A review of the spider genus *Calamoneta* Deeleman-Reinhold, a new genus in the Western Pacific and the genus *Eutittha* Thorell (Araneomorphae: Cheiracanthiidae)

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ABSTRACT

The genus *Calamoneta* Deeleman-Reinhold is reviewed; four new species are described: *Calamoneta cullenae* sp. nov. and *Calamoneta micrognatha* sp. nov., from north Queensland, *Calamoneta eungella* sp. nov. from mid-eastern Queensland and *Calamoneta flavigena* sp. nov. from south-eastern Queensland. *Cheiracanthium longimanum* L. Koch, 1873 from Fiji, Samoa and Tonga is transferred to a new sister genus, *Fijimoneta* gen. nov., type species *Fijimoneta vitilevu* sp. nov. from Fiji. Australian species in *Cheiracanthium* are briefly reviewed and *Cheiracanthium pallidum* Rainbow, 1920 is transferred to *Gnathopalystes* in the Sparassidae. The resurrection of *Eutittha* Thorell, 1878 is rejected.

In the Australia region, the only known Cheiracanthiidae are the genera *Cheiracanthium* C.L. Koch, 1839, a cosmopolitan genus from which some species have been transferred to the recently resurrected *Eutittha* Thorell, 1878 (Esyunin & Zamani 2020) and *Calamoneta* Deeleman-Reinhold, 2001. This work focuses on *Calamoneta* (Fig. 1), which was first described from material from south-east Asia (Fig. 2) for one male and one female that look similar to *Cheiracanthium*; Australian species were mentioned. Unlike *Cheiracanthium*, *Calamoneta* males lack the elongate basally directed paracymbium that is diagnostic of *Cheiracanthium* (Deeleman-Reinhold 2001). All genera include spiders that are pallid, long-legged, arboreal and have elongated apical segments of the posterior lateral spinnerets (PLS), with remaining PLS segments long and cylindrical. In contrast, the plesiomorphic and widespread condition in entelegyne araneomorphs is that the PLS are short and conical with a short or domed apical segment. Although the elongated condition of the PLS is unusual, it is by no means restricted to the Cheiracanthiidae. Within the Araneomorphae, they are also found in the Hersiliidae, Agelenidae and Hahniidae, as well as the lycosid Venoninae, and some Australian species of *Miturga* L. Koch, 1873 (Miturgidae) (Raven et al. 2002) where it appears to be an autapomorphy of *Miturga*.

Deeleman-Reinhold (2001) described *Calamoneta* based on a male and female from two species from Sumatra and Java, respectively, and despite noting the presence of congeners from Australia, did not describe them. This paper includes the description of Australian species, and a new genus with two species from Fiji, discussing the phylogenetic affinities of the genus. Impingeing partially on the Australian genera of the Cheiracanthiidae was the resurrection of the genus *Eutittha* Thorell, 1878 by Esyunin & Zamani (2020); this is examined.

MATERIALS AND METHODS

Taxonomic methodology and terminology are those used in Raven and Stumkat (2003) except as follows: eye descriptions are made from directly above or in front and measurements are taken from above; cheliceral dentition is given as the number of retromarginal teeth and promarginal teeth, e.g. r = 4, p = 3. Wherever possible, it was the left male palp that was drawn and/or scanned. Scanned material was either critical-point or air-dried from ethanol-preserved (80%) material and then sputter-coated with gold before examination in a Hitachi S-530 scanning electron microscope (sometimes also using a Robinson (T) Backscatter detector). Epigynes were photographed in ethanol and then either cleared in lactic acid and drawn, or gold-coated for examination with the scanning electron microscope. Characters consistent for the genus are generally described only in the genus description and omitted from species descriptions. Characters are explained in Raven et al. (2002). Figures have been changed to make labels clearer, but the original detail remains the same.

Abbreviations: ALE: anterior lateral eyes; ALS: anterior lateral spinnerets; AME: anterior median eyes; AMS: anterior median spinnerets; *ca.*: circa; c.o.: copulatory opening; Cons. Pk: conservation park; e.: embolus; fe: femur; ma: median apophysis; me: metatarsus; MEQ: mid-eastern Queensland; NEQ: north-east Queensland; NP: National Park; pa: patella; PLE: posterior lateral eyes; PLS: posterior lateral spinnerets; PME: posterior median eyes; PMS: posterior median spinnerets; pv: proventral; RCH: retrocoxal hymen; RTA: retrolateral tibial apophysis; rv: retroventral; SEQ: south-east Queensland; SF: State Forest; ta: tarsus; ti: tibia.

Museums: QM: Queensland Museum; AM: Australian Museum, Sydney; NHRS: Naturhistoriska Riksmuseet, Stockholm; NMNHL: Naturalis Biodiversity Center, Leiden; ZMB: Zoologisches Museum, Humboldt Universität, Berlin.

Other material examined: *Calamoneta djojosudharmoi* Deeleman-Reinhold, 2001, holotype male, NMNHL, examined; *C. urata* Deeleman-Reinhold, 2001 holotype female, NMNHL, examined.

TAXONOMY

Family Cheiracanthiidae Wagner, 1887

Cheiracanthidae Wagner, 1887: 105; Chiracanthidae Ono, 2009a: 464; Cheiracanthiidae Marusik & Kovblyuk, 2011: 126.
Eutichureae Kishida, 1936: 37.

Eutichurinae: Lehtinen 1967: 234 (original designation of type genus, *Eutichurus* Simon, 1897); Bonaldo, 1994;
Eutichuridae: Ramírez 2014: 340, new status.

Diagnosis: Differs from Clubionidae by the PMS not being sexually dimorphic (Platnick 1990, Ramírez 2014), from Miturgidae in the males having an entirely sclerotised RTA, from other dionychans in having contiguous conical ALS (Ramírez, 2014) and elongate PLS with digitiform apical segment; the tracheae consist only of four unbranched tubes (Ramírez 2014).

Included genera: *Calamoneta* Deeleman-Reinhold, 2001, *Calamopus* Deeleman-Reinhold, 2001, *Cheiracanthium* C.L. Koch, 1839, *Cheiramiona* Lotz & Dippenaar-Schoeman, 1999, *Ericaella* Bonaldo, 1994, *Eutichurus* Simon, 1897, *Fijimoneta* gen. nov, *Lessertina* Lawrence, 1942, *Macerio* Simon, 1897, *Radulphius* Keyserling, 1891, *Sinocanthium* Yu & Li, 2020, *Strotarchus* Simon, 1888, *Summacanthium* Deeleman-Reinhold, 2001, *Tecution* Benoit, 1977 (Ramírez 2014; WSC 2023).

Distribution: Worldwide with South America and south-east Asia as centres of diversity.

Cheiracanthium C.L. Koch, 1839

Cheiracanthium C.L. Koch, 1839: 9, type species *Cheiracanthium punctorium* (Villers 1789).
Eutittha Thorell, 1878: 179, type species *Eutittha insulana* Thorell, 1878. Restored synonymy.

Diagnosis: Males differ from males of *Calamoneta* and *Fijimoneta* gen. nov. in having a long cymbial spine (Deeleman-Reinhold 2001) and lacking pseudosegmented tarsi (as in Fig. 8 of Lotz 2007).

Included species from Western Pacific: *C. brevicalcaratum* L. Koch, 1873, *comb. rev.*; *C. crucigerum* Rainbow, 1920; *C. excavatum* Rainbow, 1920, *comb. rev.*; *C. gracile* L. Koch, 1873; *C. impressum* Thorell, 1881; *C. mondrainense* Main, 1954; *C. mordax* L. Koch, 1866, *comb. rev.*; *C. nervosum* Simon, 1909; *C. pennuliferum* Simon, 1909; *C. silaceum* Rainbow, 1897; *C. stratioticum* L. Koch, 1873, *comb. rev.*; *C. tenue* L. Koch, 1873; *C. turiae* Strand, 1917.

Misplaced species: *Cheiracanthium pallidum* Rainbow, 1920 is transferred to the sparassid genus *Gnathopalystes* Rainbow, 1899, which occurs in Vanuatu and south-east Asia.

Sparassidae Bertkau, 1872
Gnathopalystes Rainbow, 1899

Gnathopalystes Rainbow, 1899: 313. Type species, *Gnathopalystes ferox* Rainbow, 1899.

Gnathopalystes pallidum (Rainbow, 1920), new combination

Cheiracanthium pallidum Rainbow, 1920, 257, pl. 30, Figs. 79–82, holotype male in SAMA, examined.

Remarks: While looking for a good illustration of the male palp of *Gnathopalystes*, some errors were noted. Roewer (1955) shows that Kulczyński (1910) described a male and female of *Gnathopalystes nigriventer* but that is incorrect; only 'femina' is mentioned and figured. Croeser (1996) also noted only a female and no males in the type series.

Eutittha Thorell, 1889, replaced into synonymy

Esyunin & Zamani (2020) transfer several species of *Cheiracanthium* to the resurrected genus, *Eutittha* Thorell, 1878. The type species of *Eutittha* (*E. insulana* Thorell, 1878) was redescribed through examining the holotype, a female; no further material of the type species is known. Following a revised diagnosis of *Eutittha*, several south-east Asian, Australian and western Pacific species were transferred from *Cheiracanthium* to *Eutittha*. The new diagnosis of *Eutittha* was based on characters of the male.

Esyunin & Zamani (2020) is a literature review with no examination of the type specimens of the species treated, except for the type species of *Eutittha*, *E. insulana* Thorell, 1878 and the types of the new species. The review relies entirely on the vagaries of drawings of types by the original authors, including Rainbow whose renditions have been deemed highly interpreted at best by multiple sources (Raven 1984 on *Dolichosternum*). It also relies upon unexamined species groups of *Cheiracanthium* formed by Deeleman-Reinhold (2001).

However, the crux of the problem with resurrecting *Eutittha* is that no male is known of the type species. Without that male, alignment of Deeleman-Reinhold's species groups and other species to

Eutittha is entirely speculative and without support. Oddly enough, at the time of Esyunin & Zamani (2020), Deeleman-Reinhold (2001) had described males that were considered males of *E. insulana* and, on that basis, Esyunin & Zamani (2020) made the comment that "In a revision of southeast Asian *Cheiracanthium*, Deeleman-Reinhold (2001) proposed two species groups within this genus. She included three species in the first group: 'the common and widespread *C. insulanum* together with the related *C. melanostomum* and *C. brevicalcaratum*' (Deeleman-Reinhold 2001, p. 227). She did not provide a formal diagnosis but considered this grouping as well justified: 'In contrast to *C. insulanum* and related species, the species having the general appearance of *C. turiae* are less uniform' (Deeleman-Reinhold 2001, p. 234) (Esyunin & Zamani (2020) p. 1294)." However, Marusik et al. (2020) concluded that males described as *Cheiracanthium insulana* by Deeleman-Reinhold, 2001 and all similarly attributed to that species, are in fact *Cheiracanthium approximatum* O. Pickard-Cambridge, 1885. Therefore, the Esyunin & Zamani (2020) conclusion supporting the *Eutittha insulana* group is incorrect.

None of the characters supporting the resurrected genus were figured by Esyunin & Zamani (2020). With one exception, the only figures provided were the type species of *Eutittha*, *E. insulana* Thorell, 1878 and the types of the new species. The exception was the external epigyne of a *Cheiracanthium mordax* specimen collected 100 years later than the type; Fig. 2a of Esyunin & Zamani (2020) is actually the unattributed Fig. 6J of Dondale (1966) with one label added.

Despite giving type data, along with presumably approximated coordinates from the pre-GPS era, type depositions of transferred species are not given. The presumption is that the types were examined but most were not.

In discussions about differences between species based only upon the literature on often aged holotypes, comments are made on specimen colour, but no mention is made of preservation, which almost without exception fades colours over time. Repeatedly, *ex cathedra* pronouncements unsupported in any way are made.

Finally, some species that Esyunin & Zamani (2020) include in *Eutittha* (but not the type species) may share a character. However, no evidence is given that the character is phylogenetically significant or that by removing those species from *Cheiracanthium*, the residual species are themselves monophyletic.

In any case, resurrecting *Eutittha* is wholly unsupported, as it lacks the male of the type species of the genus. Therefore, *Eutittha* is placed in the synonymy of *Cheiracanthium*.

***Calamoneta* Deeleman-Reinhold, 2001**

Calamoneta Deeleman-Reinhold, 2001: 250 (type species *Calamoneta djojosudharmoi* Deeleman-Reinhold, 2001).

Diagnosis: Males differ from males of *Cheiracanthium* in lacking a paracymbial spine and females in the absence of an epigynal window (Deeleman-Reinhold 2001) instead having a pear-shaped medial septum. The very long leg I of adult and subadult males is whip-like and the metatarsus and tarsus I of females long and curved. These characters are also evident in the Neotropical arboreal genus *Ericaella* (Bonaldo 1994, 1997; Bonaldo et al. 2005) (and to a lesser extent some *Cheiracanthium* species); however, *Calamoneta* differs in a very subtle RTA. Males of *Calamoneta* differ from males of *Fijimoneta* gen. nov. in having pseudosegmented tarsi I (Fig. 3G, 8A) and the much longer legs.

Description: *Eyes:* Eight similarly sized eyes in two rows; front row straight to slightly recurved; back row procurved. Group occupies almost full width of head. Tapetum canoe-shaped (at least of *C. flavigena* sp. nov., not seen in specimens of other species). Lateral eyes on raised, common tubercle: ALE look to the side. *Carapace:* Caput gently arched. Fovea a shallow depression. *Sternum:* Long shield-shaped with rebordered margin and strong small triangular intracoxal processes; domed with wide troughs at intercoxal radii. *Maxillae:* Longer than wide, basal portion wider and domed, distal portion narrows then widens and is lower, forming semicircular depression across inner edge beside labium; serrula a long arc. *Labium:* Much longer than wide with broad depression behind apex. No sclerotised ridges between coxae, coxal basal projections distinct; trochanters similarly and shallowly notched. *Legs:*

Leg I of males and females much longer than its other legs; formula = 1423. In males, metatarsus and tarsus I elongate, cylindrical to whip-like and pseudosegmented, also long and curved in females but less than males; legs spinose. Trochanters with shallow or no notch. *Claws:* Claw tufts strong, dense, similar on all tarsi. Tarsal organ near distal declivity, low with transverse lenticular aperture (Fig. 6B). Trichobothrial bases with unornamented lateral wings (Fig. 6C). Post-epigastric sclerites present (Platnick 2000). *Spinnerets:* PLS with cylindrical basal segment and with conical or long digitiform apical segment. ALS bases touching, conical. *Palp (male):* Cymbium elongate with or without apical spines and dorsal scopula; along with retrolateral groove for basal third; tibia with small RTA; broad shallow-to-deep concavity on ventral cymbium proximal to bulb. *Bulb:* Separated embolus arises retrodistally encircling large flat tegulum distally supported by leaf-like translucent conductor; median apophysis vermiform, sinuous with thorn-like basal accessory process adjacent to base; in some species, subtegulum evident as tear-shaped or cucumiform sclerite between retrobasal embolus and tegulum (Fig. 7A). *Epigyne:* With pear-shaped or trianguloid median septum; large ovoid spermathecae with folded posterior ducts (Figs 13 B–F). Tracheal spiracle posterior near spinnerets.

