

Further Studies on the Systematics of Australian Diplurinae (Araneae: Mygalomorphae: Dipluridae): A New Genus from South-western Australia

Barbara York Main*

Abstract

A new diplurine genus, *Yilgarnia* is described from southern Western Australia. The genus is attributed to the Anamini and its affinities with other Australian diplurine genera are discussed. The genus is widely distributed and contains several species but only the type species *Y. currycomboides* is described here.

Introduction

This paper is the tenth in a series on the systematics of Australian Diplurinae (Main 1983, 1985; Main and Gray 1985). Main (1983) listed publications in which diplurine taxa were reviewed or new genera or species described. At that time 10 genera were recognised. Subsequently Raven (1984a) erected the genus *Namea*. In addition two other genera have been described (Main 1985). Raven (1981) in his earlier review of the Diplurinae synonymised *Chenistonia* Hogg with *Aname* Koch whereas Main (1981, 1982, 1983) considered the two as distinct genera. Although Raven (1984b) has held to his earlier synonymy I continue to regard *Chenistonia* as a distinct genus. The description here of the new genus *Yilgarnia* brings to 14 the number of diplurine genera currently accepted by me.

Yilgarnia is widely distributed in southern Western Australia from the Darling Scarp at about Bullsbrook east to Eucla. In spite of this wide range the spiders are not abundant and have been collected only patchily, the males generally in pitfall traps and the females by scratching amongst stable leaf litter and thus exposing the cryptic burrows. Although many specimens have been collected and there are several species, specimens of both sexes have been collected only from one locality, Peak Charles. The genus and type species only are described here. This will allow at least generic placement of specimens collected during surveys and ecological studies. A complete systematic account of the genus will be presented later.

Measurements given in the descriptions are in millimetres. The leg formula is length of leg/length of carapace; the tibial index is $100 \times$ width of patella at knee/(length of patella + length of tibia) (Petrunkevitch, 1942). Eyes: ALE, anterior lateral; AME, anterior median; PLE, posterior lateral; PME, posterior median. Spines: v, ventral; d, dorsal; p, prolateral; r, retrolateral. Spinnerets: PLS, posterior lateral; PMS, posterior median.

WAM, denotes Western Australian Museum. BYM denotes Barbara York Main collection (housed at the Zoology Department, University of Western Australia).

* Zoology Department, University of Western Australia, Nedlands, Western Australia, 6009.

Distribution of Australian Diplurinae

Of the 14 genera, including the two described recently (Main 1985), six genera (*Teyl* Main, *Kwonkan* Main, *Merredinia* Main, *Troglodiplura* Main, the new genus *Yilgarnia* and *Pseudoteyl* Main) appear to be confined to the south western part of the continent i.e. west of Eyre Peninsula. Furthermore *Teyl*, *Merredinia* and *Pseudoteyl* have been found only in the south west of Western Australia. *Kwonkan* extends at least as far east as Penong, *Yilgarnia* to Eucla and *Troglodiplura* is known only from caves on the Nullarbor Plain. Of the remaining eight genera *Aname*, *Chenistonia* and *Stanwellia* Rainbow and Pulleine occur in both eastern and south western Australia. Four genera (*Ixamatus* Simon, *Kiama* Main and Mascord, *Namea* Raven and *Xamiatus* Raven) occur in eastern Australia only, and the other genus *Teyloides* Main is probably restricted to the Lofty Ranges in South Australia. Only the three genera *Aname*, *Chenistonia* and *Stanwellia* have been found in Tasmania. All genera are endemic to Australia, except *Stanwellia* which occurs also in New Zealand. New Zealand species of *Stanwellia* have previously been attributed to *Aparua* Todd (Todd 1945; Forster 1968) a genus synonymised with *Stanwellia* by Main (1983).

