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A New Subfamily of Spiders with Grate-shaped Tapeta from Australia and Papua New Guinea (Araneae: Stiphidiidae: Borralinae)

MICHAEL R. GRAY* AND HELEN M. SMITH

Australian Museum, 6 College Street, Sydney NSW 2010, Australia
mike.gray@austmus.gov.au · helen.smith@austmus.gov.au

ABSTRACT. Five new genera of stiphidiid spiders are described from forest habitats in Australia and Papua New Guinea. They include *Couranga* n.gen. (*C. kioloa* n.sp., *C. diehappy* n.sp.), *Jamberoo* n.gen. (*J. johnnoblei* n.sp., *J. boydensis* n.sp., *J. actensis* n.sp. *J. australis* n.sp.) and *Elleguna* n.gen. (*E. major* n.sp., *E. minor* n.sp.) from eastern Australia; *Karriella* n.gen. (*K. treenensis* n.sp., *K. walpolensis* n.sp.) from southwestern Australia; *Asmea* n.gen. from Papua New Guinea (*A. akrikensis* n.sp., *A. hayllari* n.sp., *A. capella* n.sp., *A. mullerensis* n.sp.). A new subfamily, the Borralinae, characterized by the presence of grate-shaped tapeta in all posterior eyes, is proposed. It includes the 5 genera described here plus *Therlinya* (Gray & Smith, 2002), *Borrala* and *Pillara* (Gray & Smith, 2004). The relationships of these putative stiphidiid genera are briefly discussed and the Kababininae is provisionally referred from the Amphinectidae to the Stiphidiidae. Observations on epigynal mutilation as a post-mating sperm protection mechanism are presented. Differences in visible tapetal structure between borraline spiders and *Stiphidion* are figured and discussed.

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In two previous papers the stiphidioid genera *Therlinya, Borrala* and *Pillara*, all from eastern Australia, were described (Gray & Smith, 2002, 2004). The five additional genera described here resemble *Borrala* and *Pillara* in having a carapace with a longitudinally striped pattern (the "striped group" genera) and a profile in males that is typically highest at the fovea. *Therlinya* differs from the "striped" genera in having a carapace with a more or less arched profile in both sexes and no patterning. These genera are united by the presence of a grate-shaped tapetum in the PLE and PME, a tegular lobe on the male palpal bulb and wide female copulatory ducts. The eight genera included within this "grate-shaped tapetum group" are widely distributed along the coastal and highland forest regions of eastern Australia (except Tasmania), with extensions into south-western Australia and the highlands of Papua New Guinea. All of these spiders are forest dwelling species with simple cribellate sheet webs in which they run hanging below the sheet. Several species exhibit what may be a unique form of paternity assurance involving female genital mutilation.

Material and methods

Specimen examinations, measurements and drawings were made using a Wild M5 or Leica MZ 12 microscope with graticule and drawing attachment. The eye tapetal structures were examined in living and freshly killed spiders in 70% ethanol (routine characterization of the grate-shaped tapetum can be difficult because it is often obscured as a visible entity in preserved specimens [see techniques noted in Griswold, 1993]). Observations were made using a Leica MZ 12 microscope with two lateral cold light sources or a vertical

* author for correspondence

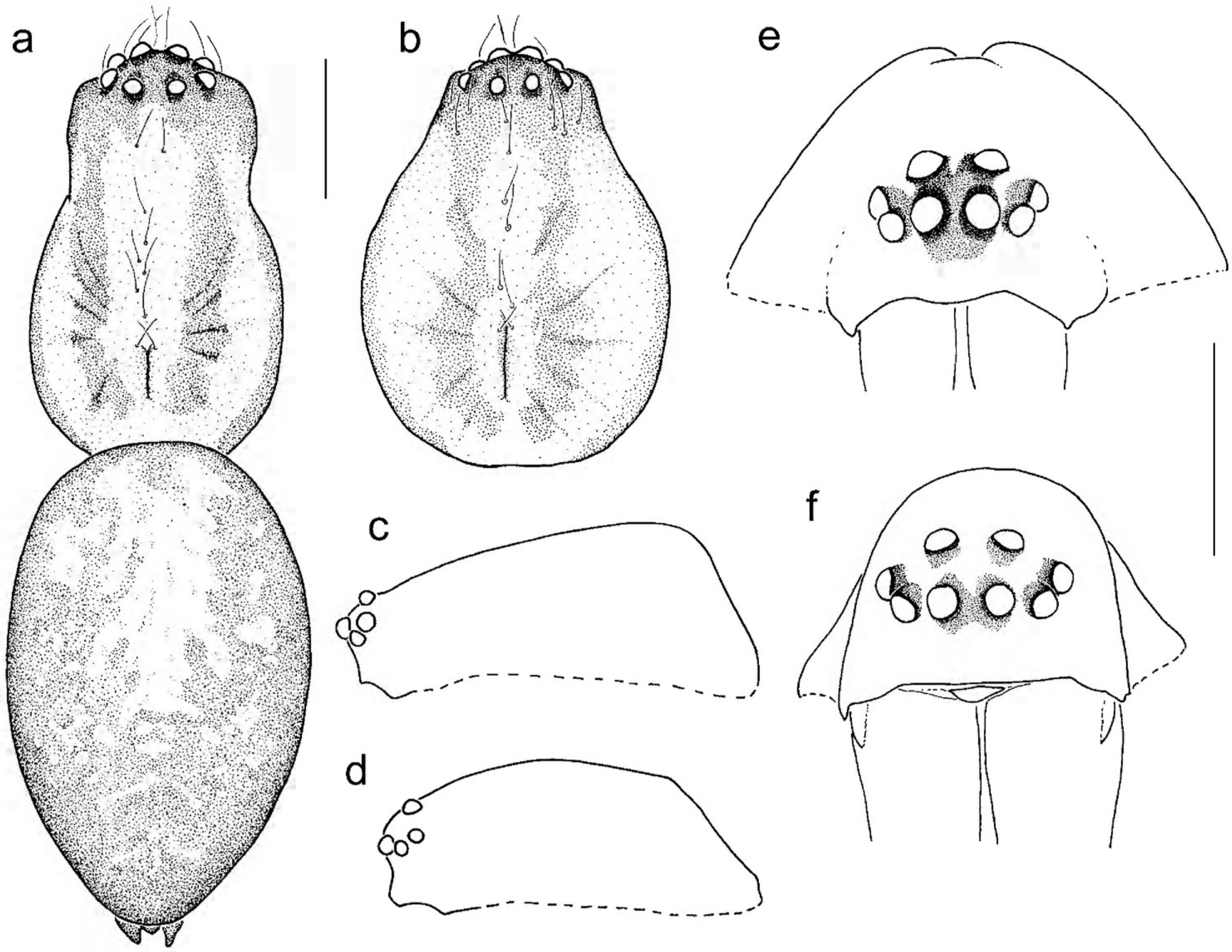

Fig. 1. *Couranga kioloa*: *a,d,f*, female: (*a*), body, dorsal; (*d,f*), female carapace: *d*, lateral; *f*, frontal showing chilum. (*b,c,e*), male carapace: *b*, dorsal; *c*, lateral; *e*, frontal. Scale lines 1.0 mm: left, *a–d*; right, *e,f*.

light source, and recorded with a Nikon Coolpix 990 digital camera. Epigynal preparations were cleared in 8% potassium hydroxide or lactic acid, before mounting in glycerol for microscopic examination. The left side male palp is illustrated and leg measurements are from the left side unless indicated. Spine counts are from left legs but the right side equivalent is given in parentheses if different. Specimen preparations for scanning electron microscopy were taken through 80–100% alcohol stages and air dried from 100% acetone. All measurements are given in millimetres. Carapace length for measured specimens is followed by a range value in parentheses.

Abbreviations. AER, anterior eye row; ALE, anterior lateral eyes; ALS, anterior lateral spinneret; AME, anterior median eyes; ASME, Australian Star Mountains Expedition to Papua New Guinea, 1965; BL, body length; CapW, caput width; CL, carapace length; Co, conductor; CST, canoe-shaped tapetum; CW, carapace width; Cyl, cylindrical spigot; CyF, cymbial flange; E, embolus; EGW, eye group width; fl, flange (epigynum); GST, grate-shaped tapetum; LL, labium length; LW, labium width; MA, median apophysis; mAP; minor ampullate spigot; MAP, major ampullate spigot; mMA, membraneous MA; MOQ, median ocular quadrangle; mPLS, modified PLS spigot; NP, National Park; Pc, paracribellar spigot; PER, posterior eye row; PLE, posterior lateral eyes; PLS, posterior lateral spinneret; PME, posterior median eyes; PMS, posterior median spinneret; RTA, retrolateral tibial apophysis; RDTA, retrolateral dorsal tibial apophysis; RVTA, retrolateral ventral tibial apophysis; SF, State Forest; SL, sternum length; sMA, sclerotized MA; SW, sternum width; TL, tegular lobe; TW, tegular window (opening bounded by the proximal embolus and the prolateral conductor margin); VCP, ventral conductor process.

Repository institutions. Specimens with the registration number prefix KS are deposited with the Australian Museum, Sydney. Other repositories are indicated by the following abbreviations: QM, Queensland Museum, Brisbane; SAM, South Australian Museum, Adelaide; WAM, Western Australian Museum, Perth

Borralinae new subfamily

Diagnosis. Gracile cribellate spiders (Fig. 5b,c). All posterior eyes with grate-shaped tapeta; AME usually largest; feathery hairs present; trochanters deeply notched; male palpal tibia with VTA; cymbium with retrolateral flange; tegulum with basal to retrolateral tegular lobe; female copulatory ducts short, broad and flattened; PMS with fused paracribellar bases placed anteroectally.

The Borralinae differs from the Stiphidiinae by the presence of a GST in all posterior eyes, a palpal tegular lobe, a median apophysis and broad copulatory ducts. It differs similarly from

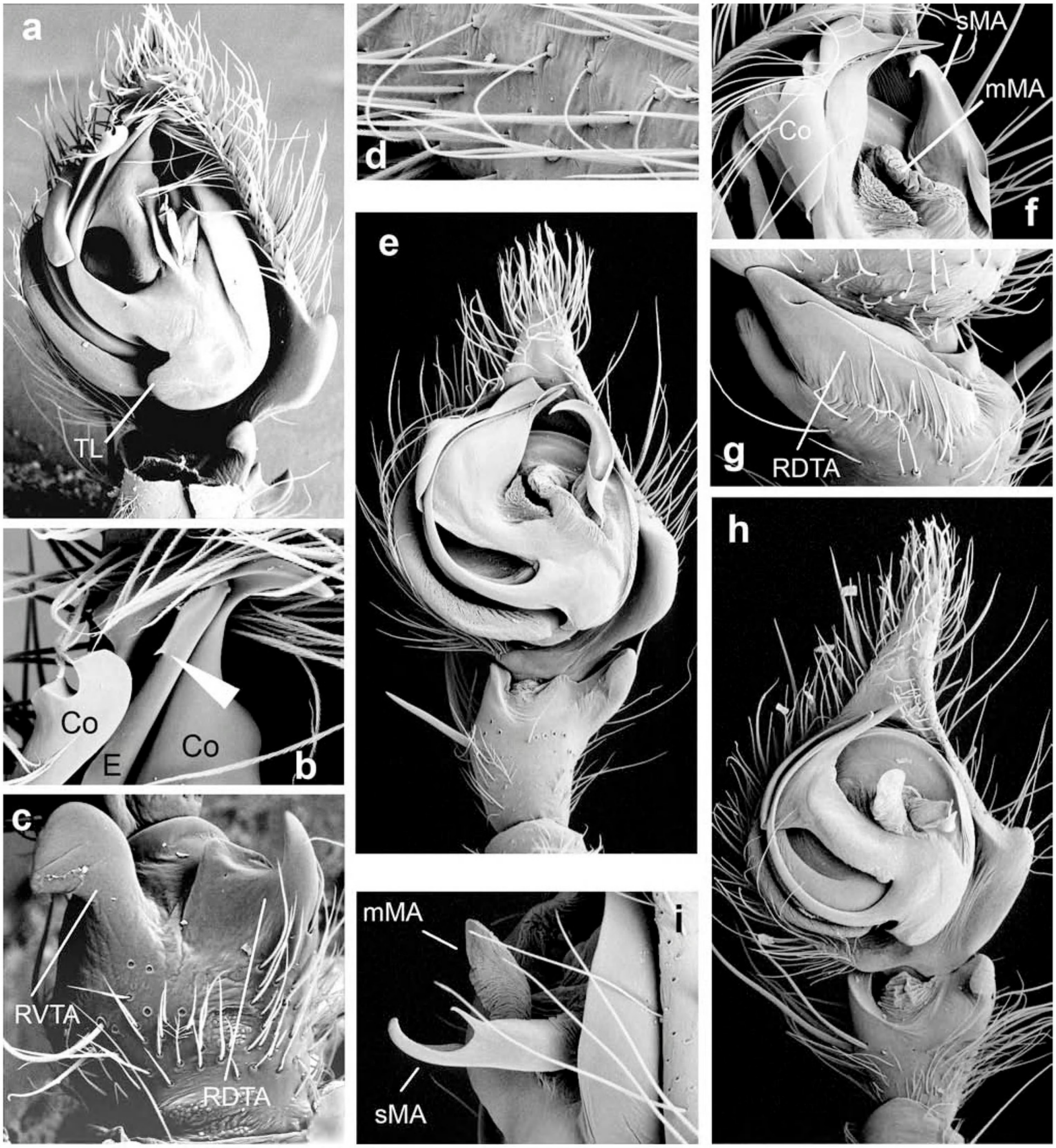

Fig. 2. Male palps. *a–d*, *Couranga kioloa* (KS69663): (*a*), cymbium and bulb, ventral; (*b*), distal conductor and embolus (barb on subapical embolus arrowed); (*c*), tibia, retrolateral; (*d*), trichobothria on cymbium. (*e–g*), *Karriella treenensis* (KS14702): *e*, tibia, cymbium and bulb, ventral; *f*, conductor and bipartite median apophysis, proventral; *g*, RDTA, dorsal. (*h,i*), *Jamberoo johnnoblei* (KS8503): *h*, tibia, cymbium and bulb, ventral; *i*, bipartite MA processes, retrolateral.

the Kababininae—but tapetal structure in latter is unknown—and additionally by the presence of a palpal RVTA. (See comments below on relationships of Kababininae).

Description

Cephalothorax and abdomen (Figs 1a–f, 4a–d). Carapace profile usually highest at fovea in males but arched to flattish in females and in both sexes of *Therlinya*; carapace wider in males, caput more prominent in females; carapace either patterned with a pair of dark grey longitudinal stripes stopping short of posterior carapace margin ("striped group" genera); or unpatterned with a cover of light grey-fawn hairs (*Therlinya*). Chilum entire. Chelicerae vertical, with prominent retrobasal boss; fang groove with 2 retromarginal and 3 promarginal teeth, basal promarginal tooth extended as a strong carina; numerous sensory hairs on the lower frontal paturon, with an enlarged hair at promarginal groove apex opposite the fang base; retrolateral jaw margin with a single apical sensory hair. Cheliceral/palpal femur "stridulatory"

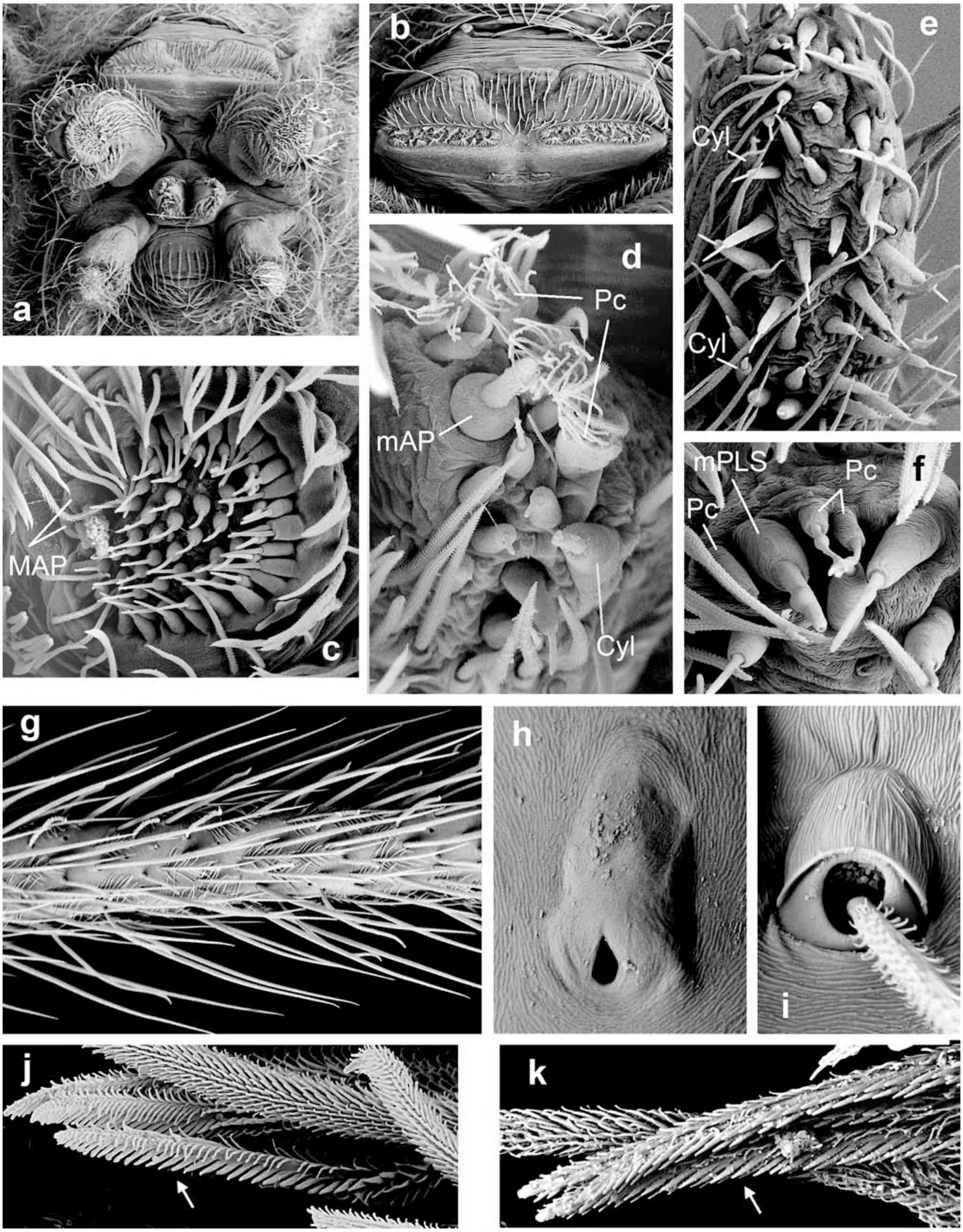

Fig. 3. *a–i*, *Jamberoo johnnoblei* (KS55724, female). (*a–f*), spinnerets: *a*, spinneret field and spiracle; *b*, cribellum; *c*, ALS (LHS); *d*, PMS (LHS); *e*, PLS (RHS); *f*, PLS, apical (RHS). (*g–i*), tarsal sensillae: *g*, hair types, ventral; *h*, tarsal organ; *i*, trichobothrium and cuticular sculpturing. (*j,k*), serrate accessory claw setae, tarsus I (arrows): *j*, *J. johnnoblei* (Mogo SF, NSW); *k*, *Stiphidion facetum* (KS53620).

setae present or absent (Fig. 15a–d). Maxillae longer than wide, lateral margins straight to weakly undulate, with a strong linear serrula. Labium slightly longer than wide, basally notched and narrowing to a weakly notched to truncate apex. Sternum cordate, posteriorly pointed to midway between coxae IV. Dorsal and ventral abdominal pattern typically as in Figs 1a, 4c,d.

Eyes (Figs 1a,b,e,f, 4f). Eyes in two rows; AME largest or subequal to PME; from above AER weakly recurved, PER weakly procurved; ALE with a canoe-shaped tapetum; PLE and PME with grate-shaped tapeta in the form of highly reflectile, broad, loose loops (Fig. 4g).

Legs. Slender; male legs longest with metatarsi I and II sometimes modified (slightly bowed and/or flattened). Femora and tibiae grey/brown banded. Trochanters deeply notched. 3–4 serrate accessory setae are placed lateral to the inferior tarsal claw (Fig. 3j); claw tufts and scopulae absent. Calamistrum linear, sub-proximal to central, 0.4–0.45× length of metatarsus and delimited at each end by a retrodorsal spine; weakly developed in males.

Sensillae and cuticle (Fig. 3g–i). Feathery hairs abundant on body and legs. Trichobothria longest distally, in single row on tarsi and metatarsi and 2 rows on tibia; present on female palpal tarsus and male cymbium (Fig. 2d); bothria collariform, proximal plate longitudinally ridged. Tarsal organ distal to trichobothria, capsulate with fine longitudinal ridging and pore keyhole to pyriform shaped. Cuticle sculpturing of "fingerprint" pattern (Fig. 3h,i).

Male palp (Figs 2a–i, 6a,b). Palpal cymbium with basal retrolateral flange. Tegular lobe basal to retrolateral, usually well developed (Fig. 2a) but sometimes reduced (Fig. 16a). Sperm duct clearly visible, S-shaped on basal or prolateral tegulum and partly associated with the TL (Fig. 6a). MA usually bipartite, if unipartite usually membraneous; bipartite MA with medial process membraneous (mMA), lateral process variably sclerotized (sMA) (Fig. 2f,i); MA occasionally reduced (e.g., *Pillara griswoldi* Gray and Smith). Conductor varies from T or modified T-shape to stalked broad falciform (prolateral limb of T may be reduced and retrolateral limb either spiniform or thickened); antero-prolateral conductor margin simple or with flange-like processes and folded to form a groove for the embolus (Fig. 2e,h). Embolus basally robust or slender, spiniform to rod shaped, curved and distal part embraced within the conductor groove (Fig. 2a,b,e,f,h). Tegular window prolateral to retrobasal, small to large (Fig. 6a). Tibia with two retrolateral apophyses (RVTA+RTA or RVTA+RDTA) and 2–3 strong prolateral to dorsal bristles or spines; patella with 1 or 2 long dorsal bristles (Figs 2c,g, 6a,b).

Epigynum (Figs 6c,d, 13d,g). Without lateral lobes or teeth; epigynal fossa paired or unpaired with anterolateral copulatory openings; copulatory ducts short, broad and flattened; paired spermathecae medium to large sized, globular to ovoid.

Spinnerets (Figs 3a–f, 4e). Cribellum bipartite, spinning fields widely separated in female (seam c. 0.3–0.4× a field width); seam and posterior plate margin strongly sclerotized, latter medially indented; in male, similar shape but narrower and non-functional. PLS slightly longer than ALS; PMS shortest. ALS: broad truncate cone, bases separated by about half a base width, apical segment very short with wide margins; PMS adjacent, spigot field longer than wide; PLS slender, bases separated by twice a base width, apical segment tapering distally and almost as long as basal segment. Spigots (female): ALS: 2 MAP, 28–80 piriform; PMS: 1 mAP, 5–13 aciniform, multiple paracribellar on 2–6 fused bases placed anteroectally, 1 cylindrical; PLS: 11–35 aciniform, 1 modified PLS spigot, 3 free paracribellar, 2 cylindrical. Spigots (male): ALS: 1 MAP + 1 nubbin, piriform; PMS: 1 mAP + fused paracribellar nubbins, aciniform; PLS: aciniform + modified PLS spigot and paracribellar nubbins.

Tracheal system. Simple with 4 unbranched tubes confined to abdomen. Spiracle just anterior to cribellum and about 0.4× as wide as cribellum plate.

Included genera. *Therlinya* Gray & Smith, 2002; *Borrala* Gray & Smith, 2004; *Pillara* Gray & Smith, 2004; *Jamberoo* n.gen.; *Couranga* n.gen.; *Asmea* n.gen.; *Karriella* n.gen.; and *Elleguna* n.gen.