Remarks: All species described here differ consistently from those of Deeleman-Reinhold (2001, types examined). These differences include shallowly notched trochanters and the form of the epigyne but particularly the slender form of the cymbium, and the tegulum not being fused to the base of the embolus; together, these are generically significant. However, Deeleman-Reinhold (2001) described only one male and one female, both lacking the first legs, except in the photograph of a live spider. The species described here certainly share characters the two south-east Asian species do not share. Nevertheless, until more material is available, whether the species described here do constitute a new genus is unresolved.

Type species: *C. djojosudharmoi* Deeleman-Reinhold, 2001

Included species: *C. djojosudharmoi* Deeleman-Reinhold, 2001; *C. urata* Deeleman-Reinhold, 2001; *C. cullenae* sp. nov.; *C. eungella* sp. nov.; *C. flavigena* sp. nov.; *C. micrognatha* sp. nov. **Note**: The gender of *Calamoneta* is feminine.

Distribution and habitat: Rainforest in Sumatra, Java, subtropical to tropical eastern coast of Australia (Fig. 2). *Calamoneta* has not been found in rainforests of the Northern Territory or Western Australia; its southern-most limit appears to be coastal northern New South Wales. Unlike the strongly legged and fossorial Miturgidae, *Calamoneta* is slender-legged and arboreal; both groups are nocturnal.

***Calamoneta flavigena* sp. nov.**

(Figs 2, 3A, 4C, 5A–D, 6A–C, 7A–C, 8A–B, 9A–D, 13H–I)

Material: South-east Queensland: holotype ♂, Mt Glorious, 27°20'S, 152°46'E, 6 Dec 1982, J.D. Majer, QM S31490. *Paratypes:* 1♀ (allotype), as for holotype, S31491; 6♂, 1♀, Upper Brookfield, 27°30'S, 152°55'E, rainforest, beating, 17–31 Jul 1981, V. Davies, R. Raven, QM S39161, S39181 (28 Jan 1982), S39163 (2 Jun 1981), QM S39164 (11 Nov 1981); 1♀, Burpengary, 27°09'S, 152°57'E, forest, beating, 5 Mar 1980, N. Hall, QM S39162; 1♀, Seary's Scrub, Cooloola NP, 26°12'S, 153°03'E, beating, 3–8 Feb 1976, R. Raven, V. Davies, QM S39180; 1♂, Bunya Mtns, 26°54'S, 151°34'E, 23 Aug 1998, R. Raven, QM S34650; 3♀, Mt Glorious (Hiller property), 27°20'S, 152°46'E, rainforest, *Argyrodendron actinophyllum* sampling, malaise trap, 9–16 Aug 1986, Y. Basset, QM S2690, S2691, S3066 (3–10 Jul 1986); 10♂, 5♀, Mt Glorious, 27°20'S, 152°46'E, 6 Dec 1982, J.D. Majer, QM S39170, S39165, S39182, S31491, S31492; 2♂, 1♀, Booloumba Creek, Conondale Range, 26°39'S, 152°39'E, rainforest, 8 Aug 1986, R. Raven, J. Gallon, QM S39166, S39167 (13–18 Apr 1976, R. Raven); 2♂, Lamington NP, O'Reilly's, 28°14'S, 153°08'E, rainforest, sweeping, 15–16 Nov 1977, V. Davies, E. Dahms, QM S39168; 1♀, Lamington NP, Nagarigoon, 28°12'S, 153°10'E, rainforest, 1–8 Apr 1976, V. Davies, N. Hall, QM S39169; 1♂, Mt Asplenium, 28°09'S, 152°26'E, 29–30 Jan 1993, G. Monteith, QM S28437; 1♂, Great Sandy NP, Cooloola Section, 26°12'S, 153°03'E, malaise trap, 5 Oct 1996, C. Lambkin, QM S32223; 1♂, Brisbane Forest Park, 27°25'04"S, 152°49'48"E, malaise trap, 1–6 Mar 1998, N. Power, AM KS69489; 2♂, same data but 4 Dec 1998, AM KS69636; 1♂, same data but

23–28 Nov 1997, AM KS69689; 2♂, same data but Feb 1998, AM KS69694; 1♂, same data but 27 Sep–2 Oct 1998, AM KS69679; 1 juvenile ♀, Greenes Falls Track, Mt Glorious, 27°19'35.2"S, 152°45'41.9"E, Apr 2017, R. Raven, AM KS128330; 1♀, same data, QM KS128326; 4♂, Mt Glorious, 27°20'S, 152°46'E, 13 Feb 1998, AM KS118983; 1♀, same data, AM KS128326.

New South Wales: 1♂, 1♀, Mulligans Hut (granite), Gibraltar Range, 29°35'S, 152°13'E, 10 Nov 1980, R. Raven, QM S54288; 2♂, Bundjalung NP, 29°22'03"S, 153°22'11"E, night collection, 17 Feb 2011, G. Milledge, H. Smith, AM KS114660; 1♂, same data but 19 Feb 2011, AM KS114674; 1♂, same data, AM KS 114678; 1♂, 2♀, Dorrigo NP, The Glade picnic area, 30.372°S, 152.725°E, 1 Nov 2020, G. Milledge, H. Smith, AM KS130826 [female not yellow *flavigena*]; 1♂, Dorrigo NP, The Glade picnic area, 30.372°S, 152.725°E, 31 Oct 2020, G. Milledge, H. Smith, AM KS130792; 1♂, Killiekrankie Mt, 30°32.5-6.5'S, 152°32.4-5'E, rainforest, 800–920 m, 12 Nov 1999, AM KS62096; 1♀, Bellangary SF, Wilson River Flora Reserve, 31°12'S 152°28'E, NSW, 12 Jul 1981, M. Gray et al., AM KS9669; 1♂, Lansdowne SF, N of Starrs Ck Picnic Area, 31°45'S 152°33'E, G. Williams, AM KS14763.

Etymology: The species epithet alludes to the orange patella or 'knee'.

Diagnosis: Males and females differ from those of all other Australian species in patellae I–IV being orange coloured.

Description: Holotype male QM S31490
Carapace 4.80 long, 3.28 wide. Abdomen 6.16 long, 2.96 wide.
I: 9.15; 1.61; 10.23; 13.69; 3.92; 38.60. II: 5.08; 1.46; 5.23; 6.38; 1.54; 19.69. III: 3.61; 1.23; 3.31; 4.08; 1.23; 13.46. IV: 5.69; 1.46; 5.38; 7.23; 1.69; 21.45. Palp: 3.23; 0.77; 2.38; –; 1.15; 7.45.

Colour: Carapace, chelicerae, sternum, maxillae, labium, distal femora through basal tibiae, distal tibiae, basal metatarsi and distal tarsi deep brown-orange; abdomen entirely pale; other parts of legs fawn. *Carapace:* Like *Cheiracantium*, long, low; fovea a long open depression; pile of fine pale hair, no strong bristles; clypeus *ca.* AME high; chilum single triangular; caput long, low. *Eyes:* MOQ square; lateral eyes on common tubercle; AME look forward and to side; ALE look to side. *Chelicerae:* Massive, porrect, as long as carapace; abut for ¼ basal length then diverge; two long large teeth evident from above; fang very long with slight discontinuity and bent in apical third, ventrally serrate; furrow margin rounded, three long large separate teeth on promargin; one distal in retromargin; most distal on both margins shorter and bent forward at basal ⅓. *Legs:* Prograde; I very long, especially tibia and metatarsus, tarsus long, deeply arched, curved but *ca.* ⅓ length of metatarsus, tarsus and distal ⅞ of metatarsus I ventrally pallid, pseudosegmented; coxae diamond-shaped with acute heel (inner edge); basal processes distinct rounded, sternal process interlock (anteriorly) with invagination formed by basal coxal posterior process; retrolateral face of coxa I with conical mound with retrocoxal hymen; trochanters short, notches very shallow on I, II, IV *ca.* twice as wide as deep on III; ridge of notches short; deep dish on retroventral coxae III, IV; sclerotised ridges almost join sternum to carapace and form V over ventral pedicel; scopula absent. *Claws:* With six long, close teeth; tufts small on I but distinct; on all leg tarsi extend higher than claws but in front of them, front profile wide oval, joined; trichobothria 6–8 in wide row on tarsi, *ca.* four in distal ⅛ of metatarsi; in band on tibiae; legs lightly hirsute; tarsi II–IV apically thickened. *Spines:* All short, not on enlarged bases; patellae spinose; I: fe p2r2; ti p2r1v2.2; me p1r1v2.1.1.1. II: fe p2r1; ti p2v2.2; me p3r3v2.2.2. III: fe p2r2; ti p1r1v0 (bs); me p3r3v2.2.2. IV: fe p1r1; ti r2v2.1; me p3r3v6 (not paired). Palp: fe p1r2. *Spinnerets:* ALS short, conical. PLS longer, thinner, with long apical segment *ca.* five times longer than wide; without enlarged spigots PMS long cylinders with enlarged spigots. Tracheal spiracle close to spinnerets. *Palp:* Tibia about twice the length of cymbium; tibia very long with short, hooked sclerotised process retrolaterally; cymbium long, slender with long, rounded apical cone, basal margin very wide; cymbium with retrolateral groove for basal third; broad deep concavity on ventral cymbium proximal to bulb, light scopula in apical ⅓. *Bulb:* Tegulum large, domed, flat, prolateral with basal sub-lobe; embolus origin wide on retrodistal corner, clockwise tapers quickly around edge of tegulum to join long opaque triangular conductor on prodistal hook, sclerotised; median apophysis vermiform, similar width for its length; overall shape of bulb drop-shaped, narrowing strongly distally.

Allotype female QM S31491. Differs from male in following:
Carapace 3.76 long, 3.04 wide. Abdomen 5.76 long, 3.04 wide.
I: 6.23; 1.46; 6.23; 8.31; 3.08; 25.31. II: 3.61; 1.31; 3.38; 3.92; 1.23; 13.45. III: 2.23; 1.08; 2.00; 2.54; 1.15; 9.00. IV: 4.00; 1.23; 3.77; 4.69; 1.23; 14.92. Palp: 1.92; 0.61; 1.61; –; 1.23; 5.37.

Colour: Entirely fawn, legs with slight point of colour on patella but more so on distal metatarsi and tarsi. *Chelicerae:* Much smaller than male but porrect, three teeth on promargin, two on retromargin of furrow; fang long, almost diaxial, with discontinuity at basal ⅓; distally serrate; sternal projection less evident. *Spines:* None on patellae; I: fe p2; ti p1v2.2.2; me p1v2.2.1. II: fe p1; ti p1v2; me p3r2v2.2.2. III: fe p1; ti p1v2; me p3r2v2.2.2. IV: fe r1; ti r1v0; me p2r3v2.2.2. Palp: fe p1. *Spinnerets:* 3–4 large spigots on PMS; PLS without enlarged spigots. *Palp:* Tarsi subapically enlarged with dorsodistally flat scopulate area; claw dentate. *Epigyne:* Narrow anterior septum (with two round depressions laterally) widening strongly posteriorly.

Distribution and habitat: Known from rainforests and vine thickets in south coastal Queensland including Mt Glorious, Upper Brookfield, Cooloola, Bunya Mts and Lamington National Parks, Booloumba Creek, Conondale Range and Burpengary, and south to Dorrigo NP, northern New South Wales.

Calamoneta cullenae sp. nov.

(Figs 1, 2, 3B, 10A–E, 13F–G)

Material: North-east Queensland: holotype ♂, Bellenden Ker Range, Cableway Base Stn, 17°16'S, 145°54'E, beating, 25–31 Oct 1981, Earthwatch/ Qld Museum, QM S31425. *Paratypes:* North-east Queensland: 1♂, as for holotype, QM S27672; 1♀, Mt Fisher, Kjellberg Rd, 17°32'S, 145°33'E, rainforest, 17–18 May 1995, G. Monteith, QM S38140; 2♂, 1♀, Mt Fisher, Kjellberg Rd, 17°32'S, 145°33'E, rainforest, 17–18 May 1995, G. Monteith, QM S38146; 1♂, 1♀, Mt Hartley, 2.5 km SW, 15°47'S, 145°19'E, rainforest, 23–24 Apr 1982, G. Monteith, D. Yeates, D. Cook, QM S38432; 1♂, 3♀, Mt Boolbun South, 15°57'S, 145°08'E, rainforest, 4–6 Nov 1995, G. Monteith, L. Roberts, D. Cook, QM S41033; 1♂, Pauls Luck, Platypus Creek, 13 km W Mossman, 16°27'S, 145°16'E, pyrethrum knockdown, 1–2 Jan 1990, ANZSES expedition, QM S31441; 1♀ (allotype), North Bell Peak, Malbon Thompson Range, 17°07'S, 145°54'E, 19–22 Nov 1990, G. Monteith, G. Thompson, QM S31497; 1♂, North Bell Peak, Malbon Thompson Range, 17°07'S, 145°54'E, 19–22 Nov 1990, G. Monteith, G. Thompson, QM S31498; 1♂, Mt Spec (S1), 18°55'S, 146°09'E, rainforest, flight intercept trap, 10 Jan–6 Feb 1995, M. Cermak, QM S39127; 1♂, Mt Formartine South, 10 km N Kuranda, 16°43'S, 145°37'E, pitfall, 23–24 Nov 1990, G. Monteith, G. Thompson, QM S39148; 1♂, Black Mt, 17 km ESE Julatten, 16°39'S, 145°29'E, rainforest, 29–30 Apr 1982, G. Monteith, D. Yeates, D. Cook, QM S39149; 1♀, Carbine Tableland, above fern patch, Devils Thumb, 16°23'S, 145°17'E, 26 Nov 1990, G. Monteith, G. Thompson, D. Cook, R. Sheridan, H. Janetzki, QM S39150; 2♀, Mt Finnigan, 15°48'S, 145°17'E, 9 Nov 1974, V.E. Davies, QM S39153, S39152; 1♀, Mt Hartley, *ca.* 750 m, 15°47'S 145°19'E, 6 Nov 1974, V. Davies, J. Covacevich, D. Joffe, QM S39151; 2♂, 2♀, Spear Ck, Mt Molloy (site 37), 16°42'S, 145°24'E, rainforest, litter, 3–10 Nov 1975, R. Raven, V. Davies, QM S39153; 1♂, 1♀, Twelve Mile Scrub, Gap Ck (site 20), 15°50'S, 145°19'E, complex notophyll vine forest, 22–27 Nov 1975, Queensland Museum, QM S39154; 1♂, Shipton's Flat, site 36, 15°48'S, 145°15'E, beating, 17–22 Nov 1975, Queensland Museum, QM S39155; 1♂, Spear Ck, 16°42'S, 145°24'E, campsite, 3–10 Nov 1975, Queensland Museum, QM S39156; 1♂, Cardwell Range, Upper Broadwater Ck Valley, 18°18'S, 145°56'E, rainforest, 17–21 Dec 1986, G. Monteith, G. Thompson, S. Hamlet, QM S39158; 1♂, Mt Williams, 16°55'S, 145°40'E, 2–3 Dec 1993, G. Monteith, H. Janetzki, D. Cook, QM S39159; 1♂, Cardwell Range, Mt Macalister, 18°18'S, 145°56'E, 13–16 Jan 1987, S. Hamlet, QM S39160; 3♂, Mt Spec (S2), 18°55'S, 146°09'E, rainforest, flight intercept trap, 10 Jan–6 Feb 1995, M. Cermak, QM S39176; 2♂, Boonjee, 17°24'S, 145°44'E, 3–6 Apr 1979, R. Raven, V. Davies, QM S39177; 1♂, Malaan SF, 17°35'S, 145°35'E, sweeping, 20–24 Apr 1978, R. Raven, V. Davies, QM S39178; 2♂, 1♀, Mt Spec NP, 18°57'S, 146°11'E, 15 Sep 1979, K.R. McDonald, QM S39179; 1♀, Roaring Meg Creek, 6 km W Cape Tribulation, 16°04'S, 145°25'E, 20–22 Nov 1993, G. Monteith, H. Janetzki, D. Cook, L. Roberts, QM S58185; 1♂, 1♀, Mt Halcyon summit, 16°03'S, 145°25'E, 22–24 Nov 1993, L. Roberts, QM S58254; 1♂, Cape Tribulation, 16°05'S, 145°26'E, hand collection, 21–22 Oct 1997, R. Raven, QM S59762;

