prolateral view. Scale lines = 2 mm.

bristles sparsely distributed over entire surface; with 3 pairs of sigilla (Figure 8), each pair increasing in size from anterior to posterior; anterior and median pairs located near edge of sternum; posterior pair elongate.

Pedipalp (Figures 11–15): Tibia cylindrical, narrow; asetose depression present, about the length of embolus; PDL/PTL 0.67. Tarsus short; sparsely setose; bulb ovoid; embolus much longer than bulb, gently curved.

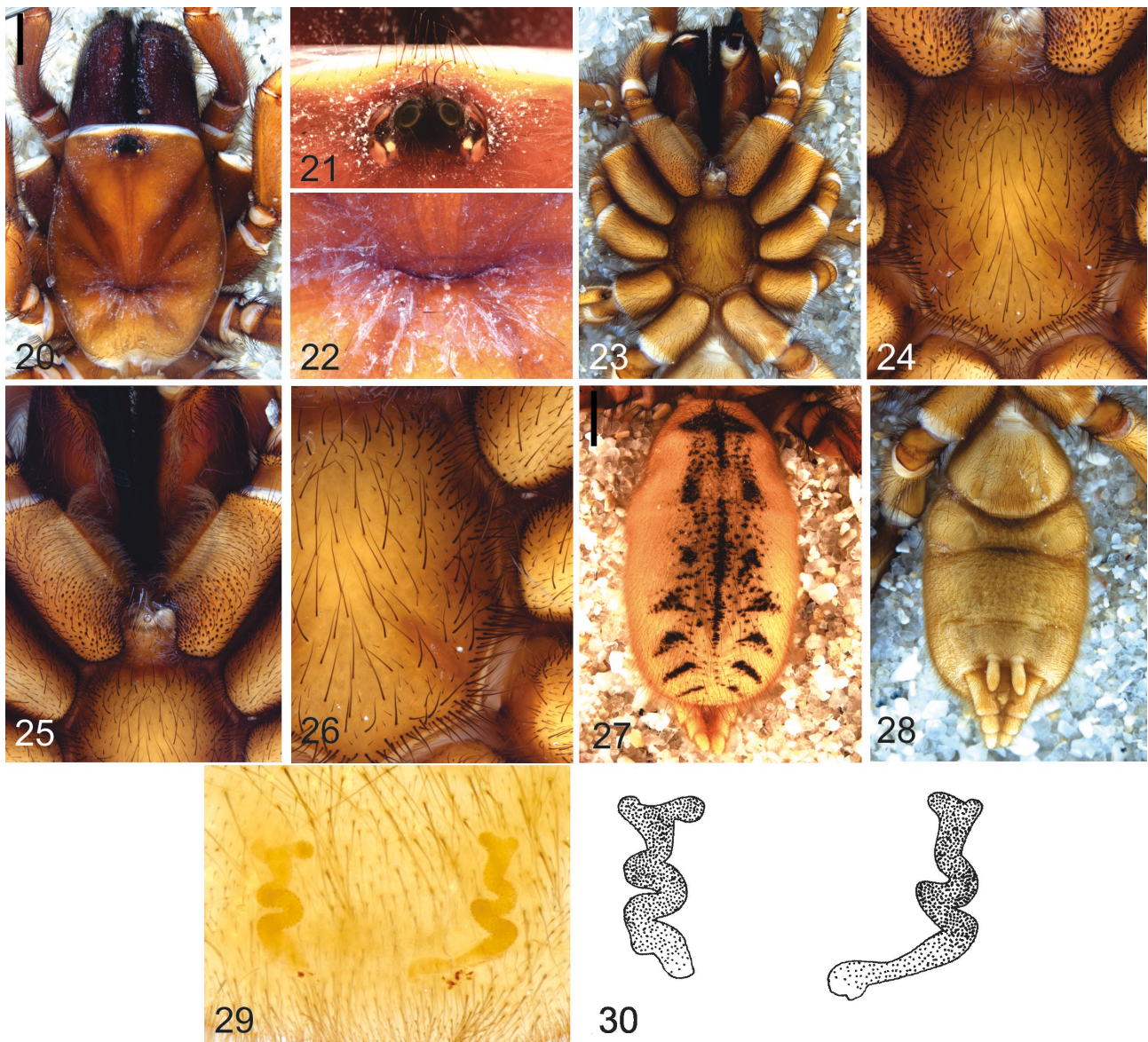
Legs: Coxal cuspules absent (Figure 5). Tibia I with large megaspor (Figures 16–18); TIL/TID 4.38; TIS/TIL 0.52; TISH/TID 0.84; metatarsus incrassate (Figure 19); MIL/MID 5.00; MIPEL/MIL 0.41. Scopula present on all tarsi, metatarsi I and II, and distal half of metatarsi III and IV. Trichobothria: tibia with numerous trichobothria in 2 rows, metatarsi with several

trichobothria, tarsi with numerous trichobothria. Claws with 2 rows of teeth; claw tufts absent. Measurements: Leg I: femur 6.2, tibia 6.6, metatarsus 5.5. Leg II: femur 5.6. Leg III: femur 4.6. Leg IV: femur 6.2.

Abdomen (Figures 9, 10): 1.8 × longer than broad, sparsely pilose with long setae on dorsal side. Spinnerets: 2 pairs of spinnerets; PMS unsegmented and separated by about diameter of spinneret; PLS 3-segmented, apical segment elongate, digitiform.

Dimensions (mm): Total body length 20.0; carapace length 8.3, width 6.6; sternum length 3.9, width 3.3; abdomen length 7.5, width 4.2.

Variation: N = 10. Carapace length 7.7–8.7; width 6.4–7.1; femur I length 6.3–7.0; metatarsus I length 5.0–5.6; femur IV length 6.1–6.8.



FIGURES 20–30 *Aname exulans* sp. nov., paratype female (WAM T10124): 20) cephalothorax, dorsal view; 21) ocular region; 22) fovea; 23) cephalothorax, ventral view; 24) sternum, ventral view; 25) maxillae and labium, ventral view; 26) left sigilla, ventral view; 27) abdomen, dorsal view; 28) abdomen, ventral view; 29) spermathecae, dorsal view; 30) spermathecae, dorsal view, line drawing. Scale lines = 2 mm.

Female: based on paratype (WAM T10124).

Colour (in alcohol): Carapace anterior red-brown fading posteriorly to light brown; legs brown, some segments with longitudinal pale stripes, tarsi paler; chelicerae uniformly dark red-brown; abdomen dorsally pale yellow-brown with black median stripe and several distinct chevrons, and ventrally pale yellow-brown.

Cephalothorax: Carapace (Figure 20) $1.18 \times$ longer than broad; with sparse fine setae, silver hairs absent, with brown bristles dorsally. Clypeal edge protruding medially. Fovea slightly procurved (Figure 22). Eyes on distinct mound (Figure 21); from above, anterior eye row slightly procurved, posterior eye row slightly recurved; AME about same size as ALE; ALE and AME the largest; PME smallest; eye group length 0.7, width 1.3. Chelicerae with broad dorsal strip of black setae, and two thinner lateral strips of smaller black setae; rastellum absent; promargin of tooth row with 9 teeth, retromargin with 5 teeth. Labium fused to sternum (Figure 25); without cuspules. Maxillae (Figure 25) with 225 cuspules; located on basal half. Sternum (Figure 24): oval, posteriorly pointed; $1.18 \times$ longer than broad; bristles sparsely distributed over entire surface; with 3 pairs of sigilla (Figure 26), each pair increasing in size from anterior to posterior; anterior and median pairs located near edge of sternum; posterior pair elongate.

Pedipalp: Tarsus densely setose.

Legs: Coxal cuspules absent (Figure 23). Scopula present on all tarsi, present on metatarsi I and II, present on distal half of metatarsi III and IV. Trichobothria: tibia with numerous trichobothria in 2 rows, metatarsi with several trichobothria, tarsi with numerous trichobothria. Claws with 2 rows of teeth; claw tufts absent. Measurements: Leg II: femur 6.0. Leg III: femur 5.5. Leg IV: femur 6.6.

Abdomen (Figures 27, 28): $1.7 \times$ longer than broad, sparsely pilose with long setae on dorsal side. Spinnerets: 2 pairs of spinnerets; PMS unsegmented and separated by about diameter of spinneret; PLS 3-segmented, apical segment elongate, digitiform.

Genitalia (Figures 29, 30): 1 pair of spermathecae, each coiled and distally bifurcate.

Dimensions (mm): Total body length 25.8; carapace length 8.7, width 7.4; sternum length 4.5, width 3.8; abdomen length 11.1, width 6.4.

Variation: N = 3. Carapace length 10.4–10.6; width 8.5–8.9; femur I length 7.5–7.6; femur IV length 7.3–8.1.

DISTRIBUTION

Aname exulans has only been found on three islands of the Houtman Abrolhos Group (North Island, West Wallabi Island and East Wallabi Island), which are located c. 60 km from the Western Australian coast in the Geraldton Sandplains IBRA bioregion of Western Australia (Figure 151).

REMARKS

Despite examining many collections of *Aname* specimens from mainland Australia, we have not detected specimens of *A. exulans* from anywhere

other than the Houtman Abrolhos (Figure 151) where it is likely to be endemic. The occurrence of a species of *Aname* that is apparently endemic to the Abrolhos Islands is somewhat remarkable, given that the islands have been connected to mainland Australia as recently as 6,500 years ago (Collins et al. 2006).

SEQUENCE DATA

Intraspecific genetic divergence for this species was low, reaching only 0.06% at *COI*. It was also very closely related to its morphologically distinct sister species, *A. mcleeryorum* (7.5%), found on the mainland adjacent to the islands inhabited by *A. exulans* (Figure 151). Sequence data for a specimen of this species was supplied by Castalanelli et al. (2014) using the code *Aname* 'MYG067'.

ETYMOLOGY

The species epithet refers to the presence of this species on offshore islands (*exul*, Latin, a banished person, exile) (Brown 1956).