Relationships within Australian Diplurinae

Yilgarnia is attributed to the Anamini (as diagnosed by Main (1983)) in which tribe I recognize four other genera: *Aname*, *Chenistonia*, *Kwonkan* and tentatively *Merredinia*. The tribe Teylini is distinguished from the sister tribe Anamini primarily by the tangential origin of the embolus (which may be reflexed or not) (i.e. the embolus arises from the mid-region of the bulb and at right angles to its axis). Furthermore the Anamini possess a tibial spur on the first leg of the male (except in *Merredinia*) whereas a spur is present in only one genus of the Teylini (Main 1985). The Anamini and Teylini are distinguished from other Australian diplurine genera by the broad spread of the maxillary cupsules which, as noted by Raven (1981), are confined to the antero-ental angle in *Ixamatus*, *Xamiatus*, *Kiama*, *Troglodiplura* and (in part) *Stanwellia*.

Systematics

Genus *Yilgarnia* gen. nov.

Type Species

Yilgarnia currycomboides sp. nov.

Diagnosis

Differs from all other Australian diplurines by the cluster of spines on the ventral face of the third and fourth coxae. Male with a tibial spur on the first leg; embolus not constricted at base and arises along main axis of bulb; retrolateral cluster of spines on tibia of palp.

Male palpal structures closely resemble those of *Kwonkan*.

Description

Small to medium sized spiders. Carapace glabrous with sparse hairs and bristles on margin. Fovea straight or procurved. Eye tubercle relatively low, broad. Chelicerae with pronounced rastellum of stout tooth-like spines but without a process; promargin of fang groove with row of large teeth, retromargin with a few small basal teeth. Labium broad, anteriorly indented, without cuspules or spinules. Maxillae with heel obscuring labium at sides, numerous cuspules spread over inner margin and extending over about two thirds of surface. Third and fourth coxae each with a retroventral cluster of distinctive, stout, thorn-like spines which resembles a currycomb. These spines are not homologous with the thorns which occur on the prolateral faces of coxae in some species of *Aname* (see Raven 1981: Figure 53 and Main 1982: 29) and certain Teylini. Distinct scopula on tarsi and metatarsi of anterior legs (I and II) only. Tarsi without spines, Tibia I of male with pronounced spur. Tibia of male palp with retrolateral cluster of spines. Embolic origin broad, on same axis as bulb, gradually tapering and bent.

Derivation of name: The name refers to the geological region of the Yilgarn block where the genus has its main distribution. The name *Yilgarnia* is considered feminine.

Distribution and Natural History

Yilgarnia occurs in southern Western Australia from the Darling Scarp at about Bullsbrook to Eucla; it appears to be absent from the extreme south west corner of the state but has been collected in the northern jarrah forest and Stirling Ranges. Spiders have been collected in jarrah and wandoo forest, eucalypt woodland, mallee and wodjil. The shallow burrows are vertical, silk lined and generally occur under leaf litter.

Yilgarnia currycomboides sp. nov.

Figures 1, 2; Table 1

Holotype, ♀

WAM 1985/449 (BYM 1956/276), Peak Charles, Western Australia, collected by A.R. Main, 17 May 1956.

Paratype, ♂ allotype

WAM 1985/450 (BYM 1967/25), Peak Charles, drowned in creek, A.R. Main, 18 October 1967.

Description

Female. Colour generally dark tan-brown; abdomen greyish brown, dorsally with pale mottlings (Figure 1a). *Carapace* length 6.1 mm, width 5.0, caput width 3.8. *Carapace* glabrous with very thin down on caput, marginal hairs and fine bristles. Fovea procurved (Figure 1a). *Eyes* (Figure 1b) on low tubercle, width of group 1.5, length 0.6; anterior row slightly procurved, posterior row recurved behind, straight in front. Diameters of eyes: ALE 0.35, AME 0.2, PLE 0.3, PME 0.1. ALE apart 0.6, AME apart 0.15, ALE and PLE contiguous. *Chelicerae* with rastellum of at least 15 stout, tooth-like spines on antero-

