



Two new species of the open-holed trapdoor spider genus *Proshermacha* (Araneae: Mygalomorphae: Anamidae) from southern Western Australia




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Abstract

The open-holed trapdoor spider genus *Proshermacha* Simon, 1908 is endemic to southern Australia, and currently contains 11 named species. We describe two new species from south-western Australia: *Proshermacha telaporta* sp. nov. from the Geraldton Sandplains and Swan Coastal Plain bioregions, and *Proshermacha robertblosfeldsi* sp. nov. from the Warren bioregion.

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<https://zoobank.org/References/CA7F45B6-6396-4716-AF24-A505698135B0>

Introduction

The mygalomorph spider genus *Proshermacha* Simon, 1908 is broadly distributed across southern Australia from the western coast of Western Australia to western Victoria. Spiders of the genus are often large and range in colour from brown to orange, usually with mottled or chevron patterns on the abdomen. Some species construct their burrows in the soil, while others construct silken tubes in natural crevices under rocks and logs (Main 1982; MSH pers. obs.). The genus was recently revalidated by Harvey et al. (2018) based on morphological and molecular criteria after long being considered a synonym of either *Aname* L. Koch, 1873 (e.g. Raven

1981) or *Chenistonia* Hogg, 1901 (e.g. Main 1982). The genus currently contains 11 species, consisting of those species included by Harvey et al. (2018), and those recently described by Harvey et al. (2020), Leenders et al. (2023) and Wilson et al. (2023). However, the genus is also known to contain numerous undescribed species (Harvey et al. 2018; Sagastume-Espinoza et al. in press; MSH, unpublished data).

We here describe two new species from south-western Western Australia: *Proshermacha telaporta* sp. nov., based on material collected from the Geraldton Sandplains and Swan Coastal Plain bioregions, and *Proshermacha robertblosfeldsi* sp. nov. from the Warren bioregion (Figure 1).

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Methods

The specimens examined in this study are lodged in the Western Australian Museum, Perth (WAM), and are preserved in 75% ethanol. Auto-montaged images were taken at different focal planes (ca. 20–30 images) with a Leica DFC500 digital camera attached to a Leica MZ16A stereo microscope, using Leica Application Suite (LAS) version 2.5.OR1 software.

Morphological 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. 2020), which was also used to generate a natural language description that was subsequently edited further.

Due to the conservation risk posed by the illegal collection of Australian mygalomorph spiders for the hobbyist market and pet trade (see Lassaline et al. 2023; Marshall et al. 2022; Rix et al. 2023), we here refrain from providing precise locality coordinates for each specimen.

The bioregions mentioned throughout the manuscript are those adopted in the Interim Biogeographic Regionisation for Australia (Thackway & Cresswell 1995; Department of the Environment (2013).

DNA sequences were obtained using the methods and protocols outlined by Harvey et al. (2020).

Taxonomy

Family Anamidae Simon, 1889

Subfamily Teylinae Main, 1985

Genus *Proshermacha* Simon, 1908

Proshermacha Simon, 1908: 363.

Type species

Proshermacha subarmata Simon, 1908, by subsequent designation of Rainbow (1911).

Diagnosis

As discussed by Harvey et al. (2018) and Rix et al. (2020), species of *Proshermacha* differ from other genera of Teylinae as follows: from *Chenistonia* Hogg, 1901 by the elongated embolus (short in *Chenistonia*); from most species of *Teyl* Main, 1975 and *Namea* Raven, 1984 by the embolus arising from the distal end of the pedipalpal bulb (Figures 17–20, 49–52) and presence of a tibial megaspur on male leg I (Figures 22, 54); and from *Teyloides* Main, 1983 by the embolus arising from the distal end of the pedipalpal bulb (Figures 17–20, 49–52).

Proshermacha telaporta Harvey, Wilson & Rix, sp. nov.

Figures 2–35

<https://zoobank.org/NomenclaturalActs/6ABB4F84-8CDD-4B18-AFC9-CC9ABC743953>

Holotype: AUSTRALIA: *Western Australia*: ♂, near Coomaloo Hill, Cooljarloo, 30°41'S, 115°28'E, 16–21 August 2006, dry pitfall, *Banksia* low woodland on sand, M. Bamford (WAM T77026).

Paratype: AUSTRALIA: *Western Australia*: 1 ♀, ca. 2 km E. of Regans Ford, 30°59'S, 115°43'E, 5 September 2007, in burrow in sandy soil, burrow without lid, A. Munro (WAM T81483).

Diagnosis

Specimens of *Proshermacha telaporta* can be distinguished from all other described species of the genus as follows: males lack flanges on the embolus (Figures 17–20) which occur in *P. robertblosfeldsi* (Figures 49–52), and the embolus is shorter than in *P. credo* and the male identified as *Chenistonia tepperi* by Main (1964). Males can be further distinguished from those species for which males are known by the thin, low megaspur on tibia I (Figures 22, 23). The spermathecae of the female (Figures 34, 35) are reminiscent of the five other species of *Proshermacha* for which the spermathecal morphology has been documented, *P. armigera* (Rainbow and Pulleine, 1918) (see Harvey et al. 2020, figure 156), *P. credo* (see Wilson et al. 2023, figure 29), *P. wilga* (see Leenders et al. 2023, fig. 29), *P. robertblosfeldsi* (Figures 58, 59) and *P. sp. 'MYG357'* (see Harvey et al. 2018, figure 7G). However, the spermathecal stalks are more widely spaced than in *P. armigera*, lack the medial curvature of *P. credo* and *P. wilga*, are less widely spaced than in *P. robertblosfeldsi* and lack the lateral flexure of *P. sp. 'MYG357'*.

Description

Male (based on holotype, WAM T77026): large anamid spider.

Colour (in alcohol) (Figures 4–24): carapace dark red-brown with darker markings in cephalic region; legs brown, some segments with longitudinal pale stripes, tarsi paler; prolateral face of femur I paler than other segments. Chelicerae uniformly dark red-brown. Abdomen dorsally yellow-brown with darker markings, and ventrally pale yellow-brown.