***Aname lillianae* Harvey and Huey, sp. nov.**

Figures 31–59

urn:lsid:zoobank.org:act:F5610B98-5EB0-4E0A-931C-CC26A2F2E1EA

MATERIAL EXAMINED

Holotype

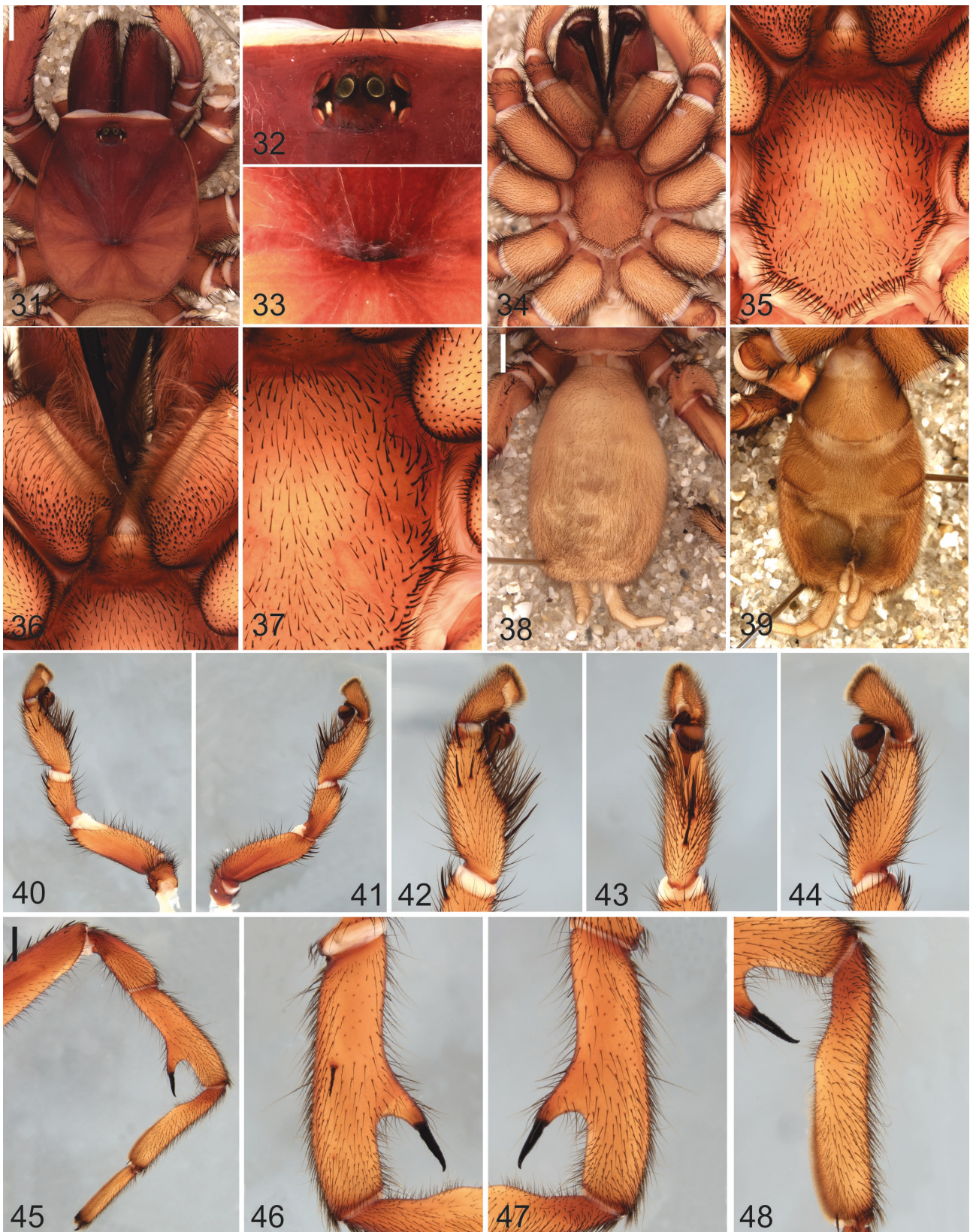
Australia: Western Australia: ♂, Pallottine Mission, near Tardun, 28°47'S, 115°51'E, collection date unknown, donated February 1990, W.H. van Veen (WAM T20639, formerly 90/609).

Paratypes

Australia: Western Australia: 1 ♂, Tutanning Nature Reserve, c. 32°32'S, 117°19'E, 29 January 1987, G.T. Smith et al. (WAM T146038); 1 ♀, Tutanning Nature Reserve, c. 32°32'S, 117°19'E, 20 October 1987, G.T. Smith et al. (WAM T146039).

Other material

Australia: Western Australia: 2 ♂, Blue Hill Range, 29°08'38"S, 116°53'40"E, 13–16 February 2004, dry pitfall, ironstone ridge in mulga/eucalypt woodland, M. Bamford (WAM T46816); 1 ♂, Cogla Downs Station, 70 miles NNW. of Sandstone, 27°26'S, 118°56'E, January 1982, A.R. Humphries (WAM T18133, formerly 88/110); 1 ♂, Coolgardie, 30°57'S, 121°10'E, 26 February 1993, donated via Department of Conservation and Land Management, Kalgoorlie (WAM T27271, formerly 93/587); 1 ♂, Durokoppin Nature Reserve, 31°24'37"S, 117°45'37"E, 6 August 1987, pitfall trap, G.R. Friend (WAM T142375); 1 ♂, Marloo Station, c. 20 miles W. of Yalgoo, 28°19'S, 116°11'E, 31 January 1968, A.M. Douglas, L.E. Koch (WAM T29852, formerly 94/263);



FIGURES 31–48 *Aname lilliana* sp. nov., holotype male (WAM T20639): 31) cephalothorax, dorsal view; 32) ocular region; 33) fovea; 34) cephalothorax, ventral view; 35) sternum, ventral view; 36) maxillae and labium, ventral view; 37) left sigilla, ventral view; 38) abdomen, dorsal view; 39) abdomen, ventral view; 40) left pedipalp, prolateral view; 41) left pedipalp, retrolateral view; 42) left pedipalp, tibia and tarsus, prolateral view; 43) left pedipalp, tibia and tarsus, ventral view; 44) left pedipalp, tibia and tarsus, retrolateral view; 45) left leg I, prolateral view; 46) left leg I, tibia I, retrolateral view; 47) left leg I, tibia I, prolateral view; 48) left leg I, metatarsus I, prolateral view. Scale lines = 2 mm.

1 ♂, McClellands [= McLennans], c. 10 km NW. of Kellerberrin, 31°34'40"S, 117°37'58"E, 10 March 1987, G.T. Smith et al. (WAM T146035); 1 ♂, Merredin, 31°29'S, 118°16'E, 15 January 1930, collector unknown (WAM T2213, formerly 30/51); 1 ♂, Ryans, c. 29 km NE. of Kellerberrin, 31°23'S, 117°51'E, 27 January 1987, G.T. Smith et al. (WAM T146036).

DIAGNOSIS

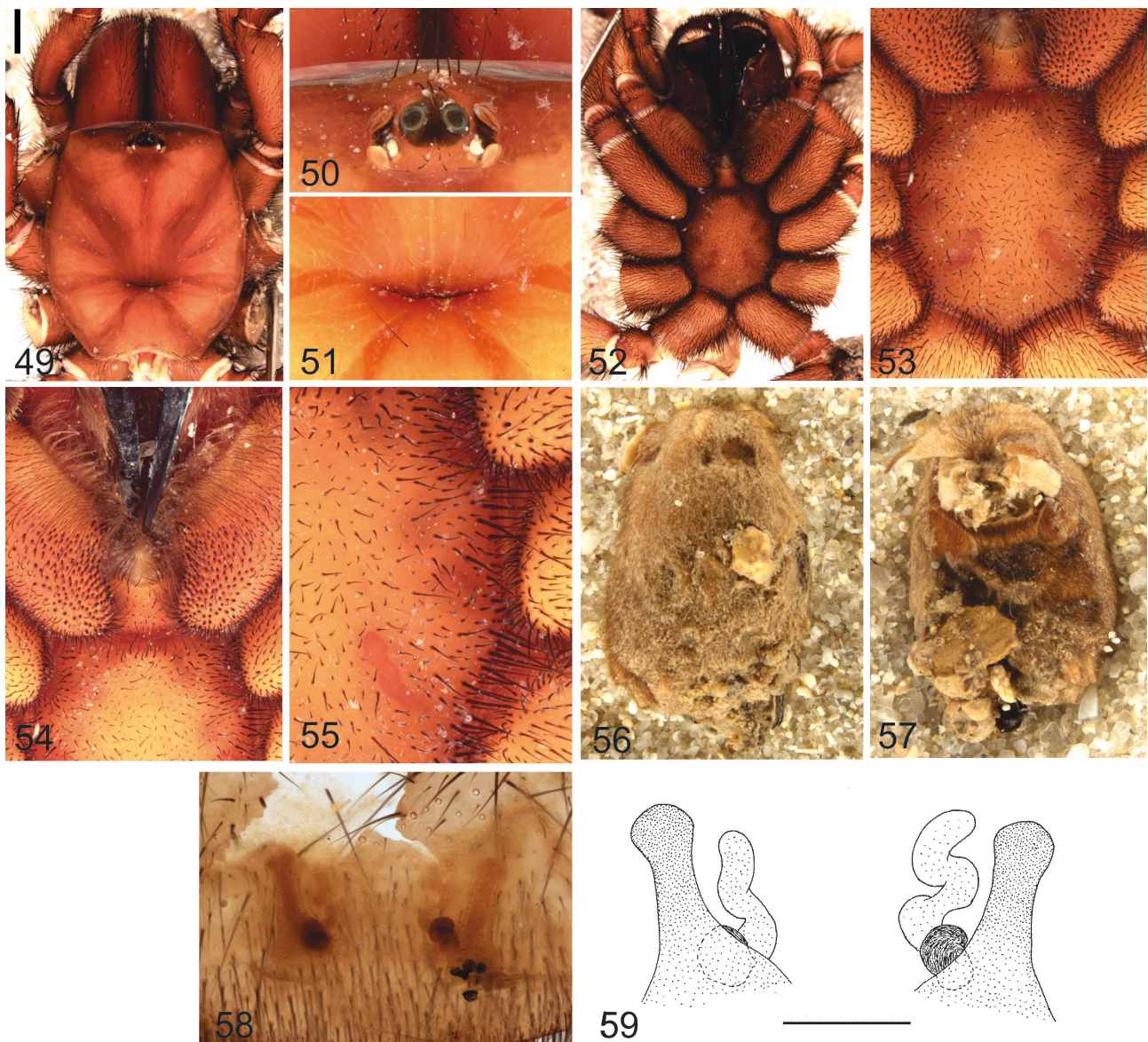
Aname lillianae most closely resembles *A. whitei*, *A. simoneae* and *A. phillipae* as adults of all three species are large and rather pale, with extremely thin third sigilla (Figures 37, 55). Males differ from *A. whitei*, *A. simoneae* and *A. phillipae* by the tapering, slender embolus (Figure 44), whereas the embolus of *A. whitei*

and *A. simoneae* is thickened and flattened, and the embolus of *A. phillipae* has a small distinct hook. The female genitalia (Figures 58, 59) differ from all other species of *Aname* in the possession of 2 pairs of spermathecae, with the median pair slightly coiled, and the lateral pair straight and with a slightly bulbous head.

DESCRIPTION

Male: based on holotype (WAM T20639)

Colour (in alcohol): Carapace anterior red-brown fading posteriorly to light brown; legs yellow-brown with red-brown distal and basal portions; chelicerae deep red-brown; abdomen dorsally pale creamy-yellow, and ventrally pale creamy-yellow.



FIGURES 49–59 *Aname lillianae* sp. nov., paratype female (WAM T146039): 49) cephalothorax, dorsal view; 50) ocular region; 51) fovea; 52) cephalothorax, ventral view; 53) sternum, ventral view; 54) maxillae and labium, ventral view; 55) left sigilla, ventral view; 56) abdomen, dorsal view (damaged); 57) abdomen, ventral view (damaged); 58) spermathecae, dorsal view; 59) spermathecae, dorsal view, line drawing. Scale lines = 2 mm.

Cephalothorax: Carapace (Figure 31) $1.09 \times$ longer than broad; with sparse fine setae, silver hairs present, with brown bristles dorsally. Clypeal edge protruding medially. Fovea slightly procurved (Figure 33). Eyes on distinct mound (Figure 32); from above, anterior eye row slightly procurved, posterior eye row slightly recurved; PME same size as AME; ALE and AME the largest; PME smallest; eye group length 1.03, width 1.92. Chelicerae with broad dorsal strip of black setae, and two thinner lateral strips of smaller black setae; rastellum absent; promargin of tooth row with 12 teeth, retromargin with 2 teeth. Labium fused to sternum (Figure 36); without cuspules. Maxillae (Figure 36) with 117 cuspules; located on basal third. Sternum (Figure 35): oval, posteriorly pointed; $1.12 \times$ longer than broad; bristles over entire surface; with 3 pairs of sigilla (Figure 37), each pair increasing in size from anterior to posterior; posterior pair elongate and slightly curved; anterior pair located near edge of sternum.

Pedipalp (Figures 40–44): Tibia cylindrical, narrow; asetose depression present, about the length of embolus; PDL/PTL 0.50; densely setose; bulb globular; embolus about same length as bulb, gently curved.

