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The spider family Micropholcommatidae (Arachnida, Araneae, Araneoidea): a relimitation and revision at the generic level

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Abstract

The araneoid spider family Micropholcommatidae Hickman, previously containing 34 southern-temperate species in eight genera, is relimited and revised at the generic level to include 18 genera from Australia, Lord Howe Island, New Caledonia, New Zealand, Papua New Guinea and Chile. Three subfamilies are proposed, and a new phylogenetic hypothesis for the family is presented as a result of two morphological cladistic analyses, used to test the phylogenetic position and phylogeny of the known micropholcommatid taxa. These cladistic analyses inferred a monophyletic Micropholcommatidae, belonging to the diverse araneoid symphytognathidan lineage, with the families Anapidae, Symphytognathidae and Micropholcommatidae further united by the newly proposed 'EbCY' clade. The genus *Teutoniella* Brignoli, previously included in the Micropholcommatidae, was found to be most closely related to an undescribed genus from South Africa, together forming a distinctive 'teutoniellid' lineage within the EbCY clade.

The subfamily Micropholcommatinae Hickman, **new rank** contains the bulk of micropholcommatid diversity, with three tribes, 15 genera and 45 described species. The micropholcommatine tribe Micropholcommatini Hickman, **new rank** includes the nominate genus *Micropholcomma* Crosby & Bishop, along with three additional genera from Australasia and Chile: *Micropholcomma* has eight species, including the type, *M. caeligenum* Crosby & Bishop, and *M. junee* **sp. n.**; *Pua* Forster is monotypic, with *P. novaezealandiae* Forster; *Tricellina* Forster & Platnick is also monotypic, with *T. gertschi* (Forster & Platnick); and *Austropholcomma* **gen. n.** has two species, including the type *A. florentine* **sp. n.**, and *A. walpole* **sp. n.**

The micropholcommatine tribe Textricellini Hickman, **new rank** is a diverse and distinctive lineage, including all species previously described in the genus *Textricella* Hickman, which is hereby recognised as a junior generic synonym of *Eterosonycha* Butler **syn. n.**; the 20 previously described species of *Textricella* are thus transferred into *Eterosonycha* or other newly described genera. The Textricellini includes 10 genera from Australasia and Chile: *Eterosonycha* has four species, including the type *E. alpina* Butler (=*Textricella parva* Hickman **syn. n.**), *E. complexa* (Forster), *E. aquilina* **sp. n.** and *E. ocellata* **sp. n.**; *Epigastrina* **gen. n.** has three species, including the type *E. fulva* (Hickman), *E. loongana* **sp. n.** and *E. typhlops* **sp. n.**; *Guiniella* **gen. n.** is monotypic, with *G. tropica* (Forster); *Raveniella* **gen. n.** has three species, including the type *R. luteola* (Hickman), *R. hickmani* (Forster) and *R. peckorum* **sp. n.**; *Rayforstia* **gen. n.** has 12 species, including the type *R. vulgaris* (Forster), the two new species *R. lordhowensis* **sp. n.** and *R. raveni* **sp. n.**, and the nine additional species *R. antipoda* (Forster), *R. insula* (Forster), *R. mcfarlanei* (Forster), *R. plebeia* (Forster), *R. propinqua* (Forster), *R. salmoni* (Forster), *R. scuta* (Forster), *R. signata* (Forster) and *R. wisei* (Forster); *Normplatnicka* **gen. n.** has three species, including the type *N. lamingtonensis* (Forster), *N. chilensis* **sp. n.** and *N. barrettae* **sp. n.**; *Eperiella* **gen. n.** has two species, including the type *E. alsophila* **sp. n.**, and *E. hastings* **sp. n.**; *Algidiella* **gen. n.** is monotypic, with *A. aucklandica* (Forster); *Taliniella* **gen. n.** has two species, including the type *T. nigra* (Forster), and *T. vinki* **sp. n.**; and *Tinytrella* **gen. n.** is monotypic, with *T. pusilla* (Forster).

The micropholcommatine tribe Patelliellini **trib. n.** includes only one monotypic genus, *Patelliella* **gen. n.**, represented by the enigmatic species *Patelliella adusta* **sp. n.** from Lord Howe Island.

The subfamily Taphiassinae **subfam. n.** includes two genera of distinctive, heavily punctate Micropholcommatidae from Australasia: *Taphiassa* Simon has six species, including the type *T. impressa* Simon, *T. punctata* (Forster), *T. castanea* **sp. n.**, *T. globosa* **sp. n.**, *T. magna* **sp. n.** and *T. robertsi* **sp. n.**; the genus *Parapua* Forster, erected by Forster (1959) for *P. punctata*, is hereby recognised as a junior generic synonym of *Taphiassa* (**syn. n.**). The endemic Tasmanian genus *Olgania* Hickman has five species, including the type *O. excavata* Hickman, *O. cracroft* **sp. n.**, *O. eberhardi* **sp. n.**, *O. troglodytes* **sp. n.** and *O. weld* **sp. n.**

The subfamily Gigiellinae **subfam. n.** includes only one genus from south-eastern Australia and Chile, *Gigiella* **gen. n.**, described for the two species *G. milledgei* **sp. n.** and *G. platnicki* **sp. n.**

The distribution, diversity and Gondwanan biogeography of the Micropholcommatidae are discussed, and natural history information is provided where known; webs and egg sacs of Taphiassinae are described for the first time. Species level monographic coverage is provided for those faunas of conservation or biogeographic significance, including the largely undescribed Western Australian fauna, the Lord Howe Island fauna, the Tasmanian cave fauna and the southern Chilean fauna, with other species of conservation or biogeographic importance also described. In total, 26 new species, 12 new genera, one new tribe and two new subfamilies are described, taking the total documented micropholcommatid fauna to 58 species.

Keywords

taxonomy, new species, systematics, phylogeny, cladistics, parsimony analysis, biodiversity, endemism, biogeography, Gondwana, vicariance, caves, temperate rainforest, conservation

Contents

Introduction

The Micropholcommatidae (Fig. 7) are a family of small to minute araneoid spiders, with 34 species in eight genera previously described from Australia, New Zealand, New Caledonia, Papua New Guinea, Chile and Brazil (Rix 2008; Rix et al. 2008; Platnick 2009). All species are cryptozoic in nature, usually living in high-humidity, three-dimensional microhabitats, where they build small, horizontal sheet-webs or three-dimensional tangle-webs (Hickman 1944, 1945) (Fig. 221D). The greatest abundance of individuals and the largest diversity of taxa occur in the cool-temperate rainforests of south-eastern Australia (Fig. 218) and New Zealand, where micropholcommatid spiders can be very common within moss and leaf litter. Although poorly-studied biologically and largely neglected taxonomically, the Micropholcommatidae are a distinctive and diverse lineage, with a significant – and previously unrecognised – generic diversity.

The history of micropholcommatid taxonomy has been one of consistent flux, with the limits, status and phylogenetic placement of the family having all changed in the 80 years since the first species, *Micropholcomma caeligenum*, was described by Crosby and Bishop (1927) from south-eastern Australia. After the family Micropholcommatidae was first erected by Hickman (1944), it was later synonymised with the Symphytognathidae by Forster (1959), resurrected by Forster and Platnick (1977), moved from the superfamily Araneoidea to the Palpimanoidea by Forster and Platnick (1984), and then synonymised with the Textricellidae by Platnick and Forster (1986). These numerous changes, synonymies and transfers were fully summarised by Rix et al. (2008), who noted that a robust test of micropholcommatid monophyly was required in the face of such taxonomic uncertainty. Rix et al. (2008) performed the first comprehensive test of micropholcommatid phylogeny, using a molecular approach to explore the monophyly and phylogenetic position of the currently recognised taxa.

The molecular phylogenetic approach of Rix et al. (2008) (Fig. 1) was an important first step in proposing a robust phylogenetic hypothesis for the family Micropholcommatidae. The use of nucleotide data removed any problems that may have resulted from morphological homoplasy, and allowed an independent test of the competing superfamily hypotheses of Forster and Platnick (1984) and Schütt (2000, 2003). Most of the currently described micropholcommatid genera were sequenced in the Rix et al. (2008) analysis, including *Taphiassa* Simon, which was previously included within the Mysmenidae (Platnick 2009), and *Teutoniella* Brignoli, an unusual South American genus from Chile and Brazil (Brignoli 1981; Platnick and Forster 1986). The family Micropholcommatidae was inferred as monophyletic to the exclusion of *Teutoniella* (Fig. 1), and firmly embedded within the superfamily Araneoidea – a group which includes the common orb-web building spiders and their diverse kin. This 'enlarged' Araneoidea was monophyletic, but was very poorly-resolved at the inter-family and inter-specific levels (Fig. 1), due mainly to limited molecular resolution with 18S and 28S rDNA sequences. The Micropholcommatidae itself was shown to include at least three major sub-lineages, two congruent with the previously-recognised family-group lineages Micropholcommatidae and Textricellidae, and one congruent with a newly-inferred 'taphiassine' lineage (Fig. 1).

The Rix et al. (2008) molecular study was, therefore, powerful but necessarily preliminary. While the study did provide an independent test of micropholcommatid phylogeny, and clearly evidenced the affinities of the micropholcommatid taxa to the Araneoidea, the phylogenetic analyses did not include morphological data, and suffered from the twin effects of: (i) limited phylogenetic resolution within the Araneoidea; and (ii) missing micropholcommatid taxa in certain groups. As a result, the Rix et al. (2008) study could not infer the actual phylogenetic position of the Micropholcommatidae within the Araneoidea, and could not infer the detailed internal phylogeny of the family as a whole. These two problems demanded further morphological treatment, and highlighted the need to complement and test preliminary molecular results with morphological data.

The current revision is thus a morphological phylogenetic test and formal taxonomic treatment of the results of the molecular study of Rix et al. (2008). The phylogenetic position and internal phylogeny of the Micropholcommatidae are tested with two separate morphological cladistic analyses, the results of which inform a comprehensive generic-level classification of the family. Species-level monographic coverage is provided for those faunas of conservation or biogeographic significance, including the largely undescribed Western Australian fauna, the Lord Howe Island fauna, the Tasmanian cave fauna and the southern Chilean fauna. In total, 26 new species, 12 new genera, one new tribe and two new subfamilies are described, taking the total documented micropholcommatid fauna to 58 species.

Materials and methods

All taxa were described and illustrated from specimens that had been stored in 75% ethyl alcohol. Female epigynes were dissected and cleared in a gently-heated solution of 10% potassium hydroxide, and male left pedipalps were removed from specimens before genitalia were mounted on temporary microscope slides with transparent hair gel ('New Wave' hard rock gel). Digital photographs were taken through a Leica MZ16 binocular microscope and an Olympus BH-2 compound microscope, using a Q-imaging Micropublisher 5.0 RTV mounted camera with Auto-Montage Pro imaging software by Syncroscopy.

Illustrations were made on Utoplex tracing paper, using printed auto-montage template images taken through a compound microscope. For scanning electron microscopy, specimens were fixed in 95% ethyl alcohol, air-dried, mounted, and sputter-coated in gold, before being scanned with a Phillips XL30 environmental scanning electron microscope. All measurements are in millimetres.

For all Material Examined sections, specimens sequenced for the molecular study of Rix et al. (2008) are denoted by the superscript 'DNA-MPE', and specimens examined under a scanning electron microscope are denoted by the superscript 'SEM'.

Note that throughout this paper the use of the term “symphytognathoid” has been avoided, and replaced with the term “symphytognathidan clade” (see Fig. 2). The latter term is a suggested replacement name for “symphytognathoid clade”, which, given the “nathoid” suffix, has a tendency to be interpreted as a superfamily taxon in its own right. The “symphytognathoid” label was only ever proposed as an informal clade name within the Araneoidea (e.g. see Griswold et al. 1998), and by modifying the suffix this confusing terminology is improved.

Note also that the use of the term “*Inflaticrus* sp.” in this paper does not constitute availability under Article 10 of the International Code of Zoological Nomenclature (International Commission on Zoological Nomenclature 1999).

Abbreviations used in the text are as follows:

Eyes

ALE	anterior lateral eyes
AME	anterior median eyes
PLE	posterior lateral eyes
PME	posterior median eyes

Male genitalia

ETR	evaginated tegular ridge
lRPA	ligulate retrolateral patellar apophysis

Spinnerets

AC	aciniform (gland spigot)
AG	aggregate (gland spigot)
ALS	anterior lateral spinnerets
bCY	basal cylindrical (gland spigot)
CY	cylindrical (gland spigot)
FL	flagelliform (gland spigot)
MAP	major ampullate (gland spigot)
mAP	minor ampullate (gland spigot)
PI	piriform (gland spigot)
PLS	posterior lateral spinnerets
PMS	posterior median spinnerets

Repositories

AMNH	American Museum of Natural History, New York (N. Platnick, L. Sorkin)
AMS	Australian Museum, Sydney (G. Milledge)
CAS	California Academy of Sciences, San Francisco (C. Griswold, D. Ubick)
FMC	Field Museum, Chicago (P. Sierwald, J. Boone)
LRA	Landcare Research Collection (formerly D.S.I.R.), Auckland (G. Hall)
MCZ	Museum of Comparative Zoology, Harvard (G. Giribet)
MNHN	Muséum National d’Histoire Naturelle, Paris (C. Rollard)
NMNH	National Museum of Natural History, Washington D.C. (J. Coddington)
NMV	National Museum of Victoria, Melbourne (P. Lillywhite)

MNZ	Museum of New Zealand (Te Papa Tongarewa), Wellington (P. Sirvid)
QMB	Queensland Museum, Brisbane (R. Raven, O. Seeman)
QVM	Queen Victoria Museum, Launceston (L. Boutin)
TM	Transvaal Museum, Pretoria (M. Krüger)
TMAG	Tasmanian Museum and Art Gallery, Hobart (L. Turner)
WAM	Western Australian Museum, Perth (M. Harvey, J. Waldock)

Cladistic analyses

To infer (i) the phylogenetic position and (ii) the phylogeny of the family Micropholcommatidae, two separate cladistic analyses were executed with independent morphological datasets. These analyses – the 'expanded' analysis and the 'new' analysis – complement and extend previous molecular analyses (i.e. Rix et al. 2008), to explore micropholcommatid interrelationships in greater detail, and to inform the generic-level taxonomy presented below.

The 'expanded' analysis. The first analysis (the 'expanded' analysis'), was used to test the phylogenetic position of the Micropholcommatidae within the Araneoidea, as an extension to the study of Rix et al. (2008), which inferred a monophyletic but largely unresolved araneoid clade (see Fig. 1). The matrix for the 'expanded' analysis was developed from those of Griswold et al. (1998) and Lopardo and Hormiga (2008), and was expanded by adding new micropholcommatid taxa and one new spinneret character (see details, below). The phylogenetic hypothesis of Griswold et al. (1998), proposed for the then recognised families of Araneoidea, was a landmark study in spider systematics, and remains the most comprehensive morphological hypothesis of araneoid phylogeny. Lopardo and Hormiga (2008) used the Griswold et al. (1998) matrix to test the phylogenetic placement of an enigmatic Tasmanian araneoid taxon, significantly developing the dataset by adding six new species and two new characters. The results of Lopardo and Hormiga (2008) shed new light on the phylogeny of the Araneoidea, and highlighted the utility of this 'expanded re-analysis' approach for cladistic hypothesis-testing. By likewise adding, for the first time, micropholcommatid and related taxa to the Griswold et al. (1998) and Lopardo and Hormiga (2008) matrices, the phylogenetic position of the Micropholcommatidae can be similarly tested, and relationships discussed.

Taxon sample: The modified dataset of Lopardo and Hormiga (2008) included 37 taxa, six more than in Griswold et al. (1998). For the current study, six additional species were added, all representing lineages of Araneoidea never before included in the Griswold et al. (1998) or Lopardo and Hormiga (2008) matrices. These taxa included four species of Micropholcommatidae representing each of the four lineages inferred by Rix et al. (2008) (see Fig. 1): *Micropholcomma bryophilum* (Butler, 1932) from Victoria (Fig. 18); *Tinytrella pusilla* (Forster, 1959) from New Zealand (Figs 136–137); *Taphiassa robertsi* sp. n. from Western Australia (Fig. 155); and *Gigiella milledgei* sp. n. from south-eastern Australia (Fig. 194); with material examined for each species listed under the relevant Taxonomy sections (below). Two additional taxa were also added: *Teutoniella cekalovici* Platnick & Forster, 1986 (Fig. 5) from Mirador Alemán, Concepción province, Chile (WAM T94536); and a new species representing a new genus (‘*Inflaticrus*’ sp.) (Fig. 6) from the Langeberg Range, Western Cape province, South Africa (TM 15228).

Characters: Taxa were scored for all 95 characters listed in Lopardo and Hormiga (2008). For the current study, three characters were further modified from Griswold et al. (1998) and Lopardo and Hormiga (2008):

Character 5 “*Cymbium*: (0) entire; (1) expanded retrolaterally”. This character was incorrectly annotated for *Crassanapis* in Appendix 4 of Lopardo and Hormiga (2008), but was nonetheless coded correctly for the published analyses presented in that study (L. Lopardo, pers. comm.). Changed from state (1) “expanded retrolaterally” to state (0) “entire” for *Crassanapis*.

Character 40 “*Labrum*: (0) simple; (1) with spur”. As for Character 5, above, this character was incorrectly annotated for *Acrobleps* in Appendix 4 of Lopardo and Hormiga (2008) (L. Lopardo, pers. comm.). Changed from state (1) “with spur” to state (0) “simple” for *Acrobleps*.

Character 72 “*PMS mAP spigot position*: (0) median-anterior; (1) posterior”. State (2) was added to this character to incorporate the loss of the PMS mAP spigot as a separate state. Changed to “*PMS mAP spigot*: (0) present, median-anterior; (1) present, posterior; (2) absent”. Also changed state (-) “inapplicable” to state (2) “absent” for *Meringa*, *Cepheia* and *Synaphris*.

In addition to the 95 characters listed in Lopardo and Hormiga (2008), a further spinneret character was newly added to the matrix, and scored across taxa based upon previously published images (Coddington 1989; Forster et al. 1990; Platnick et al. 1991; Hormiga 1994; Hormiga et al. 1995; Scharff and Coddington 1997; Agnarsson 2004; Ramírez et al. 2004; Lopardo et al. 2007; Lopardo and Hormiga 2007, 2008) or upon consultation with L. Lopardo (pers. comm.):

Character 96 “*PMS – number of anterior setae*: (0) two or more; (1) one; (2) none”. Most Araneoidea possess two or three anterior setae on the posterior median spinnerets (Fig. 5F), although a reduction in the number of setae is characteristic of species of Micropholcommatidae and several other derived Araneoidea (Figs 8G–H). Setal characters are rarely employed among spinneret datasets, and this is the first to be applied to the Griswold et al. (1998) matrix. This character was also scored for the ‘new’ analysis (see below), as Character 59.

Additional pedipalpal characters (e.g. the ligulate retrolateral patellar apophysis and tegular ridge of micropholcommatid taxa) are of phylogenetic relevance to the six newly-added taxa, although as discussed in Appendix III, homologising such characters across all Araneoidea becomes problematic, and no further characters were added to the matrix for this reason. The complete character matrix for the ‘expanded’ analysis is shown in Appendix I.

The ‘new’ analysis. The second analysis (the ‘new’ analysis), was used to explore the internal phylogeny of the Micropholcommatidae in greater detail, as an extension to the study of Rix et al. (2008), which included only a partial sample of the then described micropholcommatid taxa. With the exception of the analysis of Schütt (2003), which included three representative micropholcommatid species in a matrix of 14 araneoid taxa, the 'new' analysis is the first rigorous morphological phylogenetic test of micropholcommatid phylogeny, and the first to inform a comprehensive taxonomy in this group of spiders.

Taxon sample: Representatives of all 18 known micropholcommatid genera were scored for the morphological matrix, with at least one species from each genus imaged under a scanning electron microscope; only *Guiniella tropica* (Forster, 1959) could not be scanned, due to the lack of non-type material. In addition to 19 SEM-scanned species and the types of *G. tropica*, a further eight un-scanned micropholcommatid species were also added to the matrix, to help test the monophyly of non-monotypic genera. The material scored for each species is listed under the relevant Taxonomy sections (see below). The outgroup taxon in all analyses was *Theridiosoma gemmosum* (L. Koch) – a basal symphytognathidan – with characters and states scored according to Coddington (1986). As for the 'expanded' analysis (see above), additional symphytognathidan taxa were also added: *Teutoniella cekalovici* (Fig. 5), '*Inflaticrus*' sp. (Fig. 6) and the anapid *Novanapis spinipes* (Forster, 1951) from the Mount Thomas Conservation Area, Christchurch, New Zealand (WAM T96812).

Characters: Taxa were scored for 67 morphological characters: 21 from male genitalia; three from female genitalia; 26 from the cephalothorax and legs; eight from the abdomen; and nine from the spinnerets. Of these 67 characters, 10 parsimony-uninformative characters were retained in the matrix given their relevance to particular monotypic genera, or their possible importance in future studies. The character matrix for the 'new' analysis is shown in Appendix II, and characters and states are listed and discussed in Appendix III.

Coding and analysis. Both the 'expanded' and the 'new' matrices were analysed in NONA Version 2.0 (Goloboff 1993b), as 'spawned' from WinClada Version 1.00.04 (Nixon 1999), using the following search parameters: HOLD 100000; MULT*10000; HOLD/10; characters were unordered and analysed under equal weights parsimony, with tree-bisection-reconnection (TBR) branch-swapping. Ambiguous states were coded as (?), and inapplicable states coded as (-), with resulting trees viewed and annotated using WinClada. Jackknifing frequencies (Farris et al. 1996) and Bremer support values (Bremer 1988, 1994) were used as clade support indices for the two equal weights analyses. Jackknifing frequencies were calculated in NONA as spawned from WinClada, using 1000 pseudoreplications of the following heuristic search parameters: MULT*1000; HOLD/10. Bremer support values were calculated heuristically in NONA, searching trees suboptimal by 1, 2, 3, 4, 5, 6, 8, 10, 12, 14 and 18 steps (Lopardo and Hormiga 2008), using the commands: HOLD 1000, SUB 1; FIND *; HOLD 2000, SUB 2, FIND *;... HOLD 18000, SUB 18; FIND*; BSUPPORT; BSUPPORT *; each subsequent search thus increased the number of trees held (hold +) by a factor of 1000.

Heuristic searches under implied weights (Goloboff 1993a) were also computed for both analyses, to explore the effect on topology of differentially down-weighting homoplastic characters according to concavity functions (see Ramírez 2003; Griswold et al. 2005; Harvey and Volschenk 2007). Implied weighting analyses were calculated in Pee-Wee Version 3.0 (Goloboff 1993–1997), using the six integer values of the constant of concavity (K=1–6); a weak K-value of K=6 produces a topology more similar to equal weights analysis than a strong K-value of K=1 (Ramírez 2003; Griswold et al. 2005; Harvey and Volschenk 2007). Concavity functions were analysed with 1000 replications of TBR branch-swapping (i.e. HOLD 10000; MULT*1000; HOLD/10), using three successive jump commands of 10, 30 and 50, with an increased number of trees held at each jump command step (i.e. hold + 5000) (Harvey and Volschenk 2007).

Results

The 'expanded' analysis. The four micropholcommatid species newly added to the Griswold et al. (1998) and Lopardo and Hormiga (2008) matrices (*Gigiella milledgei*, *Taphiassa robertsi*, *Tinytrella pusilla* and *Micropholcomma bryophilum*) always grouped within the derived symphytognathidan clade (see Coddington 1986; Griswold et al. 1998; Lopardo and Hormiga 2008) under both equal and implied weights (K=1–6) parsimony analyses (Fig. 2). Two additional taxa newly added to the matrix – *Teutoniella cekalovici* from Chile and '*Inflaticrus*' sp. from South Africa – also grouped within the symphytognathidan lineage, as consistent 'teutoniellid' sister-taxa (Fig. 2). Together with the Micropholcommatidae these 'teutoniellid' species formed a monophyletic clade, united by the loss of the posterior minor ampullate (mAP) gland spigot nubbin and tartipore on the posterior median spinnerets (Character 71, State 0) (Fig. 2).

In addition to the monophyly of an enlarged symphytognathidan lineage, the results of the 'expanded' analysis provide further evidence for the placement of micropholcommatid and 'teutoniellid' taxa in a derived clade including the families Anapidae and Symphytognathidae. This 'enlarged basal cylindrical gland' (EbCY) clade (Clade 17 in Griswold et al. 1998) is proposed on the basis of an enlarged basal cylindrical gland spigot base on the posterior lateral spinnerets of females (Figs 2, 108E) – an unusual character among Araneoidea, which is not present in the other symphytognathidan families Theridiosomatidae and Mysmenidae. The monophyly and composition of the EbCY clade were not affected by an implied weights parsimony analysis (K=1–6), although the internal topology was largely unresolved.

The 'new' analysis. The results of the 'new' micropholcommatid analysis provide the first comprehensive morphological hypothesis of micropholcommatid internal phylogeny, complementing previous molecular and morphological analyses. The optimal cladogram shown in Figure 4 was one of six equally-parsimonious trees inferred under an equal weights parsimony analysis, and was also recovered in an implied weights analysis at K=6, with only one change to the phylogenetic position of *Patelliella adusta* sp. n. at K=1–5 (see Figs 3–4). Micropholcommatid monophyly was supported by three unambiguous synapomorphies: the presence of a ligulate retrolateral patellar apophysis on the male pedipalp (Character 3, State 1); the absence of a conductor (Character 20, State 1); and the presence of only a single anterior seta on the posterior median spinnerets (Character 59, State 1) (also recovered as an unambiguous synapomorphy in the 'expanded' analysis, above). One additional character – the absence of a median apophysis (Character 19, State 0) – was inferred as diagnostic for the Micropholcommatidae, but was ambiguously synapomorphic given the homoplastic occurrence of this character in '*Inflaticrus*'.

Teutoniella cekalovici and '*Inflaticrus*' sp. were inferred as sister-taxa in the 'new' analysis (Figs 3–4), and the monophyly of this 'teutoniellid' clade was supported by four unambiguous synapomorphies: the presence of a unique, basal conductor (Character 21, State 1); the presence of a punctate sternum (Character 34, State 1); the presence of reduced anterior abdominal lamellae (Character 55, State 1); and the complete absence of a posterior minor ampullate gland spigot on the posterior median spinnerets (Character 63, State 2). As for the 'expanded' analysis, micropholcommatid and 'teutoniellid' species were inferred as sister-taxa, united by the absence of the posterior minor ampullate gland spigot nubbin and tartipore on the posterior median spinnerets (Character 64, State 1).

Within the Micropholcommatidae three monophyletic subfamilies and three tribes were recovered (Fig. 4), congruent with lineages recovered by Rix et al. (2008) (see Fig. 1). The subfamily Gigiellinae was inferred as the sister-group to the subfamily Taphiassinae, together forming the sister-group to the subfamily Micropholcommatinae. The diverse subfamily Micropholcommatinae was united by four unambiguous synapomorphies, and included three monophyletic tribes: the Micropholcommatini, the Textricellini and the Patelliellini.

Discussion

The results of the 'expanded' and the 'new' analyses together provide a novel hypothesis of micropholcommatid phylogeny, from which a comprehensive classification of the family is proposed (see Fig. 4). This classification, presented below, extends from the level of the superfamily to the level of the genus, and is based on inferred monophyletic clades as evidenced by explicit morphological synapomorphies. The results of the two cladistic analyses also extend beyond the limits of the Micropholcommatidae, with implications for the phylogeny of the symphytognathidan lineage, and for the familial status of taxa therein.

The symphytognathidan and EbCY clades. The inferred placement of the Micropholcommatidae within the superfamily Araneoidea is consistent with the results of recent morphological and molecular studies (e.g. Schütt 2000, 2003; Lopardo and Hormiga 2008; Rix et al. 2008), and the family now seems firmly established as a member of the araneoid symphytognathidan clade (see Coddington 1986; Griswold et al. 1998; Lopardo and Hormiga 2008; Miller et al. 2009). This diverse lineage includes the Theridiosomatidae, Mysmenidae, Anapidae, Symphytognathidae, Micropholcommatidae and the 'teutoniellid' taxa (Fig. 2), and has a worldwide distribution, with both tropical, northern hemisphere and southern-temperate taxa. The interrelationships of the symphytognathidan taxa have been the subject of debate ever since Forster (1959), and the group, while almost certainly monophyletic, is still known only by a rather provisional phylogenetic structure.

The results of the 'expanded' analysis bring a degree of phylogenetic clarity to the symphytognathidan lineage, with evidence for an internal clade of taxa united by an unusual, enlarged basal cylindrical (bCY) gland spigot base on the posterior lateral spinnerets (PLS) of females. This 'EbCY clade' (Fig. 2) was also inferred by Griswold et al. (1998) as Clade 17, and by Lopardo and Hormiga (2008, fig. 3). Enlarged bCY gland spigot bases, situated on a separate mesal spinning field of the female PLS (Figs 2, 108E), are unusual among Araneoidea, and Griswold et al. (1998) recorded this character in only two other groups: in *Glenognatha* Simon, and in Linyphiidae plus Pimoidae (e.g. see Hormiga 2000, fig. 37D). All studied species in the families Anapidae, Symphytognathidae and Micropholcommatidae possess this distinctive PLS character, as do the 'teutoniellid' genera *Teutoniella* and '*Inflaticrus*' (Fig. 6F).

Formally recognising the EbCY clade within the symphytognathidan lineage is one of the key results of the current study, and a result which will have a broadly 'contextual' effect on future hypothesis-testing in this group of spiders. As discussed for the Anapidae (below), the EbCY hypothesis facilitates the circumscription of an inclusive monophyletic group with a known generic composition, against which outgroup taxa can be assigned, and competing hypotheses can be properly assessed. Symphytognathidan internal phylogeny is far from resolved, but with the recognition of a newly-enlarged clade – which includes micropholcommatid and 'teutoniellid' taxa – the symphytognathidan lineage is phylogenetically 'accessible' like never before, and an adequate framework now exists for testing taxonomic hypotheses.

The status of the Micropholcommatidae and Anapidae. With the recognition of a monophyletic Micropholcommatidae comes the related issue of anapid monophyly – a problem discussed in detail by Lopardo and Hormiga (2008), Rix et al. (2008) and Miller et al. (2009). The spider family Anapidae is well documented taxonomically (Platnick and Shadab 1978, 1979; Brignoli 1981; Platnick and Forster 1989; Miller et al. 2009) but very poorly known phylogenetically, and is at the centre of all problems 'symphytognathidan' in nature. No quantitative cladistic analysis has ever been conducted on a wide selection of anapid taxa, and the monophyly of the family is still the subject of considerable debate (Schütt 2003; Lopardo and Hormiga 2008; Rix et al. 2008; Miller et al. 2009). While the results of the current study do not resolve the problem of anapid monophyly, they are useful in clarifying the monophyly and morphology of the micropholcommatid lineage, and in resolving those characters which are shared between anapid, micropholcommatid and other EbCY taxa.

In a cladistic analysis of 14 araneoid taxa, Schütt (2003) inferred an enlarged Anapidae (the 'paraphyletic Anapidae' hypothesis), with the Micropholcommatidae reduced to an anapid subfamily; a result broadly replicated by Lopardo and Hormiga (2008) using the same matrix, expanded by adding five new taxa. Although this paraphyletic Anapidae hypothesis cannot be rejected by the results of the current study, such a relationship seems unlikely given (i) what is now known of micropholcommatid morphology, and (ii) given the characters used to defend the Schütt (2003) anapid clade (Clade 5 in Schütt 2003). Indeed, of the five unambiguous synapomorphies shared by the "enlarged Anapidae" of Schütt (2003, fig. 2) and the re-analysis of Lopardo and Hormiga (2008, fig. 8), none seem actually unambiguous. The first putative synapomorphy – the presence of "considerably smaller" anterior median eyes (character 9, state 1) – is open to subjective coding (Lopardo and Hormiga 2008), in addition to the observation that the AME of *Taphiassa* and Gigiellinae are similar in size to the other eyes (Fig. 170A), and the eyes of Gigiellinae seem generally reduced (Fig. 203C). The second putative synapomorphy – the "labral sclerite" (character 20, state 1) – is imprecisely defined by Schütt (2003), as is the third putative synapomorphy – the "labral appendage" (character 22, state 1) – which may refer to the labral tongue, a character shared by all anapid, micropholcommatid, 'teutoniellid' and symphytognathid species (see Griswold et al. 2005, fig. 21B; Miller et al. 2009). The fourth putative synapomorphy – "male ventral surface scuta" (character 43, state 1) – are actually present in anapid, micropholcommatid and 'teutoniellid' taxa, and the apomorphic presence or otherwise of the fifth putative synapomorphy – anterior tracheae which are "restricted to the opisthosoma" (character 49, state 0) – requires further testing among symphytognathidan taxa, given that gigielline and most 'teutoniellid' taxa do not possess fully transformed anterior tracheae. Schütt (2003) also described the presence of "a more or less armoured prosoma" (character 12) and the presence of a dorsal scute on the male abdomen (character 41) as synapomorphies of the "enlarged Anapidae", probably due to the very small number of micropholcommatid taxa included in the analysis. Fully-fused pleural sclerites are inferred in the current study as homoplastic synapomorphies of the Taphiassinae and Micropholcommatini, and a dorsal scute on the male abdomen is also clearly not symplesiomorphic for the Micropholcommatidae. On the basis of these data, the Micropholcommatidae are removed from Schütt's synonymy with the Anapidae, pending an adequate phylogenetic test of anapid phylogeny.

As Schütt (2003) demonstrated, and as the results of the current study highlight, future phylogenetic work on anapid interrelationships is critical to resolving the phylogeny of the symphytognathidan lineage, and to properly informing the family-level classification of included taxa. A comprehensive generic study is needed, and although the large diversity of anapid taxa described from the Old and New Worlds makes for a challenging prospect (see Platnick 2009), the recognition of a more inclusive symphytognathidan and possible EbCY clade means that character systems can now be properly assessed, relative to appropriate micropholcommatid, symphytognathid and 'teutoniellid' outgroups. Debates concerning the superfamilial affinities of these taxa should continue, if warranted, but resolving the phylogeny and status of the symphytognathidan taxa will require a narrower, more focussed approach, and one which explicitly details the diverse Anapidae. The 'new' matrix could easily be developed and expanded to this end, and used in a modified form to test the phylogeny of the Anapidae in the context of symphytognathidan outgroups.

The 'teutoniellid' taxa. The South American genus *Teutoniella* (Fig. 5) has consistently posed a problem to taxonomists, being superficially similar to several spider taxa, and having persisted as a tentatively-placed micropholcommatid for over two decades. First described from Brazil as an anapid by Brignoli (1981), *Teutoniella* was transferred from the Anapidae to the Micropholcommatidae by Platnick and Forster (1986), after the description of a second southern-temperate species from Chile. Platnick and Forster (1986) discussed the affinities of *Teutoniella* in great detail, acknowledging its similarities to the Micropholcommatidae, but also highlighting a superficial resemblance to certain Cyatholipidae. A new family for *Teutoniella* was considered by Platnick and Forster (1986), but a conservative hypothesis was preferred, given the very inadequate knowledge of micropholcommatid interrelationships. Like Platnick and Forster (1986), the molecular phylogenetic study of Rix et al. (2008) also questioned the taxonomic placement of *Teutoniella*, as *T. cekalovici* never grouped with the rest of the Micropholcommatidae in any phylogenetic analyses (see summary Fig. 1).

The results of the current study shed new light on the affinities of *Teutoniella*, with evidence from both the 'expanded' and the 'new' cladistic analyses for a separate lineage of 'teutoniellid' species, united by up to four unambiguous synapomorphies (Figs 2, 4). The recognition by N. Platnick (pers. comm.) of an unusual araneoid species from South Africa (coded here as '*Inflaticrus*' sp.) (Fig. 6) was important in resolving this clade, after its inclusion in the two cladistic analyses of the current study. *Teutoniella* and '*Inflaticrus*' were inferred as sister-taxa in both the 'expanded' and the 'new' analyses, embedded within the EbCY clade, and sister to the Micropholcommatidae (Figs 2, 4). This micropholcommatid plus 'teutoniellid' clade was supported by a single unambiguous synapomorphy in both analyses – the absence of a posterior mAP gland spigot nubbin and tartipore on the posterior median spinnerets (Figs 5F, 6F, 8C–D).

With the inferred sister-group relationship between the 'teutoniellid' taxa and the Micropholcommatidae, the 'teutoniellid' clade could be interpreted either as a fourth micropholcommatid subfamily, or as a separate family taxon in its own right (i.e. as 'Teutoniellidae'). Both scenarios have a cladistic basis, although in the absence of a more resolved hypothesis of EbCY phylogeny, the justification for a new family lineage is proposed here on the basis of stronger phylogenetic evidence. Indeed, for the 'teutoniellids' to be treated merely as a subfamily of the Micropholcommatidae, micropholcommatid monophyly would rest on but a single spinneret character (i.e. the absence of a posterior mAP gland spigot nubbin and tartipore on the PMS) known to be highly homoplastic among other sheet-web building Araneoidea (see Griswold et al. 1998), and known to also occur in one other genus of Anapidae (i.e. *Comaroma*; see Schütt 2000, fig. 9A) and one other genus of Symphytognathidae (i.e. *Anapistula*; see Cardoso and Scharff 2009, figs 5–6). In contrast, characters inferred as synapomorphic for a 'teutoniellid' family lineage include the presence of a unique basal conductor on the male pedipalp (Figs 5A–D, 6A–C), and the complete absence of posterior mAP spigots on the posterior median spinnerets (Figs 5F, 6F). Such characters seem distinctive and potentially significant in the context of the EbCY clade, but their optimisation does require further testing. Clearly, given (A) the ambiguously-inferred position of the 'teutoniellid' lineage in both the morphological and molecular phylogenetic analyses, and (B) the unresolved issue of anapid monophyly (and possible paraphyly), future research is needed to properly test the 'Teutoniellidae' hypothesis (Rix 2009) relative to other EbCY taxa. The authors are aware of two additional, undescribed Southern Hemisphere taxa which may be critical to resolving this issue (see Rix 2009), and the entire problem seems best addressed in concert with any related analysis of anapid or EbCY phylogeny.

Taxonomy

Family Micropholcommatidae Hickman, 1944

Micropholcommatidae Hickman, 1944: 183. Type genus *Micropholcomma* Crosby & Bishop, 1927. Synonymised with Symphytognathidae by Forster, 1959: 271. Synonymy with Symphytognathidae removed by Forster & Platnick, 1977: 2. Hickman, 1981: 65. Brignoli, 1983: 373. Forster & Platnick, 1984: 92. Davies, 1985: 89. Platnick & Forster, 1986: 7. Raven et al., 2002. Rix, 2008: 343. Platnick, 2009.

Textricellidae Hickman, 1945: 136. Type genus *Textricella* Hickman, 1945. Forster, 1955: 200. Synonymised with Symphytognathidae by Forster, 1959: 271. Synonymy with Symphytognathidae removed by Forster & Platnick, 1977: 2. Forster & Platnick, 1981: 264. Brignoli, 1983: 374. Forster & Platnick, 1984: 92. Davies, 1985: 113. Synonymised with Micropholcommatidae by Platnick & Forster, 1986: 7.

Affinities. *Superfamily Araneoidea*: The Micropholcommatidae are members of the orbicularian superfamily Araneoidea (Figs 1–2), in possessing three leg claws (Fig. 20D), serrate setae (Fig. 38D), a single major ampullate gland spigot on the anterior lateral spinnerets (Fig. 108A) and a triad (in full or in part) on the posterior lateral spinnerets (Figs 108E–F), consisting of two aggregate gland spigots and a single flagelliform gland spigot (Griswold et al. 1998). Micropholcommatid spiders also possess a single anterior cylindrical gland spigot on the posterior median spinnerets of females (Figs 126C–D), and most also possess a posterior minor ampullate gland spigot on the posterior median spinnerets (Fig. 8C) (Griswold et al. 1998).