Biology. Borraline spiders are common in forest habitats in southern and eastern Australia and highland Papua New Guinea. They occupy simple, lacy, cribellate sheet webs associated with logs, rocks, hanging bark and stable soil banks (Fig. 5a). The webs are planar to arched sheets from 15 to 35 cm in extent with more or less irregularly scalloped margins depending on the position of guying points. The arched basal area tapers back into a short funnel-like entrance vestibule of stronger silk that leads into a shallow, sparsely silked retreat hole, crevice or cavity. The spiders run inverted under the sheet.

Mating behaviour—epigynal mutilation. In many spider species matings of males with mated females may be thwarted by the presence of epigynal mating plugs—either a hardened male secretion or detached parts of the male palp blocking the female copulatory ducts (Suhm *et al.*, 1996, Fromhage & Schneider, 2006). Secretory mating plugs are often seen in borraline spiders. However, another mechanism observed here that also may have a paternity assurance function is female genital mutilation. Several borraline species have unusual epigynal structures—prominent "knobs" (*Jamberoo* spp., Fig. 9c,d; *Karriella* spp., Fig. 13d,e; *Pillara griswoldi*, in Gray & Smith, 2004, fig. 11c,d) and thin marginal flanges (*Elleguna major* n.sp, Fig. 16c)—as well as the slender median epigynal septa seen in most *Jamberoo* spp., *E. minor* n.sp. (Fig. 17c) and *Asmea* spp. (Fig. 19c). Interestingly, these structures have been observed to be partly or completely broken away from the epigynum. The most notable mutilations were seen on the epigyna of *Jamberoo* spp. (Fig. 9e,f), *Karriella* spp. (Fig. 13f) and *Elleguna* spp. (Fig. 16d)—sometimes making them almost unrecognizable taxonomically. It seems possible that the damage is associated with movements of the male palp during mating—perhaps inflicted by the robust apophyses on the palpal tibia and bulb or the cymbial flange. In some cases the epigynum may be both mutilated and plugged (Figs 9e, 13f).

When intact, the epigynal structures noted above may play a significant role during mating as guides or anchor points for facilitating male palpal insertion. If this is so, their damage or loss could be expected to seriously compromise or negate subsequent male mating success.

Only one other example of possible paternity assurance via female genital mutilation is known to us. This is the breakage of the elongate epigynal scapes present in some araneid genera, notably *Eriophora* Simon. Broken scapes have been observed in females of both Australian (pers. obs.) and American (Levi, 1970) species of *Eriophora*. Levi (1970) noted that the scape was missing in about 50% of *E. ravilla* and *E. fulginea* specimens examined.

Notes on characters

The grate-shaped tapetum in borraline spiders and *Stiphidion* (see also notes in Gray & Smith, 2004). In recent analyses of entelegyne spider relationships (Griswold *et al*., 2005) the genera *Stiphidion* Simon and *Pillara* are both scored as having eyes with a grate-shaped tapetum (GST). In *Pillara* and the other borraline spiders examined, a GST in the form of several wide reflectile loops (Fig. 4g) is present in both the PME and PLE, while the ALE has a canoe-shaped tapetum (CST). The GST has been observed in representatives of the five borraline genera for which fresh material was available—*Therlinya, Pillara, Borrala*, *Couranga* and *Jamberoo*—and it is presumed to be present in the remaining three genera. Homann (1971) records the presence of a GST in the PME and CST in the PLE and ALE of "*Stiphidium* spec.". Examination of the eyes of *Stiphidion facetum* Simon shows a strongly reflecting CST in the ALE (Fig. 4h) but not in the PLE. In both the PLE and PME the tapetum appears as a moderately bright, flocculent, greyish-white layer. This layer may be either relatively uniform or differentiated, appearing either as a field of more or less bright fuzzy spots (Fig. 4i, PME) or as variable flocculent bands (Fig. 4j), the latter usually seen in the PLE. By contrast, the grate tapeta in many lycosoid and the borraline spider eyes consist of highly reflectile loops (Fig. 4g) that are readily visible using the observational methods described here. In their study of zoropsid spiders, Raven and Stumkat (2005) note that they were "unable to confirm that *Stiphidion* has a grate-shaped tapetum". Taken together, the present evidence warrants the rejection of the presence of a GST in *Stiphidion*.

Serrate accessory claw setae. Although serrate setae are most strongly developed in the araneoid spiders (Griswold *et al*., 2005), similar setae are also present in some stiphidiid spiders. Three to four of these "toothed" setae are placed at each side of the inferior tarsal claw in *Jamberoo johnnoblei* n.sp. (Fig. 3j) and *Borrala dorrigo* (fig. 2c,d in Gray & Smith, 2004). In these genera the "teeth" are in a single row but this may be doubled basally. Serrate setae are also present in *Stiphidion facetum* but the "teeth" are in a long double row (Fig. 3k). Griswold *et al*. (2005) score these setae as absent in *Pillara* and *Stiphidion*.

Retrolateral tibial apophyses. In *Therlinya, Borrala* and *Pillara* the decidedly more ventrally placed of the two retrolateral apophyses present was termed the RVTA, while the laterally placed apophysis was the RTA. However, in the genera described here the "RTA" is usually more dorsally placed and is termed the RDTA; whether all of these RDTA's are RTA homologues is probable but uncertain. The term RVTA is retained for the more ventral apophysis, although in the new genera its position is often somewhat more retrolateral than in the three previously described genera. However, their homology is suggested by their basic structural similarity.

Median apophysis. An MA is present in all borraline genera. A single, membraneous MA is present in *Therlinya, Pillara* and *Elleguna* (Fig. 17a). In the other genera the MA is a bipartite apophysis—the medial process is always membraneous, while the lateral process is weakly to strongly sclerotized (Fig. 2f,i). The unipartite membraneous MA may be homologous with the medial process of the bipartite MA.

Legs. Male metatarsi I and II are long and slender but in *Jamberoo, Couranga, Asmea, Karriella* and *Elleguna* they are also gently bowed and may be flattened as well.

Stridulatory setae. Modified setae are present on adjacent surfaces of the lateral paturon and the prolateral palpal femur in *Elleguna* and *Karriella* (Fig. 15a–d). Their position suggests a stridulatory function. In *Karriella treenensis* n.sp. the setae may be absent in some populations.

Comments on relationships of the Borralinae

Results from a preliminary cladistic analysis of relationships with other Australian "amaurobioid" taxa group the eight borraline genera together as a strongly supported clade characterized by the presence of a GST in the PME and PLE, the tegular lobe, wide, flattened copulatory ducts and deep trochanteral notches. In this analysis the grate-shape tapetum has probably evolved at least twice—in *Baiami* Lehtinen and the Borralinae (its status in *Stiphidion* was scored as unknown). Within the borraline clade, *Therlinya* is placed at the base of a cluster representing the seven "striped group" genera. The sister group of the Borralinae is a rather heterogeneous clade comprising *Stiphidion, Baiami, Procambridgea* Forster and Wilton and *Wabua* Davies (the latter representing the subfamily Kababininae (Davies, 1999), currently placed in the family Amphinectidae). *Taurongia* Hogg (reviewed in Gray, 2005) is placed basal to these two clades. The "badumnine" genus *Phryganoporus* Simon (related to the amphinectids and currently in the Desidae) and the amphinectid *Tasmarubrius* Davies are placed successively basal to *Taurongia*.

This pattern of relationships resembles that consistently obtained by Davies (1999) and Davies & Lambkin (2000, 2001), in which the kababinine genera are always associated with *Stiphidion* and related genera but never with the Amphinectidae. *Kababina* Davies was originally placed in the Amphinectidae (Davies, 1995) and has been listed there since then (Platnick, 2007)—although Davies (1999) subsequently withdrew the subfamily from the Amphinectidae, she did not suggest an alternative family placement. Given all this, it is proposed that the Kababininae should be moved from the Amphinectidae to the Stiphidiidae. Although this move must be regarded as provisional, the family placement has greater taxonomic logic. The Stiphidiidae, as defined here, comprises the Stiphidiinae (*Stiphidion, Procambridgea* and *Baiami*), the Borralinae and the Kababininae. The family remains heterogeneous and difficult to define, its main unifying features (mostly homoplasious) being the presence of feathery hairs; a long terminal PLS segment; a retroventral tibial apophysis (absent in Kababininae; ventral branch on RTA present: Davies, 1999); embolus usually spiniform; conductor a membraneous plate (often partly sclerotized and of variable extent); and the absence of epigynal teeth or lobes. Six additional genera are listed with the Stiphidiidae in Platnick (2007) but we are not sufficiently familiar with them to comment on their placement.

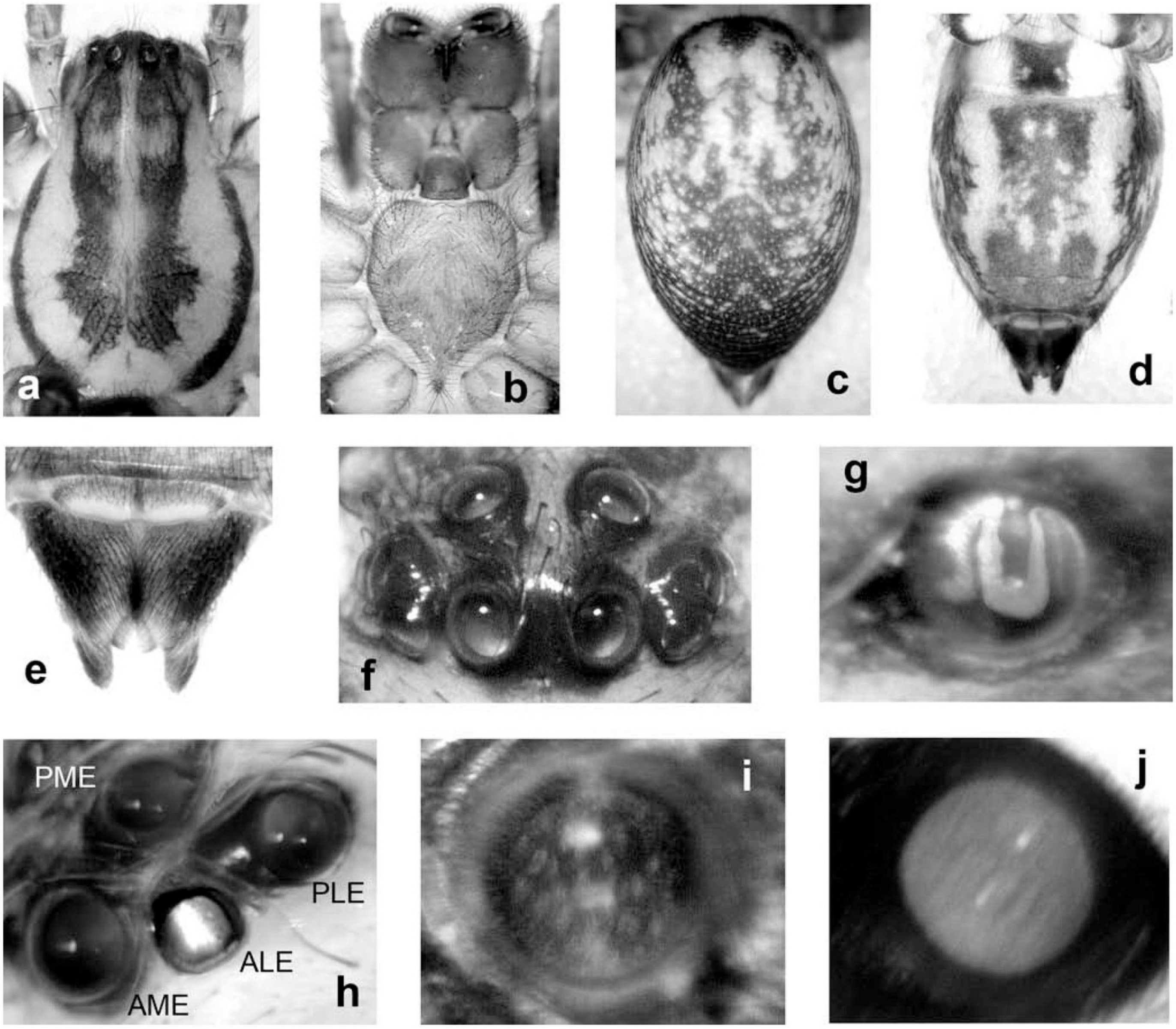

Fig. 4. *a–g*, *Jamberoo johnnoblei* (Royal National Park, NSW): (*a–e*), body, subadult male; (*f,g*), eyes, female. *a*, carapace; *b*, sternum and mouthparts; *c,d*, abdomen, dorsal and ventral; *e*, spinnerets, ventral; *f*, eye group, anterior; *g*, PME tapetum. (*h–j*), *Stiphidion facetum*, female: *h*, eyes, left side; *i*, PME tapetum (Hornsby, NSW); *j*, PLE tapetum (Jenolan, NSW).

While it emphasizes the robustness of the borraline clade, the cladistic analysis discussed above requires the addition of more representative taxa before it can be usefully presented. These include New Zealand groups such as *Orepukia* Forster and Wilton and related genera placed in the Agelenidae of Forster and Wilton (1973), some of which share marked genitalic similarities with the Borralinae. The structure of the eye tapeta in the *Orepukia* group is not recorded although *Neoramia* Forster and Wilton, a rather dissimilar NZ agelenid, lacks GST (Griswold *et al.*, 2005). The presence of the GST among the former "Amaurobioidea" (sensu Amaurobiidae + "fused paracribellar clade" of Griswold *et al.*, 1999) is currently limited to a few Australian taxa only—the Borralinae (in PLE and PME); *Baiami*, a stiphidiid genus (in PME); and *Barahna* Davies (in PME, pers. obs.), whose affinities are obscure (although it is currently listed in the Stiphidiidae—Platnick, 2007). The GST is more widely represented among the lycosoids and their relatives but homoplasy problems have placed the phylogenetic value of the character in question (Griswold *et al.*, 2005). More information is needed to clarify the taxonomic distribution of the GST and the extent and significance of structural variation observed in grate-shaped and other types of tapeta.

The most recent analyses of entelegyne spider relationships presented by Griswold *et al.* (2005) unite the borraline genus *Pillara* with *Stiphidion* as the Stiphidiidae within the RTA clade. Two of the characters used require comment. Firstly, the MA is scored as absent in both genera—in fact, an MA is present in most *Pillara* spp. (Gray & Smith, 2004) but it is uniquely reduced in the exemplar species used (*P. griswoldi*). Secondly, the scoring of a GST as present in *Stiphidion* now seems unlikely, as discussed above. The two analyses presented place the stiphidiids either as part of a basal polyotomy or as the sister group of the Amaurobiidae (shared presence of RVTA). In both cases the stiphidiid clade is excluded from the fused paracribellar clade (cf. Griswold *et al.*, 1999).

Key to genera of Borralinae

1 Carapace without obvious patterning (with uniform light grey to fawn hair cover in life), profile arched, usually highest midcaput; eyes relatively small; MA unipartite; epigynum often with a large scape projecting over the epigastric groove (sometimes reduced or absent) (Gray & Smith, 2002, figs 1, 4) .... *Therlinya*

—— Carapace patterned with a pair of longitudinal grey-brown stripes, profile in males typically slopes up to fovea, weakly arched to flattish in female; eyes relatively larger; MA bi- or unipartite; epigynum without scape, fossa divided or undivided (the "striped group" genera) 2

2 Males 3

—— Females 9

3 RVTA with a long, thick stalk and "crochet-hook" like head; epigynal fossa undivided 4

—— RVTA with stalk short or absent; epigynal fossa divided or undivided 5

4 RTA large, deeply bifurcate (Gray & Smith, 2004, fig. 11a) .... *Pillara*

—— RTA large, not bifurcate (Gray & Smith, 2004, fig. 4a) .... *Borrala*

5 Conductor with a ventral process (VCP). MA unipartite (Figs 16a, 17a) .... *Elleguna*

—— Conductor without a ventral process, MA bi- or unipartite 6

6 Conductor with a smoothly curved anterior margin, lacking processes 7

—— Conductor with anterior margin modified by flange-like processes 8

7 Lateral MA process weakly sclerotized and entire (not bifurcate); RDTA long, keel-like ("keel" shorter and notched in *A. hayllari*) (Figs 18a,b–21a,b) .... *Asmea*

—— Lateral MA process strongly sclerotized and bifurcate spiniform; RDTA not keel-like (Figs 9a,b–12a,b) .... *Jamberoo*

8 TL area indistinct; MA lateral process large, sclerotized and spiniform, with a flap-like basal spine (Figs 13a,b, 14a,b) .... *Karriella*

—— TL large; MA lateral process not as above (Figs 6a,b, 7a,b) .... *Couranga*

9 Epigynum with a large, median, knob-like process placed anteriorly; fossa absent. (Gray & Smith, 2004, fig. 13c–e) .... *Pillara* (part)

—— Epigynum not as above; knob or knobs, if present, smaller and posteriorly placed; fossa present 10

10 Fossa not divided (an indistinct median line may be present) 11

—— Fossa divided by a distinct median septum 15

11 Fossa a small, in-sloped pit sometimes partially hooded by the anterior fossa margin; spermathecae posterior to fossa (overlapping in *P. karuah*) (Gray & Smith, 2004, figs 10c, 11c, 12c) .... *Pillara* (part)

—— Fossa larger, not as above; spermathecae posterior to or level with fossa 12

12 Fossa elongate, open posteriorly; a pair of rounded knobs on the posterolateral epigynal plate (knobs may be damaged) (Figs 13d–f, 14d) .... *Karriella*

—— Fossa margin entire, knob-like processes absent 13

13 Fossa large, floor with conjoined socket-like recesses posteriorly; lateral fossa margins flanged inwards over copulatory openings

(flanges may be broken away) (Fig. 16c–d) .... *Elleguna* (part)

—— Epigynal characters not as above 14

14 Spermathecae well separated (usually visible through cuticle); spermathecae mostly anterior to posterior fossa margin (Fig. 12c) .... *Jamberoo* (part)

—— Spermathecae touching medially, or almost so; spermathecae behind posterior fossa margin (Gray & Smith, 2004, figs 4c, 5c, 6c) .... *Borrala*

15 Fossa median septum with a variably shaped posterior protuberance (rounded knob to narrow keel-like—may be damaged); spermathecae (if visible) well separated, mostly level with fossae (Figs 9c–f, 10c–e, 11c–d) .... *Jamberoo* (part)

—— Septum simple, without a posterior protuberance 16

16 Fossae with shallow, lateral extensions (may be obscured by mating plugs); septum moderately wide; a pair of low mounds behind fossae (Figs 6c, 7c,d) .... *Couranga*

—— Epigynal characters not as above 17

17 Fossae rounded, septum relatively short (may be broken); spermathecae adjacent (Fig. 17c–d) .... *Elleguna* (part)

—— Fossae strongly ovoid, septum longer; spermathecae separated (Figs 19c,f, 20c,f) .... *Asmea*

Note. Damage to parts of the epigynum (epigynal mutilation—see comments above) or the presence of epigynal mating plugs may hinder the identification of some female specimens.

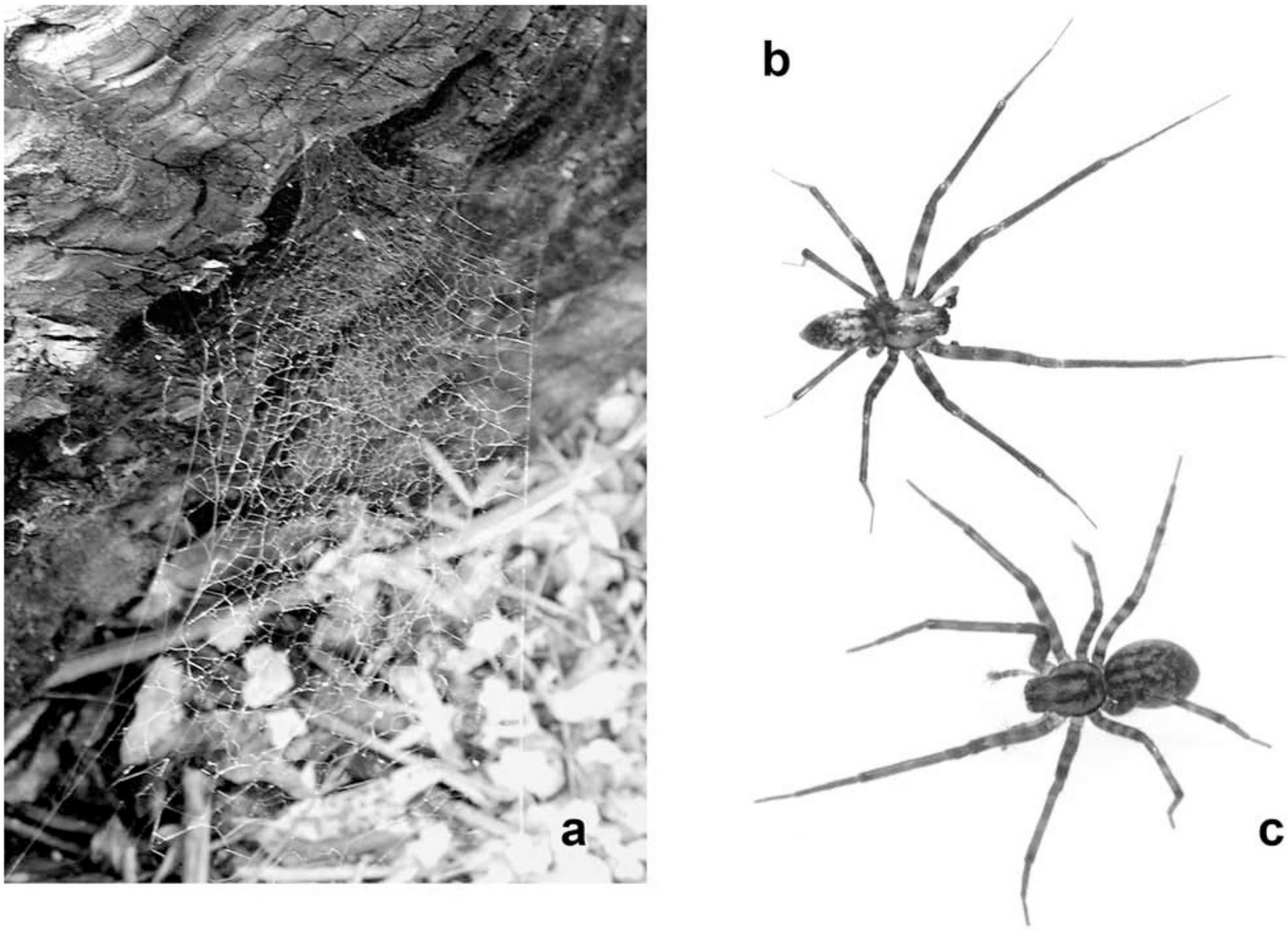

Fig. 5. *Jamberoo johnnoblei*: (*a*), sheet web on log, from above (Royal National Park, NSW). (*b*), male (Mount Keira, NSW); (*c*), female (Brown Mountain, NSW).

Couranga n.gen.

Type species. *Couranga kioloa* n.sp.

Etymology. The generic name refers to a locality in Royal National Park, New South Wales, and is considered feminine in gender.

Diagnosis. Palpal cymbium with a relatively small but well-defined retrolateral flange, margin angled apically; bulb long with a pronounced basal TL; bipartite MA with membraneous to weakly sclerotized processes; processes on anterior conductor margin. RVTA with definite stalk. Epigynum divided, fossae with shallow lateral extensions. Separated from other genera by the shallow lateral extensions of the epigynal fossae; additionally, from *Pillara, Borrala, Jamberoo* and *Asmea* by the complex conductor margin, from *Elleguna* by the absence of a ventral conductor process, and from *Karriella* by the divided epigynal fossa; separated from *Therlinya* by the striped carapace.

Description. Medium-sized, cribellate spiders (CL 2.24–3.47); with the characters of the subfamily Borralinae. *Colour* (in alcohol) (Fig. 1a,b,e,f). Carapace amber-brown, eye region dark grey with eyes surrounded by black pigment; a pair of wide, variably pigmented dark grey stripes run mid-laterally back from the eye region to coalesce and terminate at or just behind the fovea; thoracic area with narrow, dark grey, marginal stripes. Mouthparts dark brown. Legs with distinct grey-brown bands on femora and tibiae; male metatarsi and tarsi unicolorous, orange brown to light grey brown. Dorsal abdomen patterned in greyish-brown and unpigmented patches with a narrow, grey mid-dorsal anterior stripe, sometimes indistinct, and 4–5 chevrons posteriorly; lateral abdomen with a mosaic of darker and lighter patches; venter grey-brown with several more or less paired pale patches centrally and a pair of pale stripes laterally.