Legs: Coxal cuspules absent (Figure 34). Tibia I with large megaspor (Figures 45–47); TIL/TID 4.23; TIS/TIL 0.66; TISH/TID 0.80; metatarsus slightly incrassate (Figure 48); MIL/MID 5.12; MIPEL/MIL 0.40. Scopula present on all tarsi, and metatarsi I and II. Trichobothria: tibia with numerous trichobothria in 2 rows, metatarsi with several trichobothria, tarsi with numerous trichobothria. Claws with 2 rows of teeth; claw tufts absent. Measurements: Leg I: femur 9.5, tibia 8.0, metatarsus 7.3. Leg II: femur 9.3. Leg III: femur 8.5. Leg IV: femur 10.4.

Abdomen (Figures 38, 39): $1.5 \times$ longer than broad, sparsely pilose with long setae on dorsal side. Spinnerets: 2 pairs of spinnerets; PMS unsegmented and separated by about diameter of spinneret; PLS 3-segmented, apical segment elongate, digitiform.

Dimensions (mm): Total body length 24.5; carapace length 10.9, width 10.0; sternum length 5.7, width 5.0; abdomen length 11.6, width 8.0.

Variation: N = 10; carapace length 9.8–12.5; width 8.9–10.8; femur I length 8.4–10.2; metatarsus I length 6.5–7.7; femur IV length 8.9–10.9.

Female: based on paratype (WAM T146039).

Colour (in alcohol): Carapace uniformly red-brown; legs uniformly red-brown; chelicerae uniformly dark red-brown; abdomen dorsally pale creamy-yellow, and ventrally pale creamy-yellow.

Cephalothorax: Carapace (Figure 49) $1.19 \times$ longer than broad; with sparse fine setae, silver hairs absent, with brown bristles dorsally. Clypeal edge protruding medially. Fovea slightly procurved (Figure 51). Eyes (Figure 50) on distinct mound; from above, anterior eye row nearly straight, posterior eye row slightly recurved;

AME about same size as PME; ALE and AME the largest; PME smallest; eye group length 1.0, width 1.88. Chelicerae with short black setae, sparsely distributed, 1 well-defined prolateral strip dense, long, and brown or black setae; rastellum absent; promargin of tooth row with 10, retromargin with 4. Labium fused to sternum (Figure 54); without cuspules. Maxillae (Figure 54) with c. 125 cuspules; located on basal third. Sternum (Figure 53): oval, posteriorly pointed; $1.1 \times$ longer than broad; bristles over entire surface; with 3 pairs of sigilla (Figure 55), each pair increasing in size from anterior to posterior; posterior pair elongate and slightly curved; anterior pair located near edge of sternum.

Pedipalp: Tarsus with thick scopula.

Legs: Coxal cuspules absent (Figure 52). Scopula present on all tarsi, and metatarsi I and II. Trichobothria: tibia with numerous trichobothria in 2 rows, metatarsi with several trichobothria, tarsi with numerous trichobothria. Claws with 2 rows of teeth; claw tufts absent. Measurements: Leg I: femur 8.5. Leg II: femur 8.0. Leg III: Absent. Leg IV: femur 9.0.

Abdomen (Figures 56, 57): densely pilose. Spinnerets: 2 pairs of spinnerets; PMS unsegmented and separated by about diameter of spinneret; PLS 3-segmented, apical segment elongate, digitiform.

Genitalia (Figures 58, 59): 2 pairs of spermathecae, median pair slightly coiled, lateral pair straight and with slightly bulbous head.

Dimensions (mm): Total body length ? (damaged); carapace length 11.2, width 9.4; sternum length 5.6, width 5.1; abdomen ? (damaged).

DISTRIBUTION

Aname lillianae is widely distributed throughout the northern wheatbelt of Western Australia, including the following IBRA regions: Avon Wheatbelt, Coolgardie, Murchison, and Yalgoo (Figure 151).

REMARKS

Most males were collected during the summer months of January to March, although one was collected in August. The sole female was collected from Tutanning Nature Reserve and is associated with this species based on the occurrence of a male from the same location and their overall similarity, especially in its large size and yellow-brown colouration which is a relatively uncommon pair of characteristics for *Aname* species in this region.

This species was formerly known by the WAM identification code *Aname* 'MYG522'.

SEQUENCE DATA

Molecular data are not available for this species.

ETYMOLOGY

This species is named for Lillian Huey, daughter of Joel A. Huey.

Aname mccleryorum
Harvey and Huey, sp. nov.

Figures 60–90

urn:lsid:zoobank.org:act:E9053B92-0DAD-400C-B965-5E3FA213FCB8

MATERIAL EXAMINED

Holotype

Australia: Western Australia: ♂, Chapman Valley, 28°30'S, 114°47'E, 1 April 2003, J. Webb (WAM T53979^{DNA}).

Paratypes

Australia: Western Australia: 1 ♂, Geraldton, David Road, 28°43'S, 114°39'E, 24 May 1995, R. McAlpine (WAM T32568); 1 ♀, Lesueur National Park, University Track, western end, 30°09'33"S, 115°12'14"E, 239 m, 6 December 2016, wandoo woodland, J.A. Huey, M. Hillyer, J. Carvajal, M.S. Harvey (WAM T142298^{DNA}); 1 ♀, Coorow-Green Head Road, 30°03'47"S, 115°10'44"E, 122 m, 7 December 2016, wandoo woodland, J. Carvajal, J.A. Huey, M. Hillyer, M.S. Harvey (WAM T142302^{DNA}).

Other material

Australia: Western Australia: 2 ♀, 2 penultimate ♂, Greenough, 28°57'S, 114°44'E, 13 January 1977, C.L. Duncan (WAM T27543–27546); 1 juvenile, Lesueur National Park, c. 380 m N. of University Track, 30°09'02"S, 115°14'09"E, 209 m, 5 December 2016, kwongan heath on sand, M.S. Harvey, J.A. Huey, M. Hillyer, J. Carvajal (WAM T142296^{DNA}); 1 juvenile, Lesueur National Park, 30°10'54"S, 115°15'01"E, 179 m, 6 December 2016, wandoo woodland, J. Carvajal, J.A. Huey, M. Hillyer, M.S. Harvey (WAM T142300^{DNA}); 1 ♀ (died in captivity, fragments only), same data (WAM T142299); 1 ♀, Oakajee, 28°34'19.45"S, 114°36'03.49"E, 1 August 2006, M. Davis, J. Clark (WAM T104747); 3 ♀, Oakajee, 28°34'24.78"S, 114°36'20.64"E, 1–5 August 2006, M. Davis, J. Clark (WAM T107695, T129049, T129050); 1 juvenile, Oakajee, 28°34'10.00"S, 114°36'15.00"E, 1–5 August 2006, M. Davis, J. Clark (WAM T107689).

DIAGNOSIS

Aname mccleryorum most closely resembles *A. exulans* as the females have distinct chevron patterning on the abdomen, which is diffusely grey on a light background (Figures 85, 90) but with a dark median stripe and several indistinct chevrons in *A. exulans* (Figure 27). Males of *A. mccleryorum* differ from *A. exulans* in the shape of the pedipalp including the shorter tibial depression and the shorter and slightly curved embolus (Figures 71–73). Females differ by short, slightly curved spermathecal lobes (Figures 87, 88) which are coiled and distally bifurcate in *A. exulans* (Figures 29–30).

DESCRIPTION

Male: based on holotype (WAM T53979)

Colour (in alcohol): Carapace deep brown; legs brown, some segments with longitudinal pale stripes, tarsi paler; chelicerae deep red-brown; abdomen dorsally grey-brown, and ventrally pale yellow-brown.

Cephalothorax: Carapace (Figure 60) 1.28 × longer than broad, pilose, silver hairs present, with brown bristles dorsally. Clypeal edge protruding medially. Fovea slightly procurved (Figure 62). Eyes on distinct mound (Figure 61); from above, anterior eye row straight, posterior eye row slightly recurved; AME about same size as ALE; ALE and AME the largest; PME smallest; eye group length 0.9, width 1.5. Chelicerae with short black setae, sparsely distributed, 1 well-defined prolateral strip of dense, long, and brown or black setae; rastellum absent; promargin of tooth row with 10 teeth, retromargin with 6 teeth. Labium fused to sternum (Figure 65); without cuspules. Maxillae (Figure 65) with 204 cuspules; located on basal third. Sternum (Figure 64): oval, posteriorly pointed; 1.23 × longer than broad; bristles over entire surface; with 3 pairs of sigilla (Figure 66), each pair increasing in size from anterior to posterior; posterior pair elongate and slightly curved; anterior and median pairs located near edge of sternum.

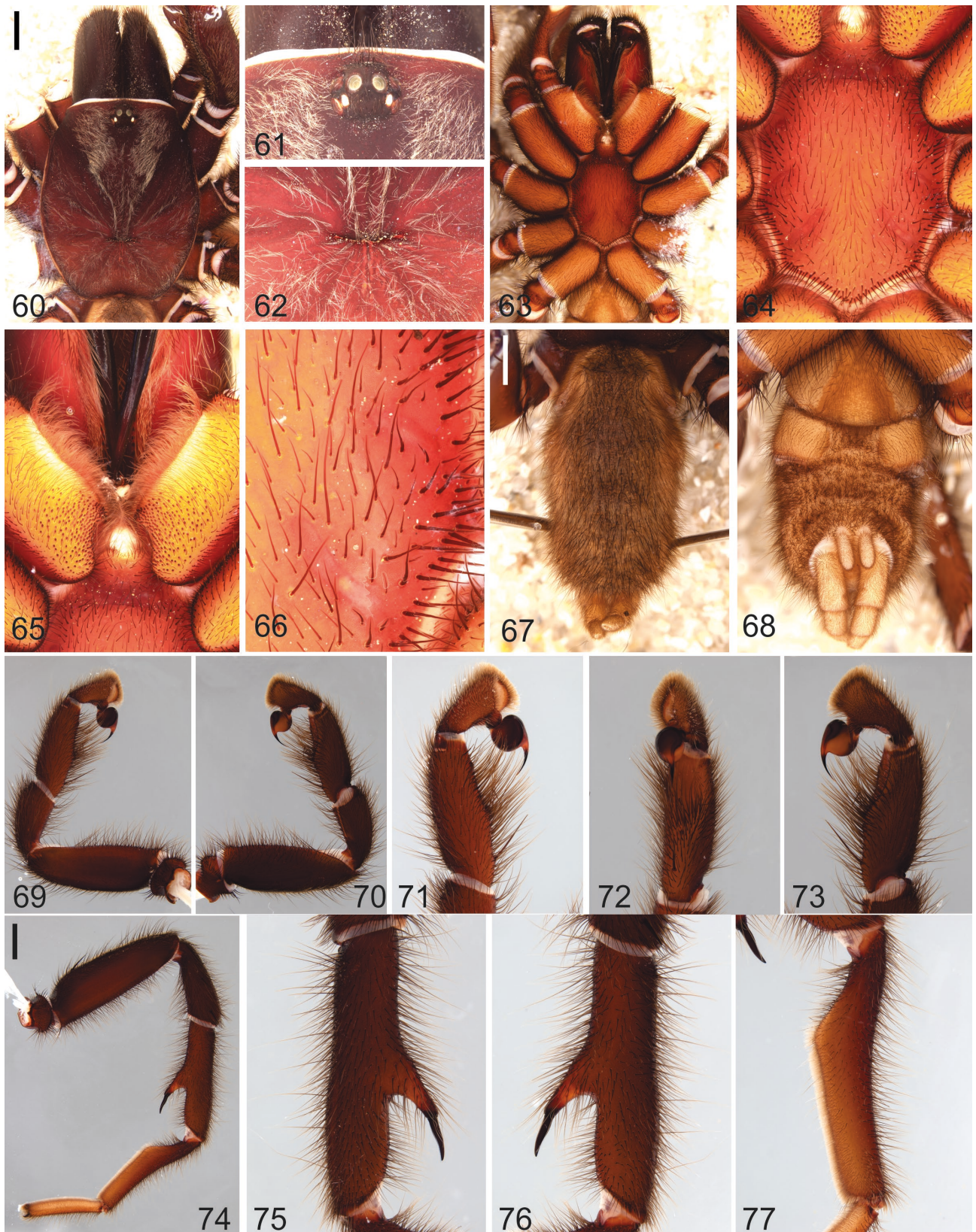
Pedipalp (Figures 69–73): Tibia cylindrical, narrow; aetose depression present, about the length of embolus; PDL/PTL 0.44. Tarsus short, broadest distally; densely setose; bulb globular; embolus short, not much longer than bulb, gently curved.