Cephalothorax: carapace (Figure 4) 1.28 × longer than broad; pilose; silver setae present; with larger brown setae dorsally; clypeal edge slightly convex. Fovea (Figure 7) straight. Eyes (Figure 6): 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 0.87, width 1.59. Chelicerae (Figure 4) densely setose with

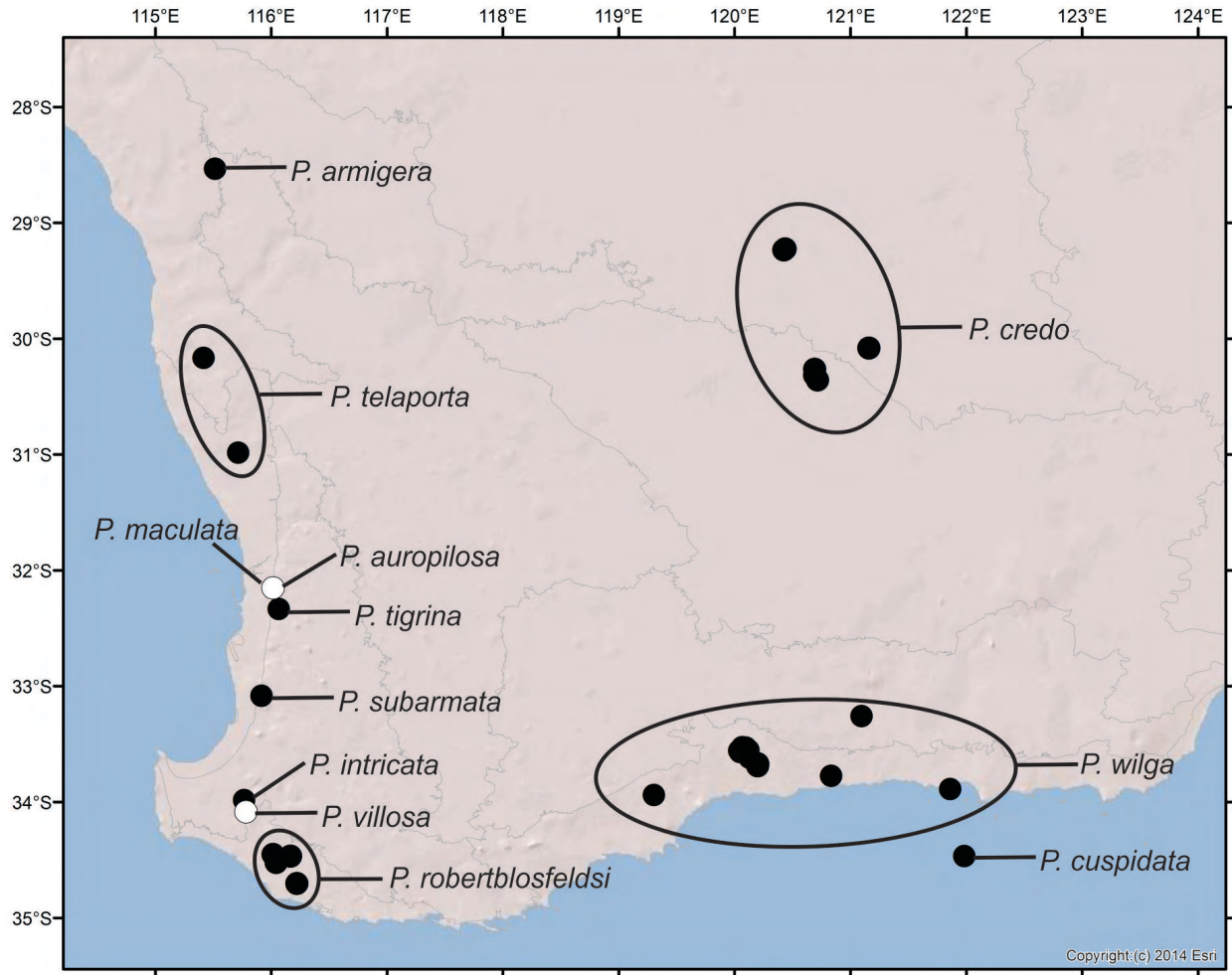


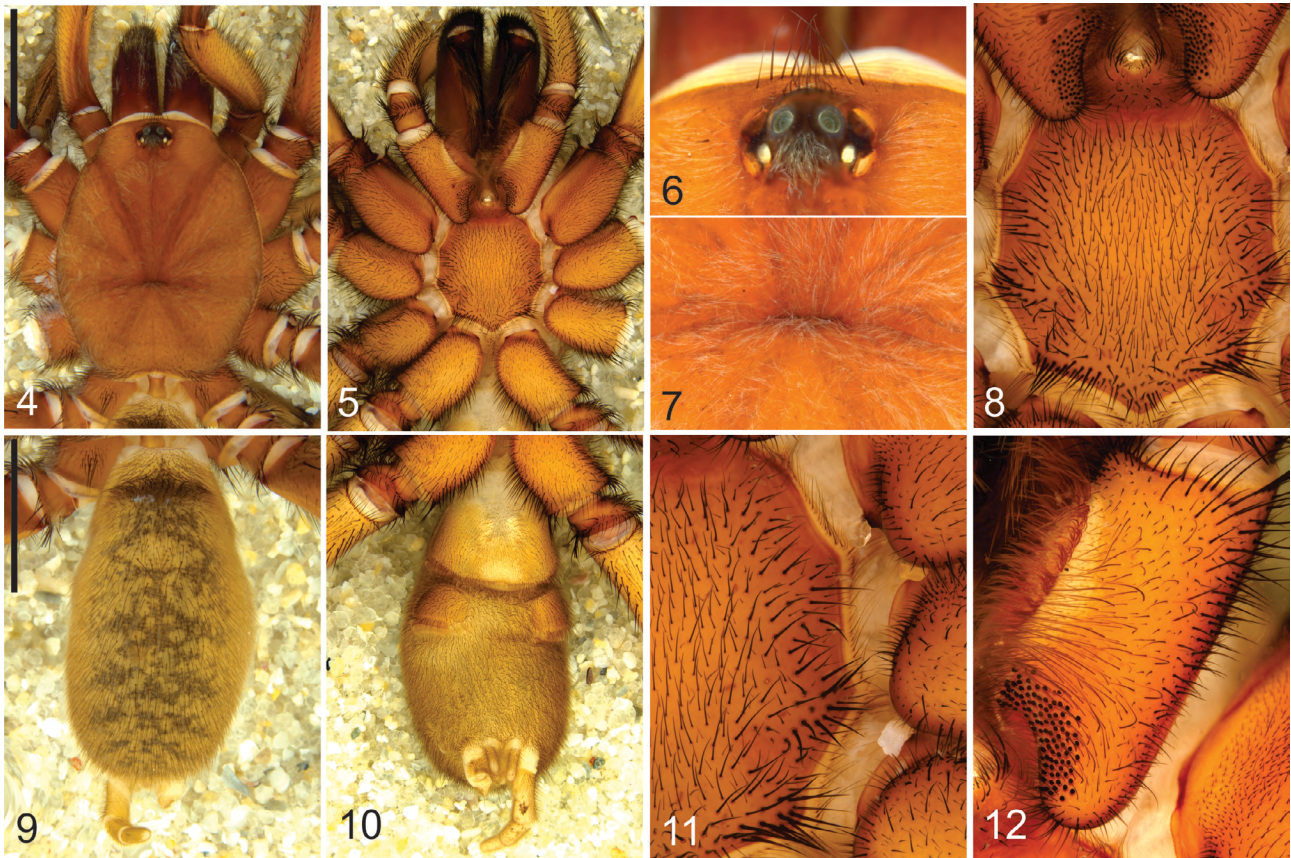
Figure 1. Distribution of the 12 described species of *Proshermacha* recorded from Western Australia, including the two new species *P. telaporta* and *P. robertblofeldsi*. The IBRS bioregions are delimited using grey borders.