Carapace. Profile highest at fovea in male; in female gently arched, often flattish from mid-caput to fovea (Fig. 1c,d). Foveal slit moderately long and deep, curving down onto concave rear slope of carapace. Clypeus about 2× width of an AME. Cheliceral/palpal stridulatory organ absent. Eyes eight, relatively large (cf. *Therlinya*); grate-shaped tapeta in posterior eyes; EGW 0.70–0.80× width of caput; AME largest or subequal to PME: AME≥PME>PLE≥ALE. MOQ almost square, slightly narrower anteriorly.

Legs. 1423. Male metatarsus II with middle to distal part weakly bowed (dorsally concave) and dorsoventrally flattened; less evident on metatarsus I. Spines: Leg tibiae with 0–2 ventral apical spines; metatarsi with distal whorl of 5 spines. Representative leg spination (*C. kioloa*): Male (KS74065)—I: femur d122, p011; tibia d0010, v221, p111, r1010; metatarsus d202, v201, p0101, r0101; II: femur d122, p0111; tibia d0010, v221, p111, r1010; metatarsus d202, v201, p0101, r0101; III: femur d122, p0111; patella d001; tibia d1010, v122, p1010, r0110; metatarsus d202, v221, p0101, r0101; IV: femur d112, p001; tibia d1010, v112, p0101, r01010; metatarsus d212, v221, p0101, r001. Female (KS74066)—I: femur d112, p011; tibia d001(small), v220, p111, r1010; metatarsus d002, v221, p0101, r0101; II: femur d122, p0111; tibia d0010, v220, p111, r1010; metatarsus d102, v221, p0101, r0101; III: femur d122, p0101; patella d101; tibia d1010, v011(111), p0101, r01010; metatarsus d202, v2021, p0101, r0101; IV: femur d112, p001; patella d001; tibia d1010, v112, p0101, r01010; metatarsus d2012, v221, p0101, r001. Three tarsal claws: superior 9–10 teeth, inferior 2–3 teeth. Female palpal tarsi spinose; palpal claw with 11–12 teeth. Trichobothria in single row of 5–6 on both tarsi and metatarsi.

Male palp (Figs 2a–d, 6a,b). Cymbium with a coniform apex with 3 bristle-like spines; retrolateral flange well defined, with apical margin offset at c. 90° to cymbium. Bulb much longer than wide. Tegulum with a large, basal TL, strongly offset from base of embolus. Sperm duct visible on the basal tegulum as a thick, upright S-shaped loop. T-shaped conductor with anterior margin modified (rather than uniformly curved)—prolaterally thickened with an apically notched process arising centrally, and a retrolateral "crested" spine-like conductor apex curving ventrally (Figs 2a,b, 6a). Embolus arising prolaterally from a wide base, curving through less than 180° as a gradually tapering rod with a single sub-distal barb and a blunt apex resting within the sub-apical conductor groove (Fig. 2b). Tegular window prolateral, of small to moderate size. MA bipartite: medial process small, membraneous; lateral process a thin, membraneous or weakly sclerotized lamina (Figs 6a,b, 7a,b). Tibia about as long as wide, with 3 strong prolateral to dorsal bristles and two distal apophyses: RVTA with a short to moderate length stalk and an ovoid, blunt, beak-like head; RDTA a thick hooked or spine-like process. Patella about as long as wide with a dorsal bristle.

Epigynum (Fig. 6c,d). Paired fossae separated by a moderately wide septum; fossae shallow, extended laterally and narrowed centrally (sometimes almost "dumbbell-shaped"—Fig. 7c). Posterior to fossae a pair of low cuticular mounds overlie the spermathecae (visible through cuticle) (Fig. 6c). Copulatory ducts open anterolaterally adjacent to septum (fossae and openings sometimes obscured by mating plug). Internal genitalia simple, with a pair of very short, broad copulatory ducts curving back to enter the spermathecae, where they equal its width; spermathecae oblong-globose and adjacent, placed immediately behind the fossa.

Spinnerets. Cribellar plate with each field c. 3.0× as wide as long and separated by a wide seam (about 0.5× a field width). Spigots (female, KS62178): ALS: 2 MAP spigots, mesal, adjacent, unequal; c. 35 piriform spigots; PMS: 1 mAP with 2–3 fused paracribellar bases (each with c. 6 to 8 spigots) grouped anteroectally around it; 5 aciniform spigots (1 anterior, rest distributed); 1 cylindrical spigot, ectal; PLS: c. 11 aciniform spigots, distributed; 1 modified PLS spigot, subapical, flanked by 3 paracribellar spigots, all free; 2 cylindrical spigots (1 basal, 1 central).

Included species. *Couranga kioloa* n.sp., *C. diehappy* n.sp.

Remarks. These spiders are distributed from southeastern NSW to southeastern Queensland; the two species overlap widely in the central–northeastern region of NSW. Modification of the anterior conductor margin is shared with *Karriella* and *Elleguna*, although the structural details differ, especially in the latter genus. Epigynal plugs, which may fill the fossae, are frequently found in both species.

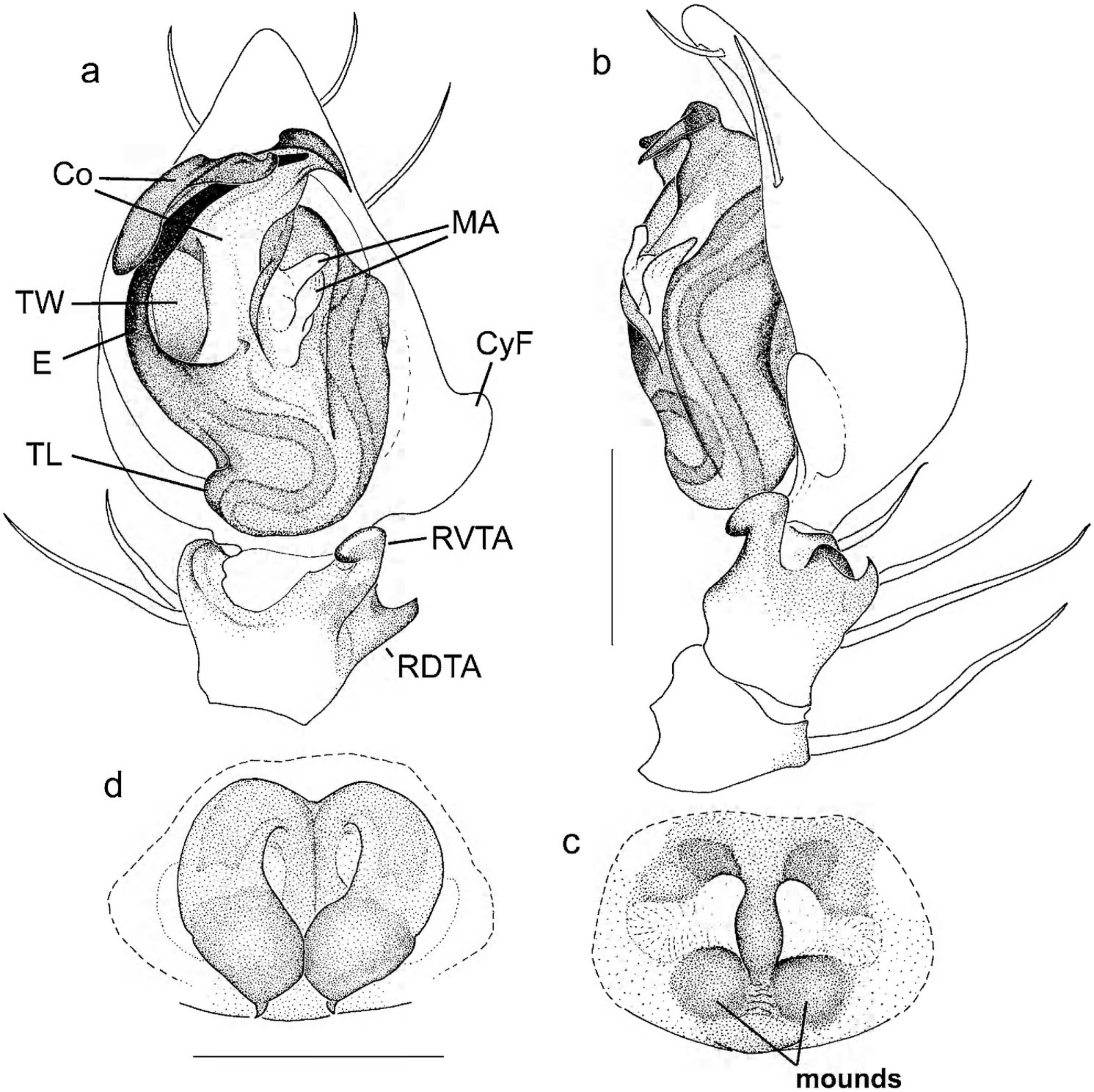

Fig. 6. *Couranga kioloa*. (*a,b*), male palp (holotype): *a*, ventral; *b*, retrolateral. (*c,d*), epigynum: *c*, ventral (KS74064); *d*, dorsal—internal genitalia (KS69664). Scale lines 0.5 mm: upper, *a,b*; lower, *c,d*.

Couranga kioloa n.sp.

Figs 1a–f, 2a–d, 6a–d, 8b

Type material. New South Wales: HOLOTYPE: ♂, KS74065, 1.5 km W of Kiah on Towamba Rd, 37°09'S 149°50'E, 15 Apr. 1978, M.R. Gray, small, angled sheet webs projecting from shallow retreats in soil bank and guyed to vegetation. PARATYPES: ♀, KS74066, data as for holotype; ♀, KS74064, data as for holotype, sheet webs in mossy bank along road, female matured in captivity; ♂ KS69662, ♀, KS86843, Mogo SF, 10 km S of Batemans Bay on Princes Highway, 35°48'S 150°08'E, 18 Apr. 1978, M.R. Gray, in webs under rock, open forest; ♂ KS34571, ♀, KS86842, Smiths Lake turn-off, Myall Lakes, 32°23'S 152°30'E, 27 Apr. 1974, M.R. Gray.

Other material. New South Wales: ♀, KS1931, Kioloa SF, Forest Drive, 35°37'S 150°16'E, 2 Nov. 1978, C. Horseman, in litter, with egg sac 4 mm diameter in silk purse retreat 10 mm diameter, eggs pale orange; ♂, KS5546, Benandarah SF, 8 km N of Batemans Bay, 35°40'S 150°14'E, 4–30 Oct. 1979, C. Horseman; ♀, KS6470, Royal National Park, Sydney, 34°08'S 151°04'E, 16 Jan. 1981, M. Gray, dry sclerophyll, under log in small messy sheet web; ♀, KS34572, Darkes Forest, 34°14'S 150°55'E, 8 Sep. 1972, R.E. Mascord; ♂, ♀, KS34573, 13 km N of Bega on Bega–Bermagui back road, 36°25'S 150°04'E, 18 May 1973, M.R. Gray, under dry log in dry area open forest, tangled web in crevice; ♂, ♀, KS34574, 11 miles S of Kempsey on Joes Cutting turn-off, 31°15'S 152°49'E, 27 Apr. 1974, M.R. Gray, in bank in suspended sheet web; ♀, KS34576, Maria SF picnic area near Kempsey, 31°11'S 152°50'E, 23 Apr. 1974, M.R. Gray, with egg sac; ♂, KS41267, Bundjalung NP, on ridge between Big Marsh & Esk River, 29°17'35"S 153°16'40"E, 4 Feb.–9 Apr. 1993, M. Gray & G. Cassis, NE NSW NPWS Survey, pit trap; ♂, KS50515, Booti Booti NP, 32°16'S 152°31'E, 17 July 1996, L. Wilkie, Bitou Pilot Study, sand dunes, pit trap; ♂, KS50516, data as KS50515, 15 July 1996; ♀, KS60719, Booti Booti NP, 32°14'44"S 152°32'33"E, 9 Oct. 1997, L. Wilkie; ♂, KS68360, data as KS60719, 12 Nov. 1996, sand dunes, pit trap; ♂, KS62463, Booti Booti NP, 32°14'28"S 152°32'50"E, 9 Oct. 1997, L. Wilkie, sand dunes, pit trap; 2 ♀♀, KS62178, Macquarie Pass, Macquarie Pass NP, 34°34'S 150°39'E, 12 Sep. 1999, H. Smith, in web on rotting log; ♂, KS62928, Booderee NP, southern headland of Jervis Bay, 35°08'49"S 150°45'05"E, 20–25 Aug. 1999, L. Gibson, pit trap; ♂, KS63013, Mount Kembla, Sydney Catchment Authority Reserve, 34°26'33"S 150°44'24"E, 6–10 Dec. 1998, L. Gibson,

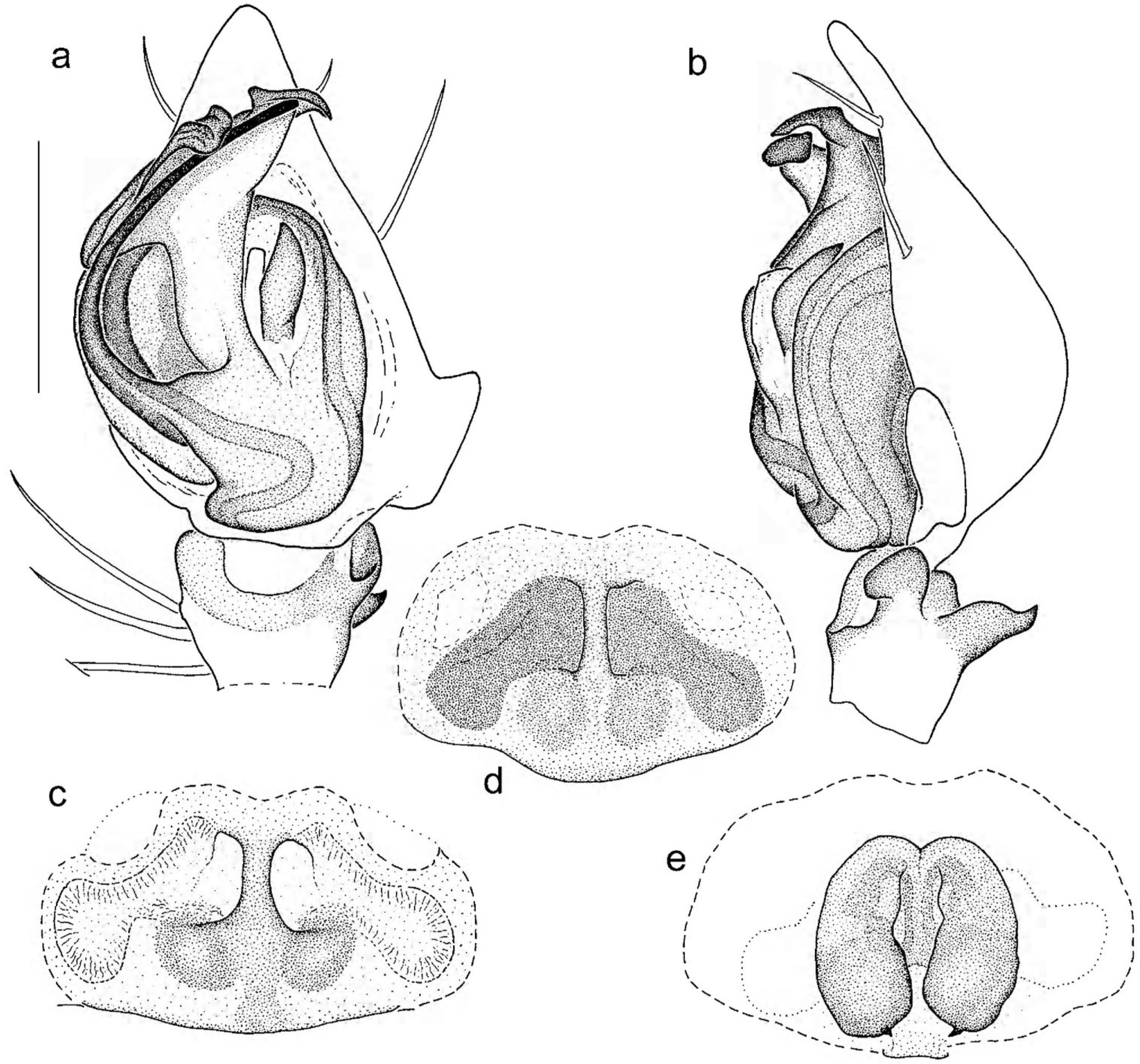

Fig. 7. *Couranga diehappy*. (*a,b*), male palp (holotype): *a*, ventral; *b*, retrolateral. (*c–e*), epigynum: *c*, ventral (KS75360); *d*, ventral, with plug (KS58105); *e*, dorsal—internal genitalia (KS75366). Scale line 0.5 mm.

pit trap; ♂, KS63067, data as KS63013, 21–25 June 1999; ♂, KS63171, Royal NP, Sir Bertram Stevens Drive c. 0.3 km E Artillery Hill, 34°04'55"S 151°03'40"E, 6–20 Dec. 1999, Gray, Milledge & Smith, STH SYD Hotspots, site 8, pit trap; ♂, KS63242, Woronora Dam Catchment, Princes Hwy c. 0.1 km NW Southern Freeway Overpass, 34°11'31"S 150°57'58"E, 8–22 Dec. 1999, Gray, Milledge & Smith STH SYD Hotspots, site 11, pit trap; 2 ♂♂, KS69658, KS69663, 2 ♀♀, KS69664–5, Bodalla SF, 8 km NNW Central Tilba near Mt Dromedary turn-off, 36°16'S 150°03'E, 17 Apr. 1978, M.R. Gray, on bank; ♀, KS69660, Bodalla Forest Park, 9 km S of Bodalla on Princes Highway, 36°10'S 150°06'E, 18 Apr. 1978, M.R. Gray, rotten log, in dry disturbed open forest; ♀, KS69659, Currawan SF, 35°37'S 150°05'E, 18 Apr. 1978, M.R. Gray; ♀, KS69661, Mogo SF, 10 km S of Batemans Bay on Princes Highway, 35°48'S 150°08'E, 18 Apr. 1978, M.R. Gray, in webs under rock, open forest, dry and burnt fairly recently; ♂, KS74067, Mt Warning Camp Ground, Wallaby Track, 28°24'S 153°16'E, 18 May 1998, H. Smith, retreat in leaf litter, lines to rotting log, collected as juvenile, matured 27 May 1998; ♂, KS74068, data as KS74067, matured late July 1998; ♂, KS74071, Kiwarrak State Forest, S of Taree, 31°58'S 152°26'E, Oct. 1976, K.D. Fairy, NSW Forestry Survey material, BPK 76OC J/24. **Queensland**: ♀, S64468 (QM), nr. Girraween NP, 28°51'S 151°57'E, R. Raven, 7 Apr. 1974; ♀, S64467 (QM), Gt Dividing Range nr Teviot Brook, 27°27'S 152°33'E, 25 Dec. 1974, R. Raven, 2,700 ft, sclerophyll.

Diagnosis. Differs from *C. diehappy* as follows: Palpal RVTA with stalk of moderate length; RDTA a thick, distally hooked process; MA processes small, subequal in size. Epigynal septum widened at middle; paired fossae with short lateral extensions.

Description

Male (holotype). BL 5.93, CL 2.95 (range 2.78–3.47), CW 2.22, CapW 1.09, EGW 0.83, LL 0.40, LW 0.40, SL 1.45, SW 1.24. Legs: 1423 (I: 11.82; II: 9.42; III: 8.40; IV: 10.98); ratio tibia I length:CW = 1:0.73. Male palp (Fig. 6a,b). RVTA stalk longer than in *C. diehappy*; RDTA thick, curved and hook-like distally. Distal loop of sperm duct U-shaped with parallel limbs. Embolus a basally wide, curved rod with a subapical barb (Fig. 2b). MA processes subequal, lateral process usually membraneous.

Female (KS74066). BL 6.40, CL 2.95 (range 2.24–3.47), CW 1.85, CapW 1.35, EGW 0.90, LL 0.41, LW 0.43, SL 1.41, SW 1.23. Legs: 1423 (I: 9.89; II: 8.13; III: 7.16; IV: 9.25); ratio tibia I length:CW = 1:0.73. Epigynum (Fig. 6c,d). Median septum widest at middle. Paired fossae with relatively short lateral extensions (cf. *C. diehappy*). Internal genitalia with very short copulatory ducts, about as wide as spermathecae.

Distribution. South-eastern New South Wales to the Border Ranges area of NSW and southeast Queensland.

Etymology. The specific name refers to Kioloa State Forest, a collection site.

Couranga diehappy n.sp.

Figs 7a–e, 8b

Type material. New South Wales: HOLOTYPE: ♂, KS61689, Diehappy SF, Horseshoe Rd, 0.5 km N of Scotchman Peak, 30°28'30"S 152°39'43"E, 11–24 Nov. 1999, M. Gray, G. Milledge & H. Smith, NE NSW Hotspots, site 18, pit trap. PARATYPES: ♀, KS75360, Scotchman SF, Horseshoe Rd & Kirklands Rd junction, 30°28'08"S 152°44'00"E, 23 Nov. 2001, G. Milledge & H. Smith, stop 4, sheet web in earth bank; ♂, KS74070, Maroota SF, 33°31'S 150°59'E, 5 Oct. 1979, G.A.Webb, NSW State Forests, pit trap; ♀, KS79583, Hornsby, Waitara Creek, 33°42'52"S 151°05'22"E, 1 Sep. 2002, H. Smith & G. Milledge, sheet web with retreat into earth bank; ♂, KS89868, data as for KS79583, Autumn 2004 (matured Aug. 2004), H.M. Smith. **Queensland**: ♂, ♀, S55468 (QM), N. Stradbroke Island Enterprise, 27°33'S 153°28'E, 90 m, 8 Jan. 2002, QM party, Blackbutt #1, day; ♂, S64481 (QM), 0.5 km NW Mt Beecher, 23°55'S 151°11'E, 15 Dec. 1999–20 Mar. 2000, G. Monteith, vine scrub, intercept trap 20 m; ♂, S64487 (QM), 0.5 km S of Fairlies Knob, 25°31'S 152°17'E, 21 Jul.–20 Oct. 2000, Cook, Wright, Vanderduys, vine scrub, pitfall, 300 m; 2 ♀♀, S56406 (QM), Fraser Island, 25°15'S 153°10'E, 11–14 Feb. 2000, B. Baehr & R. Raven.