Legs: Coxal cuspules absent (Figure 63). Tibia I with large megaspor (Figures 74–76); TIL/TID 4.13; TIS/TIL 0.55; TISH/TID 0.79; metatarsus incrassate (Figure 77); MIL/MID 4.68; MIPEL/MIL 0.42. Scopula present on all tarsi, present on metatarsi I and II, present on distal half of metatarsi III and IV. Trichobothria: tibia with numerous trichobothria in 2 rows, metatarsi with several trichobothria, tarsi with numerous trichobothria. Claws with 2 rows of teeth; claw tufts absent. Measurements: Leg I: femur 8.5, tibia 8.8, metatarsus 7.2. Leg II: femur 8.0. Leg III: femur 5.8. Leg IV: femur 8.4.

Abdomen (Figures 67, 68): 1.9 × longer than broad, densely pilose. Spinnerets: 2 pairs of spinnerets; PMS unsegmented and separated by about diameter of spinneret; PLS 3-segmented, apical segment elongate, digitiform.

Dimensions (mm): Total body length 24.7; carapace length 10.9, width 8.5; sternum length 5.3, width 4.3; abdomen length 8.8, width 4.7.

Variation: N = 1. Carapace length 11.1; width 8.5; femur I length 8.8; metatarsus I length 6.9; femur IV length 8.6.



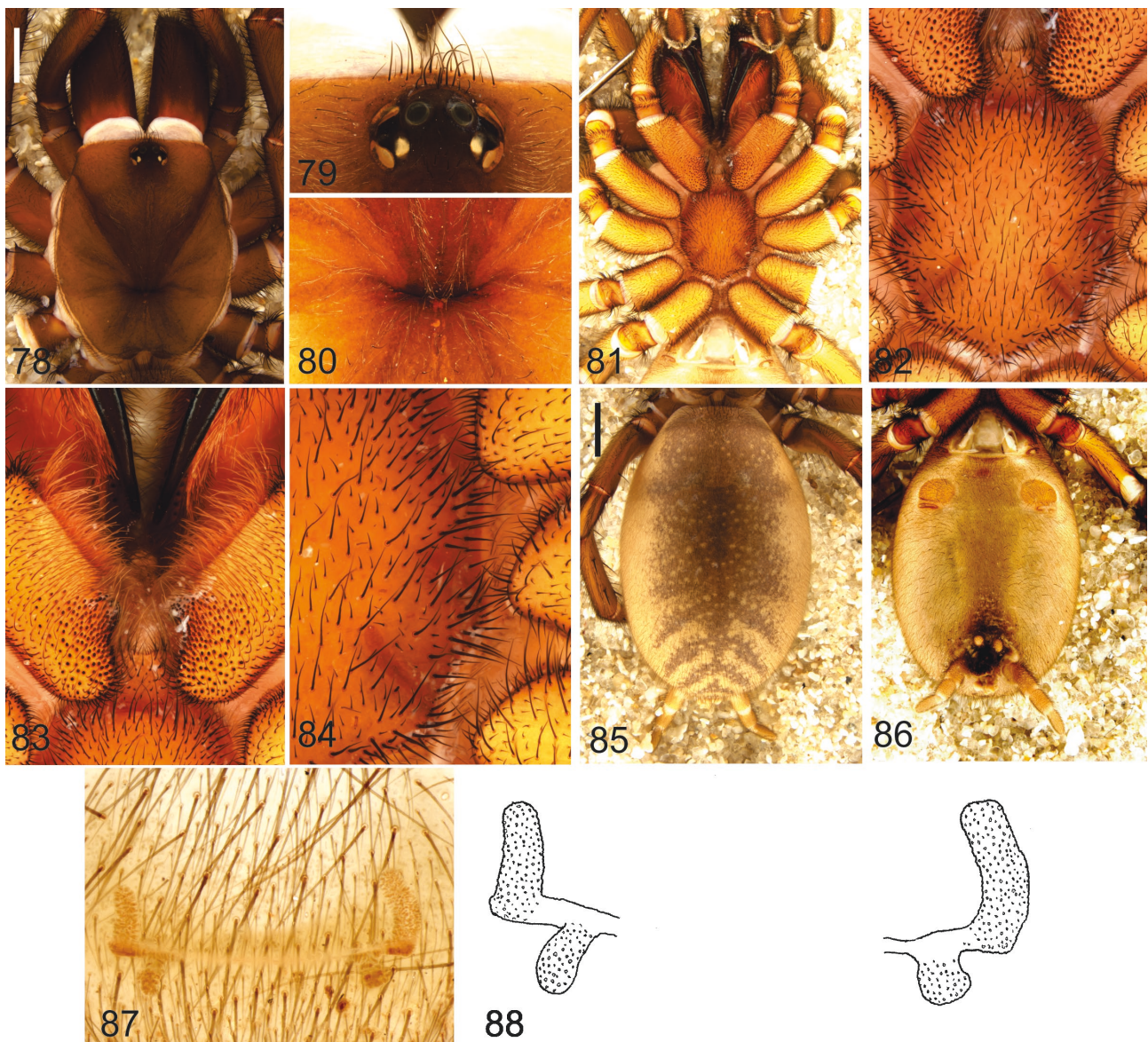
FIGURES 60–77 *Aname macleeryorum* sp. nov., holotype male (WAM T53979): 60) cephalothorax, dorsal view; 61) ocular region; 62) fovea; 63) cephalothorax, ventral view; 64) sternum, ventral view; 65) maxillae and labium, ventral view; 66) left sigilla, ventral view; 67) abdomen, dorsal view; 68) abdomen, ventral view; 69) left pedipalp, prolateral view; 70) left pedipalp, retrolateral view; 71) left pedipalp, tibia and tarsus, prolateral view; 72) left pedipalp, tibia and tarsus, ventral view; 73) left pedipalp, tibia and tarsus, retrolateral view; 74) left leg I, prolateral view; 75) left leg I, tibia I, retrolateral view; 76) left leg I, tibia I, prolateral view; 77) left leg I, metatarsus I, prolateral view. Scale lines = 2 mm.

Female: based on paratype (WAM T142298)

Colour (in alcohol): Carapace pale brown, with darker V-shaped marking delineating cephalic region; legs brown, some segments with longitudinal pale stripes, tarsi paler; chelicerae deep red-brown; abdomen dorsally base colour grey, with darker grey antero-dorsal patch and several posterior chevrons, and ventrally pale yellow-brown.

Cephalothorax: Carapace (Figure 78) $1.22 \times$ longer than broad; with sparse fine setae, silver hairs sparsely present, with brown bristles dorsally. Clypeal edge protruding medially. Fovea slightly procurved (Figure 80). Eyes on distinct mound (Figure 79); from above, anterior eye row straight, posterior eye row slightly

recurved; AME about same size as ALE; ALE and AME the largest; PME smallest; eye group length 0.8, width 1.4. Chelicerae with short black setae, sparsely distributed, 1 well-defined prolateral strip of dense, long, and brown or black setae; rastellum absent; promargin of tooth row with 9 teeth, retromargin with 7 teeth. Labium fused to sternum (Figure 83); without cuspules. Maxillae (Figure 83) with c. 155 cuspules; located on basal third. Sternum (Figure 82): oval, posteriorly pointed; $1.19 \times$ longer than broad; bristles over entire surface; with 3 pairs of sigilla (Figure 84), each pair increasing in size from anterior to posterior; posterior pair elongate and slightly curved; anterior and median pairs located near edge of sternum.



FIGURES 78–88 *Aname mccleryorum* sp. nov., paratype female (WAM T142298): 78) cephalothorax, dorsal view; 79) ocular region; 80) fovea; 81) cephalothorax, ventral view; 82) sternum, ventral view; 83) maxillae and labium, ventral view; 84) left sigilla, ventral view; 85) abdomen, dorsal view; 86) abdomen, ventral view; 87) spermathecae, dorsal view; 88) spermathecae, dorsal view, line drawing. Scale lines = 2 mm.



FIGURES 89–90 *Aname mccleryorum* sp. nov., paratype juvenile (WAM T142296): 89) lateral view; 90) posterior view.

Pedipalp: Tarsus with thick scopula.

Legs: Coxal cuspules absent (Figure 81). Scopula present on all tarsi, present on metatarsi I and II, present on distal half of metatarsi III and IV. Trichobothria: tibia with numerous trichobothria in 2 rows, metatarsi with several trichobothria, tarsi with numerous trichobothria. Claws with 2 rows of teeth; claw tufts absent. Measurements: Leg I: femur 6.1. Leg II: femur 5.5. Leg III: femur 5.1. Leg IV: femur 6.1.

Abdomen (Figures 85, 86): 1.5 × longer than broad, sparsely setose. Spinnerets: 2 pairs of spinnerets; PMS unsegmented and separated by about diameter of spinneret; PLS 3-segmented, apical segment elongate, digitiform.

Genitalia (Figures 87, 88): Spermathecal lobes short, gently curved.

Dimensions (mm): Total body length 28.5; carapace length 8.4, width 6.9; sternum length 4.3, width 3.6; abdomen length 10.9, width 7.3.

Variation: N = 3; carapace length 10.2–12.2, width 8.2–8.7; femur I length 6.4–8.1; femur IV length 7.3–7.9.

DISTRIBUTION

Aname mccleryorum has been found throughout the Geraldton Sandplains IBRA bioregion of Western Australia, from Oakajee and Chapman Valley south to Lesueur National Park (Figure 151).

REMARKS

The male holotype of *A. mccleryorum* was matched to some of the adult females using sequence data (Figure 1). The two males were collected in autumn (April and May).

This species was formerly known by the WAM identification code *Aname* 'MYG632'.

SEQUENCE DATA

Within-species genetic divergence for *A. mccleryorum* was 2.7% at *COI*, suggesting some population genetic structure across its range. It is closely related to *A. exulans* (7.5%), which is found on the neighbouring offshore Houtman Abrolhos islands (Figure 151).

ETYMOLOGY

This species is named for the McCleery family, in recognition of their generous support for the Foundation of the Western Australian Museum.

Aname phillipae Harvey and Huey, sp. nov.