Enlarged bCY Clade: Within the Araneoidea, the Micropholcommatidae belong to the newly proposed 'enlarged bCY clade' (EbCY clade), uniting the derived symphytognathidan families Symphytognathidae, Anapidae, Micropholcommatidae and a lineage of 'teutoniellid' taxa (Fig. 2). The EbCY clade (Clade 17 in Griswold et al. 1998) can be defined on the basis of at least one, powerful and unambiguous synapomorphy – the presence of an enlarged basal cylindrical (bCY) gland spigot base on the posterior lateral spinnerets of females (Figs 2, 108E). Enlarged bCY spigot bases are rare among Araneoidea, and may have evolved only three times – in a clade of Tetragnathidae including *Glenognatha*, in Linyphiidae and Pimoidae, and in derived symphytognathidans (Griswold et al. 1998).

Diagnosis. The Micropholcommatidae can be distinguished from all other EbCY and araneoid taxa by the combined presence of an evaginated tegular ridge on the male pedipalpal bulb (Figs 8A–B) (shared with 'teutoniellid' taxa), the presence of a ligulate retrolateral patellar apophysis on the male pedipalp (Figs 8E–F), the loss of the minor ampullate gland spigot nubbin and tartipore on the posterior median spinnerets (Figs 8C–D) (shared with other sheet-web building Araneoidea), and the presence of only a single anterior seta on the posterior median spinnerets (Figs 8G–H). Most micropholcommatid species also possess a characteristically smooth male pedipalpal tegulum (Figs 8A–B), devoid of any apophyses (i.e. conductor and median apophysis), although conductor-like processes have evolved secondarily (i.e. probably twice) in four genera of derived Textricellini (Figs 60, 70, 73, 95). Micropholcommatidae are unusual among symphytognathidan taxa in not building typical araneoid orb-webs (Fig. 221D), although this departure from an orb-web building ecology may also be characteristic of 'teutoniellid' taxa and several species of Anapidae (e.g. *Comaroma* Bertkau and *Sofanapis* Platnick & Forster) (Ramírez et al. 2004).

Description. Very small, ecribellate araneomorph spiders; total length 0.65 to 2.20.

Cephalothorax: Carapace cuticle discoid-granulate (Fig. 139C), reticulate (Fig. 18E) or smooth, sometimes heavily punctate (Figs 152A–D); with or without glandular depressions above maxillae (Fig. 170E–H); setae present on dorsal pars cephalica and around eyes and clypeus. Eight, six or (rarely) fewer eyes present on anterior margin of pars cephalica; AME usually smallest (Fig. 84C). Sternum posteriorly-obtuse (Fig. 122B), rarely pointed (Figs 193A–B), sometimes heavily punctate (Fig. 170B), with smooth (Fig. 115B), rugose (Fig. 131B) or reticulate (Fig. 104B) cuticle. Labium fused to sternum, not rebordered (Fig. 104B). Labrum raised medially but without obvious spur dorsal to base of labral tongue (Fig. 104F). Maxillae directed across labium; serrula a single row of teeth (Fig. 131F). Chelicerae rectangular or subtriangular, distally-divergent, often with bulging anterior projections in males (Fig. 132E); boss absent; promargin with one or more sessile teeth and proximal cheliceral gland mound (Fig. 105F); peg teeth (Fig. 105F) present or absent.

Legs and female pedipalp: Legs covered with smooth or serrate hair-like setae (Fig. 59B); patellae each with single, disto-dorsal bristle-like seta; tibiae each with two dorsal bristle-like setae (Fig. 184C). Trichobothria present on metatarsi and/or tibiae of legs; tibiae each with two to four trichobothria; metatarsi (legs I–III) each with or (rarely) without single trichobothrium; bothrial bases with raised posterior hoods (Fig. 20C); trichobothria absent on pedipalps. Tarsi longer than metatarsi (Fig. 58D), with capsulate tarsal organ (Fig. 20A) and three claws (Fig. 20D); inferior claw of leg IV elongate (Fig. 58F). Female pedipalp entire (Fig. 79C), reduced (Fig. 19C) or (rarely) a vestigial nubbin (Fig. 170F); claw absent (Fig. 105D).

Abdomen: Abdomen oval or globose, without tubercles, covered with hair-like setae (Fig. 56D); anterior sclerite present around epigastric region and petiole (Fig. 30D); dorsal and lateral abdominal scutes present or absent. Six spinnerets situated posterior to fleshy colulus (Fig. 108A); ALS (Fig. 126A) with MAP gland spigot, nubbin, tartipore, inner seta and separate PI spinning field; PMS (Figs 108C–D) with anterior seta (absent in Patelliellini), anterior CY gland spigot (females only; absent in *Austropholcomma* and *Tricellina*), two or fewer medial AC gland spigots, posterior mAP gland spigot (rarely a vestigial nubbin; absent in Patelliellini), and one (rarely) or no posterior setae; PLS (Figs 108E–F) with inner seta, FL gland spigot, two or (rarely) fewer AG gland spigots, four or fewer AC gland spigots, mesal CY gland spigot (females only) and separate basal CY gland spigot with an enlarged base (females only). Anterior tracheal spiracles present on either side of epigastric furrow, leading to anterior tracheae (Fig. 15B) or (rarely) a bed of reduced lamellae (Fig. 197); posterior tracheal spiracle present, vestigial (Fig. 158C) or usually absent. Male epigastric furrow without epiandrous gland spigots (Fig. 56G).

Genitalia: Male pedipalp relatively small (Fig. 18C) to very large (Figs 60A, 74C); patella modified, bearing ligulate retrolateral apophysis (Figs 8E–F) and occasionally one or more distal apophyses (Fig. 8F); tibia usually small, flattened, prolaterally displaced (Fig. 21F); cymbium oval, without paracymbium (Fig. 29A); tegulum smooth, usually without processes, with exposed embolus and excavate or curved evaginated tegular ridge (Figs 8A–B); conductor sometimes present in derived Textricellini (Fig. 95B). Internal sperm ducts of pedipalpal bulb simple, curving or looping from base of embolus into proximal, posterior portion of tegulum, before encircling retrolateral, anterior and prolateral portions of tegulum; ducts extending pro-posteriorly into subtegulum and fundibule (Fig. 9). External epigyne of female usually relatively poorly-sclerotised, with pair of intromittent pores situated anterior to epigastric furrow. Female genitalia entelegyne, with pair of separate, variously-lobed receptacula bearing spermathecae (Fig. 10); insemination ducts short (Fig. 99B) or long (Figs 75, 112), sometimes coiled (Fig. 112); fertilisation ducts short (Fig. 112B) or long (Fig. 51B), sometimes filiform (Figs 51, 63, 75).

Distribution. Eastern and western mainland Australia, Tasmania, Lord Howe Island, New Zealand, eastern Papua New Guinea, New Caledonia and southern Chile (Fig. 210). More than 80% of all micropholcommatid genera occur within just 10 degrees of latitude, between 35°S and 45°S (Figs 210, 217).

Included subfamilies. Micropholcommatinae Hickman and the new subfamilies Gigiellinae and Taphiassinae.

Key to the subfamilies, tribes and genera of Micropholcommatidae

1. Carapace cuticle uniformly punctate, with numerous pits covering pars cephalica, pars thoracica, clypeus and sternum (Figs 152A–D); dorsal abdominal scute absent (Figs 7P, 165A); **subfamily TAPHIASSINAE** **2**

– Carapace cuticle without pits (Fig. 78D); dorsal abdominal scute present (Figs 12C, 25A) or absent (Fig. 7J) **3**

2. Six or fewer eyes (Figs 177C, 182C); abdomen sub-triangular in lateral view (Fig. 177A); anterior sclerite of abdomen greatly enlarged (Fig. 177A), wedge-shaped (Fig. 176D), covering entire anterior portion of abdomen; Tasmanian distribution (Fig. 213); most taxa troglomorphic .... ***Olgania***

– Eight eyes (Fig. 155C); abdomen globose (Figs 7P, 165); anterior sclerite of abdomen rounded, plate-like (Fig. 165C) .... ***Taphiassa***

3. Posterior apex of sternum pointed (Figs 193A–B); retrolateral patellar apophysis of male pedipalp forked, distally-directed (Figs 193C–D); dorsal abdominal scute absent (Fig. 195); antero-lateral corners of carapace each with glandular depression (Fig. 205E); male chelicerae without peg teeth (Fig. 206F); **subfamily GIGIELLINAE**.. ***Gigiella***

– Posterior apex of sternum obtuse, with coxae of leg IV widely separated (Figs 36B, 86F); retrolateral patellar apophysis of male pedipalp flanged (Figs 12A–B) or hooked (Fig. 8E), never forked; dorsal abdominal scute present (Fig. 12C) or absent (Fig. 7J); antero-lateral corners of carapace without glandular depressions (Fig. 11F); male chelicerae with peg teeth (Figs 11A–B); **subfamily MICROPHOLCOMMATINAE**....................... **4**

4. Retrolateral patellar apophysis of male pedipalp distally-directed (Figs 12A–B); male abdomen with lateral sclerotic strips (Fig. 12C); male abdomen with dorsal scute (Fig. 12C); female abdomen with (Fig. 13B) or without (Fig. 16B) dorsal scute; carapace fused to sternum via pleural sclerites; **tribe Micropholcommatini**... **5**

– Retrolateral patellar apophysis of male pedipalp retrolaterally-directed, hooked (Fig. 8E); male abdomen without lateral sclerotic strips (Fig. 85A); male abdomen with (Fig. 85A) or without (Fig. 110A) dorsal scute; female abdomen without dorsal scute; carapace not fully fused to sternum except around petiole.. **8**

5. Embolus with remarkable 90 degree bifurcation (Figs 39D, 45A–B); male pedipalpal trochanter with prolateral stridulatory 'tooth' (Fig. 11C); male chelicerae each with bulging anterior projection (Fig. 37E); male cheliceral promargin with modified, thickened and proximally flattened peg tooth-like seta projecting from near base of fang (Figs 37F, 43F)............................... **6**

– Embolus normal, without bifurcation (Figs 17B, 21E); male pedipalpal trochanter without stridulatory 'tooth'; male chelicerae with or without bulging anterior projections; male cheliceral promargin with unmodified, cylindrical peg tooth-like seta projecting from near base of fang (Fig. 27F)................. **7**

6. Embolus with complex trajectory around entire pedipalpal bulb (Fig. 45); male clypeus concave in lateral view (Fig. 41A); Chilean distribution (Fig. 212)... ***Tricellina***

– Male embolus distally-coiled and intertwined, not extending around entire pedipalpal bulb (Fig. 39B); male clypeus straight in lateral view; Australian distribution.. ***Austropholcomma***

7. Six eyes (Fig. 25B); female abdomen with dorsal scute (Fig. 24B); male pedipalpal bulb rotated 180 degrees, embolus inserting distally relative to cymbium (Figs 29A–B); embolus short (length < 5× width), distally-hooked (Fig. 29C); New Zealand distribution.. ***Pua***

– Eight (Fig. 18C) or (rarely) fewer eyes; female abdomen with (rarely) (Fig. 13B) or without (Fig. 16B) dorsal scute; male pedipalpal bulb normal, embolus inserting proximally or prolaterally relative to cymbium (Fig. 12A);

embolus long (length > 5× width), often coiled (Fig. 12A); Australian (+/- New Caledonian) distribution .... ***Micropholcomma***

8. Male abdomen with large, plate-like dorsal scute covering most of dorsal surface of abdomen (Figs 7E, 7N, 85A) **9**

– Male abdomen without large dorsal scute (Figs 7G, 7J), with at most only small anterior region of thickened cuticle (Fig. 100A); **tribe Textricellini (in part)** **14**

9. Petiole of female abdomen tear-drop shaped (Fig. 146); embolus broad, coiling around margin of tegulum > 2× (Fig. 145); tegulum with flattened, disk-like basal embolic bulge (Fig. 150A); conductor absent; male pedipalpal patella without ornate cuticular microstructure (Fig. 150D); male pedipalpal patella sinuous, with flattened, paddle-shaped distal apophysis (Figs 145B, 150D); insemination ducts tightly coiled around fertilisation ducts (Fig. 146); Lord Howe Island distribution (Fig. 216); **tribe Patelliellini** .... ***Patelliella***

– Petiole of abdomen circular (Figs 87A–B); embolus never coiling around margin of tegulum > 2× (Fig. 91); conductor present (Figs 95A–B) or (rarely) absent (Fig. 130); male pedipalpal patella with ornate, ridged cuticular microstructure (Figs 47C–D); male pedipalpal patella without paddle-shaped distal apophysis; insemination ducts rarely coiled; **tribe Textricellini (in part)** **10**

10. Conductor absent (Fig. 130); basal embolic bulge present (Fig. 134A)......... .... ***Taliniella* (in part)**

– Conductor present (Figs 60C–D, 73, 95B); basal embolic bulge absent.... **11**

11. Male tibia I with distal, prolateral macroseta (Figs 59C–D, 62A) **12**

– Male tibia I without distal, prolateral macroseta............ ***Rayforstia* (in part)**

12. Conductor extending around entire prolateral margin of bulb (Fig. 73); embolus very long (length >> 5× width), coiled distally (Fig. 73); Papua New Guinean distribution .... ***Guiniella***

– Conductor fleshy, bilobate (Figs 60C–D, 70B); embolus short (length < 5× width), spur-like (Figs 60D, 70B); Australian distribution **13**

13. Male pedipalpal tibia without processes (Fig. 70G); conductor situated medially on tegulum, with rod-like prolateral portion and massive, fleshy retrolateral portion (Figs 66, 70A–B); external epigyne excavate, with strongly arched, wedge- shaped epigastric plate surrounding epigynal atrium (Figs 63A, 67D) .... ***Epigastrina***

– Male pedipalpal tibia with posterior processes (Figs 60F–G); conductor situated distally on tegulum, with two divergent processes (Figs 53A, 55A, 60C); female epigyne without strongly arched epigastric plate or epigynal atrium (Fig. 51) .... ***Eterosonycha***

14. Male pedipalpal patella without ornate cuticular microstructure (Fig. 142E); male cheliceral promargin with single peg tooth (Fig. 140F); male chelicerae without bulging anterior projections (Fig. 140E); basal embolic bulge present (Fig. 142B); body colour dark brown (Fig. 7M); New Zealand distribution... .... ***Tinytrella***

– Male pedipalpal patella with ornate, ridged cuticular microstructure (Figs 47C–D); male cheliceral promargin with two (rarely) (Fig. 116F) or three peg teeth (Fig. 105F); male chelicerae with or (rarely) without bulging anterior projections; basal embolic bulge present or absent; body colour pale cream (Figs 7J, 113) to dark brown (Figs 7I, 7L)...................................... **15**

15. Male pedipalpal patella with dorsal flange on ligulate retrolateral apophysis (Figs 125E, 134D–F); basal embolic bulge present (Fig. 125H, 134A); New Zealand distribution (including offshore islands) **16**

– Male pedipalpal patella without dorsal flange on ligulate retrolateral apophysis (Fig. 118D); basal embolic bulge absent; Australian, Lord Howe Island or Chilean distribution... **17**

16. Carapace colour tan-yellow (Fig. 7K); male chelicerae without bulging anterior projections (Fig. 123E); elevation of male carapace same as in female (Fig. 121); male pedipalp with medial crest behind evaginated tegular ridge (Figs 125B–C); sub-Antarctic Auckland Islands distribution.........***Algidiella***

– Carapace colour dark brown (Figs 7L, 127–128); male chelicerae each with bulging anterior projection (Fig. 132E); male carapace broader in dorsal profile and more elevated in lateral profile, relative to female (Figs 127A–B); male pedipalp without medial crest behind evaginated tegular ridge (Fig. 134A)... ***Taliniella* (in part)**

17. Embolus coiled around margin of tegulum, not interacting with pedipalpal patella (Figs 114, 118A); conductor absent; receptacula with distinctive 'drumstick-shaped' external appearance (Figs 109D, 113D), internally with insemination ducts coiled around receptacula (Fig. 112); spermathecae situated posteriorly, near epigastric furrow (Fig. 112)...........................***Eperiella***

– Embolus long (length > 5× width) or short (length < 5× width), if coiled around margin of tegulum always interacting with pedipalpal patella (Figs 77, 82); conductor present (rarely) (Fig. 91) or absent (Fig. 107A); receptacula without 'drumstick-shaped' external appearance, with or without coiled insemination ducts internally; spermathecae usually situated anteriorly or dorsally **18**

18. Cymbium with three posterior, parallel macrosetae (Figs 77A, 82C, 82G); embolus long (length > 5× width), looped around margin of bulb, interacting with pedipalpal patella (Figs 77, 82) .... ***Raveniella***

– Cymbium without three posterior macrosetae; embolus short (Fig. 107B) or long (Fig. 95A), never looped around margin of bulb **19**

19. Conductor present (Figs 91, 95B); embolus long (length > 5× width), supported distally by conductor ....***Rayforstia* (in part)**

– Conductor absent; embolus short (length < 5× width), spur-like, situated at apical margin of large, ventrally-pronounced tegular extension (Figs 98, 101, 103, 107A–D) ....***Normplatnicka***

Subfamily Micropholcommatinae Hickman, 1944, new rank

Micropholcommatidae Hickman, 1944: 183. Type genus *Micropholcomma* Crosby & Bishop, 1927.

Diagnosis. Species of Micropholcommatinae can be distinguished from all other Micropholcommatidae by the presence of peg teeth on the male cheliceral promargin (Figs 11A–B), by the presence of a pair of raised, fused setal sockets on the cheliceral promargin (Figs 11A–B), and by the presence of an ectal cheliceral stridulatory system in males (Figs 11C–D) (lost only in *Micropholcomma* and *Pua*). Other diagnostic characters include the absence of a posterior tracheal spiracle (retained only in species of *Micropholcomma*), the retention of a complete triad on the posterior lateral spinnerets (Fig. 11E), and the absence of glandular depressions on the antero-lateral corners of the carapace (Fig. 11F). A substrate-attached egg sac is another possible synapomorphy of the subfamily (see Natural History, below).

Distribution. Eastern and western mainland Australia, Tasmania, Lord Howe Island, New Zealand, eastern Papua New Guinea, New Caledonia and southern Chile (Fig. 217).

Included tribes. Micropholcommatini Hickman, Textricellini Hickman, and the new tribe Patelliellini.

Tribe Micropholcommatini Hickman, 1944, new rank

Micropholcommatidae Hickman, 1944: 183. Type genus *Micropholcomma* Crosby & Bishop, 1927.

Diagnosis. Species of Micropholcommatini can be distinguished from all other Micropholcommatidae by the presence of a distally-directed, flanged or hooked retrolateral patellar apophysis on the male pedipalp (Figs 12A–B), by the presence of pleural sclerites joining the carapace and sternum (shared with Taphiassinae and some *Gigiella*), and by the presence of lateral sclerotic strips on the male abdomen (Fig. 12C). Other diagnostic characters include the presence of a dorsal scute on the male abdomen (Fig. 12C) (shared with *Patelliella* and some Textricellini), the presence of anterior tracheae that extend into the cephalothorax (Fig. 12D) (lost only in *Tricellina*), the presence of only a single peg tooth on the male cheliceral promargin (Fig. 27F) (shared with *Patelliella* and *Tinytrella*), and the presence of insemination ducts which coil around the fertilisation ducts (Figs 10B, 15) (shared with *Patelliella*; lost in *Pua*).

Distribution. Eastern and western mainland Australia, Tasmania, New Zealand, New Caledonia and southern Chile (Fig. 217).

Included genera. *Micropholcomma* Crosby & Bishop (Fig. 7A), *Pua* Forster (Fig. 7B), *Tricellina* Forster & Platnick (Fig. 7D) and the new genus *Austropholcomma* (Fig. 7C).

Remarks. Species of Micropholcommatini are all tiny, short-legged spiders with armoured males and a distinctive, 'compact' somatic gestalt (Figs 7A–D). The tribe is most diverse in Australia, where at least one species of *Austropholcomma* and several dozen species of *Micropholcomma* remain to be described.

Genus *Micropholcomma* Crosby & Bishop, 1927

Micropholcomma Crosby & Bishop, 1927: 152. Type species by original designation *Micropholcomma caeligenus* Crosby & Bishop, 1927. Roewer, 1942: 392. Hickman, 1944: 183. Bonnet, 1957: 2905. Forster, 1959: 297. Hickman, 1981: 65. Brignoli, 1983: 374. Rix, 2008: 343. Platnick, 2009.

Microlinypheus Butler, 1932: 103. Type species by monotypy *Microlinypheus bryophilus* Butler, 1932. Roewer, 1942: 617. Synonymised by Hickman, 1944: 186. Bonnet, 1957: 2885.

Plectochetos Butler, 1932: 106. Type species by monotypy *Plectochetos longissimus* Butler, 1932. Roewer, 1942: 617. Bonnet, 1958: 3707. Synonymised by Forster, 1959: 297.

Affinities. The genus *Micropholcomma* appears to be the sister-lineage to *Pua novaezealandiae* from New Zealand (Fig. 4).

Diagnosis. Species of *Micropholcomma* can be distinguished from all other Micropholcommatini except *Pua novaezealandiae* by the presence of a normal, non-bifurcate embolus (Fig. 9A); and can be distinguished from *Pua* by the presence of a long embolus (length > 5× width) which is usually looped or coiled (Figs 9A, 12A, 17B). Other diagnostic characters include the presence (and presumed retention) of posterior tracheae (shared with *Gigiella*) and the presence of a male leg I-pedipalpal stridulatory system (Fig. 21D).

Description. Very small, entelegyne Araneoidea; total length 0.70 to 1.30. *Cephalothorax*: Carapace without glandular depressions above maxillae; cuticle without glandular pits (Fig. 18C); margins fused to sternum via pleural sclerites. Eight (Fig. 18C), rarely six or (in troglomorphic taxa) fewer eyes present on anterior margin of pars cephalica; AME, if present, smallest. Chelicerae with or without bulging anterior projections in males; promargin with true teeth, a pair of fused setal sockets adjacent to base of fang and single peg tooth in males (Fig. 19F).

Legs and female pedipalp: Legs three-clawed (Fig. 20D), covered with smooth or serrate hair-like setae; femur I of males with prolateral stridulatory denticles (Fig. 18C). Trichobothria present on legs; tibiae each with two or three trichobothria (Fig. 20C); metatarsi without trichobothria. Female pedipalp four-segmented (with fused tibia-tarsus) or reduced to a vestigial nubbin; claw absent (Figs 19C–D).

Abdomen: Abdomen oval or globose; anterior sclerite present around epigastric region and petiole; large dorsal scute present on males (Fig. 14), absent (Fig. 16B) or (rarely) present (Fig. 13B) on females; lateral sclerotic strips present on males; posterior sclerotic ring surrounding spinnerets and colulus. Six spinnerets situated posterior to fleshy colulus (Figs 22A, 22C, 23A–B); PMS of *M. bryophilum* with single medial AC gland spigot; PLS of *M. bryophilum* with complete triad. Anterior tracheal system well-developed, with relatively large lateral atria and multiple radiating tracheae (Fig. 15B); second tracheal tubes on each side looping mesally and extending through petiole into cephalothorax (Fig. 12D); posterior tracheal spiracle present, tracheae quadritracheate.

Genitalia: Male pedipalp (Fig. 21) small to large, relatively simple; patella with distally-directed, flanged or hooked ligulate retrolateral apophysis and retrolateral stridulatory ridges; tegulum smooth, with curved evaginated tegular ridge; embolus exposed, long (length > 5× width), usually looped or coiled. Female genitalia (Figs 15A–E) with pair of separate, globular anterior spermathecae; insemination ducts coiled around fertilisation ducts; fertilisation ducts posteriorly-directed.

Distribution. Eastern and western mainland Australia and Tasmania (Fig. 217). Two undescribed female specimens from Rivière Bleue and Mont Mou, New Caledonia (QMB S60522, QMB S72474) probably also belong in this genus, but males are required to confirm the identification.

Composition. Seven described species, *Micropholcomma bryophilum* (Butler, 1932), *M. caeligenum* Crosby & Bishop, 1927, *M. linnaei* Rix, 2008, *M. longissimum* (Butler, 1932), *M. mirum* Hickman, 1944, *M. parmatum* Hickman, 1944, *M. turbans* Hickman, 1981, and the new species *M. junee*. Undescribed species are also known from throughout the range of the genus.

Nomenclatural remarks. The gender of the genus name "*Micropholcomma*" was not specified by Crosby and Bishop (1927), although the type species was described with a masculine specific epithet (as *M.* "*caeligenus*"). The name *Micropholcomma* was clearly derived from the theridiid taxon name "*Pholcomma*" Thorell, and as highlighted by Levi (1964), this name should be treated as neuter. To this end, Brignoli (1983) and Davies (1985) amended the suffix endings of the species names, all of which were previously masculine or feminine.

Micropholcomma caeligenum Crosby & Bishop, 1927

Figs 7A, 9A, 12D, 13–14, 15A–B

Micropholcomma caeligenus Crosby & Bishop, 1927: 152, pl. 16, fig. 19 (holotype male from Emerald, Victoria, Australia, in Cornell University collection, not examined, probably lost). Roewer, 1942: 392. Hickman, 1944: 183, figs 8–10. Bonnet, 1957: 2906. Forster, 1959: 328, fig. 135.

Micropholcomma caeligenum Crosby & Bishop: Davies, 1985: 89. Platnick, 2009.

Selected material examined. AUSTRALIA: Victoria: Emerald, Cardinia Reservoir, 20.IV.2006, M. Rix, 1♂, 3♀ (WAM T77727); same data, 1♀ (WAM T80014$^{\text{DNA-MPE}}$); Great Otway National Park, Maits Rest, 10 km W. of Apollo Bay, 23.IV.2006, M. Rix, 1♂ (WAM T94450); Great Otway National Park, Melba Gully, 24.IV.2006,

M. Rix, 1♀ (WAM T94449); same data except 5.XI.1997, G. & S. Monteith, 1♂, 2♀ (QMB S41824); Great Otway National Park, track to Cora Lynn Cascades, near Lorne, 22.IV.2006, M. Rix, 2♀ (WAM T94447); Yarra Ranges National Park, 'The Beeches', near Marysville, 18.IV.2006, M. Rix, 1♂, 1♀ (WAM T94448).

Remarks. *Micropholcomma caeligenum* is similar to, and often sympatric with, *M. bryophilum*, e.g. in the Yarra Ranges and Otway Ranges of Victoria. It can be most easily distinguished by the absence of a pedipalp on the female. The holotype specimen described by Crosby and Bishop (1927) does not appear to be in the Cornell University collection as stated in the original description, or in the AMNH collection, and is probably lost (N. Platnick, pers. comm.).

Micropholcomma bryophilum (Butler, 1932)

Figs 10A–B, 11B, 12A, 12D, 15C, 18–21, 22A, 22C, 23A–B

Microlinypheus bryophilus Butler, 1932: 104, pl. 1, figs 1–7. Roewer, 1942: 617. Bonnet, 1957: 2885.
Micropholcomma bryophila (Butler): Hickman, 1944: 186, figs 11–14. Forster, 1959: 299.
Micropholcomma bryophilum (Butler): Davies, 1985: 89. Platnick, 2009.

Type material. Syntype male and female: Lorne, Victoria, Australia, from moss, I.1928, C. Oke, C. Gabriel (NMV K100/K101) (NOTE second female in sealed vial, K102, is not conspecific).

Selected material examined. AUSTRALIA: Victoria: Great Otway National Park, track to Cora Lynn Cascades, near Lorne, 22.IV.2006, M. Rix, 2♂, 6♀ (WAM T77726); same data, 1♂ (WAM T80013$^{\text{DNA-MPE}}$); Great Otway National Park, Maits Rest, 10 km W. of Apollo Bay, 23.IV.2006, M. Rix, 2♂, 1♀ (WAM T94451); Great Otway National Park, Melba Gully, 24.IV.2006, M. Rix, 1♂, 1♀ (WAM T94452); Otway Ranges, Beauchamp Falls, 24.IV.2006, M. Rix, 2♀ (WAM T94442); Yarra Ranges National Park, 'The Beeches', near Marysville, 18.IV.2006, M. Rix, 4♂, 7♀ (WAM T94453$^{\text{SEM♂♀}}$).

Remarks. *Micropholcomma bryophilum* is similar to, and often sympatric with, *M. caeligenum*, e.g. in the Yarra Ranges and Otway Ranges of Victoria. It can be most easily distinguished by the smaller size and presence of a four-segmented pedipalp on the female (Fig. 19C).

Micropholcomma junee Rix & Harvey, sp. n.

urn:lsid:zoobank.org:act:9A689FA4-72D0-4553-AF71-B56F303154A3

Figs 15D, 16–17, 213

Type material. Holotype male: *Splash Pot* (JF-10), Junee-Florentine karst, Tasmania, Australia, on moist wall of stream (twilight and dark zones) to c. 40 m depth, 42°43'S, 146°34'E, 28.VIII.1987, S. Eberhard (AMS KS97172).

Paratypes: Allotype female, *Cauldron Pot* (JF-2), Junee-Florentine karst, Tasmania, Australia, in deep part (dark zone) of cave, 2.IV.1990, S. Eberhard (QVM 13: 13292); 1 male, same data as holotype (AMNH).

Etymology. The specific epithet is a noun in apposition, taken from the type locality.

Diagnosis. Males and females of *Micropholcomma junee* can be distinguished from all other described congeners by the presence of only four vestigial eye spots (Figs 16A–B).

Description. *Holotype male*: Total length 0.90. Carapace 0.39 long, 0.32 wide. Abdomen 0.59 long, 0.43 wide. Leg I femur 0.34. Cephalothorax, abdominal sclerites dark tan-brown; legs, abdomen dark tan-yellow. Carapace raised anteriorly, fused to sternum via pleural sclerites; dorsal surface of pars cephalica slightly convex in lateral view. Eyes reduced to four vestigial eye spots on anterior margin of pars cephalica. Chelicerae without bulging anterior projections; promargin with single peg tooth. Legs relatively short (leg I femur-carapace ratio 0.87); macrosetae absent. Abdomen oval, protruding posteriorly, covered with hair-like setae, each seta projecting from small sclerotic spot; dorsal scute large, covering most of dorsal surface of abdomen; lateral sclerotic strips present. Pedipalpal patella with distally-directed, flanged lRPA; tegulum smooth, without processes, with curved ETR; embolus long (length > 5× width), looping once around margin of tegulum (Fig. 17).

Allotype female: Total length 0.84. Carapace 0.36 long, 0.30 wide. Abdomen 0.56 long, 0.37 wide. Leg I femur 0.37. Cephalothorax, abdominal sclerites tan-yellow; legs, abdomen pale cream. Carapace raised anteriorly, fused to sternum via pleural sclerites; dorsal surface of pars cephalica slightly convex in lateral view. Eyes reduced to four vestigial eye spots on anterior margin of pars cephalica. Chelicerae without bulging anterior projections; promargin without peg teeth. Legs relatively short (leg I femur-carapace ratio 1.03); macrosetae absent. Abdomen oval, protruding posteriorly, covered with hair-like setae, each seta projecting from small sclerotic spot; dorsal scute and lateral sclerotic strips absent. Pedipalp small, four-segmented, with fused tibia-tarsus. Epigyne with distinctive external morphology (Fig. 16D); spermathecae globular; insemination ducts coiled around arched fertilisation ducts (Fig. 15D).

Distribution. Known only from the caves *Splash Pot* and *Cauldron Pot* in the Junee-Florentine karst of south-central Tasmania (Fig. 213).

Remarks. *Micropholcomma junee* lives in sympatry with another troglobitic micropholcommatid, *Olgania eberhardi* sp. n. (see below). Nothing is known of its biology.

Micropholcomma linnaei Rix, 2008

Micropholcomma linnaei Rix, 2008: 343, figs 1–11. Platnick, 2009.

Type material. Holotype male: Walpole-Nornalup National Park, Giant Tingle Area, 8 km NE. of Walpole, Western Australia, Australia, mixed *Eucalyptus* litter, 19.XII.1976, J. Kethley (WAM T85552).

Paratypes: Allotype female, same data as holotype (WAM T85553); 33 males and 51 females, same data as holotype (WAM T85554); 1 male and 3 females, same data as holotype (FMC); 5 males and 2 females, same data as holotype except Karri and *Acacia* litter (FMC).

Remarks. *Micropholcomma linnaei* is the only species of *Micropholcomma* currently described from Western Australia, and is most similar to *M. turbans* from Tasmania (Rix 2008). Main (1974) recorded two other micropholcommatid species from Western Australia (*M. longissimum* and *M. bryophilum*), although the exact identity of these species cannot be confirmed given the lack of voucher specimens. Western Australia is now known to have a large diversity of *Micropholcomma*, with several species clearly similar to *M. longissimum* and *M. bryophilum* (see Remarks for *M. longissimum*, below), and the true identity of the Main (1974) specimens will require further testing.

***Micropholcomma longissimum* (Butler, 1932)**

Fig. 15E

Plectochetos longissimus Butler, 1932: 107, pl. 1, figs 15–20. Roewer, 1942: 617. Bonnet, 1958: 3707.

Micropholcomma longissima (Butler): Forster, 1959: 298, figs 64–69, 137. Forster & Platnick, 1984: 92, figs 360–361, 369–370, 375–376.

Micropholcomma longissimum (Butler): Davies, 1985: 89. Platnick, 2009.

Type material. Holotype male: Mount Donna Buang, near Warburton, Yarra Ranges, Victoria, Australia, under logs and similar places, 4080 ft, II.1931, C. Oke (NMV K103).

Selected material examined. AUSTRALIA: Victoria: Yarra Ranges, Toolangi State Forest, 3 km E. of Toolangi, 15.I.1990, D. Black, 1♀ (WAM T94464); Yarra Ranges, White Hill Track No. 2, 15 km ENE. of Healesville, on Acheron Way, 4.III.1990, D. Black, 2♀ (WAM T94465); same data, 2♀ (WAM T94466); Double Creek Nature Walk, 7 km N. of Mallacoota, 26.X.1990, D. Black, 2♂, 1♀ (WAM T94469); 10 km ENE. of Genoa, near Johnson's Bridge, 26.X.1990, D. Black, 1♂, 1♀ (WAM T94468); Great Otway National Park, track to Cora Lynn Cascades, near Lorne, 22.IV.2006, M. Rix, 1♂ (WAM T94463); same data, 1♂ (WAM T80018$^{\text{DNA-MPE}}$); Mount Buffalo National Park, walking tack to Eurobin Falls, 8.V.1990, D. Black, 2♀ (WAM T94467).

Remarks. *Micropholcomma longissimum* is remarkable for the exaggerated length of the male embolus (see Forster and Platnick 1984, fig. 369) and the concomitantly extreme development of the female insemination ducts, the latter of which are very tightly coiled around the fertilisation ducts (Fig. 15E). There are, however, a number of undescribed species of *Micropholcomma* in both eastern and south-western Australia that share a very similar, 'super-coiled' genitalic morphology, as well as several species (e.g. *M. linnaei*, *M. turbans*) with a somewhat intermediate morphology between *M. longissimum* and those taxa with a simple, looped embolus (e.g. *M. bryophilum*).

Micropholcomma mirum Hickman, 1944

Micropholcomma mira Hickman, 1944: 191, figs 23–31.
Micropholcomma mirum Hickman: Brignoli, 1983: 374. Davies, 1985: 89. Platnick, 2009.

Type material: Syntype male and female: New Town, Tasmania, Australia, from moss in a garden lawn, 23.XII.1943 (AMS KS6620).

Remarks. *Micropholcomma mirum* is a distinctive Tasmanian species, with males possessing a large posterior sclerotic ring around the spinnerets (see Hickman 1944, fig. 24) and an unusual, transverse posterior sclerite.

Micropholcomma parmatum Hickman, 1944

Micropholcomma parmata Hickman, 1944: 188, figs 15–22. Forster, 1959: 328, fig. 136.
Micropholcomma parmatum Hickman: Brignoli, 1983: 374. Davies, 1985: 89. Platnick, 2009.

Type material. Syntype male and female: Mount Wellington, Tasmania, Australia, from moss, 3000 ft, 25.VIII.1943 (AMS KS6621).

Remarks. *Micropholcomma parmatum* is a distinctive Tasmanian species, with males possessing a modified, sinuous leg I tarsus (see Hickman 1944, fig. 16).

Micropholcomma turbans Hickman, 1981

Micropholcomma turbans Hickman, 1981: 65, figs 29–33. Platnick, 2009.

Type material. Holotype male: Gordon River Valley, Tasmania, Australia, from moss, 42°37'S, 145°56'E, 5.I.1978, L. Hill et al. (AMS KS6997).

Paratypes: 1 female, same data as holotype (AMS KS6998).

Remarks. *Micropholcomma turbans* is a distinctive and unusual species from Tasmania, with a morphology most similar to *M. linnaei* from south-western Western Australia (Rix 2008).

Genus *Pua* Forster, 1959

Pua Forster, 1959: 299. Type species by original designation *Pua novaezealandiae* Forster, 1959. Brignoli, 1983: 374. Platnick, 2009.

Affinities. The genus *Pua* appears to be the sister-lineage to *Micropholcomma* from Australia (Fig. 4).

Diagnosis. *Pua novaezealandiae* can be distinguished from all other Micropholcommatini by the presence of a short (length < 5× width), hooked embolus situated distally on a rotated bulb (Figs 29A–C). Other diagnostic characters include the loss of the AME (Fig. 25B), the presence of very large, globular spermathecae (Fig. 15F), and the presence of a dorsal scute on the female abdomen (Fig. 24B).

Description. Very small, entelegyne Araneoidea; total length 0.80 to 1.00. *Cephalothorax*: Carapace without glandular depressions above maxillae (Fig. 26D); cuticle without glandular pits (Fig. 26E); margins fused to sternum via pleural sclerites. Six eyes present on anterior margin of pars cephalica (Fig. 25B); AME absent. Chelicerae without bulging anterior projections in males; promargin with true teeth, a pair of fused setal sockets adjacent to base of fang and single peg tooth in males (Fig. 27F).

Legs and female pedipalp: Legs three-clawed (Fig. 28D), covered with smooth or serrate hair-like setae. Trichobothria present on legs; tibiae each with two (legs I–III) or three (leg IV) trichobothria (Fig. 28C); metatarsi without trichobothria. Female pedipalp four-segmented, with fused tibia-tarsus; claw absent (Figs 27C–D).

Abdomen: Abdomen oval-globose; anterior sclerite present around epigastric region and petiole; large dorsal scute present on males and females (Figs 24A–B); lateral sclerotic strips present on males; posterior sclerotic ring surrounding spinnerets and colulus. Six spinnerets situated posterior to fleshy colulus (Figs 23C–D); PMS without AC gland spigots; PLS with complete triad. Anterior tracheal system well-developed, with relatively large lateral atria and multiple radiating tracheae; second tracheal tubes on each side looping mesally and extending through petiole into cephalothorax; posterior tracheal spiracle absent.

Genitalia: Male pedipalp (Fig. 29) relatively simple; patella with distally-directed, hooked ligulate retrolateral apophysis; bulb rotated 180 degrees, with embolus inserting distally relative to cymbium; tegulum smooth, with straight, evaginated tegular ridge; embolus exposed, short (length < 5× width) and hooked; conductor absent. Female genitalia (Fig. 15F) with pair of separate, very large, globular anterior spermathecae; insemination ducts short, barely visible in dorsal view; fertilisation ducts simple, curved.

Distribution. New Zealand.

Composition. Only the type species *Pua novaezealandiae* Forster, 1959.

Pua novaezealandiae Forster, 1959

Figs 7B, 11F, 12B, 15F, 23C–D, 24–29

Pua novaezealandiae Forster, 1959: 299, figs 70–77, 138 (holotype male from Lewis Pass, Canterbury, New Zealand, in Canterbury Museum, not examined). Brignoli, 1983: 374. Platnick, 2009.