Figures 2, 3. *Proshermacha telaporta* Harvey, Wilson & Rix, sp. nov., paratype female (WAM T81483): 2, dorsal view; 3, dorso-lateral view.

thick black setae and smaller silver setae; rastellum absent; promargin of tooth row with 9 teeth, retromargin with 17 small teeth in 2 rows. Labium (Figure 8) fused to sternum, without cuspules. Maxillae (Figure 12) with 100 (left), 93 (right) cuspules, located on the basal edge; maxillae about same colour as coxae I-IV (Figure

5). Sternum (Figure 8): oval, posteriorly pointed; 1.00 × longer than broad; setae over entire surface, setae on lateral and posterior margins longer than others; with 3 pairs of sigilla (Figure 11), each pair increasing in size from anterior to posterior; posterior pair elliptical.



Figures 4–12. *Proshermacha telaporta* Harvey, Wilson & Rix, sp. nov., holotype male (WAM T77026): 4, cephalothorax, dorsal view; 5, cephalothorax, ventral view; 6, ocular region; 7, fovea; 8, sternum; 9, abdomen, dorsal view; 10, abdomen, ventral view; 11, left sternal sigilla; 12, left maxilla. Scale bars = 5 mm.

Pedipalp (Figures 13–20): tibia cylindrical, narrow; ase-tose depression absent; tarsus long, with medial con- striction when viewed laterally; densely setose; bulb ovoid; embolus about as long as bulb, tapering to fine point, without distal flange.

Legs (Figures 21–24): coxal cuspules absent; coxa I with some setae noticeably shorter than others; tibia I mod- erately thickened, cylindrical, with large megaspur; TIL/ TID 3.77; TIS/TIL 0.62; TISH/TID 0.64; metatarsus elon- gate, slightly incrassate; MIL/MID 6.91. MIPEL/MIL 0.39; scopula present on all tarsi, and on metatarsi I and II; claws with 2 rows of teeth; claw tufts absent.

Abdomen (Figures 9, 10): 1.88 × longer than broad, dense- ly pilose. Spinnerets: 2 pairs of spinnerets; PMS unseg- mented and separated by about diameter of spinneret; PLS 3-segmented, apical segment elongate, digitiform.

Dimensions (mm): total body length (with chelicerae, but excluding spinnerets) 26.88, total body length 22.94 (excluding chelicerae and spinnerets), carapace length 11.23, width 8.75; sternum length 4.42, width 4.42. Femur I length 9.02, width 2.72, L/W 3.32; tibia I 7.10; metatarsus I 7.53; femur II 8.42; femur III 7.58; femur IV length 9.17, width 2.70, L/W 3.40. Abdomen length 10.85, width 5.76.

Female (based on paratype, WAM T81483): large anamid spider.

Colour (in alcohol) (Figures 25–33): carapace dark red- brown with darker markings in cephalic region; legs uni- formly yellow-brown; prolateral face same colour as other segments. 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 25) 1.33 × longer than broad; pilose; silver setae present; with larger brown setae dorsally; clypeal edge slightly convex. Fovea (Fig- ure 28) very slightly recurved. Eyes (Figure 27): on dis- tinct mound; from above, anterior eye row straight, posterior eye row slightly recurved; AME slightly larger than PME; AME largest; PME smallest; eye group length 0.96, width 1.83. Chelicerae (Figure 25) densely setose with thick black setae and smaller silver setae; rastellum absent; promargin of tooth row with 9 teeth, retromar- gin with 11 small teeth in 2 rows. Labium (Figure 29) fused to sternum, without cuspules. Maxillae (Figure 33) with 109 (left), 117 (right) cuspules, located on the basal edge; maxillae about same colour as coxae I–IV (Figure 26). Sternum (Figure 29): oval, posteriorly pointed; 1.07 × longer than broad; setae over entire surface, setae on lateral and posterior margins longer than others; with



Figures 13–24. *Proshermacha telaporta* Harvey, Wilson & Rix, sp. nov., holotype male (WAM T77026): 13–16, left pedipalp: 13, prolateral view; 14, tarsus, prolateral view; 15, tarsus, ventral view; 16, tarsus, retrolateral view; 17–20, left bulb: 17, ventral view; 18, dorsal view; 19, retrolateral view; 20, retrolateral view; 21–24, left leg I: 21, prolateral view; 22, tibia I, prolateral view; 23, tibia I, retrolateral view; 24, metatarsus I, prolateral view. Scale lines = 5 mm (Figures 13–16, 21–24), 0.2 mm (Figures 17–20).

3 pairs of sigilla (Figure 32), each pair increasing in size from anterior to posterior; posterior pair elliptical.

Pedipalp: with thick scopula.

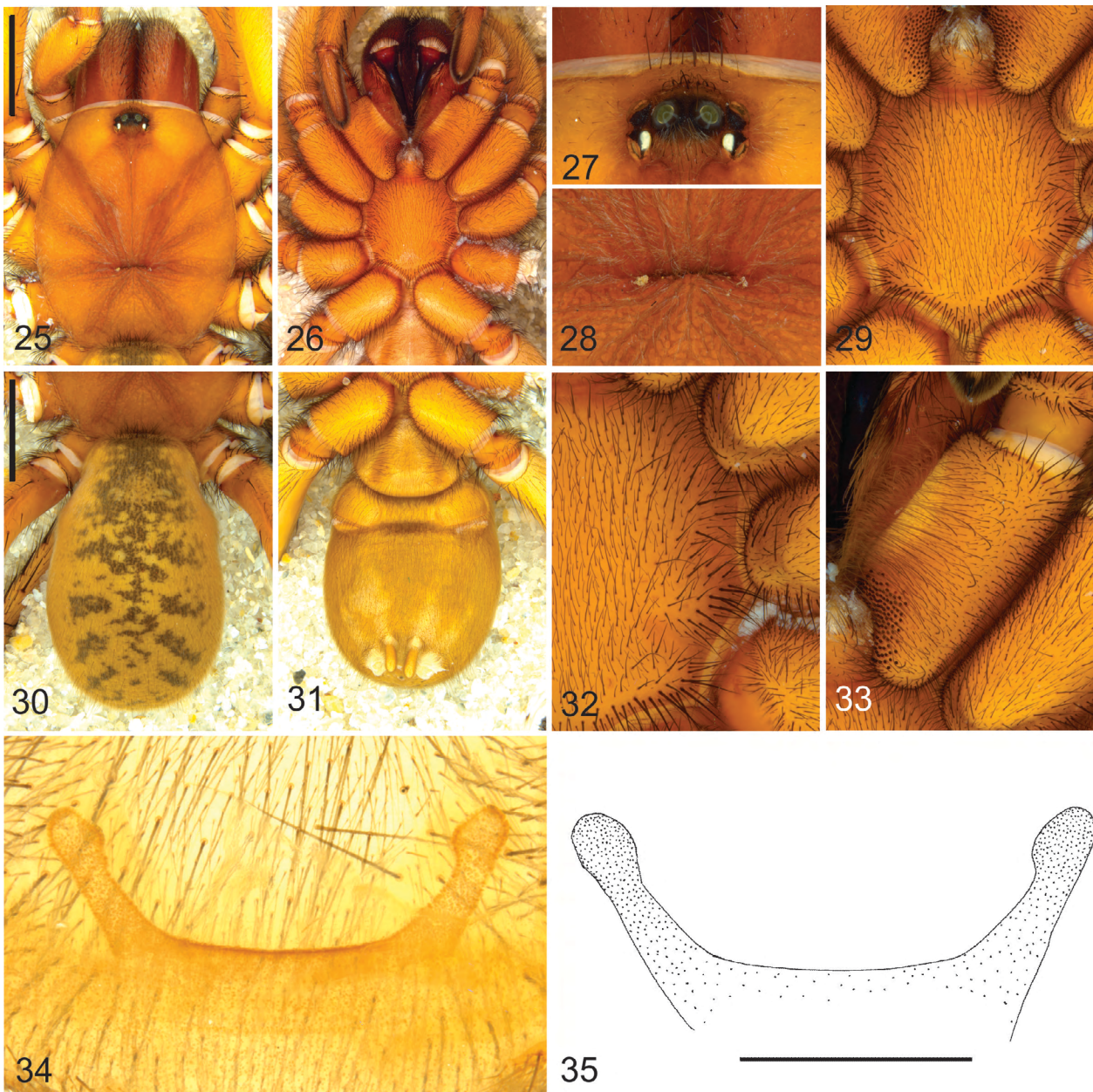
Legs: coxal cuspules absent; coxa I with some setae noticeably shorter than others; scopula present on all tarsi, and on metatarsi I and II; claws with 2 rows of teeth; claw tufts absent.

