AUSTRALIAN MUSEUM SCIENTIFIC PUBLICATIONS

Gray, Michael R., 1994. A review of the filistatid spiders (Araneae: Filistatidae) of Australia. *Records of the Australian Museum* 46(1): 39–61. [19 May 1994].

doi:10.3853/j.0067-1975.46.1994.17

ISSN 0067-1975

Published by the Australian Museum, Sydney

A Review of the Filistatid Spiders (Araneae: Filistatidae) of Australia

M.R. GRAY

Australian Museum,
PO Box A285, Sydney South, NSW 2000, Australia

ABSTRACT. Two new genera of filistatid spiders from Australia are described. *Wandella* n.gen. is widely distributed in mainland Australia and includes eleven species: *Wandella barbarella* n.sp. (type species), *W. australiensis* (L. Koch, 1873) n.comb., *W. orana* n.sp., *W. murrayensis* n.sp., *W. stuartensis* n.sp., *W. centralis* n.sp., *W. parnabyi* n.sp., *W. alinjarra* n.sp., *W. waldockae* n.sp., *W. pallida* n.sp., *W. diamentina* n.sp. *Yardiella* n.gen. is a monotypic genus for *Yardiella humphreysi*, currently known only from North-West Cape Peninsula. The affinities of these genera with *Pritha* Lehtinen, and Indo-Pacific and Indian filistatid spider faunas are noted.

GRAY, M.R., 1994. A review of the filistatid spiders (Araneae: Filistatidae) of Australia. Records of the Australian Museum 46(1): 39–61.

The filistatid spiders are usually placed with the Haplogynae, araneomorph spiders with simple genitalic structures, as the only cribellate members of this basal neocribellate group. The family relationships of the Filistatidae remain one of the more enigmatic problems of spider phylogeny, exemplified by the differing interpretations of Lehtinen (1986), Eskov & Zonshtein (1990) and Platnick *et al.* (1991). Filistatids have an almost worldwide distribution, with the exception of the north and south cool temperate regions. Twelve genera have been described, and further generic studies and a cladistic analysis of generic relationships are in progress.

Only one species of filistatid spider, *Filistata australiensis* L. Koch, 1873, has been described from Australia. It was based upon female specimens from mid-eastern Queensland. The present study shows that filistatid spiders are widely distributed in Australia, in habitats ranging from arid zone rangelands to rainforest. Their biology is poorly known. Several species make small, irregular, cribellate sheet webs, with one to four more or less distinct funnel entrances (spiders and webs, Figs 1-6). These webs can be found under loose bark (notably of *Eucalyptus* spp. associated with watercourses), in leaf litter, under rocks, and in caves. Some inland species make soil burrows. J. Henschel (personal communication) has observed cribellate silk triplines radiating from burrow entrances in red dune soils in western Queensland.

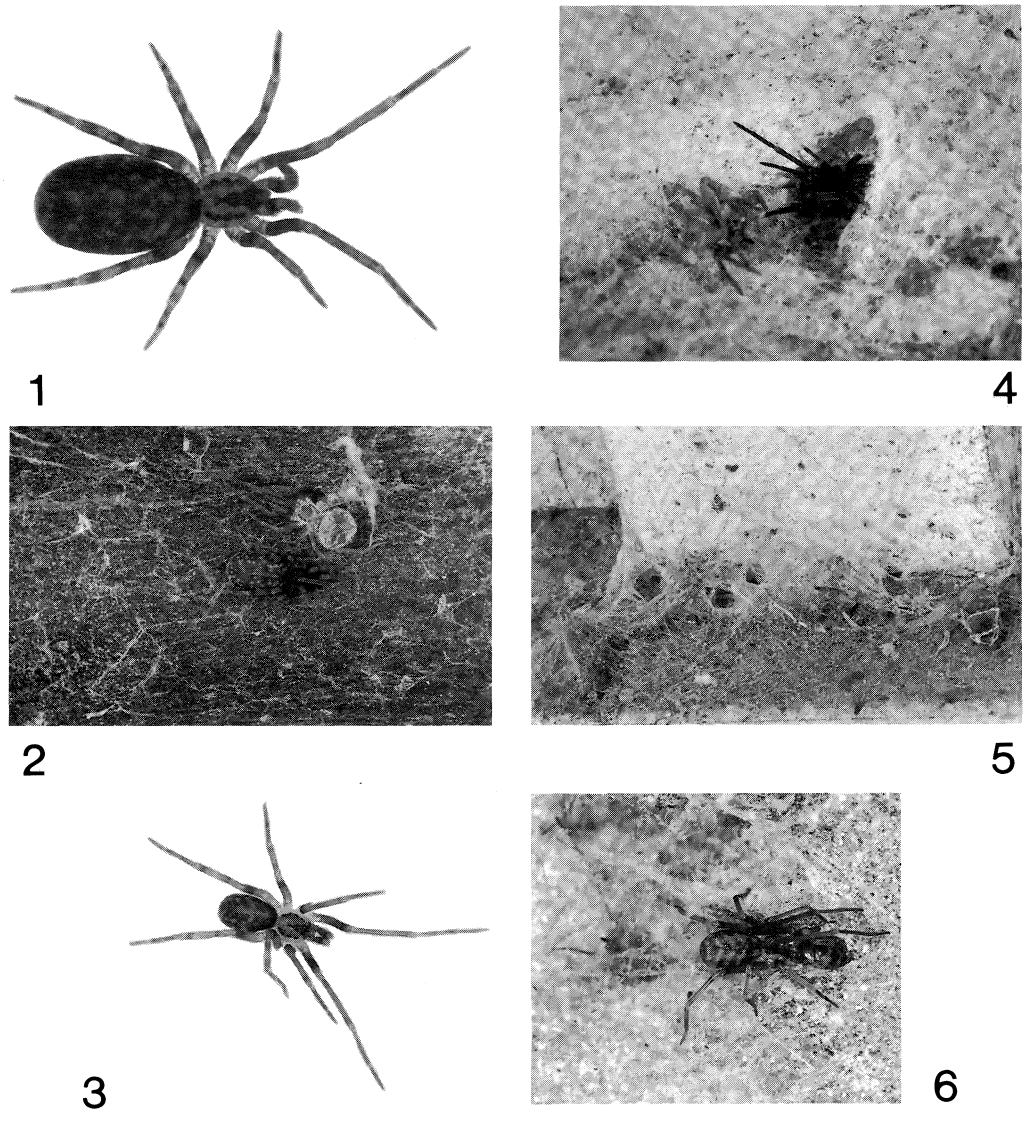
Systematics

Lehtinen (1967) assigned *F. australiensis* to *Pritha* Lehtinen. At present, *Pritha* comprises a loose association of species from the southern Palaearctic, Oriental and Indo-Pacific regions, united by the common possession of a strongly procurved ('horseshoe-shaped') cymbium.

Examination of additional material, especially male spiders, has provided new characters that reveal a related group of genera from the Indian and Indo-Pacific regions. The Australian representatives of this group, described below, include *Yardiella* n.gen. from North-West Cape Peninsula, Western Australia, and *Wandella* n.gen., widespread in mainland Australia. One of the Indo-Pacific genera (Gray, in preparation) has a trans-Pacific distribution including the Torres Strait area of north-eastern Australia. This genus includes *Filistata bakeri* Berland from the Cook Islands and *F. gibsonhilli* Savory from Christmas Island, both currently placed in *Pritha*. Thus restricted, Lehtinen's *Pritha* becomes a southern Palaearctic and Oriental genus.

Wandella, *Yardiella* and their Indian and Indo-Pacific relatives share two male palpal characters that are absent from *Pritha*. Firstly, the palpal organ has an elongate dorsal sclerite forming a lamelliform, paraembolic process (Figs 57-64) above the embolus. *Pritha* has a simple rod-like palpal organ (Ledoux, 1977). Secondly, the post-tegular palpal surface is armed with either large or minute teeth, the latter disposed in comb-like arrays. These comb-like arrays have been noted in *Wandella* (Figs 80, 81), related Indo-Pacific genera, and the South American genus *Pikelinea* Mello-Leitao. By contrast, the *Yardiella* male palp has larger, irregularly arranged teeth and a uniquely modified paraembolic process with a 'scaliform' dorsal structure (Figs 119-124). This type of paraembolic structure is also present in filistatid spiders from Orissa in north-eastern India (Figs 125, 126). Consequently, *Yardiella* is erected here as a monotypic Australian genus that has affinities with elements of the Indian filistatid fauna.

Both character and geographic distributions suggest that these 'prithine' genera shared a common ancestor



Figs 1-6. Spiders and webs. 1,2, *Wandella barbarella*: 1, female; 2, female in sheet web under *Eucalyptus wandoo* bark. 3-5, *W. orana*: 3, male; 4, female in hunting position at tunnel entrance; 5, sheet web with several entrances built on wooden beam in shed. 6, *Yardiella humphreysi* feeding on sheet web.

prior to the breakup of Gondwanaland. The ancestors of *Yardiella* were presumably widespread in western Gondwanaland before the 130 million year old separation of India.

Notes on Descriptions

All measurements are given in millimetres. For standard data the holotype or allotype measurement is given first, followed (when available) by a range in parentheses.

Abbreviations. Morphological characters: L – length, W – width, BL – body length, CL – carapace length, CW – carapace width, AL – abdomen length, AW – abdomen width, CIL – clypeus length, EGW – eye group width, MOAL – median ocular area length, AME – anterior median eye, ALE – anterior lateral eye, PLE – posterior lateral eye, PME – posterior median eye, Tib1L – leg 1 tibia length, ALS – anterior lateral spinneret, PMS – posterior median spinneret, PLS – posterior lateral spinneret. Specimen repositories: AM – Australian Museum, Sydney; CAS – Californian Academy of Sciences, San Francisco; MNHN – Museum National d'Histoire Naturelle, Paris; NHMW – Naturhistorisches Museum, Wien; QM – Queensland Museum, Brisbane; SAM – South Australian Museum, Adelaide; WAM – Western Australian Museum, Perth; ZMH – Zoologisches Museum fur Hamburg, Hamburg. Australian states: NT – Northern Territory; Qld – Queensland; NSW – New South Wales; Vic. – Victoria; SA – South Australia; WA – Western Australia.

Filistatidae

Key to Australian Genera

1. AME and PME usually subequal. Plumose hairs absent. Male palp with dorsal lamelliform paraembolic process and comb-like arrays of minute teeth on post-tegular surface ..... *Wandella*

—— AME much smaller than PME. Plumose hairs present. Male palp deeply grooved prolaterally below thickened paraembolic process; post-tegulum with teeth but comb-like tooth arrays absent ..... *Yardiella*

Wandella n.gen.

Diagnosis. Spines absent. Mid-dorsal carapace stripe bifurcate posteriorly, submarginal bands present. AME and PME usually subequal. Plumose hairs absent. PMS with 2 spigots. Male palp with lamelliform paraembolic process, margin entire or, rarely, ragged terminally. Post-tegular palp armed with numerous comb-like arrays of minute, acuminate teeth. Female genitalia with 4 receptacula embedded in secretory glands, connecting ducts short, straight.

Description. Small-medium sized spiders, CL males 0.75-1.75, CL females 0.95-2.40. Carapace with dark and light brown markings (Figs 32, 37). A broad mid-dorsal stripe runs back from eye region narrowing to foveal region, where it bifurcates; stripe dark brown to black in eye region, brown postocular area encloses a smaller and a larger pair of weakly or non-pigmented spots. Brown, scalloped submarginal bands lie inside the unpigmented thoracic margins. Clypeus strongly pigmented laterally, paler centrally. Labium and sternum brown-grey marginally, paler centrally. Cuticle of mouthparts and tarsi of palps and legs 1,2 orange-brown. Leg segments, excluding tarsi, with brown annulations proximally and distally, often joined by longitudinal pigment lines. Abdomen dark brown to grey with dorsolateral lighter brown patterning in the form of an anterior mid-dorsal stripe and 5-7 more or less distinct, lateral chevron markings. Ventral surface with a midventral, longitudinal, brown stripe broken at spiracular area and enclosing the spinnerets. Carapace ovoid-subcircular, clypeus projecting anteriorly, bluntly rounded in females, narrower and more prominent in males. Eyes on broad tubercle. ALE usually larger than AME, and AME larger than or subequal to PME (AME smallest in cavernicolous species). PME usually separated by more than their diameter. Strong bristles in front of and behind eyes, extending back to the foveal region. Fovea absent. Maxilla with a single row of broad, rather blunt serrula teeth (about 16), and branched chemosensory hairs (Fig. 19). Sternum ovoid, posteriorly pointed. Some species with a pair of small, more or less distinct posterior sternal sigillae (evident as non-pigmented spots in pigmented sternal margin), most obvious in females (Fig. 34). Body and legs clothed with ciliate hairs (Fig. 9). Plumose hairs absent. Legs 4123. Carapace usually 0.75 times or more length of tibia 1 in males, subequal in females. Calamistrum a short, triple row of toothed setae on retrolateral, proximal metatarsus IV. Outer rows usually with 6-10 hairs, middle row with 5-6 hairs. Setae in upper rows with ribbed surfaces, lower row setae with wide, smooth upper surface (Figs 13, 14). Female palpal tarsus usually short and broad. Tarsal organ domed, with irregular concentric ridging, opening via a small

subcentral pore (Fig. 11). Trichobothria in single row on metatarsi and tibiae (Figs 47, 48): metatarsi 1,4 with 1 long distal and 5-6 shorter proximal to central; metatarsi 2,3 with 4-5 proximal to central, distally longest; tibiae with 1 long central and 3-4 shorter proximal. Trichobothrial base with raised circular margin and broad opening with vertically ribbed internal walls (same as for *Yardiella*, Fig. 20). Male palpal tibia more or less incrassate. Cymbium anterior margin deeply procurved (Fig. 59), with long hairs projecting forward over tegulum. Prolateral tegular surface excavated. Ejaculatory duct n-shaped proximally, distal part follows ventral surface of post-tegulum and embolus (Figs 30, 39). Embolus a short, thick rod, usually curved ventrally. Lamelliform paraembolic process with free distal end curved prolaterally over the embolus; margin of process normally entire but distal part sometimes ragged (Figs 57-64). Post-tegular parts of palp with numerous comb-like arrays of minute, procumbent, acuminate teeth (80, 81). Abdomen with 2 pairs of small dorsal sigillae. Female internal genitalia (Figs 95-106) with a pair of more or less globose, lobe-like receptacula on each side, the medial pair smaller and sometimes digitiform (Fig. 98). Each pair of receptacula lobes opens into a bursal pocket arising from the anterolateral margins of the broad common copulatory bursa; lateral receptacula lobes with a short, straight and narrow connecting duct, medial lobe broadly connected. Spermathecae embedded in secretory glands, a greater concentration of glands occurring on the medial lobes. Spinnerets (Figs 24-29) subterminal, rounded posterior abdomen extending beyond them. Cribellum bipartite, tubiform spigots weakly clavate in distal third (Figs 25, 26). ALS with 1 major ampullate and 20-22 piriform spigots (2 marginal with flat rather than raised bases) (Fig. 27). PMS with 2 separated, flexible, weakly ensiform spigots, posterior spigot longest (Fig. 28). One or both may be paracribellar spigots, in the sense of Platnick *et al.* (1991); both shafts are widened proximally, narrowing markedly to the tip. PLS with 2 spigots (Fig. 29), one elongate with a large base may serve the minor ampullate gland; the smaller spigot may be aciniform. A row of 6-7 short setae are placed across the anterior surface of each ALS (Fig. 24). 6-8 large and small clavate setae are grouped in front of each PMS (Fig. 24); 3-4 large clavate setae surmount each PLS (Figs 24, 28). A pair of spiracles present, each opening at opposite ends of a broad groove placed in front of, but separated from, the spinnerets (about one third distance to epigynal fold); posterior book lungs rudimentary (Fig. 44).