1♂, Isley Creek, upper, 17°02'S, 145°40'E, 29–30 Nov 1993, D. Cook, G. Monteith, H. Janetzki, QM S58204; 3♂, Proserpine, Lethe Brook crossing (site XY20), 20°24'S, 148°31'E, rainforest, beating, R. Raven, QM S86622 (15 Mar 2008), S86716 (6 Nov 2007); 1♂, Thornton Peak, 16°10'S 145°22'E, 955 m, Nov 1975, M. Gray, AM KS0555; 1♂, Malanda, E. Mjoberg, NHRS; 1♂, Thornton Peak (site 39), 16°10'S, 145°2'E, 610 m, Nov 1975, M. Gray, AM KS0508; 1♂, Mt Windsor Tableland, 23 July 1996, J. Thompson, M. Moulds, F. Mackillop, AM KS45512.

Diagnosis: Males differ from males of *C. flavigena* sp. nov. (Fig. 10A) and *C. eungella* sp. nov. (Fig. 7A) in that the subtegulum is not evident between the basal embolus and tegulum and the ma is strongly hooked apically. Females differ from females of *C. eungella* sp. nov. (Fig. 13D.) and *C. flavigena* sp. nov. (Fig. 13F) in that the epigyne has two small ovoid c.o.'s and lacks a flask-like septum.

Etymology: The specific epithet is a patronym in honour of Mrs Esther Cullen, highly respected author, naturalist and advocate for the fauna and forests of north Queensland.

Description: Holotype male QM S31425
Carapace 2.68 long, 1.84 wide. Abdomen 3.84 long, 1.56 wide.
I: 6.92; 0.92; 7.54; 11.00; 2.61; 28.99. II: 3.46; 0.77; 3.85; 4.00; 1.15; 13.23. III: 2.07; 0.61; 2.00; 2.46; 0.77; 7.91. IV: 4.00; 0.77; 4.15; 5.00; 1.08; 22.91. Palp: 1.85; 0.31; 1.31; –; 0.77; 4.24.

Carapace: Almost glabrous, low, truncate, pear-shaped. *Chelicerae:* Elongate; retromargin with one long apical tooth, promargin with four teeth, longest apical, each shorter towards cheliceral base. *Legs:* Rounded rectangular coxae with distinct but small probasal and retrobasal sclerotisations; trochanteral notches very shallow, posterior indentation on III, IV indistinct; leg I of male (and subadults and juveniles) much longer than II; metatarsus I longer than of leg II; metatarsus and tarsus I curving, whip-like; scopula entirely absent; tibiae lack basal suture. *Claws:* Each claw with *ca.* eight teeth. *Spines:* I: fe p2r2; pa 0; ti v3; me v1.1.1. II: fe p2r2; pa0; ti p1r1v2 me p2r1v2. III: fe p2r1; pa 0; ti r1v0; me p1.1.1r1.1v2.2.2. IV: fe p2r1; pa 0; ti r1v0 me p1.1r1.1.1.1v2.2.2. Palp: fe p1d1r2; rest 0. *Spinnerets:* ALS stout, short with domed apex; PLS *ca.* ⅔ diameter of ALS, basal segment of PLS longer than ALS, and apical segment longer still. *Trichobothria:* Few long filiform on tarsi, metatarsi and tibiae; tarsal organ low, lens-like. *Palp:* Elongate; RTA a small, apically hooked, sclerotised retrolateral process; cymbium tear-shaped with wide basal margin, narrow prolateral and wide retromargin including lenticular groove reaching to mid-bulb; apical cone long rounded, ventrally hirsute; cymbium with retrolateral groove for basal third; broad deep concavity on ventral cymbium proximal of bulb; tibia about twice the length of cymbium. *Bulb:* Embolus with bulbous origin retrodistally directed clockwise tapers quickly and ends at apical midline; small, hooded conductor behind two pronged vermiform median apophysis; subtegulum not evident between embolus and tegulum; light scopula dorsally on cymbium apex with small spines; overall shape of bulb asymmetrically ovoid.

Allotype female QM S31497. Differs from male in following:
Carapace 3.60 long, 2.48 wide. Abdomen 6.96 long, 3.84 wide.
I: 5.31; 1.08; 5.92; 8.31; 2.69; 23.31. II: 3.23; 1.08; 2.77; 3.23; 1.08; 11.39. III: 2.07; 0.77; 1.69; 2.31; 0.85; 7.69. IV: 3.69; 1.00; 3.31; 4.15; 1.08; 13.23. Palp: 1.54; 0.54; 1.31; –; 1.08; 4.47.

Chelicerae: With two distal separated teeth on retromargin, distal tooth larger; three teeth on promargin proximal to retro-teeth, middle tooth larger. Palpal claw short, straight, spine-like. *Spines:* I: fe p2r1; ti p1v1.1.1; me p1v2.1.1. II: fe p2; ti p1v0; me p3r2v2.2.1. III: fe p2r1; ti 0; me p2r3v1.21.1. IV: fe r1; ti r1v0; me p2r2v2.2.3. Palp: fe p1r1. *Spinnerets:* ALS flattened apically with two adjacent circular spinning fields with large spigot at inner junction *Epigyne:* Externally, a pair of small fossae appear to arise from long ridge forming short 'septum' (Fig. 13F); copulatory ducts broad (Fig. 13G); smaller subcircular head of spermathecae with distinct ental lobe distally (Fig. 13G).

Distribution and habitat: Known only from rainforests in the Wet Tropics World Heritage Area, north Queensland, from Mt Hartley (15°47'S) south to Cardwell Range (18°18'S); its range overlaps with *C. micrognatha* sp. nov. and the two species were taken together at Spear Creek.

***Calamoneta eungella* sp. nov.**
(Figs 2, 3D–E, G–H, 4F, 11A–D, 13A, D–E)

Material: Mid-eastern Queensland: holotype ♂, Eungella North, Clarke Range, 21°10'S, 148°24'E, 25 Feb 1993, ANZSES expedition, QM S31495. Paratypes: 3♂, Conway NP, 20°25'S, 148°49'E, rainforest, 3 Sep 1988, R. Raven, J. Gallon, T. Churchill, QM S14077; 1♂, Eungella NP, 21°10'S, 148°24'E, closed forest, 2 Feb 1975, K.R. McDonald, QM S39174; 1♂, Conway NP near Creek, 20°25'S, 148°49'E, 13 Feb 1975, K.R. McDonald, QM S39175; 1♂, Stony Ck (Blue Mts), 21°37'S, 148°59'E, rainforest, 3–5 Oct 1999, G. Monteith, D. Cook, C. Burwell, S. Evans, QM S80917; 1♀ (allotype), Broken R, Eungella NP, 21°11'S, 148°31'E, 25 Jun 1975, V.R.J. Hansen, QM S31496; 1♀, Brandy Ck, 20°21'S, 148°43'E, 21–26 Apr 1975, R. Monroe, V. Davies, QM S39172; 2♀, Finch Hatton NP, 21°09'S, 148°38'E, complex notophyll and mesophyll vine forest on alluvium, 7–14 Apr 1975, V. Davies, R. Kohout, QM S39173; 1♀, Eungella (schoolhouse), 21°08'S, 148°29'E, rainforest, 11–14 Feb 1986, R. Raven, J. Gallon, QM S7040; 1♂, Airlie Beach, 20°16'S, 148°43'E, rainforest, 16 Feb 1986, R. Raven, J. Gallon, QM S8049; 4♂, Mt Dryander (site 12), 20°15'S, 148°32'E, 120m, April 1975, M. Gray, C. Horseman, AM KS0316.

Diagnosis: Both males and females differ from those of *C. flavigena* in the absence of bands on the leg patellae and two distal teeth on male chelicerae are opposed not juxtaposed offset; the back row of eyes is slightly recurved. Further, males differ from males of *C. flavigena* in the ovoid (Fig. 9A) (rather than drop-shaped (Fig. 11A)) shape of the bulb. Females differ from females of *C. cullenae* in the spermathecal receptaculum being longitudinally ovoid and lacking an ental lobe (Fig. 13E) and males by the subtegulum being evident between the basal embolus and tegulum.

Description: Holotype male QM S31495
Carapace 3.28 long, 2.32 wide. Abdomen 4.56 long, 1.92 wide.
I: 7.69; 1.15; 8.31; 12.15; 3.46; 32.76. II: 4.08; 1.00; 4.31; 5.08; 1.00; 15.47. III: 2.54; 0.92; 2.38; 3.08; 0.77; 9.69. IV: 4.87; 1.00; 4.61; 5.92; 1.08; 17.48. Palp: 2.46; 0.54; 1.85; –; 1.00; 5.85.

Colour: Carapace, chelicerae, sternum, legs brown-orange; abdomen fawn. *Eyes:* Back row slightly recurved. *Chelicerae:* Very long with one large tooth on retromargin, three on promargin, distal two teeth opposed, basal two closer to each other than to distal tooth. *Spines:* I: fe p2r1; ti v5 (alternating); me v1.1. II: fe p2r2; ti p2v2.2; me p3r2v2.2.1. III: fe p2r2; ti p1r1v1; me p3r3v2.2.1. IV: fe p2r2; ti r2v2.1; me p3r3v1.1.2.2. Palp: fe p1d1r2. *Palp:* Tibia less than twice the length (1.85) of cymbium; RTA short, bent, pointed, with small bump below tip; cymbium with apical spines; cucumiform extension of subtegulum arises between embolus base and tegulum (Fig. 11A); median apophysis vermiform, apically sinuous; cymbium with retrolateral groove for basal third; broad deep concavity on ventral cymbium proximal of bulb; overall shape of bulb ovoid.

Allotype female QM S31496. Differs from male in following:
Carapace 3.36 long, 2.64 wide. Abdomen 6.48 long, 4.08 wide.
I: 5.77; 1.08; 6.38; 9.15; 2.61; 24.99. II: 3.23; 0.92; 3.08; 3.46; 1.00; 11.69. III: 2.15; 0.77; 1.61; 2.15; 0.77; 7.45. IV: 3.85; 1.08; 3.77; 4.46; 1.00; 14.16. Palp: 1.46; 0.38; 1.15; –; 0.92; 3.91.

Chelicerae: Like *C. flavigena*, much smaller than male but porrect, three teeth on promargin, two on retromargin; fang long, almost paraxial with discontinuity at basal ⅓, distally serrate. Palpal claw appears as straight spike; subdistal tarsus incrassate with dorsal scopula on flattened oval area. *Spines:* I: fe p2r1; ti v2 (small, at midpoint); me v2.1.1.1.1. II: fe p2; ti p1v2.1 (mesal); me p2r2 (basal two not opposed) v2.2.2. III: fe p2; ti p1r1 (both distal) v0; me p3r3v2.2.2. IV: fe r1; ti r1v0; me p2r3v2.1.2.2. Palp: fe p1d1. *Spinnerets:* ALS flattened apically with two adjacent circular spinning fields with large spigot at inner junction. *Epigyne:* Narrow median septum anteriorly, lateral fossae small, septum becoming blunt spheroidal subdistally and flanked by a lateral crescentic hood; narrow copulatory duct opens at fossae passing distally and reflexing back to larger longitudinally ovoid head of spermathecal receptaculum without ental lobe distally; from that point a lateral folded duct passes distally.

Distribution and habitat: Known only from rainforests and vine thickets in the central coastal Queensland including Airlie Beach, Conway Range National Park, Brandy Creek to the west, Eungella

and Finch Hatton National Parks at the Clarke Range, and Crediton. Rainforests where the species were found at Airlie Beach in 1986 were converted to suburban allotments.

Calamoneta micrognatha sp. nov.

(Figs 2, 3C, 4E, 12A–D, 13B–C)

Material: *Types:* North-east Queensland: holotype ♂, Kirrama Range, 18°06'S, 145°42'E, rainforest, pyrethrum knockdown, 2 Oct 1980, G. Monteith, QM S31506. *Paratypes:* 1♂, Black Mtn, 15°41'S, 145°13'E, 30 Jan 1972, N. Clyde Coleman, QM S31505; 1♂, Spear Ck, 16°42'S, 145°24'E, campsite, 3–10 Nov 1975, Queensland Museum, QM S39157; 3♀ (includes allotype), Graham Range, 17°17'S, 145°57'E, rainforest, 8–9 Dec 1995, G. Monteith, G. Thompson, D. Cook, QM S37963, QM S38009.

Etymology: The species epithet reflects that males and females have the shortest chelicerae known in the genus.

Diagnosis: Males and females differ from all other species in the small, barely modified chelicerae (Fig. 4E).

Description: Holotype male QM S31506
Carapace 2.08 long, 1.80 wide. Abdomen 3.56 long, 1.20 wide.
I: 5.50; 0.78; 6.28; 8.61; 2.38; 23.55. II: 3.03; 0.71; 2.89; 3.07; 1.28; 10.98. III: 1.93; 0.53; 1.53; 1.96; 0.68; 6.63. IV: 3.18; 0.71; 3.32; 4.03; 0.96; 12.20. Palp: 1.36; 0.28; 0.96; –; 0.64; 3.24.