Other material. New South Wales: ♂, SAM BS1550, Kunderang Cave KB4, 30°55'S 152°10'E, 11 Dec. 1966, P. Hudson; 3 ♀♀, KS34569, Willoughby, 33°48'S 151°12'E, 2 Aug. 1969, G.S. Hunt, under rotting logs, fairly moist; 3 ♀♀, KS34575, 6 miles W of Kempsey on Sherwood Rd, 31°04'S 152°44'E, 24 Apr. 1974, M.R. Gray, sheet webs in moist bank; ♀, KS34577, Camden Razorback, 34°07'S 150°38'E, 1 May 1969, M.R. Gray; ♀, KS34578, Ku-ring-gai Chase NP, 33°39'S 151°13'E, 8 Sep. 1972, M.R. Gray, under rock in silk case with egg sac; ♀, KS34579, Ku-ring-gai Chase NP Bobbin Head, 33°39'S 151°09'E, 10 May 1974, M.R. Gray, in logs; 3 ♀♀, KS34580, data as KS34579, 10 Apr. 1974, in logs, sheet web, moist forest nr creek; ♀, KS34581, 18 km E of Woodford, 33°44'S 150°33'E, 17 Apr. 1974, M.R. Gray, low woodland-heath, in logs; ♀, KS34583, Mt Wilson, Cathedral of Ferns, 33°30'S 150°23'E, 26 June 1974, M.R. Gray & C. Horseman; ♀, KS58105, Ku-ring-gai Chase NP, near Mt Colah, 33°40'S 151°07'E, 2 July 2000, G. Milledge & H. Smith; ♀, KS68262, Hornsby, Waitara Creek, 33°42'52"S 151°05'22"E, 25 Sep. 2000, G. Milledge, under rock, with egg sac; 2 ♀♀, KS69657, KS79576, data as KS68262, 21 Sep. 2000, H. Smith & G. Milledge; 5 ♀♀, KS78346, data as KS68262, 28 Oct. 2001, H. Smith; 3 ♀♀, KS79584–6, data as KS68262, 20 July 2002, G. Milledge, under rocks; ♂, KS74069, Maroota SF, 33°31'S 150°59'E, 7 Nov. 1979, G.A.Webb, NSW State Forests, B/40, pit trap; 4 ♀♀, KS75357, KS75359, KS79579–80, Scotchman SF, junction of Horseshoe Rd & Little Boggy Track, 30°26'08"S 152°48'55"E, 23 Nov. 2001, G. Milledge & H. Smith, stop 3, sheet webs in earth bank; 4 ♀♀, KS75366–7, KS79577–8, Mt Kaputar NP, 0.8 km W of Coryah Gap Carpark, 30°16'44"S 150°07'40"E, 13 Nov. 2001, M. Gray, G. Milledge & H. Smith, stop 20, sheet webs in earth bank; ♀, KS75368, Mt Kaputar NP, 1.6 km W of Coryah Gap Carpark, 30°16'13"S 150°07'11"E, 13 Nov. 2001, M. Gray, G. Milledge & H. Smith, stop 21, sheet web in earth bank; 2 ♀♀, KS75369–70, Mt Kaputar NP, 1.9 km W of Bark Hut Campsite, 30°16'50"S 150°07'55"E, 13 Nov. 2001, M. Gray, G. Milledge & H. Smith, stop 19, sheet webs in earth bank. **Queensland**: ♂, KS69420, Brisbane Forest Park, 27°25'04"S 152°49'48"E, 11–16 Jan. 1998, N. Power, malaise trap 3; ♂, KS69497, data as KS69420, 27 Sep–2 Oct. 1998, trap 2; ♂, KS69467, Bribie Island, 27°03'30"S 153°11'32"E, 9–14 Aug. 1998, N. Power, heathland/acacia regrowth, malaise trap 1; ♀, KS69654, Blackdown Tableland NP, campsite area, 23°47'49"S 149°04'14"E, 8 May 2000, G. Milledge & H. Smith, ex rotting tree stump; ♂, S55720 (QM), N Stradbroke Island Enterprise, 27°34'S 153°27'E, 60 m, 9 Jan. 2002, QM party, Blackbutt #2, day, hand coll.; ♀, S55737 (QM), N Stradbroke Island Enterprise, 27°36'S 153°27'E, 70 m, 10 Jan. 2002, QM party, Scribbly Gum #3, day, hand coll.; ♀, S55539 (QM), as S55737, J. Burwell, berlesate, sifted litter; ♀, S55748 (QM), N Stradbroke Island Enterprise, 27°33'S 153°28'E, 90 m, 8 Jan. 2002, QM party, Blackbutt #1, day, hand coll.; 2 ♀♀, S64486 (QM), foot of Blackbutt Ra. nr Benarkin, 26°53'S 152°08'E, 25 Aug. 1979, R. Raven, under rock, sheet web; ♀, S64484 (QM), Mt Coottha, SEQ, 1 Jan. 1974, R. Raven; ♂ S64483 (QM), Conondale Ra., Kenilworth, 26°35'S 152°43'E, 1 Sep. 1974, R. Raven, rainforest; ♂, S64482 (QM), 1 km S Blue Mtn, 21°37'S 148°58'E, 22 Mar.–31 May 2000, Monteith & Cook, pitfall, 680 m, wet sclerophyll; ♂, S64485 (QM), top of Blackbutt Ra., 26°52'S 152°11'E, 24 Oct.–24 Nov. 1995, G. Monteith, intercept trap, 400 m; ♂, S64480 (QM), Gold Ck Reservoir, Brookfield, 27°27'S 152°49'E, 1 Oct. 1980, V. Davies, R. Raven, closed forest; ♂, S64479 (QM), Searys Scrub, Cooloola, 26°02'S 153°03'E, 3–7 Feb. 1976, R. Raven, V. Davies, pit traps; 2 ♂♂, 9 ♀♀, S64474 (QM), Searys Scrub, Cooloola, SEQ, 4 Feb. 1976, R. Raven, V. Davies, males from pit traps, females from horizontal sheet web back into log; ♀, S64476 (QM), Freshwater Road, Cooloola, 26°00'S 153°08'E, 26 Dec. 1974–28 Mar. 1975, G.B. & S.R. Monteith, pitfall trap; ♀, S64478 (QM), Wild Horse Mtn, Beerwah, 26°56'S 153°00'E, 10 Sep. 1975, R. Raven; ♀, S64466 (QM), Conondale Ra, ca 26°40'S 152°40'E, 31 Aug. 1974, R. Raven, sheet web & ventral retreat in bank; ♀, S64470 (QM), Conondale Ra, 31 Aug. 1974, R. Raven, sheet web with funnel (ventral) as retreat; ♀, S64469 (QM), Teviot Stream, Boonah, 27°59'S 152°41'E, 3 Oct. 1973, V. Davies, under lattice sheet web on bank; ♀, S64471 (QM), Rochedale SF, 27°36'S 153°09'E, 23 Nov. 1979, R. Raven, V. Davies, web under log; ♀, S64477 (QM), Rochedale SF, SEQ, 20 Sep. 1979, R. Raven, V. Davies, sheet web under log; ♀, S64472 (QM), Paul Lenz Plain at Bunya Mts NP, 26°50'S 151°33'E, 7 Nov. 1994, pitfalls, tussock grassland; ♀, S64473 (QM), Teewah Ck, Cooloola Rainforest, 26°05'S 153°02'E, 14 Sep. 1973, R. Raven, sheet web with retreat under log, spider using lower surface of sheet; ♂, S64475 (QM), Ravensbourne, 27°20'S 152°09'E, 16 Feb. 1974, R. Raven.

Diagnosis. Differs from *C. kioloa* as follows: palpal RVTA with short stalk; RDTA a thick, undulate spine-like process; MA with lateral process largest & weakly sclerotized. Epigynal septum not widened at middle; paired fossae with lateral extensions often longer than in *C. kioloa* ("dumbbell-shaped").

Description

Male (holotype). BL 5.83, CL 2.50 (male range 2.25–3.17), CW 1.92, CapW 0.94, EGW 0.71, LL 0.31, LW 0.39, SL 1.22, SW 1.06. Legs: 1423 (I: 11.08; II: 8.67; III: 7.50; IV: 9.75); ratio tibia I length:CW = 1:0.66. Male palp (Fig. 7a,b). RVTA like *C. kioloa* but with shorter, wider stalk; RDTA a thick, undulate, spine-like process. Distal loop of sperm duct V-shaped with limbs. Embolus longer and thinner than in *C. kioloa*, and conductor apex less strongly "crested". MA lateral process usually weakly sclerotized and larger than in *C. kioloa*.

Female (KS75360). BL 6.08, CL 2.58 (female range 2.42–3.25), CW 1.67, CapW 1.14, EGW 0.75, LL 0.35, LW 0.41, SL 1.31, SW 1.10. Legs: 1423 (I: 9.10; II: 7.27; III: 6.41; IV: 8.24); ratio tibia I length:CW = 1:0.72. Epigynum (Fig. 7c–e). Median septum relatively narrower than in *C. kioloa* and not obviously widened at middle. Paired fossae often with longer lateral extensions and more obviously narrowed centrally (more or less "dumbbell-shaped", cf. *C. kioloa*). Internal genitalia similar to *C. kioloa*.

Distribution. Central eastern New South Wales to southeast Queensland.

Etymology. The species name is taken from the type locality.

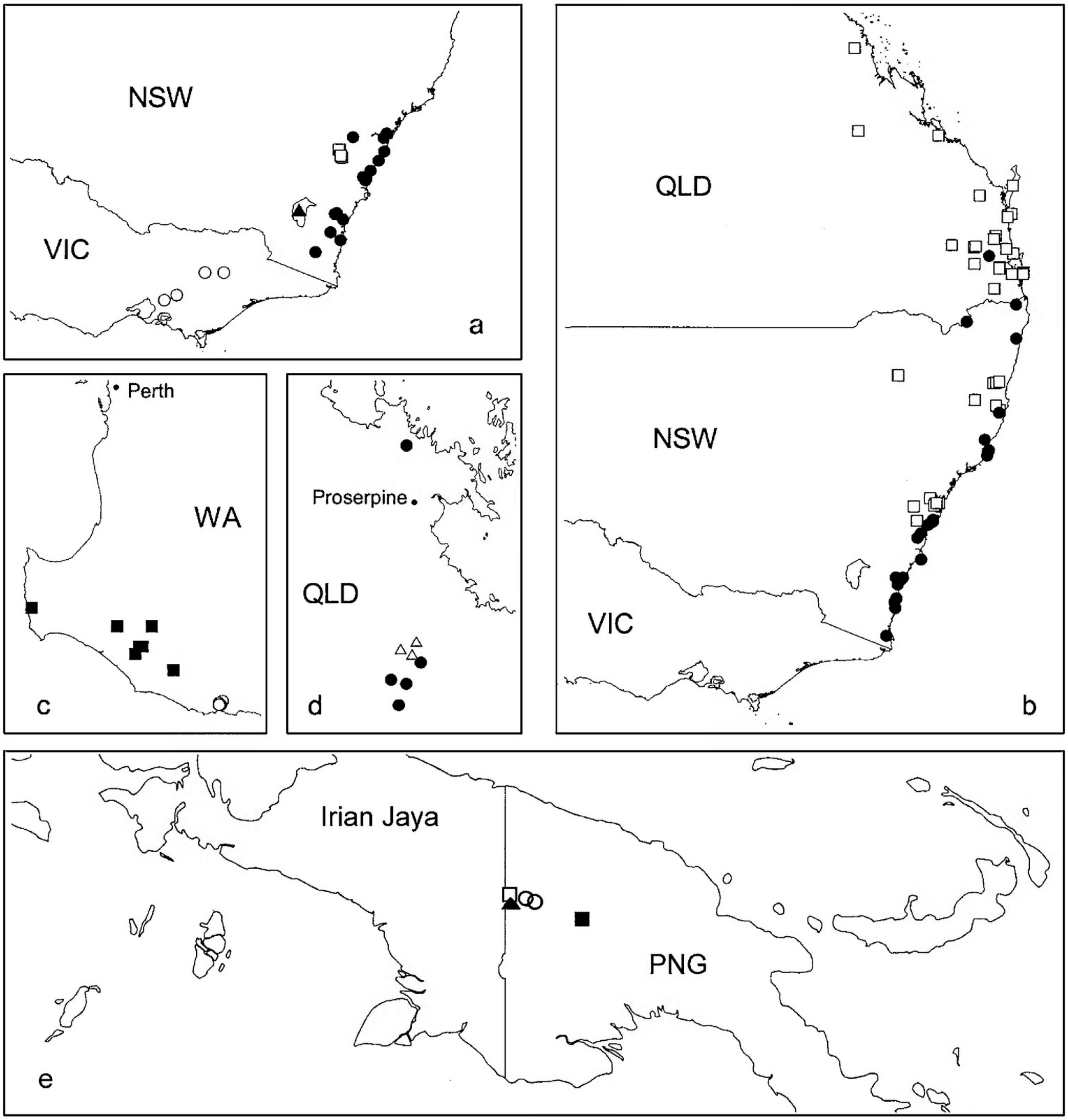

Fig. 8. Distribution records: (*a*), *Jamberoo* spp.: *J. johnnoblei*, ●; *J. boydensis*, □; *J. actensis*, ▲; *J. australis*, ○. (*b*), *Couranga* spp.: *C. kioloa*, ●; *C. diehappy*, □. (*c*), *Karriella* spp.: *K. treenensis*, ■; *K. walpolensis*, ○. (*d*), *Elleguna* spp.: *E. major*, △; *E. minor*, ●. (*e*), *Asmea* spp.: *A. akrikensis*, ▲; *A. hayllari*, ○; *A. capella*, □; *A. mullerensis*, ■.

Jamberoo n.gen.

Type species. *Jamberoo johnnoblei* n.sp.

Etymology. The generic name is taken from the Jamberoo region of New South Wales where these spiders are abundant. It is considered masculine in gender

Diagnosis. Palpal cymbium with large retrolateral flange; bulb with tegular lobe basal to retrobasal; MA large, bipartite—with membraneous and bifurcate sclerotized processes; RVTA short, blunt, beak-like; RDTA short, concave. Epigynal fossa divided by median septum with a knob to keel-like process posteriorly (except *J. australis*); spermathecae separated, placed at mid-posterior half of fossa. Separated from *Pillara* and *Borrala* by the presence of a short RVTA, from *Couranga, Karriella* and *Elleguna* by the simple, unmodified T-shaped conductor structure, and from *Asmea* by the well sclerotized, bifurcate lateral MA process.

Description. Medium-sized, cribellate spiders (CL 2.65–4.24). Similar to *Couranga* in general characters. Legs. 1243 or 1423. Male metatarsi I, II bowed (but not flattened), more noticeable in larger specimens. Representative leg spination (*J. johnnoblei*): Male (KS84009)—I: femur d1202, p01110; tibia d0010, v2020, p1110, r1010; metatarsus d0001, v2021, p0101, r1102. II: femur d1202, p01110; patella d001; tibia d0010, v2020, p1110, r1010; metatarsus d0102, v2021, p1101, r1101. III: femur d1202, p01101; patella d001; tibia d1010, v010, p1010, r1010; metatarsus d0100, v221, p1102, r1101. IV: femur d10102, p0001; patella d001; tibia d1010, v1102, p0001, r0001; metatarsus d010, v221, p112, r1012. Female (KS70125)—I: femur d1202, p0011; tibia d1000, v1100, p1010, r0110; metatarsus d0102, v2021, p1010, r0110. II: femur d1102, p0101; tibia d0001, v2200, p1010, r110; metatarsus d0102, v2021, p0101, r0101. III: femur d1202, p01101; patella d001; tibia d1010, v1100, p0110, r1010; metatarsus d0102, v221, p1102, r1101. IV: femur d1102, p001; patella d001; tibia d1010, v1101, p0110, r01010; metatarsus d10101, v211, p1012, r1011.

Male palp (Figs 2h–i, 10a–b). Cymbium with a large retrolateral flange and a short coniform to digitiform apex with 2–3 bristle-like spines. Bulb subcircular to ovoid. Tegulum with a basal-retrobasal TL of moderate size, variably offset from base of embolus. Sperm duct visible on the basal tegulum as a long, diagonal S-shaped loop. Embolus spiniform, curving 180° or more from its basal tegular origin to the conductor apex. Conductor T-shaped, with a simple, smooth marginal groove; retrolateral limb tapering to a pointed tip that curves ventrad. Tegular window large to very large, prolaterally placed. MA large, bipartite: medial process a membraneous lobe; lateral process large, strongly sclerotized and distally bifurcate spiniform—a large terminal spine with a smaller spine at its base, giving the process a "claw-like" appearance (Figs 2i, 11b) (except in *J. australis* where the smaller spine is greatly reduced [Fig. 12b]). Tibia about as long as wide, with 2–3 long prolateral bristles and two distal apophyses—RVTA short, bluntly beak-like ventrally, widest in lateral view and extended dorsally into a more or less pointed process; RDTA a short, concave, pointed process. Patella about as long as wide with a dorsal bristle.

Epigynum (Fig. 9c–g). Fossa divided or undivided (*J. australis*—Fig. 12c); divided fossae with a sclerotized longitudinal septum, enlarged posteriorly as a prominent ventral protuberance varying in shape from a rounded knob to a narrow, keel-like ridge. Internal genitalia simple, with a pair of copulatory ducts opening anterolaterally and curving dorsally above the spermathecae; spermathecae globose and separated, wider than copulatory ducts and placed in middle or posterior half of fossa (visible through cuticle).

Spinnerets (Figs 3a–f, 4e). Cribellar plate bipartite, each field about 4.5× as wide as long and separated by a moderately wide seam (about 0.3× a field width); seam and posterior plate margin strongly sclerotized, latter medially indented. In male, cribellum almost as wide as in female with small, non-functional fields. Spigots (female, *J. johnnoblei*—KS59252). ALS: 2 MAP spigots, mesal, adjacent, unequal; c. 65 piriform spigots; PMS: 1 mAP with 5–6 fused paracribellar bases (each with c. 6–11 spigots) grouped anteroectally around mAP; 13 aciniform spigots (1 anterior, rest distributed); 1 cylindrical spigot; PLS: c. 30 aciniform spigots, distributed; 1 subapical "modified PLS" spigot flanked by 3 paracribellar spigots, all free; 2 cylindrical spigots (1 basal, 1 subapical).

Included species. *Jamberoo johnnoblei* n.sp., *J. australis* n.sp., *J. boydensis* n.sp., and *J. actensis* n.sp.

Remarks.

In *Jamberoo* spp. the conductor is of the unmodified "T-shaped" type, the limbs of the T showing some specific size variation. The bipartite median apophysis is distinctive, typically consisting of a fleshy medial process and a sclerotized, bifurcate spiniform ("claw-like") lateral process. The epigynal fossa is typically divided by a well-defined, sclerotized septum terminating posteriorly in a prominent ventral protuberance (this protuberance may be broken off or obscured, along with the fossae openings, by mating plug secretions). *Jamberoo australis* varies from this typical plan—the fossa lacks a septum and the smaller spine of the lateral MA "claw" is greatly reduced. Such intrageneric genitalic variation has also been noted in other borraline genera—*Therlinya, Pillara* and *Elleguna*.

Jamberoo johnnoblei n.sp.

Figs 2h,i, 3a–j, 4a–g, 5a–c, 8a, 9a–g

Type material. New South Wales: HOLOTYPE: ♂, KS84009, Mt Keira, 34°24'S 150°51'E, 25 Jan. 1978, M.R. Gray, in log. PARATYPES: ♀, KS84010, data as holotype; ♂, KS34756, Clyde Mtn, E of Braidwood, 35°33'S 149°57'E, 10 Sep. 1975, M.R. Gray, open forest web in dry log; ♂, KS58203, Macquarie Pass, 34°34'S 150°39'E, 12 Sep. 1999, H.M. Smith, in web on rotting log; 5 ♀♀, KS57680, KS59251, KS60710, KS67201, KS84012, data as for KS58203, all reared to maturity between late Sep. and late Dec. 1999; ♂, KS8643, ♀, KS84013, Royal National Park, 34°08'S 151°04'E, 2 Dec. 1981, Horseman & Harland, under moss; ♀, KS60772, as KS8643, Sep. 1997, H.M. Smith, sheet web in rotting log, taken as juvenile, matured Jan. 1998; ♂, KS60773, as KS8643, Wattamolla Track, 27 Sep. 1997, H.M. Smith.

Other material. New South Wales: ♀, KS67897, Jamberoo Mtn, 34°40'S 150°43'E, 6 Nov. 1995, J. Noble; ♂, KS46335, Brown Mtn, 16 km W of Bemboka, 36°36'S 149°23'E, 16 Apr. 1978, M.R. Gray, small sheet webs in roadside bank, 800 m; ♀, KS59252, Macquarie Pass, 34°34'S 150°39'E, 12 Sep. 1999, H.M. Smith, in web on rotting log, matured 30 Sep; abdomen used for SEM; ♀, KS77021, Bodalla SF, 8 km NNW Central Tilba near Mt Dromedary t.o., 36°16'S 150°03'E, 17 Apr. 1978, M.R. Gray, on bank; ♀, KS60771, Mt Keira, 34°24'S 150°51'E, M.R. Gray, in soil bank, abdomen used for SEM; ♂, KS8503, Mount Wilson, 33°30'S 150°23'E, 28 Oct. 1981, C. Horseman, under log; ♀, KS69655, Mt Wilson, Cathedral of ferns, 33°30'S 150°22'E, M.R. Gray, 17 Jan. 1978; ♀, KS34763, data as KS69655, 21 Jan. 1975, M.R. Gray, large sheet web in upturned base of log at cleared edge of rainforest; ♀, KS75403, Mt Wilson, near Cathedral of Ferns, 33°30'S 150°23'E, 28 July 2001, M.R. Gray, earth bank, sheet web (matured in captivity 11 Aug. 2001); 2 ♀♀, KS6468–9, Royal National Park, 34°08'S 151°04'E, 16 Jan. 1981, M.R. Gray, dry sclerophyll, in large sheet webs up to 40 × 40cm, from sides of fallen logs & stumps; ♀, KS8332, as KS6468, 14 Oct. 1981, C. Horseman, in bank; 2 ♀♀, KS8725, KS10779, Somersby Falls, 33°24'S 151°17'E, 18 Jan. 1982, M.R. Gray, under rock, conical sheet web; ♀, KS55753, Dampier SF, Coomerang Rd, 36°03'57"S 149°47'05"E, 11 Mar. 1999, H.M. Smith; 4 ♀♀, KS9028, KS9030, KS9032, Minnamurra Falls Reserve, 34°38'S 150°44'E, 20 Apr. 1982, C. Horseman; ♀, KS55754, Monga SF, Link Rd, 35°34'04"S 149°54'14"E, 16 Mar. 1999, H.M. Smith; 2 ♀♀, KS55755–6, data as KS55754, 29 Mar. 1999; ♀, KS55723, nr Monga, 35°35'S 149°55'E, 30 Mar. 1999, H.M. Smith; ♀, KS77023, Mooney Mooney Ck, S of road bridge, 33°31'S 151°12'E, 12 Jan. 1977, M.R. Gray, small sheet web in log; ♀, KS55724, 7.5 km S of Nelligen, Mogo SF, 35°43'19"S 150°06'50"E, 29 Mar. 1999, H.M. Smith & M. Tio, laid egg sac c. 1 May 1999.

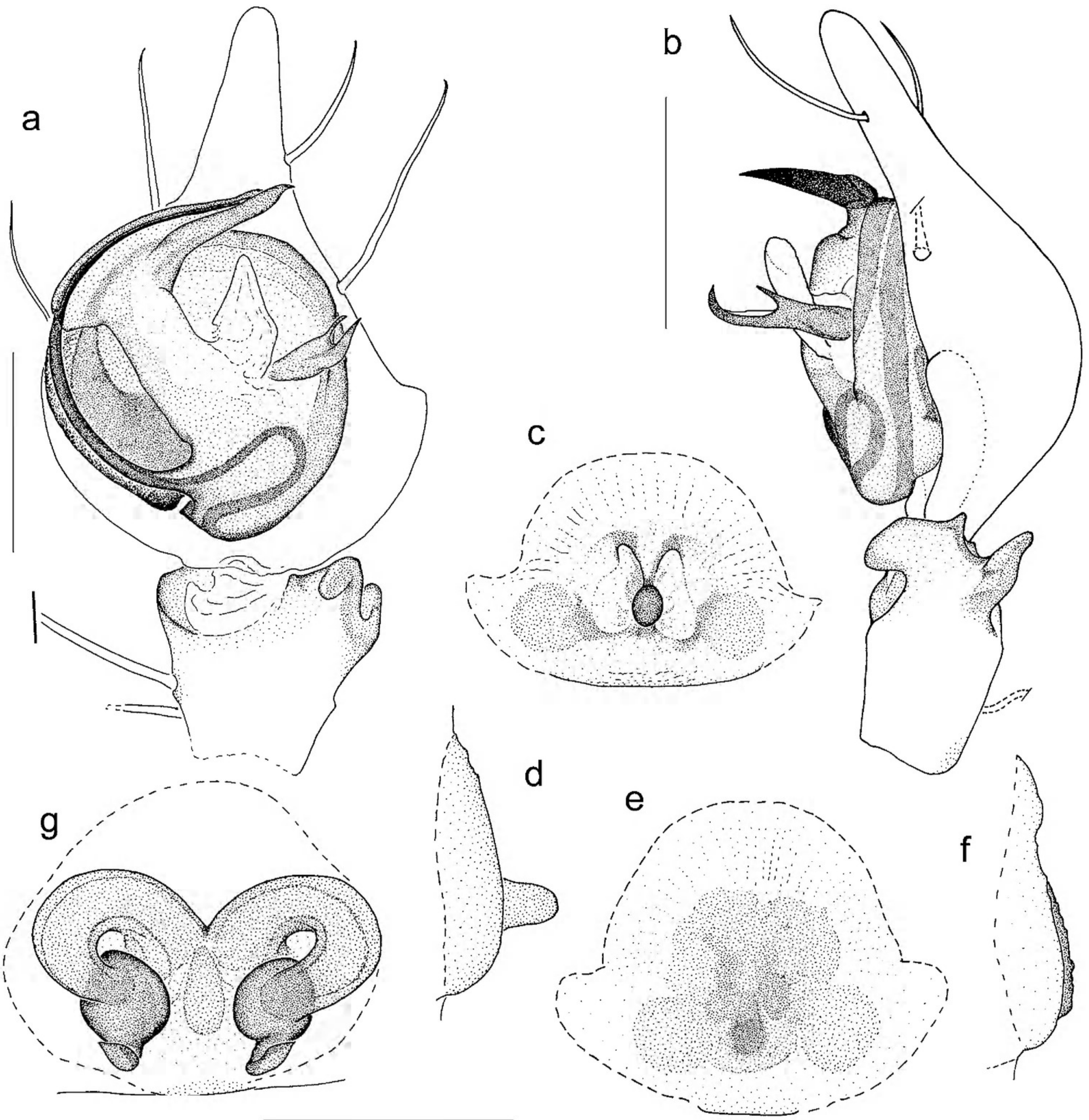

Fig. 9. *Jamberoo johnnoblei*. (*a,b*), male palp: *a*, ventral (holotype); *b*, retrolateral (KS46335). (*c–g*), epigynum: *c*, ventral, *d*, lateral (KS84010); *e,f*, plugged and damaged (KS69656); *e*, ventral; *f*, lateral; *g*, dorsal—internal genitalia (KS69656). Scale lines 0.5 mm: upper lines, *a,b*; lower line, *c–g*.