Type species. *Wandella barbarella* n.sp.

Included species. *Wandella barbarella* n.sp., *W. australiensis* (L. Koch, 1873), *W. orana* n.sp., *W. murrayensis* n.sp., *W. stuartensis* n.sp., *W. centralis* n.sp., *W. parnabyi* n.sp., *W. alinjarra* n.sp., *W. waldockae* n.sp., *W. pallida* n.sp., *W. diamentina* n.sp.

Distribution. Mainland Australia (Figs 7, 8).

Etymology. The generic name is an Aboriginal word for bark; loose bark is a typical habitat for several species.

Key to Species of *Wandella*

1. Legs long, thin, 1.5-2 times as long as carapace 2
—— Legs normal 3
2. AME about as large as PME ..... *W. diamentina*
—— AME much smaller than other eyes ..... *W. pallida*
3. Male palpal tibia short (less than 1.5 times longer than wide) 4
—— Male palpal tibia longer than this 5
4. Abdomen with strong band-like chevron pattern ..... *W. stuartensis*
—— Abdomen with more diffuse chevron pattern ..... *W. alinjarra*
5. Paraembolic lamina distally free, prolaterally curved 6
—— Paraembolic lamina sessile, erect ..... *W. waldockae*
6. Female carapace broad, subcircular 7
—— Female carapace narrower, ovoid ..... *W. parnabyi*

7. Paraembolic lamina as long as embolus 8

—— Paraembolic lamina clearly shorter than embolus 9

8. Male palpal tibia long (about 2 times as long as wide) ..... *W. centralis*

—— Male palpal tibia shorter than this ..... *W. orana*

9. Sternal sigillae present 10

—— Sternal sigillae absent or indistinct ..... *W. murrayensis*

10. Spermathecae widely separated, divergent (north-east Australia) ..... *W. australiensis*

—— Spermathecae more approximated (south-west Australia) ..... *W. barbarella*

Wandella barbarella n.sp.

Figs 1, 2, 7, 11, 15, 17-19, 22, 23, 30-37, 57-60, 81, 95

Type material. HOLOTYPE, male, (WAM), Walyunga National Park, 31°46'S 116°01'E, Upper Swan, WA, 27 Feb. 1979, M. Gray, small sheet web under bark of *Eucalyptus wandoo* on banks of Swan River, WA. PARATYPES, allotype female, KS4483 (AM); 2 females, KS6085 and KS14963 (AM); 2 males, 4 females, KS3977 (AM) - all data as for holotype; 2 females, KS4482 (AM), Greenough River, Geraldton Highway, 17 km south of Geraldton, WA, 29°01'S 114°45'E, 21 Feb. 1979, M. Gray, small sheet webs under loose bark of eucalypt along river bank; 1 male, 91/1609 (WAM), East Yorkrakine Reserve, WA, 31°28'S 117°41'E, 8 Nov. 1988, D. Mitchell.

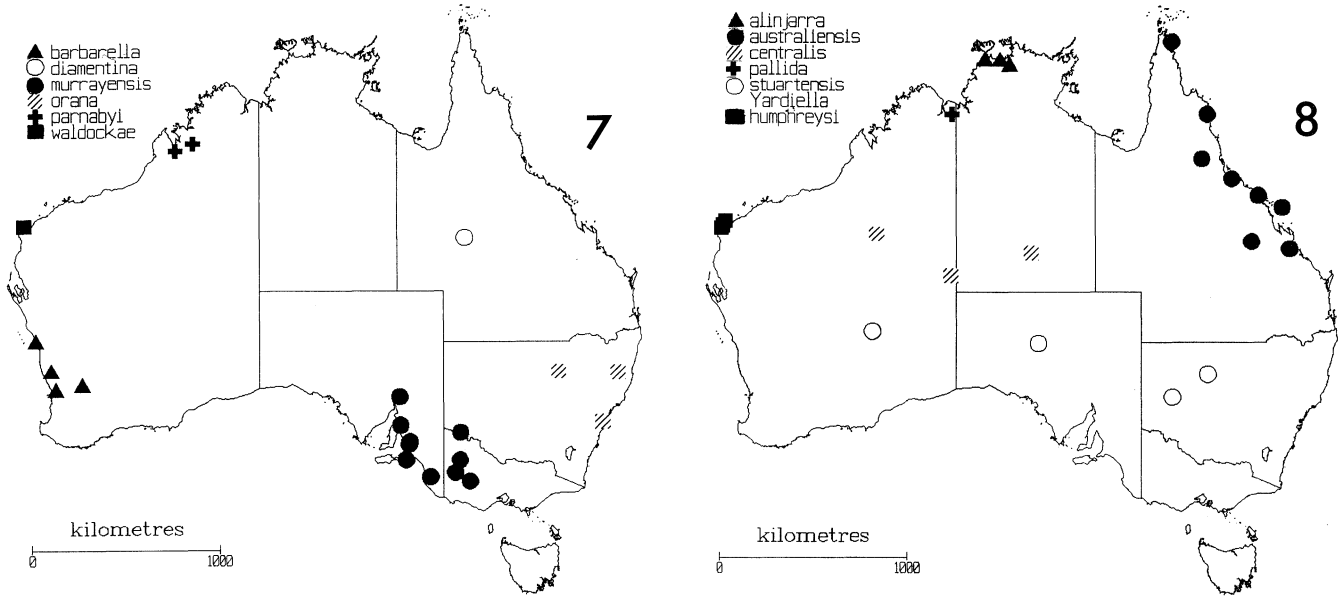
Other material. WESTERN AUSTRALIA, 1 juvenile, KS4633 (AM), Dandaragan, 30°40'S 115°42'E, 21 Oct. 1973, N. Poulter.

Diagnosis. Paraembolic lamina with rounded free end folded across subdistal embolus. Embolus strongly ventrally curved. Posterior sternal sigillae present. Calamistrum with short middle row of setae.

Male. Measurements. BL 3.1 (2.9-3.2), CL 1.34 (1.34-1.38), CW 1.08 (1.02-1.08), AL 1.71 (1.71-1.80), AW (0.96-1.10), ClL 0.32 (0.27-0.32), EGW 0.35 (0.35-0.36), MOAL 0.19 (0.19-0.20). Dorsal body pattern Fig. 37. Carapace mid-dorsal stripe strongly pigmented posteriorly, limbs of bifurcation short. Sternum with wide marginal pigment bands. CL : CW ratio 1 : 0.77. AER moderately, PER weakly procurved. Ratio AME : ALE : PLE : PME 11 : 14 : 10 : 10. Legs 1423.

	Leg 1	Leg 2	Leg 3	Leg 4
Femur	1.70	1.21	1.14	1.62
Patella	0.52	0.46	0.47	0.49
Tibia	1.78	1.08	0.98	1.41
Metatarsus	1.42	0.95	0.93	1.24
Tarsus	0.99	0.61	0.48	0.69
	6.41	4.41	4.00	5.45

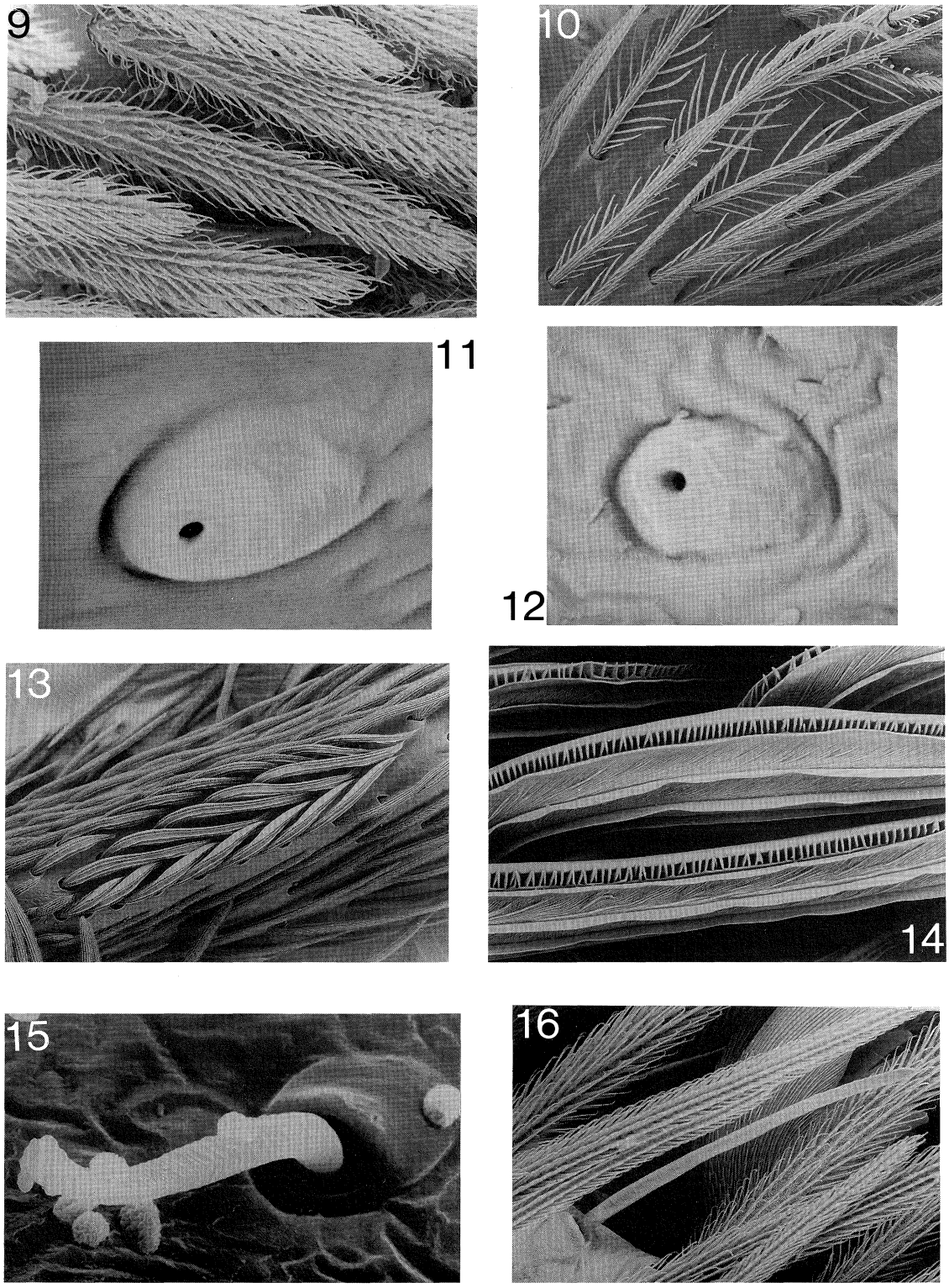
TiB1L : CL ratio 1 : 0.75. Palpal tibia L/W ratio 1: 0.60. Palpal organ. Distal tegulum excavated



Figs 7,8. Species distributions. 7, *Wandella* spp.; 8, *Wandella* spp. and *Yardiella humphreysi*.

prolaterally. Free end of paraembolic lamina bluntly rounded and strongly bent prolaterally across subdistal embolus. Embolus sinuous, strongly curved ventrally, flanged apically (Figs 30, 57-60).

Female. Similar to male. Measurements: BL 5.2 (3.1-5.2), CL 1.61 (1.48-1.62), CW 1.27 (1.14-1.30), AL 3.60 (1.90-3.86), AW 2.53 (1.40-2.57), ClL 0.32 (0.25-0.32), EGW 0.41 (0.36-0.41), MOAL 0.20 (0.19-0.22). Dorsal



Figs 9-16. *Wandella* and *Yardiella*. 9, ciliate hairs, *W. murrayensis*. 10, plumose hairs, *Y. humphreysi*. 11,12, tarsal organ: 11, *W. barbarella*; 12, *Y. humphreysi*. 13,14, *W. orana*: 13, calamistrum; 14, calamistrum setae. 15,16, sensilla: 15, tibia, metatarsus, *W. barbarella*; 16, apical tarsus, *W. orana*.

body pattern Figs 1, 37. Abdominal chevron pattern like male but often more diffuse. CL : CW ratio 1 : 0.79. Both eye rows moderately procurved. Ratio AME : ALE : PLE : PME 11 : 14 : 11 : 10. Posterior sternal sigillae present (Fig. 34). Legs 1423.

	Leg 1	Leg 2	Leg 3	Leg 4
Femur	1.60	1.14	1.07	1.52
Patella	0.48	0.43	0.44	0.44
Tibia	1.67	1.01	0.87	1.32
Metatarsus	1.33	0.89	0.86	1.16
Tarsus	0.93	0.57	0.45	0.65
	6.01	4.04	3.69	5.09

Tib1L : CL ratio 1 : 0.96. Middle row of calamistrum short, with 3-4 setae (Fig. 35). Lateral spermathecal lobes irregularly globose. Smaller medial lobes longer than wide, half to one third width of lateral lobes. Medial lobes separated by less than the width of a lateral lobe. Both lateral and medial lobes with moderately broad necks (Figs 33, 95).

Etymology. The specific name recognises Dr Barbara York Main and her remarkable and ongoing contribution to Australian arachnology.

Biology. These spiders build small, irregular sheet webs 3 to 6 cm across (Fig. 2) under loose bark of *Eucalyptus* spp., notably trees growing along watercourses. The webs have one to three tunnel entrances under, or at free edge of bark. Insect food remains and cast skins are embedded in the silk mesh.