Figures 91–119

urn:lsid:zoobank.org:act:37FB4C77-4E16-4F80-A652-BD4B476E2FF8

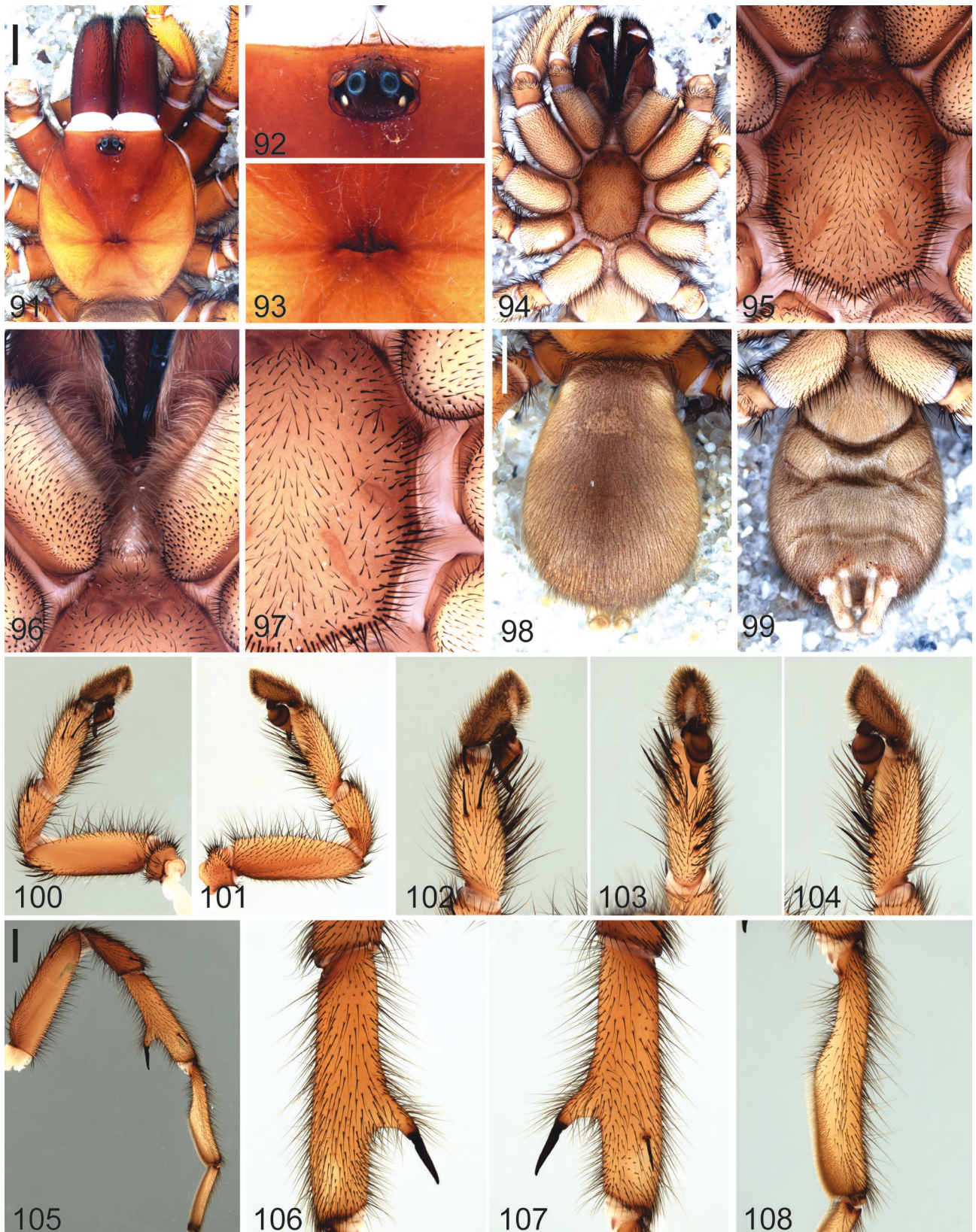
MATERIAL EXAMINED

Holotype

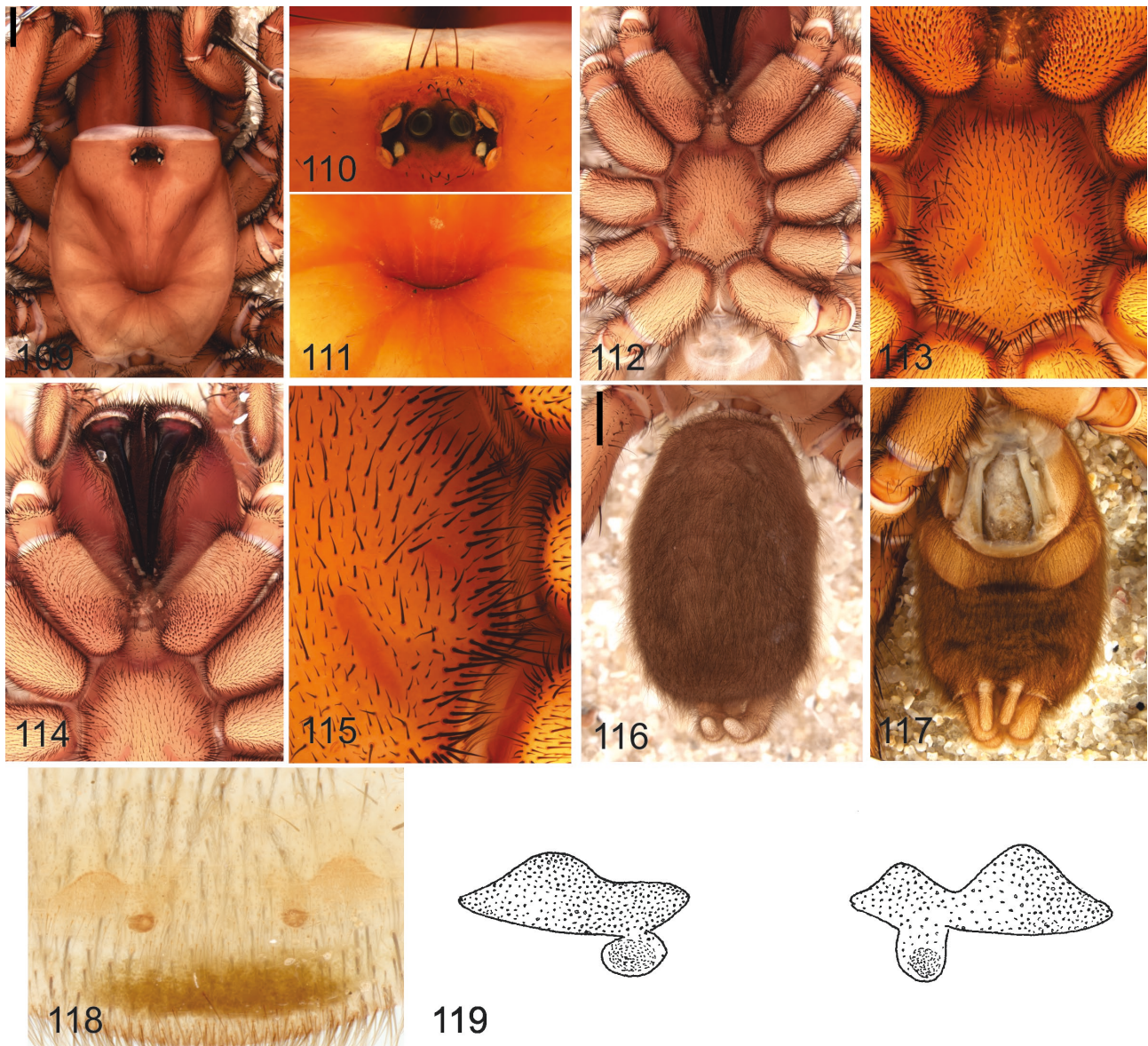
Australia: Western Australia: ♂, Deception Hill, 111.15 km NNW. of Koolyanobbing, 29°51'56"S, 119°16'37"E, 7 December 2010, dry pitfall trap, R. Teale, Z. Hamilton, V. Cartledge (WAM T110142^{DNA}).

Paratypes

Australia: Western Australia: 1 ♂, Deception Hill, 93.10 km NNW. of Koolyanobbing, 30°02'06"S, 119°16'28"E, 7 December 2010, dry pitfall trap, R. Teale, Z. Hamilton, V. Cartledge (WAM T109203^{DNA}); 1 ♂, Windarling Mine Lease (Portmans), c. 27 km N. of Mt Jackson, 30°00'36.3"S, 119°16'27.0"E, 30 November 2006, dry pitfall trap, open mulga woodland, B.M. Metcalf (WAM T132579); 1 ♀, S. of Kambalda, 31°34'03"S, 121°44'42"E, April 2006, S. Thompson (WAM T95772^{DNA}).



FIGURES 91–108 *Aname phillipae* sp. nov., holotype male (WAM T110142): 91) cephalothorax, dorsal view; 92) ocular region; 93) fovea; 94) cephalothorax, ventral view; 95) sternum, ventral view; 96) maxillae and labium, ventral view; 97) left sigilla, ventral view; 98) abdomen, dorsal view; 99) abdomen, ventral view; 100) left pedipalp, prolateral view; 101) left pedipalp, retrolateral view; 102) left pedipalp, tibia and tarsus, prolateral view; 103) left pedipalp, tibia and tarsus, ventral view; 104) left pedipalp, tibia and tarsus, retrolateral view; 105) left leg I, prolateral view; 106) left leg I, tibia I, retrolateral view; 107) left leg I, tibia I, prolateral view; 108) left leg I, metatarsus I, prolateral view. Scale lines = 2 mm.



FIGURES 109–119 *Aname phillipae* sp. nov., paratype female (WAM T95772): 109) cephalothorax, dorsal view; 110) ocular region; 111) fovea; 112) cephalothorax, ventral view; 113) sternum, ventral view; 114) maxillae and labium, ventral view; 115) left sigilla, ventral view; 116) abdomen, dorsal view; 117) abdomen, ventral view; 118) spermathecae, dorsal view; 119) spermathecae, dorsal view, line drawing. Scale lines = 2 mm.

Other material

Australia: Western Australia: 1 ♂, Bungalbin Hill, 48.2 km NNE. of Koolyanobbing, 30°17'38.34"S, 119°25'30.84"E, 12–25 December 2012, S. White (WAM T127943); 7 ♂, Lord Nelson [mine], 10.3 km SSW. of Black Hill, site LN03, 28°09'36"S, 119°30'36"E, 25 October 2004, dry pitfall trap, M. Craig (WAM T64911–64916^{DNA}, T72397); 1 ♂, Lorna Glen Station, quadrat 24, 26°07'49"S, 121°31'02"E, 25 November–1 December 2004, dry pitfall, M.A. Cowan et al. (WAM T66411); 1 ♂, Mt Forrest, c. 27 km SE. of Bulga Downs Homestead, 28°41'46"S, 119°56'35"E, 12 December 2012, dry pitfall trap, open mulga woodland over open shrubland on plain, G.P. Harewood, G. Murray (WAM T128129); 1 ♂, Mt Ida, 80 km NW. of

Menzies, 29°11'01"S, 120°25'18"E, 26 October 2011, pitfall trap, *Eucalyptus* woodland, V. Saffer (WAM T121519^{DNA}).

DIAGNOSIS

Aname phillipae most closely resembles *A. whitei*, *A. lillianae* and *A. simoneae*, as adults of all three species are large and rather pale, with extremely narrow third sigilla (Figures 97, 115). Males are most similar to *A. whitei* and *A. simoneae* as the embolus is thickened and flattened (Figure 102–104) but *A. phillipae* differs from all these species by the embolic tip being noticeably hooked (Figure 103). The female spermathecae, which consist of a low, rounded basal section with a medial anteriorly directed spermatheca with a bulbous distal

end (Figures 118, 119), cannot be distinguished from those of *A. whitei* and *A. simoneae*, but differ from those of *A. lilliana* which consist of two pairs of long spermathecae of which the median pair are slightly coiled (Figure 59).

DESCRIPTION

Male: based on holotype (WAM T110142)

Colour (in alcohol): Carapace cephalic region deep red-brown, thoracic region yellow-brown; leg I red-brown, legs II to IV uniformly yellow-brown; chelicerae uniformly dark red-brown; abdomen grey-brown.