Abdomen (Figures 30, 31): 1.55 × 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 34, 35): with 1 pair of widely spaced spermathecae, laterally divergent with bulbous spermathecae head.

Dimensions (mm): total body length (with chelicerae, but excluding spinnerets) 31.68, total body length 27.07 (excluding chelicerae and spinnerets); carapace length



Figures 25–35. *Proshermacha telaporta* Harvey, Wilson & Rix, sp. nov., paratype female (WAM T81483): 25, cephalothorax, dorsal view; 26, cephalothorax, ventral view; 27, ocular region; 28, fovea; 29, sternum; 30, abdomen, dorsal view; 31, abdomen, ventral view; 32, left sternal sigilla; 33, left maxilla; 34, spermathecae, dorsal; 35, spermathecae, dorsal. Scale bars = 5 mm (Figures 25, 30), 0.5 mm (Figure 35).

13.25, width 9.98; sternum length 5.62, width 5.26. Femur I length 9.31, width 3.37, L/W 2.76; femur II 8.74; femur III 7.97; femur IV length 9.79, width 3.45, L/W 2.84. Abdomen length 13.82, width 8.91.

Remarks

The only other specimen of *Proshermacha* lodged in the Western Australian Museum from near the two localities recorded for this species is a male (WAM T147257) collected from Watheroo National Park which is ca. 40 km from the type locality of *P. telaporta*. This specimen clearly represents a different species, as the abdomen lacks contrasting markings and the tibia and metatarsus I are differently shaped.

Proshermacha telaporta has been previously identified with the code *P. sp. 'MYG362'* in the Western Australian Museum database.

Sequence data

The two specimens of *P. telaporta* are only 1.52% divergent in the COI barcoding gene, making their identity unequivocal. The following sequence data are available on GenBank for *Proshermacha telaporta*:

Holotype male, WAM T77026: COI (OR141941).

Paratype female, WAM T81483: COI (KJ745286), 16S rRNA (OQ919013), 18S rRNA (OQ919000), 28S rRNA (OQ919022), and H3 (OQ918665).

Distribution

Proshermacha telaporta has been collected from two localities ca. 100 km apart in the southern Geraldton Sandplains and the northern Swan Coastal Plains bioregions (Figure 1). These sites represent some of the most north-westerly records of the genus *Proshermacha*.

Etymology

The species epithet is a compound noun that signifies the silken burrow entrance of anamid spiders (*tela*, Latin, web or loom; *porta*, Latin, gate or door). The name was suggested by the Klines family (Jenny, Marcus, Jacob and Ella) as part of the "A Night at the Museum Silent Auction" organised by the Foundation for the Western Australian Museum.

Proshermacha robertblofeldsi Harvey, Wilson & Rix, sp. nov

Figures 36–67

<https://zoobank.org/NomenclaturalActs/671A9F43-C10B-498B-828F-23B7AEEF7703>

Holotype: AUSTRALIA: *Western Australia*: ♂, Yeagarup, McAlpine Road, 34°31'S, 116°03'E, 118 m, 23 January 2022, M.S. Harvey, M.E. Blofelds (WAM T157103).

Chenistonia villosa Rainbow & Pulleine: Curry et al. 1985: 472, 478 (misidentification).

Diagnosis

Males of *Proshermacha robertblofeldsi* can be distinguished from the only other described species of *Proshermacha* for which males are known by the presence of distinct flanges on the embolus (Figures 49–52). The emboli of *P. credo* (see Wilson et al. 2023, figures 11–13), *P. telaporta* (Figures 17–20), *P. wilga* (see Leenders et al. 2023, figures 13–15), and the male identified as *Chenistonia tepperi* by Main (1964) lack flanges and taper to a fine point (see Main 1964, figures on page 46). It also differs from *P. credo* and *P. tepperi* by the thicker tibia and metatarsus I. Males are currently unknown for all other described species of *Proshermacha*. The spermathecae of the female are reminiscent of the five other species of *Proshermacha* for which the spermathecal morphology has been documented, *P. armigera* (Rainbow and Pulleine, 1918) (see Harvey et al. 2020, figure 156), *P. credo* (see Wilson et al. 2023, figure 29), *P. telaporta* (Figures 34, 35), *P. wilga* (see Leenders et al. 2023, figure 29) and *P. sp.* 'MYG357' (see Harvey et al. 2018, figure 7G). However, the spermathecal stalks are more widely spaced than in *P. armigera*, lack the medial curvature and bulbous terminal receptacula of *P. credo* and *P. wilga*, are less widely spaced than in *P. telaporta*, and lack the lateral flexure of *P. sp.* 'MYG357'.

Description

Male (based on holotype, WAM T157103): medium-large anamid spider.

Colour (in alcohol) (Figures 36–44): carapace deep brown; legs dark brown. Prolateral face of femur I paler than other segments. Chelicerae dark brown, almost black. Abdomen dorsally nearly black with several pale spots, and ventrally grey-brown with paler spots.

Cephalothorax: carapace (Figure 36) 1.26 × longer than broad; densely pilose; many setae bronze in colour; with larger brown setae dorsally; clypeal edge slightly convex. Fovea (Figure 39) straight. Eyes (Figure 38): on distinct mound; from above, anterior eye row slightly procurved, posterior eye row slightly recurved; AME slightly smaller than ALE; ALE and AME the largest; PME smallest; eye group length 0.91, width 1.58. Chelicerae (Figure 36) with 3 well-defined strips of brown bristles; rastellum absent; promargin of tooth row with 9 teeth, retromargin with 10 small teeth. Labium (Figure 40) fused to sternum, without cuspules. Maxillae (Figure 44) with 92 (left), 81 (right) cuspules, located on the basal edge; maxillae darker than coxae I–IV (Figure 37). Sternum (Figure 40): oval, posteriorly pointed; 1.32 × longer than broad; setae over entire surface, setae on lateral and posterior margins longer than others; with 3 pairs of sigilla, each pair increasing in size from anterior to posterior; third pair rounded, near edge of sternum.