Colour: Carapace brownish yellow, darker on margins and fovea forming donut pattern. Chelicerae and legs fawn yellow; abdomen with three white areas, two anteriorly and one larger median triangle posteriorly, present in subadult female specimen, presumably guanine crystal visible through cuticle. *Carapace:* With uniform pile of long white hairs. *Eyes:* Back eye row slightly procurved. *Chelicerae:* Small, vertical with two small separated teeth on retromargin. *Legs:* I very long, especially tibia and long curved metatarsus; pseudosegmented tarsus also long, curved. *Claws:* With about seven long teeth and tufts higher than and between claws. *Spines:* I: fe p2r2; ti p2v2.1.1; me p1v2.1.1. II: fe p2r1; ti p2r1v2; me p3r3v2.2.1. III: fe p2r2; ti r1v0; me p2r3v0.1.3. IV: fe p1r1; ti p1r2v0; me p3r4v1.1.3. Palp: fe p1d1r1. *Palp:* Tibia about 1.5 times length of cymbium; cymbium with retrolateral groove for basal third; broad shallow semicircular concavity on ventral cymbium proximal of bulb; RTA small, hook-like with subtle bifid tip; median apophysis a vermiform, narrow almost straight cylinder, similar width for its length; bulb short, overall shape ovoid.

Allotype female QM S37963. Differs from male in following:

Epigyne (Fig. 13B–C): Externally with narrow median septum, slightly enlarged posteriorly; two accessory lobes (most evident externally) beside anterior septum; internally, ducts recurved back twice shortly before relatively small head of spermathecae.

Distribution and habitat: Known only from rainforests in the Wet Tropics World Heritage Area, north Queensland, from Black Mt (15°40'S) south to Kirrama Range (18°05'S).

Remarks: This species is included in *Calamoneta* because of the very long leg I with curved metatarsi and tarsi, the palp RTA and bulb, and the elongate apical PLS. It is, however, the species with the least modified male chelicera.

Fijimoneta gen. nov.

Diagnosis: Males differ from males of *Calamoneta* in the absence of the long curved whip-like tarsi I and from males of *Cheiracanthium* in lacking the paracymbial spine.

Description: *Eyes:* Eight similarly sized eyes in two rows; front row straight to slightly recurved; back row procurved. Group occupies almost full width of head. Lateral eyes on raised, common tubercle; ALE facing forward. *Carapace:* Caput gently arched. Fovea a shallow depression. *Sternum:* With intracoxal processes. *Legs:* Coxae with prominent prolateral basal process, no intercoxal sclerotised band; legs spinose. Tarsi and metatarsi I of males not pseudosegmented but much longer than II. Trochanters with shallow notches. *Claws:* Claw tufts strong, dense, similar on all tarsi. *Palp (male):* Cymbium without dorsal process; cymbium with or without retrolateral groove; with or without dorsal scopula. *Chelicerae:* Elongate. *Spinnerets:* Apical segment of PLS conical or digitiform.

Type species: *Fijimoneta vitilevu* sp. nov. The gender of *Fijimoneta* is feminine.

Included species: *Fijimoneta vitilevu* sp. nov.; *Cheiracanthium longimanum* L. Koch, 1873.

Distribution and habitat: Rainforest in Fiji, Samoa and Tonga.

***Fijimoneta vitilevu* sp. nov.**
(Figs 2, 4B, D, 14A–C, 15B–G)

Material: Holotype ♂, Fiji: Viti Levu: Nadarivatu Reserve, 17°34'S 177°57'E, 25–26 Jul 1987, G. Monteith, D. Cook, QM S31499. Paratypes: 1♀ (allotype), same data, QM S31500; 1♂, same data, QM S31501; 1♂, Fiji: Kadavu, Lagalevu, 0–20 m, 2–7 Jul 1987, G. Monteith, QM S31504.

Other material examined: 1 juv., same data as holotype, QM S31502.

Etymology: The species epithet stems from the name of the island of the type locality.

Diagnosis: Males differ from males of all Australian species of *Calamoneta* in the shorter leg I and non-pseudosegmented tarsus I in males, and from *F. longimana* by the different alignment of the cheliceral teeth in males, shorter legs, and shorter apical segment of the PLS.

Description: Holotype male QM S31499
Carapace 5.12 long, 3.68 wide. Abdomen 6.40 long, 3.28 wide.
I: 7.76; 2.15; 7.92; 8.85; 2.54; 29.22. II: 5.38; 1.61; 5.08; 5.77; 1.54; 19.38. III: 3.69; 1.31; 2.85; 4.08; 1.15; 13.08. IV: 5.31; 1.61; 4.87; 6.61; 1.54; 19.94. Palp: 3.46; 0.85; 2.77; –; 1.23; 8.31.

Colour: Carapace brown–orange with large irregular orange areas on each side of caput; chelicerae brownish yellow; spine bases brown and three broken brown bands on tibiae and metatarsi; abdomen pallid. *Carapace:* Cover of fine black hairs on thorax, on posterior caput and three hairs in cluster behind PLE. *Eyes:* Front row recurved, back row slightly procurved. *Chelicerae:* Fang constricted for distal ⅓, not serrate; two large juxtaposed outwardly divergent teeth about mid-length of furrow; retro-tooth with distinct inner ridge across its base; proximally three much smaller teeth, one closer to large promarginal tooth and two smaller basally and close. *Claws:* About eight teeth; tufts dense, wide and enclose claws. *Spines:* I: fe p2; ti p2r1v2.2; me p1r1v2.2.1. II: fe p2; ti p2v1.2; me p1r1v2.1.2. III: fe p1r1; ti p1r1v0; me p2r2v2.2.3. IV: fe p1r1; ti r2v1; me p2r2v2.2.3. Palp: fe d1. *Spinnerets:* Apical segment of PLS long, conical but not digitiform. *Palp* (Fig. 15G)*:* Tibia about twice the length of cymbium; cymbium without retrolateral groove; broad semicircular sloping concavity on ventral cymbium proximal to bulb; subtegulum not evident between embolus and flat tegulum; median apophysis elongate, triangular with small accessory sclerite retrobasally, on opposed tegular edge a large triangular process (Fig. 14A); RTA short, curved scoop-like (Fig. 15B); overall shape of bulb reniform.

Allotype female QM S31500. Differs from male in following:
Carapace 3.28 long, 2.40 wide. Abdomen 4.40 long, 2.80 wide.
I: 4.08; 1.31; 4.08; 4.38; 1.54; 15.39. II: 2.69; 1.00; 2.54; 2.77; 0.92; 9.92. III: 1.77; 0.92; 1.46; 2.00; 0.77; 6.92. IV: 3.00; 0.92; 2.77; 3.46; 1.00; 11.15. Palp: 1.46; 0.54; 0.85; –; 0.92; 3.77.

Colour: Brown-orange with darker bands in striae, fovea and along caput margin. *Chelicerae:* Stout, geniculate; two teeth distally on retromargin juxtaposed with three teeth more basally on promargin. *Legs:* Erect slightly thicker bristles on tibiae and metatarsi with brown bases like spines. Palpal claw spike-like. *Spines:* I: fe p2r1; ti p2r2v2.2; me p1r1v2.2.1. II: fe p2; ti p2v2.2; me p1r1v2.2.3. III: fe p2r1; ti p1r1v1; me p2r2v2.2.3. IV: fe p1r1; ti r2v1; me p2r2v2.2.3. Palp: d1. *Epigyne:* Flask-like median septum without accessory lobe on spermathecae (Fig. 15E), head of spermathecae ovoid with three loops in the distal ducts of spermathecae (Fig. 15E).

Distribution and habitat: Known only from rainforest on Viti Levu, Fiji.

***Fijimoneta longimana* (L. Koch, 1873)**
(Figs 2, 3F, 4A, 15A, 16)

Cheiracanthium longimanum L. Koch, 1873: 398, T31, figs 1, 2; Roewer, 1955: 488; Moritz & Fischer, 1988: 135. New combination.

Material: Lectotype (designated) ♂, Tonga Island. ZMB: 27235; male, 'austral. sept.', E. Daemel;

ZMB2190; 1 juvenile without abdomen, Australia, Daemel, ZMB2191; 1 juvenile New South Wales, E. Daemel; ZMB2192; 1♀, Samoa, Museum Godeffroy, ZMB3405; 1♂, Tonga, Linnaeus colln, NHRS.

Other material: 1♂, Ovalau, track to peak behind Levuka, 17°40'S 178°50'E, Fiji, litter, 14 Nov 1988, R. Raven, QM S14280.

Diagnosis: Males differs from males of *F. vitilevu* sp. nov. in the much longer palp, the very long apical segment of PLS and that the two major cheliceral teeth are close enough to form a V. Females effectively unknown.

Description: Male QM S14280
Carapace 5.68 long, 3.92 wide. Abdomen 5.68 long, 3.20 wide.
I: 10.15; 2.46; 6.61; 8.15; 1.54; 28.91. II: 6.84; 2.00; 4.23; 5.54; 1.54; 20.15. III: 4.87; 1.61; 6.92; 10.00; 1.77; 25.17. IV: 7.46; 2.07; 4.61; 1.54; –; –. Palp: 5.46; 1.15; 4.88; –; –; 27.

Colour: Carapace, chelicerae and legs deep reddish orange; without dark markings or pattern, abdomen fawn. *Carapace:* Foveal depression very shallow. *Chelicerae:* Two distal major teeth slightly offset and form a V cradling fang with small single basal tooth also on retromargin; retro-tooth distal and arches forward. *Legs:* I clearly longer than II; long weak brush of scopuliform hairs on tarsi I–III (tarsi IV missing); femora almost glabrous. *Spines:* I: fe p2r1; rest absent. II: fe p2; ti p2v2.2; me p1r1v2.2.1. III: fe p2r1; ti p1r1v1; me p2r3v2.1.1.3. IV: fe p1r1; ti r1v2; me p3r3v2.1.1.3. Palp: fe p1. *Palp:* Tibia very long, about four times the length of cymbium, cymbium with retrolateral groove for basal quarter; broad semicircular sloping concavity on ventral cymbium proximal of bulb; subtegulum not evident between embolus and flat tegulum; median apophysis with broad base but short spine-like, not sinuous or hooked apically; RTA short, almost trianguloid with slightly bifid tip (Fig. 16B); overall shape of bulb long, asymmetrically ovoid.
Female syntype dry and too fragile to handle.

Distribution: Although the types were originally reported from northern Australia, no further material has been found in Queensland. The label data is therefore considered an error. Syntypes that are juvenile cannot be considered conspecific. The male described agrees with the syntype male from 'sept. Aust.' in ZMB and the male from Tonga. The locality is therefore considered incorrect. No new material is known from New Caledonia (Raven, pers. obs; 7 collecting trips). The considered distribution is Fiji, Samoa and Tonga.

Key to *Calamoneta* and *Fijimoneta* species

Males (males of *C. urata* are unknown)

1 Palpal cymbium broad, leaf-like ..... *C. djojosudharmoi*
1' Palpal cymbium narrow (Fig. 9A) **2**

2 Tarsi I pseudosegmented, leg I about 8–10 times longer than carapace (Fig. 3G); median apophysis vermiform, tube-like (e.g. Fig. 9B) ..... *Calamoneta*, **3**
2' Tarsi I not pseudosegmented, elongate, curved, leg I only about 5 times longer than carapace; median apophysis distinctly tapering (Fig. 14C) ..... *Fijimoneta*, **6**

3 Chelicerae weakly modified; about 1.5 times the length of maxillae (Fig. 3C, 4E) ..... *C. micrognatha*
3' Chelicerae strongly modified; more than twice the length of maxillae (e.g. Fig. 4C, 4A) **4**

4 Subtegulum evident, apostrophe-shaped, between embolus and tegulum retrobasally (Fig. 9A, B) **5**
4' Subtegulum not evident between embolus and tegulum retrobasally (Fig. 10A, C) ..... *C. cullenae*

5 Tegulum basally subcircular, subtegulum clearly comma-shaped, and median apophysis extends only for ¼ its length beyond tegulum distally (Fig. 9A, B); legs with darker patellae ..... *C. flavigena*
5' Tegulum basally narrow, ovoid, subtegulum banana-shaped, and median apophysis extends for ⅓ to ⅖ its length beyond tegulum distally (Figs 11A, B); legs one colour ..... *C. eungella*

6 Apical segment of PLS elongate, digitiform (e.g. Fig. 3D) ..... *F. longimana*
6' Apical segment of PLS short, triangular (Fig. 15F ..... *F. vitilevu*

Females (females of *C. djojosudharmoi* and *F. longimana* unknown or in poor condition)

1 ALE facing forward ..... *F. vitilevu*
1' ALE facing sideways ..... *Calamoneta*, **2**

2 Epigyne with median septum and two circular copulatory openings posteriorly (Fig. 13F) **3**
2' Epigyne without median septum and associated elements ..... *C. urata*

3 Legs one colour **4**
3' Patellae of legs darker ..... *C. flavigena*

4 Anterior receptaculum of epigyne with accessory lobe (Fig. 13B) ..... *C. micrognatha*
4' Anterior receptaculum of epigyne without accessory lobe (Fig. 13D) **5**

5 Large longitudinally ovoid head of spermathecae without ental lobe distally (Fig. 13E) ..... *C. eungella*
5' Small subcircular head of spermathecae with distinct ental lobe distally (Fig. 13G) ..... *C. cullenae*

DISCUSSION

The family Cheiracanthiidae Wagner, 1887 (first elevated as Eutichuridae Lehtinen, 1967 by Ramírez, 2014) has had a contentious reconception (Ramírez 2014) and includes long-legged spiders of the genus *Calamoneta* Deeleman-Reinhold, 2001 that occur in south-east Asia and in the closed forest (mostly rainforests) along coastal Queensland. However, despite a convincing morphological analysis grouping all Cheiracanthiidae (Ramírez 2014), a subsequent molecular analysis (Fig. 8 in Wheeler et al. 2017) grouped *Eutichurus ravidus* deep in the Miturgidae and only in a Baysesian analysis (Fig. 8, inset) was it grouped with other cheiracanthiids.

Interspecific relationships

Calamoneta species described from northern Australia are consistent in palpal morphology and are more similar to other Australian species than to the type species, *C. djojosudharmoi*. The cymbium and bulb are slender (compared to the leaf-like cymbium in the type species) but most significantly, the embolus base is separated from the tegulum by a groove (fused in *C. djojosudharmoi*).

Fijimoneta species show strong similarities in the male palp and female epigyne. Interspecific differences, although consistent within each species, are quite subtle. Even the Fijian species (*F. vitilevu* and *F. longimana*) are similar in sexual morphology to those from eastern Australia. However, in males of *Fijimoneta*, the first leg is about 5 times longer than the carapace, whereas in Australian *Calamoneta* the first leg is 8–10 times longer. Similarly, the first tarsi and, to a lesser extent, metatarsi of males are hardly slender and flexible. This comparison is not possible with *C. djojosudharmoi* (the only other species for which a male is known) because neither species described by Deeleman-Reinhold (2001) had the first leg present, except for femur I in *C. djojosudharmoi*. The characters of the first leg were based upon original observations (though during capture, the first legs were lost) and a photograph (Plate 2 Fig. 1 in Deeleman-Reinhold 2001) of a male considered congeneric from north Queensland.