Distribution. South Western Australia (Fig. 7).

Wandella parnabyi n.sp.

Figs 7, 38-41, 103, 104

Type material. HOLOTYPE, male, KS30232 (AM), Fitzroy River crossing on Great Northern Highway, about 60 km south of Derby, WA, 17°40'S 123°35'E, 3 Mar. 1990, H. Parnaby, under loose bark of riverbank eucalypts. PARATYPES, allotype female, KS30233 (AM); 2 females, KS30234 and KS30235 (AM) - all with same data as holotype.

Other material. WESTERN AUSTRALIA, 1 juvenile, KS7529 (AM), near Barnet Cave, Napier Range, east of Derby, WA, 17°14'S 124°41'E, 20 June 1980, B. Duckworth, under rock on limestone outcrop.

Diagnosis. Similar to *W. barbarella*, but carapace narrower and paraembolic process longer, ending closer to embolus apex.

Male. Measurements: BL 2.1, CL 1.26, CW 0.86, AL 1.60, AW 0.97, ClW 0.22, EGW 0.38, MOAL 0.20. Dorsal body pattern Fig. 41. Abdomen with 6-7 well-defined chevrons separated by a central pale stripe. Carapace rather long, CL : CW ratio 1 : 0.68. AER straight, PER weakly procurved. Ratio AME : ALE : PLE : PME 14 : 15 : 13 : 11. Sternal sigillae indistinct. Legs 1423.

	Leg 1	Leg 2	Leg 3	Leg 4
Femur	1.57	1.09	0.94	1.24
Patella	0.42	0.35	0.33	0.41
Tibia	1.69	1.04	0.83	1.19
Metatarsus	1.57	1.07	0.92	1.21
Tarsus	0.90	0.58	0.53	0.60
	6.15	4.13	3.55	4.65

Tib1L : CL ratio 1 : 0.75. Palpal tibia L/W ratio 1 : 0.62. Paraembolic process almost as long as embolus, aligned with dorsal tegulum margin, distal free margin curved above embolus (Fig. 39).

Female. Similar to male. Measurements: BL 1.8-2.3, CL 1.34 (1.09-1.34), CW 1.00 (0.75-1.00), AL 1.68 (1.55-2.62), AW 0.98 (0.98-1.49), ClW 0.25 (0.15-0.25), EGW 0.37 (0.30-0.37), MOAL 0.19 (0.17-0.19). Body pattern Fig. 38. CL:CW ratio 1 : 0.74. Clypeus broad, blunt. Eye rows procurved. Ratio AME : ALE : PLE : PME 12 : 14 : 12 : 10. Legs 1423.

	Leg 1	Leg 2	Leg 3	Leg 4
Femur	1.41	1.03	0.90	1.47
Patella	0.44	0.39	0.41	0.45
Tibia	1.37	0.83	0.67	1.07
Metatarsus	1.20	0.80	0.73	0.96
Tarsus	0.82	0.58	0.49	0.57
	5.24	3.63	3.20	4.52

Tib1L : CL ratio 1 : 0.96. Genitalia (Figs 103, 104) similar to *W. barbarella* but medial lobes separated by at least width of a lateral lobe.

Etymology. The species is named for its collector, Dr H. Parnaby, in recognition of his contribution to the Australian Museum spider collections.

Distribution. South-west Kimberley region (Fig. 7).

Wandella orana n.sp.

Figs 3, 4, 5, 7, 13, 14, 16, 24-26, 42-51

Type material. HOLOTYPE, male, KS4659 (AM), Mount Colah, NSW, 33°40'S 151°07'E, 1 Feb. 1980, M.R. Gray, wandering on shed floor. PARATYPES, allotype female, KS13763 (AM), 15 Mar. 1982, small sheet web on beams in shed, other data as for holotype; 2 females, KS13960 (AM), 29 June 1988 and KS21501 (AM), 28 June 1988, other data as for allotype; 1 male, KS 37184 (AM), Site 39BR (NPWS/AM) on north-east facing slope above Kunderang Station Creek, 410 m, 30°48'S 152°06'E, 4 Feb.-9 Apr., M. Gray & G. Cassis, in pitfall trap.

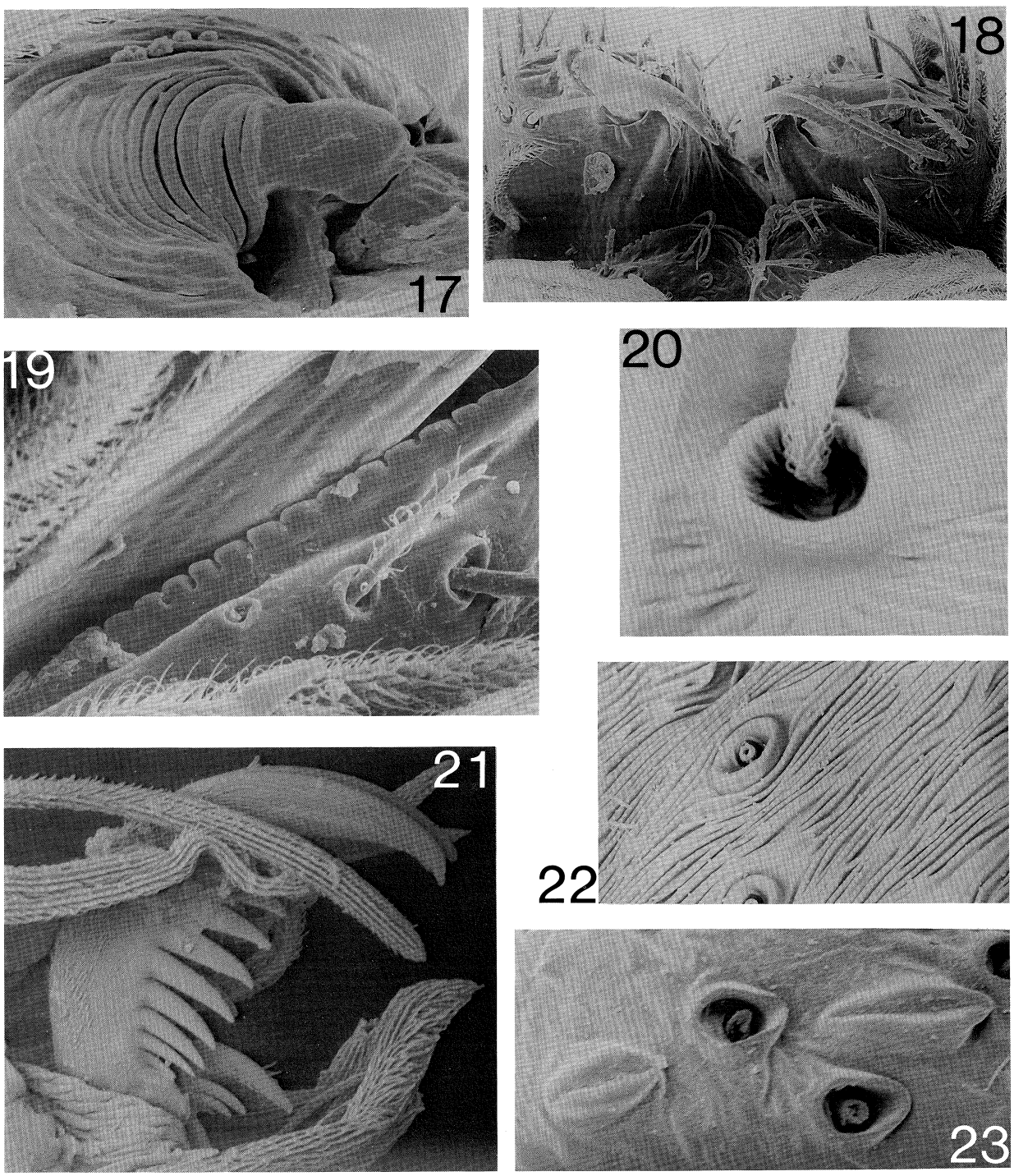
Other material. NEW SOUTH WALES, 1 female, KS12841 (AM), Coombah Station Homestead, 30°43'S 148°20'E, Apr. 1982, M. Kotzman, in leaf litter.

Diagnosis. Posterior sternal sigillae present. Male palpal tibia longer than wide. Paraembolic lamina attached for most of length, closely associated with embolus and ending near its tip. Medial spermathecal lobes small,

partly hidden behind lateral lobes.

Male. Measurements: BL 3.3, CL 1.38, CW 1.19, AL 1.86, AW 1.18, ClL 0.27, EGW 0.39, MOAL 0.23. Dorsal abdomen with indistinct pale patches flanking anterior mid-dorsal stripe; lateral chevrons narrow (Fig. 3). Sternum with weak, irregular marginal pigmentation. CL : CW ratio 1 : 0.86. Both eye rows weakly procurved. Ratio AME : ALE : PLE : PME 13 : 13 : 11 : 10. Legs 1423.

	Leg 1	Leg 2	Leg 3	Leg 4
Femur	1.89	1.38	1.16	1.48
Patella	0.44	0.43	0.40	0.43
Tibia	2.24	1.40	1.12	1.58
Metatarsus	1.90	1.22	1.14	1.50
Tarsus	1.18	0.70	0.61	0.78
	7.65	5.13	4.43	5.77



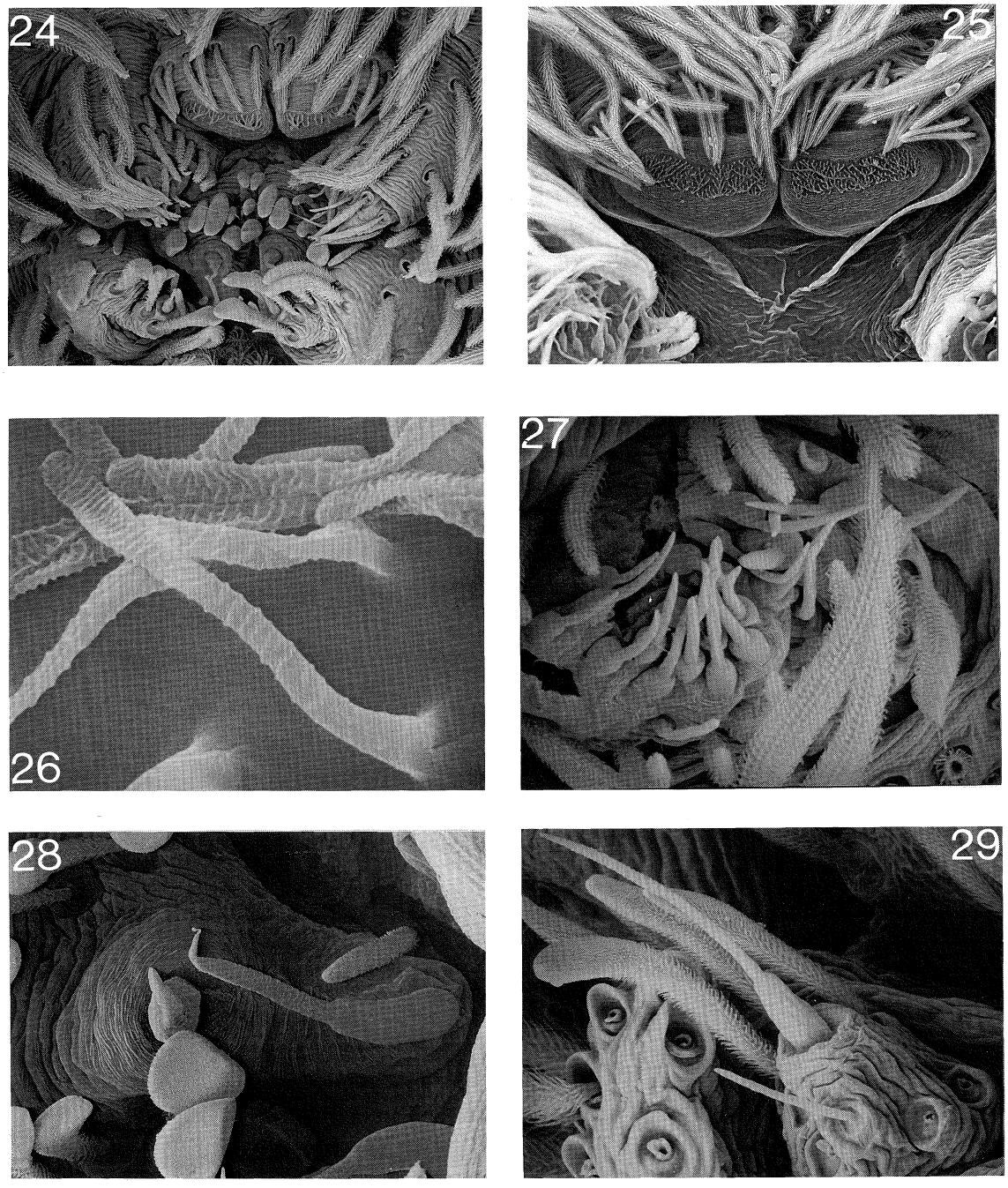
Figs 17-23. *Wandella* and *Yardiella*. 17-19,22,23, *Wandella barbarella*: 17, metatarsus/tarsus dorsal articulation; 18, distal chelicerae and maxillae; 19, maxillary serrula and chemosensitive hairs; 22, abdominal cuticle; 23, 'lyriform' organs on palpal tarsus. 20, *Yardiella humphreysi*, trichobothrium base. 21, *Wandella murrayensis*, tarsal claws.

Tib1L : CL ratio 1 : 0.62. Palpal tibia L/W ratio 1 : 0.69. Paraembolic lamina attached to embolus for most of its length, truncate apex curved across the prolateral embolus to end close to its tip (Figs 42, 43).