Diagnosis. Separated from *J. boydensis* and *J. australis* by the distally "claw-like" appearance of the large sclerotized lateral process of MA; and from *J. australis* by the presence of an epigynal septum. Differs from the closely related *J. actensis* by the digitiform shape of the distal cymbium, relatively longer prolateral conductor limb and epigynal fossae narrowest anteriorly.

Description

Male (holotype). BL 7.50, CL 4.17 (range 2.65–4.24), CW 3.08, CapW 1.80, EGW 1.18, LL 0.68, LW 0.68, SL 2.08, SW 1.63. Legs 1243, long (I: 27.00; II: 22.50; III: 16.92; IV: 20.33); ratio tibia I length:CW = 1:0.43. Male palp (Fig. 9a,b). Cymbium apex short digitiform. Bulb subcircular, about as wide as long. Conductor with a short to very short prolateral limb, about a third length of retrolateral limb. TW of moderate size, prolateral. TL basal, prolateral margin rounded to bluntly coniform. Sclerotized lateral MA process large with a strong spiniform "claw"—the curved, terminal spine wide basally and inner surface concave (Fig. 2i)

Female (KS84010). BL 7.92, CL 3.02 (range 2.81–4.73), CW 2.08, CapW 1.39, EGW 0.94, LL 0.51, LW 0.51, SL 1.43, SW 1.31. Legs: 1423 (I: 12.78; II: 10.20; III: 8.90; IV:

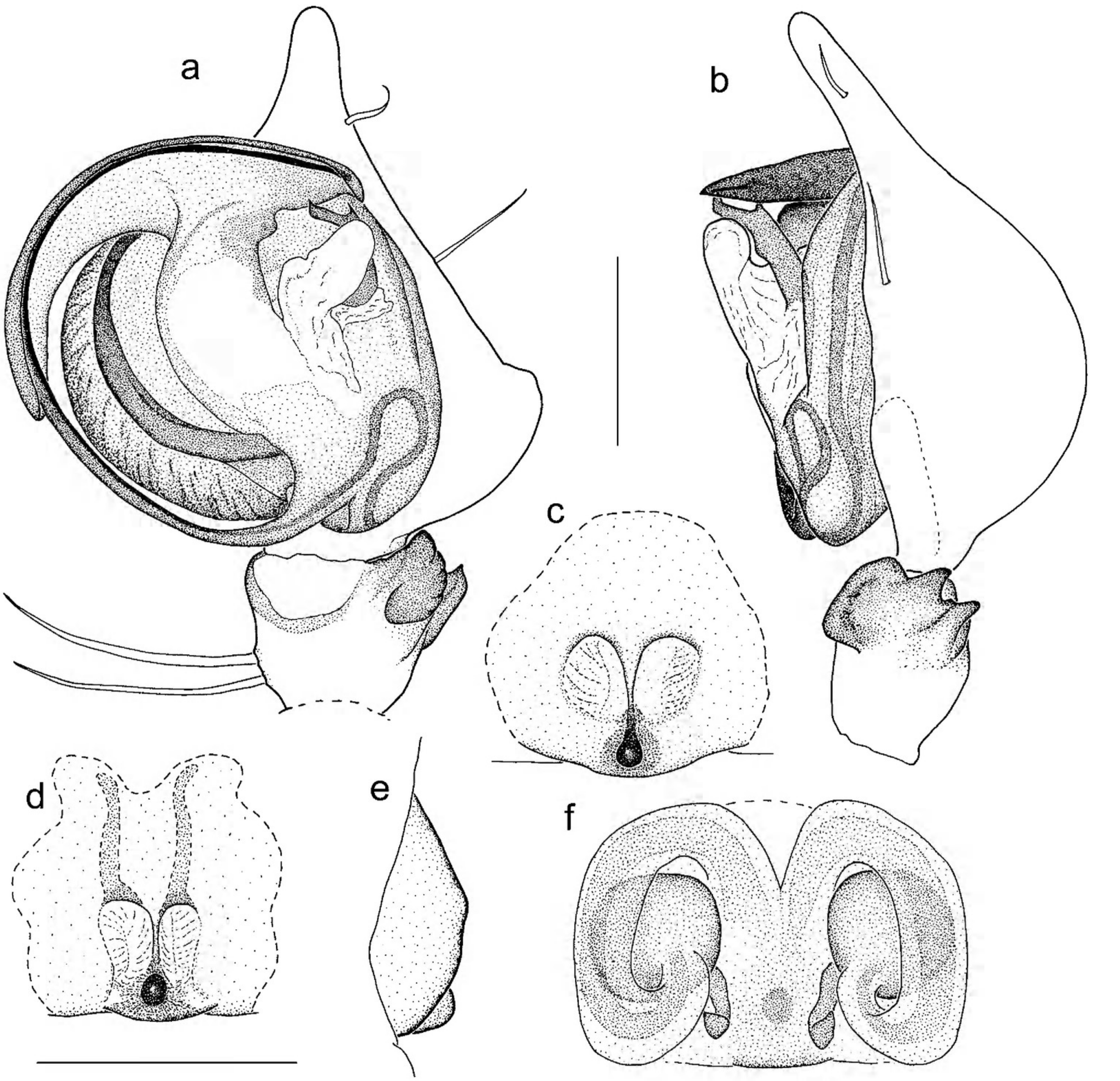

Fig. 10. *Jamberoo boydensis*. (*a,b*), male palp (holotype): *a*, ventral; *b*, retrolateral. (*c–f*), epigynum: *c,d*, ventral (KS34761, KS34759); *e*, lateral (KS34759); *f*, dorsal—internal genitalia (KS10256). Scale lines 0.5 mm: upper, *a,b*; lower, *c–f*.

10.49); ratio tibia I length:CW = 1:0.65. Epigynum (Fig. 9c–g). Fossae narrowest anteriorly. Median septum short, tapering posteriorly before expanding abruptly into a ventral sclerotized knob-like protuberance—note that the latter may vary in shape from the usual rounded to ovoid knob to a thin, keel-like lamina—that is usually placed clearly anterior to the epigastric groove. Internal genitalia with short, curved copulatory ducts and relatively small spermathecae, well separated.

Distribution. Southern and central coast and highlands of New South Wales.

Etymology. The species is named in honour of Mr John S. Noble OM, engineer, conservationist, spider collector and photographer, and a long-time friend of the museum's Arachnology Section.

Jamberoo boydensis n.sp.

Figs 8a, 10a–f

Type material. New South Wales: HOLOTYPE: ♂, KS76979, Boyd Plateau, 34°00'S 150°03'E, M.R. Gray, in logs. PARATYPES: ♀, KS34761, Mt Edwards, Boyd Plateau, 33°50'S 150°00'E, 26 Nov. 1974, M.R. Gray, in log; ♀, KS34759, data as holotype; ♀, KS34762, Boyd River crossing, Boyd Plateau, 34°03'S 150°05'E, M.R. Gray, 26 Nov. 1974, under log. ♀, KS34760, Mt Wiburd, Boyd Plateau, 33°50'S 150°01'E, 5 May 1974, M.R. Gray, eucalypt-*Poa* assn, webs on logs.

Diagnosis. Differs from other species by the elongate palpal prolateral conductor limb and the relatively long, slender epigynal septum with a small, rounded posterior knob. .

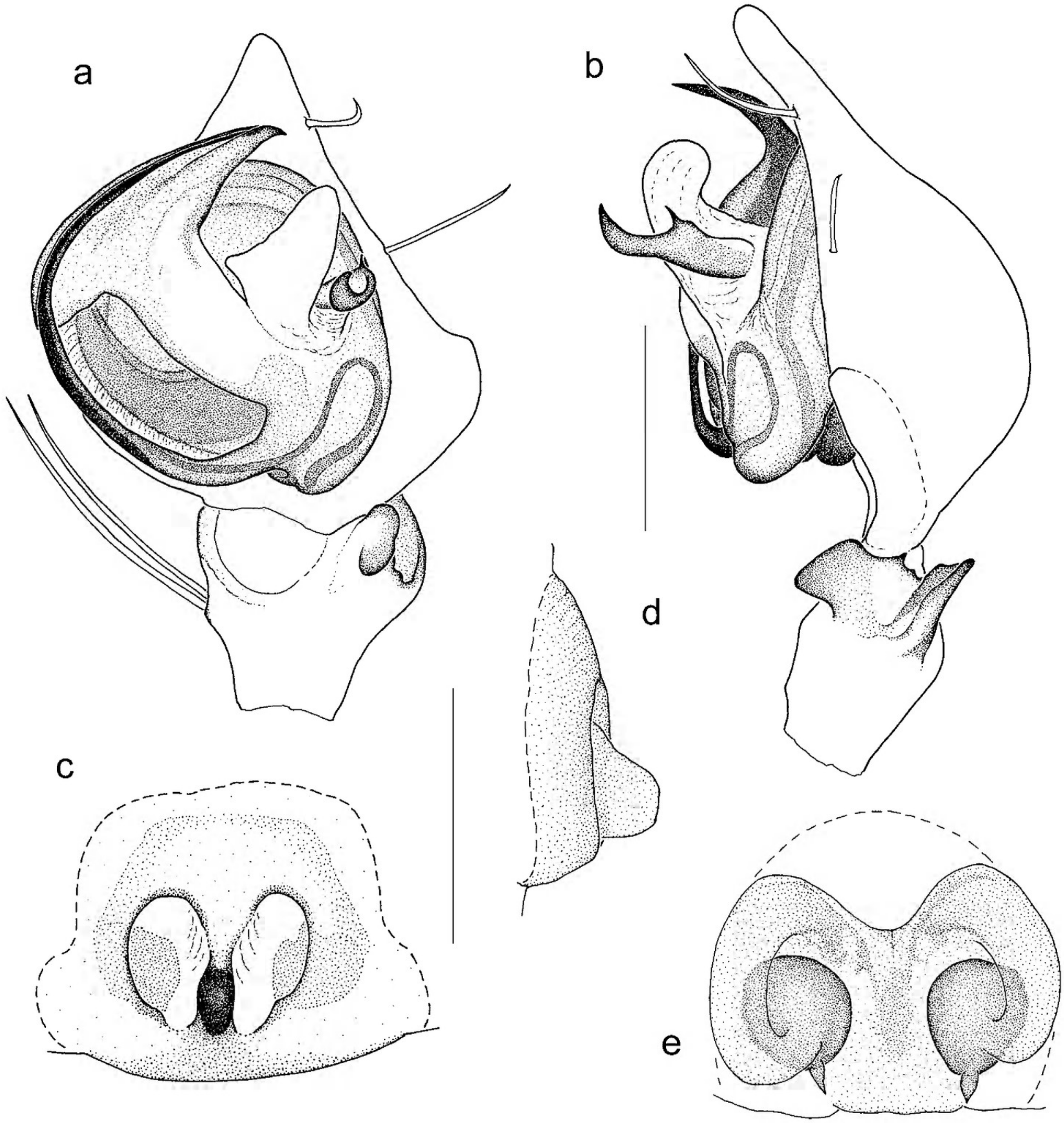

Fig. 11. *Jamberoo actensis*. (*a,b*), male palp (holotype): *a*, ventral; *b*, retrolateral. (*c–e*), epigynum (KS60770): *c*, ventral; *d*, lateral; *e*, dorsal—internal genitalia. Scale lines 0.5 mm: upper, *a,b*; lower, *c–e*.

Description

Male (holotype). BL 6.86, CL 3.35, CW 2.45, CapW 1.31, EGW 0.94, LL 0.45, LW 0.49, SL 1.57, SW 1.37. Legs: 1423 (I: 14.82; II: 12.45; III: 10.41; IV: 12.65); ratio tibia I length:CW = 1:0.66. Male palp (Fig. 10a,b). RVTA with dorsal process prominent. Cymbium apex short digitiform. Bulb ovoid, wider than long. Prolateral conductor limb elongated, much longer than retrolateral limb. TW prolateral to basal and very large. TL retrobasal with prolateral margin rounded. Sclerotized lateral process of MA with small "claw-like" bifurcation apically (much smaller than in *J. johnnoblei* and *J. actensis*).

Female (KS34761). BL 6.29, CL 2.82 (range 2.73–3.31), CW 1.88, CapW 1.18, EGW 0.88, LL 0.41, LW 0.47, SL 1.39, SW 1.21. Legs: 1423 (I: 10.49; II: 8.61; III: 7.59; IV: 9.06); ratio tibia I length:CW = 1:0.72. Epigynum (Fig. 10c–f). Median septum long and slender, with a small, rounded knob placed posteriorly near the epigastric groove. Internal genitalia with copulatory ducts looping dorsolaterally to enter the spermathecae posteriorly; spermathecae large, well separated.

Distribution. Known only from the type locality.

Etymology. The name is taken from the type locality.

Jamberoo actensis n.sp.

Figs 8a, 11a–e

Type material. Australian Capital Territory: HOLOTYPE: ♂, KS76978, 1 km SW of Gibraltar Falls on Corin Dam Rd, Tidbinbilla Ra, 35°28'S 148°57'E, 10 Dec. 1977, M.R. Gray, sheet web on log. PARATYPE: ♀, KS60770, data as for holotype.

Diagnosis. Like *J. johnnoblei* but differs as follows: distal cymbium short and coniform; palpal bulb broader; TL more retrobasally placed; and epigynal fossae broadest anteriorly.

Description

Male (holotype). BL 6.65, CL 3.18, CW 2.24, CapW 1.31, EGW 0.90, LL 0.45, LW 0.47, SL 1.49, SW 1.33. Legs: 1243 (I: 15.35; II: 12.65; III: 10.45; IV: 12.61); ratio tibia I length:CW = 1:0.57. Male palp (Fig. 11a,b). Cymbium apex short coniform. Bulb subcircular, about as wide as long. Conductor with a short prolateral limb, about half as long as retrolateral limb. TW long, prolateral to basal. TL retro-basal with prolateral margin rounded. Sclerotized MA process similar to *J. johnnoblei*.

Female (KS60770). BL 7.96, CL 3.35, CW 2.12, CapW 1.55, EGW 0.98, LL 0.57, LW 0.55, SL 1.61, SW 1.41. Legs: 1423 (I: 13.18; II: 11.18; III: 9.47; IV: 11.63); ratio tibia I length:CW = 1:0.64. Epigynum (Fig. 11c–e). Fossae relatively large and broadest anteriorly. Median septum short and wide, tapering and rising posteriorly as an ovoid protuberance, about as long as the anterior septum. Internal genitalia similar to *J. johnnoblei*.

Distribution. Known only from the type locality.

Etymology. The species name is taken from the acronym for the Australian Capital Territory (ACT).

Jamberoo australis n.sp.

Figs 8a, 12a–e

Type material. Victoria: HOLOTYPE: ♂, KS46337, Box Corner, 4.5 km N of Mount Buller village, 37°09'S 146°27'E, 1000 m, 8 Apr. 1978 (specimen matured 3 Jan. 1979), M.R. Gray. PARATYPES: ♂, KS46338, collected mature, otherwise data as holotype; ♀, KS77020, Box Corner, Mt Buller, 37°09'S 146°27'E, 16 Nov. 1982, M.R. Gray; ♂, KS77022, La La Falls, Warburton, 37°45'S 145°42'E, 13 Mar. 1954, A. Neboiss.

Other material. Victoria: ♂, KS46336, 7 km E of Mirimbah on Mount Stirling Road, 37°09'S 146°57'E, 8 Apr. 1978, M.R. Gray, 920 m; ♀, KS46081, 3 km NE of Mirimbah, 37°07'S 146°56'E, 21 Apr. 2002, M.R. Gray; ♀, KS34754, Sherbrooke Forest, 37°53'S 145°22'E, 19 Jan. 1955.

Diagnosis. Differs from other species in having the lesser spine on the spiniform sclerotized lateral process of MA reduced to a spicule (not "claw-like"); and the epigynal fossa without a dividing septum.

Description

Male (holotype). BL 8.80, CL 4.12 (range 3.22–4.16), CW 2.84, CapW 1.71, EGW 1.14, LL 0.68, LW 0.61, SL 1.95, SW 1.62. Legs: 1243 (I: 19.73; II: 16.33; III: 13.40; IV: 15.40); ratio tibia I length:CW = 1:0.56. Sternum dark brown. Male palp (Fig. 12a,b). RVTA large, anvil shaped (lateral view). Cymbium apex short coniform. Cymbial flange very wide. Bulb wider than long. Prolateral margin of TL rounded, sometimes with a small thorn-like protuberance. Lateral process of MA slender spiniform, with secondary spine reduced to a spicule (Fig. 12b).

Female (KS77020) BL 8.41, CL 3.80 (range 3.80–4.29), CW 2.65, CapW 1.80, EGW 1.16, LL 0.65, LW 0.65, SL 1.88, SW 1.57. Legs: 1243 (I: 14.83; II: 12.67; III: 10.67; IV: 12.33); ratio tibia I length:CW = 1:0.71 Sternum dark brown. Epigynum (Fig. 12c–e). Fossa open, without median septum or posterior knob, longer than wide, narrowest anteriorly. Internal genitalia (KS46081) with short copulatory ducts and large spermathecae separated by about a third of spermatheca width.

Comments. All other *Jamberoo* species have a divided epigynal fossa. Possession of an open fossa initially precluded placing the Mt Buller–Mirimbah males and females together. However, collecting has not revealed a second "striped" species in this region so that the male–female matching seems reliable. The midline area of the fossa rises ventrally from front to back, possibly reflecting a former or incipient division of the fossa.

Distribution. Southern Great Dividing Range, eastern Victoria.

Etymology. The name refers to the southern distribution of this species.

Karriella n.gen.

Type species. *Karriella treenensis* n.sp.

Etymology. The genus name is a reference to the Karri forests associated with the southwestern Australian distribution of this genus and is considered feminine in gender.

Diagnosis. Separated from all other genera by the epigynum having a pair of lateral sclerotized knobs posteriorly; fossa undivided. Palpal RDTA with a deep, dorsal groove; lateral MA process a large spiniform hook with a laminar, scale-like spine basally.

Description. Medium-sized, cribellate spiders (CL 2.45–4.90). Similar to *Couranga* in general characters. Putative stridulatory organ usually present, weakly to well-defined, consisting of basally thickened hairs in 1–2 rows or scattered on retrolateral paturon, opposite an elongate patch of minute thorn-like setae on prolateral basal half of palpal femur (Fig. 15a–d).

Legs. 1423. Male metatarsus I distally thin (but not obviously flattened) and weakly bowed (retrolaterally concave); metatarsus II little modified. Spination: representative leg spination (*K. treenensis*): Male (KS14774)—I: femur d122, p011; tibia d0010, v1222, p1110, r1010; metatarsus d212, v221, p1001, r0101; II: femur d122, p011 (001); tibia d0010, v222, p1010 (1110), r1010; metatarsus d2102, v221, p0101, r0101; III: femur d122, p011; patella d101; tibia d1010, v212, p1010, r1010; metatarsus d2102, v221, p0101,

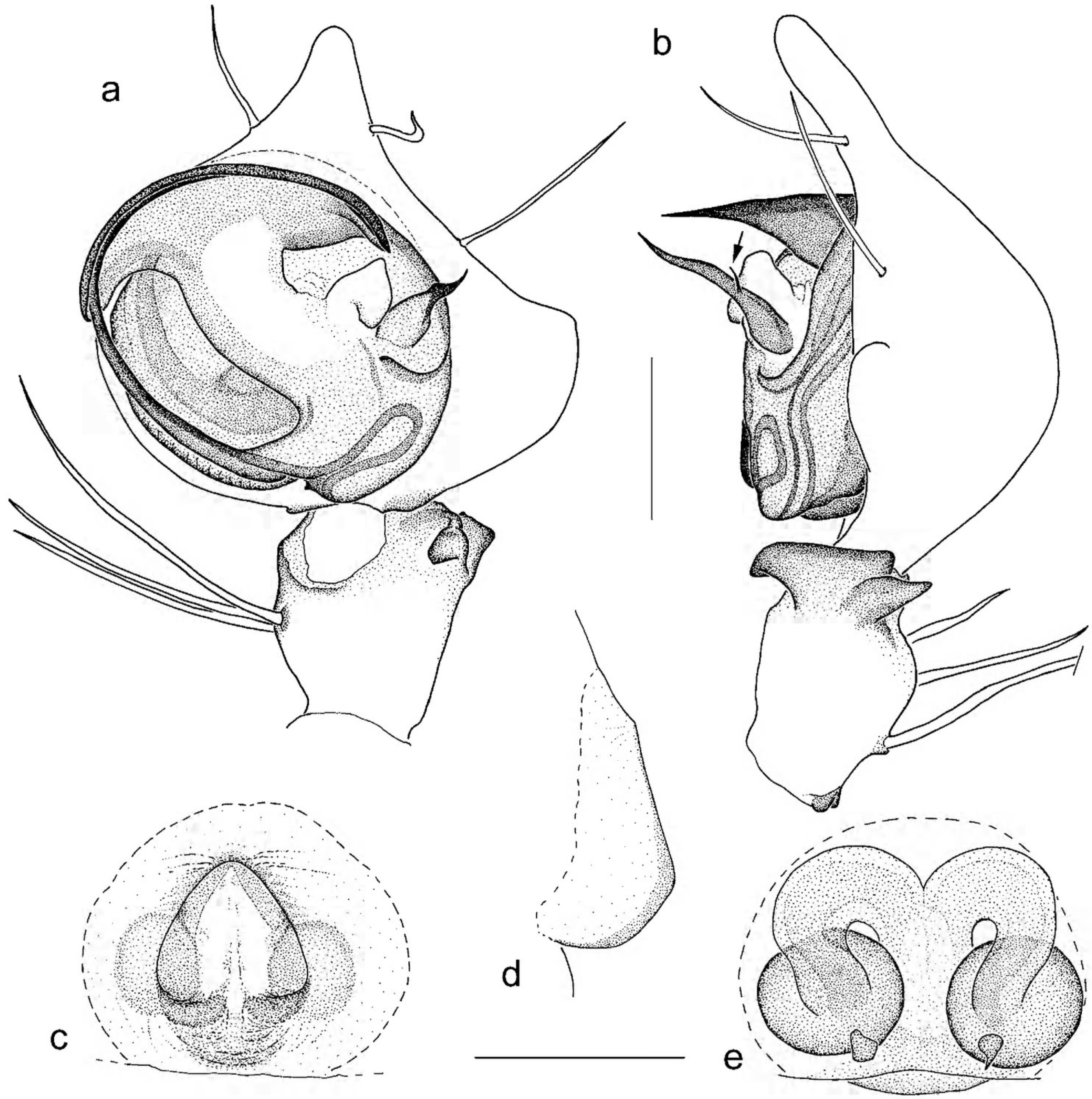

Fig. 12. *Jamberoo australis*. (*a,b*), male palp (holotype): *a*, ventral; *b*, retrolateral (arrow to spicule on lateral process of MA). (*c–e*), epigynum: *c*, ventral, *d*, lateral (KS77020); *e*, dorsal—internal genitalia (KS46081). Scale lines 0.5 mm: upper, *a,b*; lower, *c–e*.

r0101; IV: femur d112, p001; patella d101; tibia d1010, v112, p1010, r1010; metatarsus d222, v221, p0101, r001. Female (KS14775)—I: femur d122, p011; tibia d0010, v222(1222), p1110, r1010; metatarsus d212, v221, p0101, r0101; II: femur d122, p111(101); tibia d0010, v222, p1110, r1010; metatarsus d212, v221, p0101, r0101; III: femur d122, p011; patella d101; tibia d1010, v112(122), p1010, r0110; metatarsus d212, v221, p0101, r0101; IV: femur d112, p0101; patella d101; tibia d1010, v112, p1010, r1010; metatarsus d222, v221, p0101, r001.