The ratio of male femur I to carapace length in the holotype of *C. djojosudharmoi* is 3.3, whereas in the other species it varies from about 2.6 (*C. micrognatha* sp. nov., *C. cullenae*), 2.3 (*C. eungella*), 1.8–1.9 (*C. flavigena*, *F. longimana*) to 1.5 (*F. vitilevu*).

The relative size of femur I does not, however, reflect the relative length of the first leg to the carapace length. The ratio that reflects the difference is metatarsus I to femur I. In Australian *Calamoneta* species, it varies from 1.5–1.6, whereas in *Fijimoneta*, it varies from 0.8–1.2.

Equally, in the Australian *Calamoneta* species, metatarsi and tarsi I of males and females are whip-like and pseudosegmented. However, in *Fijimoneta*, they are elongate but not pseudosegmented. A reversal to non-pseudosegmented tarsi may have occurred in *Fijimoneta*. On the other hand, if the character in *Fijimoneta* is plesiomorphic, that would require considerable homoplasy in characters of the male palp.

In *Fijimoneta*, the ALE are set on a distinct forward-looking tubercle that is higher than the tubercle of the PLE. Given those consistent differences, we feel that the new genus is justified. However, although the Western Pacific *Fijimoneta* species are clearly monophyletic, the elevation of a new genus for the Australian species requires that a synapomorphy be found for the species from Sumatra and Java. Clearly, the male palps of the latter are more plesiomorphic in their resemblance to *Cheiracanthium* and other eutichurine genera of Deeleman-Reinhold (2001).

Putative synapomorphies (with the plesiomorphic condition in *C. djojosudharmoi* in square brackets) of the Western Pacific clade (including Australian) are narrow cymbium [cymbium leaf-shaped], cymbial scopula present [absent], median apophysis long and narrow [basally broad], RTA small [large scoop-shaped], embolus free of tegulum [fused]; conductor spine-like [broad, wide], epigyne with circular copulatory openings posteriorly. The putative synapomorphy of the Australian clade are metatarsi and tarsi I of males and females whip-like, pseudosegmented.

Biogeography

The relationships of the *Calamoneta* species present a considerable challenge from a biogeographical point of view. The absence of species groups within the Australian species is hardly surprising. This frequently occurs with rainforest spiders (e.g. Baehr 2003; Raven & Stumkat 2005) of north-eastern Australia, but Baehr (2003) did find that the southern-most species in both groups of the zodariid genus *Tropasteron* (based around *T. andreae* Baehr 2003 and *T. cleveland* Baehr 2003, respectively) were the sister group of all others.

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FIGURES

Figure 1. *Calamoneta cullenae* sp. nov., habitus, male. © J. Wright.

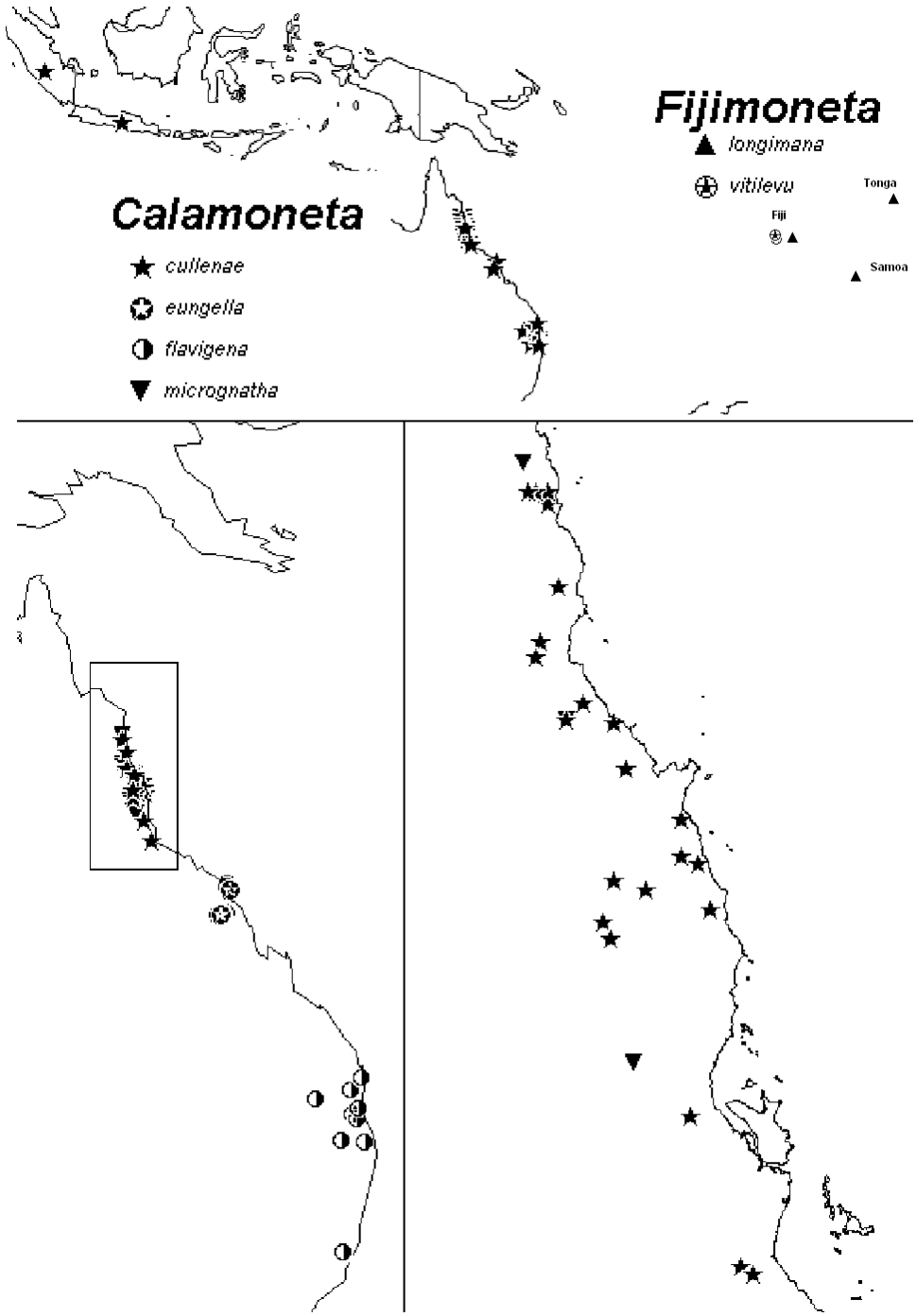

Figure 2. Occurrence of *Calamoneta* and *Fijimoneta* in Australia and the Western Pacific.

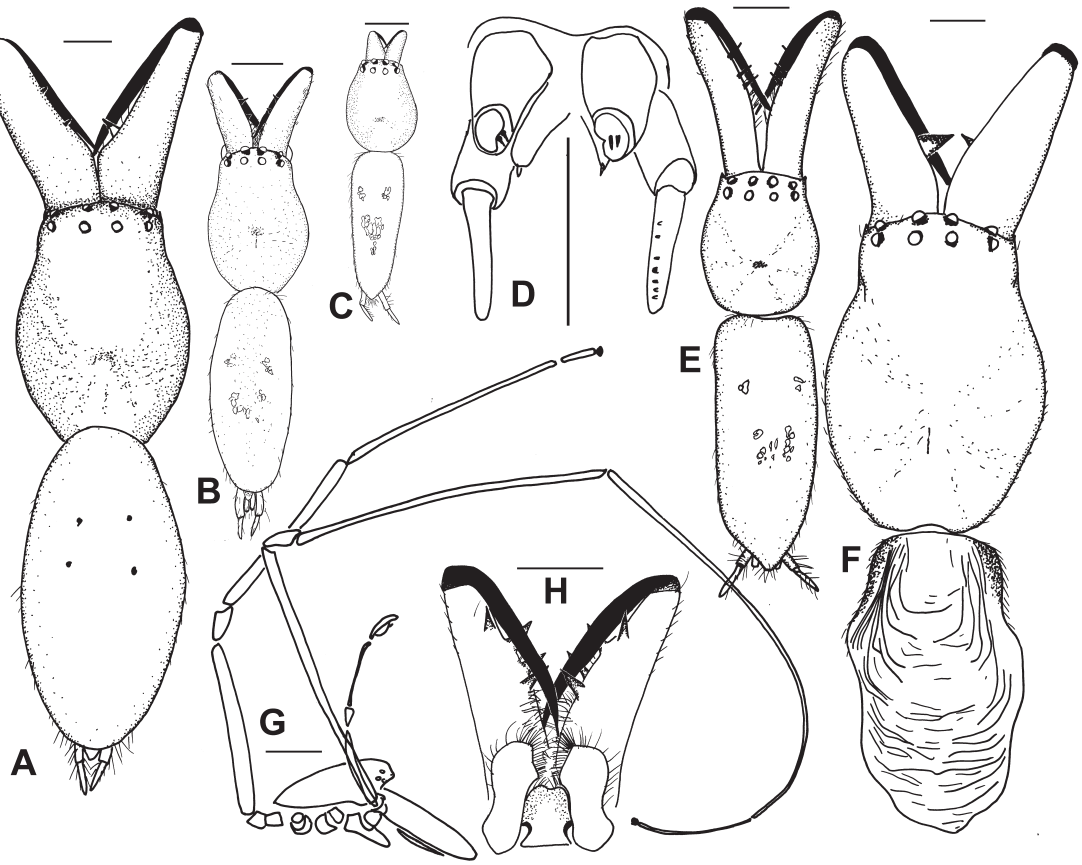

Figure 3. *Calamoneta* and *Fijimoneta* gen. nov. males. **A–C**, **E–F:** cephalothorax and abdomen, dorsal view. **A:** *C. flavigena* sp. nov. **B:** *C. cullenae* sp. nov. **C:** *C. micrognatha* sp. nov. **D:** *C. eungella* sp. nov., spinnerets, ventral view. **E:** *C. eungella* sp. nov. **F:** *F. longimana*. **G–H:** *C. eungella* sp. nov., cephalothorax showing legs I, IV and palp. **G:** chelicerae, maxillae and labium, lateral view. **H:** ventral view. All scale lines = 1 mm.

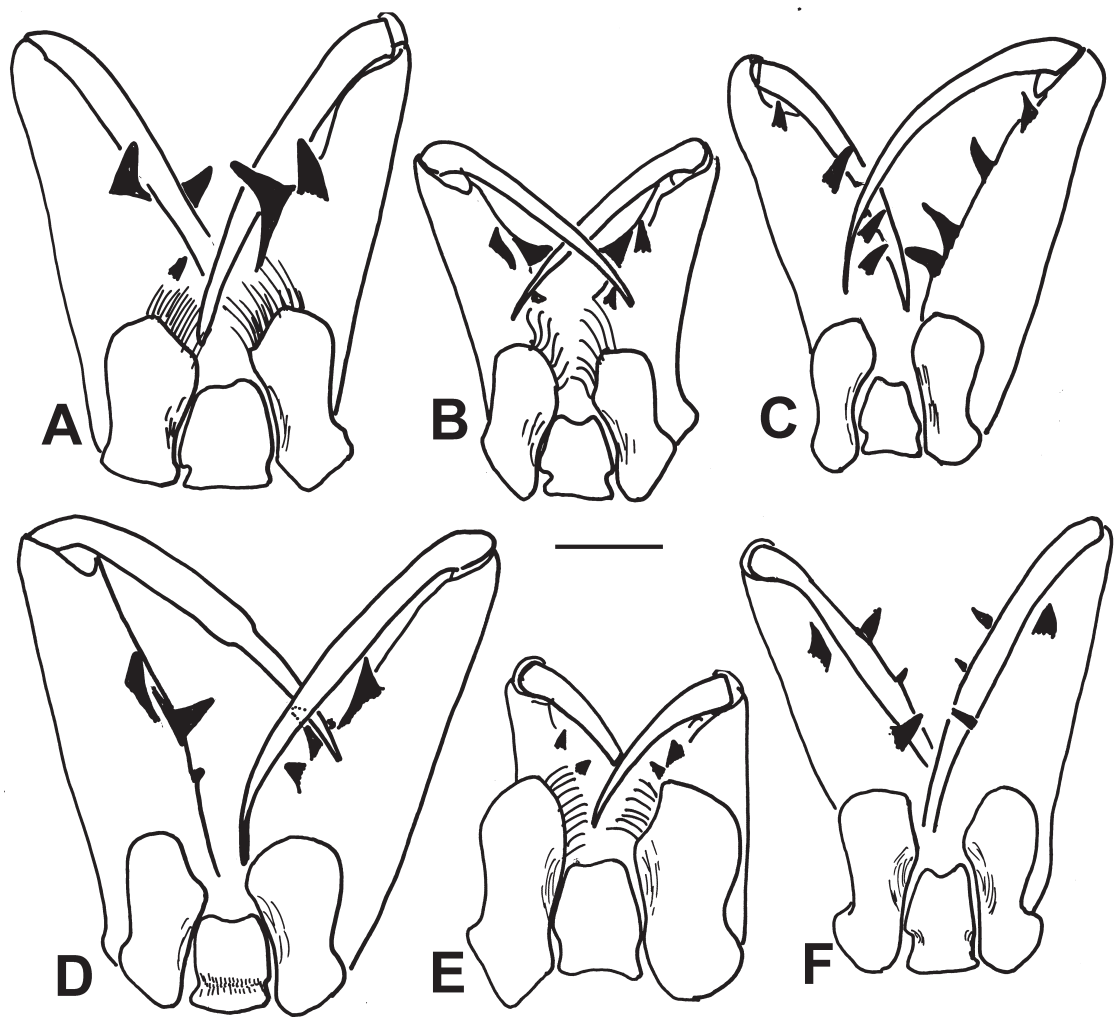

Figure 4. *Calamoneta* and *Fijimoneta* gen. nov., males, chelicerae, ventral view. **A:** *F longimana*, from Ovalau. **B:** *F. vitilevu* sp. nov. from Kadavu **C:** *C. flavigena* sp. nov. **D:** *F. vitilevu* sp. nov., holotype. **E:** *C. micrognatha* sp. nov. **F:** *C. eungella* sp. nov. Scale line = 1 mm for A–D, 0.32 mm for E, 0.64 mm for F.