Selected material examined. NEW ZEALAND: South Island: Canterbury: Lewis Pass, Riordans Bridge, 25.IV.1977, R. Forster, 2♂, 2♀ (AMNH); Lake Rubicon, 19.XI.1950, R. Forster, 5♂, 7♀ (AMNH). **Otago:** Makarora Valley, 12.XII.1977, R. Forster, 4♂, 3♀ (AMNH$^{\mathrm{SEM}♂♀}$). **West Coast:** Mawhera State Forest, 10.XI.1971, J. Dugdale, 2♂, 15♀ (AMNH). **North Island: Waikato:** Mamaku Range, Rotorua, 18.I.1972, G. Ramsay, 2♂, 5♀ (LRA).

Remarks. *Pua novaezealandiae* is widespread in New Zealand, where it can be found on both the North and South Islands. Nothing is known of its biology, except that specimens have usually been collected from moss or leaf litter.

Genus *Austropholcomma* Rix & Harvey, gen. n.

urn:lsid:zoobank.org:act:147D1954-1235-4686-8622-FAC298AB72CD

Type species. *Austropholcomma florentine* Rix & Harvey, sp. n.

Etymology. The generic name is a contraction of 'Australian' plus '*Micropholcomma*', and refers to the Australian distribution of species in this genus. The gender is neuter.

Affinities. The genus *Austropholcomma* appears to be the sister-lineage to *Tricellina gertschi* from Chile (Fig. 4).

Diagnosis. Species of *Austropholcomma* can be distinguished from all other Micropholcommatini except *Tricellina gertschi* by the presence of a bifurcate embolus (Fig. 39D); and can be distinguished from *Tricellina* by the presence of a distally-coiled, intertwined embolus which is restricted to the ventral tegulum (rather than looping around the entire bulb as in *T. gertschi*) (Figs 39A–E). Other diagnostic characters include the presence of a large, flange-like distal patellar apophysis on the male pedipalp (Fig. 39F), and the presence of very large bulging anterior projections on the male chelicerae (Fig. 37E).

Description. Very small, entelegyne Araneoidea; total length 0.65 to 0.90. *Cephalothorax*: Carapace without glandular depressions above maxillae; cuticle without glandular pits (Fig. 36); margins fused to sternum via pleural sclerites. Eight (Fig. 31B) or six (Fig. 34C) eyes present on anterior margin of pars cephalica; AME, if present, smallest. Chelicerae with large, bulging anterior projections in males; promargin with true teeth, a pair of fused setal sockets adjacent to base of fang and single peg tooth in males (Figs 37B, 37F); proximal peg tooth-like seta of fused setal sockets modified in males, proximally-flattened (Fig. 37F); ectal stridulatory ridges present in males.

Legs and female pedipalp: Legs three-clawed (Fig. 38D), covered with smooth or serrate hair-like setae. Trichobothria present on legs; tibiae each with two (legs I–III) or three (leg IV) trichobothria (Fig. 38C); metatarsi without trichobothria. Female pedipalp reduced, three- or four-segmented; claw absent (Figs 37C–D).

Abdomen: Abdomen oval-globose; anterior sclerite present around epigastric region and petiole; large dorsal scute present on males (Fig. 34A), absent on females (Fig. 34B); lateral abdominal sclerotic strips present on males (Fig. 12C); posterior sclerotic ring surrounding spinnerets and colulus. Six spinnerets situated posterior to fleshy colulus (Figs 22B, 22D, 23E–F); PMS of *A. florentine* with single medial AC gland spigot and apparently without anterior CY gland spigot; PLS of *A. florentine* with complete triad. Anterior tracheal system well-developed, with multiple radiating tracheae; second tracheal tubes on each side looping mesally and extending through petiole into cephalothorax; posterior tracheal spiracle absent.

Genitalia: Male pedipalp (Fig. 39) relatively large; trochanter with modified prolateral seta forming stridulatory 'tooth'; patella with distally-directed, flanged ligulate retrolateral apophysis and large, flange-like distal apophysis; tegulum smooth, with curved evaginated tegular ridge; embolus exposed, long (length > 5× width), with looped proximal portion and bifurcate, coiled and intertwined distal portion. Female genitalia (Figs 33A–C) with pair of separate, globular anterior spermathecae; insemination ducts coiled around fertilisation ducts, with sclerotised proximal portion and expanded, membranous distal portion; fertilisation ducts arched, posteriorly-directed.

Distribution. South-eastern Australia (Tasmania, Victoria) and extreme south-western Western Australia (Fig. 217).

Composition. The two new species *Austropholcomma florentine* and *A. walpole*. A single male of an undescribed species is also known from the Yarra Ranges of Victoria (WAM T94459).

Austropholcomma florentine Rix & Harvey, sp. n.

urn:lsid:zoobank.org:act:4ED7929A-38F4-4C56-81E6-DB72855414AA

Figs 7C, 12C, 22B, 22D, 23E–F, 30–32, 33A–B, 36–39

Type material. Holotype male: Florentine Valley, 20 km NW. of Maydena, Tasmania, Australia, myrtle litter at base of log, 14.II.1977, J. Kethley (TMAG).

Paratypes: Allotype female, same data as holotype (TMAG); 3 males and 16 females, same data as holotype (FMC$^{\mathrm{SEM}♂♀}$).

Other material examined. AUSTRALIA: Tasmania: Florentine Valley, 22 km NW. of Maydena, myrtle litter and root mat, 15.II.1977, J. Kethley, 2♂, 5♀ (FMC); Frodsham's Pass, 42°49'S, 146°23'E, 22.XI.1986, M. Harvey, P. Lillywhite, 2♀ (WAM T94461); south-western Tasmania, 42°37'S, 145°56'E, 5.I.1978, L. Hill et al., 1♂ (AMS KS26992); 0–10 km W. of Strathgordon, N. of Mount Sprent, 290 m, Berlese moss and litter, wet rainforest, 27.IV.1987, N. Platnick, R. Raven, T. Churchill, 1♂ (AMNH).

Etymology. The specific epithet is a noun in apposition, taken from the type locality.

Diagnosis. Males and females of *Austropholcomma florentine* can be distinguished from *A. walpole* by the presence of eight eyes (Fig. 31B).

Description. *Holotype male*: Total length 0.82. Carapace 0.38 long, 0.31 wide. Abdomen 0.47 long, 0.45 wide. Leg I femur 0.27. Cephalothorax, abdominal sclerites, legs tan-yellow; abdomen cream. Carapace raised anteriorly, fused to sternum via pleural sclerites; dorsal surface of pars cephalica slightly convex in lateral view. Eight eyes present on anterior margin of pars cephalica; AME 0.75x diameter of ALE; PME separated by nearly twice their own diameter. Chelicerae each with large, bulging anterior projection; promargin with single peg tooth and modified, proximally-flattened peg tooth-like seta projecting from fused setal socket. Legs relatively short (leg I femur-carapace ratio 0.71); macrosetae absent. Abdomen oval-globose, covered with hair-like setae, each seta projecting from small sclerotic spot; dorsal scute large, covering most of dorsal surface of abdomen; lateral sclerotic strips present. Pedipalpal patella with distally-directed, flanged lRPA and large, flange-like distal apophysis; tegulum smooth, without processes, with curved ETR; embolus long (length > 5× width), bifurcate, with proximal portion looping once around margin of tegulum, distal portion coiled and intertwined (Fig. 32).

Allotype female: Total length 0.89. Carapace 0.38 long, 0.29 wide. Abdomen 0.60 long, 0.49 wide. Leg I femur 0.26. Cephalothorax, abdominal sclerites, legs tan-yellow; abdomen cream. Carapace raised anteriorly, fused to sternum via pleural sclerites; dorsal surface of pars cephalica slightly convex in lateral view. Eight eyes present on anterior margin of pars cephalica; AME 0.5x diameter of ALE; PME separated by their own diameter. Chelicerae without bulging anterior projections; promargin without peg teeth. Legs relatively short (leg I femur-carapace ratio 0.68); macrosetae absent. Abdomen oval-globose, covered with hair-like setae, each seta projecting from small sclerotic spot; dorsal scute absent; lateral sclerotic strips present. Pedipalp small, four-segmented, with fused tibia-tarsus. Epigyne with distinctive external morphology (Fig. 30D); spermathecae globular, 'tear-drop' shaped; insemination ducts coiled around arched fertilisation ducts, insemination ducts with sclerotised proximal portion and expanded, membranous distal portion (Figs 33A–B).

Distribution. Known only from Tasmania.

Remarks. *Austropholcomma florentine* is very similar to *A. walpole* from Western Australia. Nothing it known of its biology, except that specimens have been collected from moss and leaf litter, mainly in *Nothofagus* rainforest.

Austropholcomma walpole Rix & Harvey, sp. n.

urn:lsid:zoobank.org:act:EC837C80-F60C-480F-9650-305D9AD1AC8D
Figs 33C, 34–35, 214

Type material. Holotype male: Walpole-Nornalup National Park, Giant Tingle Area, 8 km NE. of Walpole, Western Australia, Australia, mixed *Eucalyptus* litter, 19.XII.1976, J. Kethley (WAM T94438).

Paratypes: Allotype female, same data as holotype (WAM T94439); 3 males and 18 females, same data as holotype (WAM T94440); 2 males and 6 females, same data as holotype (FMC).

Other material examined. AUSTRALIA: Western Australia: Walpole-Nornalup National Park, Anderson Road, near Valley of the Giants Road, 120 m, Tingle-*Allocasuarina*-Karri (*Eucalyptus diversicolor*) forest, Berlese leaf and bark litter, 34°59'29"S, 116°52'21"E, 2.VIII.2004, Newton, Thayer et al., 6♂, 12♀ (FMC); Walpole-Nornalup National Park, Anderson Road, near Valley of the Giants Road, Tingle-Karri forest, leaf litter Tullgren funnel, 34°59'32"S, 116°52'17"E, 3.V.2008, M. Rix, M. Harvey, 2♂, 4♀ (WAM T94460); Walpole-Nornalup National Park, Shedley Drive, fungi and bark litter, 22.VI.1980, S. & J. Peck, 1♂ (AMNH); Mount Frankland National Park, Mount Frankland, 29 km N. of Walpole, unburned litter below switch-back in Forestry Road, 15.XII.1976, J. Kethley, 1♂, 2♀ (FMC); same data, 3♂, 12♀ (FMC); same data, 7♂, 19♀ (FMC).

Etymology. The specific epithet is a noun in apposition, taken from the type locality.

Diagnosis. Males and females of *Austropholcomma walpole* can be distinguished from *A. florentine* by the presence of only six eyes (Fig. 34C), with the AME reduced to barely-visible vestigial eye spots.

Description. *Holotype male*: Total length 0.67. Carapace 0.31 long, 0.25 wide. Abdomen 0.45 long, 0.36 wide. Leg I femur 0.24. Cephalothorax, abdominal sclerites, legs tan-yellow; abdomen cream. Carapace raised anteriorly, fused to sternum via pleural sclerites; dorsal surface of pars cephalica slightly convex in lateral view. Six eyes present on anterior margin of pars cephalica; AME reduced to barely-visible vestigial eye spots; PME separated by their own diameter. Chelicerae each with large, bulging anterior projection; promargin with single peg tooth and modified, proximally-flattened peg tooth-like seta projecting from fused setal socket. Legs relatively short (leg I femur-carapace ratio 0.77); macrosetae absent. Abdomen oval-globose, covered with hair-like setae, each seta projecting from small sclerotic spot; dorsal scute large, covering most of dorsal surface of abdomen; lateral sclerotic strips present. Pedipalpal patella with distally-directed, flanged lRPA and large, flange-like distal apophysis; tegulum smooth, without processes, with curved ETR; embolus long (length > 5× width), bifurcate, with proximal portion looping once around margin of tegulum, distal portion coiled and intertwined (Fig. 35).

Allotype female: Total length 0.71. Carapace 0.31 long, 0.25 wide. Abdomen 0.51 long, 0.40 wide. Leg I femur 0.22. Cephalothorax, abdominal sclerites, legs tan-yellow; abdomen cream. Carapace raised anteriorly, fused to sternum via pleural sclerites; dorsal surface of pars cephalica slightly convex in lateral view. Six eyes present on anterior margin of pars cephalica; AME reduced to barely-visible vestigial eye spots; PME separated by slightly less than their own diameter. Chelicerae without bulging anterior projections; promargin without peg teeth. Legs relatively short (leg I femur-carapace ratio 0.71); macrosetae absent. Abdomen oval-globose, covered with hair-like setae, each seta projecting from small sclerotic spot; dorsal scute absent; lateral sclerotic strips present. Pedipalp very small, vestigial, three-segmented. Epigyne with distinctive external morphology (Fig. 34D); spermathecae globular, 'tear-drop' shaped; insemination ducts coiled around arched fertilisation ducts, insemination ducts with sclerotised proximal portion and expanded, membranous distal portion (Fig. 33C).

Distribution. Known only from the far south coast of south-western Western Australia, in the area immediately surrounding Walpole (Walpole-Nornalup National Park and Mount Frankland National Park) (Fig. 214).

Remarks. *Austropholcomma walpole* appears to be a short-range endemic taxon (Harvey 2002), and is probably restricted to the tall, wet, Karri and Tingle (*Eucalyptus* spp.) forests surrounding Walpole. The species occurs in sympatry with several other micropholcommatine and taphiassine species, and shares a similar, southern coastal distribution with *Micropholcomma linnaei* (see Rix 2008) and *Normplatnicka barrettae* sp. n. (see below) (Fig. 214).

Genus *Tricellina* Forster & Platnick, 1989

Tricella Forster & Platnick, 1981: 266 (name preoccupied in Diptera). Type species by original designation *Tricella gertschi* Forster & Platnick, 1981. Brignoli, 1983: 696.

Tricellina Forster & Platnick, 1989 *in* Platnick, 1989: 166 (replacement name for *Tricella* Forster & Platnick, 1981). Platnick, 2009.

Affinities. The genus *Tricellina* appears to be the sister-lineage to *Austropholcomma* from Australia (Fig. 4).

Diagnosis. *Tricellina gertschi* can be distinguished from all other Micropholcommatini by the presence of an extremely long (length >> 5× width), bifurcate embolus with a complex trajectory around the entire pedipalpal bulb (Fig. 45). Other diagnostic characters include the presence of a concave male clypeus in lateral view (Fig. 41A), and the retention of a five-segmented female pedipalp (Fig. 43C).

Description. Very small, entelegyne Araneoidea; total length 1.00 to 1.10. *Cephalothorax*: Carapace without glandular depressions above maxillae; cuticle without glandular pits (Fig. 42E); margins fused to sternum via pleural sclerites; clypeus of male concave in lateral view (Fig. 41A). Eight eyes present on anterior margin of pars cephalica (Fig. 41); AME smallest. Chelicerae with bulging anterior projections in males; promargin with true teeth, a pair of fused setal sockets adjacent to base of fang and single peg tooth in males (Fig. 43F); proximal peg tooth-like seta of fused setal sockets modified in males, proximally-flattened (Fig. 43F); ectal stridulatory ridges present in males.

Legs and female pedipalp: Legs three-clawed (Fig. 44D), covered with smooth or serrate hair-like setae. Trichobothria present on tibiae and metatarsi of legs; tibiae each with two (legs I–III) or three (leg IV) trichobothria; metatarsi (legs I–III) each with single trichobothrium (Fig. 44C). Female pedipalp entire, five-segmented; claw absent (Figs 43C–D).

Abdomen: Abdomen oval; anterior sclerite present around epigastric region and petiole; large dorsal scute present on males (Fig. 41A), absent on females (Fig. 40B); lateral sclerotic strips present on males; posterior sclerotic ring surrounding spinnerets and colulus. Six spinnerets situated posterior to fleshy colulus (Figs 23G–H); PMS with single medial AC gland spigot and apparently without anterior CY gland spigot; PLS with complete triad. Anterior tracheal system with multiple anteriorly-directed tracheae; posterior tracheal spiracle absent.

Genitalia: Male pedipalp (Fig. 45) relatively large; trochanter with modified prolateral seta forming stridulatory ‘tooth’; patella with broad, distally-directed, flanged ligulate retrolateral apophysis; tegulum smooth, with curved, evaginated tegular ridge; embolus exposed, very long (length >> 5× width), with looped proximal portion and bifurcate distal portion which winds in a complex trajectory around the entire pedipalpal bulb. Female genitalia (Fig. 33D) with pair of separate, globular anterior spermathecae; insemination ducts coiled around fertilisation ducts, with sclerotised proximal portion and expanded, membranous distal portion; fertilisation ducts bent, posteriorly-directed.

Distribution. Southern Chile, in Región de la Araucanía (Cautín and Malleco provinces) and Región de los Lagos (Chiloé, Llanquihue, Osorno and Palena provinces) (Fig. 212).

Composition. Only the type species *Tricellina gertschi* (Forster & Platnick, 1981).

Tricellina gertschi (Forster & Platnick, 1981)

Figs 7D, 23G–H, 33D, 40–45, 212

Tricella gertschi Forster & Platnick, 1981: 266, figs 1–2, 4–10, 14–15, 20–22 (holotype male from west of Cherquenco, Cautín province, Chile, in AMNH, not examined). Brignoli, 1983: 696.

Tricellina gertschi (Forster & Platnick): Forster & Platnick, 1989 *in* Platnick, 1989: 166. Platnick et al., 1991: 5, figs 240–244. Platnick, 2009.

Material examined. CHILE: Región IX (de la Araucanía): Cautín: 4 km W. of Cherquenco, near Temuco, 28.IV.1961, L. Smith, 1♂, 6♀ (AMNH). **Malleco:** Monumento Natural Contulmo, 31.I.1986, N. Platnick, T. Schuh, 1♀ (AMNH); same data except 23.I.1985, N. Platnick, O. Francke, 1♀ (AMNH). **Región X (Los Lagos): Chiloé:** Chiloé Island, 5 km N. of Quellon, 1.XII.1981, N. Platnick, T. Schuh, 1♂ (AMNH); same data, 1♂, 5♀ (AMNH). **Llanquihue:** 35 km NW. of Río Negro, 24.I.1986, N. Platnick, T. Schuh, 3♀ (AMNH). **Osorno:** Termas de Puyehue, 25.XI.1981, N. Platnick, T. Schuh, 1♀ (AMNH); same data except 24.XI.1981, 6♂, 15♀ (AMNH); Volcán Osorno, 12.II.1985, N. Platnick, O. Francke, 1♀ (AMNH). **Palena:** 25–27 km N. of Chaitén, 17.I.1986, N. Platnick, P. Goloboff, T. Schuh, 2♂, 6♀ (AMNH); 70 km S. of Chaitén, 16.I.1986, N. Platnick, P. Goloboff, T. Schuh, 5♂, 35♀ (AMNH); vicinity of Chaitén, 5–7.XII.1981, N. Platnick, T. Schuh, 1♀ (AMNH); same data except 7.XII.1981, 12♂, 29♀ (AMNH$^{\text{SEM}♂♀}$).

Remarks. *Tricellina gertschi* is the only species in the tribe Micropholcommatini known to occur in Chile, where it is relatively widespread (Fig. 212). Forster and Platnick (1981) discussed the similarities of *T. gertschi* to a number of Australasian micropholcommatid taxa, suggesting a possible close relationship to *Raveniella hickmani*, *R. luteola* and *Guiniella tropica* (then all placed in *Textricella*). The original naming of '*Tricella*' (a contraction of '*Textricella*') and the associated discussion on relationships were based on the assumption that *T. gertschi* was closely related to *Textricella parva*

Hickman (=*Eterosonycha alpina* Butler) and other taxa now in the Textricellini; an erroneous interpretation based largely on a homoplastic morphology of the abdominal respiratory system. *Tricellina gertschi* was also described by Forster and Platnick (1981: 266) as a likely haplogyne spider, with "paired spherical receptacula, of which one is membranous"; an interpretation which resulted in the inclusion of *T. gertschi* in a cladistic analysis of haplogyne taxa by Platnick et al. (1991). The second "membranous" receptaculum identified by Forster and Platnick (1981) is actually a distal series of coiled, membranous insemination ducts surrounding a central, posteriorly-directed fertilisation duct – a morphology shared with species of *Austropholcomma* (Fig. 33). *Tricellina* is now known to be a typical, entelegyne micropholcommatine taxon, closely related to *Austropholcomma* from Australia.

Tribe Textricellini Hickman, 1945, new rank

Textricellidae Hickman, 1945: 136. Type genus *Textricella* Hickman, 1945 (=*Eterosonycha* Butler, 1932).

Diagnosis. Species of Textricellini can be distinguished from all other Micropholcommatidae by the presence of a modified, enlarged and sinuous flagelliform gland spigot on the posterior lateral spinnerets (the 'textricellin FL gland spigot') (Fig. 46), usually visible only with a scanning electron microscope. With the exception of the basal species *Tinytrella pusilla* (Forster, 1959), species of Textricellini can also be distinguished from all other Micropholcommatidae by the presence of two or three peg teeth on the male cheliceral promargin (Figs 47A–B), and the presence of ornate, ridged cuticular sculpturing on the male pedipalpal patella (Figs 47C–D). The tribe can be further distinguished from all other Micropholcommatinae by the absence in all but a few taxa of a dorsal scute on both the male and female abdomen (Figs 76A–B). The 'textricellin somatic gestalt' (see Remarks, below) is also extremely distinctive and useful for identification.

Distribution. South-eastern and south-western mainland Australia, Tasmania, Lord Howe Island, Papua New Guinea, New Zealand and southern Chile. This distribution is largely congruent with a vicariant, Gondwanan biogeography (Fig. 217) (see Biogeography, below).

Included genera. *Eterosonycha* Butler (Fig. 7E) and the nine new genera *Algidiella* (Fig. 7K), *Eperiella* (Fig. 7J), *Epigastrina* (Fig. 7F), *Guiniella* (Fig. 72), *Normplatnicka* (Fig. 7I), *Raveniella* (Fig. 7G), *Rayforstia* (Fig. 7H), *Taliniella* (Fig. 7L) and *Tinytrella* (Fig. 7M).

Remarks. While difficult to quantify empirically, species of Textricellini possess an extremely distinctive overall somatic morphology, or 'gestalt', unique among Micropholcommatidae (see Figs 7E–M). This textricellin somatic gestalt was recognised in the traditional generic concept of '*Textricella*' (see Forster 1959) and the old family concept of Textricellidae (Platnick and Forster 1986), and is often so obvious that an experienced arachnologist can identify a spider as a textricellin without the use of a microscope.

Genus *Eterosonycha* Butler, 1932

Eterosonycha Butler, 1932: 114. Type species by monotypy *Eterosonycha alpina* Butler, 1932. Roewer, 1942: 357. Bonnet, 1956: 1803. Transferred from Zodariidae to Textricellidae by Davies, 1985: 113. Platnick, 2009.

Textricella Hickman, 1945: 136. Type species by original designation *Textricella parva* Hickman, 1945. Forster, 1955: 200. Forster, 1959: 274. Forster, 1964: 95. Brignoli, 1983: 375, 695. Davies, 1985: 113. Platnick, 2009. **syn. n.** (but see also Davies, 1985: 113).

Affinities. The genus *Eterosonycha* appears to be the sister-lineage to *Epigastrina* from Tasmania (Fig. 4).

Diagnosis. Species of *Eterosonycha* can be distinguished from all other Textricellini by the presence of a modified, enlarged tibia on the male pedipalp with pronounced posterior projections (Figs 60F–G). *Eterosonycha* is also one of only three textricellin genera (including *Epigastrina*, *Guiniella*) with males that possess a dorsal scute on the abdomen (Fig. 7E), a large conductor on the pedipalp (Figs 6C–D) and a distal, prolateral tibial macroseta on leg I (Figs 59C–D). Species of *Eterosonycha* can be further distinguished from these similar taxa by the presence of a fleshy distal conductor with two divergent processes (Figs 53A, 60C).

Description. Very small, entelegyne Araneoidea: total length 0.80 to 1.20. *Cephalothorax*: Carapace without glandular depressions above maxillae; cuticle without glandular pits (Fig. 56A). Eight eyes present on anterior margin of pars cephalica (Fig. 52C); AME smallest. Chelicerae with bulging anterior projections in males; promargin with inner denticles, true teeth, a pair of fused setal sockets adjacent to base of fang and three peg teeth in males (Fig. 57H); ectal stridulatory ridges present in males (Fig. 59A).

Legs and female pedipalp: Legs three-clawed (Fig. 58F), covered with smooth or serrate hair-like setae; tibia I of males with distal, prolateral macroseta (Figs 59C–D). Trichobothria present on legs; tibiae each with three (legs I–III) or four (leg IV) trichobothria; metatarsi (legs I–III) each with single trichobothrium (Fig. 58C). Female pedipalp entire, five-segmented; claw absent (Fig. 57E).

Abdomen: Abdomen oval; anterior sclerite present around epigastric region and petiole; large dorsal scute present on males (Fig. 54A), absent on females (Fig. 54B); posterior sclerotic ring surrounding spinnerets weakly-sclerotised. Six spinnerets situated posterior to fleshy colulus (Fig. 71A); PMS of *E. alpina* with single medial AC gland spigot; PLS of *E. alpina* with complete triad, including enlarged, sinuous FL gland spigot. Anterior tracheal system with multiple anteriorly-directed tracheae (Fig. 51B); posterior tracheal spiracle absent.

Genitalia: Male pedipalp (Fig. 60) relatively large; trochanter with modified prolateral seta forming stridulatory 'tooth'; patella distally-expanded, with retrolaterally-directed, hooked ligulate retrolateral apophysis and ornate, ridged cuticular microstructure; tibia modified, enlarged, with one or more posterior processes; tegulum large, bulging posteriorly, with excavate evaginated tegular ridge and large, fleshy distal conductor with two divergent processes; embolus exposed, short (length < 5× width) and spur-like. Female genitalia (Fig. 51) heavily sclerotised externally, with pair of separate, 'twisted' anterior spermathecae; insemination ducts heavily sclerotised, curving anteriorly; fertilisation ducts filiform.

Distribution. South-eastern Australia (Tasmania, Victoria and New South Wales), north to approximately Sydney (Fig. 217).

Composition. Two described species, *Eterosonycha alpina* Butler, 1932, *E. complexa* (Forster, 1959) and the two new species *E. aquilina* and *E. ocellata*. Two undescribed species, similar to *E. aquilina* and *E. complexa*, are known from Victoria.

Nomenclatural remarks. The genus *Eterosonycha* was originally described by Butler (1932) for the species *E. alpina*, from the Kosciusko National Park, New South Wales. The original description and illustrations of *E. alpina* were, unfortunately, woefully inadequate (Butler described three Micropholcommatidae in that paper, including two congeneric species of *Micropholcomma*, in two different families), and the true identity of this species was understandably missed by Hickman (1945) and subsequent authors. Thus, the family Textricellidae and the genus *Textricella* were described over a decade later by Hickman (1945) for *T. parva* (the type species) and two additional Tasmanian species, even though *T. parva* and *E. alpina* were conspecific taxa. Davies (1985) first recognised *Eterosonycha* as a textricellid similar to *T. parva*, suggesting then that the genus name *Eterosonycha* would have priority over the name *Textricella*. *Eterosonycha alpina* is hereby formally recognised as a senior synonym of *T. parva*, and *Eterosonycha* as a senior generic synonym of *Textricella*. However, the family-group name Textricellini is retained, as required under Article 40 of the International Code of Zoological Nomenclature (International Commission on Zoological Nomenclature 1999).

Eterosonycha alpina Butler, 1932

Figs 11D, 48–50, 51A–B, 56–60, 71A, 222

Eterosonycha alpina Butler, 1932: 115, pl. 2, figs 7–13. Roewer, 1942: 357. Bonnet, 1956: 1803. Davies, 1985: 113. Platnick, 2009.

Textricella parva Hickman, 1945: 137, figs 1–5, 16. Forster, 1959: 285, fig. 1. Forster & Platnick, 1981: 266, figs 16–17, 23–24. Brignoli, 1983: 375, 695. Davies, 1985: 114. Platnick, 2009. **syn. n.**

Type material (of *E. alpina*). Syntype male and slide-mounted female: Mount Kosciusko, New South Wales, Australia, in sphagnum moss, I.1931 (♂)/XI.1923 (♀), C. Oke (NMV K099/K098).

Type material (of *T. parva*). Syntype male and female: The Cascades, Mount Wellington, Tasmania, Australia, from moss, 26.VI.1943 (AMS KS6694).

Selected material examined. AUSTRALIA: Tasmania: Mt Wellington, Lenah Valley, 27.IV.2007, M. Rix, 6♂, 7♀ (WAM T77729); Mt Wellington, Woods Track to O'Grady's Falls, 28.IV.2006, M. Rix, L. Boutin, 26♂, 49♀ (WAM T94105$^{\text{SEM♂♀}}$); same data, 1♂ (WAM T80030$^{\text{DNA-MPE}}$); Cuckoo Falls walk, near Scottsdale, 26.IV.2006, M. Rix, 20♂, 36♀ (WAM T94106).

Remarks. *Eterosonycha alpina* is a distinctive, relatively widespread species, found throughout Tasmania and on the Australian mainland north to at least southern New South Wales. Females possess an unmistakeable external epigyne (Fig. 48D) – a characteristic shared by most species of *Eterosonycha*. Specimens of this species can be extremely abundant in mossy habitats in Tasmania, and *E. alpina* is the dominant microspider in moss on Mount Wellington, near Hobart, Tasmania (an observation also noted by Hickman 1945).

Eterosonycha aquilina Rix & Harvey, sp. n.

urn:lsid:zoobank.org:act:5E16DE9E-BCF3-4C19-9ABF-882338D20396

Figs 7E, 51C, 52–53

Type material. Holotype male: Yarra Ranges National Park, Mount Donna Buang, Victoria, Australia, Mountain Ash/*Nothofagus*/fern forest, 37°42'36"S, 145°40'57"E, 19.IV.2006, M. Rix (NMV K10766).

Paratypes: Allotype female, same data as holotype (NMV K10767); 4 males and 10 females, same data as holotype (WAM T94446).

Other material examined. AUSTRALIA: Victoria: Acheron Gap, 16 km N. of Warburton, 750 m, *Nothofagus* forest Berlese, 28–30.IV.1978, S. & J. Peck, 1♂ (AMNH); Alfred National Park, 200 m, temperate rainforest Berlese, bark and rotten logs, 21.V.1978, S. & J. Peck, 2♂, 4♀ (AMNH); Coranderrk Reserve, SE. of Healesville, 240 m, Berlese, forest litter, 13.I.1980, A. Newton, M. Thayer, 1♀ (AMNH); Otway Ranges, Beauchamp Falls, sifting moss, 38°39'07"S, 143°36'23"E, 24.IV.2006, M. Rix, 1♂, 1♀ (WAM T94444); Great Otway National Park, track to Cora Lynn Cascades, near Lorne, sifting moss, 38°30'58"S, 143°55'45"E, 22.IV.2006, M. Rix, 4♂, 10♀ (WAM T94445); Kalista, Sherbrooke Forest Park, 400–500 m, wet sclerophyll forest Berlese of forest litter, 15.I.1980, A. Newton, M. Thayer, 1♂, 1♀ (AMNH); Tarra-Bulga National Park, 550 m, Berlese, fungi on logs, 17.V.1978, S. & J. Peck, 6♀ (AMNH); 12 km E. of Warburton, 215 m, *Eucalyptus* forest, dry moss on logs, 12–16.I.1980, A. Newton, M. Thayer, 3♀ (AMNH); Warburton, 500 m, *Nothofagus* litter, 30.IV.1978, S. & J. Peck, 1♂ (MCZ); Warburton, Cement Creek, 670 m, *Nothofagus cunninghamii* forest, Berlese, forest litter, 10–17.I.1980, A. Newton, M. Thayer, 1♂ (AMNH); same data, 1♀ (AMNH); Wingam Inlet National Park, Berlese, fungi and eucalypt bark, 23.V.1978, S. & J. Peck, 1♂ (AMNH). **New South Wales:** Kosciusko National Park, Leather Barrel Creek, 1000 m, frass under bark, wet sclerophyll, 21.IV.1978, S. & J. Peck (AMNH). **Tasmania:** 16 km NNW. of Bicheno, Douglas River, wet forest litter, 41°46'S, 148°14'E, 3.XI.1985, L. Hill, 2♀ (QMB S6578); Cuckoo Falls, near Scottsdale, sifting moss, 41°14'13"S, 147°36'49"E, 26.IV.2006, M. Rix, 1♂, 10♀ (WAM T94441); Mount Barrow Road, 890 m, *Nothofagus* Berlese, forest litter, 15–17.II.1980, A. Newton, M. Thayer, 2♀ (AMNH); 4 km S. of Weldborough, 460 m, *Nothofagus* forest Berlese, 12–14.II.1980, A. Newton, M. Thayer, 1♀ (AMNH); same data, 1♂ (AMNH).

Etymology. The specific epithet is derived from the Latin 'aquilinus', meaning 'of the eagle' (Brown 1956), and refers to the distinctive, eagle-like shape of the female epigyne of this species.

Diagnosis. Males of *Eterosonycha aquilina* can be distinguished from all other described congeners by the shape of the distal conductor, which has a prominent, retrolaterally-directed process (Fig. 53A). Females can be distinguished from all other described congeners by the distinctive, 'eagle-like' shape of the external epigyne (Fig. 52D).

Description. *Holotype male*: Total length 0.98. Carapace 0.47 long, 0.40 wide. Abdomen 0.66 long, 0.48 wide. Leg I femur 0.35. Cephalothorax, abdominal sclerites, legs tan-yellow; abdomen with chequered dark-olive and tan-yellow pattern laterally and ventrally. Carapace raised anteriorly, not fused to sternum except around petiole; dorsal surface of pars cephalica slightly convex in lateral view. Eight eyes present on anterior margin of pars cephalica; AME 0.6x diameter of ALE; PME separated by half their own diameter. Chelicerae each with large, bulging anterior projection; promargin with three peg teeth. Legs relatively short (leg I femur-carapace ratio 0.74); distal, prolateral macroseta present on tibia I. Abdomen oval, covered with hair-like setae; dorsal scute large, covering most of dorsal surface of abdomen; lateral sclerotic strips absent. Pedipalpal patella with retrolaterally-directed, hooked lRPA, divergent distal apophysis and expanded distal region with ornate, ridged cuticular microstructure; tibia enlarged, with pointed posterior process; tegulum large, bulging posteriorly, with excavate ETR and large, divergent, fleshy distal conductor bearing prominent, retrolaterally-directed process; embolus short (length < 5× width), spur-like, situated adjacent to base of conductor (Fig. 53).

Allotype female: Total length 1.09. Carapace 0.49 long, 0.39 wide. Abdomen 0.74 long, 0.57 wide. Leg I femur 0.37. Cephalothorax, abdominal sclerites, legs tan-yellow; abdomen olive brown dorsally, with chequered dark-olive and tan-yellow pattern laterally and ventrally. Carapace raised anteriorly, not fused to sternum except around petiole; dorsal surface of pars cephalica slightly convex in lateral view. Eight eyes present on anterior margin of pars cephalica; AME 0.6x diameter of ALE; PME separated by slightly less than their own diameter. Chelicerae without bulging anterior projections; promargin without peg teeth. Legs relatively short (leg I femur-carapace ratio 0.76); macrosetae absent. Abdomen oval, covered with hair-like setae; dorsal scute and lateral sclerotic strips absent. Pedipalp entire, five-segmented. Epigyne heavily sclerotised externally, with distinctive 'eagle-shaped' morphology (Fig. 52D); spermathecae looped and twisted; insemination ducts curved and looped anteriorly; fertilisation ducts filiform (Fig. 51C).

Distribution. Known from south-eastern Australia, in southern New South Wales, Victoria and Tasmania.

Remarks. *Eterosonycha aquilina* is among the most distinctive of any Australian Textricellini, with an unmistakeable external epigyne (Fig. 52D) and male pedipalp (Fig. 53) morphology. It is common in moss and leaf litter in south-eastern Australia, and is one of the dominant micro-spiders in moss on Mount Donna Buang, in the Yarra Ranges of Victoria (M. Rix, pers. obs.). It can be found in sympatry with *E. alpina* at several localities (e.g. at Cuckoo Falls, Tasmania).

Eterosonycha complexa (Forster, 1959), comb. n.

Textricella complexa Forster, 1959: 277, figs 4–9 (holotype male from Royal National Park, Sydney, New South Wales, Australia, in QMB, not examined). Brignoli, 1983: 375. Davies, 1985: 113. Platnick, 2009.

Remarks. *Eterosonycha complexa* is the northern-most species of the genus *Eterosonycha*, known from just south of Sydney, New South Wales. The male pedipalp is highly apomorphic and extremely complex (hence the name) (see Forster 1959, figs 4–5).

Eterosonycha ocellata Rix & Harvey, sp. n.

urn:lsid:zoobank.org:act:46E2827A-B315-4C35-855E-705A20E6B220
Figs 51D, 54–55

Type material. Holotype male: Great Otway National Park, Maits Rest, 10 km W. of Apollo Bay, Victoria, Australia, sifting moss from trunk of *Nothofagus cunninghamii*, 38°45'19"S, 143°33'18"E, 23.IV.2006, M. Rix (NMV K10768).

Paratypes: Allotype female, same data as holotype (NMV K10769); 1 male, same data as holotype (WAM T94443).

Etymology. The specific epithet is derived from the Latin 'ocellatus', meaning 'having little eyes' (Brown 1956), and refers to the small eyes of this species.

Diagnosis. Males of *Eterosonycha ocellata* can be distinguished from all other described congeners by the shape of the distal conductor, which has a tubular prolateral process and bifurcate retrolateral process (Fig. 55). Females can be distinguished from all other described congeners by the distinctive shape of the external epigyne (Fig. 54D). Both sexes can also be recognised by the relatively small eyes (Fig. 54C).

Description. *Holotype male*: Total length 0.83. Carapace 0.42 long, 0.35 wide. Abdomen 0.57 long, 0.41 wide. Leg I femur 0.33. Body colour pale tan-yellow, carapace slightly darker. Carapace raised anteriorly, not fused to sternum except around petiole; dorsal surface of pars cephalica slightly convex in lateral view. Eight eyes present on anterior margin of pars cephalica; AME 0.5x diameter of ALE; PME separated by slightly more than their own diameter. Chelicerae each with large, bulging anterior projection; promargin with three peg teeth. Legs relatively short (leg I femur-carapace ratio 0.79); distal, prolateral macroseta present on tibia I. Abdomen oval, covered with hair-like setae; dorsal scute large, covering most of dorsal surface of abdomen; lateral sclerotic strips absent. Pedipalpal patella with retrolaterally-directed, hooked lRPA and expanded distal region with ornate, ridged cuticular microstructure; tibia enlarged, with pronounced, curved posterior process; tegulum large, bulging posteriorly, with excavate ETR and large, divergent, fleshy distal conductor bearing tubular prolateral process and bifurcate retrolateral process; embolus short (length < 5× width), spur-like, situated adjacent to base of conductor (Fig. 55).

Allotype female: Total length 1.00. Carapace 0.47 long, 0.33 wide. Abdomen 0.62 long, 0.46 wide. Leg I femur 0.35. Cephalothorax, abdominal sclerites, legs tan-yellow; abdomen dark olive brown dorsally, with chequered dark-olive and tan-yellow pattern laterally and ventrally. Carapace raised anteriorly, not fused to sternum except around petiole; dorsal surface of pars cephalica slightly convex in lateral view. Eight eyes present on anterior margin of pars cephalica; AME 0.5x diameter of ALE; PME separated by their own diameter. Chelicerae without bulging anterior projections; promargin without peg teeth. Legs relatively short (leg I femur-carapace ratio 0.74); macrosetae absent. Abdomen oval, covered with hair-like setae; dorsal scute and lateral sclerotic strips absent. Pedipalp entire, five-segmented. Epigyne heavily sclerotised externally, with distinctive morphology (Fig. 54D); spermathecae looped and twisted; insemination ducts broad, curved; fertilisation ducts filiform (Fig. 51D).

Distribution. Known only from the Otway Ranges of Victoria.

Remarks. *Eterosonycha ocellata* is an unusual species of *Eterosonycha*, currently known only from the Otway Ranges of Victoria. The type specimens were found living together in moss on the trunk of a large Southern Beech (*Nothofagus cunninghamii*) tree, in dark, wet, cool-temperate rainforest at Maits Rest.