Cephalothorax: Carapace (Figure 91) 1.11 × longer than broad; with sparse fine setae, silver hairs present, with brown bristles dorsally. Clypeal edge straight. Fovea slightly procurved (Figure 93). Eyes (Figure 92) on distinct mound; from above, anterior eye row straight, posterior eye row slightly recurved; AME about same size as ALE; ALE and AME the largest; PME smallest; eye group length 0.82, width 1.01. Chelicerae with broad dorsal strip of black setae, and 2 thinner lateral strips of smaller black setae; rastellum absent; promargin of tooth row with 10 teeth, retromargin with 4 teeth. Labium fused to sternum (Figure 96); without cuspules. Maxillae (Figure 96) with 112 cuspules; located on basal half. Sternum (Figure 95): oval, posteriorly pointed; 1.18 × longer than broad; bristles over entire surface. With 3 pairs of very faint sigilla (Figure 97); each pair increasing in size from anterior to posterior; posterior pair elongate and slightly curved.

Pedipalp (Figures 100–104): Tibia cylindrical, narrow; asetose depression present, about the length of embolus; PDL/PTL 0.49. Tarsus short, broadest distally; densely setose; bulb ovoid; embolus shorter than bulb, flattened, terminating in constricted and slightly hooked tip.

Legs: Coxa I with 2–3 cuspules near medial edge of coxa I (Figures 94, 95). Tibia I with large megaspor (Figures 105–107); TIL/TID 4.11; TIS/TIL 0.62; TISH/TID 0.71; metatarsus incrassate (Figure 108); MIL/MID 5.04; MIPEL/MIL 0.52. Scopula present on tarsi and metatarsi of all legs. Trichobothria: tibia with numerous trichobothria in 2 rows, metatarsi with several trichobothria, tarsi with numerous trichobothria. Claws with 2 rows of teeth; claw tufts absent. Measurements: Leg I: femur 8.5, tibia 8.4, metatarsus 6.4. Leg II: femur 7.9. Leg III: femur 6.7. Leg IV: femur 8.5.

Abdomen (Figures 98, 99): 1.4 × longer than broad, densely pilose. Spinnerets: 2 pairs of spinnerets; PMS unsegmented and separated by about diameter of spinneret; PLS 3-segmented, apical segment elongate, digitiform.

Dimensions (mm): Total body length 18.4; carapace length 8.8, width 7.9; sternum length 4.5, width 3.8; abdomen length 9.2, width 6.4.

Variation: N = 10; carapace length 8.2–9.4; width 7.5–8.2; femur I length 7.3–8.7; metatarsus I length 5.7–6.7; femur IV length 8.2–9.6.

Female: based on paratype (WAM T95772)

Colour (in alcohol): Carapace anterior brown-yellow fading to yellow-brown posteriorly; legs uniformly red-brown; chelicerae yellow-brown; abdomen grey-brown.

Cephalothorax: Carapace (Figure 109) 1.19 × longer than broad; with sparse fine setae, silver hairs absent, with brown bristles dorsally. Clypeal edge protruding medially. Fovea slightly procurved (Figure 111). Eyes on distinct mound (Figure 110); from above, anterior eye row slightly procurved, posterior eye row slightly recurved; AME larger than ALE; ALE largest; PME smallest; eye group length 0.96, width 1.88. Chelicerae with short black setae, sparsely distributed, with 1 well-defined prolateral strip dense, long, and brown or black setae; rastellum absent; promargin of tooth row with 10 teeth, retromargin with 4 teeth. Labium fused to sternum (Figure 114); with 1 cuspule. With c. 210 cuspules; located in basal half. Sternum (Figure 113): oval, posteriorly pointed; 1.14 × longer than broad; bristles over entire surface; with 3 pairs of sigilla (Figure 115), each pair increasing in size from anterior to posterior; anterior pair located near edge of sternum; posterior pair elliptical.

Pedipalp: Tarsus with thick scopula.

Legs: Coxal cuspules absent (Figure 112). Scopula present on all tarsi, present on metatarsi I and II, present on distal half of metatarsi III and IV. Trichobothria: tibia with numerous trichobothria in 2 rows, metatarsi with several trichobothria, tarsi with numerous trichobothria. Claws with 2 rows of teeth; claw tufts absent. Measurements: Leg I: femur 9.2. Leg II: femur 8.2. Leg III: femur 7.3. Leg IV: femur 9.4.

Abdomen (Figures 116, 117): 1.4 × longer than broad, densely pilose. Spinnerets: 2 pairs of spinnerets; PMS unsegmented and separated by about diameter of spinneret; PLS 3-segmented, apical segment elongate, digitiform.

Genitalia (Figures 118, 119): Low, rounded basal section with medial anteriorly directed spermatheca, with bulbous distal end.

Dimensions (mm): Total body length 25; carapace length 11.6, width 9.8; sternum length 5.8, width 5.1; abdomen length 10.9, width 7.7.

DISTRIBUTION

Aname phillipae has been found in the Gascoyne, Murchison and Coolgardie IBRA bioregions of Western Australia (Figure 151).

REMARKS

The female was matched with the males using sequence data (Figure 1). Males have been collected in pitfall traps during the spring and summer months of October to December.

This species was formerly known by the WAM identification code *Aname* 'MYG604'.

SEQUENCE DATA

Despite showing significant genetic structure in the concatenated phylogeny (Figure 1), only one specimen was successfully sequenced at *COI*. This genetic structure was primarily based on structure in 16S (data not shown). *Aname phillipae* is closely related to *A. simoneae* and *A. whitei*, to which it is very similar morphologically.

ETYMOLOGY

This species is named for Phillipa Huey, daughter of Joel A. Huey.

Aname simoneae Harvey and Huey, sp. nov.

Figures 120–150

urn:lsid:zoobank.org:act:C2D21926-A117-468F-A25A-6EC0E01CED4E

Aname MY2121: Hedin and Bond 2006: figs 4, 5; Bond et al. 2012: figs 1, 2; Wheeler et al. 2017: fig. 2; Opatova et al. 2020: fig. 3 (which states 'MY2131').

MATERIAL EXAMINED

Holotype

Australia: Western Australia: ♂, 21 km S. of Laverton, 28°47'34"S, 122°25'53"E, 8 January 2011, pit trap, S.A. Thompson (WAM T110261^{DNA}).

Paratypes

Australia: Western Australia: 1 ♂, Lake Way, 15 km SSE. of Wiluna, 26°50'33"S, 120°21'47"E, 10 March 2010, P. Bolton (WAM T101218); 1 ♀, same data except 24 October 2007 (WAM T104712); 1 ♀, c. 41.5 km SSE. of Menzies, 30°04'21.91"S, 121°10'35.75"E, 4 May 2018, dug from burrow, E.S. Volschenk (WAM T149148^{DNA}).

Other material

Australia: Western Australia: 2 ♂, Black Swan Nickel Mine, 50 km NE. of Kalgoorlie, 30°23'54"S, 121°40'53"E, 12 December 2003–5 January 2004, pitfall trap, P.R. Langlands (WAM T56915); 1 ♂, Bulong, 30°45'S, 121°48'E, 1 December 1932, F. Jones (WAM T2500, formerly 32/2686); 2 ♂, Goldminer Caravan Park, Kalgoorlie, 30°44'S, 121°28'E, 20 January 1993, G. Thompson (WAM T27289–27290, formerly 93/605–606); 1 ♂, Mt Veters Station, Black Swan Nickel Mine, 50 km NE. of Kalgoorlie, 30°23'56"S, 121°41'06"E, 12 December 2003, 5 January 2004, pitfall trap, P.R. Langlands (WAM T56960); 3 ♂, Ora Banda, 30°23'S, 121°04'E, January 2006, S. Thompson (WAM T95768); 1 ♂, 7–8 km WNW. of Point Salvation, red sands site, 28°12'S, 123°36'E, 27 December 1995, pitfall trap, E.R.

Pianka (WAM T44223); 1 juvenile, Wanjarri, 53.3 km S. of Lake Way homestead, site YAK07B, 27°24'24"S, 120°36'42"E, dug from burrow, 4 December 2005, R. Teale (WAM T76834^{DNA}).

DIAGNOSIS

Aname simoneae most closely resembles *A. whitei*, *A. lillianae* and *A. phillipae* as adults of all three species are large and rather pale, with extremely narrow third sigilla (Figures 97, 115). Males are most similar to *A. whitei* and *A. phillipae* as the embolus is thickened and flattened (Figures 131–133) but differ from *A. phillipae* by the lack of distinct terminal hook and from *A. whitei* by the shape of the embolus which is more evenly tapered. The embolus of *A. lillianae* is slender and tapering. The female spermathecae, which consist of a low, rounded basal section with a medial anteriorly directed spermatheca with a bulbous distal end (Figures 147, 148), cannot be distinguished from those of *A. whitei* and *A. phillipae*, but differ from those of *A. lillianae* which consist of two pairs of long spermathecae of which the median pair are slightly coiled (Figure 59).

DESCRIPTION

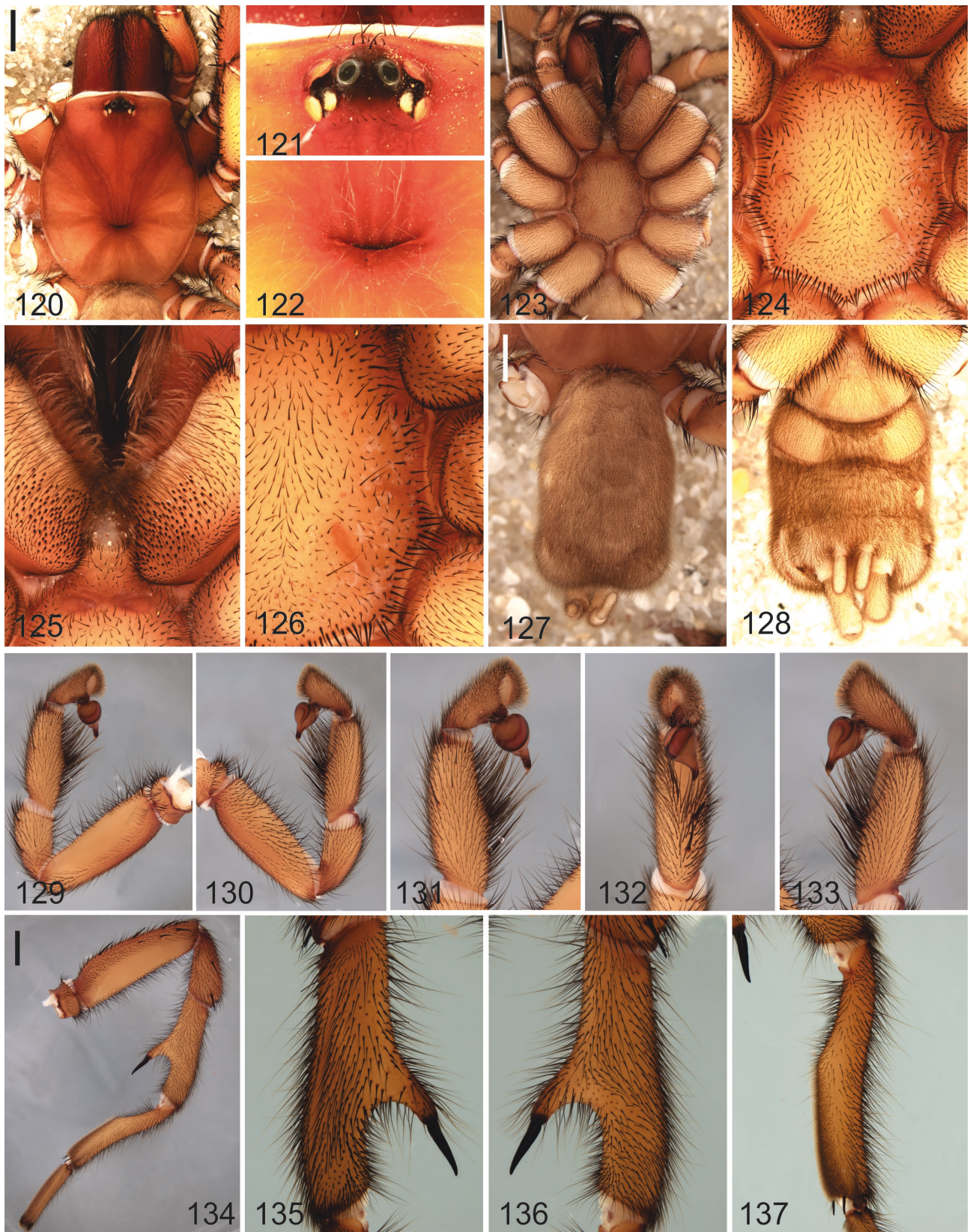
Male: based on holotype (WAM T110261)

Colour (in alcohol): Carapace anterior light orange-brown fading posteriorly to pale yellow; leg I red-brown, legs II to IV uniformly yellow-brown; chelicerae burnt orange; abdomen dorsally pale creamy-yellow, and ventrally pale creamy-yellow.