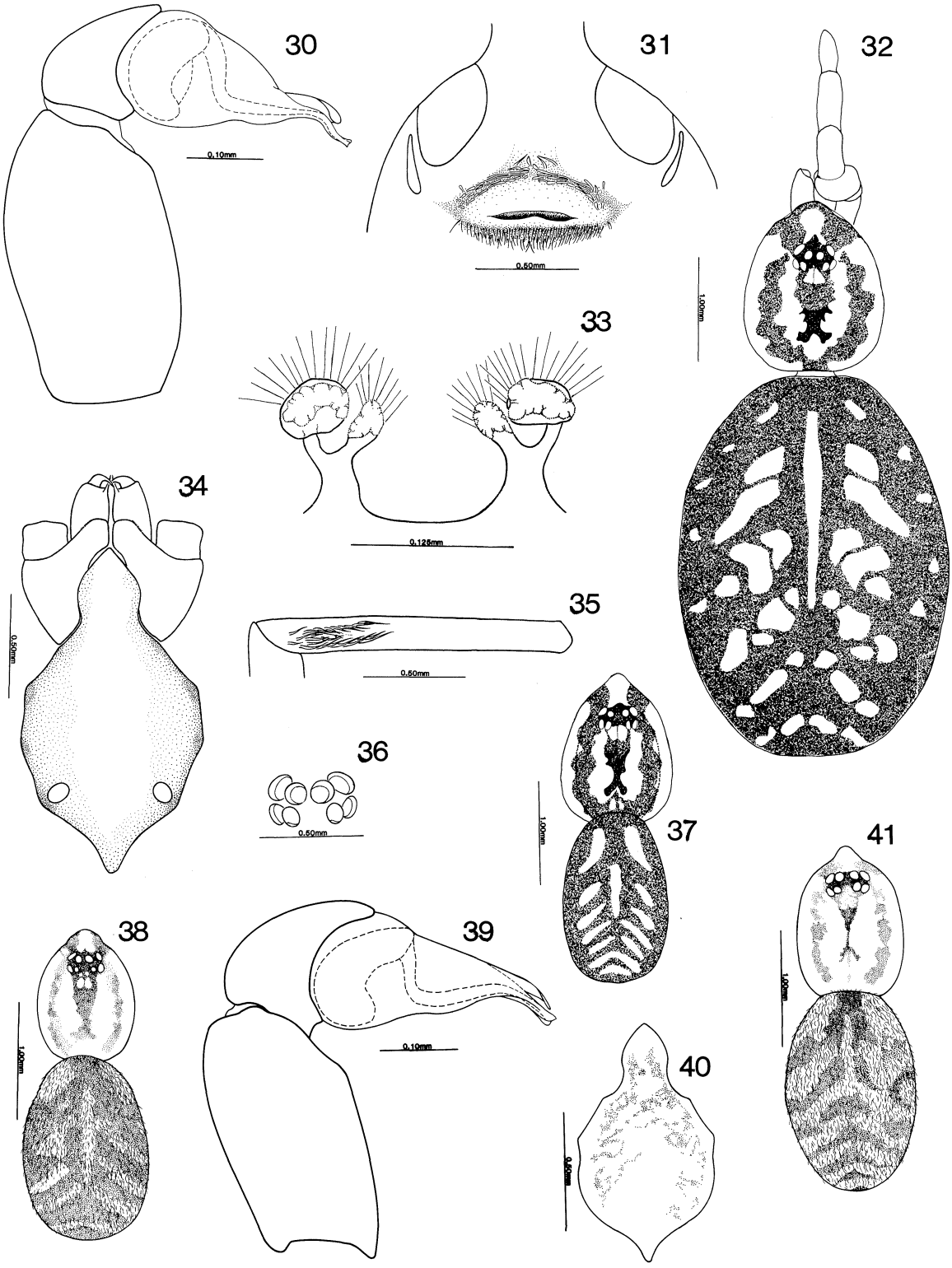
Female. Similar to male. Measurements: BL 4.9 (4.9-5.2), CL 1.91 (1.84-2.09), CW 1.54 (1.51-1.75), AL 3.00 (3.00-3.13), AW 2.21 (2.15-2.21), ClL 0.36 (0.26-0.47), EGW 0.44 (0.44-0.49), MOAL 0.25 (0.24-0.25). Dorsal body pattern Fig. 46. Abdominal chevrons broader than in male. Posterior sternal sigillae present (Fig. 45). CL : CW ratio 1 : 0.81. AER slightly procurved, PER moderately procurved. Ratio AME : ALE : PLE : PME 13 : 19 : 14 : 11. Legs 1(42)3.

	Leg 1	Leg 2	Leg 3	Leg 4
Femur	1.60	1.50	1.07	1.52
Patella	0.48	0.57	0.44	0.44
Tibia	2.06	1.20	0.87	1.32
Metatarsus	1.33	1.18	0.86	1.16
Tarsus	1.22	0.80	0.37	0.82
	6.69	5.25	3.61	5.26

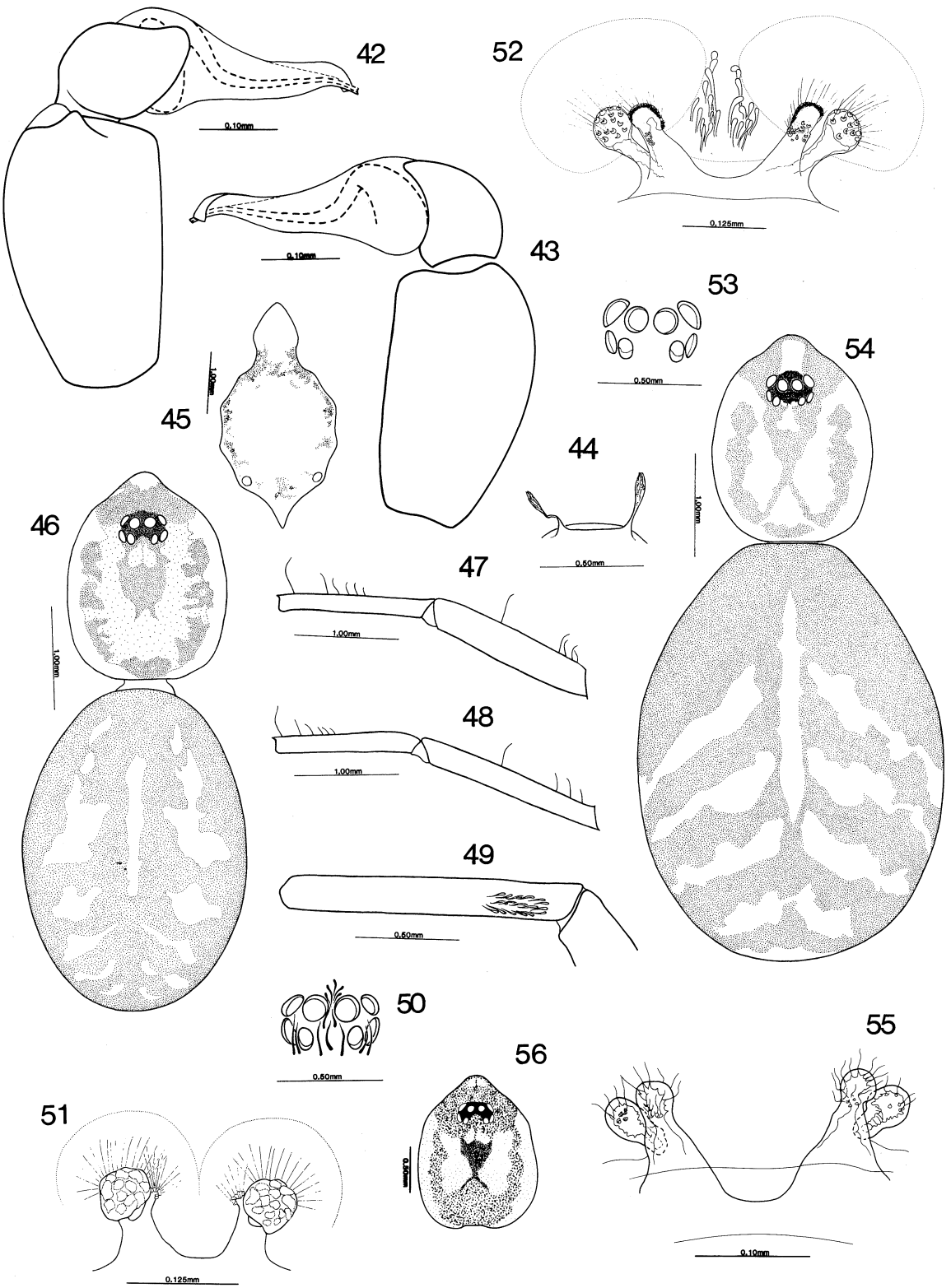
Tib1L : CL ratio 1 : 0.92. Spermathecae irregularly globose. Medial lobes 0.3-0.5 width of lateral lobes, sometimes partly obscured behind them. Medial



Figs 24-29. Spinnerets (females). 24-26, *Wandella orana*. 27-29, *W. murrayensis*. 24, spinnerets (note clavate setae). 25, cribellum. 26, cribellum spigots. 27, ALS spigots. 28, PMS spigots. 29, PLS spigots.



Figs 30-41. 30-37, *Wandella barbarella*: 30, male palp, prolateral; 31, epigynal region, groove open; 32, dorsal body, female; 33, internal genitalia; 34, labium, maxillae, sternum; 35, metatarsus 4, calamistrum; 36, eyes; 37, dorsal body, male. 38-41, *W. parnabyi*: 38, dorsal body, female; 39, male palp, prolateral; 40, labium, sternum; 41, dorsal body, male.



Figs 42-56. 42-51, *Wandella orana*: 42,43, male palp, 42, retrolateral, 43, prolateral; 44, posterior 'book lungs' and spiracles; 45, labium and sternum; 46, dorsal body, female; 47,48, tibial and metatarsal trichobothrium pattern, 47, leg 4, 48, leg 1; 49, metatarsus 4, calamistrum; 50, eyes; 51, internal genitalia. 52-56, *W. australiensis*: 52, internal genitalia; 53, eyes; 54, dorsal body, female; 55,56, syntype female; 55, internal genitalia, 56, dorsal carapace.

lobes separated by 0.5-1.5 times the width of a lateral lobe (Fig. 51).

Etymology. Orana is an Aboriginal word meaning welcome and refers to the unexpected discovery of this species in outer suburban Sydney, NSW.

Distribution and biology. This species is known primarily from a localised population, presumably introduced, associated with old farm buildings in outer suburban Sydney, central coastal New South Wales. No specimens have been found in bushland around Sydney. However, the recent collection of a male specimen from Kunderang Creek suggests that the real distribution of *W. orana* is in forest habitats of north-eastern NSW. A female specimen from north-central NSW is provisionally placed with this species. In their suburban habitat, these spiders make small, irregular sheet webs 3 to 8 cm across with two to four entrances (Fig. 5 shows a web built on a wooden beam inside a shed). These structures resemble smaller versions of the webs of desid spiders such as the black house spider, *Badumna insignis*. Insect food remains (flies, moths, beetles) and cast skins litter the silk sheets.

Wandella australiensis (L. Koch) n.comb.

Figs 8, 52-56

Filistata australiensis L. Koch, 1873: 451, pl. 35, fig. 4.
Pritha australiensis.–Lehtinen, 1967: 260.–Davies, 1985: 64.

Type material. SYNTYPES, 4 females from Rockhampton, Qld, 23°22'S 150°32'E, in ZMH Museum Godeffroyi No. 8098, examined. (Additional ?type material from MNHN and NHMW noted by Lehtinen (1967), not seen).

Other material. QUEENSLAND, 1 female, S679 (QM), Peak Downs Station, south-east of Clermont, 22°56'S 148°05'E, 30 Nov. 1973, R.J. McKay, in 'silk lined burrow'; 1 female, KS7353 (AM), Mount Dryander (lower slopes), north of Proserpine, 20°15'S 148°32'E, Apr. 1975, M. Gray & C. Horseman, dry vine forest (A.M. rainforest survey Site 12), under bark; 1 female, S6752 (QM), Bushy Island, 20°57'S 150°05'E, June 1975, D. Gleason; 1 female, S6753 (QM), Lansdown Station, Woodstock, near Townsville, 19°16'S 146°49'E, 30 Oct. 1975, A. Brown; 1 female, S6757 (QM), Douglas Island, Great Barrier Reef, 11°14'S 142°59'E, 21 Dec. 1979, R. Buckley; 1 female, S6758 (QM), Forty Mile Scrub, 18°05'S 144°53'E, 11 Apr. 1978, V.E. Davies, in web under bark; 1 female (MNHN, bottle 477), Cooktown, 15°28'S 145°15'E.

Diagnosis. Similar to *W. orana*, but spermathecal lobes much more widely separated. (Male unknown).

Description of female (Peak Downs). Measurements: BL 5.9, CL 1.91, CW 1.54, AL 4.0, AW 2.88, ClL 0.36, EGW 0.47, MOAL 0.25. (Rockhampton holotype female CL 1.66, CW 1.32). Dorsal body pattern Figs 54, 56. Carapace with mid-dorsal stripe deeply bifurcate posteriorly. Sternum strongly pigmented marginally. CL : CW ratio 1 : 0.79. Eye rows procurved. AME : ALE : PLE : PME 10 : 14 : 13 : 11. Posterior sternal sigillae present. Legs 1423.

	Leg 1	Leg 2	Leg 3	Leg 4
Femur	2.03	1.49	1.29	1.95
Patella	0.66	0.61	0.56	0.63
Tibia	2.07	1.21	1.01	1.55
Metatarsus	1.74	1.25	1.12	1.48
Tarsus	1.21	0.76	0.71	0.85
	7.71	5.34	4.69	6.46

Tib1L : CL ratio 1 : 0.92. Spermathecal lobes diverge laterally, widely separated. Medial lobes 0.5-1 times width of lateral lobes, and separated by 3-4 widths of a lateral lobe (Figs 52, 55).

Biology. This species has been recorded in habitats ranging from rainforest to woodland. Until males are available it is difficult to be certain that only a single species is involved. It is interesting to note that a female from the drier part of this range (Peak Downs) was taken from a 'silk lined burrow'.

Distribution. North-central east Queensland (Fig. 8).

Wandella alinjarra n.sp.