Pedipalp (Figures 45–52): tibia cylindrical, narrow; ase-tose depression absent; tarsus long, with medial constriction when viewed laterally; densely setose; bulb ovoid; embolus about same length as bulb, with prominent flanges.

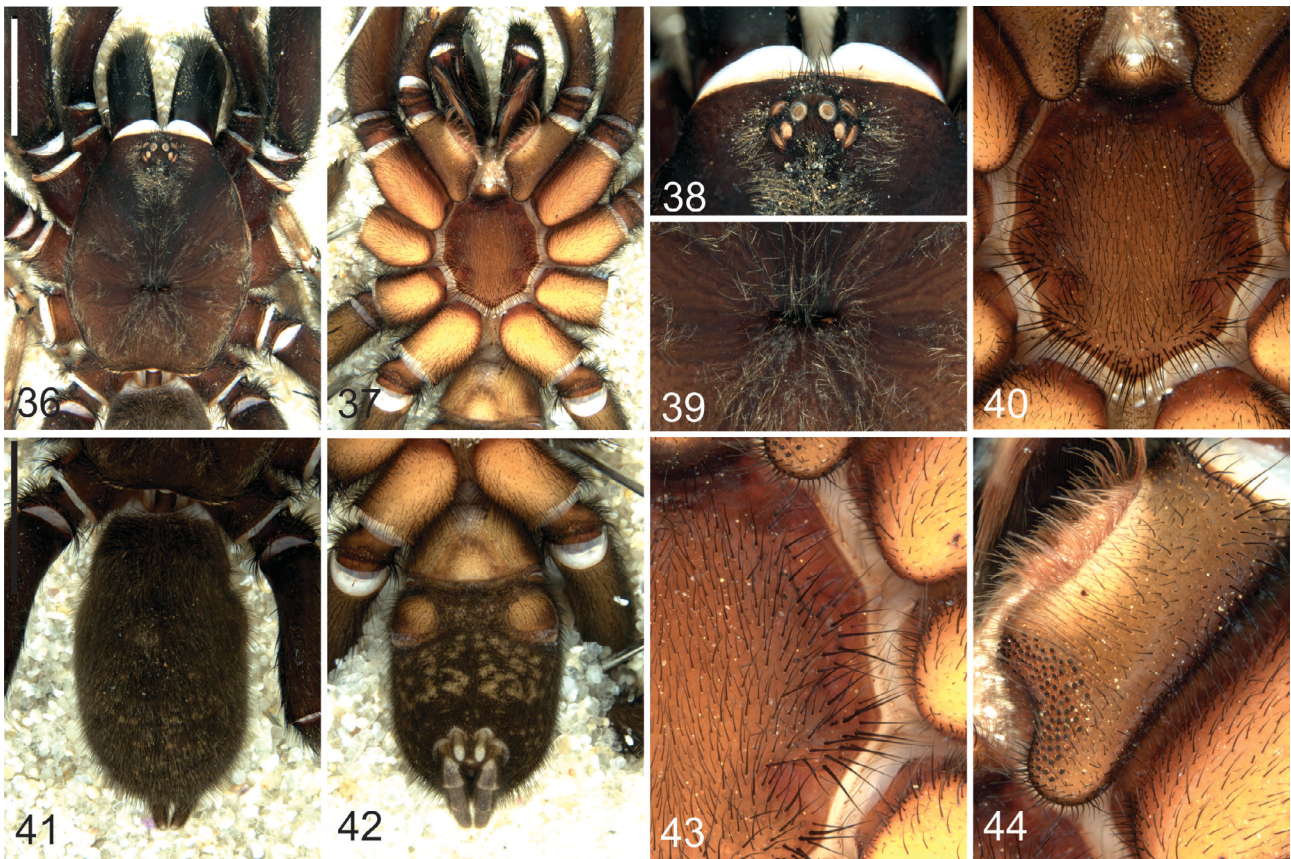
Legs (Figures 53–56): coxal cuspules absent; coxa I with some setae noticeably shorter than others; tibia I cylindrical, with large megaspor; TIL/TID 3.70; TIS/TIL 0.64; TISH/TID 0.80; metatarsus incrassate; MIL/MID 4.91. MIPEL/MIL 0.37; scopula present on all tarsi, absent on metatarsi; claws with 2 rows of teeth; claw tufts absent.

Abdomen (Figures 41, 42): 1.74 × 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 (with chelicerae, but excluding spinnerets) 24.34, total body length 19.92 (excluding chelicerae and spinnerets). Carapace length 9.84, width 7.79; sternum length 5.47, width 4.13. Femur I length 7.87, width 2.74, L/W 2.87; tibia I 6.03; metatarsus I 6.04; femur II 6.91; femur III 6.14; femur IV length 7.78, width 2.54, L/W 3.06. Abdomen length 9.50, width 5.46.

Variation (n = 5): carapace length 8.37–9.89, width 6.93–8.12, L/W 1.21–1.27; femur I length 6.97–7.97, width 2.67–3.04. L/W 2.67–3.04; metatarsus I length 5.19–5.88; femur IV length 7.06–8.23, width 2.11–2.51, L/W 3.27–3.35.

Female (based on WAM T130799): medium-large anamid spider.



Figures 36–44. *Proshermacha robertblosfeldsi* Harvey, Wilson & Rix, sp. nov., holotype male (WAM T157103): 36, cephalothorax, dorsal view; 37, cephalothorax, ventral view; 38, ocular region; 39, fovea; 40, sternum; 41, abdomen, dorsal view; 42, abdomen, ventral view; 43, left sternal sigilla; 44, left maxilla. Scale bars = 5 mm.

Colour (in alcohol) (Figures 57–65): carapace dark yellow-brown with red-brown radial markings; legs uniformly yellow-brown; prolateral face of femur I same colour as other segments. Chelicerae deep red-brown. Abdomen dorsally dark grey with paler spots forming mottled pattern, and ventrally grey-brown with paler spots.

Cephalothorax (Figure 57): carapace (Figure 57) 1.26 × longer than broad; pilose; silver setae absent; with larger brown setae dorsally; clypeal edge slightly convex. Fovea (Figure 60) straight. Eyes (Figure 59): on distinct mound; from above, anterior eye row nearly straight, posterior eye row slightly recurved; AME slightly smaller than ALE; PLE largest; ALE smallest; eye group length 0.68, width 1.32. Chelicerae (Figure 57) with 3 well-defined strips of brown bristles; rastellum absent; promargin of tooth row with 12 teeth, retromargin with 6 small teeth. Labium (Figure 61) fused to sternum, without cuspules. Maxillae (Figure 61) with 93 (left), 80 (right) cuspules, located on the basal edge; maxillae about same colour as coxae I–IV (Figure 58). Sternum (Figure 61): oval, posteriorly pointed; 1 × longer than broad; setae over entire surface, setae on lateral and posterior margins longer than others; with 3 pairs of sigilla, each pair increasing in size from anterior to posterior; third pair rounded, near edge of sternum.