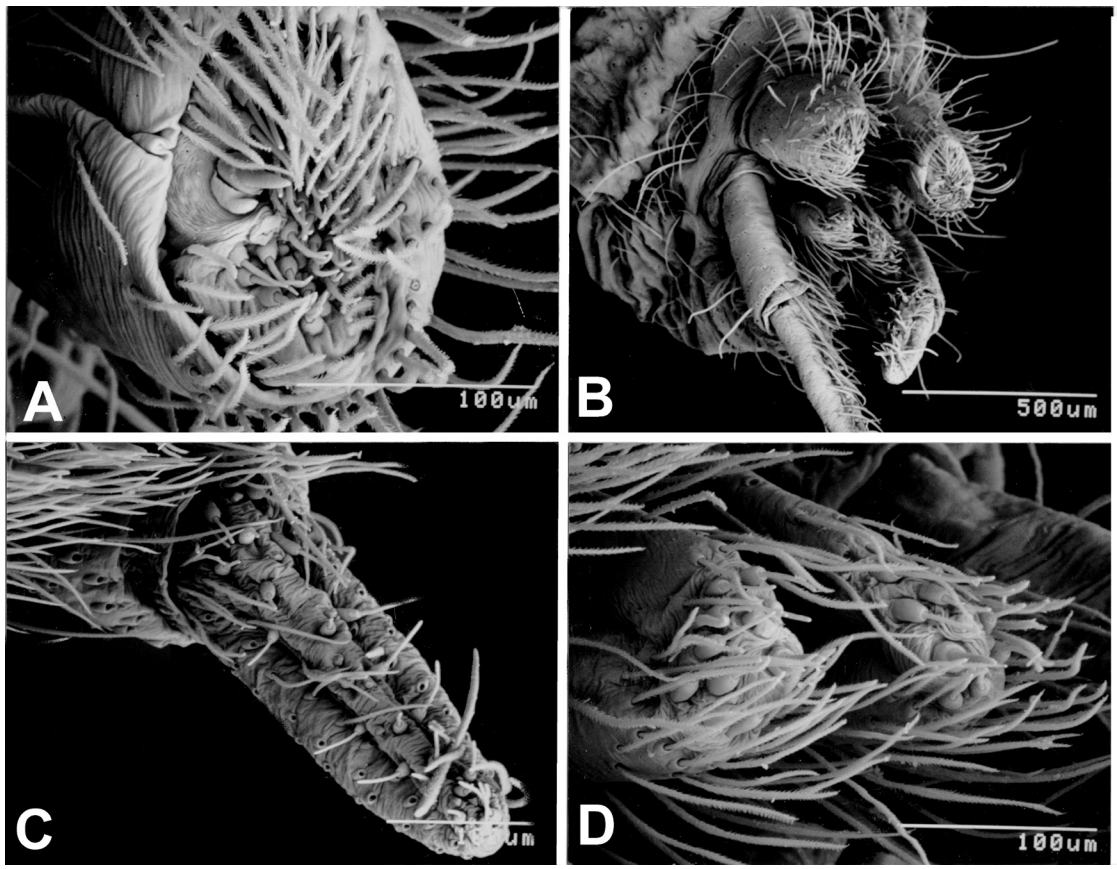

Figure 5. *Calamoneta flavigena* sp. nov., QM S39182, female spinnerets, scanning electron micrographs. **A:** tip of ALS, axial view. **B:** group posterior, oblique view. **C:** apical segment of PLS, axial view; **D:** PMS, axial view.

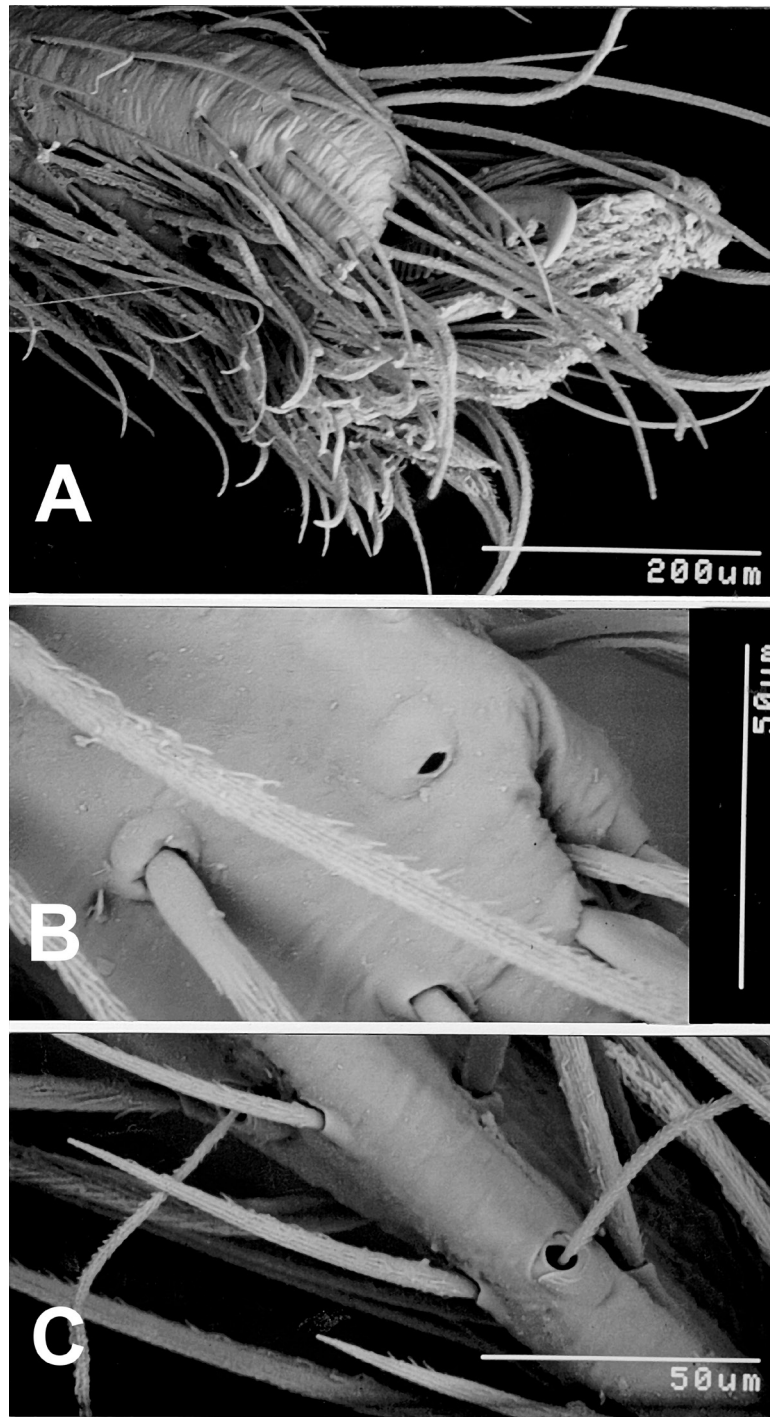

Figure 6. *Calamoneta flavigena* sp. nov., QM S31492, leg I, male, scanning electron micrographs. **A:** claws on tarsi showing tufts. **B:** tarsal organ. **C:** metatarsal trichobothrial cup.

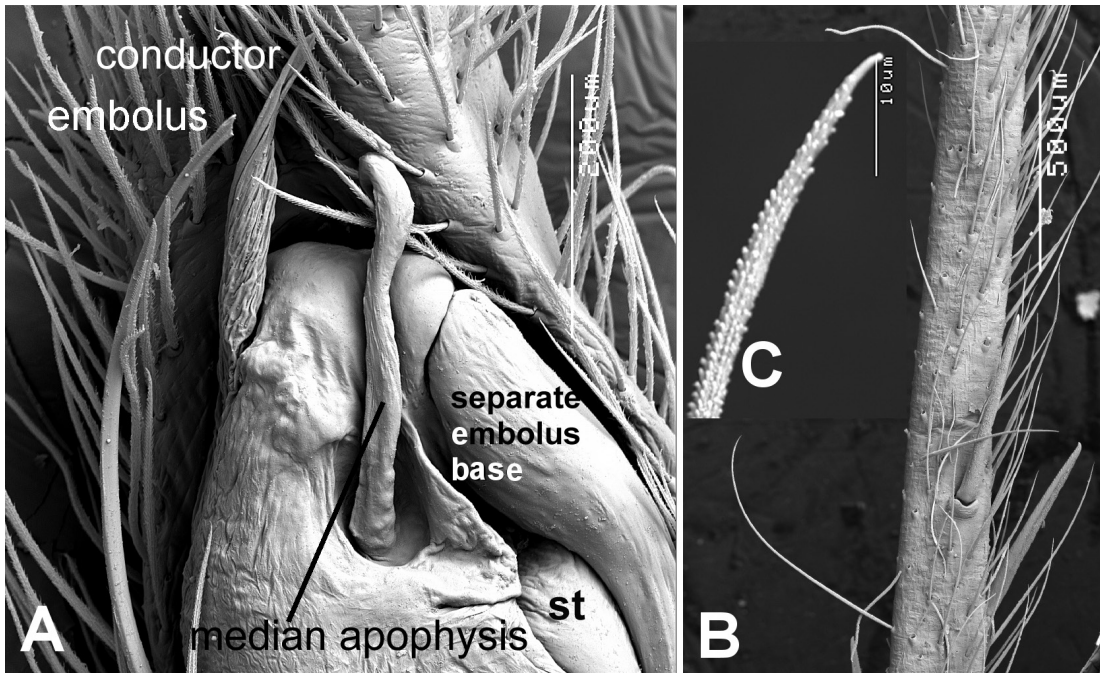

Figure 7. *Calamoneta flavigena* sp. nov., male, scanning electron micrographs. **A:** distal portion of bulb showing embolus, conductor, median apophysis, separate embolus base and subtegulum (labelled as st). **B:** metatarsus IV, lateral view showing elongate sensory hairs **C:** enlargement of hair tip.

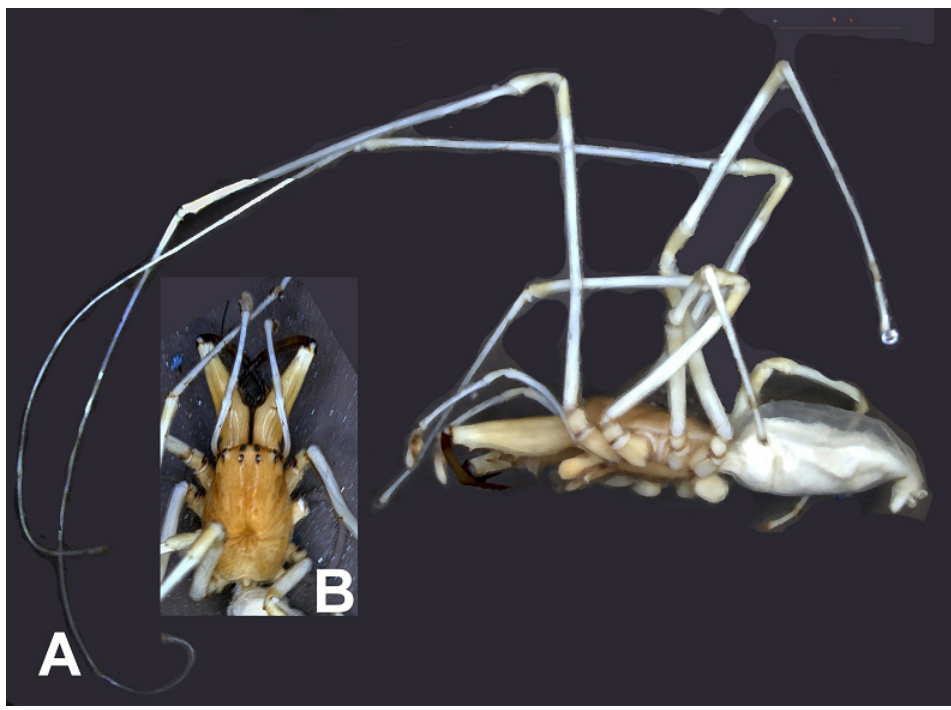

Figure 8. *Calamoneta flavigena* sp. nov., male, AM KS14763: **A:** lateral view **B:** carapace, dorsal view.

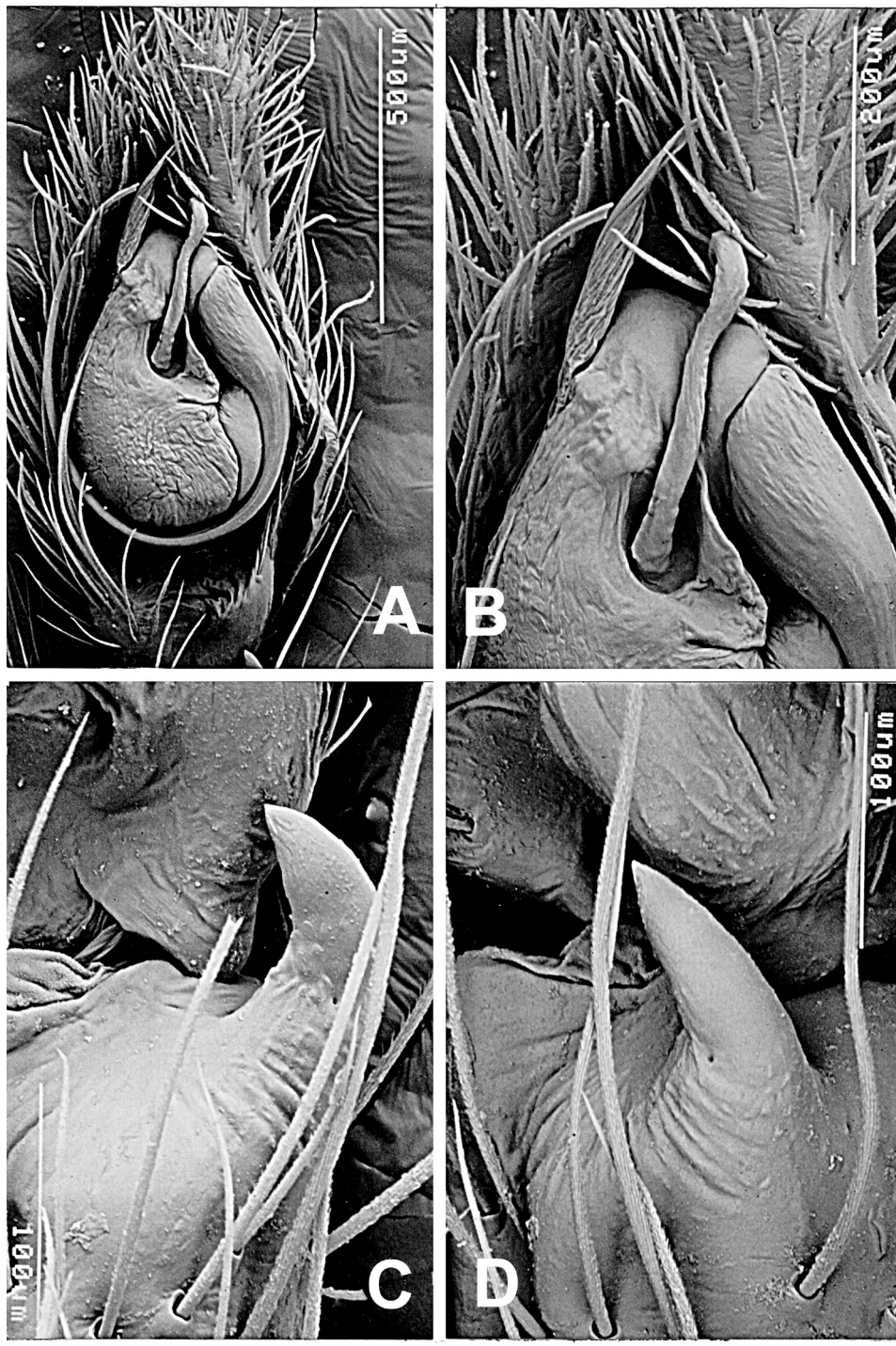

Figure 9. *Calamoneta flavigena* sp. nov., male palp, scanning electron micrographs. **A:** cymbium and bulb, ventral view. **B:** tip of bulb showing apophyses. **C:** cymbium with RTA, ventral view. **D:** retrolateral view.