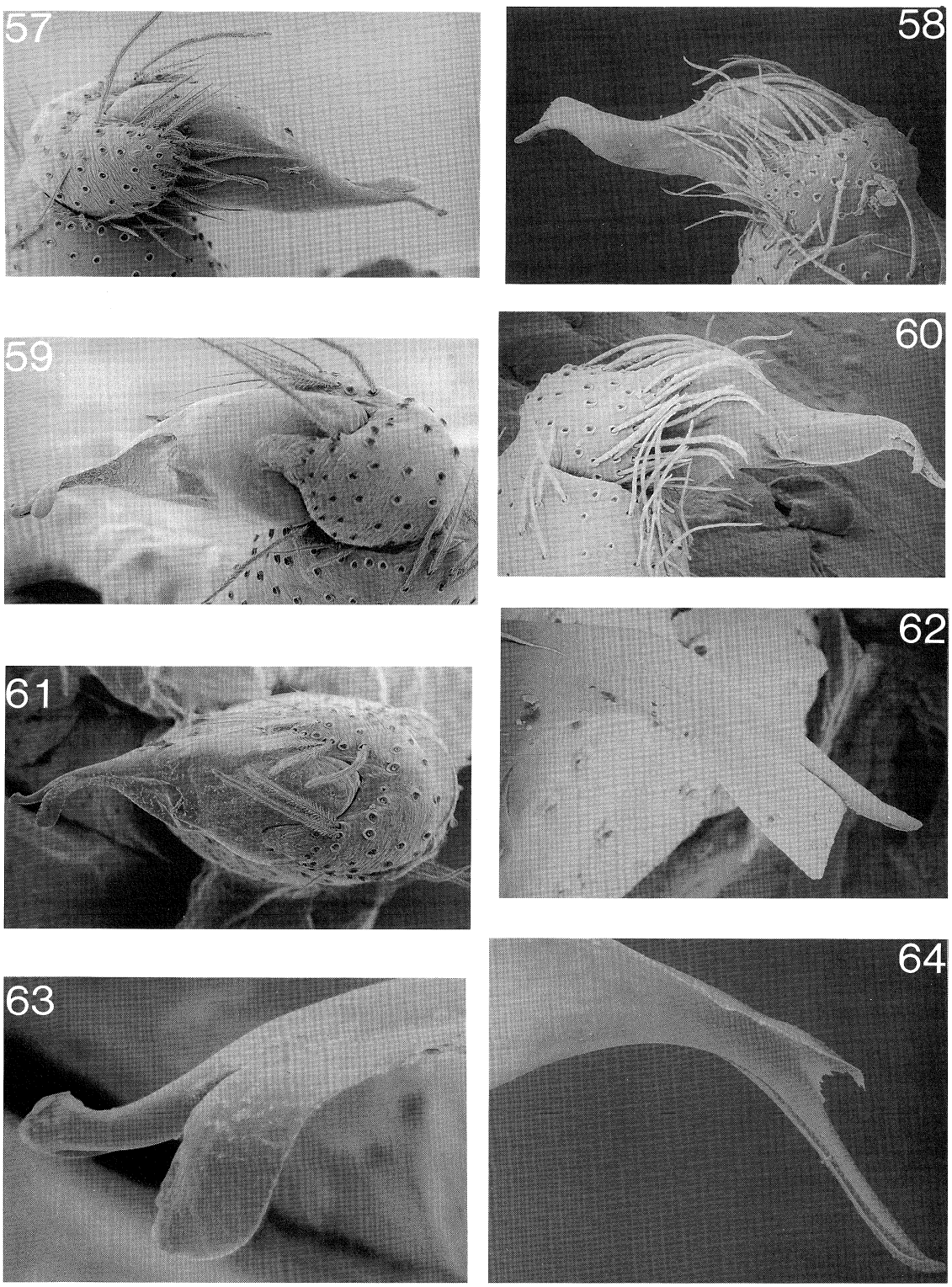
Figs 8, 64, 71-77

Type material. HOLOTYPE, male, S681 (QM), Lee Point, Darwin, Northern Territory (NT), 12°21'S 131°54'E, 7 June 1979, G.B. Monteith, in rainforest litter (QM berlesate no.92). PARATYPES, allotype female, S681 (QM), data as for holotype; 1 female, KS32145, data as for holotype; 2 females, (MV), Red Lily Billabong, Kapalga, Kakadu National Park, NT, 1 July 1987, M.S. Harvey & A.L.Yen; 1 female, Alligator River, Mount Elliot National Park, NT, 19°25'S 147°01'E.

Other material. NORTHERN TERRITORY, 3 juveniles, S6754 (QM), South Alligator Inn, Kakadu National Park, 12°40'S 132°30'E, Nov. 1979, R. Raven, under logs.

Diagnosis. Small spiders (CL about 1 mm). Male palpal tibia very short. Paraembolic process narrow and crest-like, anterior margin ragged. Clypeus only slightly longer than median ocular area. PME-PME about diameter of a PME.

Male. Measurements: BL 2.5, CL 1.08, CW 0.85, AL 1.38, AW 0.96, ClL 0.20, EGW 0.35, MOAL 0.18. Non-pigmented postocular area smaller than in other species. Frontal area of abdomen without obvious pale markings. Sternum margins moderately pigmented. CL : CW ratio 1 : 0.79. Median ocular area about as long as clypeus. AER and PER weakly procurved. Ratio AME : ALE : PLE : PME 11 : 15 : 11 : 10. PME-PME equal to or less than diameter of a PME. Sternal sigillae not visible. Legs 1423.



Figs 57-64. Male palps. 57-60, *Wandella barbarella*: 57, retrolateral; 58, prolateral; 59, dorsal; 60, embolus and paraembolic process, dorsal. 61-63, *W. murrayensis*: 61, retrolateral; 62, prolateral; 63, embolus and paraembolic process (tegular flange at left), dorsal. 64, *W. alinjarra*, embolus and paraembolic process, dorsal.

	Leg 1	Leg 2	Leg 3	Leg 4
Femur	1.58	1.22	0.96	1.30
Patella	0.46	0.36	0.29	0.36
Tibia	1.80	1.13	0.87	1.35
Metatarsus	1.51	1.06	0.88	1.23
Tarsus	0.96	0.50	0.59	0.77
	6.31	4.27	3.59	5.01

Tib1L : CL ratio 1 : 0.60. Palpal tibia very short, L/W ratio 1 : 0.95, about as long as patella. Paraembolic process narrow, prolaterally curved distal part tapering to a point above the ragged distal margin. Embolus ventrally curved with slight dorsal reflexion at apex (Figs 64, 74, 75).

Female. Similar to male. Measurements: BL 3.9 (2.5), CL 1.12 (0.96), CW 0.83 (0.78), AL 2.78 (2.50), AW 1.73 (1.61), ClL 0.20 (0.15), EGW 0.33 (0.29), MOAL 0.17 (0.16). Dorsal body pattern Fig. 77. CL : CW ratio 1 : 0.74. AER straight to slightly procurved, PER weakly procurved. Ratio AME : ALE : PLE : PME 8 : 11 : 9 : 8. Legs (1)423 (legs 1 tibiae, metatarsi and tarsi missing).

	Leg 1	Leg 2	Leg 3	Leg 4
Femur	1.20	0.90	0.78	1.10
Patella	0.38	0.32	0.33	0.36
Tibia	–	0.79	0.64	1.08
Metatarsus	–	0.69	0.64	0.88
Tarsus	–	0.50	0.40	0.58
	–	3.20	2.79	4.02

Calamistrum very short, 4-5 hairs in outer rows, 3 in middle row (Fig. 72). Spermathecae globose, medial lobes about 0.75 times width of lateral lobes, and separated by more than the width of a lateral lobe. All lobes with well-defined necks (Fig. 73).

Etymology. Alinjarra is an Aboriginal word meaning north and refers to the northern Australian distribution of this species.

Distribution. Northern Territory (Fig. 8)

Wandella murrayensis n.sp.

Figs 7, 9, 21, 27-29, 61-63, 82-86, 96, 97

Type material. HOLOTYPE, male, ARA5311(11) (SAM), Felixstowe, Adelaide, SA, on bank of Torrens River at junction with Forth Creek, 35°46'S 138°36'E, 7 Sept. 1985, D. Hirst, under *Eucalyptus* bark. PARATYPES, allotype female, data as for holotype; 1 male, 3 females, (SAM), Torrens River, Adelaide, SA, between Zoo and Hackney Bridge, 35°46'S 138°36'E, 8 Jan. 1986, D. Hirst, under *Eucalyptus* bark; 1 male, (SAM), Heywood Park, Adelaide, SA, 5 Apr. 1975, R.V. Southcott, under bark of *E. camuldulensis*; 2 males, 1 female, KS35718 (AM), Parra Wirra National Park, South Para River, SA, 34°42'S 138°50'E, 21 May 1983, D. Hirst, under bark; 1 female, (SAM), Marcollat, 40 km east-north-east of Kingston South-East, SA, 36°45'S 140°10'E, Sept. 1974; 1 male, 1 female, Melrose, SA, 32°05'S 138°11'E, A.M. Lea; 1 male, 1 female, (SAM), Blair Athol, Adelaide, SA, 29 Apr. 1979, D. Hirst, in old brick incinerator; 1 female, KS12619 (AM), 24 km south of Redhill, Princes Highway, SA, 33°44'S 138°13'E, 8 Aug. 1980, M. Harvey, under bark of *E. camaldulensis*. 1 male, 1 female, (SAM), Kulkine Forest, Murray River, Vic., south-east of Red Cliffs, 34°18'S 142°??'E, 7 Oct. 1979, D. Hirst, under bark on river bank; 2 males, 2 females, (SAM), 1 km south-west of Deep Lead, Vic., 37°01'S 142°43'E, 20 June 1989, D. Hirst, under eucalypt bark; 3 females, (MV), 5 km west of Mildura, Vic., 34°10'S 142°06'E, 21 Sept. 1985, M.S. Harvey, B.J. Scott, L.A. Hoare, under bark of *E. camaldulensis*; 1 female, KS29235 (AM), Merbein, Vic., 34°10'S 142°04'E, W.J. Webster; 2 females, KS12838-9 (AM), Horseshoe Bend, Little Desert National Park, Vic., 36°30'S 141°45'E, 6 July 1982, M.S. Harvey & B. Roberts, under *E. camaldulensis* bark; 1 female, KS12840 (AM), Lake Albacutya National Park, 15 km west-north-west of Yaapeet, Vic., 35°46'S 142°03'E, 3 July 1982, M.S. Harvey & B. Roberts.

Diagnosis. Similar to *W. barbarella* but differs as follows: male with carapace only a little shorter than tibia 1. Male palp with broad tegulum, distal area flanged prolaterally. Paraembolic lamina wide, free end rounded.Palpal tibia clearly longer than wide.

Male. Measurements: BL 3.1 (2.9-3.5), CL 1.46 (1.36-1.51), CW 1.11 (1.00-1.23), AL 1.62 (1.62-1.86), AW 0.92 (0.90-1.10), ClL 0.28 (0.26-0.36), EGW 0.35 (0.32-0.37), MOAL 0.22 (0.18-0.22). Colour pattern like *W. barbarella*, but not as heavily pigmented at foveal area. Margins of sternum strongly pigmented. CL : CW ratio 1 : 0.76. AER and PER both procurved. Ratio AME : ALE : PLE : PME 12 : 13 : 10 : 9. Posterior sternal sigillae indistinct. Legs 1423, short relative to CL.

	Leg 1	Leg 2	Leg 3	Leg 4
Femur	1.57	1.07	0.90	1.26
Patella	0.44	0.41	0.38	0.47
Tibia	1.67	0.98	0.89	1.21
Metatarsus	1.49	1.00	0.89	1.23
Tarsus	0.92	0.51	0.48	0.55
	6.09	3.97	3.46	4.72

Tib1L : CL ratio 1 : 0.87. Palpal tibia L/W ratio 1 : 0.61. Tegulum broad with a prolateral flange-like distal margin curving strongly round to embolus; wide lamina of paraembolic process curved prolaterally across subdistal embolus (Figs 61-63, 82-84).

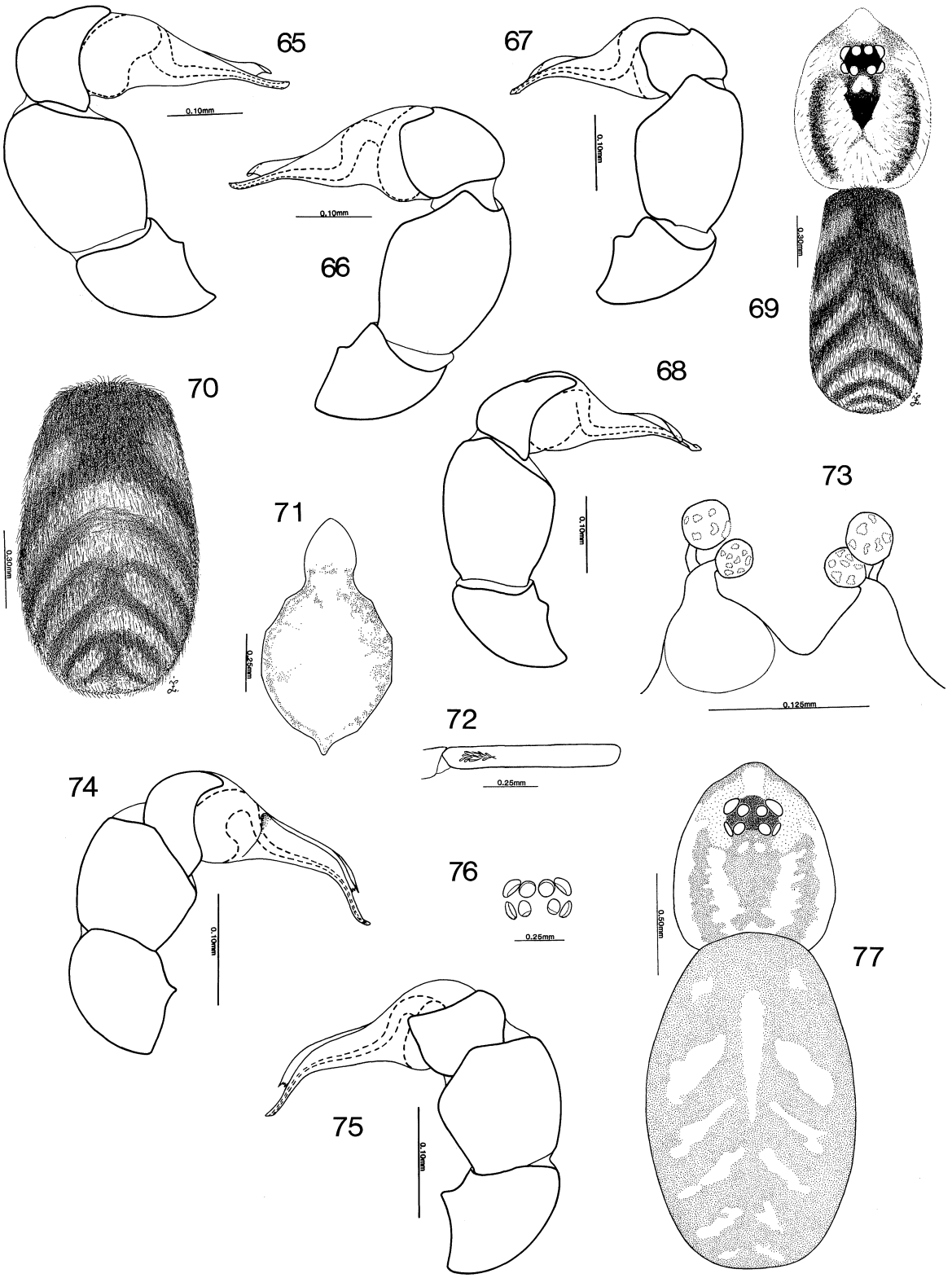
Female. Similar to male. Measurements: BL 5.0 (3.8-5.2), CL 1.88 (1.61-1.96), CW 1.45 (1.29-1.59), AL 3.10 (2.22-3.10), AW 2.07 (1.24-2.07), ClL 0.37 (0.28-0.43), EGW 0.44 (0.39-0.45), MOAL 0.22 (0.21-0.23). Dorsal body pattern Fig. 85. Ventral abdominal stripe partially longitudinally divided by paler central stripe. Clypeus partially divided by thin pigment band. CL : CW ratio 1 : 0.77. Ratio AME : ALE : PLE : PME 15 : 25 : 15 : 12. Legs 1423.