Pedipalp: with thick scopula.

Legs: coxal cuspules absent; coxa I with some setae noticeably shorter than others; scopula present on all tarsi, absent on metatarsi; claws with 2 rows of teeth; claw tufts absent.

Abdomen (Figures 62, 63): 1.73 × longer than broad, pilose. Spinnerets: 2 pairs of spinnerets; PMS unsegmented and separated by about diameter of spinneret; PLS 3-segmented, apical segment elongate, digitiform.

Genitalia (Figures 66, 67): with 1 pair of widely spaced spermathecae, laterally divergent with bulbous spermathecae head.

Dimensions (mm): total body length (with chelicerae, but excluding spinnerets) 18.62, total body length 16.13 (excluding chelicerae and spinnerets). Carapace length 7.97, width 6.33. Sternum length 3.55, width 3.55. Femur I length 6.12, width 2.02, L/W 3.03; femur II 5.47; femur III 4.80; femur IV length 3.14, width 1.82 mm, L/W 1.73. Abdomen length 8.30, width 4.80.

Variation (n = 5): carapace length 9.72–10.27, width 7.10–8.55, L/W 1.14–1.42; femur I length 6.53–7.58, width 2.44–2.78, L/W 2.68–2.77; femur IV length 7.13–8.06, width 2.35–2.58, L/W 2.97–3.12.

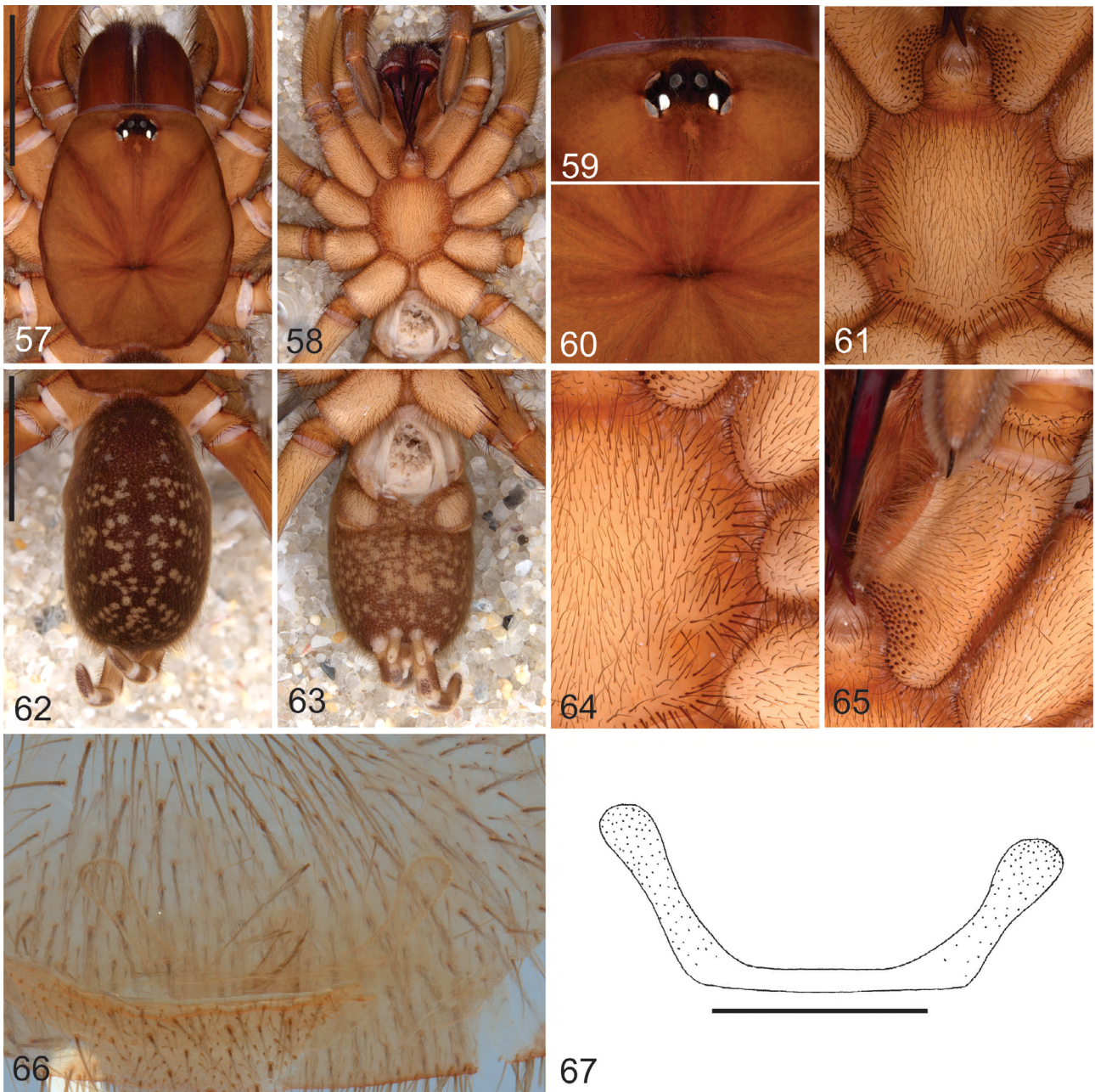


Figures 45–56. *Proshermacha robertblosfeldsi* Harvey, Wilson & Rix, sp. nov., holotype male (WAM T157103): 45–48, left pedipalp: 45, prolateral view; 46, tarsus, prolateral view; 47, tarsus, ventral view; 48, tarsus, retrolateral view; 49–52, left bulb: 49, ventral view; 50, dorsal view; 51, retrolateral view; 52, retrolateral view; 53–56, left leg I: 53, prolateral view; 54, tibia I, prolateral view; 55, tibia I, retrolateral view; 56, metatarsus I, prolateral view. Scale lines = 5 mm (Figures 45–48, 53–56), 0.2 mm (Figures 49–52).