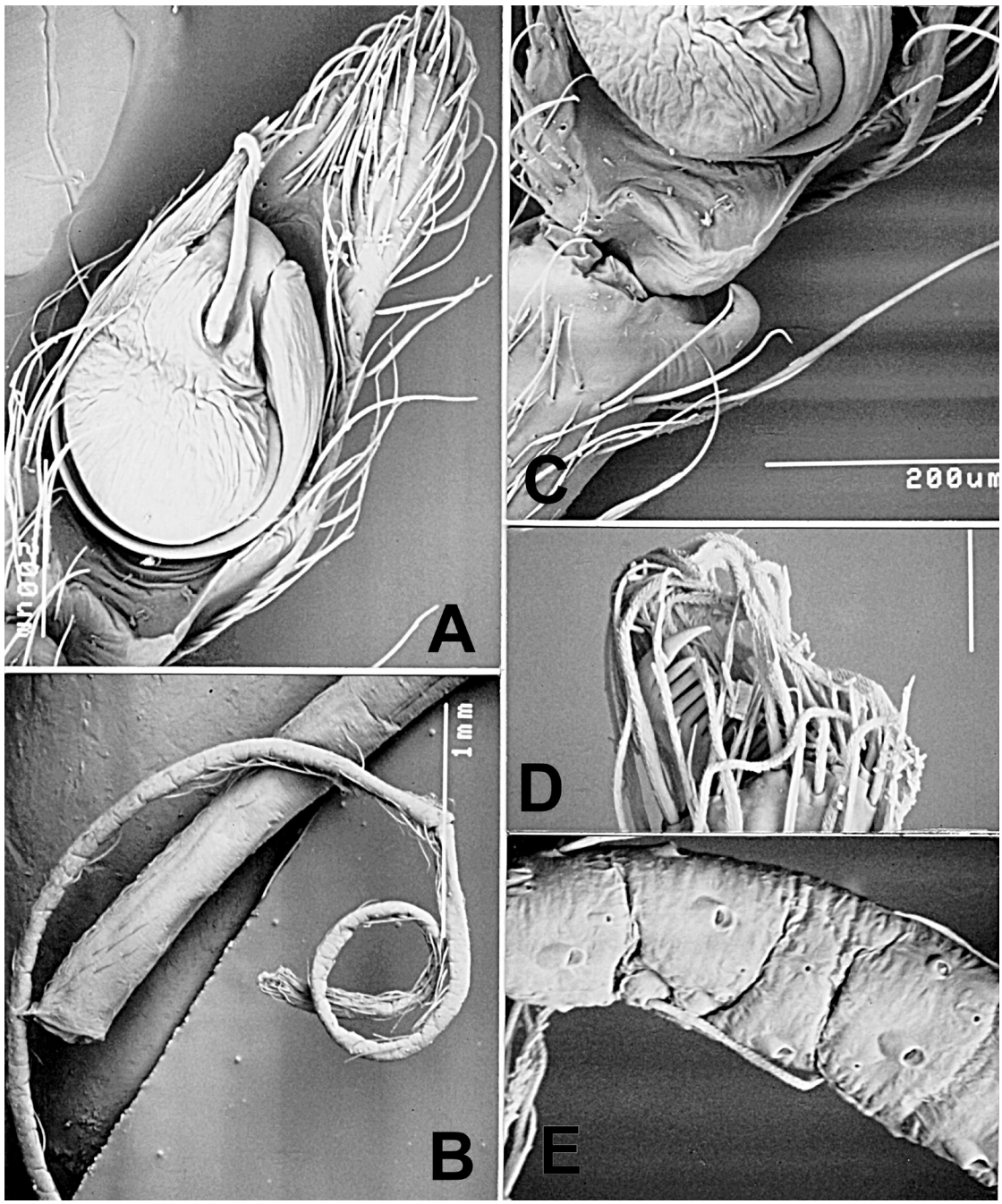

Figure 10. *Calamoneta cullenae* sp. nov., male, scanning electron micrographs. **A:** palpal cymbium and bulb, ventral view. **B:** metatarsus and tarsus I, showing pseudosegmentation, lateral view. **C:** base of bulb and cymbium with RTA, ventral view. **D:** claws of leg I showing tuft, lateral view. **E:** tarsus I, showing pseudosegmentation, lateral view.

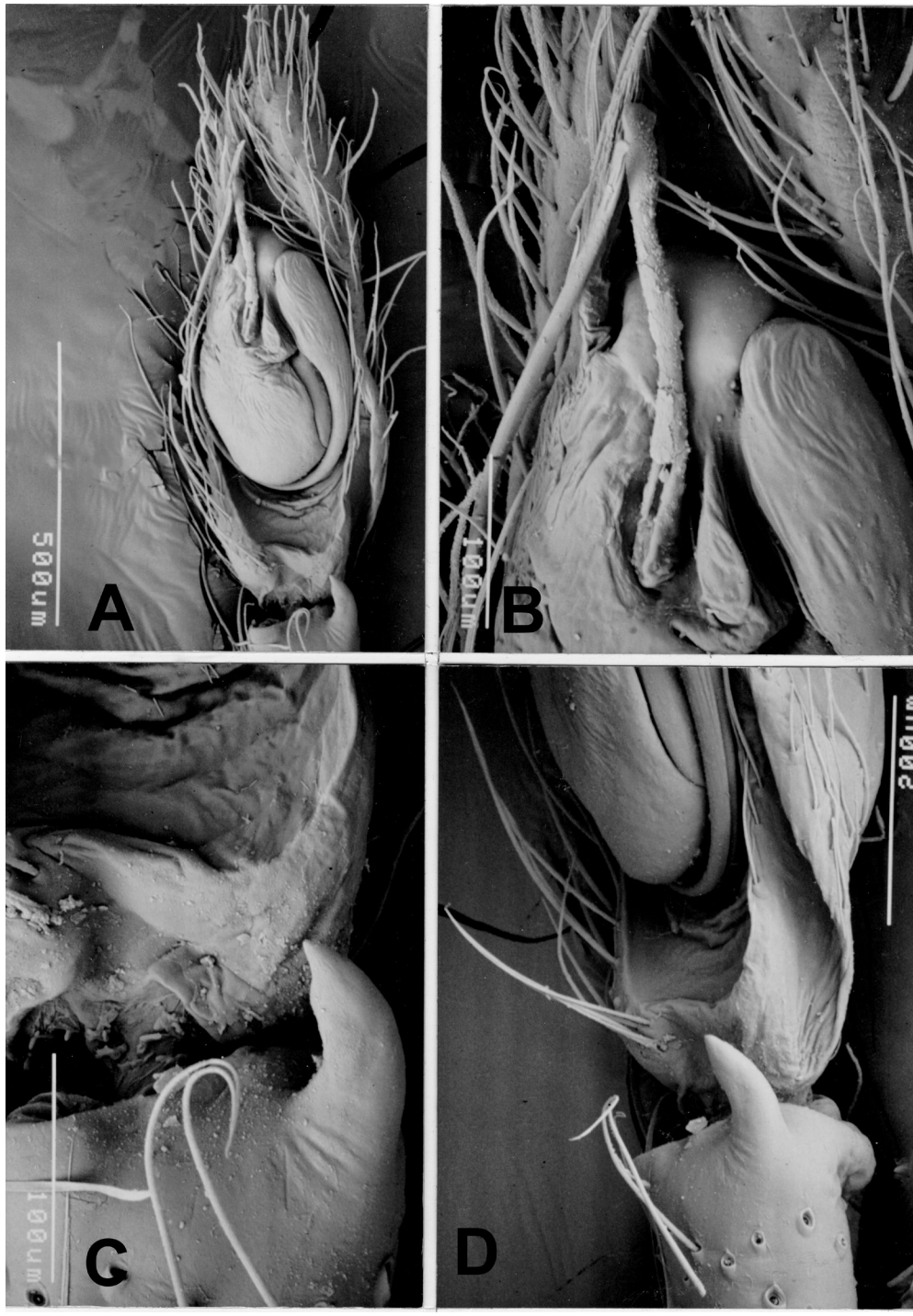

Figure 11. *Calamoneta eungella* sp. nov., male palp, scanning electron micrographs. **A:** cymbium and bulb, ventral view. **B:** tip of bulb showing apophyses. **C:** cymbium with RTA, ventral view. **D:** retrolateral view.

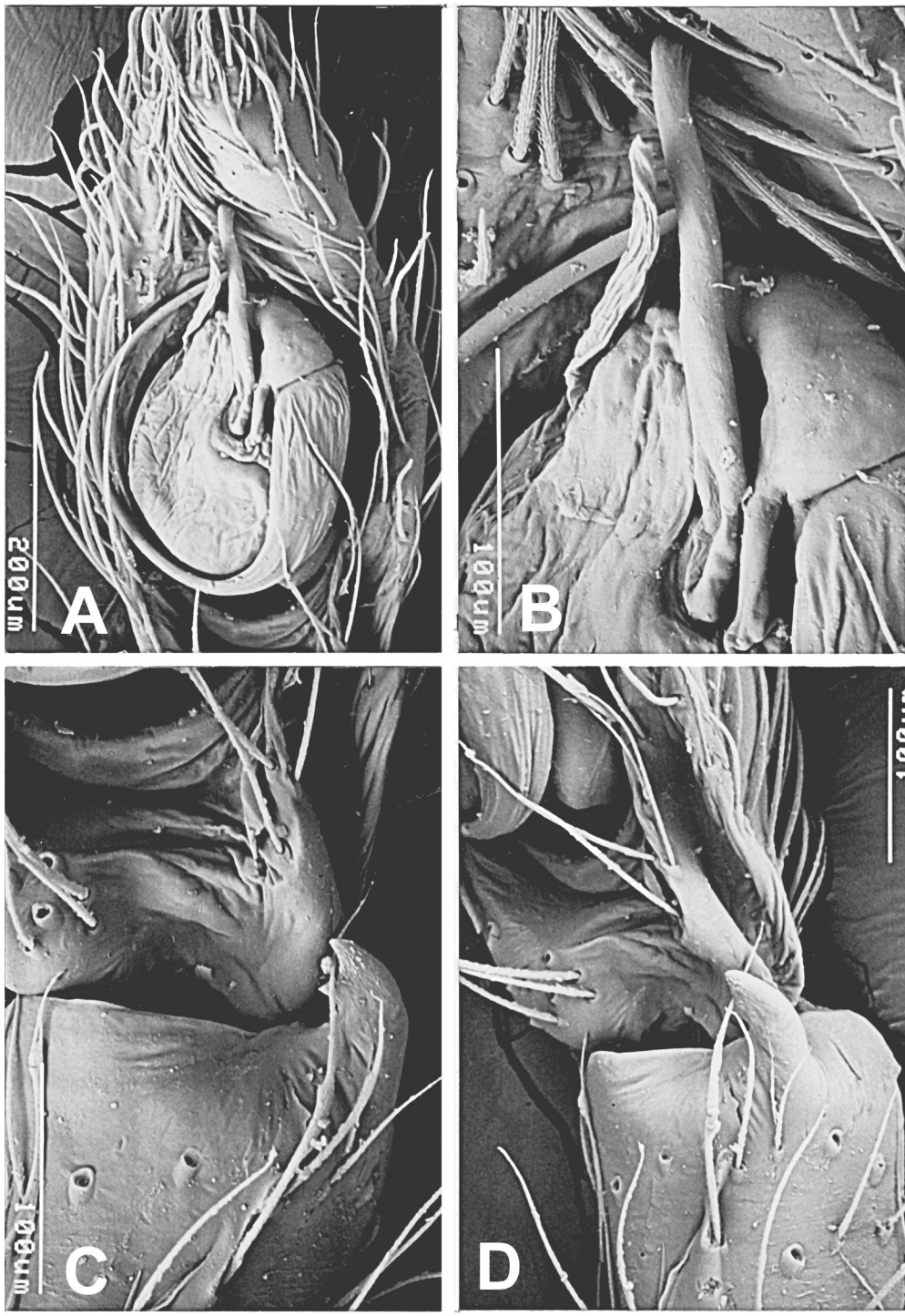

Figure 12. *Calamoneta micrognatha* sp. nov., male palp, scanning electron micrographs. **A:** cymbium and bulb, ventral view. **B:** tip of bulb showing apophyses. **C:** cymbium with RTA, ventral view. **D:** retrolateral view.

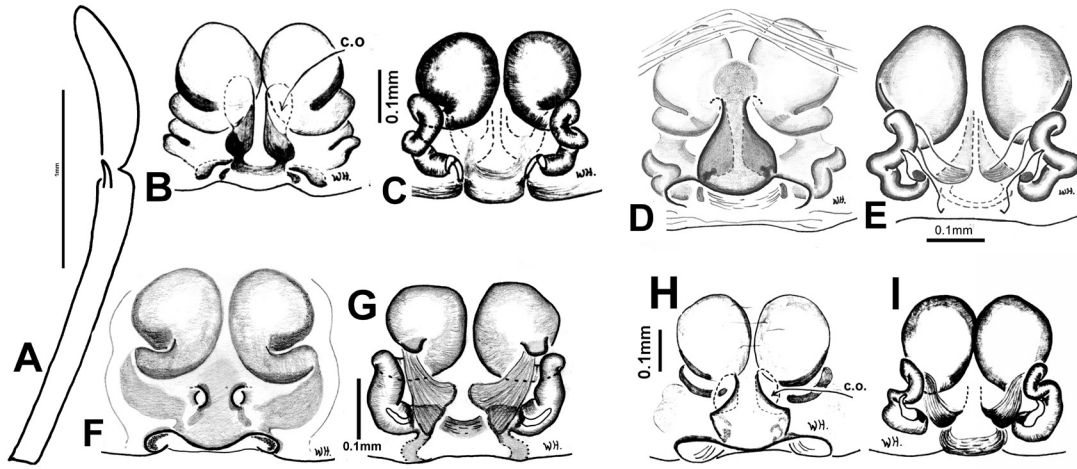

Figure 13. *Calamoneta*, female epigyne and male palp. **A:** *C. eungella*, male palpal tibia and cymbium, retrolateral view. **B, D, F, H:** external epigyne. **C, E, G, I:** internal epigyne. **B–C:** *C. micrognatha*. **D–E:** *C. eungella*. **F–G:** *C. cullenae* **H–I:** *C. flavigena*, AM KS9669. Scale line = 1 mm for A, 0.1 mm for B, C, E, G and H.