Epigastrina Rix & Harvey, gen. n.

urn:lsid:zoobank.org:act:6EC32285-8591-464F-8A7D-3C95D93EC3EE

Type species. *Textricella fulva* Hickman, 1945.

Etymology. The generic name is derived from the morphological adjective 'epigastric', and refers to the remarkable morphology of the epigastric region of females of this genus. The gender is feminine.

Affinities. The genus *Epigastrina* appears to be the sister-lineage to *Eterosonycha* from south-eastern Australia (Fig. 4).

Diagnosis. Species of *Epigastrina* can be distinguished from all other Textricellini by the presence of a very large, fleshy medial conductor on the male pedipalp (Figs 62, 66, 70A–B), and the presence of a pronounced, wedge-shaped epigastric plate on the female epigyne (Figs 63A, 67D), which encloses parallel, filiform insemination and fertilisation ducts (Fig. 63B). Other diagnostic characters include the presence of a dorsal scute on the male abdomen (Fig. 67C), and the presence of a distal, prolateral tibial macroseta on the leg I of males (Figs 62A, 67F).

Description. Very small, entelegyne Araneoidea: total length 1.10 to 1.20. *Cephalothorax*: Carapace without glandular depressions above maxillae; cuticle without glandular pits (Fig. 67E). Eight (Fig. 61C) or (in troglomorphic taxa) fewer eyes (Figs 64B, 65C) present on anterior margin of pars cephalica; AME, if present, smallest. Chelicerae with bulging anterior projections in males; promargin with inner denticles, true teeth, a pair of fused setal sockets adjacent to base of fang and three peg teeth in males (Fig. 68F); ectal stridulatory ridges present in males.

Legs and female pedipalp: Legs three-clawed (Fig. 69D), covered with smooth or serrate hair-like setae; tibia I of males with distal, prolateral macroseta (Figs 62A, 67F). Trichobothria present on legs; tibiae each with three (legs I–III) or four (leg IV) trichobothria (Fig. 69C); metatarsi (legs I–III) each with single trichobothrium. Female pedipalp entire, five-segmented; claw absent (Figs 68C–D).

Abdomen: Abdomen oval; anterior sclerite present around epigastric region and petiole; large dorsal scute present on males (Fig. 67C), absent on females (Fig. 61B); posterior sclerotic ring surrounding spinnerets weakly-sclerotised. Six spinnerets situated posterior to fleshy colulus (Figs 71B–D); PMS of *E. fulva* with single medial AC gland spigot; PLS of *E. fulva* with complete triad, including enlarged, sinuous FL gland spigot. Anterior tracheal system with multiple anteriorly-directed tracheae; posterior tracheal spiracle absent.

Genitalia: Male pedipalp (Fig. 70) relatively large; trochanter with modified prolateral seta forming stridulatory 'tooth'; patella with retrolaterally-directed, hooked ligulate retrolateral apophysis and ornate, ridged cuticular microstructure; tegulum large, bulging posteriorly, with excavate evaginated tegular ridge and extremely large, complex, fleshy medial conductor with rod-like prolateral process and massive, fleshy retrolateral process; embolus exposed, short (length < 5× width), spur-like, projecting from between prolateral and retrolateral processes of conductor. Female genitalia (Fig. 63) heavily sclerotised externally, with pronounced, excavate, wedge-shaped epigastric plate surrounding epigynal atrium; insemination and fertilisation ducts parallel, filiform, enclosed within elevated margins of epigastric plate; ducts leading internally to pair of separate, globular, 'bean-shaped' anterior spermathecae.

Distribution. Currently known only from Tasmania (Fig. 217), although three female specimens of an undescribed species that probably belong in this genus have been collected from Cardinia Reservoir, near Emerald, Victoria (WAM T94094). A single female specimen from Jarrahdale, south-western Western Australia (WAM T48210) may also belong in this genus.

Composition. *Epigastrina fulva* (Hickman, 1945) and the two new species *E. loongana* and *E. typhlops*. Two possible undescribed species (see above) are known from Victoria and south-western Western Australia.

Epigastrina fulva **(Hickman, 1945), comb. n.**

Figs 7F, 61–62, 63A–C, 67–70, 71B–D

Textricella fulva Hickman, 1945: 140, figs 6–10. Forster, 1959: 275, fig. 2. Brignoli, 1983: 375. Davies, 1985: 113. Platnick, 2009.

Type material. Syntype male and female: Mount Wellington, Tasmania, Australia, near 'The Springs', from moss, 2000 ft, 19.XII.1944 (♂)/25.VIII.1943 (♀) (AMS KS6692).

Selected material examined. AUSTRALIA: Tasmania: Mount Wellington, Woods Track to O'Grady's Falls, 28.IV.2006, M. Rix, L. Boutin, 1♂, 6♀ (WAM T77728$^{\text{SEM♀}}$); same data, 1♂ (WAM T80027$^{\text{DNA-MPE}}$); Hobart, Bett's Gully, 3.IX.1978, P. McQuillan, 3♂ (WAM T94145$^{\text{SEM♂}}$).

Remarks. *Epigastrina fulva* is relatively common and widespread in Tasmania, where specimens can be found in moss and leaf litter. The species is immediately recognisable by the remarkable shape of the female epigyne (Fig. 63A) and male pedipalp (Fig. 62), with similar species known only from caves.

Epigastrina loongana **Rix & Harvey, sp. n.**

urn:lsid:zoobank.org:act:AEFBBEA7-2BF1-45B1-A755-FFD3F153ED95

Figs 63D, 64, 213

Type material. Holotype female: *Mostyn Hardy Cave* (Old Tourist Cave) (L-4), Loongana karst, Tasmania, Australia, dark zone, 41°25'S, 146°00'E, 22.II.1969, A. & T. Goede (AMS KS72935).

Etymology. The specific epithet is a noun in apposition, taken from the type locality.

Diagnosis. Females of *Epigastrina loongana* can be distinguished from all other described congeners by the presence of only six reduced eyes (Fig. 64B). Males are unknown.

Description. *Holotype female*: Total length 1.10. Carapace 0.49 long, 0.40 wide. Abdomen 0.69 long, 0.49 wide. Leg I femur 0.41. Cephalothorax, legs very pale tan-yellow; abdomen pale cream, with darker tan-yellow epigyne. Carapace raised anteriorly, not fused to sternum except around petiole; dorsal surface of pars cephalica slightly convex in lateral view. Six reduced eyes present on anterior margin of pars cephalica; AME absent; PME separated by twice their own diameter. Chelicerae without bulging anterior projections; promargin without peg teeth. Legs relatively short (leg I femur-carapace ratio 0.84); macrosetae absent. Abdomen oval, covered with hair-like setae; dorsal scute and lateral sclerotic strips absent. Pedipalp entire, five-segmented. Epigyne heavily sclerotised externally, with distinctive, wedge-shaped epigastric plate (Fig. 64C); spermathecae globular, connecting to parallel, filiform insemination and fertilisation ducts (Fig. 63D).

Distribution. Known only from *Mostyn Hardy Cave* in the Loongana karst of north-central Tasmania (Fig. 213).

Remarks. *Epigastrina loongana* is a troglomorphic species with reduced eyes, otherwise very similar to *E. fulva* and *E. typhlops*.

Epigastrina typhlops Rix & Harvey, sp. n.

urn:lsid:zoobank.org:act:39623469-D1A5-4EDD-974A-1F3AD909EBC8
Figs 63E, 65–66, 213

Type material. Holotype male: *Kubla Khan* (MC-1), Mole Creek karst, Tasmania, Australia, from sheet web with vertical stay lines in cracks of wall above pool, near lower entrance (dark zone), 41°33'12"S, 146°16'52"E, 24.X.1990, S. Eberhard (AMS KS29793).

Paratypes: Allotype female, same data as holotype (QVM 13: 12765).

Etymology. The specific epithet is derived from the Greek 'typhlos', meaning 'blind' (Brown 1956), and refers to the absence of eyes in this species.

Diagnosis. Males and females of *Epigastrina typhlops* can be distinguished from all other described congeners by the complete absence of eyes (Fig. 65C).

Description. *Holotype male*: Total length 1.18. Carapace 0.53 long, 0.39 wide. Abdomen 0.70 long, 0.47 wide. Leg I femur 0.48. Cephalothorax, legs very pale tan-yellow; abdomen pale cream. Carapace raised anteriorly, not fused to sternum except around petiole; dorsal surface of pars cephalica slightly convex in lateral view. Eyes absent. Chelicerae each with large, bulging anterior projection; promargin with three peg teeth. Legs relatively short (leg I femur-carapace ratio 0.91); distal, prolateral macroseta present on tibia I. Abdomen oval, covered with hair-like setae; dorsal scute large, indistinct, covering most of dorsal surface of abdomen; lateral sclerotic strips absent. Pedipalpal patella with retrolaterally-directed, hooked lRPA and ornate, ridged cuticular microstructure; tegulum large, bulging posteriorly, with excavate ETR and very large, divergent, fleshy medial conductor bearing rod-like prolateral process and massive, fleshy retrolateral process; embolus short (length < 5× width), spur-like, distally hooked, situated between divergent processes of conductor (Fig. 66).

Allotype female: Total length 1.12. Carapace 0.49 long, 0.40 wide. Abdomen 0.76 long, 0.55 wide. Leg I femur 0.43. Cephalothorax, legs very pale tan-yellow; abdomen pale cream, with darker tan-yellow epigyne. Carapace raised anteriorly, not fused to sternum except around petiole; dorsal surface of pars cephalica slightly convex in lateral view. Eyes absent. Chelicerae without bulging anterior projections; promargin without peg teeth. Legs relatively short (leg I femur-carapace ratio 0.88); macrosetae absent. Abdomen oval, covered with hair-like setae; dorsal scute and lateral sclerotic strips absent. Pedipalp entire, five-segmented. Epigyne heavily sclerotised externally, with distinctive, wedge-shaped epigastric plate (Fig. 65D); spermathecae globular, connecting to parallel, filiform insemination and fertilisation ducts (Fig. 63E).

Distribution. Known only from the cave *Kubla Khan* in the Mole Creek karst of north-central Tasmania (Fig. 213).

Remarks. *Epigastrina typhlops* is a highly troglomorphic and completely blind species, otherwise very similar to *E. fulva* and *E. loongana*.

Genus *Guiniella* Rix & Harvey, gen. n.

urn:lsid:zoobank.org:act:AC61BC3A-E16A-4A98-A51B-17D783E5D82D

Type species. *Textricella tropica* Forster, 1959.

Etymology. The generic name is derived from 'Papua New Guinea', and refers to the type locality of the type species in this genus. The gender is feminine.

Affinities. The genus *Guiniella* appears to be the sister-lineage to a clade including the genera *Eterosonycha* and *Epigastrina* (Fig. 4).

Diagnosis. *Guiniella tropica* can be distinguished from all other Textricellini by the presence of a unique, very long, distally-coiled embolus and supporting conductor, the latter of which straddles the embolus along the entire prolateral margin of the bulb (Fig. 73). Other diagnostic characters include the presence of a dorsal scute on the male abdomen, and the presence of a distal, prolateral tibial macroseta on the leg I of males.

Description. Very small, entelegyne Araneoidea: total length 1.00 to 1.10. *Cephalothorax*: Carapace without glandular depressions above maxillae; cuticle without glandular pits. Eight eyes present on anterior margin of pars cephalica (Figs 72B–C); AME smallest. Chelicerae with bulging anterior projections in males; promargin with true teeth, a pair of fused setal sockets adjacent to base of fang and three peg teeth in males; ectal stridulatory ridges present in males.

Legs and female pedipalp: Legs three-clawed, covered with smooth or serrate hair-like setae; tibia I of males with distal, prolateral macroseta. Trichobothria present on legs; tibiae each with three (legs I–III) or four (leg IV) trichobothria; metatarsi (legs I–III) each with single trichobothrium. Female pedipalp entire, five-segmented; claw absent.

Abdomen: Abdomen oval; anterior sclerite present around epigastric region and petiole; large dorsal scute present on males, absent on females; posterior sclerotic ring surrounding spinnerets weakly-sclerotised. Six spinnerets situated posterior to fleshy colulus; ALS largest, PMS smallest. Anterior tracheal system with multiple anteriorly-directed tracheae; posterior tracheal spiracle absent.

Genitalia: Male pedipalp (Fig. 73) relatively large; trochanter with modified prolateral seta forming stridulatory 'tooth'; patella with retrolaterally-directed, hooked ligulate retrolateral apophysis, rounded prolateral apophysis, pointed distal apophysis and ornate, ridged cuticular microstructure; tegulum large, with excavate evaginated tegular ridge and long, strap-like conductor which extends around entire prolateral margin of bulb; embolus exposed, very long (length >> 5× width), looping once around margin of tegulum before straddling prolateral conductor and coiling again distally. Female genitalia damaged in allotype specimen and difficult to determine from original description; spermathecae apparently large, bulbous (see Forster 1959, fig. 61); insemination ducts almost certainly coiled around receptacula.

Distribution. Known only from montane eastern Papua New Guinea (Fig. 217), near Daulo Pass and Mount Otto, in the Eastern Highlands province.

Composition. Only the type species *Guiniella tropica* (Forster, 1959).

Guiniella tropica (Forster, 1959), comb. n.

Figs 72–73

Textricella tropica Forster, 1959: 295, figs 58–63, 139. Forster & Platnick, 1981: 266, fig. 13. Brignoli, 1983: 375, 695. Platnick, 2009.

Type material. Holotype male: Daulo Pass, Eastern Highlands, Papua New Guinea, from moss, rainforest, 8000 ft, 22.VIII.1956, T. Woodward (QMB S111).

Paratypes: Allotype female, same data as holotype (QMB S111).

Remarks. The type specimens of this species are in very poor condition (see Fig. 72), especially the paratype female, in which the epigyne has been damaged due to partial dissection. Daulo Pass (the type locality) and Mount Otto (recorded in Forster 1959) are situated in mountainous regions of Papua New Guinea's Eastern Highlands, at altitudes of over 2,200 metres.

Genus *Raveniella* Rix & Harvey, gen. n.

urn:lsid:zoobank.org:act:988FBFCB-CD72-4F87-A824-F401B8D11BBF

Type species. *Textricella luteola* Hickman, 1945.

Etymology. The generic name is a contraction of 'Raven' plus '*Textricella*'. It is named in honour of Robert J. Raven of the Queensland Museum (Brisbane) – friend, colleague and mentor – for his extraordinary contributions to Arachnology, and his invaluable friendship and support of M. Rix and M. Harvey over many years. The gender is feminine.

Affinities. The genus *Raveniella* appears to be the sister-lineage to a clade including the genera *Guiniella*, *Eterosonycha* and *Epigastrina* (Fig. 4).

Diagnosis. Species of *Raveniella* can be distinguished from all other Textricellini by the presence of distinctive, looped embolus on the male pedipalp; this embolus interacts distally with the pedipalpal patella and abuts three unique, posteriorly-directed cymbial macrosetae (Figs 73C, 77, 82A–G). Other diagnostic characters include the presence of complex, membranous insemination ducts which loop and coil around the receptacula (Fig. 75), the presence of a distal, prolateral tibial macroseta on the leg I of males (Figs 76C, 81A–B), and the presence of filiform fertilisation ducts (Fig. 75).

Description. Very small, entelegyne Araneoidea: total length 0.70 to 1.30. *Cephalothorax*: Carapace without glandular depressions above maxillae; cuticle without glandular pits (Figs 78D–F). Eight eyes present on anterior margin of pars cephalica (Fig. 76C); AME smallest. Chelicerae with bulging anterior projections in males; promargin excavate, with inner denticles, true teeth, a pair of fused setal sockets adjacent to base of fang and two or three peg teeth in males (Figs 79F–H); ectal stridulatory ridges present in males (Figs 78E–F, 81C).

Legs and female pedipalp: Legs three-clawed (Figs 80E–F), covered with smooth or serrate hair-like setae; tibia I of males with distal, prolateral macroseta (Figs 76C, 81A–B). Trichobothria present on legs; tibiae each with three (legs I–III) or four (leg IV) trichobothria; metatarsi (legs I–III) each with single trichobothrium (Fig. 80D). Female pedipalp entire, five-segmented; claw absent (Figs 79C–D).

Abdomen: Abdomen oval; anterior sclerite present around epigastric region and petiole; dorsal scute absent on males and females (Figs 76A–B); posterior sclerotic ring surrounding spinnerets weakly-sclerotised. Six spinnerets situated posterior to fleshy colulus (Fig. 83); PMS of *R. luteola* with single medial AC gland spigot; PLS of *R. luteola* with complete triad, including enlarged, sinuous FL gland spigot. Anterior tracheal system with multiple anteriorly-directed tracheae (Fig. 75B); posterior tracheal spiracle absent.

Genitalia: Male pedipalp (Fig. 82) relatively large; trochanter with modified prolateral seta forming stridulatory 'tooth'; patella with retrolaterally-directed, hooked ligulate retrolateral apophysis and ornate, ridged cuticular microstructure; cymbium with three prominent, parallel macrosetae (cymbial macrosetae) situated on retro-posterior margin; tegulum smooth, with curved, marginal evaginated tegular ridge; embolus exposed, very long (length >> 5× width), encircling bulb once before extending posteriorly to abut cymbium, posterior cymbial macrosetae and distal patella; embolus sometimes with additional curls or coils distally. Female genitalia (Fig. 75) with pair of separate, variable receptacula, each with proximal portion, globular spermatheca and distal extension leading to fertilisation duct; insemination ducts membranous and transparent, with complex looped and coiled trajectory around receptacula; each insemination duct consisting of lateral opening, proximal loop, one or two anterior loops, diagonal duct and variable distal portion, entering receptaculum mesally or ventrally; fertilisation ducts filiform.

Distribution. South-eastern and south-western mainland Australia and Tasmania (Fig. 217).

Composition. Two described species, *Raveniella luteola* (Hickman, 1945), *R. hickmani* (Forster, 1959) and the new species *R. peckorum*. Undescribed species are known from south-western Western Australia and north-eastern New South Wales.

Remarks. Species of *Raveniella* are among the most distinctive of any Textricellini, with large, highly modified male pedipalps (Figs 77, 82). The genus is the most widespread of the Australian textricellin genera, being found throughout south-eastern and south-western Australia.

***Raveniella luteola* (Hickman, 1945), comb. n.**

Figs 46B, 74, 75C, 78A–C, 79–83

Textricella luteola Hickman, 1945: 144, figs 11–15. Forster, 1959: 275, fig. 3. Forster & Platnick, 1981: 266, figs 11–12, 25–26. Forster & Platnick, 1984: 92, figs 356, 368. Brignoli, 1983: 375, 695. Davies, 1985: 113. Platnick, 2009.

Type material. Syntype male and female: Mount Wellington, Tasmania, Australia, from moss, 23.VII.1943 (AMS KS6693).

Selected material examined. AUSTRALIA: Tasmania: Mount Wellington, Horseshoe Bend, 25.IX.1977, P. McQuillan, 1♀ (WAM T94136); Mount Wellington, Lenah Valley, 27.IV.2006, M. Rix, 9♂, 3♀ (WAM T77730$^{\text{SEM♂}}$); same data, 1♂ (WAM T80029$^{\text{DNA-MPE}}$); Mount Wellington, Woods Track to O'Grady's Falls, 28.IV.2006, M. Rix, L. Boutin, 1♂ (WAM T94102); Cuckoo Falls, near Scottsdale, 26.IV.2006, M. Rix, 4♂, 5♀ (WAM T94103$^{\text{SEM♀}}$). **Victoria:** Beauchamp Falls, Otway Ranges, 24.IV.2006, M. Rix, 1♂, 10♀ (WAM T94101); Yarra Ranges National Park, Mount Donna Buang, 27.V.1990, D. Black, 1♀ (WAM T94151); Yarra Ranges National Park, 'The Beeches', near Marysville, 18.IV.2006, M. Rix, 3♂, 5♀ (WAM T94104). **New South Wales:** Dorrigo National Park, Wonga Walk and track towards Never Never Picnic Area, 11.IV.2006, M. Rix, 5♂, 2♀ (WAM T94095); Kosciusko National Park, Snowy Mountains, uphill from Betts Creek Crossing, 16.IV.2006, M. Rix, A. Rix, 1♂, 3♀ (WAM T94100). **Queensland:** Curtis Farm, Canungra, 31.III.1979, G. Monteith, 1♂, 1♀ (AMNH).

Remarks. *Raveniella luteola* is a distinctive and widespread species in south-eastern Australia, occurring in mesic forests from south-eastern Queensland to Tasmania, at both low and high altitudes. It can be extremely common in the moss, leaf litter and ferny understory of temperate rainforests (M. Rix, pers. obs.), often occurring in sympatry with other south-eastern Australian textricellin species, e.g. *Eterosonycha alpina*, *E. aquilina*, *Epigastrina fulva*, *R. hickmani* and *Normplatnicka lamingtonensis*. In alpine habitats at Kosciusko National Park, specimens of *R. luteola* have been collected from morning-thawed sphagnum moss, where the spiders presumably survive freezing night-time temperatures in the subniveal space (M. Rix, pers. obs.).

***Raveniella hickmani* (Forster, 1959), comb. n.**

Figs 75A–B, 77A

Textricella hickmani Forster, 1959: 280, figs 14–19 (holotype male from Mount Wellington, Tasmania, Australia, in QMB, not examined). Brignoli, 1983: 375. Davies, 1985: 113. Platnick, 2009.

Selected material examined. AUSTRALIA: Tasmania: Mount Wellington, Woods Track to O'Grady's Falls, 28.IV.2006, M. Rix, L. Boutin, 4♀ (WAM T94099); Cuckoo Falls, near Scottsdale, 26.IV.2006, M. Rix, 1♀ (WAM T94098). **Victoria:** Otway Ranges, Beauchamp Falls, 24.IV.2006, M. Rix, 1♂, 15♀ (WAM T77731); same data, 1♂ (WAM T80028$^{\mathrm{DNA\text{-}MPE}}$); Yarra Ranges National Park, Mount Donna Buang, 19.IV.2006, M. Rix, 1♂, 14♀ (WAM T94097); Yarra Ranges National Park, 'The Beeches', near Marysville, 18.IV.2006, M. Rix, 2♂, 8♀ (WAM T94096).

Remarks. *Raveniella hickmani* is a distinctive, dark brown species of *Raveniella*, found in moss, leaf litter and low-growing ferns in the temperate rainforests of Victoria and Tasmania. It is usually much less common than *R. luteola*, with which it can sometimes be found in sympatry (M. Rix, pers. obs.).

Raveniella peckorum Rix & Harvey, sp. n.

urn:lsid:zoobank.org:act:28D43BF3-89EF-407A-B6B4-31BE17F5F7CE

Figs 75D, 76, 77B, 78D–F

Type material. Holotype male: Modong Nature Reserve, 15 km NE. of Rockingham, Western Australia, Australia, sifting leaf litter, 32°13'10"S, 115°54'09"E, 5.vi.2007, M. Rix (WAM T94549).

Paratypes: Allotype female, same data as holotype (WAM T94550); 10 males and 5 females, same data as holotype (WAM T94408$^{\mathrm{SEM}♂}$).

Other material examined. AUSTRALIA: Western Australia: Albany, Emu Point, sifting leaf litter, 35°00'14"S, 117°55'50"E, 30.IV.2008, M. Rix, 1♂, 1♀ (WAM T94366); Austin Bay Nature Reserve, E. of Peel Inlet, end of Beacham Road, 32°36'42"S, 115°47'11"E, 12.VI.2007, M. Rix, 1♂, 4♀ (WAM T94411); Avon National Park, off Keating Road, sifting leaf litter, 31°34'30"S, 116°09'56"E, 20.VI.2007, M. Rix, 1♂, 1♀ (WAM T94436); Beela Road, 7.5 km ENE. of Brunswick Junction, Tullgren funnel, sifted leaf litter, 33°14'14"S, 115°55'00"E, 25.VII.2003, M. Harvey, 1♀ (WAM T76276); same data, 2♀ (WAM T76277); same data, 2♀ (WAM T76275); Boddington Bauxite Mine, 32°57'S, 116°27'E, VII.2003, G. Oraby, 1♀ (WAM T76204); same data, 1♀ (WAM T76213); same data except X.2007, 1♀ (WAM T76207); same data, 1♀ (WAM T76203); Bold Park, Perth, site BP1, wet pitfall, 31°57'11"S, 115°45'50"E, 24.IX.-18.XI.1993, J. Waldock et al., 1♀ (WAM T76301); same data except 20.V.-20.VII.1993, M. Harvey, J. Waldock, 1♀ (WAM T76302); Bold Park, Perth, site BP3, wet pitfall, 31°56'30"S, 115°46'27"E, 20.VII.-24.IX.1993, J. Waldock, 1♀ (WAM T76306); Bold Park, Perth, site BP4, wet pitfall, 31°56'29"S, 115°46'01"E, 24.IX.-18.XI.1993, J. Waldock et al., 1♀ (WAM T76305); Bold Park, Perth, W. of Challenger Parade, sifting leaf litter, 31°57'06"S, 115°45'26"E, 28.V.2007, M. Rix, 1♂, 4♀ (WAM T94374); same data except 14.IX.2008, 5♀ (WAM T94363); same data except 15.V.2007, 2♂ (WAM T94371); same data except 12.V.2007, 1♂ (WAM T94410); Bibra Lake Bushland, Perth, E. of North Lake Road, sifting leaf litter, 32°05'16"S, 115°49'12"E, 17.V.2007, M. Rix, 1♀ (WAM T94387); Brockman National Park, 16 km S. of Pemberton, leaf litter and mould under karri trees, 8. XII.1976, J. Kethley, 1♀ (FMC); Buller Nature Reserve, 9.5 km SW. of Waroona, sifting leaf litter, 32°52'04"S, 115°49'43"E, 22.VI.2007, M. Rix, 2♂, 1♀ (WAM T94431); Cup Road, 40 km SE. of Manjimup, 6–28.VII.1980, S. & J. Peck, 6♂, 9♀ (WAM T76232); same data except 15.VII.1980, 3♂, 13♀ (AMNH); Cardup Nature Reserve, 10 km SSW. of Armadale, sifting leaf litter, 32°14'45"S, 115°59'31"E, 5. VI.2007, M. Rix, 2♂, 12♀ (WAM T94417); same data except site CR2, wet pitfall, 32°14'40"S, 115°59'15"E, 16.IV.-17.VI.1996, J. Waldock, P. West, A. Longbottom, 1♂ (WAM T76200); Conspicuous Point, litter under peppermint trees, 14.XII.1976, J. Kethley, 1♀ (FMC); Dog Pool, on Shannon River, leaf litter, 32°46'S, 116°22'E, 27.IV.-1.V.1990, M. Harvey, J. Waldock, 1♀ (WAM T76260); Hartfield Park, Forrestfield, Perth, E. of Tonkin Highway, sifting leaf litter, 31°59'53"S, 115°59'49"E, 23.V.2007, M. Rix, 2♂, 2♀ (WAM T94399); Huntly Mine, 5 km E. of Banksiadale Dam, bark trapped, 32°39'S, 116°05'E, IV.2005, A. Peck, 1♀ (WAM T63388); same data except 2.VI.-14.VII.2005, 1♀ (WAM T63858); same data, 1♀ (WAM T63904); same data, 1♀ (WAM T63861); same data, 1♂ (WAM T63871); same data except 13.VII.-24.VIII.2005, 1♀ (WAM T64282); Jandakot Airport, Perth, site JK1, wet pitfall, 32°05'36"S, 115°52'39"E, 16.VII.-1.IX.1994, J. Waldock, A. Longbottom, 4♂, 1♀ (WAM T76293); Jandakot Reserve, Perth, off Lakes Way, W. of Jandakot Airport, sifting leaf litter, 32°05'40"S, 115°51'24"E, 6.VI.2007, M. Rix, 2♂, 1♀ (WAM T94420); Kings Park, Perth, sifting leaf litter, 31°57'19"S, 115°50'00"E, 7. VI.2007, M. Rix, 4♂, 10♀ (WAM T94370); same data except Berlese litter, 12. VI.1987, N. Platnick, R. Raven, 27♂, 25♀ (AMNH); Koondoola Regional Bushland, Perth, S. of Marangaroo Drive, sifting leaf litter, 31°50'01"S, 115°52'13"E, 22.V.2007, M. Rix, 1♀ (WAM T94401); Leeuwin-Naturaliste National Park, Augusta, 34°20'S, 115°09'E, 22.VII.1980, S. & J. Peck, 1♂, 1♀ (WAM T76238); same data, 4♂, 12♀ (AMNH); Leeuwin-Naturaliste National Park, N. of Caves Road, sifting leaf litter, 33°38'39"S, 115°02'44"E, 21.VI.2007, M. Rix, 3♀ (WAM T94382); Leeuwin-Naturaliste National Park, off Sugarload Road, sifting leaf litter, 33°33'29"S, 115°01'25"E, 25.IV.2008, M. Rix, 1♀ (WAM T94379); Leeuwin-Naturaliste National Park, Yallingup, marri wood litter, 21.VII.1980, S. & J. Peck, 6♂, 27♀ (AMNH); Lightning Swamp Bushland, Perth, N. of Malaga Drive, sifting leaf litter, 31°52'11"S, 115°54'07"E, 22.V.2007, M. Rix, 1♂, 2♀ (WAM T94390); Mammoth Cave Reserve, karri forest dung traps, 34°04'S, 115°02'E, 20–22.VII.1980, S. & J. Peck, 2♀ (WAM T76267); same data, 2♀ (AMNH); 54 km SE. of Manjimup, jarrah forest litter, 34°36'S, 116°34'E, 22.VI–4.VII.1980, S. & J. Peck, 5♀ (WAM T76231); same data, 1♂, 3♀ (AMNH); Marangaroo Reserve, Perth, N. of Horton Crescent, sifting leaf litter, 31°49'52"S, 115°50'12"E, 21.V.2007, M. Rix, 7♂, 4♀ (WAM T94402); S. of Mordalup Road, N. of Lake Muir, wet pitfall, 34°19'01"S, 116°31'49"E, 15.X.1999–1.XI.2000, P. Van Heurck et al. CALM survey, 1♂ (WAM T94175); Mount Cooke, leaf litter, 32°25'S, 116°18'E, 19.IX.1991, M. Harvey, J. Waldock, 2♀ (WAM T76222); same data except 27.IV.1992, 8♂, 4♀ (WAM T76223); same data, 5♀ (WAM T76268); same data except 31.VII.1991, 3♂, 9♀ (WAM T76224); same data except 1.X.1990, 1♀ (WAM T76230); same data except pitfall trap, 16.VI.-31. VII.1991, 1♂, 1♀ (WAM T76227); same data except sifting leaf litter, 20.VII.2002,

M. Rix, M. Harvey, 3♂, 4♀ (WAM T76212); Mount Frankland, 29 km N. of Walpole, unburned litter in burned area, J. Kethley, 1♀ (FMC); Mount Henry, Perth, E. of Kwinana Freeway, sifting leaf litter, 32°01'57"S, 115°51'39"E, 20.V.2007, M. Rix, 1♂ (WAM T94384); Mount Lindesay, site 208, 34°50'S, 117°19'E, VIII.1995, S. Barrett, 1♂ (WAM T76216); Neerabup National Park, W. of Wanneroo Road, sifting leaf litter, 31°38'58"S, 115°43'44"E, 2.IX.2006, M. Rix, 3♀ (WAM T94385); Perth Airport, site PA6, wet pitfall, 31°58'05"S, 115°58'05"E, 28.VII–23.IX.1993, J. Waldock et al., 1♂ (WAM T76299); Perth Airport, site PA8, wet pitfall, 31°58'36"S, 115°58'28"E, 28.VII.-23.IX.1993, J. Waldock et al., 1♂, 1♀ (WAM T76298); Perth Airport, south-eastern sector, N. of Tonkin Highway, sifting leaf litter, 31°58'36"S, 115°58'27"E, 29.V.2008, M. Rix, J. Wojcieszek, 4♂, 4♀ (WAM T94422); Pinnaroo Valley Memorial Park, Perth, wet pitfall, 31°48'S, 115°46'E, 1.VIII.1993, D. Leary, 1♂ (WAM T76274); Porongurup National Park, site 226, wet pitfall, 34°40'56"S, 117°52'30"E, 13.VI.1996, S. Barrett, 1♂ (WAM T76195); Porongurup National Park, Ravine Road, dry moss on seepage area, 34°41'S, 117°53'E, 24.XII.1976, J. Kethley, 1♀ (FMC); Porongurup National Park, southern slope of Twin Peaks, 34°41'S, 117°53'E, 2.I.1977, J. Kethley, 5♀ (FMC); same data, 1♀ (FMC); Port Kennedy Scientific Park, S. of Port Kennedy Drive, sifting leaf litter, 32°22'41"S, 115°45'02"E, 12.VI.2007, M. Rix, 2♂, 3♀ (WAM T94415); near Quinninup, 29 km SSE. of Manjimup, karri litter, 34°29'S, 116°16'E, 13–16.VII.1980, S. & J. Peck, 2♀ (WAM T76262); Rottnest Island, near Lake Timperley, sifting leaf litter, 32°00'23"S, 115°31'11"E, 13.VI.2007, M. Rix, 9♂, 14♀ (WAM T94377); Shenton Park Bushland, Perth, S. of Lemnos Street, sifting leaf litter, 31°57'37"S, 115°48'01"E, 10.V.2007, M. Rix, 1♂ (WAM T94380); Stirling Range National Park, base of Pyungoorup Peak, sifting leaf litter, 34°21'54"S, 118°19'44"E, 5.VIII.2008, M. Rix, M. Harvey, 9♂, 10♀ (WAM T94362); same data except wet pitfall, 27.IV.-4.IX.1996, M. Harvey et al., 2♂, 1♀ (WAM T76282); Stirling Range National Park, Bluff Knoll, site 230, pitfall, 34°23'S, 118°15'E, 7.IX.1995, S. Barrett, 1♂ (WAM T76190); Stirling Range National Park, Bluff Knoll, site 213, pitfall, 34°23'37"S, 118°15'10"E, 19.VI.1996, S. Barrett, 1♂ (WAM T76189); Stirling Range National Park, Bluff Knoll, 34°22'S, 118°15'E, 23.XII.1976, J. Kethley, 2♀ (FMC); same data, 1♀ (FMC); same data except 31.XII.1976, 1♀ (FMC); Stirling Range National Park, Ellen Peak, sifting leaf litter, 34°21'30"S, 118°19'57"E, 6.XI.2007, M. Rix et al., 1♀ (WAM T94368); Stirling Range National Park, Talyuberlup Peak, 34°24'S, 117°57'E, 29.XII.1976, J. Kethley, 1♀ (FMC); Stirling Range National Park, Toolbrunup Peak, wet pitfall, 34°23'32"S, 118°03'32"E, 23.IV.-3.IX.1996, J. Waldock, B. Main, 1♂ (WAM T76281); Stirling Range National Park, Toolbrunup Peak track, 34°22'S, 118°02'E, 10.VI.1980, S. & J. Peck, 10♂ (AMNH); Stirling Range National Park, Toolbrunup Peak, 34°22'S, 118°02'E, 27.XII.1976, J. Kethley, 1♀ (FMC); same data, 1♀ (FMC); Sues Bridge, 50 km SW. of Nannup, marri log litter, 34°18'S, 115°22'E, 26.VII.1980, S. & J. Peck, 3♀ (WAM T76233); same data, 1♂, 3♀ (WAM T76234); same data, 2♂, 12♀ (AMNH); Sultana Road Bushland, Perth, W. of Roe Highway, sifting leaf litter, 31°57'55"S, 116°00'11"E, 23.V.2007, M. Rix, 3♂, 3♀ (WAM T94398); Talbot Road Reserve, Stratton, Perth, sifting leaf litter, 31°52'04"S, 116°03'02"E, 31.V.2007, M. Rix, 8♂, 8♀ (WAM T94396); same data except marri litter Tullgren funnel, 29.VIII.2006, J. Waldock, K. Edward, 1♂ (WAM T94533); Talbot Road Reserve, Stratton, Perth, site TR3, wet pitfall, 31°52'24"S, 116°02'52"E, 24.VI.-28.VII.1993, M. Harvey, J. Waldock, 1♂ (WAM T94565); Thomsons Lake Nature Reserve, Perth, S. of Senecio Lane, sifting leaf litter, 32°08'14"S, 115°49'28"E, 6.VI.2007, M. Rix, 2♀ (WAM T94414); Torbay Head, lot 40, pitfall, 35°08'S, 117°38'E, 14–27.VI.1987, B. Main, 1♂ (WAM T76271); Torndirrup National Park, pitfall, 25.V.-9.XI.1983, P. Dyer, J. Lyon, 11♂, 9♀ (WAM T76221); same data except 6–13.VII.1983, 1♀ (WAM T76235); Torndirrup National Park, Eclipse Island Road, Tullgren funnel, 35°06'05"S, 117°52'23"E, 15.III.2005, M. Harvey et al., 3♀ (WAM T76236); Torndirrup National Park, Flinders Peninsula near Isthmus Bay, 35°06'S, 117°58'E, 28.XII.1976, J. Kethley, 1♀ (FMC); Trigg Bushland Reserve north, Perth, W. of Duart Road, sifting leaf litter, 31°52'23"S, 115°45'44"E, 15.V.2007, M. Rix, 1♀ (WAM T94400); Trigg Dune Bush, Perth, site TD1, wet pitfall, 31°52'09"S, 115°45'38"E, 13.VII.-25.IX.1995, M. Harvey, J. Waldock, 1♀ (WAM T76217); Tuart Forest National Park, near junction of Stirling Road and Higgins Road, sifting leaf litter, 33°33'07"S, 115°30'48"E, 21.VI.2007, M. Rix, 4♀ (WAM T94427); Two People's Bay Nature Reserve, 34°59'S, 118°10'E, 14. VI.1980, S. & J. Peck, 6♀ (AMNH); Two People's Bay Nature Reserve, Mount Gardner, 35°00'S, 118°11'E, 1.I.1977, J. Kethley, 1♀ (FMC); same data, 1♀ (FMC); same data, 1♀ (FMC); Walpole-Nornalup National Park, 28 km NE. of Walpole, 34°58'S, 116°55'E, 17.XII.1976, J. Kethley, 1♀ (FMC); Walpole-Nornalup National Park, Collier Road, 19.VI.1980, S. & J. Peck, 2♂, 1♀ (AMNH); Walpole-Nornalup National Park, Hilltop Road, 21.VI.1980, S. & J. Peck, 4♂, 8♀ (AMNH); Walpole-Nornalup National Park, Shedley Drive, 34°59'S, 116°44'E, 22.VI.1980, S. & J. Peck, 1♀ (WAM T76263); Walpole-Nornalup National Park, Shedley Drive, 35°00'S, 116°38'E, 22.VI.1980, S. & J. Peck, 2♀ (AMNH); Walpole-Nornalup National Park, Tingle Tree, 34°59'S, 116°47'E, 18.VI.-29.VII.1980, S. & J. Peck, 6♂, 5♀ (AMNH); same data, 1♂ (AMNH); Walpole-Nornalup National Park, Valley of the Giants, 35°00'S, 116°43'E, VII.1980, S. & J. Peck, 2♀ (WAM T76240); same data, 1♂, 6♀ (WAM T76239); Walpole-Nornalup National Park, Valley of the Giants, 34°58'S, 116°53'E, 21.VII.1980, S. & J. Peck, 3♂, 4♀ (AMNH); Walpole-Nornalup National Park, Zig Zag Road, 34°58'S, 116°53'E, 20.VI.-4.VII.1980, S. & J. Peck, 6♂, 18♀ (AMNH); Warren National Park, near Pemberton, 34°25'S, 115°56'E, 12.VII.1980, S. & J. Peck, 2♀ (WAM T17744); Warren National Park, near Pemberton, 34°30'S, 115°57'E, 5.VII.1980, S. & J. Peck, 1♂, 1♀ (AMNH); Wellesley River at Marriott Road, Tullgren funnel, 33°12'40"S, 115°47'02"E, 25.VII.2003, M. Harvey, 2♀ (WAM T76269); Wellington National Park, off Wellington Dam Road, sifting leaf litter, 33°20'28"S, 115°57'27"E, 22.VI.2007, M. Rix, 3♀ (WAM T94433); Windy Harbour, 34°50'S, 116°01'E, 8–12.VII.1980, S. & J. Peck, 1♂ (WAM T76261); same data except 8.VII.1980, 9♂, 9♀ (AMNH); Wireless Hill Bushland, Perth, N. of Davy Street, sifting leaf litter, 32°01'57"S, 115°49'34"E, 16.V.2007, M. Rix, 1♂ (WAM T94391); Woodman Point Regional Park, S. of Perth, sifting leaf litter, 32°08'S, 115°45'E, 6.VIII.2006, M. Rix, J. Wojcieszek, 1♂, 7♀ (WAM T94413); same data, 1♂ (WAM T80033$^{DNA-MPE}$); same data except 21.V.2005, M. Rix, M. Harvey, 5♂, 3♀ (WAM T76279); Woodman Point Regional Park, S. of Perth, sifting leaf litter, 32°07'55"S, 115°45'35"E, 30.V.2007, M. Rix, 8♂, 5♀ (WAM T94394); Woodman Point Regional Park, S. of Perth, site WO4, wet pitfall, 32°07'58"S, 115°45'29"E, 4.V.-6.VII.1995, J. Waldock, M. Harvey, 3♂ (WAM T76284); same data except 1. IX.-4.XI.1994, 2♂ (WAM T76182); same data except 28.VI.-1.IX.1994, J. Waldock, A. Longbottom, 10♂, 2♀ (WAM T76285); same data, 1♂ (WAM T76173); Yalgorup National Park, adjacent to White Hill Road, sifting leaf litter, 32°41'15"S, 115°38'57"E, 27.VI.2007, M. Rix, 1♂, 2♀ (WAM T94430); Yalgorup National Park, off Preston Beach Road, W. of Lake Newnham, sifting leaf litter, 32°53'53"S, 115°41'22"E, 27. VI.2007, M. Rix, 2♂, 2♀ (WAM T94437).