	Leg 1	Leg 2	Leg 3	Leg 4
Femur	1.74	1.28	1.21	1.68
Patella	0.61	0.62	0.56	0.68
Tibia	1.72	1.03	0.85	1.46
Metatarsus	1.60	1.04	0.96	1.32
Tarsus	1.07	0.67	0.57	0.73
	6.74	4.64	4.15	5.87

Tib1L : CL ratio 1 : 0.91. Lateral spermathecal lobes

slightly larger than medial lobes, the latter separated by more than the width of a lateral lobe. Neck of lateral lobes narrow, of medial lobes broad. (Figs 96, 97).

Etymology. The specific name refers to the Murray River district, an important part of the distribution of this species.



Figs 65-77. 65-70, *Wandella stuartensis*: 65-68, male palp, 65,66, Tintinalogy, NSW, 67,68, Mabel Creek, SA, 65,68, prolateral, 66,67 retrolateral; 69,70, dorsal body, female, 69, Tintinalogy, NSW, 70, Mabel Creek, SA. 71-77, *W. alinjarra*: 71, labium and sternum; 72, metatarsus 4, calamistrum; 73, internal genitalia; 74,75, male palp, 74, prolateral, 75, retrolateral; 76, eyes; 77, dorsal body, female.

Distribution. South-eastern Australia (Fig. 7).

Wandella stuartensis n.sp.

Figs 8, 65-70, 80

Type material. HOLOTYPE, male, ARA5311(2) (SAM), Lagoon Waterhole, Mabel Creek Station, SA, 28°56'S 134°19'E, 26 Oct. 1984, P. Greenslade, in pitfall trap. PARATYPES, 1 male, ARA5311(2) (SAM), Tintinalogy Station, NSW, about 50 km north-east of Menindee on Darling River bank, 32°05'S 142°59'E, 6 Apr. 1981, D. Hirst; 1 male, KS35718 (AM), 7-8 km west-north-west of Point Salvation, WA, 28°12'S 123°36'E, 12 Oct. 1990, E. Pianka; 2 males, 91/1607-8 (WAM), Red Sands, WA, 28°12'S 123°35'E, 6 Nov. 1989, E. Pianka.

Other material. NEW SOUTH WALES, 1 juvenile, KS4634 (AM), Pulpulla Station, 30°45'S 145°15'E, 6 Oct. 1968, M. Gray.

Diagnosis. Legs long in male, tibia 1 twice as long as carapace. Male palp similar to *W. murrayensis*, but tibia shorter. Abdomen with strongly banded dorsal pattern. (Female unknown).

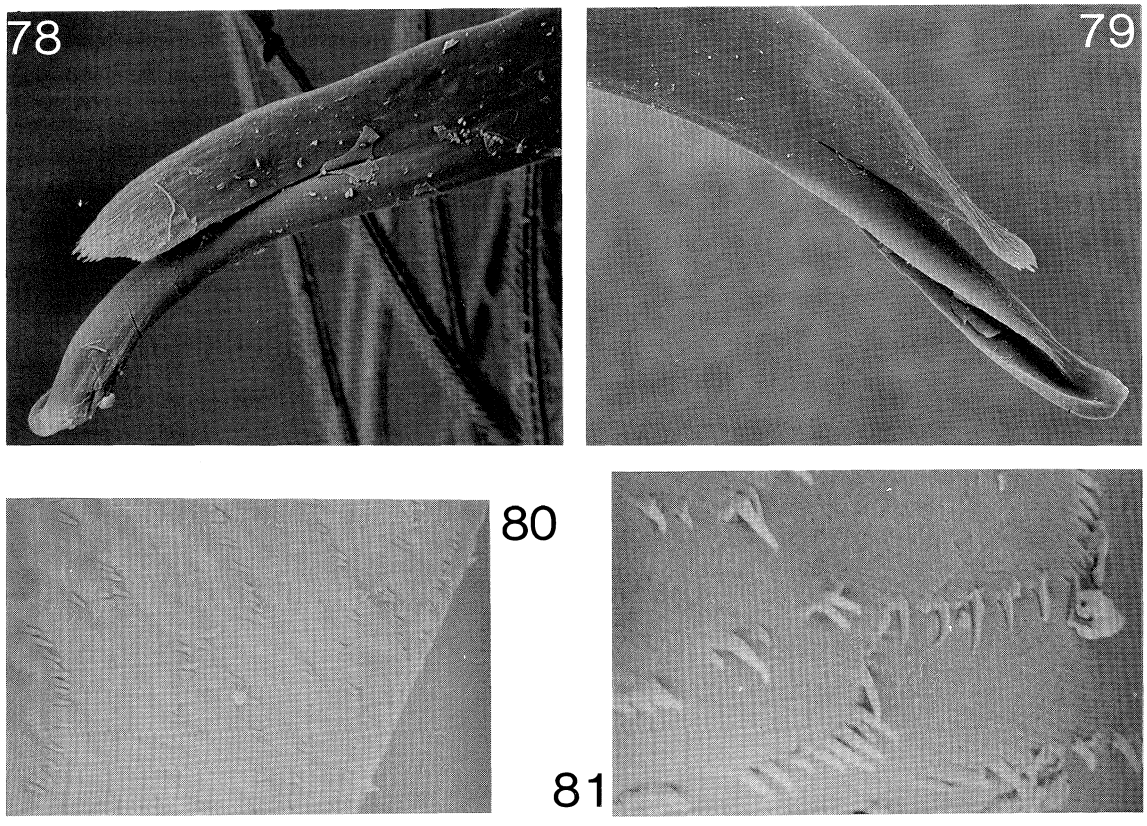
Male. Measurements: BL 2.3 (2.2), CL 1.00 (0.89), CW 0.83 (0.72), AL 1.15 (1.34), AW 0.78 (0.73), ClL 0.25 (0.23), EGW 0.29 (0.31), MOAL 0.18 (0.22). Dorsal body pattern Figs 69, 70. Pre-foveal part of carapace mid-dorsal stripe as dark as eye region. Submarginal bands weakly scalloped. Anterior abdominal chevrons separated by dark stripe, posterior chevrons joined, giving a banded appearance. Sternum with moderately pigmented lateral margins. CL : CW ratio 1 : 0.83. Both eye rows procurved. Ratio AME : ALE : PLE : PME 12 : 13 : 10 : 8. Sternal sigillae indistinct. Legs 1423, long.

	Leg 1	Leg 2	Leg 3	Leg 4
Femur	1.80	1.15	1.00	1.39
Patella	0.45	0.40	0.43	0.47
Tibia	2.18	1.23	0.96	1.40
Metatarsus	1.89	1.14	1.01	1.37
Tarsus	1.08	0.59	0.54	0.68
	7.40	4.51	3.94	5.31

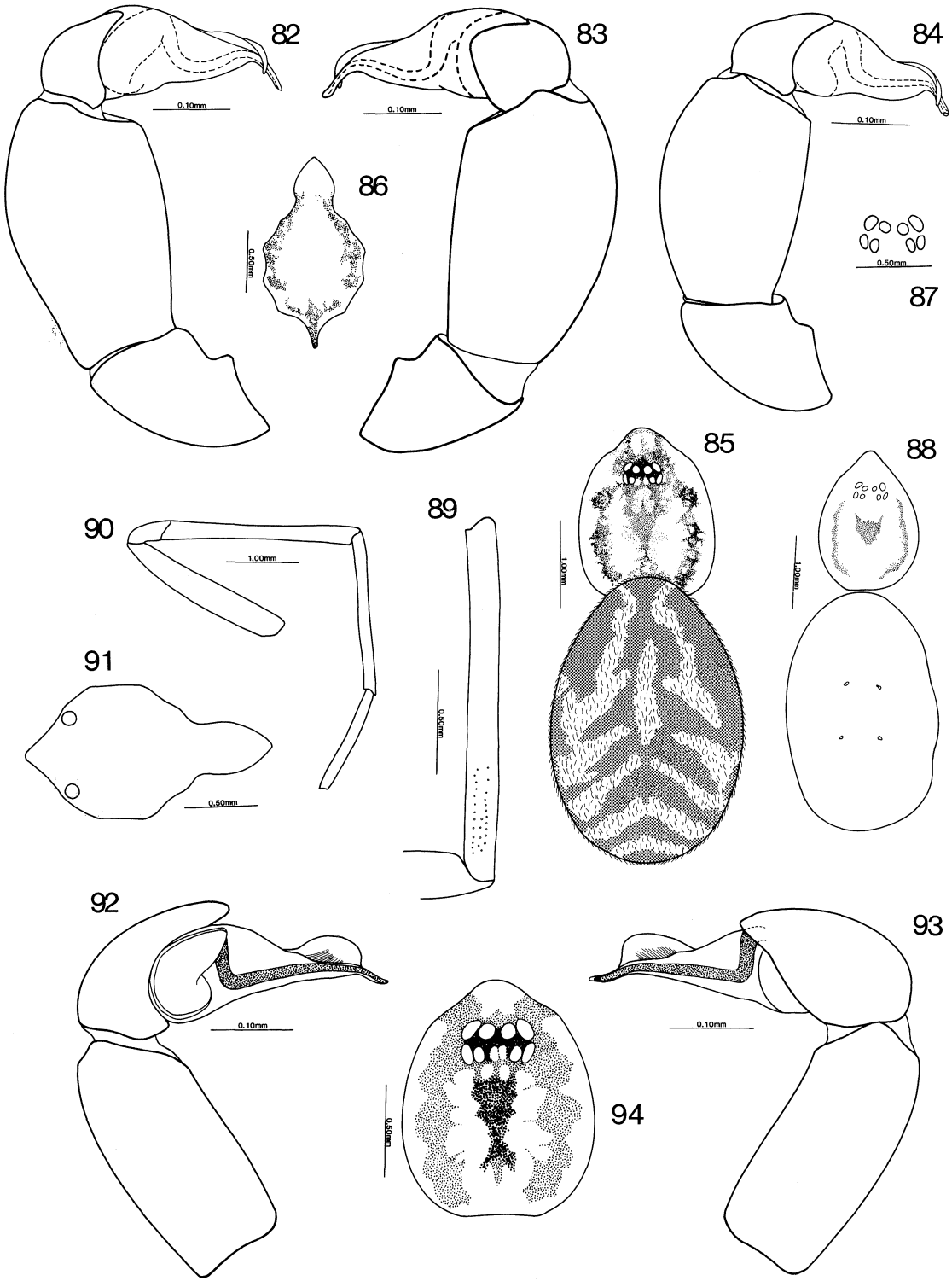
Tib1L : CL ratio 1 : 0.45. Palpal tibia short (Fig. 65), L/W ratio 1 : 0.80. Palpal organ (Figs 65-68) similar to *W. murrayensis*. Paraembolic lamina rounded apically, curved across prolateral side of subdistal embolus. Embolus only slightly ventrally curved, apex bent retrolaterally.

Etymology. The specific name refers to the Stuart Range near the type locality of this species.

Distribution. Southern inland Australia (Fig. 8).



Figs 78-81. Male palp. 78,79, *Wandella pallida*, embolus and paraembolic process: 78, retrolateral; 79, prolateral. 80,81, comb-like tooth arrays on paraembolic process: 80, *W. stuartensis*, retrolateral; 81, *W. barbarella*, prolateral.



Figs 82-94. 82-86, *Wandella murrayensis*: 82-84, male palp, 82, prolateral (Adelaide), 83, retrolateral (Adelaide), 84, prolateral (Melrose); 85, dorsal body, female; 86, labium and sternum. 87-91, *W. diamentina*: 87, eyes; 88, dorsal body, female; 89,metatarsus 4, calamistrum setal pattern; 90, leg 1; 91, labium, sternum. 92-94, *W. waldockae*: 92,93, male palp, 92, prolateral, 93, retrolateral; 94, dorsal carapace, male.

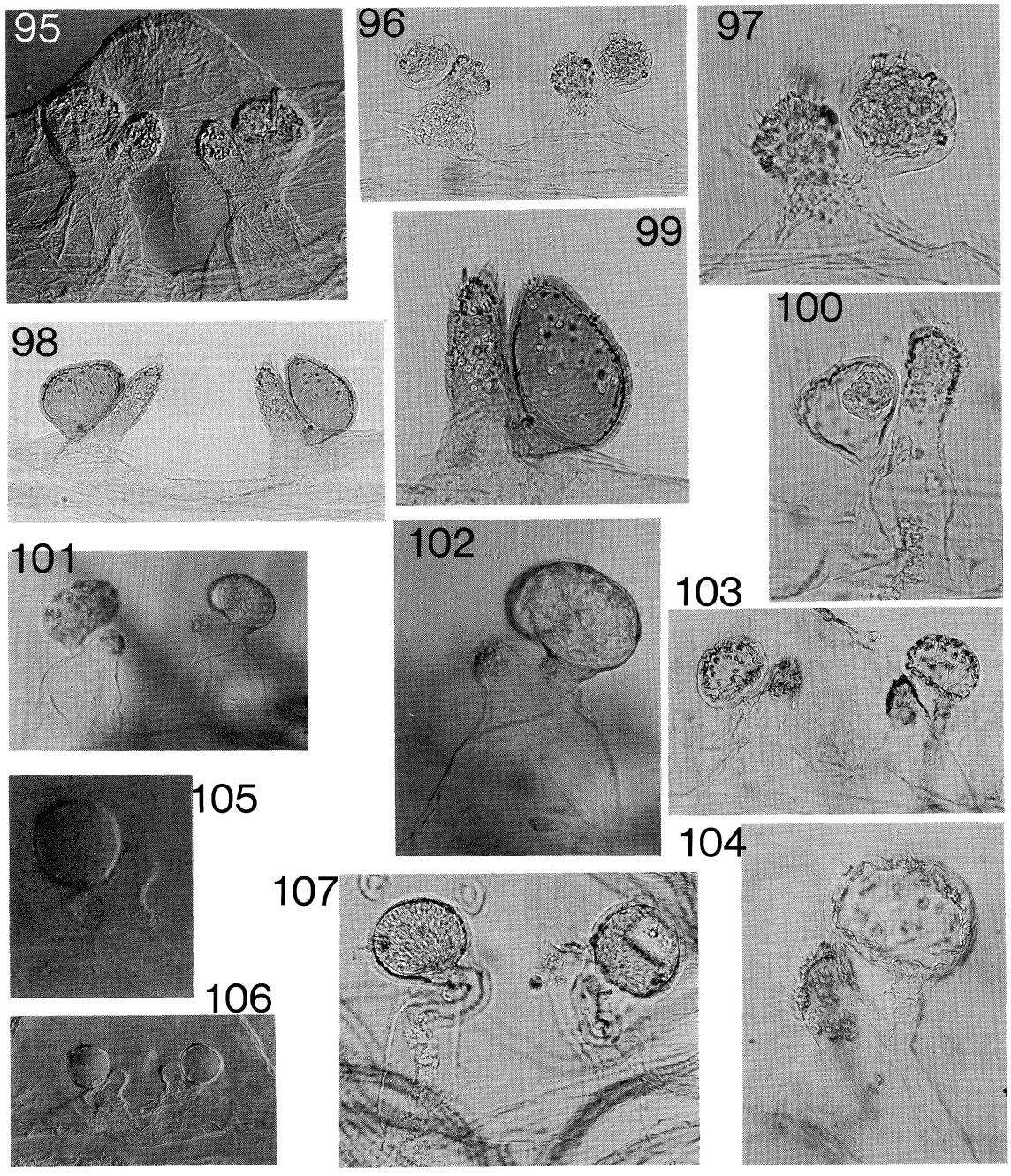
Wandella diamentina n.sp.