Other specimens examined

AUSTRALIA: *Western Australia*: 1 ♀, Boorara-Gardner National Park, KTC Road at Canterbury River, 34°42'S, 116°13'E, 64 m, 12 October 2011, ex silken retreat under log, M.S. Harvey, G. Giribet (WAM T130799); 1 ♂, East Brook (past Gloucester Tree), Pemberton, 34°27'S, 116°01'E, 21 August 1956, B.Y. Main (WAM T158950); 1 ♂, Collins, south of Pemberton, 34°29'S, 116°03'E, 22 March 1957, muddy bank of creek, A.R. Main (WAM

T158963); 1 ♂, Crowea Forest Block, 12 km SE. of Pemberton, 34°28'S, 116°10'E, 29 October 1976, by hand, S.J. Curry (WAM T18175); 1 juvenile, same data except 20–26 November 1976, pitfall trap (WAM T32651); 2 juveniles, same data except 17–24 December 1976, pitfall trap (WAM T32708, T32709); 1 ♀, same data except 24 December 1976, by hand (WAM T18168); 2 ♀, same data except 25 November 1977, by hand (WAM T18178, T18179); 1 ♀, same data except 13–19 November 1976,



Figures 57–67. *Proshermacha robertblosfeldsi* Harvey, Wilson & Rix, sp. nov., paratype female (WAM T130799): 57, cephalothorax, dorsal view; 58, cephalothorax, ventral view; 59, ocular region; 60, fovea; 61, sternum; 62, abdomen, dorsal view; 63, abdomen, ventral view; 64, left sternal sigilla; 65, left maxilla; 66, spermathecae, dorsal; 67, spermathecae, dorsal. Scale bars = 5 mm (Figures 57, 62), 0.5 mm (Figure 67).

pitfall trap (WAM T32642); 1 ♀, same data except 11–17 December 1976, pitfall trap (WAM T32649); 1 ♂, same data except 16–22 October 1976, pitfall trap (WAM T32646); 1 ♀, same data except 17–24 December 1976, pitfall trap (WAM T32650); 1 ♂, same data except 23–29 October 1976, pitfall trap (WAM T32644); 2 ♂, same data except 30 October–5 November 1976, pitfall trap (WAM T32710, T32711); 1 ♂, same data except 5 November 1976, by hand (WAM T18167); 1 ♂, same data except 6–12 November 1976, pitfall trap (WAM T32647); 1 ♂, same data except 10–17 November 1976, pitfall trap (WAM T32707); 4 ♂, same data except 20–26 November 1976, pitfall trap (WAM T32712–T32715); 1 ♂, same data

except 27 November–3 December 1976, pitfall trap (WAM T32645); 1 ♂, same data except 11–17 December 1976, pitfall trap (WAM T32648); 3 ♂, same data except 31 October 1977, by hand (WAM T18169–T18171); 3 ♂, same data except 7 November 1977, by hand (WAM T18172–T18174); 2 ♂, same data except 25 November 1977, by hand (WAM T18176–T18177); 1 ♂, same data except 2 December 1977, by hand (WAM T18180); 1 ♀, same data except Creek Site, 27 November–3 December 1976, pitfall trap (WAM T32657); 1 ♀, same data 25–31 October 1977, pitfall trap (WAM T32771); 3 juveniles, same data except creek site, 10–17 December 1980, pitfall trap (WAM T32655, T32656, T32658); 1 juvenile,

same data except 28 October–3 November 1978, pitfall trap (WAM T32747); 1 juvenile, same data except 12–18 November 1977, pitfall trap (WAM T32766); 1 ♀, same data except 14–20 December 1979, pitfall trap (WAM T32641); 1 ♀, same data except 7–13 November 1980, pitfall trap (WAM T32659); 1 ♀, same data except 6–12 December 1977, pitfall trap (WAM T32757); 1 ♂, same data except 25–1 December 1978, pitfall trap (WAM T32652); 2 ♂, same data except 2–8 December 1978, pitfall trap (WAM T32653, T32654); 1 ♂, same data except 30 November–6 December 1979, pitfall trap (WAM T32744); 1 ♂, same data except 4–10 November 1978, pitfall trap (WAM T32745); 1 ♂, same data except 28 October–3 November 1978, pitfall trap (WAM T32746); 1 ♂, same data except 1–8 November 1979, pitfall trap (WAM T32750); 2 ♂, same data except 13–19 November 1976, pitfall trap (WAM T32755, T32756); 2 ♂, same data except 23–29 October 1976, pitfall trap (WAM T32758, T32759); 2 ♂, same data except 6–12 November 1976, pitfall trap (WAM T32760, T32761); 4 ♂, same data except 12–18 November 1977, pitfall trap (WAM T32762–T32765); 3 ♂, same data except 26 November–2 December 1977, pitfall trap (WAM T32767, T32769); 1 ♂, same data except 25–31 October 1977, pitfall trap (WAM T32770); 3 ♂, same data except 1–7 November 1977, pitfall trap (WAM T32772–T32774); 1 ♂, same data except 19–25 November 1977, pitfall trap (WAM T32775); 2 ♂, same data except 5–11 November 1977, pitfall trap (WAM T32776, T32777); 1 ♀, same data except Ridge Site, 10–17 November 1978, pitfall trap (WAM T32727); 1 juvenile, same data except 17–24 November 1978, pitfall trap (WAM T32634); 1 juvenile, same data except 14–20 December 1978, pitfall trap (WAM T32635); 1 juvenile, same data except 25 November–1 December 1978, pitfall trap (WAM T32637); 1 juvenile, same data except 15–21 November 1980, pitfall trap (WAM T32638); 2 juveniles, same data except 17–24 December 1976, pitfall trap (WAM T32639, T32640); 2 juveniles, same data except 28 October–3 November 1978, pitfall trap (WAM T32667, T32668); 1 juvenile, same data except 26 October–1 November 1979, pitfall trap (WAM T32669); 1 juvenile, same data except 17–24 November 1978, pitfall trap (WAM T32721); 1 juvenile, same data except 29 September–6 October 1979, pitfall trap (WAM T32743); 1 ♀, same data except 25–31 October 1980, pitfall trap (WAM T32666); 1 ♀, same data except 26 October–1 November 1979, pitfall trap (WAM T32724); 1 ♀, same data except 14–20 October 1979, pitfall trap (WAM T32731); 2 ♀, same data except 29 September–6 October 1979, pitfall trap (WAM T32741, T32742); 1 ♂, same data except 25 November–1 December 1978, pitfall trap (WAM T32636); 1 ♂, same data except 2–8 December 1978, pitfall trap (WAM T32660); 1 ♂, same data except 9–15 December 1978, pitfall trap (WAM T32661); 1 ♂, same data except 10–17 December 1980, pitfall trap (WAM T32662); 2 ♂, same data except 28 October–3 November 1978, pitfall trap (WAM T32663, T32664); 1 ♂, same data except 25–31 October 1980, pitfall trap

(WAM T32665); 4 ♂, same data except 27 November–3 December 1976, pitfall trap (WAM T32716–T32719); 1 ♂, same data except 10–17 December 1976, pitfall trap (WAM T32720); 2 ♂, same data except 5–11 November 1977, pitfall trap (WAM T32722, T32723); 2 ♂, same data except 10–17 November 1978, pitfall trap (WAM T32725, T32726); 4 ♂, same data except 17–24 November 1978, pitfall trap (WAM T32751–T32754); 2 ♂, same data except 25 November–1 December 1978, pitfall trap (WAM T32728, T32729); 1 ♂, same data except 16–22 November 1979, pitfall trap (WAM T32730); 1 ♂, 1 ♀, same data except 7–13 November 1980, pitfall trap (WAM T32748, T32749); 2 ♂, same data except 22–28 November 1980, pitfall trap (WAM T32739, T32740).