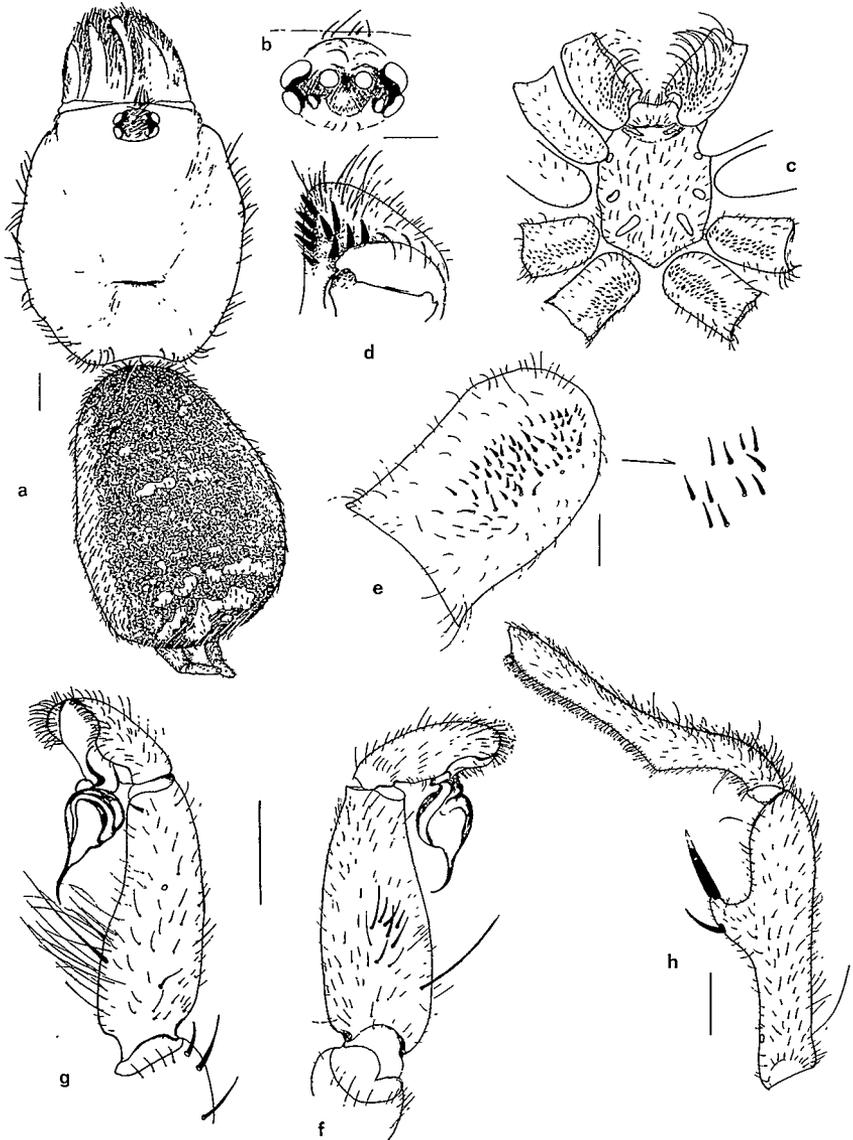


Figure 2 *Yilgarnia currycomboides* sp. nov. Allotype (paratype) male; (a) dorsal aspect of carapace and abdomen; (b) eyes; (c) sternal area; (d) rastellum of left chelicera; (e) right coxa IV with cluster of spines; (f) right palp, retrolateral aspect; (g) right palp, prolateral aspect; (h) left leg I, tibia and metatarsus. Scale lines, b, e, 0.5 mm; a, c, f-h, 1 mm; d, not to scale.