Figs 7, 87-91, 105, 106

Type material. HOLOTYPE, female, S6751 (QM), Wyralah Station, south-west of Winton, Qld, 22°46'S 142°22'E, 15 July 1981, A. Rozefelds, under rock. PARATYPES, 2 juveniles, data as for holotype.

Diagnosis. Legs long, female tibia 1 almost 1.5 times as long as carapace. Body of preserved specimens very pale. Lateral receptacula without secretory glands. (Male unknown).

Female. Measurements: BL 4.68, CL 1.76, CW 1.26, AL 2.98, AW 1.89, ClL 0.32, EGW 0.41, MOAL 0.19. Body pigment/patterning vestigial (in preservative), cephalothorax and legs pale amber, carapace with very faint standard pattern, abdomen cream coloured (Fig. 88). Carapace long ovoid, CL : CW ratio 1 : 0.72. Both eye rows procurved. Ratio AME : ALE : PLE : PME 8 : 11 : 9 : 7. Posterior sternal sigillae present (Fig. 91). Legs 1423, long.



Figs 95-107. Internal genitalia. 95, *Wandella barbarella*. 96,97, *W. murrayensis*. 98-100, *W. centralis*: 98,99, Canning Stock Route; 100, Alice Springs. 101,102, *W. pallida*. 103,104, *W. parnabyi*. 105,106, *W. diamentina*. 107, *Yardiella humphreysi*.

	Leg 1	Leg 2	Leg 3	Leg 4
Femur	2.21	1.44	1.34	1.87
Patella	0.53	0.47	0.49	0.61
Tibia	2.54	1.40	1.10	1.79
Metatarsus	2.11	1.15	1.17	1.62
Tarsus	1.36	0.74	0.71	0.81
	8.75	5.20	4.81	6.70

Tib1L : CL ratio 1 : 0.69. Calamistrum lateral hair rows long, with 12-13 setae (Fig. 89). Palpal tarsus long, slender. Lateral spermathecal lobes large and smoothly spherical, without secretory glands. Medial lobes glandular and small, one third width of lateral lobes, and separated by two thirds the width of a lateral lobe (Figs 105, 106).

Etymology. The species name refers to the Diamentina River which runs near the type locality.

Distribution. Known only from the type locality (Fig. 7).

Wandella waldockae n.sp.

Figs 7, 92-94

Type material. HOLOTYPE, male, 90/1909 (WAM), near Cave C118, North West Cape, WA, 22°09'S 113°59'E, 12 Sept. 1989, B. Jones, W.F. Humphreys & A. Humphreys (ref. 278), from surface pitfall trap near cave entrance.

Diagnosis. Small spiders. Male palp with erect, 'sail-like' paraembolic lamina above embolus. Palpal tibia short (female unknown).

Male. BL 2.3, CL 1.00, CW 0.76, AL 1.31, AW 0.64, ClW 0.17, EGW 0.29, MOAL 0.17. Carapace Fig. 94 (abdomen damaged but colour pattern as for genus). CL : CW ratio 1 : 0.76. Eye rows weakly procurved. AME : ALE : PME : PLE 8 : 11 : 7 : 8. Sternal sigillae indistinct or absent. Legs 1423.

	Leg 1	Leg 2	Leg 3	Leg 4
Femur	1.46	0.95	0.75	1.09
Patella	0.34	0.31	0.31	0.36
Tibia	1.62	0.88	0.69	1.09
Metatarsus	1.36	0.87	0.71	1.05
Tarsus	0.81	0.44	0.43	0.52
	5.59	3.45	2.89	4.11

Tib1L : CL 1 : 0.62. Palpal tibia L/W ratio 1 : 0.44. Palpal organ with distinctive, membranous paraembolic process, held erect above embolus (Fig. 92, 93).

Etymology. The species is named after Ms J. Waldock, Technical Officer in Arachnology at the Western Australian Museum.

Distribution. Type locality only (Fig. 7).

Wandella centralis n.sp.

Figs 8, 98-100, 108-112

Type material. HOLOTYPE, male (CAS), Alice Springs, NT, 23°42'S 133°52'E, 29 Oct. 1962, E.S. Ross & D. Cavagnaro. PARATYPES, allotype female (CAS), data as for holotype; 3 females (CAS), data as for holotype; 2 females, KS32146 (AM), data as for holotype. 1 female, 88/47 (WAM), Canning Stock Route near Well 29, WA, 22°34'S 123°53'E, 3 Aug. 1987, A.E. De Jong, under bark of 'oak' (?*Casuarina*); 1 female, 90/1917 (WAM), Giles Creek Crossing, WA, 25°03'S 128°40'E, 15 Jan. 1990, M.S. Harvey & T.F. Houston.

Diagnosis. Male palpal tibia long. Paraembolic lamina as long as embolus. Female genitalia with elongate medial lobes.

Male. Measurements. CL 1.59, CW 1.27, AL 0.82, AW 1.71, AL 1.13, ClW 0.30, EGW 0.37, MOAL 0.22. Dorsal body pattern Figs 103, 104, abdomen with 4-5 chevrons. CL : CW ratio 1 : 0.80. Eye rows weakly procurved. Ratio AME : ALE : PLE : PME 15 : 16 : 12 : 10. Posterior sternal sigillae present, small. Legs 1423.

	Leg 1	Leg 2	Leg 3	Leg 4
Femur	1.84	1.24	1.03	1.75
Patella	0.45	0.33	0.39	0.48
Tibia	1.85	1.22	1.02	1.82
Metatarsus	1.61	1.21	1.02	1.25
Tarsus	1.03	0.58	0.53	0.71
	6.78	4.58	3.99	6.01

Tib1L : CL ratio 1 : 0.86. Palpal tibia long, L/W ratio 1 : 0.50. Palpal organ (Figs 108, 109) with long, crest-like paraembolic process, as long as embolus.

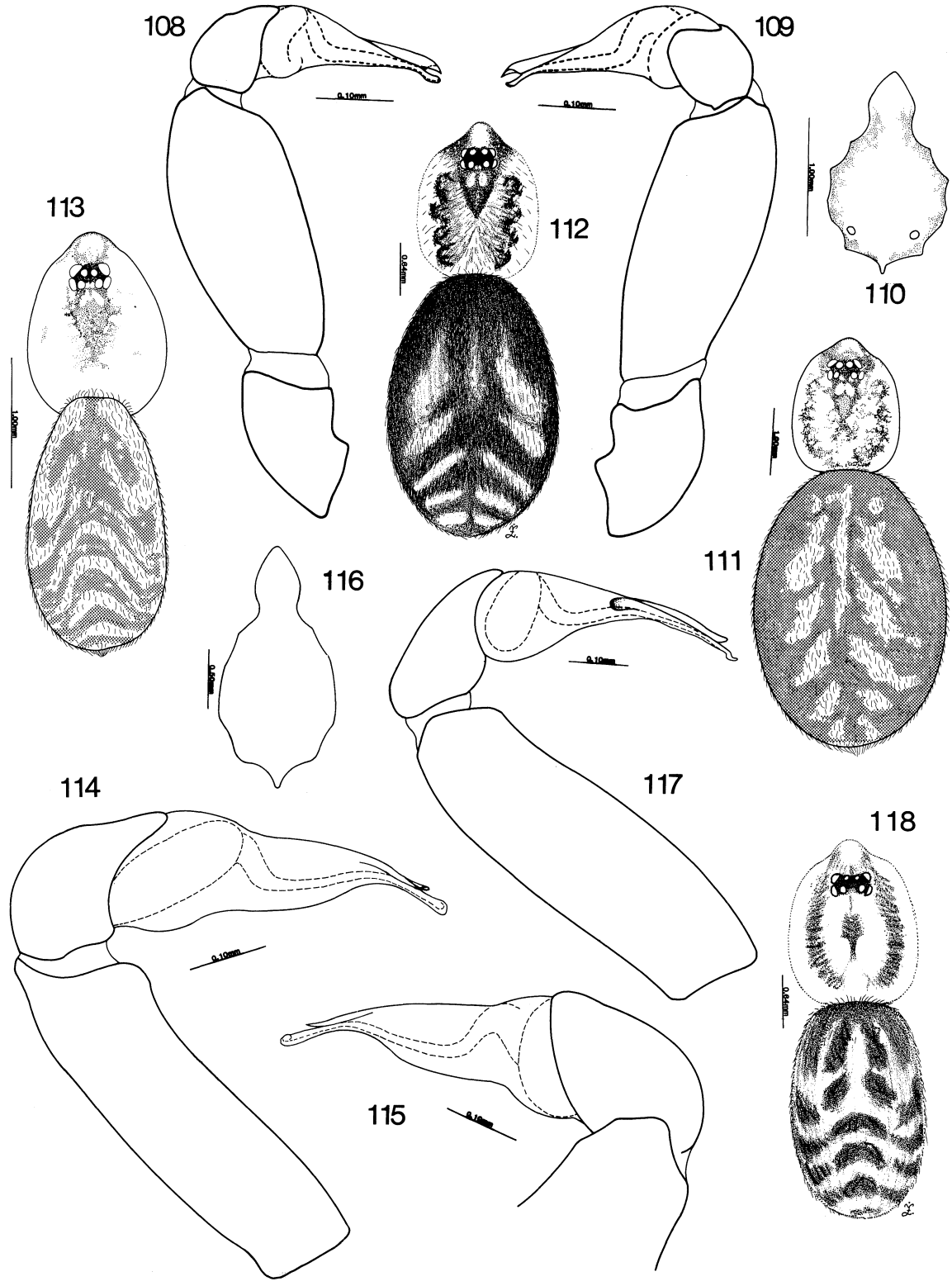
Female. Measurements. CL 1.95 (1.63-1.95), CW 1.50 (1.33-1.63), AL 3.28 (2.40-4.07), AW 2.21 (1.76-2.97), ClL 0.29 (0.24-0.33), EGW 0.49 (0.43-0.50), MOAL 0.30 (0.23-0.32). Dorsal body pattern Figs 111, 112; abdominal chevrons small but distinct. Sternal sigillae present, small (Fig. 110). CL : CW ratio 1 : 0.78. AME : ALE : PLE : PME 16 : 20 : 15 : 13. Legs 1423.

	Leg 1	Leg 2	Leg 3	Leg 4
Femur	2.00	1.86	1.33	1.76
Patella	0.65	0.57	0.58	0.64
Tibia	2.05	1.26	1.05	1.53
Metatarsus	1.78	1.21	1.07	1.42
Tarsus	1.27	0.80	0.68	0.80
	7.75	5.70	4.71	6.15

Tib1L : CL ratio 1 : 0.95. Lateral spermathecal lobes large, ovoid. Medial lobes long, projecting anteriorly beyond lateral lobes, and separated by the width of a lateral lobe (Figs 98-100).

Etymology. The specific name refers to the central Australian distribution of this species.

Distribution. Central Australia (Fig. 8).



Figs 108-118. 108-112, *Wandella centralis*: 108,109, male palp, 108, prolateral, 109, retrolateral; 110, labium, sternum; 111,112, dorsal body, female, 111, Canning Stock Route, WA, 112, Alice Springs, NT. 113-115, *W. pallida*: 113, dorsal body, female; 114,115, male palp, 114, prolateral, 115, retrolateral. 116-118, *Yardiella humphreysi*: 116, labium and sternum; 117, male palp, prolateral; 118, dorsal body, female.

Wandella pallida n.sp.

Figs 8, 78, 79, 101, 102, 113-115

Type material. HOLOTYPE, male, 90/1915 (WAM), Cave KJ-8, Jeremiah Hills, WA, 15°27'S 128°45'E, 25 June 1990, P. Drew, on stone/soil floor in dark zone (S43). PARATYPES, allotype female, 90/1916 (WAM), data as for holotype, on dust/soil floor near fine, messy, dust-coated web in humid terminating chamber (S.52)

Diagnosis. Weakly pigmented filistatids. AME smallest. Legs very long. Male palpal tibia elongate. Proximal part of ejaculatory duct nearer horizontal than vertical.

Male. Measurements. BL 3.5, CL 1.36, CW 1.12, AL 2.11, AW 1.17, ClL 0.26, EGW 3.29, MOAL 1.79. Pigmentation reduced. Carapace marginal bands reduced to absent. CL : CW ratio 1 : 0.82. AER procurved, PER weakly procurved. AME smaller than other eyes. AME : ALE : PLE : PME 7 : 11 : 10 : 8. Legs 1423, very long.

	Leg 1	Leg 2	Leg 3	Leg 4
Femur	2.90	1.99	1.63	2.17
Patella	0.50	0.46	0.45	0.47
Tibia	3.37	1.90	1.46	1.98
Metatarsus	2.96	1.76	1.64	2.15
Tarsus	1.50	0.76	0.70	0.89
	11.23	6.87	5.88	7.66

Tib1L : CL ratio 1 : 0.40. Palpal tibia long, slender, L/W ratio 1 : 0.34. Proximal limb of 'n' shaped ejaculatory duct nearer horizontal than vertical (Figs 114, 115). Paraembolic process with ragged distal margin (Figs 78,79).