Male palp (Figs 2e–g, 13a–c). Cymbium with a coniform apex with 3 bristle-like spines; apical margin of retrolateral flange not offset from cymbium. Bulb rounded. Tegular lobe reduced, small or indistinct; distally curved sperm duct compressed into basal bulb, course partly obscured. Embolus a tapering, semicircular spine, its distal part clasped within the conductor marginal groove. Conductor a truncated, modified T-shape (prolateral limb absent, retrolateral limb broad), anterodorsal margin with flange-like processes anterior to the marginal groove; distal conductor curved ventrally, tapering to a pointed apex. Tegular window prolateral-basal, of moderate size. MA bipartite, membraneous medial process low and ridge-like; sclerotized lateral process a large hook-shaped spine with a laminar, scale-like spine at base. Tibia about as long as wide, with 3 prolateral setae (two robust, spine-like; one a shorter, dorsad bristle), and two distal apophyses: RVTA short and blunt, RDTA a broad plate with a dorsal slit or pit-like groove. Patella about as long as wide with a long dorsal bristle reaching level of basal cymbium.

Epigynum (Fig. 13d–g). Fossa an undivided shallow pit, longer than wide, deepest and rounded anteriorly, shallower and margins weak to absent posteriorly; posterolateral

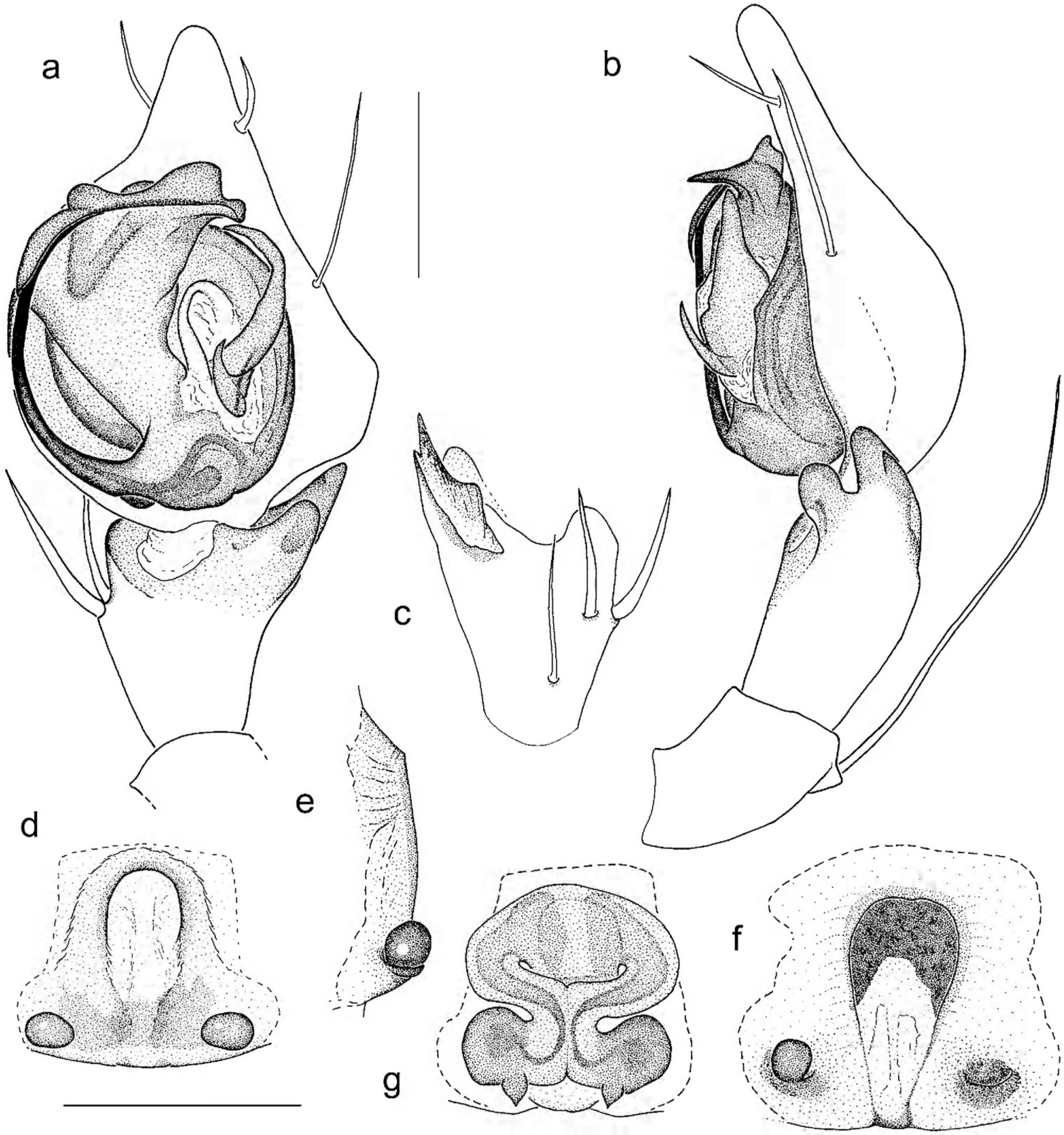

Fig. 13. *Karriella treenensis*. (*a–c*), male palp (holotype): *a*, ventral; *b*, retrolateral; *c*, tibia, dorsal. (*d–g*), epigynum: *d*, ventral (KS14775); *e*, lateral (WAM T78285); *f*, plugged and damaged epigynum, ventral (KS14862); *g*, dorsal—internal genitalia (KS14690). Scale line 0.5 mm: upper, *a–c*; lower, *d–g*.

epigynum with a pair of strongly sclerotized, knob-like protuberances (may be damaged or broken off). Internal genitalia with a pair of short, wide, S-shaped copulatory ducts which meet in the midline before entering the spermathecae medially; spermathecae globose and separated, placed under the sclerotized "knobs" on the posterior epigynum. Spinnerets. Cribellar fields c. 4.0× as wide as long and separated by a seam about 0.2× a field width. Spigots (female, KS85058): ALS: 2 MAP spigots, mesal, adjacent, unequal; c. 40 piriform spigots; PMS: 1 mAP spigot; 5 paracribellar multi-spigot fused bases (2–7 spigots each) grouped anteroectally around mAP; 9 aciniform spigots (1 anterior, rest distributed); 1 cylindrical spigot, posteroectal; PLS: c. 35 aciniform spigots, distributed; 1 subapical "modified PLS" spigot flanked by 3 paracribellar spigots, all free; 2 cylindrical spigots (1 basal, 1 central).

Included species. *Karriella treenensis* n.sp., and *K. walpolensis* n.sp.

Remarks. These spiders are confined to the southern Karri forest region of Western Australia. In mated females one or both epigynal "knobs" are usually damaged; an epigynal plug also may be present in the fossa. Modification of the male anterior conductor margin is similar to that seen in *Couranga* spp. The putative stridulatory structures are variably developed in both males and females. Similar structures are found in males of *Elleguna* spp.

Karriella treenensis n.sp.

Figs 2e–g, 8c, 13a–g, 15a–b

Type material. Western Australia: HOLOTYPE: ♂, KS14774, Treen Brook, 5 km SE of Pemberton, 34°26'S 116°04'E, 11 Feb. 1979, M.R. Gray, in log. PARATYPES: 3 ♀♀, KS14775, KS82652–3, data as holotype; ♀, KS14792, Treen Brook SF, 8 km west of Pemberton, 34°26'S 116°02'E, 12 Feb. 1979, M.R. Gray, in litter; 3 ♂♂, KS34750, KS82654–6, Manjimup, 34°15'S 116°09'E, 1971, J. Springett, SW Forest Survey Ref 19FSS; ♂, WAM T78284, data as KS82654–6; ♂, 2 ♀♀, WAM 74/7–10, 12 miles W of Manjimup, ca 34°13'S 115°56'E, 11 Mar. 1971, H. Butler, litter.

Other material. Western Australia: 2 ♀♀, KS14690, KS85058, Warren NP, Old Vasse Road, 34°30'S 116°00'E, 10 Feb. 1979, M.R. Gray, large filmy horizontal sheet web suspended from low mossy bark on karri trunk; ♂, KS14702, Dombakup SF, 34°30'S 116°00'E, 4 Feb. 1979, M.R. Gray, in sheet web on dry culvert bank, palp used for SEM; 3 ♂♂, KS15305, Pine Creek, 0.5 km from Quarty Rd, Nannup–Pemberton area, 34°15'S 115°50'E, 14 Feb. 1979, M.R. Gray, pitfall traps in litter, 26 Jan.–4 Mar. 1979; ♂, KS34749, ♀, KS34751, Pemberton, Brockman NP, 34°30'S 116°00'E, 22 Jan. 1974, M.R. Gray, under logs in karri forest; ♀, KS34752, Pemberton, 34°30'S 116°00'E, 1971, J. Springett, SW Forest Survey Ref 21FSS; ♀, KS34753, Shannon River (Nelson Rd) Northcliffe, 34°39'S 116°21'E, Jan. 1974, M.R. Gray, in webs on river bank—web in expanding half bell shape, 30 cm diameter; 2 ♀♀, KS14862, Boranup Drive, off Caves Road near Karridale, 34°05'S 115°03'E, 14 Feb. 1979, M.R. Gray, in sheet webs in soil banks and in hanging curled bark near ground; 2 ♂♂, KS15143, as KS14862 but pitfall traps, 26 Jan.–3 Mar. 1979.

Diagnosis. Differs from *K. walpolensis* by the slit-like dorsal groove on the male palpal RDTA; female with epigynal fossa relatively wider and copulatory ducts shorter and arranged in a compact S-shape.

Description

Male (holotype). BL 5.02, CL 2.45 (range 2.45–3.55), CW 2.04, CapW 1.10, EGW 0.78, LL 0.39, LW 0.45, SL 1.33, SW 1.14. Legs: 1423 (I: 11.51; II: 9.92; III: 8.57; IV: 10.20); ratio tibia I length:CW = 1:0.70. Male palp (Fig. 13a–c). Palpal bulb longer than wide. Dorsal groove on RDTA narrow, slit-like. Distal conductor with a large, crest-like process sub-apically. Putative stridulatory bristles on retrolateral paturon, either in 1–2 rows (Fig. 15a) or more scattered (occasionally indistinct); prolateral basal half of femur with a row or patch of very short setae with thickened bases (Fig. 15b).

Female (KS14775). BL 6.33, CL 3.18 (range 2.92–3.62), CW 2.04, CapW 1.39, EGW 0.94, LL 0.47, LW 0.47, SL 1.45, SW 1.25. Legs: 1423 (I: 10.98; II: 9.35; III: 8.12; IV: 9.88); ratio tibia I length:CW = 1:0.74. Stridulatory organ present but less strongly developed than in male, setae grouped irregularly, not in row. Epigynum (Fig. 13d–g). Fossa an inverted U-shape (Fig. 13d), may be narrowed posteriorly (Fig. 13f); fossa length (from anterior margin to line between epigynal knob centres) c. 2× fossa width. Fossa sometimes plugged and the posterior epigynal "knobs" may be damaged or missing (Fig. 13f). Internal genitalia with copulatory ducts and spermathecae making a tight S-shape.

Variation. The bowed male metatarsi I are sometimes pencilled laterally with a pair of dark brown longitudinal lines. Specimens from the Karridale/Boranup area east of Pemberton lack any obvious cheliceral "stridulatory" setae.

Distribution. The Pemberton–Karridale region of the southwest corner of Western Australia.

Etymology. The species name refers to Treen Brook, W.A., the type locality.

Karriella walpolensis n.sp.

Figs 8c, 14a–e, 15c,d

Type material. Western Australia: HOLOTYPE: ♂, WAM T78282, Walpole-Nornalup NP, Hill Top Rd, 34°57'S 116°46'E, M.R. Gray, pitfall traps in litter, 31 Jan.–5 Mar. 1979. PARATYPES: ♀, KS14554, 15 km E of Walpole along Valley of the Giants Rd, 34°56'S 116°48'E, 7 Feb. 1979, M.R. Gray, in log crevice, in retreat funnel with large filmy sheet web, c. 40×20 cm; ♂, KS15383, data as for holotype; 3 ♀♀, KS7240, Walpole-Nornalup NP, Hilltop Rd 4 km SW of highway turn-off, 34°58'S 116°46'E, 8 Feb. 1979, M.R. Gray, under logs, large fine mesh, suspended sheet web; ♂, KS14572, as KS7240 but 2 km from highway turn off; ♀, WAM T78283, Walpole-Nornalup NP, Gully Road, 34°58'S 116°47'E, 15 Feb. 1979, M.R. Gray, pitfall traps in litter, 31 Jan.–5 Mar. 1979; ♀, KS14623, Walpole-Nornalup NP, 2 km along Tinglewood-Mt Clare Rd, 34°58'S 116°46'E, 9 Feb. 1979, M.R. Gray, in curled bark, filmy horizontal web c. 30 × 20 cm extending c. 40 cm above ground; ♀, KS14642, Walpole-Nornalup NP, 34°58'S 116°46'E, 9 Feb. 1979, M.R. Gray, under logs.

Diagnosis. Differs from *K. treenensis* by the more open dorsal groove on male palpal RDTA; female with a narrower epigynal fossa and copulatory ducts in a more extended S-shape.

Description

Male (holotype). BL 8.57, CL 4.90 (range 3.67–4.90), CW 3.31, CapW 1.96, EGW 1.22, LL 0.84, LW 0.73, SL 2.37, SW 1.76. Legs: 1(4/2)3 (I: 19.92; II: 17.17; III: 14.58; IV: 17.17); ratio tibia I length:CW = 1:0.66. "Stridulatory" bristles usually present on paturon and palpal femur, but relatively scattered and sometimes indistinct (Fig. 15c,d). Male palp (Fig. 14a–c). Palpal bulb as wide as long. Dorsal groove on RDTA more open and pocket-like. Distal conductor with a smaller flange-like process sub-apically (cf. *K. treenensis*).

Female (KS14554). BL 8.94, CL 4.45 (range 3.47–4.57), CW 2.86, CapW 2.16, EGW 1.31, LL 0.76, LW 0.67, SL 1.96, SW 1.67. Legs: 1423 (I: 15.67; II: 13.75; III: 11.92; IV: 14.17); ratio tibia I length:CW = 1:0.72. Epigynum (Fig. 14d,e). Fossa similar in external structure to *K. treenensis*, but usually narrower—fossa length (from anterior margin to line between epigynal knob centres) c. 3× fossa width. Posterior epigynal "knobs" are sometimes damaged or broken off. Internal genitalia with copulatory ducts longer and forming a looser S-shape with the spermathecae, cf. *K. treenensis*.

Distribution. Walpole and Nornalup areas of southwest Western Australia.

Etymology. The species name refers to the town of Walpole near the type locality.

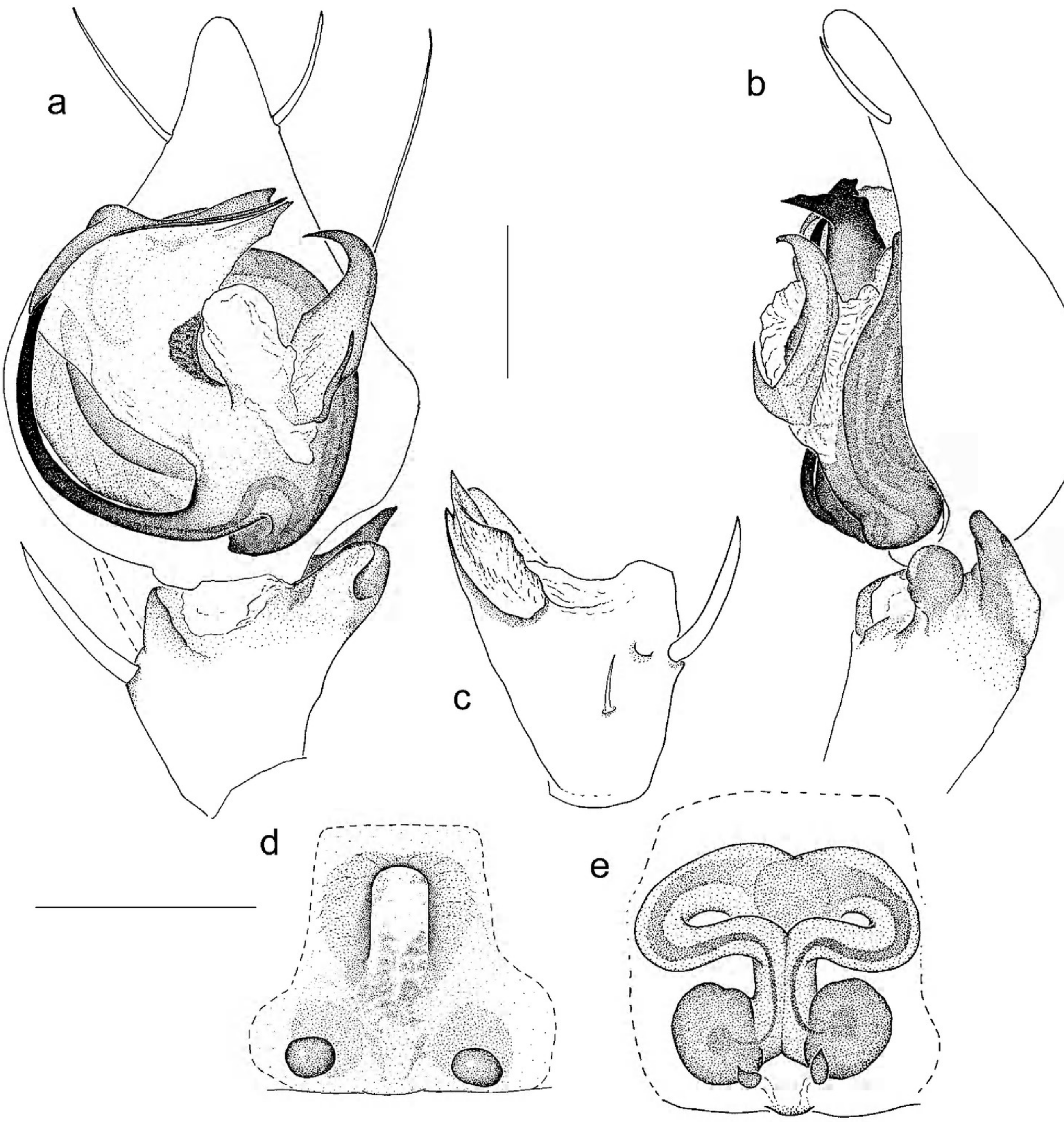

Fig. 14. *Karriella walpolensis*. (*a–c*), male palp (holotype): *a*, ventral; *b*, retrolateral; *c*, tibia, dorsal. (*d,e*), epigynum: *d*, ventral (KS7240); *e*, dorsal—internal genitalia (KS14642). Scale line 0.5 mm: upper, *a–c*; lower, *d,e*.

Elleguna n.gen.

Type species. *Elleguna major* n.sp.

Etymology. The name is an anagram of Eungella, a reference to the type species locality in mid-east Queensland. The gender is considered to be feminine.

Diagnosis. Separated from all other genera by the unique presence of a ventral process on the male palpal conductor; from all except *Therlinya* and *Pillara* by the presence of a unipartite MA; and from all except *Karriella* by the small to indistinct tegular lobe. Females are separated from other genera by the presence of paired "sockets" in the posterior fossa floor or wall.

Description. Medium-sized, cribellate spiders (CL 3.10–4.00). Similar to *Couranga* in general characters. Putative cheliceral/palpal stridulatory organ present, but seen in males only, structure similar to that in *Karriella* but with only patch-like, rather than linear, setal groups.

Legs 1423. Male metatarsi I and II dark brown and strongly bowed (concave dorsally) for much of length (especially leg I), thinner distally but not obviously flattened. Spination: representative leg spination: Male (KS62169)—femur d1202, p0011; tibia d0010, v2102(2202), p1110, r1110; metatarsus d2102, v2021, p1001, r0101; II: femur d10202, p01011; tibia d0010, v2202, p1110, r1010(1110); metatarsus d2102, v2021, p1001, r0101; III: femur d1202, p0111; patella d101; tibia d1010, v122(112), p1010, r1010; metatarsus d2102, v2021, p1001, r0101; IV: femur

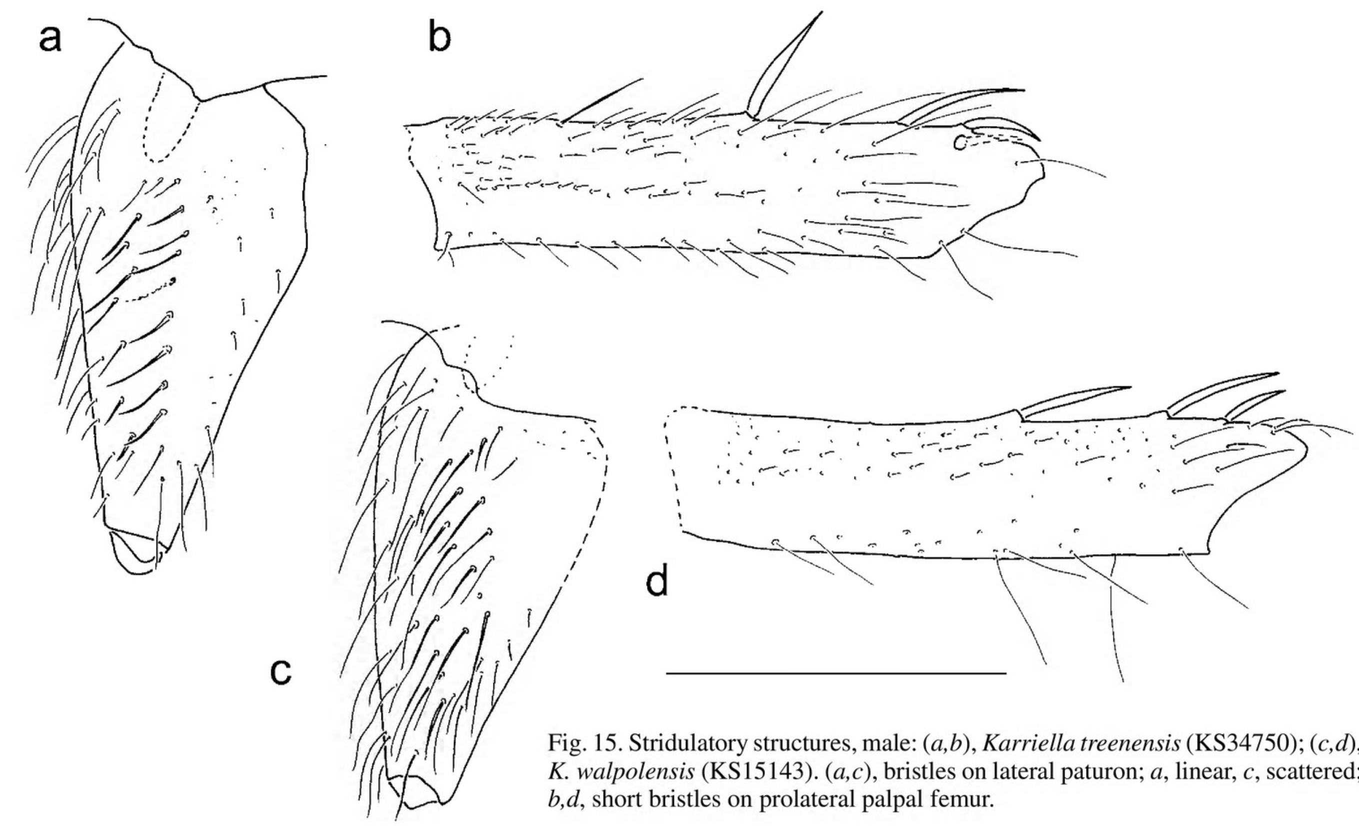

Fig. 15. Stridulatory structures, male: (*a,b*), *Karriella treenensis* (KS34750); (*c,d*), *K. walpolensis* (KS15143). (*a,c*), bristles on lateral paturon; *a*, linear, *c*, scattered; *b,d*, short bristles on prolateral palpal femur.

d112(20102), p001(01011); patella d001; tibia d1010, v1102, p01010, r01010; metatarsus d200102, v020201, p011001, r000101. Female (KS79521)—I: femur d1202, p011; tibia d0010, v222, p1110, r1110(1010); metatarsus d212, v221, p0101, r0101; II: femur d1202, p0111; tibia d0010, v222, p1110, r1010; metatarsus d2012, v221, p0101, r0101; III: femur d1202 p0101(0111); patella d101; tibia d1010, v112, p0110, r0110; metatarsus d2012, v221, p101, r011; IV: femur d1012, p001(0101); tibia d1010, v112, p01010, r01010; metatarsus d222, v221, p0101, r001.