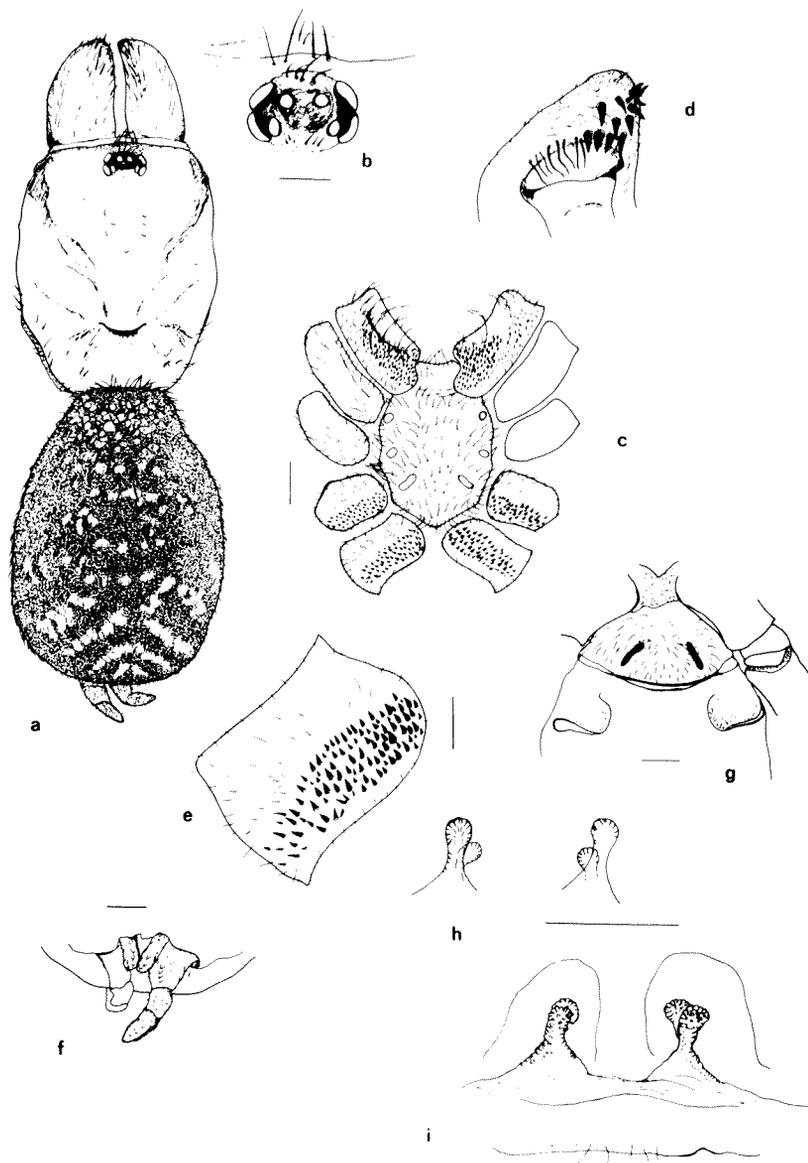


Figure 1 *Yilgarnia currycomboides* sp. nov. Holotype female; (a) dorsal aspect of carapace and abdomen; (b) eyes; (c) sternal area; (d) rastellum of right chelicera; (e) right coxa IV with currycomb-like spines; (f) spinnerets; (g) anterior ventral region of abdomen showing genital plate; (h) internal genitalia (spermathecae), dorsal view; (i) spermathecae, tilted down at rear to give a more antero-dorsal view. Scale lines, b, e, h, i, 0.5 mm; a, c, f, g, 1.0 mm; d, not to scale.

Table 1: *Yilgarnia currycomboides* sp. nov. Leg measurements. Holotype female with allotype male measurements in parentheses.

Leg formula:	4	1	2	3		
	2.57(3.64)	2.47(3.18)	2.14(2.98)	1.75(2.73)		
	F	P	Ti	M	Ta	Total
Palp	3.3(3.3)	2.1(1.9)	2.1(2.5?)	—	2.0(1.2)	9.5(8.9)
I	4.5(5.4)	2.8(3.3)	3.2(4.4)	2.8(4.8)	1.8(2.8)	15.1(20.7)
II	3.8(5.1)	2.5(3.0)	2.7(4.1)	2.4(4.5)	1.7(2.7)	13.1(19.4)
III	3.0(4.5)	2.0(2.4)	1.5(3.0)	2.5(5.0)	1.7(2.9?)	10.7(17.8)
IV	4.3(6.0)	2.4(2.8)	4.1(5.7)	3.2(6.3)	1.7(2.9)	15.7(23.7)

Width of patella I at knee, 0.8 (1.0); tibial index 13.3 (12.98)