Female. Similar to male. Measurements. BL 3.1, CL 1.36, CW 1.06, AL 1.77, AW 0.91 ClL 0.22 EGW 3.15 MOAL 1.54. Dorsal body pattern (Fig. 113). CL : CW ratio 1 : 0.78. Eyes as in male. AME : ALE : PLE : PME 6 : 10 : 9 : 7. Sternal sigillae not seen. Legs 14(2)3, long.

	Leg 1	Leg 2	Leg 3	Leg 4
Femur	2.35	1.62	1.33	1.86
Patella	0.46	0.42	0.41	0.47
Tibia	2.66	–	1.15	1.64
Metatarsus	2.20	–	1.18	1.60
Tarsus	1.28	–	0.69	0.86
	8.95	–	4.76	6.43

Tib1L : CL ratio 1 : 0.51. Palpal tarsus long, slender. Lateral spermathecal lobes large, ovoid. Medial lobes small, short, separated by about the width of a lateral lobe (Figs 101, 102).

Etymology. The specific name refers to the weak pigmentation of these spiders.

Distribution. Known only from the type locality (Fig. 8).

Yardiella n.gen.

Diagnosis. Spines absent. Carapace mid-dorsal stripe reduced, weakly bifurcate posteriorly. AME very small. PMS with 2 spigots. Plumose and ciliate hairs present. Male palp long, slender, post-tegular prolateral dorsal surface longitudinally grooved, paraembolic process low, thickened, roofing the groove. Post-tegular groove with larger proximal and smaller distal teeth (comb-like arrays absent), dorsal paraembolic process with scaliform sculpturing. Female genitalia with four receptacula, lateral receptacula with elongate connecting ducts.

Description. Similar to *Wandella* except as follows. Medium sized spiders, CL up to 2.40. Carapace long, mid-dorsal stripe incomplete behind eyes, weakly bifurcate posteriorly. AER weakly procurved, PER weakly procurved to straight. ALE much larger than AME and AME much smaller than PME. Ciliate and plumose hairs present (Fig. 10). Tarsal organ Fig. 12. Trichobothria: metatarsi 1,2 with 2 long distal and 5 short central, metatarsi 3,4 with 1 long distal and 4-5 central-proximal; tibiae with 1 long distal and 1 long, 3-4 short proximal. Trichobothrial base Fig. 20. Female palp tarsus moderately long, cylindrical. Legs elongate, tibia 1 2-3 times length of carapace. Calamistrum with 3 rows of toothed setae. Male palpal tibia long, weakly incrassate (Fig. 117). Palpal organ slender, prolateral post-tegular surface with a deep, longitudinal groove, becoming shallower in distal third. Paraembolic process long, low and thickened, dorsal surface with 'scaliform' sculpturing (Fig. 122); process reflected prolaterally to form the roof of the post-tegular groove, distal end of process free, erect (Fig. 124). Post-tegular groove with large, blunt teeth proximally and pointed, procumbent teeth, the latter single or in groups of 2-3 (?comb vestiges) scattered distally along the groove (Figs 119-124). Female genitalia like *Wandella*, but lateral spermathecal lobes connected to deep bursal pockets by elongate, curved ducts (Fig. 107). Spinnerets as for *Wandella*.

Type species. *Yardiella humphreysi* n.sp.

Included species. The genus is monotypic.

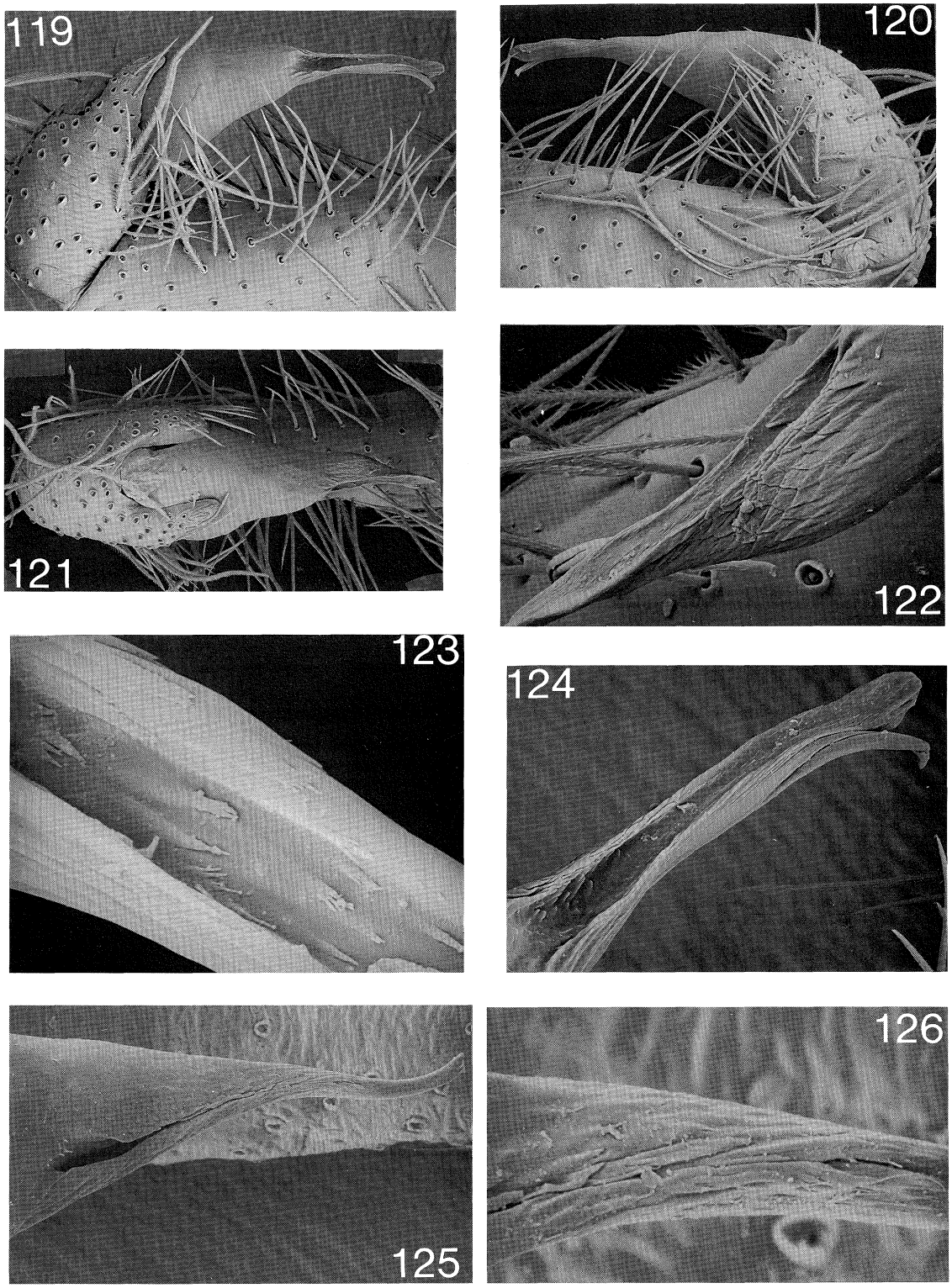
Etymology. The genus is named after Yardie Station, North-West Cape Peninsula.

Distribution. North-West Cape Peninsula, WA (Fig. 8).

Yardiella humphreysi n.sp.

Figs 6, 8, 10, 12, 20, 107, 116-124

Type material. HOLOTYPE, male, (WAM), Cave C94, North-West Cape Peninsula, WA, 21°47'S 114°10'E, 20 Sept.



Figs 119-126. Male palp. 119-124, *Yardiella humphreysi*: 119, prolateral; 120, retrolateral; 121, dorsal; 122, post-tegular palp showing dorsal scaliform structure; 123, smaller teeth along post-tegular groove; 124, post-tegular groove, larger teeth at apex. 125,126, Undescribed Indian species (near *Yardiella*), from Orissa, north-east India. Male palp: 125, grooved post-tegular area, dorsal; 126, part of dorsal scaliform structure.

1988, M. Gray & S. Eberhard. PARATYPES, allotype female, KS30224 (AM), data as for holotype; 2 males, KS21587, KS30226 (AM); 7 females, KS21587, KS30225, KS30227 - KS30231 (AM), data as for holotype; 9 females, 90/1889-99 (WAM), Cave C64, North-West Cape Peninsula, WA, 22°02'S 114°01'E, 27 June 1989, M. Harvey, B. Vines & E. Bowra (#3593); 3 females, 90/1900, 1902, 1903 (WAM), locality as above, 3 July 1989, D. Brooks & P. Raison, from guano pile (#4108, #4129, #4141); 1 male, 90/1910 (WAM), locality as above, 25 May 1990, J.M. Waldock (#245); 1 female, 90/1888 (WAM), Cave C199, North-West Cape Peninsula, WA, 22°12'S 113°55'E, 27 June 1989, M. East & D. Brooks (#3779).

Diagnosis. Medium sized spiders. Pigmentation variably reduced. AME small. Legs long, first tibia 2-3* as long as carapace. Male palpal organ slender, with paraembolic groove.

Male. Measurements: BL 2.9 (2.5-3.0), CL 1.65 (1.43-1.66), CW 1.30 (1.06-1.30), ClL 0.35 (0.31-0.36), AL 2.24 (1.83-2.43), AW 1.31 (1.06-1.34), EGW 0.39 (0.34-0.39), MOAL 0.20 (0.16-0.20). Pigmentation variably reduced: on carapace, confined to submarginal bands and lateral clypeal areas, mid-dorsal pigmentation confined to eye mound and mid-dorsum; dorsal and lateral abdomen mid-dark lustrous grey with a pale, often thin, mid-dorsal stripe and 6-7 usually distinct and large, light brown lateral chevrons (Fig. 6), sometimes coalescent. Ventral body pale, unpatterned. Legs light brown, darker distally, with dark grey annulations on the femora and tibiae. CL : CW ratio 1 : 0.75. AER weakly procurved, PER recurved-straight. AME smallest, much smaller than PME. AME : ALE : PLE : PME 8 : 15 : 13 : 11. Sternal sigillae not seen. Legs 1423, very long.

	Leg 1	Leg 2	Leg 3	Leg 4
Femur	3.45	2.38	1.89	2.52
Patella	0.50	0.53	0.52	0.60
Tibia	4.38	2.28	1.70	2.31
Metatarsus	3.76	2.15	1.90	2.52
Tarsus	1.96	0.92	0.90	1.09
	14.05	8.26	6.91	9.04

Tib1L : CL ratio 1 : 0.38. Palpal tibia long, L/W ratio 1 : 0.34. Palpal organ long, slender with a highly modified paraembolic process as for genus (Figs 117, 119-124).

Female. Similar to male. BL 3.9 (2.9-4.1), CL 2.35 (1.65-2.40), CW 1.51 (1.34-1.66), ClL 0.45 (0.30-0.48), AL 3.8 (2.9-3.9), AW 2.54 (2.02-2.60), EGW 0.48 (0.39-0.48), MOAL 0.26 (0.20-0.26), Dorsal body pattern Figs 6, 118 (abdominal pattern somewhat variable). CL : CW ratio 1 : 0.74. AME small. AME : ALE : PLE : PME 10 : 16 : 14 : 13. Labium and sternum Fig. 116. Legs 1423, long.

	Leg 1	Leg 2	Leg 3	Leg 4
Femur	3.78	2.50	2.11	2.93
Patella	0.69	0.64	0.67	0.77
Tibia	4.49	2.34	1.66	2.54
Metatarsus	3.70	2.05	1.82	2.44
Tarsus	1.97	0.99	0.93	1.13
	14.63	8.52	7.19	9.81

Tib1L : CL ratio 1 : 0.53. CW : PalpFemL ratio 1 : 0.97. Palpal tarsus slender. Lateral spermathecal lobes spherical with few secretory tubules and set upon elongate, curved, tube-like necks (Fig. 107). Smaller medial lobes separated by 0.5-1 times the width of a lateral lobe.

Etymology. The species is named in recognition of Dr Bill Humphreys' contribution to our knowledge of the North-West Cape cavernicolous fauna.

Biology. These are the largest of the Australian filistatid spiders. The small AME, long legs and somewhat reduced body pigment suggest that this may be a cave-obligate species. They have never been found on the surface, despite their occurrence in twilight as well as dark, cave zones. Their webs are irregular shawls with funnel entrances, built among rocks and roots on the cave floor, walls and roof. They are often associated with bat guano deposits. Males and females were observed occupying the same web.

Distribution. North-West Cape Peninsula, WA (Fig. 8).

ACKNOWLEDGMENTS. Dr M. Harvey and Ms J. Waldock (WAM), Dr R. Raven (QM), Mr D. Hirst (SAM) and Mr D. Ubick (CAS) kindly made available material from collections in their care. I am grateful to Dr G. Rack (ZMH) and Mlle J. Rollard (MNHN) for their assistance when visiting their institutions. Dr W. Humphreys provided the opportunity for me to participate in his field work program at North-West Cape, WA. Technical assistance was provided by Judith Thompson and Christine Horseman. Judith Thompson, Jane McRae and Marek Zabka provided illustration assistance. This research was supported by an Australian Research Council grant.

References

Eskov, K.Y. & S.L. Zonshtein, 1990. A new classification for the order Araneida (Arachnida: Chelicerata). Acta Zoologici Fennici 190: 129-138.

Koch, L.E., 1873. Die Arachniden Australiens. Bauer & Raspe, Nuremberg.

Ledoux, J.C., 1977. Redescription of *Pritha nana* (Simon) (Araneae, Filistatidae). Revue Arachnologique 1: 65-74.

Lehtinen, P.T., 1967. Classification of the cribellate spiders and some allied families, with notes on the evolution of the suborder Araneomorphae. Annales Zoologici Fennici 4: 199-468.

Lehtinen, P.T., 1986. Evolution of the Scytodoidea. **In** W.G. Eberhard, Y.D. Lubin & B.C. Robinson. Proceedings of the Ninth International Congress of Arachnology, Panama 1983. Smithsonian Institution, Washington.

Platnick, N.I., J.A. Coddington, R.R. Forster & C.E. Griswold, 1991. Spinneret morphology and the phylogeny of Haplogyne spiders (Araneae, Araneomorphae). American Museum Novitates 3016: 1-73.

Accepted December 30, 1993