Male palp (Figs 16a,b, 17a,b). Cymbium with a short digitiform apex with 3 bristle-like spines; retrolateral flange of moderate to large size. Bulb rounded. Tegular lobe retrobasal, small or indistinct, the sperm duct in two axial loops visible in ventral or retrolateral view. Embolus a tapering, curved spine resting in the deep marginal conductor groove. Conductor a modified, broad T-shape, with a thick stem directed prolaterally to anteriorly, the "T" margin with flange-like processes; a ventral conductor process (VCP) extends anteriorly across the embolus and conductor groove. Tegular window prolateral to basal, moderate size. MA small, unipartite, membraneous and prolaterally placed. Tibia about as long as wide, with 3 strong prolateral bristles; with a short, blunt RVTA and a short or long RDTA. Patella about as long as wide with a dorsoapical bristle.

Epigynum (Figs 16c–e, 17c–e). Fossa divided by a median septum or an indistinct median ridge; septum or fossa margins may appear broken and irregular; posterior fossa floor or wall with a pair of shallow socket-like recesses; copulatory ducts open anterolaterally. Internal genitalia simple, with a pair of short copulatory ducts entering the spermathecae ventrolaterally; spermathecae globose, contiguous or subadjacent medially, placed just anterior to the epigastric groove.

Included species. *Elleguna major* n.sp., *E. minor* n.sp.

Remarks. The species included here occur sympatrically in the Eungella region. They show some marked differences in genitalic structure. However, both share the unique presence of a ventral conductor process on the male palp, and paired "sockets" in the posterior epigynal fossa (floor or wall) of females. Damage may be seen to the lateral margins (*E. major*) or the median septum (*E. minor*) of the epigynal fossa.

Distribution. From the Eungella NP region to the coastal Mt Dryander range, NE of Mackay, mid-eastern Queensland.

Elleguna major n.sp.

Figs 8d, 16a–e

Type material. Queensland: HOLOTYPE: ♂, KS34765, lower slopes of Mt William, Dalrymple Heights near Eungella, 21°01'S 148°36'E, Apr. 1975, M. Gray & C. Horseman, in log, Rainforest Survey Site 15, notophyll evergreen vine forest. PARATYPES: ♀, KS57656, Eungella area, Snake Rd, 4.7 km NW Dalrymple Rd, 21°02'47"S 148°32'17"E, 20 Apr. 1998, G. Milledge; ♂, KS34585, Dalrymple Heights, 21°04'S 148°35'E, 9 Apr. 1975, M.R. Gray & C. Horseman, in roadside bank near Rainforest Survey Camp; ♀, KS57653, Eungella NP, Dalrymple Rd, 1.3 km NE Snake Rd junction, 21°04'S 148°35'E, 18 Apr. 1998, G. Milledge; ♀, KS57654, as KS57653 but 1.7 km; 2 ♂♂, 4 ♀♀, KS83622–7, data as for holotype.

Diagnosis. Differs from *E. minor* as follows: male palp with a large ventral conductor process, a basally angled and apically elongated embolus, and a large RDTA; epigynal fossa indistinctly divided by a weak median ridge and lateral fossa margins extended inwards as thin "flanges".

Description

Male (holotype). BL 6.65, CL 3.22 (range 3.10–3.39), CW 2.33, CapW 1.22, EGW 0.88, LL 0.43, LW 0.43, SL 1.59, SW 1.35. Legs: 1423 (I: 15.58; II: 13.17; III: 11.58; IV: 14.25); ratio tibia I length:CW = 1:0.66. Male palp (Fig. 16a,b). Bulb

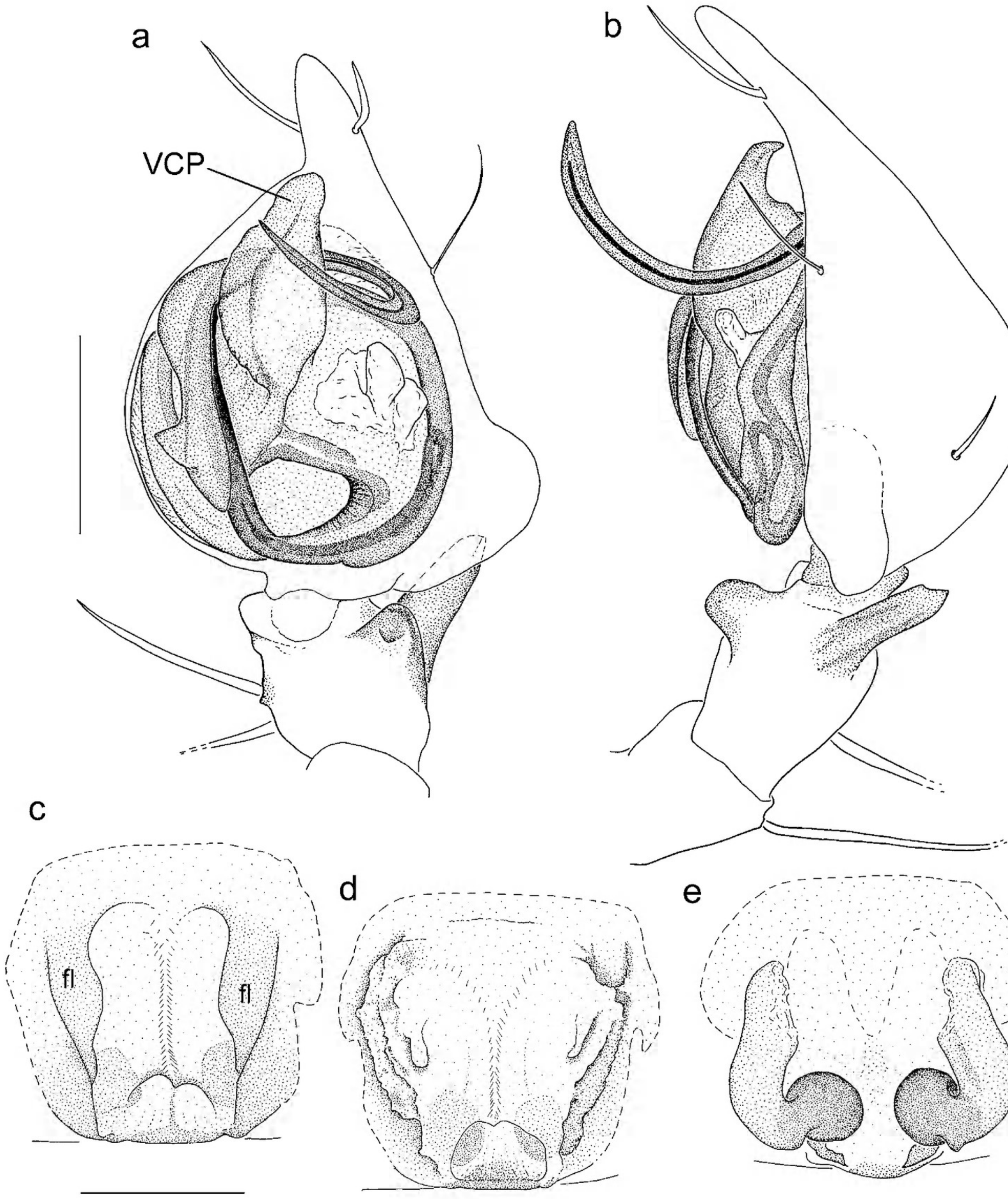

Fig. 16. *Elleguna major*. (*a,b*), male palp (holotype): *a*, ventral; *b*, retrolateral. (*c–e*), epigynum: *c*, ventral, fl = flange (KS57656); *d*, ventral, flanges broken (KS83624); *e*, dorsal—internal genitalia (KS83624). Scale lines 0.5 mm: upper, *a,b*; lower, *c–e*.

with a reduced, indistinct TL, with a tightly looped sperm duct visible retrolaterally. Embolus a long, curved spine, thick and strongly angled basally just before entering the conductor groove, then tapering and slender distally. Prolateral limb of conductor wide with a triangular flange; retrolateral limb extended as a long, translucent, curved spine supporting the elongate embolus and making a loose loop around the ventral conductor process. VCP very large with a thickened base. TW basal. MA surrounded by a collar-like membraneous area. RDTA a robust, ventrally concave, tapering process.

Female (KS57656). BL 8.37, CL 4.00 (range 3.22–4.00), CW 2.53, CapW 1.88, EGW 1.16, LL 0.61, LW 0.59, SL 1.80, SW 1.51. Legs: 1423 (I: 14.33; II: 12.25; III: 10.58; IV: 13.00); ratio tibia I length:CW = 1:0.69. Epigynum (Fig. 16c–e). Fossa longer than wide, weakly divided by a median ridge; anterolateral fossa margins extended as thin, flange-like laminae ("fl" in Fig. 16c) over the anterolateral fossa floor and copulatory openings (these flanges may be broken off—Fig. 16d); posterior fossa floor with a pair of adjacent "socket-like" recesses. Copulatory duct openings anterolateral, widely separated. Internal genitalia. Copulatory ducts very short, of moderate width; spermathecae small.

Distribution. Known only from Eungella NP area, mid-eastern Queensland.

Etymology. The species name refers to the large size of the male palpal ventral conductor process.

Elleguna minor n.sp.

Figs 8d, 17a–e

Type material. Queensland: HOLOTYPE: ♂, S74216 (QM), Crediton, c. 21°16'S 148°32'E, R. Kohout & V. Davies, 14–21 Apr. 1975, sheet web (running underneath). PARATYPES: ♀, KS79572, 2 ♂♂, KS79581–2, ♂, KS57652, Eungella NP, Broken River rainforest walk, 0.5 km from carpark, 21°10'S 148°30'E, 18 Apr. 1998, G. Milledge, sheet webs on banks of pathway; 3 ♀♀, S62169 (QM), data as holotype; ♂, S62165 (QM), Mt Dryander summit, 20°15'S 148°33'E, 740 m, 24 Apr. 1979, G.B. Monteith, rainforest, berlesate, moss on rocks & trees; ♀, S62167 (QM), Mt Dryander, 20°15'S 148°33'E, 700–800 m, 21 Nov. 1992, Monteith, Thompson, Cook & Janetzki.

Other material. Queensland: ♂, 2 ♀♀, S62168 (QM), Eungella NP, c. 21°10'S 148°30'E, 9 Nov. 1991, R. Raven, P. Lawson, night coll.; ♀, S62164 (QM), Crediton, Eungella, 21°11'S 148°33'E, 750 m, 17 Nov. 1992, Monteith, Thompson, Cook & Janetzki; ♂, S27427 (QM), Mt Dryander, 20°15'S 148°33'E, 650 m, 21 Nov. 1992–mid Apr. 1993, D. Cook & G.B. Monteith, RF intercept & pitfalls; 7 ♀♀, S62170 (QM), Finch Hatton, c. 21°06'S 148°37'E, 7–14 Apr. 1975, R. Kohout, V. Davies, L. Myberg, running on underside of sheet webs with retreat in rotting wood or bank.

Diagnosis. Differs from *E. major* as follows: male palp with a small ventral conductor process; semicircular embolus; short RDTA; MA often with a sclerotized spot; epigynal fossa divided by a definite septum.

Description

Male (holotype). BL 7.27, CL 3.71(range 3.35–3.96), CW 3.02, CapW 1.43, EGW 0.98, LL 0.51, LW 0.49, SL 1.71, SW 1.47. Legs: 1423 (I: 16.25; II: 14.08; III: 12.33; IV: 15.67); ratio tibia I length:CW = 1:0.79. Male palp (Fig. 17a,b). Cymbial flange large. Bulb with a small, retrobasal TL, the looped sperm duct visible ventrally. Embolus an evenly curved, semicircular spine. TW prolateral-basal. VCP a short, apically rounded plate. Curved conductor margin with two low, flange-like processes; retrolateral limb of conductor divided into a dorsal spine-like process and a ventral tapering, spatulate process, grooved for the embolus; both processes curve retroventrally. Membraneous MA often with a small, sclerotized spot. RDTA short, with subterminal cusp.

Female (KS79572). BL 8.08, CL 3.92, CW 2.50, CapW 1.67, EGW 1.08, LL 0.56, LW 0.53, SL 1.71, SW 1.43. Legs: 1423 (I: 13.25; II: 11.08; III: 9.83; IV: 12.17); ratio tibia I length:CW = 1:0.75. Epigynum (Fig. 17c–e). Fossa divided by a septum with a pair of shallow recessed “sockets” in the adjacent posterior walls. Copulatory duct openings anterolaterally placed. Internal genitalia. Copulatory ducts short, about as wide as spermathecae.

Comments. The septum dividing the epigynal fossa is variable in width. Some thinner septa may be broken off towards the posterior end.

Distribution. Eungella NP area to Mt Dryander, mid-eastern Queensland.

Etymology. The species name refers to the small size of male palpal ventral conductor process.

Asmea n.gen.

Type species. *Asmea akrikensis* n.sp.

Etymology. The generic name refers to the 1965 Australian Star Mountains Expedition to Papua New Guinea, during which several of the spiders described here were collected. The name is considered masculine.

Diagnosis. Palpal cymbium with large retrolateral flange; tegular lobe and base of embolus usually separated by a deep prolateral notch; MA bipartite, with erect membraneous and erect to curved, weakly sclerotized processes; RVTA short, blunt, beak-like; RDTA typically long, keel-like. Epigynal fossa divided by a median septum; spermathecae separated, placed near the posterior fossa margin.

Separated from *Pillara* and *Borrala* by the presence of a short RVTA, from *Couranga, Karriella* and *Elleguna* by the simple, unmodified T-shaped conductor structure, and from *Jamberoo* by the MA shape and the keel-like RDTA.

Description. Medium-sized, cribellate spiders (CL 3.31–5.25). Similar to *Couranga* in general characters. AER strongly recurved with AME protuberant on low tubercle above concave clypeus. AME or PME largest (except *A. capella*).

Legs 1423. Superior claws long, slender. Male metatarsi I and II weakly to obviously bowed and flattened. Trochanters notched but deepest anteriorly. Spines: representative leg spination (*A. hayllari*): Male (SAM NN19579)—I: femur d1022, p0111; tibia d0010, v222, p1110, r1010; metatarsus d20102, v221, p0101, r0101. II: femur d10202, p01110; patella d00(1); tibia d0010, v222, p1110, r1010; metatarsus d20102, v221, p0101, r1010. III: femur d1202, p111; patella d101; tibia d1010, v222, p0110, r01010; metatarsus d20102, v221, p0101, r0101. IV: femur d20102, p0111; patella d101; tibia d1010, v222, p01010, r01010; metatarsus d222, v221, p0101, r001. Female (SAM BS1120)—I: femur d1202, p0111; tibia d00(1)0, v221(0), p1110, r1010; metatarsus d1012, v221, p0101, r0101. II: femur d1202, p0111; tibia d0010, v221(0), p1110, r1010; metatarsus d1012, v221, p0101, r0101. III: femur d1202, p0111; tibia d1010, v122, p110, r110; metatarsus d2102, v221, p0101, r0101. IV: femur d112, p001; patella d001; tibia d1010, v112, p1010, r01010; metatarsus d2012, v121(or 111), p0101, r001. Male palp (Fig. 18a,b). Cymbium with a large retrolateral flange and a coniform to digitiform apex with 2–3 bristle-like spines. Bulb subcircular to ovoid. Tegulum with a well differentiated, retrobasal TL. Sperm duct visible on the basal tegulum as a wide S-shaped loop. Embolus spiniform, curving in a semi-circle from its probasal tegular origin around the conductor margin. Conductor T-shaped, with a simple marginal groove; retrolateral limb tapering to a pointed tip that curves ventrad, clasping the distal embolus. Tegular window large, prolaterally placed. MA large, bipartite, both processes more or less laminate and erect—medial process unsclerotized; lateral process weakly sclerotized and either erect or curved. Tibia

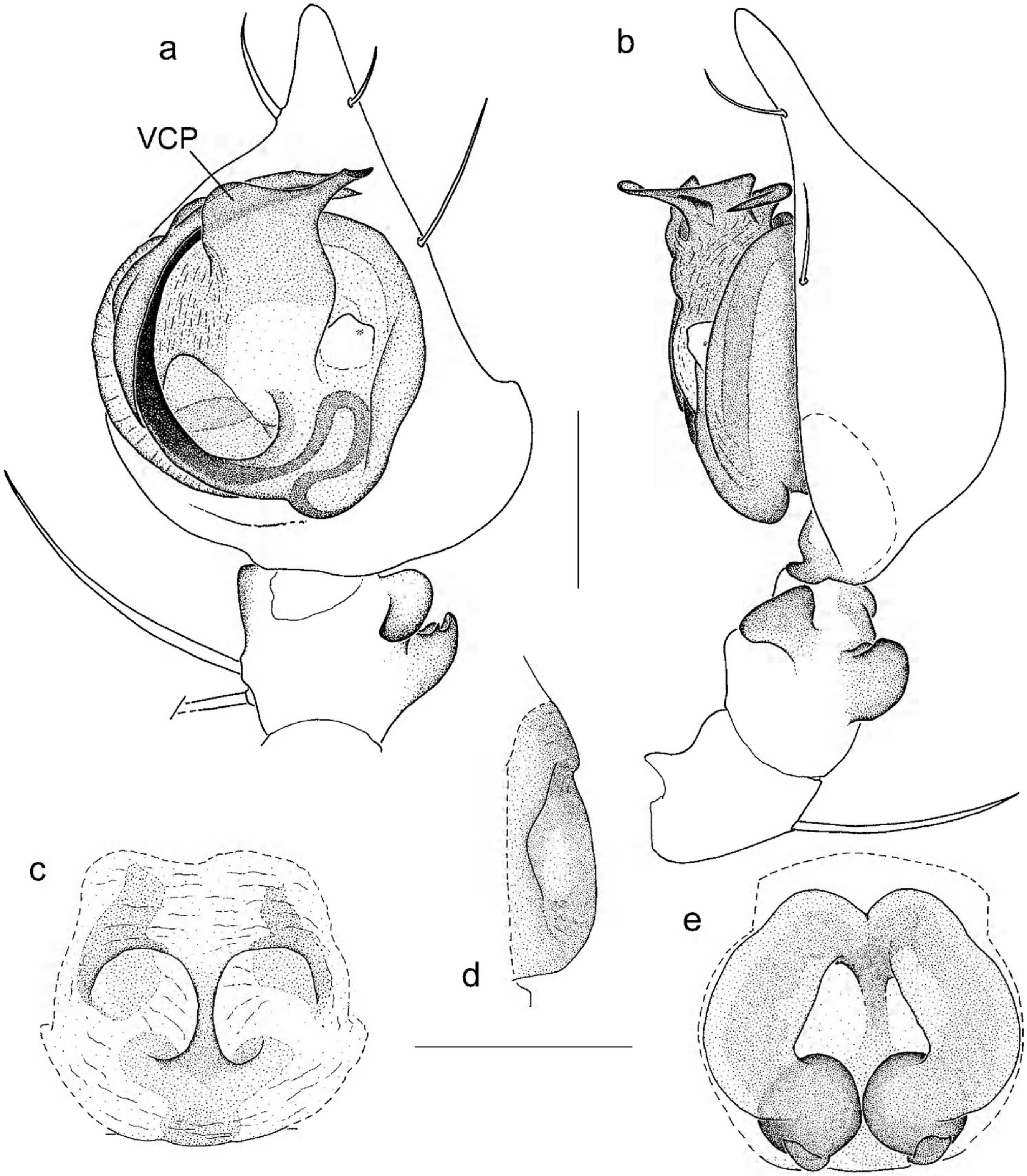

Fig. 17. *Elleguna minor*. (*a,b*), male palp (KS57652): *a*, ventral; *b*, retrolateral. (*c–e*), epigynum (KS79572): *c*, ventral; *d*, lateral; *e*, dorsal—internal genitalia. Scale lines 0.5 mm: upper, *a,b*; lower, *c–e*.

about as long as wide, with 2–3 strong prolateral bristles or spines and two distal apophyses: RVTA short, bluntly beak-like ventrally, widest in lateral view; RDTA typically a large, longitudinal, keel-like process (but "keel" short and notched in *A. hayllari*), attached along the retrodorsal tibia. Patella about as long as wide with a dorsal bristle. Epigynum (Fig. 19c–f). Fossa divided by a median septum. Copulatory ducts very short, entering spermathecae anterodorsally; spermathecae ovoid, separated toward midline.

Included species. *Asmea akrikensis* n.sp., *A. hayllari* n.sp., *A. capella* n.sp., and *A. mullerensis* n.sp.

Distribution. Western Highlands of Papua New Guinea.