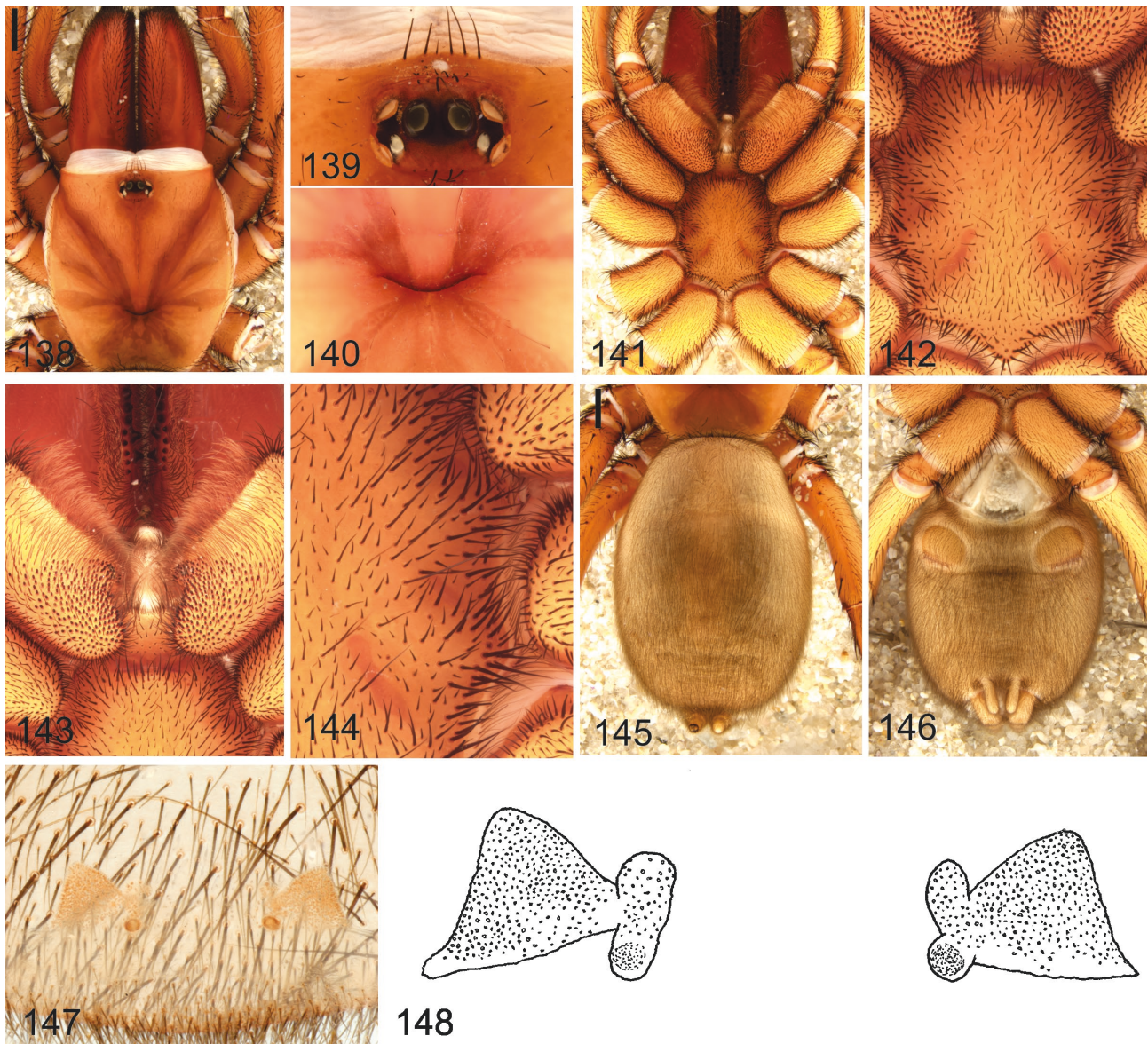
Cephalothorax: Carapace (Figure 120) 1.22 × longer than broad; with sparse short setae, silver hairs absent; without dorsal bristles. Clypeal edge straight. Fovea slightly procurved (Figure 122). Eyes on distinct mound (Figure 121); from above, anterior eye row procurved, posterior eye row nearly straight; AME larger than ALE; ALE largest; PME smallest; eye group length 0.96, width 1.58. Chelicerae with short black setae, sparsely distributed; with 1 well-defined prolateral strip of dense, long, and brown or black setae; rastellum absent; promargin of tooth row with 10 teeth, retromargin with 4 or 5 teeth. Labium fused to sternum (Figure 125); without cuspules. Maxillae (Figure 125) with c. 134 cuspules; located on basal half. Sternum (Figure 124): oval, posteriorly pointed; 1.18 × longer than broad; bristles over entire surface; with 3 pairs of sigilla (Figure 126), each pair increasing in size from anterior to posterior; anterior pair located near edge of sternum; posterior pair elliptical.

Pedipalp (Figures 129–133): Tibia cylindrical, narrow; aetose depression present, about the length of embolus; PDL/PTL 0.39; densely setose; bulb ovoid; embolus shorter than bulb, flattened, terminating in constricted tip.

Legs: Coxal cuspules absent (Figure 123). Tibia I with large megaspur (Figures 134–136); TIL/TID 4.58; TIS/TIL 0.61; TISH/TID 1.08; metatarsus slightly incrassate (Figure 137); MIL/MID 5.24; MIPEL/MIL 0.48.



FIGURES 120–137 *Aname simoneae* sp. nov., holotype male (WAMT110261): 120) cephalothorax, dorsal view; 121) ocular region; 122) fovea; 123) cephalothorax, ventral view; 124) sternum, ventral view; 125) maxillae and labium, ventral view; 126) left sigilla, ventral view; 127) abdomen, dorsal view; 128) abdomen, ventral view; 129) left pedipalp, prolateral view; 130) left pedipalp, retrolateral view; 131) left pedipalp, tibia and tarsus, prolateral view; 132) left pedipalp, tibia and tarsus, ventral view; 133) left pedipalp, tibia and tarsus, retrolateral view; 134) left leg I, prolateral view; 135) left leg I, tibia I, retrolateral view; 136) left leg I, tibia I, prolateral view; 137) left leg I, metatarsus I, prolateral view. Scale lines = 2 mm.



FIGURES 138–148 *Aname simoneae* sp. nov., paratype female (WAMT149148): 138) cephalothorax, dorsal view; 139) ocular region; 140) fovea; 141) cephalothorax, ventral view; 142) sternum, ventral view; 143) maxillae and labium, ventral view; 144) left sigilla, ventral view; 145) abdomen, dorsal view; 146) abdomen, ventral view; 147) spermathecae, dorsal view; 148) spermathecae, dorsal view, line drawing. Scale lines = 2 mm.

Scopula present on all tarsi, and metatarsi I and II. Trichobothria: tibia with numerous trichobothria in 2 rows, metatarsi with several trichobothria, tarsi with numerous trichobothria. Claws with 2 rows of teeth; claw tufts absent. Measurements: Leg I: femur 8.1, tibia 8.5, metatarsus 7.2. Leg II: femur 7.8. Leg III: femur 7.0. Leg IV: femur 7.7.

Abdomen (Figures 127, 128): 1.6 × longer than broad, densely pilose. Spinnerets: 2 pairs of spinnerets; PMS unsegmented and separated by about diameter of spinneret; PLS 3-segmented, apical segment elongate, digitiform.

Dimensions (mm): Total body length 24.0; carapace length 9.8, width 8.0; sternum length 4.8, width 4.1; abdomen length 9.4, width 5.8.

Variation: N = 10; carapace length 9.3–13.3; width 8.1–10.1; femur I length 8.4–9.7; metatarsus I length 7.1–7.7; femur IV length 9.1–10.2.

Female: based on paratype (WAM T149148)

Colour (in alcohol): Carapace dark yellow-brown with red-brown radial markings; legs uniformly red-brown; chelicerae uniformly dark red-brown; abdomen grey-brown.

Cephalothorax: Carapace (Figure 138) 1.04 × longer than broad; with sparse fine setae, silver hairs absent, with brown bristles dorsally. Clypeal edge protruding medially. Fovea slightly procurved (Figure 140). Eyes on distinct mound (Figure 139); from above, anterior eye row slightly procurved, posterior eye row slightly



FIGURES 149–150 *Aname simoneae* sp. nov., paratype female (WAMT149148): 149, dorsal view; 150, burrow entrance. (Image courtesy Erich Volschenk.)