Etymology. The specific epithet is a patronym in honour of Stewart and Jarmila Peck, who collected many specimens of this (and other micropholcommatid) species in 1980, during AMNH-sponsored field work in south-western Western Australia.

Diagnosis. Males of *Raveniella peckorum* can be distinguished from *R. hickmani* by the longer, distally-curled embolus (Fig. 77), and from *R. luteola* by the absence of a terminal, spur-like extension on the evaginated tegular ridge (Fig. 77B). Females can be distinguished from all other described congeners by the cylindrical receptacula and spherical morphology of the spermathecae (Fig. 75D).

Description. *Holotype male*: Total length 1.16. Carapace 0.59 long, 0.45 wide. Abdomen 0.63 long, 0.51 wide. Leg I femur 0.45. Cephalothorax, legs dark tan-yellow; abdomen dark olive-grey. Carapace raised anteriorly, not fused to sternum except around petiole; dorsal surface of pars cephalica slightly convex in lateral view. Eight eyes present on anterior margin of pars cephalica; AME 0.6x diameter of ALE; PME separated by their own diameter. Chelicerae each with large, bulging anterior projection; promargin with three peg teeth. Legs relatively short (leg I femur-carapace ratio 0.76); distal, prolateral macroseta present on tibia I. Abdomen oval, covered with hair-like setae; dorsal scute and lateral sclerotic strips absent. Pedipalpal patella with retrolaterally-directed, hooked lRPA, small, conical distal apophysis, larger, subtriangular terminal apophysis and ornate, ridged cuticular microstructure; tegulum smooth, with curved, marginal ETR; embolus very long (length >> 5× width), extending posterior to patella, curling distally to form a three-quarter revolution; cymbium unmodified with three long posterior macrosetae (Fig. 77B).

Allotype female: Total length 1.22. Carapace 0.60 long, 0.43 wide. Abdomen 0.74 long, 0.59 wide. Leg I femur 0.45. Cephalothorax, legs tan-yellow; abdomen tan-grey. Carapace raised anteriorly, not fused to sternum except around petiole; dorsal surface of pars cephalica slightly convex in lateral view. Eight eyes present on anterior margin of pars cephalica; AME 0.6x diameter of ALE; PME separated by slightly less than their own diameter. Chelicerae without bulging anterior projections; promargin without peg teeth. Legs relatively short (leg I femur-carapace ratio 0.75); macrosetae absent. Abdomen oval, covered with hair-like setae; dorsal scute and lateral sclerotic strips absent. Pedipalp entire, five-segmented. Epigyne with distinctive external morphology

(Fig. 76D); receptacula cylindrical, with spherical spermathecae; insemination ducts membranous, with complex, convoluted trajectory and multiply-looped distal portion; fertilisation ducts filiform (Fig. 75D).

Distribution. This species is found throughout the south-western Australian 'High Rainfall Province' (see Hopper and Gioia 2004), from Two Peoples Bay Nature Reserve near Albany to the Avon National Park, north of Perth, with outlying populations in the Porongurup and Stirling Range National Parks. It is ubiquitous in the tall eucalypt forests of the Darling Escarpment and south coast, and is also found throughout the southern Swan Coastal Plain (including Rottnest Island), north to Neerabup National Park.

Remarks. *Raveniella peckorum* is one of several species of *Raveniella* known from south-western Western Australia (M. Rix, unpubl. data). It was included in the molecular phylogenetic analysis of Rix et al. (2008) as "*Textricella* sp. WA".

Genus *Rayforstia* Rix & Harvey, gen. n.

urn:lsid:zoobank.org:act:D3B762BB-8CCE-4262-B7F6-6765420D1433

Type species. *Textricella vulgaris* Forster, 1959.

Etymology. The generic name is derived from 'Ray Forster', and refers to the late Raymond R. Forster (1922–2000), for his enormous contribution to the study of micropholcommatid and other Australasian spiders, and for describing most of the species in this genus. The gender is feminine.

Affinities. The genus *Rayforstia* appears to be closely related to *Normplatnicka* from south-eastern Australia and Chile (Fig. 4).

Diagnosis. Species of *Rayforstia* can be distinguished from all other Textricellini by the presence of a looped distal embolus which is straddled by a small, pointed, distal conductor (Figs 91, 95A–B). Other diagnostic characters include the presence of a dorsal scute on the male abdomen of most species (Fig. 85A), and the presence of variously 'bean-shaped' receptacula in females (Fig. 87).

Description. Very small, entelegyne Araneoidea: total length 0.65 to 1.20. *Cephalothorax*: Carapace without glandular depressions above maxillae; cuticle without glandular pits (Fig. 92E). Eight (Fig. 86A) or six (Fig. 86E) eyes present on anterior margin of pars cephalica; AME, if present, smallest. Chelicerae usually with bulging anterior projections in males; promargin with inner denticles, true teeth, a pair of fused setal sockets adjacent to base of fang and two or three peg teeth in males (Fig. 93F); ectal stridulatory ridges present in males.

Legs and female pedipalp: Legs three-clawed (Fig. 94D), covered with smooth or serrate hair-like setae. Trichobothria present on legs; tibiae each with three (legs I–III) or four (leg IV) trichobothria (Fig. 94C); metatarsi (legs I–III) each with single trichobothrium. Female pedipalp entire, five-segmented; claw absent (Fig. 93C–D).

Abdomen: Abdomen oval; anterior sclerite present around epigastric region and petiole; large dorsal scute present on males of most species (Figs 84A, 85A), absent on females (Fig. 84B); posterior sclerotic ring surrounding spinnerets and colulus. Six spinnerets situated posterior to fleshy colulus; PMS of *R. vulgaris* with single medial AC gland spigot; PLS of *R. vulgaris* with complete triad, including enlarged, sinuous FL gland spigot. Anterior tracheal system with multiple anteriorly-directed tracheae (Fig. 87B); posterior tracheal spiracle absent.

Genitalia: Male pedipalp (Fig. 95) relatively simple; trochanter with modified prolateral seta forming stridulatory 'tooth'; patella with retrolaterally-directed, hooked ligulate retrolateral apophysis and ornate, ridged cuticular microstructure; tegulum smooth, with excavate evaginated tegular ridge and small, pointed distal conductor; embolus exposed, long (length > 5× width) and looped, supported distally by conductor. Female genitalia (Fig. 87) with pair of separate, globular, variously 'bean-shaped' anterior spermathecae; insemination ducts simple, usually looped; fertilisation ducts curved.

Distribution. New Zealand (including Campbell Island) and eastern Australia (including Lord Howe Island) (Fig. 217).

Composition. Ten described species, *R. antipoda* (Forster, 1959), *R. insula* (Forster, 1959), *R. mcfarlanei* (Forster, 1959), *R. plebeia* (Forster, 1959), *R. propinqua* (Forster, 1959), *R. salmoni* (Forster, 1959), *R. scuta* (Forster, 1959), *R. signata* (Forster, 1959), *R. vulgaris* (Forster, 1959), *R. wisei* (Forster, 1964), and the two new species *R. lordhowensis* and *R. raveni*. Further undescribed species are known from New Zealand and eastern Australia.

Rayforstia vulgaris **(Forster, 1959), comb. n.**

Figs 7H, 47B, 84, 85, 87A–B, 92–95

Textricella vulgaris Forster, 1959: 286, figs 28–32 (holotype male from Lake Te Au, Southland, New Zealand, in Canterbury Museum, not examined). Forster & Platnick, 1981: 264, figs 3, 18–19, 27. Brignoli, 1983: 375, 695. Forster & Platnick, 1984: 92, figs 357–359, 362–367, 371–374. Platnick, 2009.

Selected material examined. NEW ZEALAND: South Island: Southland: Lake Te Au, near S. Arm of Lake Te Anau, 12–24.I.1953, R. Forster, 5♂, 7♀ (MCZ); Fiordland, Cascade Creek, Eglinton Valley, 23.I.1951, R. Forster, 5♂, 8♀ (MCZ); Fiordland National Park, Smithy Creek, 67 km N. of Te Anau, 17.IV.1995, C. Griswold, T. Meikle, 1♂, 4♀ (CAS). **Canterbury:** Coral Track entrance, between Arthurs Pass and Otira, 2.IV.2006, M. Rix, 2♂, 1♀ (WAM T94456); Lewis Pass, 1.IV.2006, M. Rix, 11♂, 18♀ (WAM T94455$^{\text{SEM♂♀}}$); same data, 1♂ (WAM T80031$^{\text{DNA-MPE}}$).

Remarks. *Rayforstia vulgaris* is a common and relatively widespread species on the South Island of New Zealand. It is most similar to the other eight-eyed species of *Rayforstia* described from New Zealand (*R. antipoda*, *R. insula*, *R. mcfarlanei* and *R. signata*), but can be distinguished by the distinctive shape of the external epigyne and receptacula (Figs 84D, 87A–B).

Rayforstia antipoda (Forster, 1959), comb. n.

Figs 86C–D, 87D

Textricella antipoda Forster, 1959: 288, figs 33–34 (holotype male from Meads Landing, Lake Hawea, Otago, New Zealand, in Canterbury Museum, not examined). Brignoli, 1983: 375. Platnick, 2009.

Selected material examined. NEW ZEALAND: South Island: Otago: Meads Landing, Lake Hawea, 20.I.1951, R. Forster, 1♂, 1♀ (AMNH); Kidds Bush, Lake Hawea, 9.IV.1979, R. Forster, 6♂, 11♀ (AMNH).

Remarks. *Rayforstia antipoda* is most similar to the other eight-eyed species of *Rayforstia* described from New Zealand (*R. insula*, *R. mcfarlanei*, *R. signata* and *R. vulgaris*), but can be distinguished by the distinctive shape of the external epigyne and the L-shaped receptacula (Figs 86D, 87D).

Rayforstia insula (Forster, 1959), comb. n.

Textricella insula Forster, 1959: 283, fig. 23 (holotype male from Solander Island, Southland, New Zealand, in MNZ, not examined). Brignoli, 1983: 375. Platnick, 2009.

Remarks. *Rayforstia insula* is most similar to the other eight-eyed species of *Rayforstia* described from New Zealand (*R. antipoda*, *R. mcfarlanei*, *R. signata* and *R. vulgaris*). It is known from Solander Island, 65 km north-west of Stewart Island.

Rayforstia lordhowensis Rix & Harvey, sp. n.

urn:lsid:zoobank.org:act:F924C5AC-108D-4E75-AC69-8B1818440781

Figs 87E, 88–89, 216

Type material. Holotype male: next to Soldier's Creek, Lord Howe Island, New South Wales, Australia, litter, 31°34'55"S, 159°05'09"E, 8.VI.2003, I. Hutton, K. Lees (AMS KS88916).

Paratypes: Allotype female, Stephens Reserve, New Settlement, Lord Howe Island, New South Wales, Australia, pitfall trap, 31°31'33"S, 159°03'53"E, 4–14.XII.2000, AM team (AMS KS76260).

Etymology. The specific epithet refers to the type locality of this species.

Diagnosis. Males of *Rayforstia lordhowensis* can be distinguished from all other described congeners except *R. raveni* by the absence of a dorsal scute (Figs 88A–B); and from *R. raveni* by the shorter embolus and more symmetric, triangular conductor (Fig. 89). Females can be distinguished from all other described congeners by the tilted, globular morphology of the spermathecae (Fig. 87E). Both sexes can also be recognised by the small body size and Lord Howe Island distribution (Fig. 216).

Description. *Holotype male*: Total length 0.68. Carapace 0.34 long, 0.27 wide. Abdomen 0.36 long, 0.25 wide. Leg I femur 0.25. Body colour very pale cream. Carapace raised anteriorly, not fused to sternum except around petiole; dorsal surface of pars cephalica slightly convex in lateral view. Eyes present on anterior margin of pars cephalica, but barely-visible due to faded colour of specimen. Chelicerae without bulging anterior projections; promargin with three peg teeth. Legs relatively short (leg I femur-carapace ratio 0.74); macrosetae absent. Abdomen oval, covered with hair-like setae; dorsal scute and lateral sclerotic strips absent. Pedipalpal patella with retrolaterally-directed, hooked lRPA and rounded, depressed distal region with ornate, ridged cuticular microstructure; tegulum smooth, with excavate ETR and triangular distal conductor; embolus long (length > 5× width), looping dorsal to conductor (Fig. 89).

Allotype female: Total length 0.86. Carapace 0.41 long, 0.31 wide. Abdomen 0.49 long, 0.37 wide. Leg I femur 0.28. Body colour very pale cream. Carapace raised anteriorly, not fused to sternum except around petiole; dorsal surface of pars cephalica slightly convex in lateral view. Eyes present on anterior margin of pars cephalica, but barely-visible due to faded colour of specimen. Chelicerae without bulging anterior projections; promargin without peg teeth. Legs relatively short (leg I femur-carapace ratio 0.68); macrosetae absent. Abdomen oval, covered with hair-like setae; dorsal scute and lateral sclerotic strips absent. Pedipalp entire, five-segmented. Epigyne with distinctive external morphology (Fig. 88D); spermathecae globular, tilted mesally; insemination ducts looped; fertilisation ducts sinuous (Fig. 87E).

Distribution. Known only from Lord Howe Island in the western Pacific Ocean, 780 km north-east of Sydney (Fig. 216).

Remarks. *Rayforstia lordhowensis* seems more similar to Australian species of *Rayforstia* than to New Zealand taxa, as evidenced by the absence of a dorsal scute on the male abdomen and the close similarity to *R. raveni* from eastern Australia. The species is found on both the north and mountainous south of Lord Howe Island (Fig. 220); the habitat at Stephens Reserve is lowland, subtropical rainforest dominated by Kentia palms (*Howea* spp.) (Fig. 220F). It is the smallest known species of *Rayforstia*.

Rayforstia mcfarlanei (Forster, 1959), comb. n.

Textricella mcfarlanei Forster, 1959: 289, figs 35–36 (holotype male from Temple River, Lake Ohau, Canterbury, New Zealand, in Canterbury Museum, not examined). Brignoli, 1983: 375. Platnick, 2009.

Remarks. *Rayforstia mcfarlanei* is most similar to the other eight-eyed species of *Rayforstia* described from New Zealand (*R. antipoda*, *R. insula*, *R. signata* and *R. vulgaris*).

Rayforstia plebeia (Forster, 1959), comb. n.

Textricella plebeia Forster, 1959: 290, fig. 37 (holotype male from Codfish Island, Southland, New Zealand, in MNZ, not examined). Brignoli, 1983: 375. Platnick, 2009.

Remarks. *Rayforstia plebeia* is most similar to the other six-eyed species of *Rayforstia* described from New Zealand (*R. propinqua*, *R. salmoni*, *R. scuta* and *R. wisei*). It is known from Codfish Island, near Stewart Island.

Rayforstia propinqua (Forster, 1959), comb. n.

Figs 86E–F, 87F

Textricella propinqua Forster, 1959: 285, figs 26–27 (holotype male from Cass River, Canterbury, New Zealand, in Canterbury Museum, not examined). Brignoli, 1983: 375. Platnick, 2009.

Selected material examined. NEW ZEALAND: South Island: Canterbury: Broken River, 21.VI.1956, R. Forster, 4♀ (MCZ).

Remarks. *Rayforstia propinqua* is most similar to the other six-eyed species of *Rayforstia* described from New Zealand (*R. plebeia*, *R. salmoni*, *R. scuta* and *R. wisei*), but can be distinguished by the distinctive shape of the external epigyne and the 'peanut-shaped' spermathecae (Figs 86F, 87F).

Rayforstia raveni Rix & Harvey, sp. n.

urn:lsid:zoobank.org:act:B43D3782-5F0C-4776-940B-E9C4B19C01ED

Figs 90–91

Type material. Holotype male: Boondall Wetlands, Queensland, Australia, *Melaleuca* woodland, 5–10 m, pitfall, 27°20'21"S, 153°04'27"E, 29.VII.-2.IX.2003, QM Party (QMB S83999).

Paratypes: 14 males, same data as holotype (QMB S62272).

Other material examined. AUSTRALIA: Queensland: Boondall Wetlands, *Melaleuca* woodland, 5–10 m, pitfall, 27°20'21"S, 153°04'27"E, 1–29.VII.2003, QM Party, 4♂ (QMB S62956); same data except 2.IX.-2.X.2003, 11♂ (QMB S62831); same data except 31.X.-2.XII.2003, 3♂ (QMB S65553); same data except 2.XII.2003–2.I.2004, 3♂ (QMB S65554); same data except 22.IV.-26.V.2003, 2♂ (QMB S65552); Gold Creek Reservoir, pitfall trap, 140 m, open forest, 27°27'53"S, 152°52'32"E, 31.III.-30.IV.2004, QM Party, 1♂ (QMB S65224); same data except spotted gum open forest, 1–30.X.2003, 1♂ (QMB S65160).

Etymology. The specific epithet is a patronym in honour of Robert J. Raven of the Queensland Museum (Brisbane), for his enormous contribution to describing the spiders of south-eastern Queensland, and for managing the arachnological collections made during the Queensland Museum's 'Brisbane City Council Terrestrial Invertebrate Status Review' (TISR). All of the known specimens of *R. raveni* were collected as part of the TISR in 2003/04.

Diagnosis. Males of *Rayforstia raveni* can be distinguished from all other described congeners except *R. lordhowensis* by the absence of a dorsal scute (Fig. 90A); and from *R. lordhowensis* by the longer embolus and asymmetric, curved conductor (Fig. 91). Females are unknown.

Description. *Holotype male*: Total length 0.84. Carapace 0.41 long, 0.31 wide. Abdomen 0.45 long, 0.30 wide. Leg I femur 0.31. Cephalothorax, legs tan-yellow; abdomen olive-cream. Carapace raised anteriorly, not fused to sternum except around petiole; dorsal surface of pars cephalica slightly convex in lateral view. Eight eyes present on anterior margin of pars cephalica; AME 0.5x diameter of ALE; PME separated by half their own diameter. Chelicerae each with bulging anterior projection; promargin with three peg teeth. Legs relatively short (leg I femur-carapace ratio 0.76); macrosetae absent. Abdomen oval, covered with hair-like setae; dorsal scute and lateral sclerotic strips absent. Pedipalpal patella with retrolaterally-directed, hooked lRPA and rounded, depressed distal region with ornate, ridged cuticular microstructure; tegulum smooth, with excavate ETR and curved, subtriangular distal conductor; embolus long (length > 5× width), looping dorsal to conductor (Fig. 91).

Distribution. Known only from south-eastern Queensland.

Remarks. *Rayforstia raveni* is the only species of *Raveniella* currently described from the Australian mainland, although other undescribed species are known from eastern Australia, and *R. lordhowensis* from Lord Howe Island seems closely related.

Rayforstia salmoni **(Forster, 1959), comb. n.**

Figs 86G, 87G

Textricella salmoni Forster, 1959: 290, figs 38–45 (holotype male from Desert Road, Waiouru, Manawatu-Wanganui, New Zealand, in MNZ, not examined). Brignoli, 1983: 375. Platnick, 2009.

Type material: Paratypes: 9 males and 10 females, Desert Road, Waiouru, Manawatu-Wanganui, New Zealand, 24.III.1948, R. Forster (AMNH).

Selected material examined. NEW ZEALAND: North Island: Manawatu-Wanganui: Desert Road, Waiouru, 10.I.1967, R. Forster, 1♂, 2♀ (AMNH); same data except 28.IV.1946, J. Salmon, 3♂, 1♀ (MCZ).

Remarks. *Rayforstia salmoni* is a distinctive species from the North Island of New Zealand. It is most similar to the other six-eyed species of *Rayforstia* described from New Zealand (*R. plebeia*, *R. propinqua*, *R. scuta* and *R. wisei*), but can be distinguished by the distinctive shape of the external epigyne and receptacula (Figs 86G, 87G).

Rayforstia scuta **(Forster, 1959), comb. n.**

Figs 86H, 87H

Textricella scuta Forster, 1959: 293, figs 46–50 (holotype male from Norsewood, Hawke's Bay, New Zealand, in MNZ, not examined). Brignoli, 1983: 375. Platnick, 2009.

Selected material examined. NEW ZEALAND: North Island: Hawke's Bay: Norsewood, 27.I.1948, P. Culliford, 3♀ (MCZ); same data, 4♂, 9♀ (AMNH); Norsewood Motor Camp, 14.VII.1966, R. Forster, 1♂ (AMNH). **Waikato:** Lake Rotopounamu, SW. of Turangi, 4–9.IV.1980, A. Newton, M. Thayer, 4♂ (AMNH); Taumarunui County, S. side of Whakapapanui Stream, 18.I.1967, K. Wise, 1♂, 2♀ (AMNH). **South Island: Canterbury:** Lewis Pass, 1.IV.2006, M. Rix, 1♂ (WAM T94454).

Remarks. *Rayforstia scuta* is an unusual, widespread species from the North and South Islands of New Zealand. It is most similar to the other six-eyed species of *Rayforstia* described from New Zealand (*R. plebeia*, *R. propinqua*, *R. salmoni* and *R. wisei*), but can be distinguished by the distinctive shape of the male anterior sclerite, which extends posteriorly well beyond the epigastric furrow (see Forster 1959, fig. 46).

Rayforstia signata **(Forster, 1959), comb. n.**

Figs 86A–B, 87C

Textricella signata Forster, 1959: 283, figs 24–25 (holotype male from Lake Janet, Canterbury, New Zealand, in Canterbury Museum, not examined). Brignoli, 1983: 375. Platnick, 2009.

Selected material examined. NEW ZEALAND: South Island: Canterbury: Lake Janet, 1.VIII.1949, R. Forster, 4♀ (AMNH); Puhipuhi Valley, Kaikoura, 12.X.1965, A. Walker, 9♂, 4♀ (AMNH). **Marlborough:** Saxton Pass, Molesworth, 17.VIII.1966, A. Walker, 6♂, 6♀ (AMNH).

Remarks. *Rayforstia signata* is most similar to the other eight-eyed species of *Rayforstia* described from New Zealand (*R. antipoda*, *R. insula*, *R. mcfarlanei* and *R. vulgaris*), but can be distinguished by the distinctive shape of the external epigyne (Fig. 86B).

Rayforstia wisei (Forster, 1964), comb. n.

Textricella wisei Forster, 1964: 95, figs 118–121 (holotype male from Campbell Island, New Zealand, not examined). Brignoli, 1983: 375. Platnick, 2009.

Remarks. *Rayforstia wisei* is a distinctive species known only from Campbell Island. It is most similar to the other six-eyed species of *Rayforstia* described from New Zealand (*R. plebeia*, *R. propinqua*, *R. salmoni* and *R. scuta*).

Genus *Normplatnicka* Rix & Harvey, gen. n.

urn:lsid:zoobank.org:act:C806E167-172B-4095-822B-8210A3759782

Type species. *Textricella lamingtonensis* Forster, 1959.

Etymology: The generic name is derived from 'Norman Platnick', and refers to Norman I. Platnick of the American Museum of Natural History, for his enormous contribution to the study of micropholcommatid and other Australasian spiders. The gender is feminine.

Affinities. The genus *Normplatnicka* appears to be closely related to *Rayforstia* from Australia and New Zealand (Fig. 4).

Diagnosis. Species of *Normplatnicka* can be distinguished from all other Textricellini by the presence of a short, spur-like embolus situated at the apical margin of a large, ventrally-pronounced tegular extension (Figs 98, 103, 107A–D). Other diagnostic characters include the absence of a dorsal scute on the male abdomen (Fig. 97A) and the absence of a conductor (Fig. 107B).

Description. Very small, entelegyne Araneoidea: total length 0.70 to 1.40. *Cephalothorax*: Carapace without glandular depressions above maxillae; cuticle without glandular pits (104E). Eight (Fig. 96C) or six (Fig. 100C) eyes present on anterior margin of pars cephalica; AME, if present, smallest. Chelicerae with bulging anterior projections in males; promargin with inner denticles, true teeth, a pair of fused setal sockets adjacent to base of fang and two or three peg teeth in males (Fig. 105F); ectal stridulatory ridges present in males.

Legs and female pedipalp: Legs three-clawed (Fig. 106D), covered with smooth or serrate hair-like setae. Trichobothria present on legs; tibiae each with three (legs I-IV) or four (leg IV) trichobothria (Fig. 106C); metatarsi (legs I–III) each with single trichobothrium. Female pedipalp entire, five-segmented; claw absent (Fig. 105C–D).

Abdomen: Abdomen oval; anterior sclerite present around epigastric region and petiole; dorsal scute absent on males and females (Figs 102A–B), with at most only small region of thickened cuticle anteriorly on males of some species (Fig. 100A); posterior sclerotic ring surrounding spinnerets weakly sclerotised. Six spinnerets situated posterior to fleshy colulus (Fig. 108); PMS of *N. lamingtonensis* with single medial AC gland spigot; PLS of *N. lamingtonensis* with complete triad, including enlarged, sinuous FL gland spigot. Anterior tracheal system with multiple anteriorly-directed tracheae; posterior tracheal spiracle absent.

Genitalia: Male pedipalp (Fig. 107) relatively simple; trochanter with modified prolateral seta forming stridulatory 'tooth'; patella with retrolaterally-directed, hooked ligulate retrolateral apophysis and ornate, ridged cuticular microstructure; tegulum smooth, with excavate evaginated tegular ridge and short (length < 5× width), exposed, spur-like embolus situated at apical margin of large, ventrally-pronounced tegular extension bearing additional stout process near base of embolus. Female genitalia (Fig. 99) with pair of separate, compact, globular anterior spermathecae; insemination ducts simple, looped around fertilisation ducts; fertilisation ducts simple, curved.

Distribution. Eastern and extreme south-western mainland Australia, Tasmania and southern Chile, in Región Ibáñez del Campo (Aisén province) and Región de los Lagos (Chiloé and Llanquihue provinces) (Fig. 217).

Composition. *Normplatnicka lamingtonensis* (Forster, 1959) and the two new species *N. barrettae* and *N. chilensis*. Several undescribed species are known from south-eastern Australia.

Normplatnicka lamingtonensis (Forster, 1959), comb. n.

Figs 7I, 8G, 11A, 11E, 46A, 47A, 47C, 96–98, 99A–B, 104–108

Textricella lamingtonensis Forster, 1959: 281, figs 20–22 (holotype male from Lamington National Park, Border Ranges, Queensland, Australia, in QMB, not examined). Brignoli, 1983: 375. Davies, 1985: 113. Platnick, 2009.

Selected material examined. AUSTRALIA: New South Wales: Bar Mountain, Border Ranges National Park, 22.IV.2002, G. Monteith, 2♂, 4♀ (QMB S72475); Brindle Creek, Border Ranges, 29.II.-3.III.1980, A. Newton, M. Thayer, 1♀ (AMNH). **Victoria:** Acheron Gap, 16 km N. of Warburton, 28–30.IV.1978, S. & J. Peck, 11♂, 9♀ (AMNH$^{SEM♂♀}$); Acheron Gap, 6 km NE. of Mount Donna Buang, 21.II.-23.IV.1996, G. Milledge, 1♀ (NMV K6231); The Big Culvert, 2.5 km ENE. of Mount Observation, 24.IV.1996, G. Milledge, 4♀ (NMV K6232); same data except 28.XII.1995, 1♂ (NMV K6233); Cement Creek Reserve, 2.2 km ESE. of Mount Donna Buang, 16.II.1995, G. Milledge, 1♂, 5♀ (NMV K6230); Cement Creek, Warburton, 10–17.I.1980, A. Newton, M. Thayer, 1♂ (AMNH); Mount Buffalo National Park, Bright Mountain, 22.IV.1978, S. & J. Peck, 5♂, 14♀ (AMNH); same data except lower Eurobin Creek, 24–27.IV.1978, 1♀ (AMNH); Tarra-Bulga National Park, 17.V.1978, S. & J. Peck, 2♂ (AMNH); Tarra-Bulga National Park, 30 km NW. Yarram, 10–17.V.1978, S. & J. Peck, 1♀ (AMNH); Yarra Ranges National Park, Mount Donna Buang, 19.IV.2006, M. Rix, 1♂, 3♀ (WAM T94470); same data, 1♂ (WAM T80034$^{DNA-MPE}$); same data except 11–17.I.1980, A. Newton, M. Thayer, 1♂ (AMNH).

Remarks. *Normplatnicka lamingtonensis* is a distinctive and widespread species, known from extreme south-eastern Queensland, New South Wales and Victoria. The morphology of specimens from the Border Ranges (the type locality) and southern Victoria is almost identical, although northern specimens possess only two peg teeth on the male cheliceral promargin, whereas specimens from Victoria possess three. This species was included in the molecular phylogenetic analysis of Rix et al. (2008) as "*Textricella* sp. VICBlack".

Normplatnicka barrettae Rix & Harvey, sp. n.

urn:lsid:zoobank.org:act:5B2FD0CB-BB84-4822-BCF4-2A6A25875848

Figs 99D, 100–101, 214

Type material. Holotype male: Walpole-Nornalup National Park, Giant Tingle Area, 8 km NE. of Walpole, Western Australia, Australia, *Eucalyptus* and *Acacia* litter on laterite soil, 19.XII.1976, J. Kethley (WAM T94471).

Paratypes: Allotype female, same data as holotype (WAM T94472); 2 males and 1 female, same data as holotype (WAM T94473); 1 male, same data as holotype except Karri and *Acacia* litter (FMC); 3 males and 1 female, same data as holotype except mixed *Eucalyptus* litter (FMC); 1 male, same data (FMC).

Other material examined. AUSTRALIA: Western Australia: Walpole-Nornalup National Park, Anderson Road, near Valley of the Giants Road, Tingle-Karri forest, leaf litter Tullgren funnel, 34°59'32"S, 116°52'17"E, 3.V.2008, M. Rix, M. Harvey, 1♂ (WAM T94367); Walpole-Nornalup National Park, Giant Red Tingle Area, 6 km NE. of Coalmine Beach, litter under *Allocasuarina*, 13.XII.1976, J. Kethley, 6♂ (FMC); same data except Karri litter, 1♂ (FMC); Walpole-Nornalup National Park, 1.4 km NE. of Mandalay Beach, leaf and log litter Berlese, 34°59'46"S, 116°32'56"E, 9.VIII.2004, Clarke, Newton, Thayer, 1♂ (FMC); Walpole-Nornalup National Park, Red Tingle turn-off, 5 km NE. of Coalmine Beach, litter and fungus mat near trail, 5.XII.1976, J. Kethley, 1♂, 1♀ (FMC); same data except fungal mat under litter, 1♂ (FMC); same data except *Allocasuarina* litter, 2♂ (FMC); same data except litter at base of log, 1♂ (FMC); same data, 1♂ (FMC); same data, 1♂, 1♀ (FMC); same data except litter at base of Red Tingle, 1♀ (FMC); Brockman National Park, leaf litter under *Allocasuarina decussata*, 8.XII.1976, J. Kethley, 1♂ (FMC); Mount Clare, 12 km W. of Walpole, *Eucalyptus* litter on sand near stream, 20.XII.1976, J. Kethley, 3♀ (FMC); Mount Frankland National Park, Mount Frankland, 29 km N. of Walpole, unburned litter below switch-back in Forestry Road, 15.XII.1976, J. Kethley, 2♂ (FMC); same data, 4♂, 1♀ (FMC); same data, 5♂ (FMC); Warren National Park, 16 km SW. of Pemberton, *Allocasuarina decussata* litter, 12.XII.1976, J. Kethley, 3♂, 1♀ (FMC).

Etymology. The specific epithet is a patronym in honour of Sarah Barrett, of the Western Australian Department of Environment and Conservation, for her efforts in collecting relictual and short-range endemic arachnids in southern Western Australia.

Diagnosis. Males and females of *Normplatnicka barrettae* can be distinguished from all other described congeners by the presence of only six eyes (Fig. 100C). Both sexes can also be recognised by the small body size and Western Australian distribution (Fig. 214).

Description. *Holotype male*: Total length 0.71. Carapace 0.33 long, 0.26 wide. Abdomen 0.39 long, 0.25 wide. Leg I femur 0.22. Cephalothorax, legs tan-yellow; dorsal half of abdomen cream dorsally with chequered olive and cream pattern laterally and ventrally. Carapace raised anteriorly, not fused to sternum except around petiole; dorsal surface of pars cephalica slightly convex in lateral view. Six eyes present on anterior margin of pars cephalica; AME absent; PME separated by slightly less than half their own diameter. Chelicerae each with bulging anterior projection; promargin with three peg teeth. Legs relatively short (leg I femur-carapace ratio 0.67); macrosetae absent. Abdomen oval, covered with hair-like setae; dorsal scute and lateral sclerotic strips absent, but dorsal surface of abdomen with oval region of thickened cuticle anteriorly. Pedipalpal patella with retrolaterally-directed, hooked lRPA, pointed distal apophysis and ornate, ridged cuticular microstructure; tegulum smooth, with excavate ETR and large, ventrally-pronounced tegular extension; embolus short (length < 5× width), spur-like, situated at apical margin of tegular extension adjacent to bulbous, retrolaterally-directed process (Fig. 101).

Allotype female: Total length 0.76. Carapace 0.35 long, 0.24 wide. Abdomen 0.41 long, 0.25 wide. Leg I femur 0.21. Cephalothorax, legs tan-yellow; abdomen pale cream. Carapace raised anteriorly, not fused to sternum except around petiole; dorsal surface of pars cephalica slightly convex in lateral view. Six eyes present on anterior margin of pars cephalica; AME absent; PME separated by slightly more than half their own diameter. Chelicerae without bulging anterior projections; promargin without peg teeth. Legs relatively short (leg I femur-carapace ratio 0.60); macrosetae absent. Abdomen oval, covered with hair-like setae; dorsal scute and lateral sclerotic strips absent. Pedipalp entire, five-segmented. Epigyne with distinctive external morphology (Fig. 100D); spermathecae globular; insemination ducts proximally triangular, heavily sclerotised, looping dorsally; fertilisation ducts simple, curved (Fig. 99D).

Distribution. Known only from the far south coast of south-western Western Australia, in the Walpole-Nornalup, Mount Frankland, Brockman and Warren National Parks (Fig. 214).

Remarks. *Normplatnicka barrettae* appears to be a short-range endemic taxon (see Harvey 2002), and is probably restricted to the tall, wet, Karri and Tingle (*Eucalyptus* spp.) forests between Pemberton and Denmark. The species occurs in sympatry with several other micropholcommatine and taphiassine species, and shares a very similar, southern coastal distribution with *Micropholcomma linnaei* (see Rix 2008) and *Austropholcomma walpole* sp. n. (see above) (Fig. 214).

Normplatnicka chilensis Rix & Harvey, sp. n.

urn:lsid:zoobank.org:act:ACD612C7-0D41-460B-B0DA-560F2E95EA66

Figs 99C, 102–103, 212

Type material. Holotype male: Parque Nacional Queulat, near Puerto Cisnes, Aisén province, Región Ibáñez del Campo, Chile, 500 m, wet forest, 6.II.1985, N. Platnick, O. Francke (AMNH).

Paratypes: Allotype female, same data as holotype (AMNH); 1 female, same data as holotype (AMNH).

Other material examined. CHILE: Región XI (Ibáñez del Campo): Aisén: 30 km N. of Puyuhuapi, 100 m, sifted moss on logs, 29.I.1985, S. & J. Peck, 1♀ (AMNH). **Región X (Los Lagos): Chiloé:** Chiloé Island, 5 km N. of Quellon, 105 m, Berlese from modified forest, floor litter and moss, 1.XII.1981, N. Platnick, T. Schuh, 2♀ (AMNH). **Llanquihue:** Alerce Andino, near Laguna Fria, Berlese from mixed forest with *Fitzroya cupresoides*, 41°30'30"S, 72°37'00"W, 21.XII.2000, J. Miller, F. Alvarez, J. Coddington, 2♂ (NMNH).

Etymology. The specific epithet refers to the distribution of this species in Chile.

Diagnosis. Males of *Normplatnicka chilensis* can be distinguished from all other described congeners by the presence of a broad, flange-like distal apophysis on the pedipalpal patella (Fig. 103B). Females can be distinguished from all other described congeners by the distinctive shape of the external epigyne (Fig. 102D). Both sexes can also be recognised by the Chilean distribution (Fig. 212). In the field this species is likely to be confused only with the sympatric species *Eperiella alsophila*, which has a very different male pedipalp and female epigyne.

Description. *Holotype male*: Total length 0.88. Carapace 0.48 long, 0.37 wide. Abdomen 0.49 long, 0.33 wide. Leg I femur 0.33. Cephalothorax, legs tan-yellow; abdomen cream dorsally with chequered olive and cream pattern laterally and ventrally. Carapace raised anteriorly, not fused to sternum except around petiole; dorsal surface of pars cephalica slightly convex in lateral view. Eight eyes present on anterior margin of pars cephalica; AME 0.6x diameter of ALE; PME separated by their own diameter. Chelicerae each with bulging anterior projection; promargin with three peg teeth. Legs relatively short (leg I femur-carapace ratio 0.69); macrosetae absent. Abdomen oval, covered with hair-like setae; dorsal scute and lateral sclerotic strips absent. Pedipalpal patella with retrolaterally-directed, hooked lRPA, broad, flange-like distal apophysis and ornate, ridged cuticular microstructure; tegulum smooth, with excavate ETR and large, ventrally-pronounced tegular extension; embolus short (length < 5× width), spur-like, situated at apical margin of tegular extension adjacent to small, pointed process (Fig. 103).

Allotype female: Total length 1.04. Carapace 0.47 long, 0.39 wide. Abdomen 0.73 long, 0.49 wide. Leg I femur 0.35. Cephalothorax, legs tan-yellow; abdomen cream with darker tan-yellow epigyne. Carapace raised anteriorly, not fused to sternum except around petiole; dorsal surface of pars cephalica slightly convex in lateral view. Eight eyes present on anterior margin of pars cephalica; AME 0.5x diameter of ALE; PME separated by slightly less than their own diameter. Chelicerae without bulging anterior projections; promargin without peg teeth. Legs relatively short (leg I femur-carapace ratio 0.74); macrosetae absent. Abdomen oval, covered with hair-like setae; dorsal scute and lateral sclerotic strips absent. Pedipalp entire, five-segmented. Epigyne with distinctive external morphology (Fig. 102D); spermathecae globular, spherical; insemination ducts proximally triangular, heavily sclerotised; fertilisation ducts simple, curved (Fig. 99C).