Width of patella IV at knee, 0.9 (1.0); tibial index 14.0 (11.76)

apical angle (Figure 1d). Promargin of fang groove with eight teeth, retromargin with five basal teeth extending to between second and third proximal promarginal teeth. *Labium* broad, anteriorly indented, obscured at sides by maxillary heels; length approximately 0.8; broad sigillum separating labium from sternum. *Maxillae* each with squarish heel, numerous cuspules (at least 150) extending from inner margin including heel (except posterior margin) in a triangle over at least two thirds of ventral face (Figure 1c). *Sternum* length 3.2, width 2.9. Covered with fine bristles. Posterior sigilla long and narrow, away from margin. *Legs* with scopula present on palp tarsus and tarsi and metatarsi of legs I and II, incomplete on metatarsi I and on apical half only of metatarsi II; a median band of bristles dividing scopula on tarsi II. Tarsi III and IV with dense brush of ventral bristles intermixed with a few scopulate hairs laterally. Coxae III and IV each with a retroventral cluster of thorn-like spines like a currycomb (Figures 1c and e). *Paired tarsal claws* with six to eight teeth in each row; inner rows (i.e. retrolateral row of proclaw and prolateral row of retroclaw) of legs III and IV arise distally to outer rows. Palp claw with five or six teeth on promargin. *Spines* (right appendages). Tarsi of all legs lack spines. All femurs with a dorsal, median line of delicate bristles. Palp tarsus with basal pair of ventral spines, tibia v 4 apical spines of which rv 2, tapering and bristle-like, and 5 bristles (left 6), femur pd 1 apical spine. Leg I, metatarsus v 2-1rv-2, tibia v 5 long bristles, pd 2 tapering spines, patella pd 2 (lost), femur d 1 basal bristle, pd 1 apical. Leg II, metatarsus v 2-2-2, p 1, tibia v 7 bristles, pd 1 (2 left), patella pd 3 bristles, femur d 1 basal bristle, pd 1 apical. Leg III, metatarsus v 2-2-1-2, d 1-1-2-2, p 4, r 1 apical, tibia v 2-1-2 bristles, d 2, p 2 stout spines, r 1, patella p 3 stout spines and a pd proximal cluster of about 12 short, thorn-like spines, femur d 1 basal bristle, pd 1, rd 2. Leg IV, metatarsus v 2-1-2-1-2, rd 2, p 1, r 1, tibia v 2-2-2 bristles, r 2, patella pd proximal cluster of about 17 short tooth-like spines, femur d 1 basal bristle, rd 1 apical spine. *Abdomen* length 7.1,

width approximately 5.3. *Spinnerets* (Figure 1f) bent upwards around posterior of abdomen. PMS 0.8 long, PLS basal segment 0.9, median 0.6, terminal 0.9 (cylindrical, tapering). Genital plate does not project posteriorly (Figure 1g). Internal genitalia very similar to some species of *Kwonkan*; spermathecae broadly based, tapering to a narrow neck which branches into two, stalked crowns (Figures 1h, i).

Male. Colour dark tan-brown, margin of carapace darker; abdomen dorsally dark brown with yellowish mottlings (Figure 2a), ventrally pale, unmarked. *Carapace* length 6.5, width 5.3, caput width 3.1. *Carapace* lacks marginal spines, long tapering bristles only. Fovea straight. No spines or bristles between eyes and fovea. *Eyes* (Figure 2b) on pronounced tubercle with a few anterior bristles; several spines on clypeus. Width of eye group 1.1, length 0.6. Diameters of eyes: ALE, 0.35, AME 0.2, PLE 0.25; PME 0.15. ALE apart 0.7, AME apart 0.1, ALE and PLE almost contiguous 0.5 apart. *Chelicerae* with rastellum of about 12 spines (Figure 2d). Promargin of fang groove with seven teeth (eight left), retromargin with five (left four) basal teeth. *Labium*, as for female, width about 1.1, length about 0.6. *Maxillae* with at least 100 cuspules but without spinules. *Sternum* length 3.2, width 2.6. Posterior sigilla long, narrow, away from margin (Figure 2c). *Palp* (Figures 2f, g) tarsus with apical scopula, no spines. Bulb subspherical to pyriform with broad embolic origin; embolus tapering. Tibia with retrolateral cluster of about five delicate spines and additional bristles; two long, fine prolateral bristles. *Legs*. Tibia I with large median spur, bearing a stout terminal megaspine (tip broken) and a smaller spine beneath megaspine; one proximal ventral spine and 1 prolaterodorsal spine; metatarsus I bowed, incrassate and with proximal ventral depression (Figure 2h). Long hairs and bristles on all aspects of legs which are not heavily spinose (see below). Coxae III and IV ventrally with currycomb-like cluster of short, stout spines (like spinules) which are not as thickened as in female (Figures 2c, e). *Tarsal claws* with 8 to 12 teeth in each row; inner combs arise distally to bases of outer combs. *Scopulae* on tarsi I and II and apical half of metatarsi I and II, sparse on tarsus III, a few apical hairs on metatarsus III, tarsus IV with dense brush of bristles and a few apical scopulate hairs. *Trichobothria*, 8 to 12 on tarsi and metatarsi, up to six in each row on tibiae. *Spines* (left legs; right tarsi I and IV and leg III missing). Leg I, metatarsus, 0, tibia (see above), patella p 2 long, curved spines, femur pd 2 in apical third, d 2 long tapering bristles in mid region. Leg II, metatarsus v 2-2-2, pd 2, tibia pv 2 apical, v 2 long tapering bristles, pd 2 patella pd 2 long curved spines, femur p 3 long bristles in mid region, pd 1 + 1 bristle. Leg III, metatarsus v about 9, d 3, p about 4, r 5, tibia v 2-2-2, d 1, pd 2, rd 2, patella rd 1, p 3, femur, d 1 long median bristle, pd 2, rd 1. Leg IV, metatarsus v 9, d 2, rd 2, p 2, r 2, tibia v 2-2-2 bristles, p 2, r 2, patella 0, femur d 1 median bristle, rd 2 bristles. *Abdomen* length 8.0, width 5.0. Sparsely scattered long hairs. *Spinnerets*. PMS cylindrical, terminally truncate, length 0.8; PLS cylindrical with terminal segment tapering; basal segment 1.0, median 0.7, terminal approximately 1.1.