Remarks

All specimens of *Proshermacha robertblosfeldi* were collected in forests dominated by karri (*Eucalyptus diversicolor*) and marri (*Corymbia calophylla*). The holotype male was found comatose in the middle of a track on a hot summer morning and was most likely dying at the end of the mating season. The female from Boorara-Gardner National Park was collected from a silken retreat that was situated under a log. The majority of the remaining specimens were collected from the Crowea Forest Block, ca. 12 km SE. of the town of Pemberton, either collected by hand or with the use of pitfall traps (Curry et al. 1985). They were originally identified by B.Y. Main as *Chenistonia villosa* Rainbow and Pulleine, 1918, which was described from a female collected near Nannup, Western Australia (Rainbow and Pulleine 1918). This species was transferred to *Proshermacha* by Harvey et al. (2018). Other specimens have been collected by B.Y. Main and A.R. Main in the Pemberton region.

We have obtained *COI* sequences from two specimens of *P. villosa* (WAM T146686, T146688) collected at or very near the type locality, and found that they differ from the two sequenced specimens of *P. robertblosfeldsi* by 14.6–16.1%, which is far above generally accepted levels of intraspecific genetic variation in anamid spiders.

Although we lack sequence data for the specimens collected from Crowea, the morphology of the male pedipalp and first leg clearly demonstrates that they are conspecific with the male from Yeagarup.

Adult male specimens have been collected in August, October, November, December, January and March, indicating a wide temporal pattern of maturation and dispersal.

Proshermacha robertblosfeldi has been previously identified with the code *P. sp.* 'MYG498' in the Western Australian Museum database.

Sequence data

The two specimens of *P. robertblosfeldi* from which we obtained sequence data were matched with each other using *COI* sequence data and were 8.2% divergent,

which we contend is within the range of variation found in anamid species. The following sequence data are available on GenBank:

Holotype male, WAM T157103: COI (OR141943).

Female, WAM T130799: COI (OR141942).

Distribution

Proshermacha robertblosfeldi has been collected from several localities south of Pemberton which are only 25 km apart in the Warren IBRA 7.0 bioregion (Figure 1).

Etymology

The species epithet is in loving memory of Robert John Blosfelds (1960–2021).

Disclosures

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References

Castalanelli MA, Framenau VW, Huey JA, Hillyer MJ & Harvey MS (2020) New species of the open-holed trapdoor spider genus *Aname* (Araneae: Mygalomorphae: Anamidae) from arid Western Australia. *Journal of Arachnology* 48: 169–213.

Curry SJ, Humphreys WF, Koch LE & Main BY (1985). Changes in arachnid communities resulting from forestry practices in Karri forest, south-west Western Australia. *Australian Forestry Research* 15: 469–480.

Dallwitz MJ, Paine TA & Zurcher EJ (2020) User's guide to the DELTA System: a general system for processing taxonomic descriptions. Accessed on 25 August 2023. <https://www.delta-intkey.com/www/uguide.htm> (CSIRO: Canberra).

Department of the Environment (2013) Australia's bioregions (IBRA). IBRA7, Commonwealth of Australia. <http://www.environment.gov.au/land/nrs/science/ibra#ibra>. Accessed 25 August 2023.

Harvey MS, Gruber K, Hillyer MJ & Huey JA (2020). 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*. *Records of the Western Australian Museum* 35: 10–38.

Harvey MS, Hillyer MJ, Main BY, Moulds TA, Raven RJ, Rix MG, Vink CJ & Huey JA (2018) Phylogenetic relation-

ships of the Australasian open-holed trapdoor spiders (Araneae: Mygalomorphae: Nemesiidae: Anaminae): multi-locus molecular analyses resolve the generic classification of a highly diverse lineage. *Zoological Journal of the Linnean Society* 184: 407–452.

Lassaline CR, Stringham OC, Moncayo S, Toomes A & Cassey P (2023) Untangling the web: dynamics of Australia's online terrestrial invertebrate trade. *Austral Entomology* 62: 372–387.

Leenders XJR, Beach D & Harvey MS (2023) A new species of open-holed trapdoor spider of the genus *Proshermacha* (Mygalomorphae: Anamidae) from Western Australia. *Australian Journal of Taxonomy* 20: 1–10.

Main BY (1964) Spiders of Australia. (Jacaranda Press, Milton).

Main BY (1982) Further studies on the systematics of Australian Diplurinae (Araneae: Mygalomorphae, Dipluridae): the taxonomic status of *Proshermacha* Simon and *Chenistonia tepperi* Hogg. *Australian Entomological Magazine* 8: 83–88.

Marshall BM, Strine CT, Fukushima CS, Cardoso P, Orr MC & Hughes AC (2022) Searching the web builds fuller picture of arachnid trade. *Communications Biology* 5(1): 448.

Rainbow WJ (1911) A census of Australian Araneidae. *Records of the Australian Museum* 9: 107–319.

Rainbow WJ & Pulleine RH (1918) Australian trap-door spiders. *Records of the Australian Museum* 12: 81–169.

Raven RJ (1981) A review of the Australian genera of the mygalomorph spider subfamily Diplurinae (Dipluridae: Chelicerata). *Australian Journal of Zoology* 29: 321–363.

Raven RJ (1985a) The spider infraorder Mygalomorphae (Araneae): cladistics and systematics. *Bulletin of the American Museum of Natural History* 182: 1–180.

Raven RJ (1985b) A revision of the *Aname pallida* species-group in northern Australia (Anaminae: Nemesiidae: Araneae). *Australian Journal of Zoology* 33: 377–409.

Rix MG, Wilson JD & Harvey MS (2020) First phylogenetic assessment and taxonomic synopsis of the open-holed trapdoor spider genus *Namea* (Mygalomorphae: Anamidae): a highly diverse mygalomorph lineage from Australia's tropical eastern rainforests. *Invertebrate Systematics* 34: 679–726.

Rix MG, Wilson JD, Laidlaw MJ, Harvey MS, Rix AG & Rix DC (2023) Demography, passive surveillance and potential habitat modelling of an Australian giant trapdoor spider (Idiopidae: *Euoplos grandis*) from the Queensland Brigalow Belt: half a decade of population monitoring for conservation outcomes. *Austral Entomology* 62: 200–219.

Sagastume-Espinoza KO, Simmons LW & Harvey MS. (in press) Use of geometric morphometrics to distinguish

trapdoor spider (Mygalomorphae: Anamidae: *Proshermacha*) morphotypes: a useful taxonomic tool. *Journal of Arachnology*.

Simon E (1908) Araneae, 1re partie. In 'Die Fauna Südwest-Australiens'. (Eds W Michaelsen & R Hartmeyer), vol. 1, pp. 359–446 (Gustav Fischer, Jena)

Thackway R & Cresswell ID (1995) 'An Interim Biogeographic Regionalisation for Australia: a framework for

establishing the national system of reserves'. Version 4.0. (Australian Nature Conservation Agency, Canberra)

Wilson JD, Rix MG & Harvey MS (2023) A new spider species of the genus *Proshermacha* (Mygalomorphae: Anamidae) from the Coolgardie and Murchison bioregions of Western Australia, collected on a Bush Blitz species-discovery expedition. *Australian Journal of Taxonomy* 19: 1–7.



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