Distribution. Known only from southern Chile, in Región Ibáñez del Campo (Aisén province) and Región de los Lagos (Chiloé and Llanquihue provinces) (Fig. 212).

Remarks. *Normplatnicka chilensis* is a remarkable Chilean textricellin, clearly congeneric with, and very similar to, the Australian species *N. lamingtonensis*. It is known only from the cool-temperate rainforests of southern Chile, in the regions surrounding Chiloé Island, and has usually been collected in direct sympatry with *Eperiella alsophila* (Fig. 212).

Genus *Eperiella* Rix & Harvey, gen. n.

urn:lsid:zoobank.org:act:976B850B-7D62-47D5-9E57-F7FF1224C163

Type species. *Eperiella alsophila* Rix & Harvey, sp. n.

Etymology. The generic name is derived from an arbitrary combination of letters. The gender is feminine.

Affinities. The genus *Eperiella* appears to be the sister-lineage to a diverse clade of species in the genera *Rayforstia*, *Normplatnicka*, *Raveniella*, *Guiniella*, *Eterosonycha* and *Epigastrina* (Fig. 4).

Diagnosis. Species of *Eperiella* can be distinguished from all other Textricellini by the presence of a very long (length >> 5× width) embolus which coils around the margin of the tegulum (Figs 111, 114), and the presence of 'drumstick-shaped' receptacula with coiled insemination ducts and posterior spermathecae (Fig. 112). Other diagnostic characters include the presence of only two peg teeth on the male cheliceral promargin (Fig. 116F).

Description. Very small, entelegyne Araneoidea: total length 0.70 to 1.00. *Cephalothorax*: Carapace without glandular depressions above maxillae; cuticle without glandular pits (Fig. 115D). Eight (Figs 109C, 115A) or fewer (Fig. 113C) eyes present on anterior margin of pars cephalica; AME, if present, smallest. Chelicerae with or without bulging anterior projections in males; promargin with true teeth, a pair of fused setal sockets adjacent to base of fang and two peg teeth in males (Fig. 116F); ectal stridulatory ridges present in males.

Legs and female pedipalp: Legs three-clawed, covered with smooth or serrate hair-like setae. Trichobothria present on legs; tibiae each with three (legs I–III) or four (leg IV) trichobothria (Fig. 117D); metatarsi (legs I–III) each with single trichobothrium (Fig. 117C). Female pedipalp entire, five-segmented; claw absent (Fig. 116D).

Abdomen: Abdomen oval; anterior sclerite present around epigastric region and petiole; dorsal scute absent on males and females (Figs 109A–B); posterior sclerotic ring surrounding spinnerets weakly sclerotised. Six spinnerets situated posterior to fleshy colulus (Fig. 119); PMS of *E. alsophila* without AC gland spigots and with posterior mAP gland spigot reduced to nubbin; PLS of *E. alsophila* with complete triad, including enlarged, sinuous FL gland spigot. Anterior tracheal system with multiple anteriorly-directed tracheae; posterior tracheal spiracle absent.

Genitalia: Male pedipalp (Fig. 118) relatively simple; trochanter with modified prolateral seta forming stridulatory 'tooth'; patella with retrolaterally-directed, hooked ligulate retrolateral apophysis and ornate, ridged cuticular microstructure; tegulum smooth, with curved, marginal evaginated tegular ridge; embolus exposed, very long (length >> 5× width), coiling around margin of tegulum. Female genitalia (Fig. 112) with pair of separate, 'drumstick-shaped' receptacula with posterior spermathecae; insemination ducts coiled around receptacula; fertilisation ducts ventrally-looped.

Distribution. Southern Chile, in Región Ibáñez del Campo (Aisén province), Región de los Lagos (Chiloé, Llanquihue and Palena provinces) and in southern Tasmania (Figs 212–213, 217).

Composition. The two new species *Eperiella alsophila* and *E. hastings*.

Eperiella alsophila Rix & Harvey, sp. n.

urn:lsid:zoobank.org:act:39F75041-0C29-4B76-AF30-65C126B04D3C

Figs 7J, 47D, 109–111, 112A–B, 115–119, 212

Type material. Holotype male: 25–27 km N. of Chaitén, Palena province, Región de los Lagos, Chile, 40 m, moss Berlese from wet virgin forest, 17.I.1986, N. Platnick, T. Schuh (AMNH).

Paratypes: Allotype female, same data as holotype (AMNH); 2 males and 1 female, same data as holotype (AMNH$^{\text{SEM♂}}$).

Other material examined. CHILE: Región X (Los Lagos): Chiloé: Chiloé Island, 5 km N. of Quellon, 105 m, Berlese from modified forest, floor litter and moss, 1.XII.1981, N. Platnick, T. Schuh, 3♀ (AMNH$^{\text{SEM♀}}$). **Llanquihue:** Alerce Andino, near Laguna Fria, Berlese from mixed forest with *Fitzroya cupresoides*, 41°30'30"S, 72°37'00"W, 21.XII.2000, J. Miller, F. Alvarez, J. Coddington, 1♀ (NMNH). **Región XI (Ibáñez del Campo): Aisén:** Parque Nacional Queulat, near Puerto Cisnes, 500 m, wet forest, 6.II.1985, N. Platnick, O. Francke, 2♂, 1♀ (AMNH); 30 km N. of Puyuhuapi, 100 m, sifted moss on logs, 29.I.1985, S. & J. Peck, 1♂, 1♀ (AMNH).

Etymology. The specific epithet is derived from the Greek 'alsos', meaning 'grove' (Brown 1956), and refers to the cool temperate rainforests in which this species occurs.

Diagnosis. Males and females of *Eperiella alsophila* can be distinguished from *E. hastings* by the presence of normal, pigmented eyes (Fig. 109C). Both sexes can also be recognised by the Chilean distribution (Fig. 212). In the field this species is likely to be confused only with the sympatric species *Normplatnicka chilensis*, which has a very different male pedipalp and female epigyne.

Description. *Holotype male*: Total length 0.78. Carapace 0.41 long, 0.33 wide. Abdomen 0.46 long, 0.33 wide. Leg I femur 0.34. Cephalothorax, legs tan-yellow; abdomen pale olive-cream. Carapace raised anteriorly, not fused to sternum except around petiole; dorsal surface of pars cephalica slightly convex in lateral view. Eight eyes present on anterior margin of pars cephalica; AME very small, less than 0.5x diameter of ALE; PME touching mesally. Chelicerae without bulging anterior projections; promargin with two peg teeth. Legs relatively short (leg I femur-carapace ratio 0.83); macrosetae absent. Abdomen oval, covered with hair-like setae; dorsal scute and lateral sclerotic strips absent. Pedipalpal patella with retrolaterally-directed, hooked lRPA and ornate, ridged cuticular microstructure; tegulum smooth, with curved, marginal ETR; embolus very long (length >> 5× width), coiling 1.5x around margin of tegulum, distally with expanded, 'trumpet-shaped' morphology (Fig. 111).

Allotype female: Total length 0.75. Carapace 0.39 long, 0.31 wide. Abdomen 0.47 long, 0.35 wide. Leg I femur 0.32. Cephalothorax, legs tan-yellow; abdomen pale olive-cream with darker tan-yellow epigyne. Carapace raised anteriorly, not fused to sternum except around petiole; dorsal surface of pars cephalica slightly convex in lateral view. Eight eyes present on anterior margin of pars cephalica; AME very small, less than 0.5x diameter of ALE; PME almost touching mesally. Chelicerae without bulging anterior projections; promargin without peg teeth. Legs relatively short (leg I femur-carapace ratio 0.82); macrosetae absent. Abdomen oval, covered with hair-like setae; dorsal scute and lateral sclerotic strips absent. Pedipalp entire, five-segmented. Epigyne with distinctive, 'drumstick-shaped' external morphology (Fig. 109D); receptacula with posterior spermathecae; insemination ducts coiled around receptacula; fertilisation ducts ventrally-looped (Figs 112A–B).

Distribution. Known only from southern Chile, in Región Ibáñez del Campo (Aisén province) and Región de los Lagos (Chiloé, Llanquihue and Palena provinces) (Fig. 212).

Remarks. *Eperiella alsophila* is a remarkable Chilean textricellin, very similar to the rare and highly restricted Australian species *E. hastings*. It is known only from the cool-temperate rainforests of southern Chile, in the regions surrounding Chiloé Island, and has usually been collected in direct sympatry with *Normplatnicka chilensis* (Fig. 212).

Eperiella hastings Rix & Harvey, sp. n.

urn:lsid:zoobank.org:act:AB7104B0-40F3-4EE5-BB1D-012296F3CB55

Figs 112C–D, 113–114, 213

Type material. Holotype male: *Bug Hole* (H-X3), Hastings karst, Tasmania, Australia, from cave wall, 43°23'S, 146°51'E, 21.iv.1988, S. Eberhard (QVM 13: 13533).

Paratypes: Allotype female, same data as holotype (QVM 13: 44521); 2 females, same data as holotype (QVM 13: 44522).

Etymology. The specific epithet is a noun in apposition, taken from the type locality.

Diagnosis. Males and females of *Eperiella hastings* can be distinguished from *E. alsophila* by the presence of only six vestigial eye spots (Fig. 113C). Both sexes can also be recognised by the Tasmanian cave distribution (Fig. 213).

Description. *Holotype male*: Total length 0.77. Carapace 0.41 long, 0.34 wide. Abdomen 0.44 long, 0.28 wide. Leg I femur 0.29. Body colour pale cream. Carapace raised anteriorly, not fused to sternum except around petiole; dorsal surface of pars cephalica slightly convex in lateral view. Eyes reduced to six vestigial eye spots on anterior margin of pars cephalica. Chelicerae each with bulging anterior projection; promargin with two peg teeth. Legs relatively short (leg I femur-carapace ratio 0.71); macrosetae absent. Abdomen oval, covered with hair-like setae; dorsal scute and lateral sclerotic strips absent. Pedipalpal patella with retrolaterally-directed, hooked lRPA and ornate, ridged cuticular microstructure; tegulum smooth, with curved, marginal ETR; embolus very long (length >> 5× width), coiling 3× around margin of tegulum (Fig. 114).

Allotype female: Total length 0.94. Carapace 0.45 long, 0.32 wide. Abdomen 0.57 long, 0.36 wide. Leg I femur 0.27. Cephalothorax, legs pale tan-yellow; abdomen pale cream. Carapace raised anteriorly, not fused to sternum except around petiole; dorsal surface of pars cephalica slightly convex in lateral view. Eyes reduced to six vestigial eye spots on anterior margin of carapace. Chelicerae without bulging anterior projections; promargin without peg teeth. Legs relatively short (leg I femur-carapace ratio 0.60); macrosetae absent. Abdomen oval, covered with hair-like setae; dorsal scute and lateral sclerotic strips absent. Pedipalp entire, five-segmented. Epigyne with distinctive, 'drumstick-shaped' external morphology (Fig. 113D); receptacula with globular posterior spermathecae; insemination ducts coiled around receptacula; fertilisation ducts ventrally-looped (Figs 112C–D).

Distribution. Known only from the cave *Bug Hole* in the Hastings karst of southern Tasmania (Fig. 213).

Remarks. *Eperiella hastings* is an extremely rare and enigmatic spider from the Hastings karst of southern Tasmania (Fig. 213). The species has no known close relatives in Australasia, and seems clearly congeneric only with *E. alsophila* from southern Chile. The Hastings Caves are home to a significant diversity of troglobitic arthropods (Eberhard et al. 1991), and the presence here of this extraordinary species is of the greatest biogeographic interest and conservation concern.

Genus *Algidiella* Rix & Harvey, gen. n.

urn:lsid:zoobank.org:act:DF88D73E-9FAF-46D1-AD52-9752E67725BE

Type species. *Textricella aucklandica* Forster, 1955.

Etymology. The generic name is derived from the Latin 'algidus', meaning 'cold' (Brown 1956), and refers to the temperate, sub-antarctic climate of the Auckland Islands, the type locality of the type species in this genus. The gender is feminine.

Affinities. The genus *Algidiella* appears to be closely related to *Taliniella* from New Zealand (Fig. 4).

Diagnosis. *Algidiella aucklandica* can be distinguished from all other Textricellini by the combined presence of a rounded basal embolic bulge (shared with *Taliniella* and *Tinytrella*) (Fig. 125H), by the presence of a dorsal flange-like projection on the retrolateral patellar apophysis of the male pedipalp (shared with *Taliniella*) (Figs 125E–G), and by the presence of a medial crest behind the evaginated tegular ridge (Figs 125B–C). Other diagnostic characters include the absence of bulging anterior projections on the male chelicerae (Fig. 123E), and the relatively low carapace profile of both males and females (Fig. 121).

Description. Very small, entelegyne Araneoidea: total length 1.00 to 1.10. *Cephalothorax*: Carapace without glandular depressions above maxillae; cuticle without glandular pits (Fig. 122E). Eight eyes present on anterior margin of pars cephalica (Fig. 120C); AME smallest. Chelicerae without bulging anterior projections in males; promargin with true teeth, a pair of fused setal sockets adjacent to base of fang and two peg teeth in males (Fig. 123F); ectal stridulatory ridges present in males.

Legs and female pedipalp: Legs three-clawed (Fig. 124D), covered with smooth or serrate hair-like setae. Trichobothria present on legs; tibiae each with three (legs I–III) or four (leg IV) trichobothria; metatarsi (legs I–III) each with single trichobothrium (Fig. 124C). Female pedipalp entire, five-segmented; claw absent (Figs 123C–D).

Abdomen: Abdomen oval; anterior sclerite present around epigastric region and petiole; dorsal scute absent on males and females (Fig. 121); posterior sclerotic ring surrounding spinnerets and colulus, ventrally extended in males. Six spinnerets situated posterior to fleshy colulus (Figs 126A, 126C, 126E); PMS without AC gland spigots and with posterior mAP gland spigot reduced to nubbin; PLS with complete triad, including enlarged, sinuous FL gland spigot. Anterior tracheal system with multiple anteriorly-directed tracheae; posterior tracheal spiracle absent.

Genitalia: Male pedipalp (Fig. 125) relatively simple; trochanter with modified prolateral seta forming stridulatory 'tooth'; patella with retrolaterally-directed, hooked ligulate retrolateral apophysis bearing dorsal flange, and ornate, ridged cuticular microstructure; tegulum smooth, with rounded basal embolic bulge, curved evaginated tegular ridge (ETR) and medial crest behind ETR; embolus exposed, long (length > 5× width), extending along prolateral margin of ETR and medial crest. Female genitalia (Fig. 138D) with pair of separate, globular lateral spermathecae; insemination ducts anteriorly looped; fertilisation ducts simple, curved.

Distribution. Known only from the Auckland Islands, New Zealand (Fig. 210).

Composition. Only the type species *Algidiella aucklandica* (Forster, 1955).

Algidiella aucklandica (Forster, 1955), comb. n.

Figs 7K, 120–125, 126A, 126C, 126E, 138D

Textricella aucklandica Forster, 1955: 200, figs 56–60 (holotype male from Auckland Island, New Zealand, in MNZ, not examined). Brignoli, 1983: 375. Platnick, 2009.

Material examined. NEW ZEALAND: Auckland Islands: Adams Island, Magnetic Cove Station, 16.I.1966, G. Kuschel, 3♀ (AMNH); same data except 18.I.1966, 1♀ (AMNH); same data, 1♂ (AMNH); Breaksea Point, Carnely Harbour, 2.II.1973, J. Dugdale, 1♀ (AMNH); Camp Cove, Carnley Harbour, 17.II.1973, J. Dugdale, 2♀ (AMNH); same data, 1♂, 3♀ (AMNH); Fleming Plateau, 2.II.1973, J. Dugdale, 2♂, 7♀ (AMNH); Mount D'Urville, 4.I.1973, J. Farrell, 1♀ (AMNH); Ranui Cove, 27.II.1973,

J. Dugdale, 1♂, 1♀ (AMNH); same data, 1♀ (AMNH); Skua Gully Flat, Carnley Harbour, 5.II.1973, J. Dugdale, 1♂, 2♀ (AMNH); same data, 2♂, 3♀ (AMNH$^{\text{SEM}♂♀}$).

Remarks. *Algidiella aucklandica* is an unusual, distinctive and basal textricellin species, known only from the sub-antarctic Auckland Islands, south of New Zealand (Fig. 210).

Genus *Taliniella* Rix & Harvey, gen. n.

urn:lsid:zoobank.org:act:1D54305B-A403-42E5-9FE3-F1E8893091C8

Type species. *Textricella nigra* Forster, 1959.

Etymology. The generic name is derived from an arbitrary combination of letters. The gender is feminine.

Affinities. The genus *Taliniella* appears to be closely related to *Algidiella* from the Auckland Islands, south of New Zealand (Fig. 4).

Diagnosis. Species of *Taliniella* can be distinguished from all other Textricellini by the combined presence of a rounded basal embolic bulge (shared with *Algidiella* and *Tinytrella*) (Fig. 134A), by the presence of a dorsal flange-like projection on the retrolateral patellar apophysis of the male pedipalp (shared with *Algidiella*) (Figs 134D–F), and by the presence of bulging anterior projections on the male chelicerae (Fig. 132E). Other diagnostic characters include the brown body colouration (Figs 7L, 127–129), and the sexually-dimorphic shape of the carapace (Figs 127A–B).

Description. Very small, entelegyne Araneoidea: total length 0.80 to 1.00. *Cephalothorax*: Carapace without glandular depressions above maxillae; cuticle without glandular pits (Fig. 131E). Eight eyes present on anterior margin of pars cephalica (Fig. 129B); AME smallest. Chelicerae with bulging anterior projections in males; promargin with true teeth, a pair of fused setal sockets adjacent to base of fang and two or three peg teeth in males (Fig. 132F); ectal stridulatory ridges present in males.

Legs and female pedipalp: Legs three-clawed (Fig. 133D), covered with smooth or serrate hair-like setae. Trichobothria present on legs; tibiae each with two (legs I–III) or three (leg IV) trichobothria; metatarsi (legs I–III) each with single trichobothrium (Fig. 133C). Female pedipalp entire, five-segmented; claw absent (Figs 132C–D).

Abdomen: Abdomen oval; anterior sclerite present around epigastric region and petiole; dorsal scute present (Fig. 129A) or absent (Fig. 127A) on males, absent on females (Fig. 127B); posterior sclerotic ring surrounding spinnerets and colulus. Six spinnerets situated posterior to fleshy colulus (Fig. 135); PMS of *T. nigra* with single medial AC gland spigot; PLS of *T. nigra* with complete triad, including enlarged, sinuous FL gland spigot. Anterior tracheal system with multiple anteriorly-directed tracheae; posterior tracheal spiracle absent.

Genitalia: Male pedipalp (Fig. 134) relatively large; trochanter with modified prolateral seta forming stridulatory 'tooth'; patella with retrolaterally-directed, hooked ligulate retrolateral apophysis bearing dorsal flange, variable distal apophysis and ornate, ridged cuticular microstructure; tegulum smooth, with rounded basal embolic bulge and excavate evaginated tegular ridge; embolus exposed, long (length > 5× width), looping or coiling around margin of bulb. Female genitalia of *T. nigra* (Figs 127D, 138C) sclerotised externally, with raised epigastric plate and epigynal atrium; internally with pair of separate, bilobate lateral receptacula; insemination ducts simple, curving laterally; fertilisation ducts ventrally-looped.

Distribution. New Zealand (Fig. 217).

Composition. *Taliniella nigra* (Forster, 1959) and the new species *T. vinki*.

Taliniella nigra (Forster, 1959), comb. n.

Figs 7L, 127–128, 131–135, 138C

Textricella nigra Forster, 1959: 279, figs 10–13 (holotype male from Little Barrier Island, Auckland, New Zealand, in Canterbury Museum, not examined). Brignoli, 1983: 375. Platnick, 2009.

Selected material examined. NEW ZEALAND: North Island: Auckland: Little Barrier Island, 9.XII.1950, 1♂, 1♀ (AMNH). **Hawke's Bay:** Makahu Spur, Kaweka Range, 24.II.1971, J. Townsend, 23♂, 36♀ (AMNH). **Waikato:** Te Aroha Mountain (written 'Te Aroho'), 6.V.1946, J. Salmon, 1♀ (AMNH). **Wellington:** Aorangi Mountains, Haurangi, 2.IX.1965, J. Townsend, 2♂, 4♀ (AMNH$^{\text{SEM♂♀}}$).

Remarks. *Taliniella nigra* is a dark brown species with a complex male pedipalpal patella, recognised by Forster (1959) as different to all other Textricellini in New Zealand. It has a relatively widespread distribution on the North Island, although morphological variation exists across the range of this species (Forster 1959). It can be distinguished from *T. vinki* by the absence of a dorsal scute on the male abdomen (Fig. 127A) and by the shorter embolus (Fig. 134A).

Taliniella vinki Rix & Harvey, sp. n.

urn:lsid:zoobank.org:act:2F2F7C29-9BD8-4B9D-BF8B-F09D57881B46

Figs 129–130

Type material. Holotype male: Mount Thomas Conservation Area, Canterbury, New Zealand, track to summit from Wooded Gully Picnic Area, sifting moss, 43°11'31"S, 172°20'10"E, 3.iv.2006, M. Rix (MNZ).

Paratypes: 1 male, same data as holotype (WAM T80032$^{\text{DNA-MPE}}$).

Etymology. The specific epithet is a patronym in honour of Cor Vink, of AgResearch (Lincoln Science Centre, New Zealand), for his contributions to New Zealand Arachnology, and his hospitality during field work around Christchurch.

Diagnosis. Males of *Taliniella vinki* can be distinguished from *T. nigra* by the presence of a dorsal scute on the male abdomen (Fig. 129A) and the presence of a longer embolus (Fig. 130). Females are unknown.

Description. *Holotype male*: Total length 0.80. Carapace 0.44 long, 0.35 wide. Abdomen 0.59 long, 0.45 wide. Leg I femur 0.27. Cephalothorax, abdomen brown; legs dark tan-yellow. Carapace raised anteriorly, not fused to sternum except around petiole; dorsal surface of pars cephalica slightly convex, with declining profile in lateral view. Eight eyes present on anterior margin of pars cephalica; AME 0.6x diameter of ALE; PME separated by their own diameter. Chelicerae each with bulging anterior projection; promargin with two peg teeth. Legs relatively short (leg I femur-carapace ratio 0.61); macrosetae absent. Abdomen oval, slightly shrunken, covered with hair-like setae; dorsal scute large, covering most of dorsal surface of abdomen; lateral sclerotic strips absent. Pedipalpal patella with retrolaterally-directed, hooked lRPA bearing dorsal flange, broad, flange-like distal apophysis and ornate, ridged cuticular microstructure; tegulum smooth, with rounded basal embolic bulge, excavate ETR and curved, sclerotised marginal rim; embolus very long (length >> 5× width), coiling 1.5x around margin of tegulum (Fig. 130).

Distribution. Known only from the Mount Thomas Conservation Area, north of Christchurch.

Remarks. *Taliniella vinki* is an enigmatic species, similar to *Taliniella nigra* from the North Island. This species was included in the molecular phylogenetic analysis of Rix et al. (2008) as "*Textricella* sp. NZ", where it was inferred as a basal taxon, sister to all other species now placed in the genera *Eterosonycha*, *Epigastrina*, *Normplatnicka*, *Raveniella* and *Rayforstia* (see Fig. 1).

Genus *Tinytrella* Rix & Harvey, gen. n.

urn:lsid:zoobank.org:act:90DEFFED-7D5D-4CF7-AFE9-5EDC7409D54A

Type species. *Textricella pusilla* Forster, 1959.

Etymology. The generic name is a contraction of 'tiny' and '*Textricella*', and refers to the small body size of the type species in this genus. The gender is feminine.

Affinities. The genus *Tinytrella* appears to be the basal sister-lineage to all other Textricellini (Fig. 4).

Diagnosis. *Tinytrella pusilla* can be distinguished from all other Textricellini by the presence of only a single peg tooth on the male cheliceral promargin (Fig. 140F), and by the absence of cuticular sculpturing on the male pedipalpal patella (Fig. 142E). Other diagnostic characters include the small body size, the dark brown body colouration (Figs 7M, 136–137), the anteriorly-declining profile of the pars cephalica in lateral view (Figs 137A, 139C, 139E), the absence of a dorsal scute on the male abdomen (Fig. 136A), and the simple male pedipalpal patella (Fig. 142E).

Description. Very small, entelegyne Araneoidea: total length 0.70 to 0.80. *Cephalothorax*: Carapace without glandular depressions above maxillae; cuticle without glandular pits (Figs 139C, 139E). Eight eyes present on anterior margin of pars cephalica (Fig. 139C); AME smallest. Chelicerae without bulging anterior projections in males; promargin with true teeth, a pair of fused setal sockets adjacent to base of fang and one peg tooth in males (Fig. 140F); ectal stridulatory ridges present in males.

Legs and female pedipalp: Legs three-clawed (Fig. 141D), covered with smooth or serrate hair-like setae. Trichobothria present on legs; tibiae each with two (legs I–III) or three (leg IV) trichobothria; metatarsi (legs I–III) each with single trichobothrium (Fig. 141C). Female pedipalp entire, five-segmented; claw absent (Figs 140C–D).

Abdomen: Abdomen oval; anterior sclerite present around epigastric region and petiole; dorsal scute absent on males and females (Figs 136A–B); posterior sclerotic ring surrounding spinnerets weakly sclerotised. Six spinnerets situated posterior to fleshy colulus (Figs 126B, 126D, 126F); PMS without medial AC gland spigots; PLS with complete triad, including enlarged, sinuous FL gland spigot. Anterior tracheal system with multiple anteriorly-directed tracheae (Fig. 138B); posterior tracheal spiracle absent.

Genitalia: Male pedipalp (Fig. 142) relatively simple; trochanter with modified prolateral seta forming stridulatory 'tooth'; patella with retrolaterally-directed, hooked ligulate retrolateral apophysis; tegulum smooth, with rounded basal embolic bulge and rounded, semi-circular evaginated tegular ridge; embolus exposed, long (length > 5× width) and sinuous, projecting distally. Female genitalia (Figs 138A–B) with pair of separate, sinuous anterior receptacula; insemination ducts simple, looping dorsally around receptacula; fertilisation ducts ventrally-looped.

Distribution. New Zealand (Fig. 217).

Composition. Only the type species *Tinytrella pusilla* (Forster, 1959).

Tinytrella pusilla (Forster, 1959), comb. n.

Figs 7M, 8A, 8C, 8E, 9B, 10C, 126B, 126D, 126F, 136–137, 138A–B, 139–142

Textricella pusilla Forster, 1959: 294, figs 51–57, 140 (holotype male from east of Dog Hill, Canterbury, New Zealand, in Canterbury Museum, not examined). Brignoli, 1983: 375. Platnick, 2009.

Selected material examined. NEW ZEALAND: South Island: Canterbury: creek E. of Dog Hill, tributary of the Hurunui River, 12.V.1952, J. Dugdale, 1♂, 2♀ (AMNH); Mt Richardson, 31.III.2006, M. Rix. 1♂ (WAM T94458). **Southland:** Alton Burn, Tuatapere, 13.III.1981, R. Forster, 6♂, 8♀ (AMNH); Fiordland National Park, S. end of Lake Te Anau, 21.IV.1995, C. Griswold, T. Meikle, 1♂, 2♀ (CAS); Lake Hauroko, 25.II.1970, R. Forster, C. Wilton, 2♂, 5♀ (AMNH); Lake Monowai, 15.I.1971, R. Forster, 4♂, 3♀ (AMNH); N. of Te Anau, 19.II.1965, N. Walker, 12♂, 37♀ (AMNH$^{SEM♂♀}$). **North Island: Wellington:** Orongorongo, 18.IX.1969, J. Watt, 17♂, 12♀ (AMNH).

Remarks. *Tinytrella pusilla* is a small, brown species from the North and South Islands of New Zealand, recognised by Forster (1959) as different to all other Textricellini in New Zealand. It appears to be the most basal textricellin taxon known, sister to all other described species (Fig. 4). Nothing is known of its biology or habits.

†Genus *Cenotextricella* Penney, 2007

Cenotextricella Penney, 2007 *in* Penney et al., 2007: 49. Type species by original designation *Cenotextricella simoni* Penney, 2007.

Distribution. Extinct. Known only from early Tertiary (lowermost Eocene) Paris amber.

Composition. Only the fossil species *Cenotextricella simoni* Penney, 2007.

Taxonomic remarks. The amber fossil genus *Cenotextricella*, represented only by *C. simoni* from the lowermost Eocene Paris Basin of France, was described by Penney (2007) as a species possibly related to '*Textricella*'. This placement is tentatively followed here on the basis of what appears to be a retrolaterally-directed apophysis on the male pedipalpal patella, the presence of a dorsal scute on the male abdomen, and the presence of a possible conductor on the male pedipalp (all textricellin-like characters) (Penney et al. 2007). Unfortunately, several key characters cannot be detected using the X-Ray Computed Tomography method utilised by Penney et al. (2007), e.g. the arrangement of spinneret spigots, and the presence or otherwise of glandular depressions on the carapace, peg teeth on the cheliceral promargin or cuticular sculpturing on the pedipalpal patella. The somatic gestalt of *Cenotextricella* is also not typically textricellin, and the affinities of this taxon remain unknown.

†*Cenotextricella simoni* Penney, 2007

Cenotextricella simoni Penney, 2007 *in* Penney et al., 2007: 49, figs 1–12 (holotype male from lowermost Eocene amber, Paris Basin, France, in MNHN, not examined).

Remarks. *Cenotextricella simoni* was a tiny northern-temperate species, with no known extant congeneric relatives. Its placement in the Micropholcommatidae and Textricellini is tentative.

Tribe Patelliellini Rix & Harvey, trib. n.

urn:lsid:zoobank.org:act:8893E770-FD91-4729-83FD-CAD7FA106CAF

Type genus. *Patelliella* Rix & Harvey, gen. n.

Diagnosis. *Patelliella adusta* is the only known species in the tribe Patelliellini. It can be distinguished from all other Micropholcommatidae and Micropholcommatinae by the presence of a tear-drop shaped female abdominal petiole (Fig. 146), the presence of a large, disk-shaped basal embolic bulge (Fig. 150A), the presence of a sinuous male pedipalpal patella bearing a flattened, paddle-shaped distal apophysis (Figs 145B, 150C–D), the absence of an anterior seta on the PMS (Figs 151C–D), the presence of a posterior seta on the PMS (shared with *Taphiassa*) (Figs 151C–D), and the complete absence of the posterior mAP spigot on the PMS (Figs 151C–D). Other diagnostic characters include the presence of a dorsal scute on the male abdomen (shared with Micropholcommatini and some derived Textricellini) (Fig. 144A) and the presence of a very long embolus that coils around the margin of the tegulum more than two times (shared with some *Micropholcomma* and *Eperiella*) (Fig. 145).

Distribution. Known only from Lord Howe Island (Fig. 216).

Included genera. Only the new genus *Patelliella*.

Remarks. The tribe Patelliellini, represented only by the monotypic genus *Patelliella* and the extraordinary type species *P. adusta*, is one of the most enigmatic and geographically restricted araneoid taxa in the world, with a current total range of less than 5 km^2! While clearly a micropholcommatine taxon similar to species in the tribes Micropholcommatini and Textricellini, *P. adusta* has no known relatives in either of these tribes, and shares none of the synapomorphies which define those distinctive clades.

Genus *Patelliella* Rix & Harvey, gen. n.

urn:lsid:zoobank.org:act:DD323775-22BF-4ABA-B161-FF1320C81BE6

Type species. *Patelliella adusta* Rix & Harvey, sp. n.

Etymology. The generic name is derived from the morphological noun 'patella', and refers to the remarkable, sinuous morphology of the male pedipalpal patella of the type species in this genus. The gender is feminine.

Diagnosis. As for the tribe Patelliellini (see above).

Description. Very small, entelegyne Araneoidea; total length 1.00 to 1.30. *Cephalothorax*: Carapace without glandular depressions above maxillae; cuticle without glandular pits (Fig. 147E). Eight eyes present on anterior margin of pars cephalica (Fig. 143C); AME smallest. Chelicerae with bulging anterior projections in males; promargin with true teeth, a pair of fused setal sockets adjacent to base of fang and single peg tooth in males (Fig. 148F); ectal stridulatory ridges present in males.

Legs and female pedipalp: Legs three-clawed (Figs 149D–F), covered with smooth or serrate hair-like setae. Trichobothria present on legs; tibiae each with three (legs I–III) or four (leg IV) trichobothria; metatarsi (legs I–III) each with single trichobothrium (Fig. 149C). Female pedipalp entire, five-segmented; claw absent (Figs 148C–D).

Abdomen: Abdomen oval; anterior sclerite present around epigastric region and unusual, tear-drop shaped petiole on females (Fig. 146); large dorsal scute present on males (Fig. 144A), absent on females (Fig. 143B); posterior sclerotic ring surrounding spinnerets and colulus. Six spinnerets situated posterior to fleshy colulus (Fig. 151); PMS reduced, with posterior seta but without anterior seta, medial AC gland spigots or posterior mAP gland spigot; PLS with complete triad. Anterior tracheal system with multiple, anteriorly-directed tracheae; posterior tracheal spiracle absent.

Genitalia: Male pedipalp (Fig. 150) relatively large; patella sinuous, with retrolaterally-directed, hooked ligulate retrolateral apophysis and flattened, paddle-shaped distal apophysis; tegulum smooth, with large, disk-shaped basal embolic bulge and curved evaginated tegular ridge; embolus exposed, very long (length >> 5× width), coiling around margin of tegulum >2x. Female genitalia (Fig. 146) with pair of separate, globular anterior spermathecae; insemination ducts coiled around fertilisation ducts; fertilisation ducts sinuous, posteriorly-directed.

Distribution. Known only from Lord Howe Island (Figs 216, 217)

Composition. Only the new species *Patelliella adusta*.

Patelliella adusta Rix & Harvey, sp. n.

urn:lsid:zoobank.org:act:1AD1C743-0B7A-4F65-9AFB-CD6A34402E82
Figs 7N, 143–151, 216

Type material. Holotype male: Mount Gower summit, D Gully, Lord Howe Island, New South Wales, Australia, 850 m, moss on trees, 16.XI.1979, G. Monteith (QMB S88030).

Paratypes: Allotype female, same data as holotype (QMB S88031); 2 males and 1 female, same data as holotype (QMB S88032$^{\mathrm{SEM}♂♀}$); 2 females, east end of Mount Gower summit, leaf litter ex *Dawsonia*, moss off log, 31°35'07"S, 159°04'43"E, 15.V.2001, I. Hutton (AMS KS79112).

Other material examined. AUSTRALIA: New South Wales: Lord Howe Island: Mount Gower: far eastern edge of Little Pocket, leaf litter, 31°35'23"S, 159°04'11"E, 23.V.2002, I. Hutton, 1♀ (AMS KS88975); midway down ridge N. of igloo, moss, 31°35'05"S, 159°04'35"E, 20.XI.2001, I. Hutton, 1♀ (AMS KS85197); ridge, leaf litter ex moss, 31°35'18"S, 159°04'20"E, 20.XI.2001, I. Hutton, P. Flemons, C. Reid, 1♀ (AMS KS85198); Station 45, north-eastern area of summit, in lichen on tree trunks, 31°35'12"S, 159°04'42"E, 15.II.1971, M. Gray, 1♂ (AMS KS86058); summit, litter, 31°35'23"S, 159°04'19"E, 1.II.1979, T. Kingston, B. Miller, 2♀ (AMS KS88977); top of gully N. of igloo, leaf litter ex moss, 31°35'07"S, 159°04'36"E, 20.XI.2001, I. Hutton, P. Flemons, C. Reid, 1♂ (AMS KS79111); top of large ridge, 31°35'16"S, 159°04'24"E, 20.XI.2001, I. Hutton, P. Flemons, C. Reid, 1♂, 1♀ (AMS KS79113). **Mount Lidgbird:** 31°33'S, 159°05'E, 1978, T. Kingston, 1♂ (AMS KS88976).

Etymology. The specific epithet is derived from the Latin 'adustus', meaning 'tanned' or 'brown' (Brown 1956), and refers to the brown body colouration of this species.

Diagnosis. As for the tribe Patelliellini (see above).

Description. *Holotype male*: Total length 1.18. Carapace 0.57 long, 0.50 wide. Abdomen 0.78 long, 0.65 wide. Leg I femur 0.47. Cephalothorax, abdominal sclerites brown; legs tan-yellow; abdomen dark-olive. Carapace significantly raised anteriorly, not fused to sternum except around petiole; dorsal surface of pars cephalica slightly convex in lateral view; clypeus bulging anteriorly. Eight eyes present on anterior margin of pars cephalica; AME 0.6x diameter of ALE; PME separated by slightly less than their own diameter. Chelicerae each with bulging anterior projection; promargin with one peg tooth. Legs relatively short (leg I femur-carapace ratio 0.82); macrosetae absent. Abdomen oval, covered with hair-like setae; dorsal scute large, covering most of dorsal surface of abdomen; lateral sclerotic strips absent. Pedipalp as for the Tribe Patelliellini (see above).

Allotype female: Total length 1.23. Carapace 0.57 long, 0.45 wide. Abdomen 0.88 long, 0.67 wide. Leg I femur 0.43. Cephalothorax, abdominal sclerites brown; legs tan-yellow; abdomen olive. Carapace raised anteriorly, not fused to sternum except around petiole; dorsal surface of pars cephalica slightly convex in lateral view; clypeus bulging anteriorly. Eight eyes present on anterior margin of pars cephalica; AME 0.6x diameter of ALE; PME separated by slightly less than their own diameter. Chelicerae without bulging anterior projections; promargin without peg teeth. Legs relatively short (leg I femur-carapace ratio 0.75); macrosetae absent. Abdomen oval, covered with hair-like setae, each seta projecting from small sclerotic spot; dorsal scute and lateral sclerotic strips absent. Pedipalp entire, five-segmented. Epigyne as for the Tribe Patelliellini (see above).

Distribution. Known only from southern Lord Howe Island in the western Pacific Ocean, 780 km north-east of Sydney (Fig. 216).

Remarks. *Patelliella adusta* has been collected only from the wet, montane cloud forest that occurs on the 27 hectare summit of Mount Gower, Lord Howe Island (Figs 220B–E), with a single additional specimen collected from nearby Mount Lidgbird (Figs 216, 220). The species is remarkable among Micropholcommatinae in having no known close relatives, and as such its presence on Lord Howe Island is puzzling, given the recent Australasian affinities of most of the fauna and flora of the island (Hutton 1998; Savolainen et al. 2006; Austin and Jennings 2009). Unlike the sympatric micropholcommatid species *Taphiassa magna* and *Rayforstia lordhowensis*, *P. adusta* has never been collected in the lowland forests on the northern half of the island, and the main population is restricted to the small, 850 m high plateau-like summit of Mount Gower (Figs 216, 220). Clearly, given its unique phylogenetic position and extremely limited distribution, this enigmatic species is of the highest conservation significance.

Subfamily Taphiassinae Rix & Harvey, subfam. n.

urn:lsid:zoobank.org:act:69327955-5C5C-49FA-BA8E-71151812EABB

Type genus. *Taphiassa* Simon, 1880.