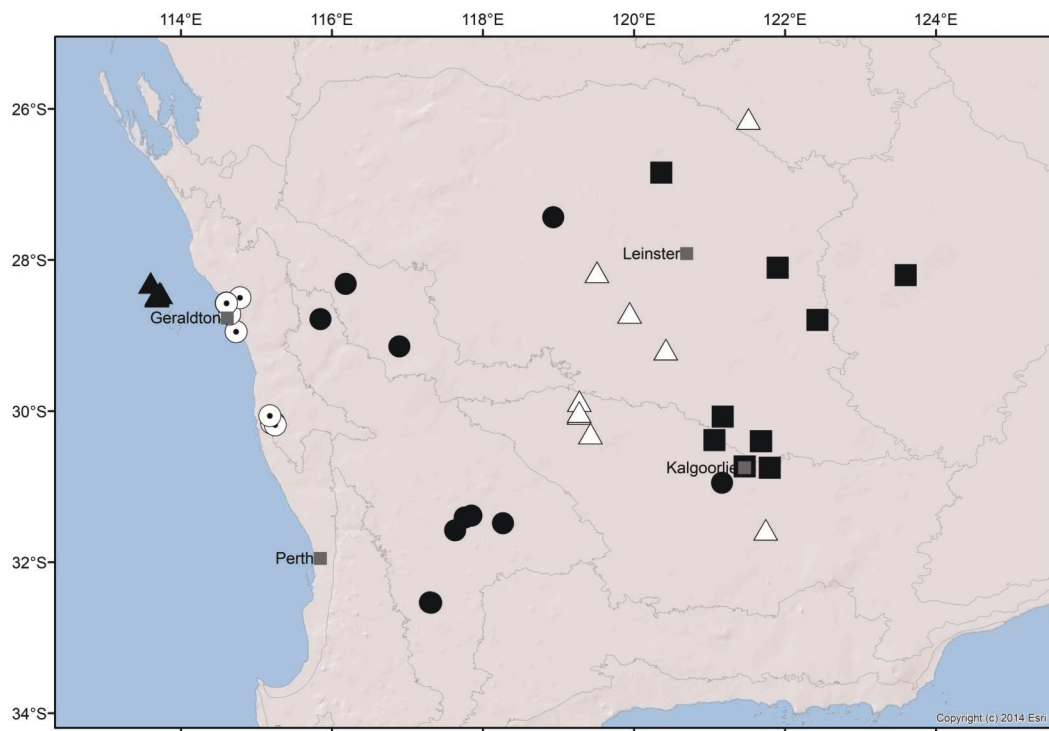


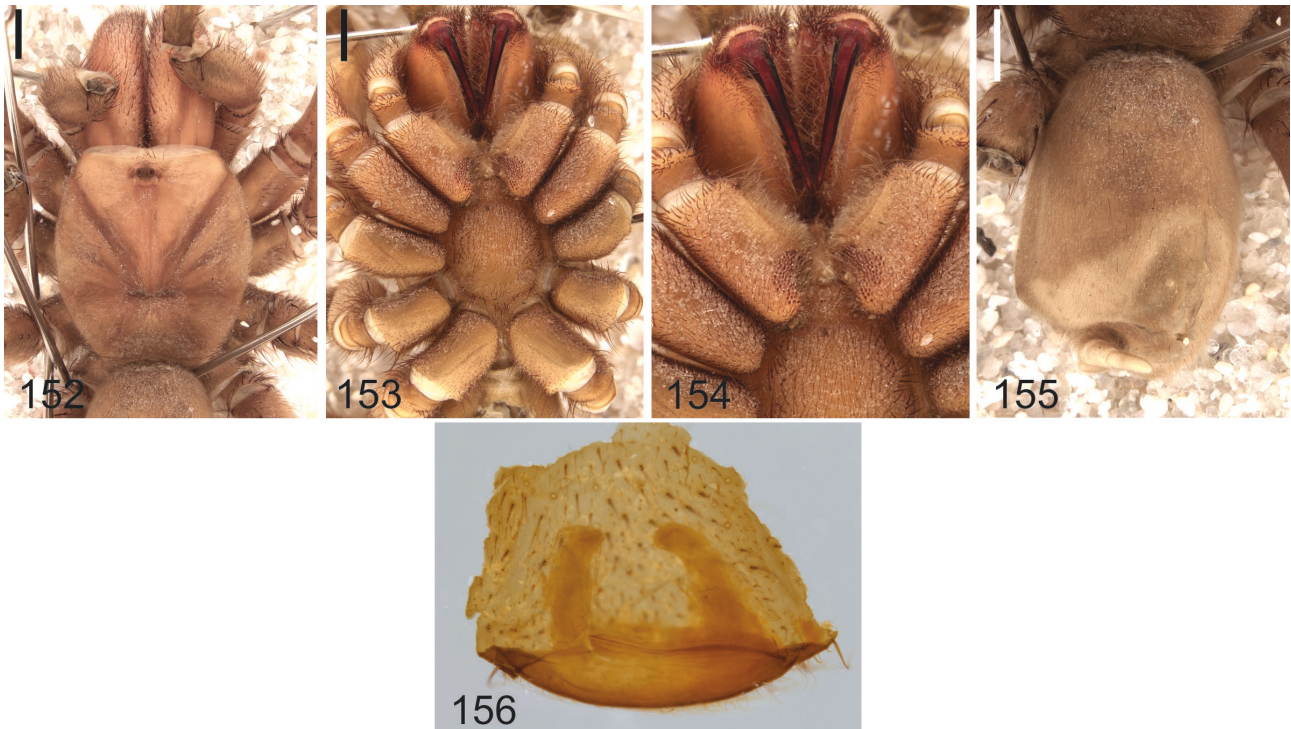
FIGURE 151 Known distributions of the *Aname* species treated in this paper, superimposed over IBRA bioregions: *Aname exulans* sp. nov. (solid triangle); *A. lilliana* sp. nov. (solid circle); *A. mcCleeryorum* sp. nov. (open circle); *A. phillipae* sp. nov. (open triangle); *A. simoneae* sp. nov. (solid square).

recurved; AME about same size as ALE; ALE and AME the largest; PME smallest; eye group length 1.0, width 1.8. Chelicerae with broad dorsal strip of black setae, and two thinner lateral strips of smaller black setae; rastellum absent; promargin of tooth row with 11 teeth, retromargin with 5 teeth. Labium fused to sternum (Figure 143); without cuspules. Maxilla (Figure 143) with c. 215 cuspules; located on basal half. Sternum (Figure 142): oval, posteriorly pointed; $1.2 \times$ longer than broad; bristles over entire surface; with 3 pairs of sigilla (Figure 144), each pair increasing in size from anterior

to posterior; anterior pair located near edge of sternum; posterior pair elongate.

Pedipalp: Tarsus with thick scopula.

Legs: Coxal cuspules absent (Figure 141). Scopula present on all tarsi, present on metatarsi I and II. Trichobothria: tibia with numerous trichobothria in 2 rows, metatarsi with several trichobothria, tarsi with numerous trichobothria. Claws with 2 rows of teeth; claw tufts absent. Measurements: Leg I: femur 8.9. Leg II: femur 8.1. Leg III: femur 7.2. Leg IV: femur 9.3.



FIGURES 152–156 *Proshermacha armigera*, holotype female (AM KS8193): 152) cephalothorax, dorsal view; 153) cephalothorax, ventral view; 154) maxillae, labium and sternum, ventral view; 155) abdomen, dorsal view; 156) spermathecae, dorsal view. Scale lines = 2 mm.

Abdomen (Figures 145, 146): 1.5 × longer than broad, densely pilose. Spinnerets: 2 pairs of spinnerets; PMS unsegmented and separated by about diameter of spinneret; PLS 3-segmented, apical segment elongate, digitiform.

Genitalia (Figures 147, 148): Low, rounded basal section with medial anteriorly directed spermatheca, with bulbous distal end.

Dimensions (mm): Total body length 24.0; carapace length 9.9, width 9.5; sternum length 6.0, width 5.0; abdomen length 15.5, width 10.7.

Variation: N = 1; carapace length 10.6, width 8.3; femur I length 7.8; femur IV length 8.5.

DISTRIBUTION

Aname simoneae has been found in the Coolgardie, Great Victoria Desert and Murchison IBRA bioregions of Western Australia (Figure 151).

REMARKS

The female used for the description was matched with the male holotype using sequence data (Figure 1). The other female was collected from the same locality as a male. Males have been collected in pitfall traps during the summer months of December to March.

Our sequence data matched those of a specimen identified as *Aname* MY2121 in previous studies examining mygalomorph spider phylogenetics (Bond et al. 2012; Hedin and Bond 2006; Wheeler et al. 2017), and we are confident that this sample represents

A. simoneae. Although the locality was given as ‘N of Leonora S28.10172 E125.90417’ by Hedin and Bond (2006), the site is actually located at S28.10172 E121.90417 (M. Hedin, in litt.).

This species was formerly known by the WAM identification code *Aname* ‘MYG523’.

SEQUENCE DATA

Intraspecific genetic distances are high within *A. simoneae* (8.98%). *Aname simoneae* is closely related to *A. phillipae* and *A. whitei*, to which it is very similar morphologically.

ETYMOLOGY

This species is named for Simone Huey, wife of Joel A. Huey.

Genus *Proshermacha* Simon, 1908

Proshermacha Simon, 1908: 363. Type species: *Proshermacha subarmata* Simon, 1908, by subsequent designation of Rainbow (1911).

REMARKS

The genus *Proshermacha* was recently reinstated by Harvey et al. (2018) for a group of species from southern Australia that could be best diagnosed by characters found in the male pedipalp. Although the genus contains eight species, numerous new species have been observed in museum collections (Harvey et al. 2018).

Proshermacha armigera
(Rainbow and Pulleine, 1918) comb. nov.,

Figures 152–156

urn:lsid:zoobank.org:act:47ECBBF8-E50F-401F-9E49-F066921C163E

Aname armigera Rainbow and Pulleine, 1918: 150, plate 23, figs 102, 103.

MATERIAL EXAMINED

Holotype

Australia: Western Australia: ♀, Mullewa [as ‘Mullawa’ (sic)] [28°32’S, 115°31’E], date unknown, F. May (AM KS8193).

DESCRIPTION

Female: based on holotype (AM KS8193)

Colour (in alcohol): Carapace uniformly yellow-brown; indeterminate (faded); chelicerae yellow-brown; abdomen dorsally grey-brown, and ventrally pale yellow-brown.

Cephalothorax: Carapace (Figure 152) 1.14 × longer than broad, densely pilose, silver hairs present, with brown bristles dorsally. Clypeal edge protruding medially. Fovea slightly procurved (Figure 154). Eyes on distinct mound (Figure 153); from above, anterior eye row straight, posterior eye row slightly recurved; AME larger than ALE; ALE and AME the largest; PME smallest; eye group length 0.6, width 1.4. Chelicerae with 2 well-defined rows of short black spines; rastellum absent; promargin of tooth row with 8 teeth, retromargin with 10 teeth. Labium fused to sternum (Figure 154); with 3 cuspules. Maxilla with c. 100 cuspules; located on the proximo-basal edge (Figure 154). Sternum (Figure 153): oval, posteriorly pointed; 1.16 × longer than broad; bristles over entire surface; with 3 pairs of sigilla (Figure 153), each pair increasing in size from anterior to posterior; anterior and median pairs located near edge of sternum.

Pedipalp: Tarsus densely setose.

Legs: Coxal cuspules absent (Figure 153). Trichobothria: tibia with numerous trichobothria in 2 rows, metatarsi with several trichobothria, tarsi with numerous trichobothria. Claws with 2 rows of teeth; claw tufts absent. Measurements: Leg I: femur 8.8. Leg II: femur 6.4. Leg III: femur 4.5. Leg IV: femur 6.9.

Abdomen (Figure 155): 1.4 × longer than broad, densely pilose with bristles. Spinnerets: 2 pairs of spinnerets; PMS unsegmented and separated by about diameter of spinneret; PLS 3-segmented, apical segment elongate, digitiform.

Genitalia (Figure 156): 1 pair of widely spaced, thickened, anteriorly directed spermathecae.

Dimensions (mm): Total body length 21.1; carapace length 8.3, width 7.3; sternum length 4.3, width 3.7; abdomen length 8.7, width 6.2.

DISTRIBUTION

Proshermacha armigera is known only from the holotype collected from Mullewa in the northern section of the Avon Wheatbelt IBRA region, Western Australia.

REMARKS

The original description of *A. armigera* was based on a single female collected from Mullewa in the north-western Wheatbelt region of Western Australia, although the locality was incorrectly stated to be ‘Mullawa’ (Rainbow and Pulleine 1918). The holotype is in fair condition, but many of the legs have become separated from the body.

As stated above, *Proshermacha* is best diagnosed by a combination of features found in males, including the presence of a large ventral tibial spur on leg I, the lack of a ventral asetose depression on the male pedipalpal tibia, the long embolus, and the lack of thickened setae on the retrolateral face of the male pedipalpal tibia, which renders the placement of the female holotype of *A. armigera* slightly problematic. The maxillary cuspules are restricted to the baso-mesal edge of the maxillae (Figure 154), which excludes it from *Aname* where the cuspules are spread over the entire basal half of the maxilla (Harvey et al. 2018). The restricted conformation is only known from species of *Chenistonina*, *Proshermacha* and *Teyl*, at least among the Western Australian anamid fauna. The general body plan does not resemble species of *Teyl* which tend to have gracile legs and rounded abdomens. Species of *Chenistonina* have only been recorded from mesic regions of southern Western Australia and have never been found in the mid-west region (MSH, JAH, unpublished data). Therefore, we here transfer *A. armigera* to the genus *Proshermacha* which have similarly shaped spermathecae (Harvey et al. 2018, figure 7G). There are no obvious morphological features that would help to distinguish *P. armigera* from others in the genus, and we have not been able to match the female with males of *Proshermacha* collected in the general vicinity of the type locality.

SEQUENCE DATA

Molecular data are not available for this species.

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