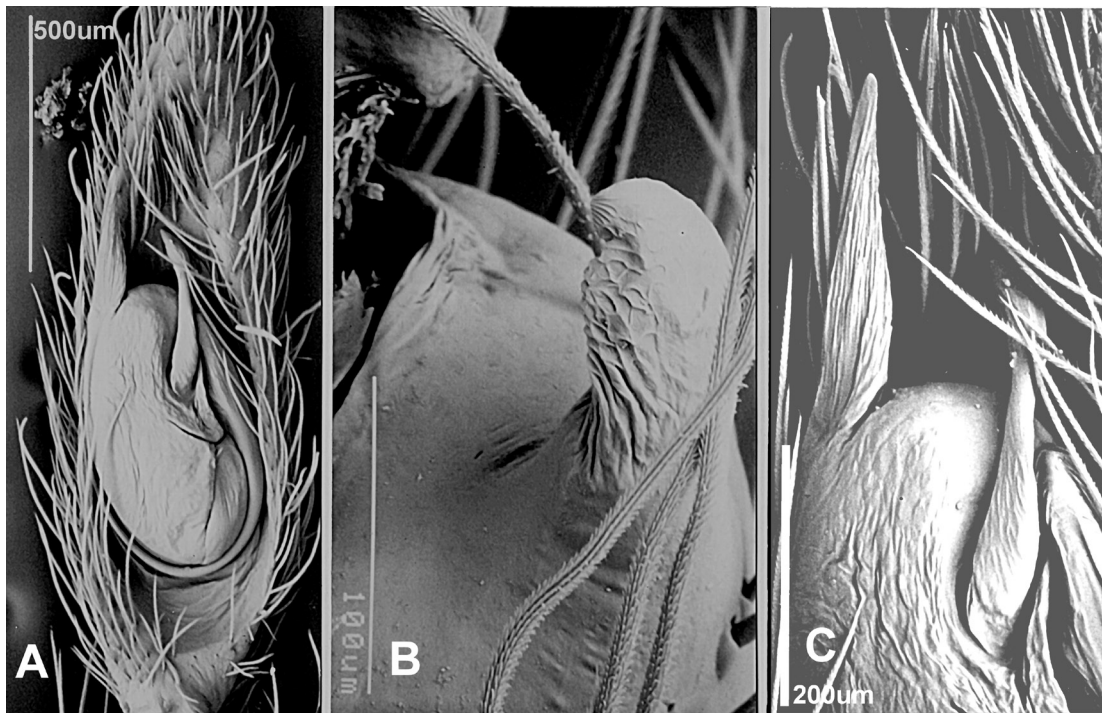

Figure 14. *Fijimoneta vitilevu* sp. nov., male palp, scanning electron micrographs. **A:** cymbium and bulb, ventral view. **B:** cymbium with RTA, retrolateral view. **C:** tip of bulb showing apophyses.

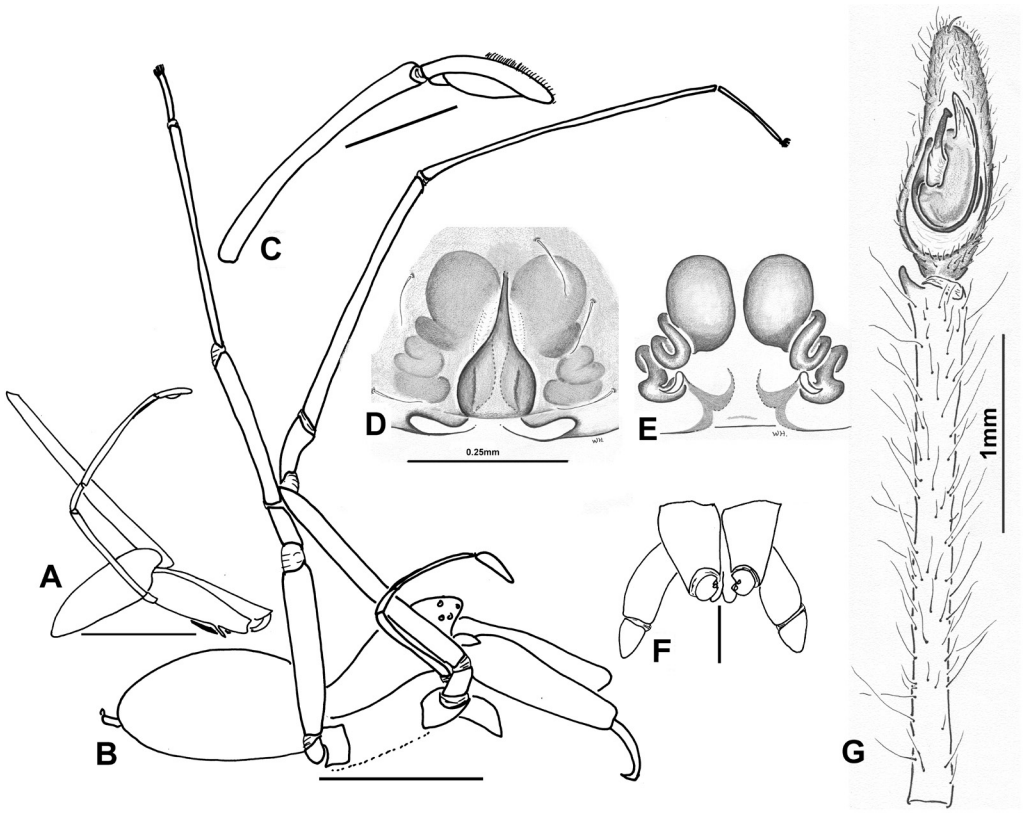

Figure 15. *Fijimoneta* species. **A:** *F. longimana*, male, QM S14280, cephalothorax, femur I and palp, lateral view. **B–G:** *F. vitilevu* sp. nov., **B–C, G:** holotype male. **B:** cephalothorax and abdomen, legs I, IV and palp, lateral view. **C:** palpal tibia and cymbium, prolateral view. **D–F:** allotype female. **D:** epigyne, external. **E:** internal. **F:** spinnerets, ventral view. **G:** palpal tibia, cymbium and bulb, ventral view. Scale lines = 5 mm for A–B, 1 mm for C, 0.25 mm for D–F, internal and external epigynes at same scale.

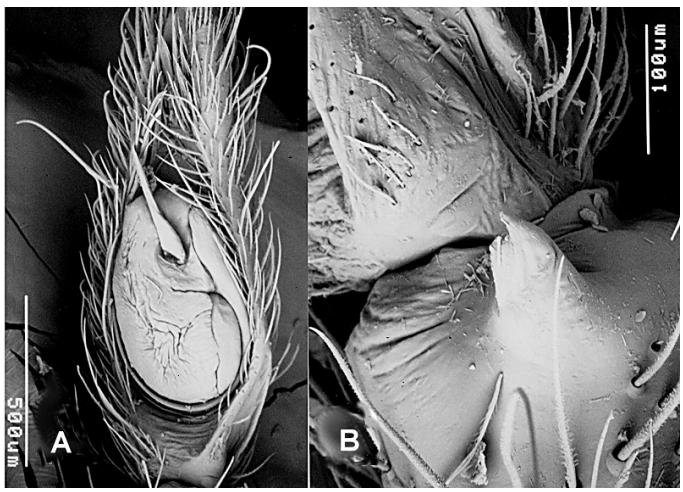

Figure 16. *Fijimoneta longimana*, QM S14280, male palp, scanning electron micrographs. **A:** cymbium and bulb, ventral view. **B:** base of cymbium with RTA, retrolateral view.

LITERATURE CITED

Baehr, B. (2003). *Tropasteron* gen. nov. of the *Asteron*-complex (Araneae: Zodariidae) from tropical Queensland. *Memoirs of the Queensland Museum*, **49**(1), 29–64.

Bonaldo, A.B. (1994). A subfamília Eutichurinae na região neotropical, com a revisão do gênero *Eutichurus* Simon, 1896 (Araneae, Miturgidae). *Iheringia* (Zool.), **76**, 101–159.

Bonaldo, A.B. (1997). Sobre uma espécie nova do gênero *Ericaella* (Araneae, Miturgidae, Eutichurinae). *Iheringia*, *Série Zoologia*, **83**, 199–202.

Bonaldo, A.B., Brescovit, A.D. & Rheims, C.A. (2005). On a new species of *Ericaella* Bonaldo (Araneae, Miturgidae, Eutichurinae), with a cladistic analysis of the genus. *Zootaxa*, **835**, 1–8. 10.5281/zenodo.170688

Croeser, P.M.C. (1996). A revision of the African huntsman spider genus *Palystes* L. Koch 1875 (Araneae: Heteropodidae). *Annals of the Natal Museum*, **37**(1), 1–122.

Deeleman-Reinhold, C.L. (2001). Forest spiders of South-east Asia with a revision of the sac and ground spiders (Araneae: Clubionidae, Corinnidae, Liocranidae, Gnaphosidae, Prodidomidae, and Trochanterriidae [sic.]. Brill, Leiden.

Dondale, C.D. (1966). The spider fauna (Araneida) of deciduous orchards in the Australian Capital Territory. *Australian Journal of Zoology*, **14**(6), 1157–1192.

Esyunin, S.L. & Zamani, A. (2020). 'Conundrum of esoterica': on the long-forgotten genus *Eutittha* Thorell, 1878, with new taxonomic considerations in *Cheiracanthium* C.L. Koch, 1839 (Araneae: Cheiracanthiidae). *Journal of Natural History*, **54**(19–20), 1293–1323. https://doi.org/10.1080/00222933.2020.1781950

Kishida, K. (1936). Notes on two spider genera *Chiracanthium* and *Clubiona*. *Acta Arachnologica*, **1**(2), 34–41. https://doi.org/10.2476/asjaa.1.34

Koch, C.L. (1839). *Die Arachniden*. C.H. Zeh'sche Buchhandlung, Nürnberg, Fünfter Band, pp. 125–158, pl. 175–180 (f. 418–431); Sechster Band, pp. 1–156, pl. 181–216 (f. 432–540); Siebenter Band, pp. 1–106, pl. 217–246 (f. 541–584).

Koch, L. (1873). *Die arachniden australiens nach der Natur beschrieben und abgebildet*. **1**. Bauer und Raspe, Nürnberg.

Kulczyński, W. (1910). 'Araneae et Arachnoidea Arthrogastra', Botanische und zoologische Ergebnisse einer wissenschaftlichen Forschungreise nach den Samoainsiln, dem Neuguinea-Archipel und den Solomon inseln von Marz bis Dezember 1905 von Dr Karl Rechinger, III Teil, Denkschrift der Akademie der Wissenschaften, Wien, **85**, 389–411.

Lehtinen, P.T. (1967). Classification of the Cribellate spiders and some allied families, with notes on the evolution of the suborder Araneomorpha. *Annales Zoologici Fennici*, **4**(3), 199–468.

Lotz, L.N. (2007). The genus *Cheiracanthium* (Araneae: Miturgidae) in the Afrotropical region: 1: Revision of known species. *Navorsinge van die Nasionale Museum, Bloemfontein*, **23**, 1–76.

Marusik, Y.M. & Kovblyuk, M.M. (2011). *Spiders (Arachnida, Aranei) of Siberia and Russian Far East*. KMK Scientific Press, Moscow.

Marusik, Y.M., Omelko, M.M. & Simmons, Z.M. (2020). Redescription of two west Himalayan *Cheiracanthium* (Aranei: Cheiracanthiidae). *Arthropoda Selecta*, **29**(3), 339–347.

Moritz, M. & Fischer, S. (1988). Die typen der Arachniden-Sammlung des Zoologischen Museums Berlin. VIII. Araneae: Miturgidae, Liocranidae, Clubionidae, Gnaphosidae. *Mitteilung Zoologischen Museums Berlin*, **64**, 131–149.

Ono, H. (2009). *The spiders of Japan with keys to the families and genera and illustrations of the species*. Tokai University Press, Kanagawa.

Platnick, N.I. (1990). Spinneret morphology and the phylogeny of ground spiders (Araneae, Gnaphosidae). *American Museum Novitates*, **2978**, 1–42.

Platnick, N.I. (2000). A relimitation and revision of the Australasian ground spider family Lamponidae (Araneae: Gnaphosoidea). *Bulletin of the American Museum of Natural History*, **245**, 1–328.

Rainbow, W.J. (1899). Contribution to a knowledge of the araneidan fauna of Santa Cruz. *Proceedings of the Linnean Society of New South Wales*, **24**, 304–321.

Rainbow, W.J. (1920). Arachnida from Lord Howe and Norfolk Islands. *Records of the South Australian Museum*, **1**(3), 229–272, pl. 28–31.

Ramírez, M.J. (2014). The morphology and phylogeny of Dionychan spiders (Araneae: Araneomorphae). *Bulletin of the American Museum of Natural History*, **390**, 1–374.

Raven, R.J. (1984). A new diplurid genus from eastern Australia and a related *Aname* species (Diplurinae: Dipluridae: Araneae). *Australian Journal of Zoology Supplementary Series*, **96**, 1–51.

Raven, R.J., Baehr, B.C. and Harvey, M.S. (2002). *An interactive key to Australian spider subfamilies*. Australian Biological Resources Study: CSIRO Publishing, Melbourne.

Raven, R.J. & Stumkat, K. (2003). Problem solving in the spider families Miturgidae, Ctenidae and Psechridae (Araneae) in Australia and New Zealand. *Journal of Arachnology*, **31**, 105–121.

Raven, R.J. & Stumkat, K. (2005). Revisions of Australian ground-hunting spiders: II. Zoropsidae (Lycosoidea: Araneae). *Memoirs of the Queensland Museum*, **50**(1), 347–423.

Roewer, C.F. (1955). *Katalog der Araneae von 1758 bis 1940, bzw. 1954*. Bruxelles, **2**, 1–1751.

Thorell, T. (1878). Studi sui ragni Malesi e Papuani. II. Ragni di Amboina raccolti Prof. O. Beccari. *Annali del Museo Civico di Storia Naturale di Genova*, **13**, 5–317.

Wagner, W.A. (1887). Copulationsorgane des Männchens als Criterium für die Systematik der Spinnen. *Horae Societatis Entomologicae Rossicae*, **22**, 3–132, pl. 1–10.

Wheeler, W.C., Coddington, J.A., Crowley, L.M., Dimitrov, D., Goloboff, P.A., Griswold, C.E., Hormiga, G., Prendini, L., Ramírez, M.J., Sierwald, P., Almeida-Silva, L.M., Álvarez-Padilla, F., Arnedo, M.A., Benavides, L.R., Benjamin, S.P., Bond, J.E., Grismado, C.J., Hasan, E., Hedin, M. ... Zhang, J.X. (2017). The spider tree of life: phylogeny of Araneae based on target-gene analyses from an extensive taxon sampling. *Cladistics*, **33**(6), 576–616.

WSC (2023). *World Spider Catalog*. Version 24.5. Natural History Museum Bern. http://wsc.nmbe.ch