Diagnosis. Species of Taphiassinae can be distinguished from all other Micropholcommatidae by the presence of a heavily punctate cephalothorax, with numerous glandular pits covering the pars cephalica, pars thoracica, clypeus and sternum (Figs 152A–D). Other diagnostic characters include the presence of otherwise smooth cuticle on the carapace and sternum, the presence of pleural sclerites joining the carapace and sternum (shared with Micropholcommatini and some *Gigiella*), the presence of glandular depressions on the antero-lateral corners of the carapace (shared with Gigiellinae) (Figs 170E, 170G–H), the presence of a strongly-recurved distal apophysis on the male pedipalpal patella (shared with some *Gigiella*) (Fig. 152E), the presence of a vestigial posterior tracheal spiracle on the ventral abdomen (Fig. 152F), the absence of a dorsal scute on the male abdomen (shared with Gigiellinae and most Textricellini), and the presence of relatively long legs in most species (Figs 158A–B). The suspended, loosely-woven egg sacs of Taphiassinae (Figs 223A, 223D–E, 223H) are also distinctive and possibly synapomorphic for the subfamily (see Natural History, below).

Distribution. Eastern and south-western mainland Australia, Tasmania, Lord Howe Island, New Caledonia and New Zealand (Fig. 217).

Included genera. *Taphiassa* Simon and *Olgania* Hickman.

Remarks. Species of Taphiassinae are all heavily punctate, mostly long-legged spiders, with a widespread distribution in Australasia. Although the monophyly of the subfamily is unequivocal and strongly supported by both molecular and morphological characters, the Taphiassinae were only first recognised as a distinct lineage by Rix et al. (2008). It is the only micropholcommatid subfamily not yet recorded from southern Chile (Fig. 217), and includes the largest Micropholcommatidae in the world; an undescribed species of *Taphiassa* from Mont Do, New Caledonia (AMNH) has a body length of 2.16 millimetres. Several species appear superficially similar to certain Cyatholipidae.

Genus *Taphiassa* Simon, 1880

Taphiassa Simon, 1880: 172. Type species by monotypy *Taphiassa impressa* Simon, 1880. Roewer, 1942: 414. Bonnet, 1959: 4238. Transferred from Theridiidae to Symphytognathidae by Levi & Levi, 1962: 29. Transferred from Symphytognathidae to Mysmenidae by Forster & Platnick, 1977: 2. Brignoli, 1980: 730 (also transferred '*Taphiassa*' *punctigera* Simon, 1895 to Theridiidae *incertae sedis*). Brignoli, 1983: 379. Platnick, 2009.

Parapua Forster, 1959: 301. Type species by original designation *Parapua punctata* Forster, 1959. Brignoli, 1983: 374. Platnick, 2009. **syn. n.** (but see also Brignoli, 1980: 731).

Affinities. The genus *Taphiassa* appears to be the sister-lineage to *Olgania* from Tasmania (Fig. 4).

Diagnosis. Species of *Taphiassa* can be distinguished from species of *Olgania* by the presence of a normal, plate-like anterior sclerite (Fig. 165C), the presence of an enlarged subtegulum (Fig. 174A), and the presence of a seta projecting from the proximal toothed mound of the cheliceral promargin (Figs 159B, 172F). Other diagnostic characters include the presence of eight eyes (Fig. 152A), and the absence of bulging anterior projections on the male chelicerae (Fig. 157E).

Description. Very small, entelegyne Araneoidea: total length 1.00 to 2.20. *Cephalothorax*: Carapace with glandular depressions above maxillae (Figs 170E, 170G–H); cuticle of carapace and sternum heavily punctate, covered with glandular pits (Figs 152A–C); margins fused to sternum via pleural sclerites. Eight eyes present on anterior margin of pars cephalica (Fig. 152A); eyes usually subequal, AME greater than three-quarters diameter of ALE (Fig. 152C). Chelicerae without bulging anterior projections in males; promargin with one sessile tooth and separate proximal, toothed mound near tip of fang bearing prolateral seta (Figs 159A–B); fused setal sockets, peg teeth and ectal stridulatory ridges absent.

Legs and female pedipalp: Legs three-clawed (Figs 160E–F), covered with smooth or serrate hair-like setae; superior claws of legs I–II often strongly pectinate (Figs 173D–E); superior claws of legs III–IV usually asymmetric (Fig. 173F). Trichobothria present on legs; tibiae each with three (legs I–III) or four (legs III–IV) trichobothria; metatarsi each with (legs I–IV) (Fig. 160C) or sometimes without (leg IV) single trichobothrium. Female pedipalp entire (Fig. 159C), reduced or vestigial (Fig. 170F); claw absent (Fig. 159D).

Abdomen: Abdomen globose; anterior sclerite present around epigastric region and petiole; dorsal scute absent on males and females (Figs 155A–B); posterior sclerotic ring surrounding spinnerets and colulus. Six spinnerets situated posterior to fleshy colulus (Figs 162, 175); PMS with single medial AC gland spigot and posterior seta; PLS with reduced triad consisting of FL gland spigot and single AG gland spigot. Anterior tracheal system well-developed, with multiple radiating tracheae (Figs 169E–F); posterior tracheal spiracle vestigial (Figs 152F, 154D).

Genitalia: Male pedipalp (Figs 161, 174) relatively small; patella with retrolaterally-directed, hooked ligulate retrolateral apophysis and strongly recurved distal apophysis; subtegulum enlarged, bulging posteriorly; tegulum smooth, with curved evaginated tegular ridge; embolus exposed, long (length > 5× width), curving distally. Female genitalia (Figs 154A–C, 169) with pair of separate, globular anterior spermathecae; insemination ducts simple, straight; fertilisation ducts simple, curved.

Distribution. Eastern and south-western mainland Australia, Tasmania, Lord Howe Island, New Caledonia and New Zealand (Fig. 217).

Composition. Two described species, *Taphiassa impressa* Simon, 1880 and *T. punctata* (Forster, 1959) and the four new species *T. castanea*, *T. globosa*, *T. magna* and *T. robertsi*. Undescribed species are also known from New Caledonia and eastern Australia. Note that the species *Taphiassa punctigera* Simon, 1895 is a Theridiidae *incertae sedis* (Brignoli 1980; Platnick 2009), not conspecific or congeneric with *T. impressa*.

Nomenclatural remarks. The genus *Taphiassa* was originally described by Simon (1880) for the species *T. impressa*, from Nouméa, New Caledonia. No illustrations were provided with the original description, and the species had never been adequately illustrated (Brignoli 1980). Levi and Levi (1962) transferred *T. impressa* from the Theridiidae to the Symphytognathidae, while Forster and Platnick (1977) transferred it from the Symphytognathidae to the Mysmenidae. It was Brignoli (1980) who, with remarkable insight aided only be Simon's original Latin description, first noted the similarity of *T. impressa* to *Parapua*, and the analysis of Rix et al. (2008) also inferred a close sister-group relationship between *Taphiassa* and *Parapua*. *Taphiassa* is hereby transferred from the Mysmenidae to the Micropholcommatidae, and *Taphiassa* is formally recognised as a senior generic synonym of *Parapua*.

Taxonomic remarks. Species of *Taphiassa* can be arbitrarily divided into two groups based upon somatic features – the '*Taphiassa* group' and the '*Parapua* group'. Species in the '*Parapua* group' (including *T. punctata*, *T. castanea* and similar species) are generally smaller, darker coloured, with relatively shorter legs and smaller female pedipalps than species in the '*Taphiassa* group', which are often relatively large with strongly patterned abdomens. A spectrum of intermediate morphologies exists, however, and the division seems merely phenetic. Many additional species of *Taphiassa* are known from Australia and New Caledonia (e.g. see Platnick 1993 under "*Parapua*"), and the genus has clearly radiated in New Caledonia, with at least five undescribed species represented in museum collections (M. Rix, unpubl. data).

The '*Taphiassa* Group'

Taphiassa impressa Simon, 1880

Figs 153, 154A–B

Taphiassa impressa Simon, 1880: 172. Roewer, 1942: 414. Bonnet, 1959: 4238. Levi & Levi, 1962: 29, figs 312–313. Brignoli, 1980: 730. Platnick, 2009.

Type material. Holotype female: 'Nouméa', New Caledonia, E. Simon (MNHN AR3747).

Remarks. Female specimens of *Taphiassa* examined from Mont Koghis, Col des Rousettes and Aoupinié (AMNH) are very similar to, and may be conspecific with, the holotype female of *Taphiassa impressa*. Males are required, however, to determine whether these populations are indeed conspecific, or whether they represent a complex of closely related species. New Caledonia has a diverse taphiassine fauna, with at least five new species of *Taphiassa* known from montane habitats (e.g. Mont Do, Mont Dzumac, Mont Mandjélia, Mont Panié) and offshore islands (e.g. Île des Pins) (M. Rix, unpubl. data).

Taphiassa robertsi Rix & Harvey, sp. n.

urn:lsid:zoobank.org:act:D3B8D09B-71C2-49EF-97F1-0C145EEAB3CA

Figs 7P, 8B, 8D, 8F, 8H, 10E–F, 152A–B, 152F, 154C–D, 155–162, 215, 223F–G

Type material. Holotype male: Yanchep National Park, *Mambibby Cave* (YN-12), Western Australia, Australia, web strand on rock wall near stair, 31°33'S, 115°41'E, 4.VII.1998, R. Foulds (WAM T94519).

Paratypes: Allotype female, *Tuart Cave* (YN-474), Carabooda area, A. Lombardo's property, Western Australia, Australia, off soil cone litter, edge of daylight, 20.III.1999, R. Foulds (WAM T94520).

Other material examined. AUSTRALIA: Western Australia: same data as holotype except 18.V.2002, 1♂ (WAM T94521$^{SEM♂}$); same data as holotype except web strand, twilight zone, 30.VI.2001, 1♀ (WAM T94522); Yanchep National Park, *Chingah Cave* (YN-416), rock wall under daylight hole, twilight zone, 16.XII.2000, R. Foulds, 1♀ (WAM T94523); Yanchep National Park, unnamed cave (YN-420), 4 m into cave, twilight of entrance overhang, dragline, 16.IV.1996, R. Foulds, 1♀ (WAM T94524); Yanchep National Park, *Carpark Cave* (YN-18), web strand in rockwall, daylight edge, 7.VII.1998, R. Foulds, 1♀ (WAM T94525$^{\text{SEM♀}}$); Bibbulmun Track, E. of Albany Wind Farm, sifting elevated leaf litter, 35°04'10"S, 117°48'26"E, 18.III.2008, M. Rix, M. Harvey, 1♂ (WAM T94529); D'Entrecasteaux National Park, Chesapeake Road, sifting leaf litter, 34°51'30"S, 116°24'46"E, 14.III.2007, M. Rix, M. Harvey, M. Moir, 1♀ (WAM T94528); Gull Rock National Park, end of Ledge Point Road, 35°00'51"S, 118°00'23"E, 17.III.2008, M. Rix, M. Harvey, 1♂ (WAM T94492); Limeburners Road, near Torndirrup National Park, sifting elevated leaf litter in deep gully, 35°05'27"S, 117°54'40"E, 14.III.2008, M. Rix, M. Harvey, 3♂, 1♀ (WAM T94527); Margaret River region, *Foxhole Cave* (MR-9), from web among rocks in breezeway, 33°55'S, 115°00'E, 2.XI.1996, R. Foulds, 1♂ (WAM T94526); Porongurup National Park, Waddys Hut, sifting elevated leaf litter, 34°40'55"S, 117°50'55"E, 29.IV.2008, M. Rix, M. Harvey, 1♂ (WAM T94482); Sand Patch Beach Reserve, end of Mutton Bird Road, sifting elevated leaf litter, 35°02'41"S, 117°41'31"E, 18.III.2008, M. Rix, M. Harvey, 1♀ (WAM T94530); Torndirrup National Park, Salmon Hole Road, sifting elevated leaf litter, 35°06'07"S, 117°58'03"E, 14.III.2008, M. Rix, M. Harvey, 1♀ (WAM T94493); Two Peoples Bay Nature Reserve, near Picnic Area, sifting elevated leaf litter, 34°58'27"S, 118°10'42"E, 1.V.2008, M. Rix, M. Harvey, J. Newell, 1♀ (WAM T94483); Walpole-Nornalup National Park, litter, 9.II.1979, M. Gray, 1♀ (AMS KS14625); same data, 1♀ (AMS KS14636); Walpole-Nornalup National Park, Anderson Road, near Valley of the Giants Road, Tingle-Karri forest, leaf litter Tullgren funnel, 34°59'32"S, 116°52'17"E, 3.V.2008, M. Rix, M. Harvey, 1♂, 2♀ (WAM T94481); West Cape Howe National Park, sifting leaf litter above Shelley Beach, 35°06'22"S, 117°37'39"E, 7.XI.2007, M. Rix, 1♂, 1♀ (WAM T94532); West Cape Howe National Park, off Torbay Beach Road, sifting elevated leaf litter in gully opposite Richard Island, 35°04'35"S, 117°38'49"E, 16.III.2008, M. Rix, M. Harvey, 1♂, 2♀ (WAM T94531); Westcliffe fireline track, litter, 9.II.1979, M. Gray, 1♂, 1♀ (AMS KS14646); Witchcliffe region, *Pentorifice Cave* (WI-122), off web near stalagmite drip at north-eastern end of cave, 25.III.1995, R. Foulds, 1♂ (WAM T35078); near Yate Road, S. of Bremer Bay, sifting elevated leaf litter, 34°24'10"S, 119°22'43"E, 2.V.2008, M. Rix, M. Harvey, J. Newell, 1♀ (WAM T94484).

Etymology. The specific epithet is a patronym in honour J. Dale Roberts, of the University of Western Australia (Perth), for his exceptional supervision, patient guidance and wonderful support during M. Rix's postgraduate study at the University of Western Australia.

Diagnosis. Males and females of *Taphiassa robertsi* can be distinguished from all other described congeners by the distinctive, bi-coloured pattern on the abdomen

(Figs 7P, 155A–B), similar only to undescribed species in south-eastern Australia. In the field this species is likely to be confused only with the sympatric species *T. globosa*, which is much smaller, with relatively shorter legs.

Description. *Holotype male*: Total length 1.43. Carapace 0.67 long, 0.49 wide. Abdomen 0.74 long, 0.61 wide. Leg I femur 1.29. Cephalothorax, anterior sclerite, abdominal sclerotic spots brown; legs, spinneret sclerite tan-yellow; abdomen dark grey, with cream mesal stripe and cream lateral patches. Carapace raised anteriorly, fused to sternum via pleural sclerites, with circular sclerotic rim around petiole; dorsal surface of pars cephalica slightly convex in lateral view; carapace and sternum heavily punctate. Eight eyes present on anterior margin of pars cephalica; AME 0.8x diameter of ALE; PME separated by slightly less than their own diameter. Chelicerae without bulging anterior projections; promargin without peg teeth. Legs relatively long (leg I femur-carapace ratio 1.93); macrosetae absent. Abdomen globose, covered with hair-like setae, each seta projecting from small sclerotic spot; dorsal scute and lateral sclerotic strips absent. Pedipalpal patella with retrolaterally-directed, hooked lRPA and strongly recurved distal apophysis; bulb spherical, with posteriorly-bulging subtegulum; tegulum smooth, with curved ETR; embolus long (length > 5× width), curving distally (Fig. 156).

Allotype female: Total length 1.55. Carapace 0.68 long, 0.50 wide. Abdomen 0.82 long, 0.76 wide. Leg I femur 1.29. Cephalothorax, anterior sclerite, abdominal sclerotic spots brown; legs, spinneret sclerite tan-yellow; abdomen dark grey, with cream mesal stripe and cream lateral patches. Carapace raised anteriorly, fused to sternum via pleural sclerites, with circular sclerotic rim around petiole; dorsal surface of pars cephalica slightly convex in lateral view; carapace and sternum heavily punctate. Eight eyes present on anterior margin of pars cephalica; AME 0.8x diameter of ALE; PME separated by slightly less than their own diameter. Chelicerae without bulging anterior projections; promargin without peg teeth. Legs relatively long (leg I femur-carapace ratio 1.90); macrosetae absent. Abdomen globose, covered with hair-like setae, each seta projecting from small sclerotic spot; dorsal scute and lateral sclerotic strips absent. Pedipalp entire, five-segmented. External epigyne indistinct (Fig. 155D); spermathecae globular, almost spherical; insemination ducts short; fertilisation ducts simple, curved (Fig. 154C).

Distribution. Known from the western and southern coasts of south-western Western Australia (Fig. 215).

Remarks. *Taphiassa robertsi* is a common and relatively widespread species in south-western Western Australia, where specimens have been collected by beating and sifting low vegetation and elevated leaf litter in mesic habitats. The main population extends along the south coast from Margaret River in the west to at least Bremer Bay in the east, with outlying populations in the Porongurup National Park and in caves at Yanchep National Park, north of Perth (Fig. 215). Similar species are also known from throughout south-eastern Australia.

The '*Parapua* Group'

Taphiassa castanea Rix & Harvey, sp. n.

urn:lsid:zoobank.org:act:032497CC-BBF5-49F1-A91F-CD2F88D8F4D1

Figs 152C, 163–164, 169C, 170–175

Type material. Holotype male: Cuckoo Falls, near Scottsdale, Tasmania, Australia, beating ferns, 41°14'13"S, 147°36'49"E, 26.IV.2006, M. Rix (TMAG).

Paratypes: Allotype female, same data as holotype (TMAG); 5 males, same data as holotype (WAM T94478); 1 male, same data as holotype (WAM T80024$^{\text{DNA-MPE}}$).

Other material examined. AUSTRALIA: Tasmania: Liffey Falls, 14.V.1953, V. Hickman, 1♂, 1♀ (AMS KS49192); track off Mount Barrow Road, 780 m, pyrethrum fogging tree ferns, 15–17.II.1980, A. Newton, M. Thayer, 1♀ (AMNH); Mount Wellington, Cascades, 10.IV.1961, V. Hickman, 1♂ (AMS KS30732); Mount Wellington, 'Fern Tree', beating low-growing ferns, 42°55'19"S, 147°15'36"E, 28.IV.2006, M. Rix, 5♂, 1♀ (WAM T94475$^{\text{SEM♂♀}}$); Mt Wellington, Lenah Valley track from 'The Springs' carpark, sifting moss and leaf litter, 27.IV.2007, M. Rix, 1♀ (WAM T94474); 60 km S. of Smithton on Sumac Road, mixed litter, 3.III.1977, J. Kethley, 1♀ (FMC); south-western Tasmania, 42°37'S, 145°45'E, 9.II.1976, C. Howard et al., 1♀ (AMS KS26237).

Etymology. The specific epithet is derived from the Latin 'castaneus', meaning 'of the colour of chestnuts, brown' (Brown 1956), and refers to the brown carapace colouration of this species.

Diagnosis. Males of *Taphiassa castanea* can be distinguished from all other described congeners by the small body size (carapace length < 0.60), and by the oval profile of the tegulum in ventral view (Fig. 164A). Females can be distinguished from all other described congeners by the small body size (carapace length < 0.60) and by the distinctive shape of the receptacula (Fig. 169C). Both sexes can also be recognised by the Tasmanian distribution.

Description. *Holotype male*: Total length 1.13. Carapace 0.55 long, 0.43 wide. Abdomen 0.64 long, 0.61 wide. Leg I femur 0.58. Cephalothorax, abdominal sclerites dark brown; legs dark tan-yellow; abdomen dark olive, with slightly darker markings mesally and laterally. Carapace raised anteriorly, fused to sternum via pleural sclerites, with circular sclerotic rim around petiole; dorsal surface of pars cephalica slightly convex in lateral view; carapace and sternum heavily punctate. Eight subequal eyes present on anterior margin of pars cephalica; PME separated by slightly less than half their own diameter. Chelicerae without bulging anterior projections; promargin without peg teeth. Legs relatively short (leg I femur-carapace ratio 1.05); macrosetae absent. Abdomen globose, covered with hair-like setae, each seta projecting from small sclerotic spot; dorsal scute and lateral sclerotic strips absent. Pedipalpal patella with retrolaterally-directed, hooked lRPA and strongly recurved distal apophysis; bulb oval in profile, with posteriorly-bulging subtegulum; tegulum smooth, oval in profile, with curved ETR; embolus long (length > 5× width), curving distally (Fig. 164).

Allotype female: Total length 1.25. Carapace 0.53 long, 0.46 wide. Abdomen 0.72 long, 0.65 wide. Leg I femur 0.58. Cephalothorax, abdominal sclerites dark brown; legs dark tan-yellow; abdomen dark grey. Carapace raised anteriorly, fused to sternum via pleural sclerites, with circular sclerotic rim around petiole; dorsal surface of pars cephalica slightly convex in lateral view; carapace and sternum heavily punctate. Eight subequal eyes present on anterior margin of pars cephalica; PME separated by slightly less than half their own diameter. Chelicerae without bulging anterior projections; promargin without peg teeth. Legs relatively short (leg I femur-carapace ratio 1.09); macrosetae absent; superior claws on legs I–II strongly pectinate. Abdomen globose, slightly shrunken, covered with hair-like setae, each seta projecting from small sclerotic spot; dorsal scute and lateral sclerotic strips absent. Pedipalp very small, reduced to a vestigial nubbin. External epigyne indistinct (Fig. 163D); spermathecae globular, oval in profile; insemination ducts short; fertilisation ducts simple, curved (Fig. 169C).

Distribution. Known only from Tasmania.

Remarks. *Taphiassa castanea* is a common species in Tasmania, where it can be found living under low ferns in temperate rainforest habitats, sometimes in direct sympatry with another species of *Taphiassa* very similar to *T. robertsi*. It is most similar to *T. globosa* and several other undescribed species from mainland Australia. This species was included in the molecular phylogenetic analysis of Rix et al. (2008) as "*Parapua* sp. TAS".

Taphiassa globosa **Rix & Harvey, sp. n.**

urn:lsid:zoobank.org:act:29F22A1B-422F-4B32-B2AA-18ED3C4901D4

Figs 165–166, 169D, 215, 223C–E

Type material. Holotype male: Walpole-Nornalup National Park, Tall Tingle Tree Path, Western Australia, Australia, 13.VI.1987, N. Platnick, R. Raven (WAM T96810).

Paratypes: Allotype female, same data as holotype (WAM T96811).

Other material examined. AUSTRALIA: Western Australia: Beedelup National Park, Beedelup Falls, sifting elevated leaf litter, 34°25'S, 115°52'E, 27.VIII.2006, M. Rix, J. Wojcieszek, 1♂ (WAM T94479); S. of Bremer Bay, sifting elevated leaf litter, 34°25'13"S, 119°22'26"E, 2.V.2008, M. Rix, M. Harvey, J. Newell, 1♂ (WAM T94487); Dillon Bay, near Bremer Bay, sifting elevated leaf litter under *Agonis*, 34°27'26"S, 119°16'36"E, 2.V.2008, M. Rix, M. Harvey, J. Newell, 1♂ (WAM T94489); Frenchman Peak, Cape Le Grand National Park, sifting elevated leaf litter on S. face of summit, 34°58'03"S, 122°09'59"E, 26.XII.2008, M. Rix, J. Wojcieszek, 1♀ (WAM T94488); Gull Rock National Park, off Gull Rock Road, sifting elevated leaf litter, 35°00'31"S, 118°02'29"E, 17.III.2008, M. Rix, M. Harvey, 1♀ (WAM T94485); Gull Rock National Park, end of Ledge Point Road, sifting elevated leaf litter, 35°00'51"S, 118°00'23"E, 17.III.2008, M. Rix, M. Harvey, 1♂

(WAM T94490); Karri Valley, Hop Garden Road, off Vasse Highway, sifting leaf litter, 34°24'59"S, 115°50'52"E, 26–27.VIII.2006, M. Rix, 1♂ (WAM T80025$^{\text{DNA-MPE}}$); Sand Patch Beach Reserve, end of Prescott Vale Road, W. of Albany Wind Farm, sifting elevated leaf litter, 35°03'07"S, 117°45'39"E, 15.III.2008, M. Rix, M. Harvey, 1♂ (AMNH); Shannon National Park, Dog Pool, head-torch at night, 34°46'S, 116°22'E, 8.VI.1993, J. Waldock, A. Sampey, 1♀ (WAM T65551); Torndirrup National Park, Salmon Hole Road, sifting elevated leaf litter, 35°06'07"S, 117°58'03"E, 14.III.2008, M. Rix, M. Harvey, 1♂, 1♀ (AMNH); Warren National Park, Maidenbush Track, 600 m, old-growth Karri (*Eucalytpus diversicolor*) forest, flight-intercept trap, 34°30'31"S, 115°57'25"E, 29.VII-10.VIII.2004, Newton, Solodovnikov, 1♀ (FMC); West Cape Howe National Park, Cosy Corner camp ground, sifting elevated leaf litter, 35°03'40"S, 117°38'37"E, 16.III.2008, M. Rix, M. Harvey, 1♀ (WAM T94486).

Etymology. The specific epithet is derived from the Latin 'globosus', meaning 'spherical' (Brown 1956), and refers to the rounded abdomen of this species.

Diagnosis. Males of *Taphiassa globosa* can be distinguished from all other described congeners by the small body size (carapace length < 0.50), by the broad, almost subtriangular profile of the tegulum in ventral view (Fig. 166A), and by the distinctive bi-coloured pattern on the abdomen (Fig. 165A). Females can be distinguished from all other described congeners by the small body size (carapace length < 0.50) and by the distinctive, compact shape of the receptacula (Fig. 169D). Both species can also be recognised by the Western Australian distribution (Fig. 215). In the field this species is likely to be confused only with the sympatric species *T. robertsi*, which is much larger, with relatively longer legs.

Description. *Holotype male*: Total length 1.03. Carapace 0.49 long, 0.42 wide. Abdomen 0.59 long, 0.51 wide. Leg I femur 0.51. Cephalothorax, abdominal sclerites dark brown; legs tan-yellow; abdomen pale tan-yellow, with dark grey mesal marking and dark grey lateral patches. Carapace raised anteriorly, fused to sternum via pleural sclerites, with circular sclerotic rim around petiole; dorsal surface of pars cephalica slightly convex in lateral view; carapace and sternum heavily punctate. Eight subequal eyes present on anterior margin of pars cephalica; PME separated by half their own diameter. Chelicerae without bulging anterior projections; promargin without peg teeth. Legs relatively short (leg I femur-carapace ratio 1.04); macrosetae absent. Abdomen globose, covered with hair-like setae, each seta projecting from small sclerotic spot; dorsal scute and lateral sclerotic strips absent. Pedipalpal patella with retrolaterally-directed, hooked lRPA and strongly recurved distal apophysis; bulb somewhat conical, with posteriorly-bulging subtegulum; tegulum smooth, almost subtriangular in profile, with curved ETR; embolus long (length > 5× width), curving distally (Fig. 166).

Allotype female: Total length 1.25. Carapace 0.47 long, 0.42 wide. Abdomen 0.88 long, 0.84 wide. Leg I femur 0.57. Cephalothorax, abdominal sclerites dark brown; legs tan-yellow; abdomen dark grey, with slightly paler mesal region. Carapace raised anteriorly, fused to sternum via pleural sclerites, with circular sclerotic rim around petiole; dorsal surface of pars cephalica slightly convex in lateral view; carapace and sternum heavily punctate. Eight subequal eyes present on anterior margin of pars cephalica; PME separated by half their own diameter. Chelicerae without bulging anterior projections; promargin without peg teeth. Legs relatively short (leg I femur-carapace ratio 1.21); macrosetae absent; superior claws on legs I–II strongly pectinate. Abdomen globose, covered with hair-like setae, each seta projecting from small sclerotic spot; dorsal scute and lateral sclerotic strips absent. Pedipalp very small, reduced to a vestigial nubbin. External epigyne indistinct (Fig. 165D); spermathecae globular, compact, 'teardrop' shaped; insemination ducts short; fertilisation ducts simple, curved (Fig. 169D).

Distribution. Known only from the south coast of south-western Western Australia, from Pemberton east to Cape Le Grand National Park (Fig. 215).

Remarks. *Taphiassa globosa* is a common and relatively widespread species along the Western Australian south coast, where it can be found in low vegetation in mesic habitats. It is most similar to *T. castanea* and several other undescribed species from eastern Australia. This species was included in the molecular phylogenetic analysis of Rix et al. (2008) as "*Parapua* sp. WA".

Taphiassa magna Rix & Harvey, sp. n.

urn:lsid:zoobank.org:act:94C29946-FA1E-418B-8806-0B6397297E25
Figs 167–168, 169A, 216, 223H

Type material. Holotype male: Eddies Cave, Mount Gower track, Lord Howe Island, New South Wales, Australia, 550 m, sieved litter and moss, 16.XI.1979, G. Monteith (QMB S88033).

Paratypes: Allotype female, trail to Mount Gower, Lord Howe Island, New South Wales, Australia, pitfall trap, 31°35'08"S, 159°04'45"E, 28.XI.-5.XII.2000, AM CBCR (AMS KS76214); 1 female, Mount Gower, Lord Howe Island, New South Wales, Australia, summit, pitfall trap, 31°35'23"S, 159°04'22"E, 28.XI.-5.XII.2000, AM CBCR (AMS KS76237).

Other material examined. AUSTRALIA: New South Wales: Lord Howe Island: trail to Mount Gower, pitfall trap, 31°35'08"S, 159°04'45"E, 5–14.XII.2000, AM CBCR, 1♀ (AMS KS76209); above Erskine Valley, pitfall trap, 31°35'S, 159°05'E, 12.IX.1978, T. Kingston, 1♀ (AMS KS87125); Mount Lidgbird, south-eastern face at base of summit tabletop, pitfall trap, 31°34'26"S, 159°04'54"E, 25.XI.-2.XII.2000, AM CBCR, 1♀ (AMS KS76105); same data except 31°34'22"S, 159°04'46"E, 1♀ (AMS KS76146); North Bay, litter, 31°31'09"S, 159°02'29"E, 13.XI.1978, T. Kingston, B. Miller, 1♀ (AMS KS88974); same data except 15.XI.1978, 1♀ (AMS KS88973).

Etymology. The specific epithet is derived from the Latin 'magnus', meaning 'large' (Brown 1956), and refers to the relatively large body size of this species.

Diagnosis. Males and females of *Taphiassa magna* can be distinguished from all other described congeners by the large body size (carapace length > 0.70). Both sexes can also be recognised by the Lord Howe Island distribution (Fig. 216).

Description. *Holotype male*: Total length 1.51. Carapace 0.73 long, 0.59 wide. Abdomen 0.94 long, 0.78 wide. Leg I femur 1.04. Cephalothorax, abdominal sclerites dark reddish-brown; legs dark tan-yellow; abdomen dark olive-yellow. Carapace raised anteriorly, fused to sternum via pleural sclerites, with circular sclerotic rim around petiole; dorsal surface of pars cephalica slightly convex in lateral view; carapace and sternum heavily punctate. Eight subequal eyes present on anterior margin of pars cephalica; PME separated by slightly less than half their own diameter. Chelicerae without bulging anterior projections; promargin without peg teeth. Legs relatively long (leg I femur-carapace ratio 1.42); macrosetae absent. Abdomen globose, covered with hair-like setae, each seta projecting from small sclerotic spot; dorsal scute and lateral sclerotic strips absent. Pedipalpal patella with retrolaterally-directed, hooked lRPA and strongly recurved distal apophysis; bulb oval in profile, with posteriorly-bulging subtegulum; tegulum smooth, with curved ETR; embolus long (length > 5× width), curving distally (Fig. 168).

Allotype female: Total length 1.70. Carapace 0.74 long, 0.60 wide. Abdomen 1.16 long, 0.88 wide. Leg I femur 1.04. Cephalothorax, abdominal sclerites dark reddish-brown; legs dark tan-yellow; abdomen olive-grey. Carapace raised anteriorly, fused to sternum via pleural sclerites, with circular sclerotic rim around petiole; dorsal surface of pars cephalica slightly convex in lateral view; carapace and sternum heavily punctate. Eight subequal eyes present on anterior margin of pars cephalica; PME separated by slightly less than half their own diameter. Chelicerae without bulging anterior projections; promargin without peg teeth. Legs relatively long (leg I femur-carapace ratio 1.41); macrosetae absent; superior claws on legs I–II strongly pectinate. Abdomen globose, covered with hair-like setae, each seta projecting from small sclerotic spot; dorsal scute and lateral sclerotic strips absent. Pedipalp very small, reduced to a vestigial nubbin. External epigyne indistinct (Fig. 167D); spermathecae globular, bent inwardly; insemination ducts short; fertilisation ducts simple, curved (Fig. 169A).

Distribution. Known only from Lord Howe Island in the western Pacific Ocean, 780 km north-east of Sydney (Figs 216, 220).

Remarks. *Taphiassa magna* is one of the largest Micropholcommatidae in the world, and is known only from Lord Howe Island. The species is widespread on the island, found in both lowland and montane areas (Figs 216, 220). The large body size, reddish-brown carapace colour and morphology of the male and female genitalia suggest a possible close relationship with *T. punctata* from New Zealand.

Taphiassa punctata **(Forster, 1959), comb. n.**

Figs 9C, 169B, 169E–F

Parapua punctata Forster, 1959: 301, figs 78–81, 141 (holotype male from Methven, Canterbury, New Zealand, in Canterbury Museum, not examined). Brignoli, 1983: 374. Platnick, 2009.

Selected material examined. NEW ZEALAND: South Island: Canterbury: 8 km S. of Arthurs Pass, 14.III.1980, A. Newton, M. Thayer, 1♀ (AMNH); Lewis Pass, 1.IV.2006, M. Rix, 1♀ (WAM T94480); same data, 1♀ (WAM T80022$^{\text{DNA-MPE}}$). **Marlborough:** Victoria Domain, Bobs Bay, 24.I.1995, L. Boutin, 2♂ (CAS). **North**

Island: Auckland: Waipoua State Forest, Wairau Summit, 11–14.IV.1980, A. Newton, M. Thayer, 1♂ (AMNH). **Waikato:** Mill Road, Kaimanawa Forest Park, near Taupo, 3–8.IV.1980, A. Newton, M. Thayer, 1♂ (AMNH); 22 km SE. of Taupo, 7.IV.1980, A. Newton, M. Thayer, 2♂, 2♀ (AMNH).

Remarks. *Taphiassa punctata* is a relatively large taphiassine species, similar to *T. magna* from Lord Howe Island. It is found on both the North and South Islands of New Zealand, where it has been collected from moss and leaf litter. At Lewis Pass, specimens were collected from the underside of dense, hanging clumps of moss, in sympatry with *Rayforstia vulgaris* and a species of Mecysmaucheniidae (M. Rix, pers. obs.).

Genus *Olgania* Hickman, 1979

Olgania Hickman, 1979: 71. Type species by original designation *Olgania excavata* Hickman, 1979. Brignoli, 1983: 372. Davies, 1985: 55. Transferred from Anapidae to Micropholcommatidae by Platnick & Forster, 1989: 76. Platnick, 2009.

Affinities. The genus *Olgania* appears to be the sister-lineage to *Taphiassa* from Australasia (Fig. 4).

Diagnosis. Species of *Olgania* can be distinguished from species of *Taphiassa* by the presence of six or fewer eyes (Figs 177C, 182C), and by the presence of a very large, wedge-shaped anterior sclerite which covers the entire anterior portion of the abdomen (Figs 176D, 177A). Other diagnostic characters include the presence of bulging anterior projections on the male chelicerae (Figs 188A, 190F), the presence of a ring of prominent sclerotic sigillae on the posterior abdomen (Fig. 177B), and the troglomorphic morphology of most species (Fig. 179).

Description. Very small, entelegyne Araneoidea: total length 0.90 to 1.20. *Cephalothorax*: Carapace with glandular depressions above maxillae; cuticle of carapace and sternum heavily punctate, covered with glandular pits (Fig. 188); margins fused to sternum via pleural sclerites. Six (Fig. 177C) or no (Fig. 182C) eyes present on anterior margin of pars cephalica; AME absent. Chelicerae with or (rarely) without bulging anterior projections in males; promargin with two true teeth (Fig. 190B); fused setal sockets, peg teeth and ectal stridulatory ridges absent.

Legs and female pedipalp: Legs three-clawed (Fig. 191D), covered with smooth or serrate hair-like setae. Trichobothria present on legs; tibiae each with three (legs I–III) or four (legs III–IV) trichobothria; metatarsi (legs I–III) each with single trichobothrium (Fig. 191C). Female pedipalp entire, five-segmented; claw absent (Fig. 190C–D).

Abdomen: Abdomen subtriangular in lateral view, with very large, wedge-shaped anterior sclerite present around epigastric region and petiole, extending anteriorly and laterally to cover entire anterior portion of abdomen (Figs 176D, 177A); dorsal scute absent on males and females (Fig. 176A–B); posterior abdomen thickened around dorsal and lateral margins of anterior sclerite, with ring of sclerotic sigillae (Fig. 177B) and sclerotic ring surrounding spinnerets and colulus. Six spinnerets situated posterior to fleshy colulus; ALS largest; PMS smallest; spigot morphology unknown. Anterior tracheal system well-developed, with multiple anteriorly-directed tracheae (Fig. 178A); posterior tracheal spiracle vestigial (Figs 189C–D).

Genitalia: Male pedipalp (Fig. 192) small to large; patella with retrolaterally-directed, hooked ligulate retrolateral apophysis and strongly recurved distal apophysis; tibia with or without pair of large prolateral macrosetae; tegulum smooth, with curved, marginal evaginated tegular ridge; embolus exposed, long (length > 5× width), sometimes coiled. Female genitalia (Fig. 178) with pair of separate, globular anterior receptacula each with internal ducts; insemination ducts looped or coiled; fertilisation ducts simple, curved.

Distribution. Known only from Tasmania (Fig. 213).

Composition. *Olgania excavata* Hickman, 1979 and the four new species *O. cracrofti*, *O. eberhardi*, *O. troglodytes* and *O. weld*.

Taxonomic remarks. The genus *Olgania* was first described by Hickman (1979) in the family Anapidae, before being transferred to the Micropholcommatidae by Platnick and Forster (1989: 76). The close phylogenetic relationship between *Olgania* and *Taphiassa* was first noted by Rix et al. (2008), and the two genera now form the distinctive subfamily Taphiassinae.

***Olgania excavata* Hickman, 1979**

Figs 7O, 152D–E, 176–177, 178A, 188–192, 213, 223A–B

Olgania excavata Hickman, 1979: 73, figs 34–38. Brignoli, 1983: 372. Davies, 1985: 55. Platnick, 2009.

Type material. Holotype male: Gordon River Valley, Tasmania, Australia, from moss, 42°35'30"S, 145°44'00"E, 29.I.1976, C. Howard et al. (AMS KS2709).

Paratypes: Allotype female, Gordon River Valley, 1.5 km W. of junction of Gordon and Denison Rivers, Tasmania, Australia, from moss, 42°43'12"S, 145°49'00"E, 16.II.1978, L. Hill et al. (AMS KS2710); 1 female, same data as allotype except 42°43'S, 145°50'E, 8.II.1977, C. Howard et al. (AMS KS97160).

Other material examined. AUSTRALIA: Tasmania: Gordon River region, 3.II.1978, L. Hill et al., 1♀ (AMS KS72967); Bubs Hill, just W. of Victoria Pass, in cave (*1935 Cave*, BH-4), 28.IV.1987, R. Raven, T. Churchill, N. Platnick, 1♂, 6♀ (AMNH); Bubs Hill, *1935 Cave* (BH-4), 29.XII.1986, S. Eberhard, 3♂, 1♀ (AMNH); Bubs Hill, *Thylacine Lair* (BH-203), 30.IV.2006, M. Rix, A. Clarke, L. Boutin, 1♂, 4♀ (WAM T76938$^{\text{SEM}♀}$); same data, 1♀ (WAM T80021$^{\text{DNA-MPE}}$); same data, 1♀ (QVM 13: 44520); same data except 1.XI.1988 (written on label as 1.xi.1989), S. Eberhard, 1♂, 1♀ (AMS KS29588); same data except 1.XI.1988, 2♀ (QVM 13: 12727); *Cardia Cave* (Acheron 1/2 Cave) (AR-X2), Acheron River, western World Heritage Area, 24.III.1989, S. Eberhard, 3♂, 6♀ (AMS KS21307); *Kutikina Cave* (Fraser Cave) (F-34), Franklin River, western World Heritage Area, 23.III.1989, S. Eberhard, 3♂, 4♀ (AMS KS21297$^{\text{SEM}♂♀}$); same data except 21.iii.1989, 1♂, 2♀ (AMS KS29477); same data, 1♂, 1♀ (QVM 13: 12778).