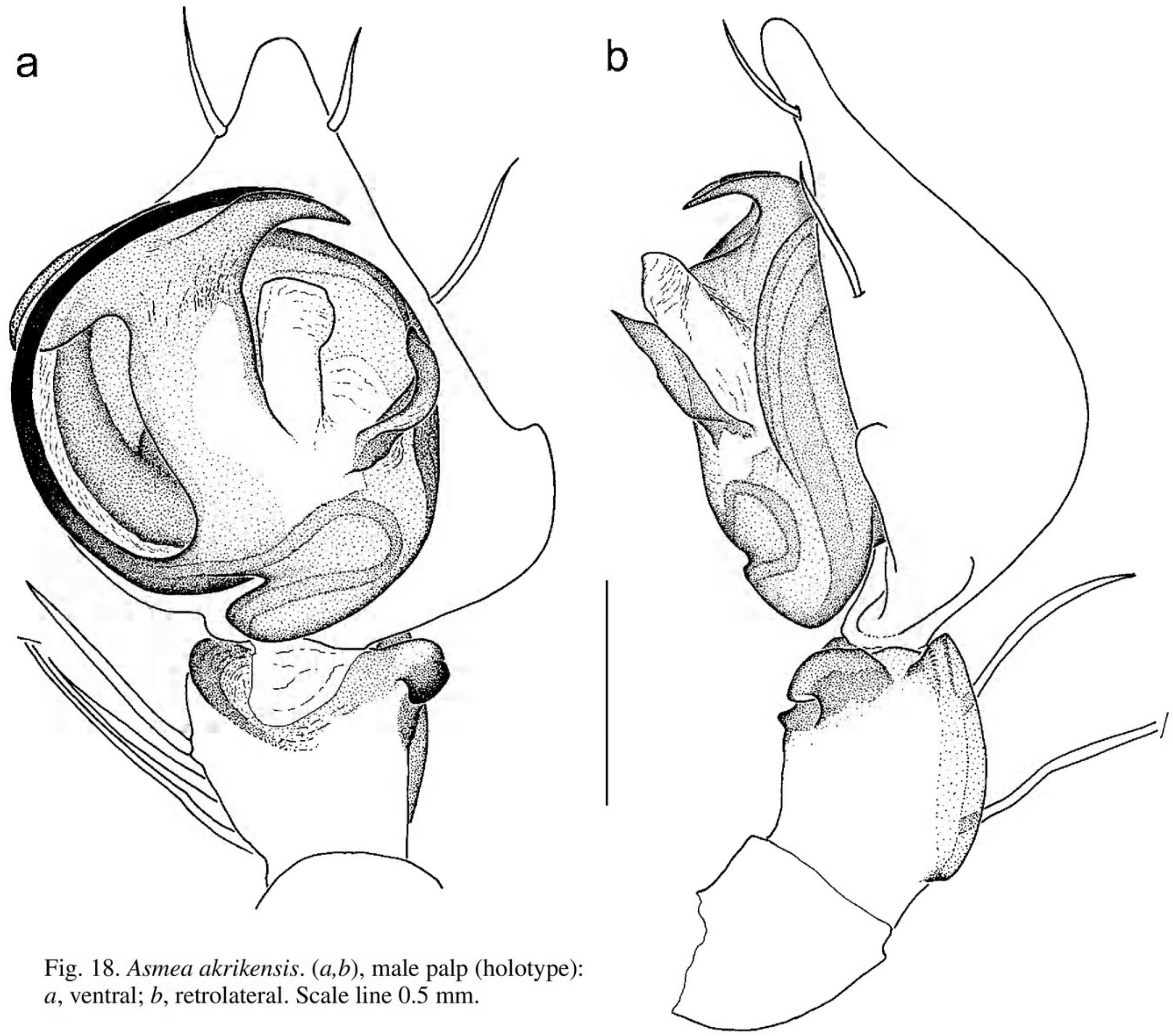

Fig. 18. *Asmea akrikensis*. (*a,b*), male palp (holotype): *a*, ventral; *b*, retrolateral. Scale line 0.5 mm.

Asmea akrikensis n.sp.

Figs 8e, 18a,b

Type material. Papua New Guinea: Western Province: HOLOTYPE: ♂, KS45033, SE slopes of Mt Akrik, 15 km NW of Tabubil, 5°10'S 141°09'E, 14 Nov. 1993, R.B. Lachlan, 1625 m.

Diagnosis. Distinguished from males of other species by the wide separation of the two MA processes and the RDTA almost as long as the tibia.

Description

Male (holotype). BL 6.73, CL 3.43, CW 2.65, CapW 1.47, EGW 0.98, LL 0.55, LW 0.49, SL 1.71, SW 1.47. Legs: 1423 (I: 13.14; II: 11.02 (RHS); III: 9.88; IV: 12.37); ratio tibia I length:CW = 1:0.82. AME≥PME>ALE≥PLE. Clypeus height ca 2× AME width. Metatarsi I and II dark brown and strongly sclerotized, bowed (dorsally concave) and dorsoventrally flattened. Male palp (Fig. 18a,b). Distal cymbium short, coniform. Apical margin of cymbial flange strongly offset. MA processes well separated, lateral process a flattened, twisted, weakly sclerotized spine. Deep indentation between TL and embolic base. RDTA a long keel, more than three-quarters length of tibia. Tibia with 3 strong prodorsal spine-like bristles.

Female. Unknown.

Distribution. Recorded only from the type locality.

Etymology. The species name refers to the type locality, Mt Akrik.

Asmea hayllari n.sp.

Figs 8e, 19a–f

Type material. Papua New Guinea: Sandaum Province: HOLOTYPE: ♂, SAM NN19579, semi moss forest bordering the Nong-Ilam River systems N & E of Starr (sic) Mts, 6000'–7000', New Guinea 15–22 May 1965, T. Hayllar. (See comments on locality and coordinates below). PARATYPE: ♀, SAM BS1120, cave, Oksapmin, 4,800 ft, T.P.N.G., 22 May 1965, T. Hayllar (ASME). (See comments on locality data below)

Diagnosis. Differs from males of other species by the short, notched RDTA and smoothly rounded TL. Epigynal fossa with a narrow median septum.

Description

Male (holotype). BL 7.96, CL 3.96, CW 2.78, CapW 1.59, EGW 1.12, LL 0.61, LW 0.57, SL 1.76, SW 1.55. Legs: 1423 (I: 18.25; II: 15.25; III: 12.08 [RHS, estimated, tarsus missing]; IV: 15.50); ratio tibia I length:CW = 1:0.61. AME>PME>ALE≥PLE. Clypeus height 1.75× AME width.

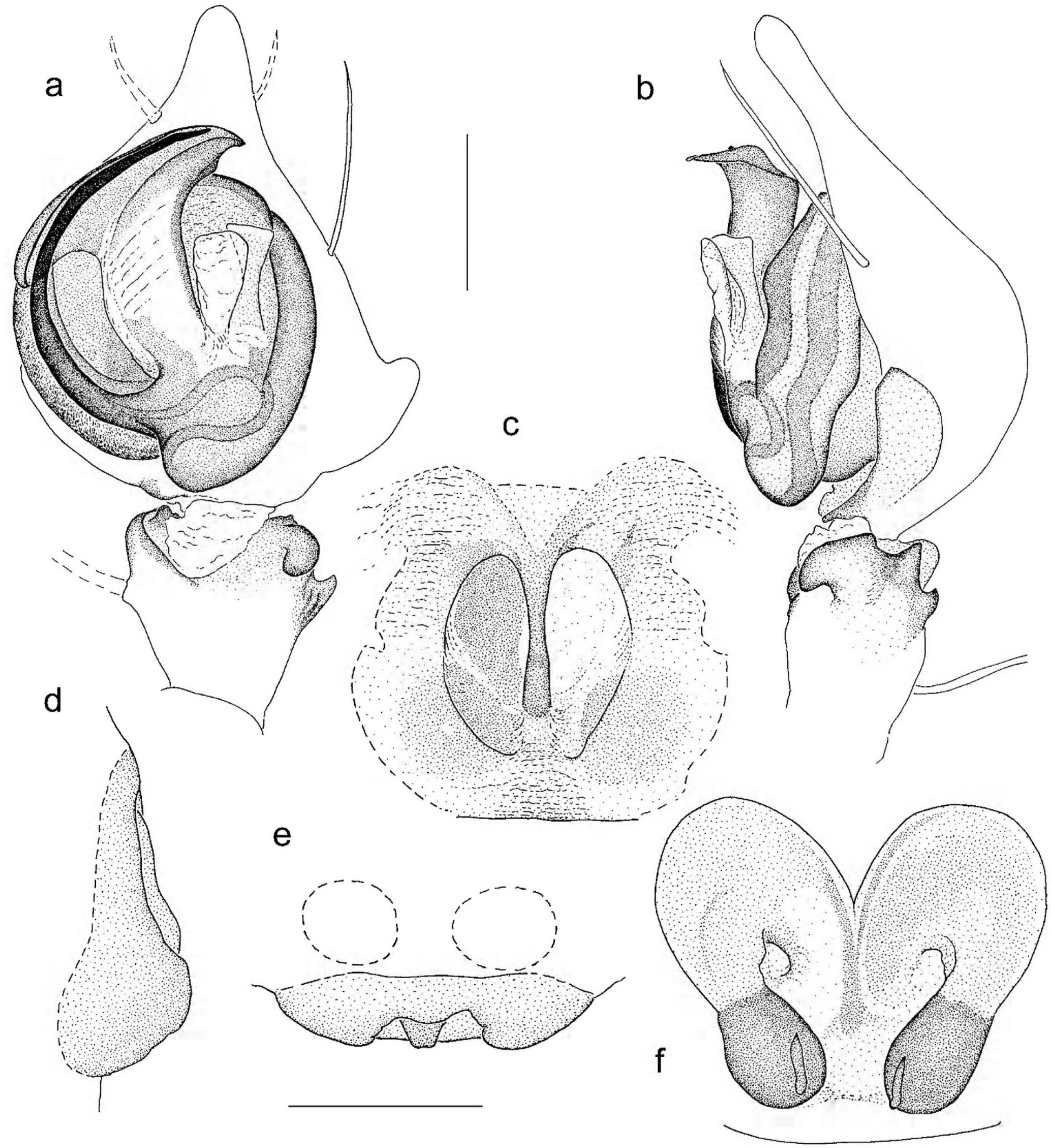

Fig. 19. *Asmea hayllari*. (*a,b*), male palp (holotype): *a*, ventral; *b*, retrolateral. (*c–f*), epigynum (SAM BS1120): *c*, ventral; *d*, lateral; *e*, posterior; *f*, dorsal—internal genitalia. Scale lines 0.5 mm: upper, *a,b*; lower, *c–f*.

Metatarsi I, II weakly bowed and flattened. Male palp (Fig. 19a,b). Distal cymbium short, conical. Apical margin of cymbial flange strongly offset. TL rounded, offset but not separated from base of embolus. MA processes adjacent, lateral process weakly sclerotized, widening and truncated apically. Tibia with 3 strong prodorsal bristles; RVTA laterally broad; RDTA keel short and notched.

Female: (BS1120). BL 10.17, CL 5.00, CW c. 3.00, CapW c. 2.33 (carapace damaged), EGW 1.43, LL 0.73, LW 0.73, SL 2.12, SW 1.92. Legs: 1423 (I: 20.08; II: 17.00; III: 14.33; IV: 17.33 [RHS]); ratio tibia I length:CW = 1:0.72. PME>AME>ALE≈PLE. Clypeus height 3× AME width. Epigynum (Fig. 19c–f). Fossa longer than wide with narrow septum. Internal genitalia with very broad copulatory ducts and relatively small spermathecae (cf. *A. capella*).

Distribution. North-eastern Star Mountains, Sandaum Province, Papua New Guinea.

Etymology. The species is named in honour of Tom Hayllar, member of the Australian Star Mountains Expedition of 1965 and collector of the type material and other specimens of *Asmea*.

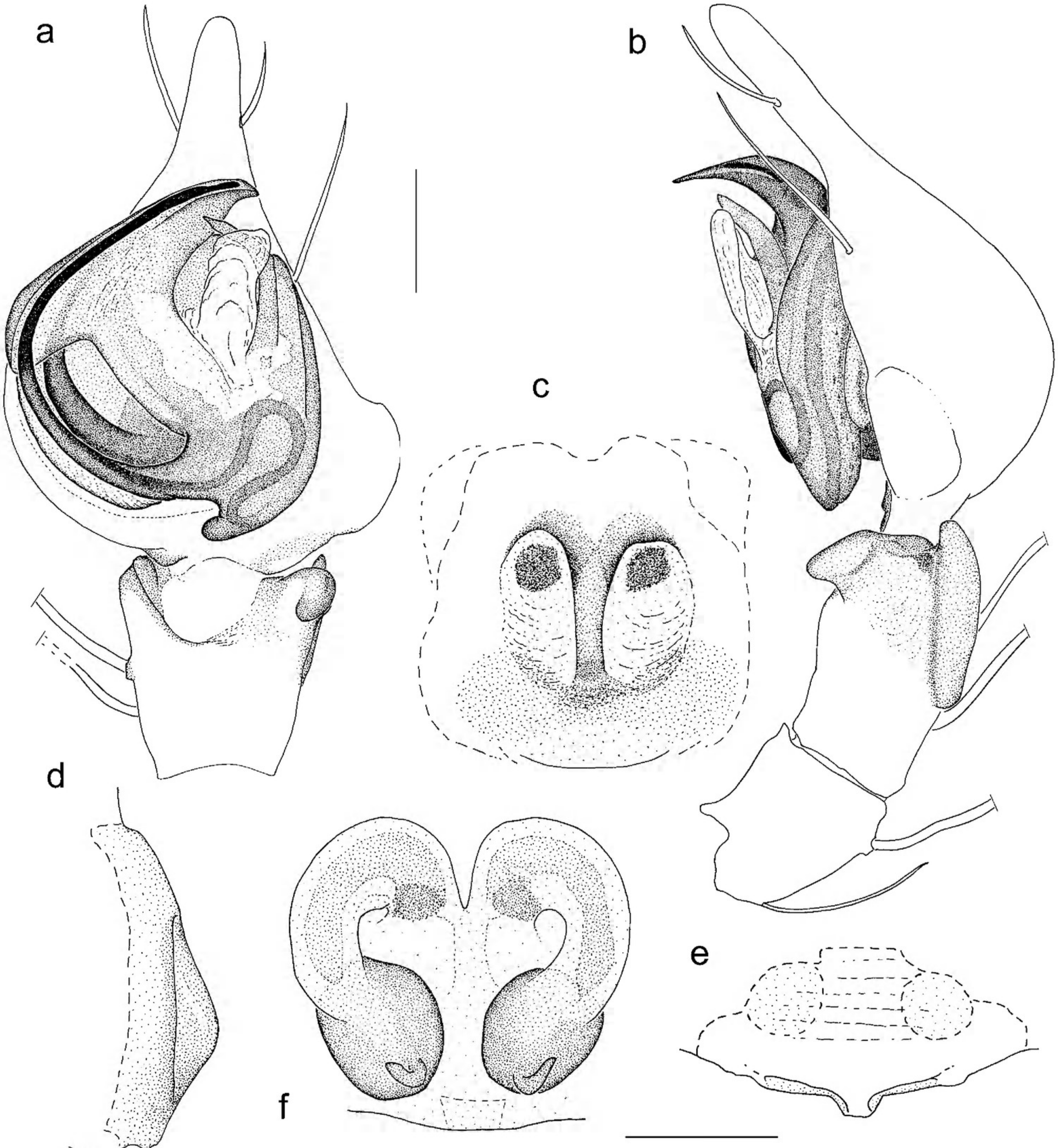

Fig. 20. *Asmea capella*. (*a,b*), male palp (SAM NN19576): *a*, ventral; *b*, retrolateral. (*c–f*), epigynum (holotype): *c*, ventral; *d*, lateral; *e*, posterior; *f*, dorsal—internal genitalia. Scale lines 0.5 mm: upper, *a,b*; lower, *c–f*.

Comments on locality and coordinates. *Paratype female locality*—the label data for this specimen gives the collection locality as "cave, Oksapmin", a reference also found in the ASME diary notes provided by Tom Hayllar. Oksapmin is a village locality placed some 80 km east of Telefomin. However, all collecting done during the 1965 ASME took place in areas to the west of Telefomin, from which the expedition started and finished—the Oksapmin area to the east of Telefomin was neither sampled nor visited. Contemporaneous diary accounts and recollections record the paratype female as being collected at "a cave near Oksapmin after leaving the Ilam River" (T. Hayllar, pers. comm.). All of this makes it likely that "Oksapmin" is actually a misspelling of Okapmin, a village placed west of Telefomin near the Ilam River. Accordingly, the coordinates for Okapmin are given as the approximate location for the female paratype in Fig. 8e (5°07'S 141°31'E).

Holotype male locality—Hayllar's ASME diary notes indicate that this specimen was collected about 1.5 days before the female during a seven day march along the Nong-Ilam River system toward "Oksapmin" (= Okapmin). This suggests that the male specimen was collected approxi-

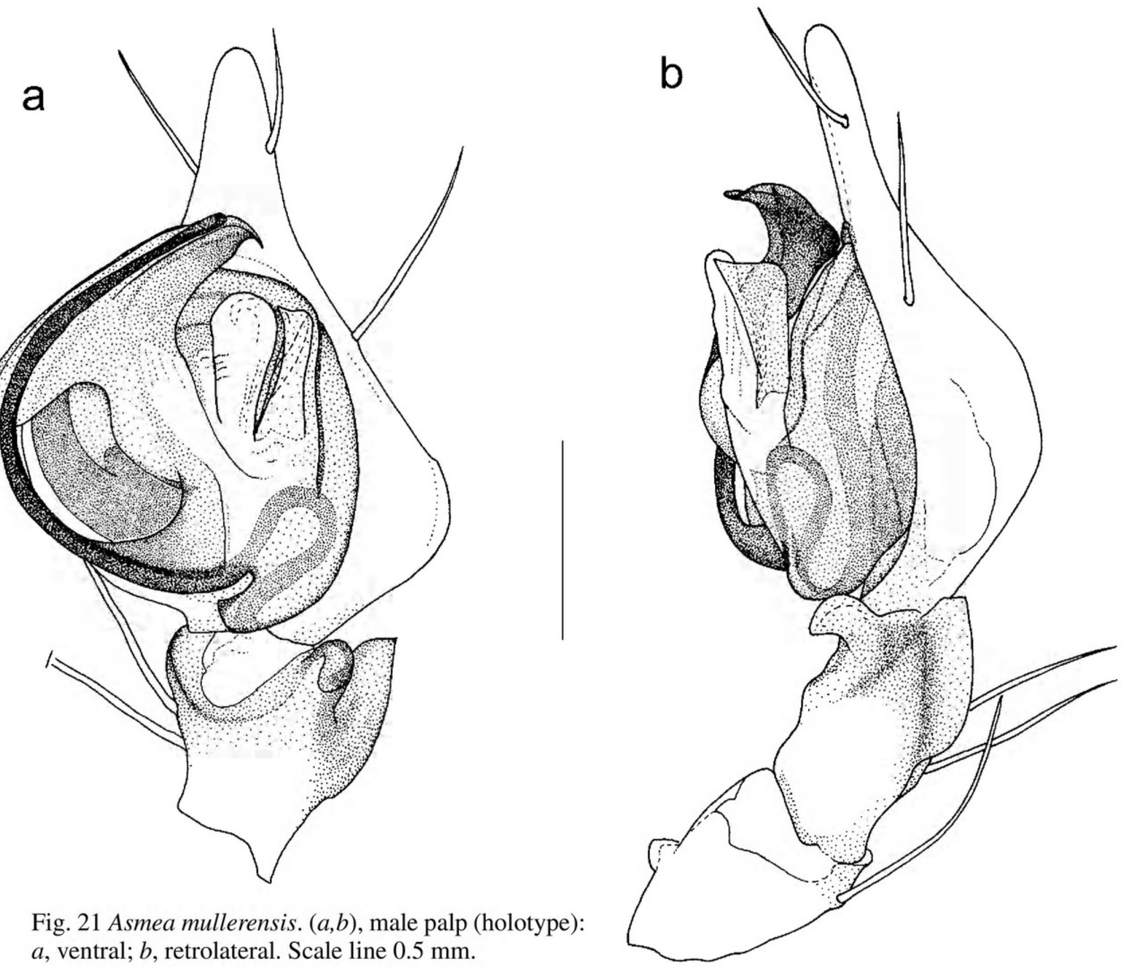

Fig. 21 *Asmea mullerensis*. (*a,b*), male palp (holotype): *a*, ventral; *b*, retrolateral. Scale line 0.5 mm.

mately 30 km from Okapmin. This assumption was used to approximate location coordinates for the male specimen (5°04'S 141°20'E) in Fig. 8e. The relative proximity of these collecting sites provides additional support for the male/female conspecificity assumed here.

Asmea capella n.sp.

Figs 8e, 20a–f

Type material. Papua New Guinea: Western Province: HOLOTYPE: ♀, SAM BS1114, P.L. Cave, Star Mountains, T.P.N.G., ASME. (See comments on locality data below). PARATYPE: ♂, SAM NN19576, Star Mountains, New Cal. [sic], 1965. (See comments on locality data below)

Diagnosis. Separated from other species by the small AME; from *A. hayllari* by the wider epigynal septum and the smoothly keel-shaped RDTA, from *A. akrikensis* by the closely adjacent MA processes and from *A. mullerensis* by the "spiniform" and medially curved lateral MA process.

Description

Female (holotype). BL 11.08, CL 5.25, CW 3.67, CapW 2.37, EGW 1.39, LL 0.80, LW 1.00, SL 2.37, SW 2.16. Legs: long, 1423 (I: 26.17; II: 23.08; III: 20.25; IV: 24.67); ratio tibia I length:CW = 1:0.55. Eyes relatively small; AME smallest; PLE≈ALE>PME≥AME. Clypeus height 4× AME width. Epigynum (Fig. 20c–f). Fossa septum wider than in *A. hayllari*. Internal genitalia: copulatory ducts narrower and spermathecae larger than in *A. hayllari*.

Male (NN19576) (body partially collapsed, possibly due to drying). BL 7.96, CL 4.08, CW 2.98 (estimated), CapW 1.84 (estimated), EGW 1.16, LL 0.84, LW 0.73, SL 1.98, SW 1.82. Legs: long, 1423 (I: 27.17; II: 24.08; III: 20.42; IV: 25.17); ratio tibia I length:CW = 1:0.45 (estimated). Metatarsi I weakly bowed, II moderately bowed and weakly flattened. Eyes with AME and ALE smallest (AME probably reduced); PME≥PLE>AME≥ALE. Clypeus height 4× AME width. Male palp (Fig. 20a,b). Distal cymbium short, digitiform. Deep indentation between TL and embolic base. MA processes closely adjacent; lateral process weakly sclerotized and "spiniform", curving behind the medial process. Tibia with 3 strong prodorsal bristles; RVTA laterally broad. RDTA a long keel, almost three-quarters length of tibia.

Distribution. Star Mountains, Western Province, Papua New Guinea.

Etymology. The specific name refers to Capella, a peak in the Star Mountains near the Plateau Limestone collecting locality.

Comments on locality data. It seems likely that the label data locality "New Cal." given for the male specimen NN19576 is a subsequent mistranscription for "New Guinea". This is because: (*a*) closely related males have been collected from the Star Mountains region in Papua New Guinea, including at least one by the ASME in 1965; and (*b*) there are no "Star Mountains" located in New Caledonia.

Consequently, it seems safe to assume that the spider is from the Star Mountains, Papua New Guinea, and we therefore treat the specimen as a male of this species.

The female type locality, P.L. Cave, refers to Plateau Limestone Cave (K1 or K1 sink) adjacent to the Dokfuma Base Camp near the Krom River, SE of Mt Capella (c. 5°01'S 141°08'E in Fig. 8e). This cave was visited by the ASME on 1 Apr. 1965 (T. Hayllar, pers. comm.). A female and 5 juveniles collected from P.L. Cave are present in the SAM collection. The presence in "K1 Sink" of "large spiders" is specifically mentioned in the expedition notes, but the sex or number of specimens collected is not. Both the male and female specimens described here are rather large and long legged, and have small AME (smallest in female) relative to the typically large AME size seen in other borraline species. This may represent evidence of adaptation to cave-dwelling, although only the female is definitely known to be associated with caves.

Asmea mullerensis n.sp.

Figs 8e, 21a,b

Type material. Papua New Guinea: Southern Highlands Province: HOLOTYPE: ♂, KS571, Muller Range, scarp area, c. 5°34'S 142°25'E, 17 Aug. 1976, D. Rothery. (Locality coordinates approximated from maps and information in James *et al*., 1977; James & Dyson, 1978)

Diagnosis. Separated from *A. akrikensis* by the closely adjacent MA processes and digitiform cymbium, from *A. hayllari* by the uniformly keel-shaped RDTA, and from *A. capella* by the erect and apically truncate retrolateral MA process.

Description

Male (holotype). BL 6.58, CL 3.31, CW 2.29, CapW 1.35, EGW 1.03, LL 0.50, LW 0.50, SL 1.51, SW 1.39. Legs (legs 1 missing): probably (1)423. Metatarsi I missing, II weakly bowed and flattened. PME>AME>PLE>ALE. Clypeus height 1.75× AME width. Male palp (Fig. 21a,b). Distal cymbium short, digitiform. Cymbial flange not strongly offset from cymbium. Deep indentation between TL and embolic base. Bipartite MA processes approximated, lateral process an erect, moderately sclerotized and distally translucent lamina, truncate apically. Tibia with 3 prodorsal bristles; RVTA small; RDTA keel-like, about half length of tibia.

Female: Not known

Distribution. Recorded from the type locality only.

Etymology. The name refers to the Muller Range, the region from which this species was collected.

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