Acknowledgements

I am grateful for facilities provided by the Zoology Department, University of Western Australia. This paper was prepared while I was engaged in a wider study of the systematics of Australian Diplurinae supported in part by the Australian Biological Resources Study.

References

- Forster, R. R. (1968). Ctenizidae, Dipluridae. In 'The spiders of New Zealand' Part 2. (R.R. Forster and C.L. Wilton). *Otago Mus. Bull.* 2: 1 — 73.
- Main, B.Y. (1981). Eco-evolutionary radiation of Mygalomorph spiders in Australia. In: *Ecological Biogeography of Australia* (Ed. A. Keast): 853-872. (Junk: The Hague).
- Main, B.Y. (1982). Further studies on the systematics of Australian Diplurinae (Araneae: Mygalomorphae, Dipluridae): The taxonomic status of *Proshermacha* Simon and *Chenistonia tepperi* Hogg. *Aust. ent. Mag.* 8: 83-88.
- Main, B.Y. (1983). Further studies on the systematics of Australian Diplurinae (Chelicerata: Mygalomorphae: Dipluridae): Two new genera from south western Australia. *Journ. Nat. Hist.* 17: 923-949.
- Main, B.Y. (1985). Further studies on Australian Diplurinae: A review of the genera of the Teylini (Araneae: Mygalomorphae: Dipluridae). *Aust. J. Zool.* 33(5): 743-759.
- Main, B.Y. and Gray, M.R. (1985). Further studies on the systematics of Australian Diplurinae (Chelicerata: Mygalomorphae: Dipluridae): Description of the male of *Troglodiplura lowryi* with notes on its affinities. *Psyche*, 92: 151-162.
- Petrunkevitch, A. (1942). A study of amber spiders. *Trans. Conn. Acad. Arts. Sci.* 34: 119-464.
- Raven, R.J. (1981). A review of the Australian genera of the mygalomorph spider subfamily Diplurinae (Dipluridae: Chelicerata). *Aust. J. Zool.* 29: 321-363.
- Raven, R.J. (1984a). A new diplurid genus from eastern Australia and a related *Aname* species (Diplurinae: Dipluridae: Araneae). *Aust. J. Zool. Supp. Ser. No.* 96: 1-51.
- Raven, R.J. (1984b). A revision of the *Aname maculata* species group (Araneae, Dipluridae) with notes on biogeography. *J. Arachnol.* 12: 177-193.
- Todd, V.E. (1945). Systematic and biological account of the New Zealand Mygalomorphae (Arachnida). *Trans. Roy. Soc. N.Z.* 74: 375-407, pls 55-58.