Remarks. *Olgania excavata* is known only from western and south-western Tasmania, where it has been collected from *Kutikina Cave* (Franklin River karst), *Cardia Cave* (Acheron River karst) and caves in the Bubs Hill karst (including *1935 Cave* and *Thylacine Lair*) (Figs 213, 219). Several specimens have also been collected from moss in temperate rainforest in the Gordon River Valley, and these are the only known epigean populations of *Olgania*.

At Bubs Hill (Fig. 219) the spiders build small, horizontal sheet-webs (Fig. 223B) on the walls or floor of limestone caves, usually in cracks or depressions, or under rocks or small ledges near seepages. The webs are held in position by vertical support-lines, and are often extended to effectively fill a particular crevice. The web is composed of an extremely fine mesh of silk, and some webs have two parallel layers of silk. The spiders hang upside-down in the centre of the webs, and walk very slowly towards the periphery if disturbed. Both adult males and females can be found sitting in their own webs, and the spiders seem to be at least loosely colonial, with several webs usually found in close proximity (first recorded by Eberhard et al. 1991). Egg sacs are hung above the sheet-webs singly or in pairs, and each circular egg sac contains only a single egg, which is surrounded by a thin, loosely-woven layer of fine elastic silk (Fig. 223A).

Olgania cracroft Rix & Harvey, sp. n.

urn:lsid:zoobank.org:act:4F30BA73-C2D0-427F-A5BF-2F432DC69F2E

Figs 178D, 179C, 180–181, 213

Type material. Holotype male: *Wargata Mina* (Judds Cavern) (C-1), Cracroft karst, Tasmania, Australia, from groups of sheet-webs on wall of C-17 side passage (dark zone), 43°15'S, 146°35'E, 25.XI.1989, J. Jackson (AMS KS29532).

Paratypes: Allotype female, same data as holotype (AMS KS97161); 1 female, same data as holotype (AMS KS97162); 4 females, same data as holotype (QVM 13: 12662).

Etymology. The specific epithet is a noun in apposition, taken from the type locality.

Diagnosis. Males of *Olgania cracroft* can be distinguished from all other described congeners except *O. troglodytes* by the absence of prolateral, thorn-like macrosetae on the male pedipalpal tibia; and from *O. troglodytes* by the coiled embolus (Fig. 181). Females can be distinguished from all other described congeners by the distinctive, inverted L-shaped receptacula with coiled insemination ducts (Fig. 178D).

Description. *Holotype male*: Total length 0.98. Carapace 0.49 long, 0.45 wide. Abdomen 0.65 long, 0.49 wide. Leg I femur 0.86. Cephalothorax tan yellow; legs pale tan-yellow; abdomen pale cream. Carapace raised anteriorly, fused to sternum via pleural sclerites; dorsal surface of pars cephalica strongly convex in lateral view; carapace and sternum heavily punctate. Eyes absent, except for single, barely-visible vestigial eye spot on each side of pars cephalica. Chelicerae each with large, bulging anterior projection; promargin without peg teeth. Legs relatively long (leg I femur-carapace ratio 1.76); macrosetae absent. Abdomen globose, covered with hair-like setae, each seta projecting from small sclerotic spot; dorsal scute and lateral sclerotic strips absent. Pedipalpal patella with retrolaterally-directed, hooked lRPA and strongly recurved distal apophysis bearing flattened distal process; tibia without thorn-like macrosetae; tegulum smooth, with curved, marginal ETR; embolus very long (length >> 5× width), coiling nearly 2× around margin of bulb (Fig. 181).

Allotype female: Total length 1.07. Carapace 0.55 long, 0.47 wide. Abdomen 0.73 long, 0.59 wide. Leg I femur 0.87. Cephalothorax, abdominal sclerites dark tan-yellow; legs, abdomen pale tan-yellow. Carapace raised anteriorly, fused to sternum via pleural sclerites; dorsal surface of pars cephalica strongly convex in lateral view; carapace and sternum heavily punctate. Eyes absent, except for single, barely-visible vestigial eye spot on each side of pars cephalica. Chelicerae each with large, bulging anterior projection; promargin without peg teeth. Legs relatively long (leg I femur-carapace ratio 1.58); macrosetae absent. Abdomen subtriangular-globose, covered with hair-like setae, each seta projecting from small sclerotic spot; dorsal scute and lateral sclerotic strips absent. Pedipalp entire, five-segmented. Epigyne with distinctive, inverted L-shaped external morphology (Fig. 180D); receptacula globular, constricted, with looped internal ducts; insemination ducts coiled around receptacula; fertilisation ducts simple, curved (Fig. 178D).

Distribution. Known only from the cave *Wargata Mina* (formerly *Judds Cavern*) in the Cracroft karst of southern Tasmania (Fig. 213).

Remarks. *Olgania cracroft* is a distinctive, blind and long-legged species known only from a single cave in southern Tasmania. It is among the most troglomorphic of any Micropholcommatidae, and is most similar to *O. troglodytes* from the nearby Ida Bay karst (Fig. 179). Nothing is known of its biology or conservation status, except that specimens were collected from sheet-webs on the cave wall.

Olgania eberhardi Rix & Harvey, sp. n.

urn:lsid:zoobank.org:act:F8D1FB85-9B5D-4B80-B8F9-4F6E3DE358EC

Figs 179A, 182–183, 213

Type material. Holotype male: *Splash Pot* (JF-10), Junee-Florentine karst, Tasmania, Australia, sheet-web on moist wall of stream in cave (twilight and dark zones) to c. 40 m depth, 42°43'S, 146°34'E, 28.VIII.1987 (but probably 28.V.1987), S. Eberhard (AMS KS97169).

Etymology. The specific epithet is a patronym in honour of Stefan S. Eberhard, whose pioneering work surveying, collecting and documenting the invertebrate cave fauna of Tasmania resulted in the discovery of many new species of troglobitic arthropods, including this species.

Diagnosis. Males of *Olgania eberhardi* can be distinguished from all other described congeners except *O. excavata* and *O. weld* by the presence of two prolateral, thorn-like macrosetae on the male pedipalpal tibia (Fig. 183A); and from *O. excavata* and *O. weld* by the complete absence of eyes (Fig. 182C).

Description. *Holotype male*: Total length 1.10. Carapace 0.54 long, 0.49 wide. Abdomen 0.73 long, 0.50 wide. Leg I femur 0.86. Cephalothorax, abdominal sclerites brown; legs, abdomen dark tan yellow. Carapace raised anteriorly, fused to sternum via pleural sclerites; dorsal surface of pars cephalica strongly convex in lateral view; carapace and sternum heavily punctate. Eyes absent. Chelicerae each with large, bulging anterior projection; promargin without peg teeth. Legs relatively long (leg I femur-carapace ratio 1.59); macrosetae absent. Abdomen subtriangular, covered with hair-like setae, each seta projecting from small sclerotic spot; dorsal scute and lateral sclerotic strips absent. Pedipalpal patella with retrolaterally-directed, hooked lRPA and strongly recurved, sickle-shaped distal apophysis; tibia with two thorn-like prolateral macrosetae; tegulum smooth, with curved, marginal ETR; embolus long (length > 5× width), looping around prolateral margin of bulb (Fig. 183).

Distribution. Known only from the cave *Splash Pot* in the Junee-Florentine karst of south-central Tasmania (Fig. 213).

Remarks. *Olgania eberhardi* is known only from a single cave in southern Tasmania, where it lives in sympatry with another troglobitic micropholcommatid, *Micropholcomma junee* (see above). It is completely blind with a large and distinctive pedipalp (Figs 182A–B), and is most similar to *O. weld* and *O. excavata*. The holotype specimen was collected from a sheet-web on the cave wall.

Olgania troglodytes Rix & Harvey, sp. n.

urn:lsid:zoobank.org:act:12301C34-1B39-4A2A-AC50-A018051969AB

Figs 178C, 179D, 184–185, 213

Type material. Holotype male: *Revelation Cave* (IB-1), Ida Bay karst, Tasmania, Australia, under sheet webs on wall of side chamber upslope from main cave passage, c. 40 m below surface (dark zone), 25.III.1989, A. Clarke (AMS KS32002).

Paratypes: Allotype female, same data as holotype (AMS KS97163); 1 male and 3 females, same data as holotype (AMS KS97164).

Other material examined. AUSTRALIA: Tasmania: *Arthurs Folly* (1B-110), Ida Bay karst, in sheet web on moist wall c. 2 m above stream (dark zone), before rockfall section c. 200 m from entrance, 43°24'S, 146°52'E, 20.XI.1986, A. Clarke, S. Eberhard, 1♂, 2♀ (AMNH); *Bradley-Chesterman Cave* (IB-4), Ida Bay karst, from sheet webs (twilight zone), 43°24'S, 146°52'E, 22.III.1990, S. Eberhard, 4♀ (QVM 13: 13223); *Dismal Hill Pot* (IB-128), Ida Bay karst, webs near leaf litter at ~90 m below surface (dark zone), 9.VIII.1987, S. Eberhard, 2♂ (AMS KS20185); *Little Grunt* (IB-23), Ida Bay karst, 43°24'S, 146°52'E, from webs on cave ceiling (dark zone),16. IV.1990, S. Eberhard, 1♀ (QVM 13: 13066); same data except webs on dry cave wall, 20.XI.1990, 2♀ (QVM 13: 12768); *Loons Cave* (IB-2), Ida Bay karst, sheet webs (from near litter or in mud cracks) near aven (dark zone), 10.V.1989, S. Eberhard, J. Jackson, 1♂, 2♀ (AMS KS29595); same data except in sheet webs deep in cave (dark zone), 2♀ (QVM 13: 12665); *March Fly Pot* (IB-46), Ida Bay karst, from sheet-webs on walls in lower chamber (dark zone), 43°24'S, 146°52'E, 23.III.1990, S. Eberhard, 2♂, 2♀ (QVM 13: 13303); *Pseudocheirus Cave* (IB-97), Ida Bay karst, 4.V.1990, S. Eberhard, 3♂, 7♀ (QVM 13: 12851); *Straw Cave* (IB-91), Ida Bay karst, from sheet webs deep in cave (dark zone), 43°24'S, 146°52'E, 5.IV.1990, S. Eberhard, 1♀ (QVM 13: 13268); *Thun Junction* (IB-20), Ida Bay karst, from horizontal web in crevice of aven wall at c. 35 m depth, 125 m from entrance (dark zone), 24.III.1989, A. Clarke, 2♀ (AMS KS32011).

Etymology. The specific epithet is derived from the Greek 'trogle', meaning 'hole', and the Greek 'dytes', meaning 'enterer' (Brown 1956), and refers to the cave-dwelling nature of this species.

Diagnosis. Males of *Olgania troglodytes* can be distinguished from all other described congeners except *O. cracroft* by the absence of prolateral, thorn-like macrosetae on the male pedipalpal tibia; and from *O. cracroft* by the shorter, looped embolus (Fig. 185). Females can be distinguished from all other described congeners by the distinctive shape of the receptacula (Fig. 178C).

Description. *Holotype male*: Total length 0.94. Carapace 0.42 long, 0.41 wide. Abdomen 0.63 long, 0.47 wide. Leg I femur 0.76. Cephalothorax, abdominal sclerites tan-yellow; legs pale tan-yellow; abdomen cream. Carapace raised anteriorly, fused to sternum via pleural sclerites; dorsal surface of pars cephalica strongly convex in lateral view; carapace and sternum heavily punctate. Eyes absent, except for single, barely-visible vestigial eye spot on each side of pars cephalica. Chelicerae without bulging anterior projections; promargin without peg teeth. Legs relatively long (leg I femur-carapace ratio 1.81); macrosetae absent. Abdomen subtriangular-globose, covered with hair-like setae, each seta projecting from small sclerotic spot; dorsal scute and lateral sclerotic strips absent. Pedipalpal patella with retrolaterally-directed, hooked lRPA, strongly recurved distal apophysis and additional, flange-like distal process; tibia without thorn-like macrosetae; tegulum smooth, with curved, marginal ETR; embolus long (length > 5× width), looping around prolateral margin of bulb (Fig. 185).

Allotype female: Total length 0.96. Carapace 0.46 long, 0.42 wide. Abdomen 0.67 long, 0.54 wide. Leg I femur 0.78. Cephalothorax, abdominal sclerites tan-yellow; legs pale tan-yellow; abdomen cream. Carapace raised anteriorly, fused to sternum via pleural sclerites; dorsal surface of pars cephalica strongly convex in lateral view; carapace and sternum heavily punctate. Eyes absent, except for single, barely-visible vestigial eye spot on each side of pars cephalica. Chelicerae without bulging anterior projections; promargin without peg teeth. Legs relatively long (leg I femur-carapace ratio 1.70); macrosetae absent. Abdomen subtriangular, covered with hair-like setae, each seta projecting from small sclerotic spot; dorsal scute and lateral sclerotic strips absent. Pedipalp entire, five-segmented. Epigyne with distinctive external morphology (Fig. 184D); receptacula globular, with coiled internal ducts; insemination ducts looped; fertilisation ducts simple, curved (Fig. 178C).

Distribution. Known only from caves in the Ida Bay karst of southern Tasmania, including *Arthurs Folly*, *Bradley-Chesterman Cave*, *Dismal Hill Pot*, *Little Grunt*, *Loons*

Cave, *March Fly Pot*, *Pseudocheirus Cave*, *Revelation Cave*, *Straw Cave* and *Thun Junction* (Fig. 213).

Remarks. *Olgania troglodytes* is a distinctive, blind and long-legged species known from at least 10 caves in the Ida Bay karst of southern Tasmania. It is among the most troglomorphic of any Micropholcommatidae, and is most similar to *O. cracroft* from the nearby Cracroft karst (Fig. 179). Nothing is known of its biology or conservation status, except that specimens were collected from horizontal sheet-webs on the walls of caves.

Olgania weld Rix & Harvey, sp. n.

urn:lsid:zoobank.org:act:76E0281C-AE7A-457A-9F0B-831D70868BA5
Figs 178B, 179B, 186–187, 213

Type material. Holotype male: *Weld River Arch* (UW-X9), Weld River Arch and Arch Caves karst, Upper Weld River, Tasmania, Australia, 42°50'S, 146°25'E, 11.V.1986, S. Eberhard (AMS KS97170).

Paratypes: Allotype female, same data as holotype (AMS KS97171).

Etymology. The specific epithet is a noun in apposition, taken from the type locality.

Diagnosis. Males of *Olgania weld* can be distinguished from all other described congeners except *O. eberhardi* and *O. excavata* by the presence of two prolateral, thorn-like macrosetae on the male pedipalpal tibia (Fig. 187A); and from *O. eberhardi and O. excavata* by the very large embolus (Fig. 187). Females can be distinguished from all other described congeners by the large epigyne (Fig. 186D), and by the distinctive shape of the receptacula (Fig. 178B).

Description. *Holotype male*: Total length 0.99. Carapace 0.49 long, 0.45 wide. Abdomen 0.74 long, 0.42 wide. Leg I femur 0.76. Cephalothorax, abdominal sclerites dark tan-yellow; legs, abdomen tan-yellow. Carapace raised anteriorly, fused to sternum via pleural sclerites; dorsal surface of pars cephalica strongly convex in lateral view; carapace and sternum heavily punctate. Six vestigial eye spots present on anterior margin of pars cephalica, in three separated diads. Chelicerae each with large, bulging anterior projection; promargin without peg teeth. Legs relatively long (leg I femur-carapace ratio 1.55); macrosetae absent. Abdomen subtriangular, covered with hair-like setae, each seta projecting from small sclerotic spot; dorsal scute and lateral sclerotic strips absent. Pedipalpal patella with retrolaterally-directed, hooked lRPA and pronounced, strongly recurved distal apophysis; tibia with two thorn-like prolateral macrosetae; tegulum smooth, with curved, marginal ETR; embolus long (length > 5× width), very large, coiling once around margin of bulb (Fig. 187).

Allotype female: Total length 1.03. Carapace 0.43 long, 0.41 wide. Abdomen 0.73 long, 0.46wide. Leg I femur 0.69. Cephalothorax, abdominal sclerites dark tan-yellow; legs, abdomen tan-yellow. Carapace raised anteriorly, fused to sternum via pleural sclerites; dorsal surface of pars cephalica strongly convex in lateral view; carapace and sternum heavily punctate. Six vestigial eye spots present on anterior margin of pars cephalica, in three separated diads. Chelicerae without bulging anterior projections; promargin without peg teeth. Legs relatively long (leg I femur-carapace ratio 1.60); macrosetae absent. Abdomen subtriangular, covered with hair-like setae, each seta projecting from small sclerotic spot; dorsal scute and lateral sclerotic strips absent. Pedipalp entire, five-segmented. Epigyne heavily sclerotised with distinctive external morphology (Fig. 186D); receptacula globular, reniform, with internal ducts; insemination ducts broad, looped around receptacula; fertilisation ducts simple, curved (Fig. 178B).

Distribution. Known only from the cave *Weld River Arch* in the Weld River Arch and Arch Caves karst of south-central Tasmania (Fig. 213).

Remarks. *Olgania weld* is a relatively large, robust species known only from a single cave in southern Tasmania. It has reduced eyes, large, distinctive genitalia (Figs 186C–D, 187), and is most similar to *O. eberhardi* and *O. excavata*. Nothing is known of its biology.

Subfamily Gigiellinae Rix & Harvey, subfam. n.

urn:lsid:zoobank.org:act:619C93BE-E34B-49C4-B704-B10250719B68

Type genus. *Gigiella* Rix & Harvey, gen. n.

Diagnosis. Species of Gigiellinae can be distinguished from all other Micropholcommatidae by the presence of a distinctly pointed posterior apex of the sternum (Figs 193A–B). Other diagnostic characters include the presence of a distally-directed, forked retrolateral patellar apophysis on the male pedipalp (Figs 193C–D), the presence of glandular depressions on the antero-lateral corners of the carapace (shared with Taphiassinae) (Figs 198C, 198E), the absence of a dorsal scute on the abdomen (shared with Taphiassinae and most Textricellini) (Fig. 195), the presence of reduced lamellae rather than anterior abdominal tracheae (Figs 197B, 197D), the presence of two AC gland spigots on the PMS (Figs 193E–F), and the presence of a reduced triad on the PLS (Figs 209C–D).

Distribution. South-eastern Australia and southern Chile (Figs 211, 217).

Included genera. Only the new genus *Gigiella*.

Remarks. Species of Gigiellinae are relatively large Micropholcommatidae, with a distinctive somatic 'gestalt' (Fig. 195) and a restricted, relictual distribution in southern-temperate *Nothofagus* rainforests.

Genus *Gigiella* Rix & Harvey, gen. n.

urn:lsid:zoobank.org:act:0B8E7286-8910-4C0D-A261-0D2E6B00DADC

Type species. *Gigiella milledgei* Rix & Harvey, sp. n.

Etymology. The generic name is derived from the Greek 'gigas' meaning 'giant' (Brown 1956), referring to the relatively large size of the species in this genus. The gender is feminine.

Affinities. The affinities of *Gigiella* are equivocal, in that the genus may be the sister-lineage to the subfamily Taphiassinae, or a basal micropholcommatid taxon, sister to all other species (Fig. 4).

Diagnosis. As for the subfamily Gigiellinae (see above).

Description. Very small, entelegyne Araneoidea: total length 1.40 to 1.60. *Cephalothorax*: Carapace with glandular depressions above maxillae (Figs 198C, 198E); cuticle without glandular pits (Fig. 198C); margins with or without pleural sclerites. Posterior apex of sternum pointed (Figs 193A–B). Eight eyes present on anterior margin of pars cephalica; eyes subequal, AME not obviously smallest (Fig. 203C). Chelicerae without bulging anterior projections in males; promargin with three true teeth (Fig. 199F); fused setal sockets, peg teeth and ectal stridulatory ridges absent.

Legs and female pedipalp: Legs three-clawed (Figs 200E–H), covered with smooth or serrate hair-like setae. Trichobothria present on legs; tibiae each with three (legs I–III) or four (leg IV) trichobothria (Fig. 200D); metatarsi (legs I–III) each with single trichobothrium (Fig. 200C). Female pedipalp entire, five-segmented; claw absent (Figs 199C–D).

Abdomen: Abdomen oval-globose, with weakly sclerotised anterior sclerite present around epigastric region and petiole; dorsal scute absent on males and females (Figs 194A–B, 195); posterior sclerotic ring surrounding spinnerets weakly sclerotised. Six spinnerets situated posterior to fleshy colulus (Figs 202, 209); PMS with two medial AC gland spigots; PLS with reduced triad consisting of only FL gland spigot. Anterior respiratory system of reduced lamellar morphology, with bed of parallel lamellae adjacent to each receptaculum (Figs 197B, 197D); posterior tracheal spiracle present, tracheae quadritracheate.

Genitalia: Male pedipalp (Figs 201, 208) relatively simple; patella with distally-directed, forked retrolateral apophysis; tegulum smooth, with curved evaginated tegular ridge; embolus exposed, long (length > 5× width), with sinuous or coiled trajectory around bulb. Female genitalia (Fig. 197) with pair of separate, globular anterior spermathecae; insemination ducts looped or coiled around receptacula; fertilisation ducts simple, curved.

Distribution. South-eastern Australia (Victoria and Tasmania) and southern Chile, in Región de los Lagos (Chiloé, Palena and Valdivia provinces) and Región Ibáñez del Campo (Aisén province) (Figs 211, 217).

Composition. The two new species *G. milledgei* and *G. platnicki*.

Gigiella milledgei Rix & Harvey, sp. n.

urn:lsid:zoobank.org:act:A81D66A4-7630-4A9F-A7C6-5122217FAE0C

Figs 7Q, 10D, 193C, 193E, 194, 195A, 196, 197A–B, 198–202, 211

Type material. Holotype male: Mount Sabine, Great Otway National Park, Victoria, Australia, 585 m, pyrethrum fogging, 38°38'S, 143°43'E, 6.XI.1997, G. Monteith (QMB S88028).

Paratypes: Allotype female, same data as holotype (QMB S88029); 5 males and 11 females, same data as holotype (QMB S43059$^{\mathrm{SEM}♂♀}$).

Other material examined. AUSTRALIA: Victoria: Great Otway National Park, Young Creek Road, 0.4 km NW. of Triplet Falls, flight intercept trap, *Eucalyptus* forest, 38°40'S, 143°29'E, 11.IV.-14.VI.1995, G. Milledge, 1♀ (NMV K6229); Great Otway National Park, Melba Gully, pyrethrum fogging in rainforest, 38°42'S, 143°23'E, 5.XI.1997, G. Monteith, 1♂, 1♀ (QMB S43235); The Big Culvert, 2.5 km ENE. of Mount Observation, moss and litter, *Nothofagus cunninghamii* forest, 37°33'36"S, 145°52'15"E, 28.XII.1995, G. Milledge, 1♂, 1♀ (NMV K6228); Yarra Ranges National Park, Donna Buang Road, 1 km SW. of Mount Donna Buang, litter and moss, *Nothofagus cunninghamii* forest, 37°43'00"S, 145°40'15"E, 16.II.1995, G. Milledge, 2♂, 1♀ (NMV K6227); Yarra Ranges National Park, Mount Donna Buang, 1250 m, *Nothofagus* forest, moss from trees, 37°42'S, 145°40'E, 7.XI.1997, G. Monteith, 1♂ (QMB S41820); Yarra Ranges National park, near summit of Mount Donna Buang, sieved litter, *Eucalyptus* forest, 27.V.1990, D. Black, 2♀ (WAM T94535); same data except under log in *Nothofagus* forest, 37°42'36"S, 145°40'57"E, 19.IV.2006, M. Rix, 1♂ (WAM T80035$^{\mathrm{DNA\text{-}MPE}}$). **Tasmania:** Cradle Mountain-Lake St. Clair National Park, Overland Trail, 50.2 km (82°) ENE. of Queenstown, 760 m, eucalypt woodland and rainforest, sifting leaf litter, 42°06'S, 146°09'E, 11.III.2006, C. Griswold, D. Silva, 1♂, 1♀ (CAS 9024501); same data, 1♂, 1♀ (CAS 9024500); Cradle Mountain-Lake St. Clair National Park, W. side of Lake St. Clair, 750 m, *Eucalyptus-Acacia* litter under *Banksia* trees, 25–29.I.1980, A. Newton, M. Thayer, 4♂, 4♀ (AMNH); Cuckoo Falls walk, near Scottsdale, 41°14'S, 147°36'E, 22.XI.2003, M. Rix (WAM T94534); Florentine Valley, 22 km NW. of Maydena, moss on logs, 15.II.1977, J. Kethley, 1♂ (FMC); Franklin River, 20 km W. of Derwent Bridge, 29.IV.1987, N. Platnick, R. Raven, T. Churchill, 1♂, 1♀ (AMNH); Mount Field National Park, from moss, litter, rocks in beech forest, 42°40'59"S, 146°38'55"E, 25–26.XI.2003, L. Boutin, 2♀ (QVM); Mount Wellington, Cascades Creek, below O'Grady's Falls, top side of Strickland Avenue, from moss, 42°54'S, 147°14'E, 13.VII.1976, V. Hickman, 1♂ (AMS KS66002); 'National Park', 28.II.1952, V. Hickman, 1♂, 4♀ (AMS KS31280); 5 km S. of Renison Bell, 180 m, pyrethrum fogging of mossy overhang, 1.V.1987, N. Platnick, R. Raven, T. Churchill, 1♂ (AMNH); south-western Tasmania, 42°43'S, 145°48'E II.1977, C. Howard et al., 1♀ (AMS KS25840); same data except 16.II.1978, no collector, 1♂ (AMS KS27292); 6 km E. of Strahan, pyrethrum fogging in King Fern rainforest, 30.IV.1987, N. Platnick, R. Raven, T. Churchill, 3♂, 3♀ (AMNH); 6 km SE. of Strahan, Berlese, litter from King Fern rainforest, 30.IV.1987, N. Platnick, R. Raven, T. Churchill, 1♂, 1♀ (AMNH); Tarraleah, 7.X.1957, 1♂ (AMS KS51556); same data, 1♂, 1♀ (AMS KS53551).

Etymology. The specific epithet is a patronym in honour of Graham Milledge, of the Australian Museum (Sydney), for collecting many specimens of this species from Victoria, and for assistance in loaning micropholcommatid specimens during the course of this study.

Diagnosis. Males of *Gigiella milledgei* can be distinguished from *G. platnicki* by the shorter, sinuous embolus (Fig. 196). Females can be distinguished from *G. plat-*

nicki by the looped insemination ducts (Figs 197A-B). Both sexes can also be recognised by the south-eastern Australian distribution (Fig. 211).

Description. *Holotype male*: Total length 1.51. Carapace 0.76 long, 0.61 wide. Abdomen 0.88 long, 0.71 wide. Leg I femur 0.62. Cephalothorax dark brown; legs dark tan-yellow; abdomen dark grey with paler, chequered pattern posteriorly and laterally. Carapace raised anteriorly, not fused to sternum except around petiole; dorsal surface of pars cephalica slightly convex in lateral view. Eight subequal eyes present on anterior margin of pars cephalica; PME separated by their own diameter. Chelicerae without bulging anterior projections; promargin without peg teeth. Legs relatively short (leg I femur-carapace ratio 0.82); macrosetae absent. Abdomen oval-globose, covered with hair-like setae, each seta projecting from small sclerotic spot; dorsal scute and lateral sclerotic strips absent. Pedipalpal patella with distally-directed, forked lRPA and strongly-recurved distal apophysis; tegulum smooth, with curved ETR; embolus long (length > 5× width), sinuous, curving distally (Fig. 196).

Allotype female: Total length 1.59. Carapace 0.78 long, 0.60 wide. Abdomen 1.00 long, 0.82 wide. Leg I femur 0.65. Cephalothorax dark brown; legs dark tan-yellow; abdomen dark grey with paler, chequered pattern posteriorly and laterally. Carapace raised anteriorly, not fused to sternum except around petiole; dorsal surface of pars cephalica slightly convex in lateral view. Eight subequal eyes present on anterior margin of pars cephalica; PME separated by their own diameter. Chelicerae without bulging anterior projections; promargin without peg teeth. Legs relatively short (leg I femur-carapace ratio 0.83); macrosetae absent. Abdomen oval-globose, covered with hair-like setae, each seta projecting from small sclerotic spot; dorsal scute and lateral sclerotic strips absent. Pedipalp entire, five-segmented. Epigyne with distinctive external morphology (Fig. 194D); receptacula globular, bilobate; insemination ducts looping dorsally; fertilisation ducts simple, curved (Figs 197A–B).

Distribution. Known from the Yarra Ranges and Otway Ranges of Victoria, and from Tasmania (Fig. 211).

Remarks. *Gigiella milledgei* is a relatively large, dark brown species from the Southern Beech (*Nothofagus cunninghamii*) and cool-temperate rainforests of Victoria and Tasmania (Fig. 211). It has been collected from ferns, moss and from under logs, but nothing else is known of its biology. This species was included in the molecular phylogenetic analysis of Rix et al. (2008) as "Gen. n. sp. VICBig" (see Fig. 1).

Gigiella platnicki Rix & Harvey, sp. n.

urn:lsid:zoobank.org:act:AF683CEF-BF54-4140-9B26-C2AB85F9DEE1

Figs 7R, 193A–B, 193D, 193F, 195B, 197C–D, 203–209, 211

Type material. Holotype male: 102 km S. of Puerto Puyuguapi, Aisén province, Región Ibáñez del Campo, Chile, 220 m, wet forest, 19.I.1986, N. Platnick, P. Goloboff, T. Schuh (AMNH).

Paratypes: Allotype female, same data as holotype (AMNH); 1 male and 7 females, same data as holotype (AMNH$^{\mathrm{SEM}♂♀}$).

Other material examined. CHILE: Región XI (Ibáñez del Campo): Aisén: Parque Nacional Queulat, near Puerto Cisnes, 500 m, wet forest, 6.II.1985, N. Platnick, O. Francke, 1♂ (AMNH). **Región X (Los Lagos): Chiloé:** Chiloé Island, 5 km N. of Quellon, 105 m, Berlese, modified forest, floor litter and moss, 1.XII.1981, N. Platnick, T. Schuh, 1♀ (AMNH). **Palena:** 70 km S. of Chaitén, 500 m, wet streambank, moss Berlese, 16.I.1986, N. Platnick, P. Goloboff, T. Schuh, 1♀ (AMNH); vicinity of Chaitén, 0–100 m, moss in forest, 7.XII.1981, N. Platnick, T. Schuh, 2♂ (AMNH); 25–27 km N. of Chaitén, 40 m, wet virgin forest, moss Berlese, 17.I.1986, N. Platnick, P. Goloboff, T. Schuh, 1♂ (AMNH). **Valdivia:** 34 km WNW. of La Unión, 700 m, mixed evergreen forest, 17.XII.1984–7.II.1985, S. & J. Peck, 1♀ (AMNH).

Etymology. The specific epithet is a patronym in honour Norman I. Platnick, of the American Museum of Natural History (New York), for his enormous contribution to the study of micropholcommatid spiders, and for collecting many specimens of this species, including the type series.

Diagnosis. Males of *Gigiella platnicki* can be distinguished from *G. milledgei* by the longer, coiled embolus (Fig. 204). Females can be distinguished from *G. milledgei* by the coiled insemination ducts (Figs 197C–D). Both sexes can also be recognised by the Chilean distribution (Fig. 211).

Description. *Holotype male*: Total length 1.41. Carapace 0.86 long, 0.59 wide. Abdomen 0.73 long, 0.59 wide. Leg I femur 0.88. Cephalothorax dark tan-yellow; legs tan-yellow; abdomen dark grey with paler sclerotic spots. Carapace raised anteriorly, fused to sternum via pleural sclerites; dorsal surface of pars cephalica slightly convex in lateral view. Eight subequal eyes present on anterior margin of pars cephalica; PME separated by slightly less than their own diameter. Chelicerae without bulging anterior projections; promargin without peg teeth. Legs relatively short (leg I femur-carapace ratio 1.02); macrosetae absent. Abdomen oval-globose, covered with hair-like setae, each seta projecting from small sclerotic spot; dorsal scute and lateral sclerotic strips absent. Pedipalpal patella with distally-directed, forked lRPA; tegulum smooth, with curved ETR; embolus long (length > 5× width), coiled 1.5x around margin of bulb (Fig. 204).

Allotype female: Total length 1.47. Carapace 0.76 long, 0.54 wide. Abdomen 0.94 long, 0.76 wide. Leg I femur 0.71. Cephalothorax brown; legs dark tan-yellow; abdomen dark grey with paler sclerotic spots. Carapace raised anteriorly, fused to sternum via pleural sclerites; dorsal surface of pars cephalica slightly convex in lateral view. Eight subequal eyes present on anterior margin of pars cephalica; PME separated by slightly less than their own diameter. Chelicerae without bulging anterior projections; promargin without peg teeth. Legs relatively short (leg I femur-carapace ratio 0.93); macrosetae absent. Abdomen oval-globose, covered with hair-like setae, each seta projecting from small sclerotic spot; dorsal scute and lateral sclerotic strips absent. Pedipalp entire, five-segmented. Epigyne with distinctive external morphology (Fig. 203D); receptacula globular, twisted; insemination ducts coiling around receptacula; fertilisation ducts looped (Figs 197C–D).

Distribution. Known only from southern Chile, in Región de los Lagos (Chiloé, Palena and Valdivia provinces) and Región Ibáñez del Campo (Aisén province) (Fig. 211).

Remarks. *Gigiella platnicki* is a relatively large species from the cool-temperate rainforests of southern Chile, in the region between Valdivia and Aisén (Fig. 211). It has mostly been collected from moss in wet, virgin forest, but nothing else is known of its biology.

Biogeography

As first suggested by Forster and Platnick (1981: 264), the taxonomy of the Micropholcommatidae "would be of greater value to biogeographic analysis if a more fully resolved classification were available". Such a classification is now available, and with a newly proposed phylogenetic hypothesis for the family, the distribution of the Micropholcommatidae warrants biogeographic analysis under a cladistic framework. As discussed by Forster and Platnick (1981), and as highlighted by the results of the current study, temperate Chilean-Australian patterns are evident in several micropholcommatid genera, raising the question of whether Gondwanan vicariance could be responsible for these biogeographic patterns.

The southern-temperate micropholcommatid fauna. The Micropholcommatidae are a distinctively southern-temperate family (see Platnick 1991), with a south-eastern Australian centre of diversity, and over 80% of all known genera occurring within just 10 degrees of latitude, between 35°S and 45°S (Figs 210, 217). In the cool-temperate rainforests of the Otway Ranges, Yarra Ranges and Tasmania (Fig. 218), micropholcommatid spiders can be extremely abundant, and the Southern Beech (*Nothofagus cunninghamii*) forests of south-eastern Australia (Fig. 218D) are the only places in the world where 10 or 11 genera of Gigiellinae, Micropholcommatinae and Taphiassinae can be found living in close sympatry. Similarly, in extreme south-western Western Australia, the temperate Walpole region is the only area where all five Western Australian genera occur in sympatry, and two of these genera (*Austropholcomma* and *Normplatnicka*) are locally endemic (Fig. 214). Even in tropical New Guinea, New Caledonia and north-eastern Queensland, micropholcommatid species are largely restricted to montane habitats, which are cooler in climate, and home to a diversity of otherwise temperate taxa (Platnick 1991). In South America, micropholcommatid species have been collected only in the cool-temperate rainforests of southern Chile, and this fauna has a clear biogeographic connection to south-eastern Australia (see below). A very few micropholcommatid species have adapted to more xeric inland or tropical lowland habitats, however these species are the exception, and all such taxa have otherwise southern-temperate congeneric relatives.

The evidence for Gondwanan vicariance. Models of Gondwanan vicariance are a central tenet of 'vicariance biogeography' (see Brundin 1966; Platnick 1976; Nelson and Platnick 1981; Nelson and Ladiges 2001; Sanmartin and Ronquist 2004), generally invoked to explain the current distributions of Southern Hemisphere taxa by recourse to the continental rifting of Gondwana (see Li and Powell 2001; McLoughlin 2001). To address vicariant biogeographic hypotheses under a cladistic framework, 'area cladograms' can be constructed to reconcile the geographic distributions of taxa with their possible phylogenetic history (Nelson and Platnick 1981), under a testable framework which assumes cladogenic events are congruent with the temporal order of vicariance (Platnick 1976; Nelson and Platnick 1981). Vicariance biogeography is powerful in that concordant or 'repetitious' patterns can be compared across taxa (Platnick 1976; Sanmartin and Ronquist 2004), and biogeographic hypotheses can be developed accordingly. Many studies have tested Gondwanan vicariant patterns using an area cladogram approach, in both plants (e.g. Swenson et al. 2001; Ladiges et al. 2003; Cook and Crisp 2005; Meudt and Simpson 2006) and animals (e.g. Griswold and Ledford 2001; Daniels et al. 2004; Sparks and Smith 2004; Kuntner 2006).

As suggested by Forster and Platnick (1981), the southern-temperate distribution of the Micropholcommatidae (Fig. 210) is amenable for exploring vicariant biogeographic hypotheses under the testable assumption that this distribution is the result of Gondwanan vicariance. Figure 217 summarises the phylogeny and biogeography of the 18 micropholcommatid genera with an area cladogram, illustrating those taxa found on different continental landmasses, and highlighting those clades with potentially vicariant Gondwanan patterns. Multiple micropholcommatid taxa in multiple subfamilies and tribes exhibit sister-group relationships on separate Gondwanan landmasses, with reciprocally-distributed Chilean-Australian (e.g. *Gigiella*), Australian-New Zealand (e.g. *Rayforstia*), Australian-New Caledonian (e.g. *Taphiassa*) and Australian-New Guinean (e.g. *Guiniella-Epigastrina*/*Eterosonycha*) clades, as highlighted (*) in Figure 217. Four genera in three separate lineages exhibit a remarkable Chilean-Australian distribution, and the Micropholcommatidae are one of only a few arachnid groups known to exhibit such a strong trans-Pacific connection between congeneric taxa (but see also certain Pseudoscorpiones, Hydracarina and Oribatida) (Harvey 1996, 1998a, b; Colloff 2009).

The case of the Textricellini is a further, compelling example of how phylogenetic patterns in the Micropholcommatidae are congruent with patterns of Gondwanan vicariance. The basal textricellin taxa in the genera *Tinytrella*, *Eperiella* and *Algidiella* are all restricted to New Zealand (the first of the eastern Gondwanan landmasses to separate; Li and Powell 2001; Sanmartin and Ronquist 2004), with more derived taxa in the genera *Eperiella* and *Normplatnicka* shared between Australia and South America, and terminal taxa in the '*Eterosonycha* clade' found only in Australia and montane Papua New Guinea (Fig. 217). This cladogenic pattern is largely congruent with the geological area cladogram of Sanmartin and Ronquist (2004, fig.1), and strong evidence for the Gondwanan ancestry of the textricellin clade. No other major micropholcommatid lineage exhibits such a characteristically Gondwanan phylogeny, and the Textricellini may yet prove to be one of the more striking examples of Gondwanan vicariance in the Arachnida. Interestingly, with the exception of an undescribed species of *Raveniella* from Western Australia (M. Rix, unpubl. data), species of Textricellini are entirely restricted to mesic, temperate habitats throughout their range, an observation which is consistent with a relictual, vicariant model of distribution for this group of spiders.

Other biogeographic models. In the case of the Micropholcommatidae, the evidence for Gondwanan vicariance is compelling (Fig. 217), and strong evidence to the contrary is required to invoke an alternative explanation for the distribution patterns observed. Models of 'dispersal biogeography' are often cited as alternatives to vicariance biogeography, under the assumption that widespread taxa may have dispersed in the past from former centres of origin (Platnick 1976; Sanmartin and Ronquist 2004). One of the problems with dispersal biogeography is that such hypotheses are rarely falsifiable (Sanmartin and Ronquist 2004) – taxa could of course, *potentially*, have travelled anywhere at any time – although with the advent of DNA sequencing, the molecular dating of clades is one way of approaching the dispersal-vicariance debate (e.g. see Buckley et al. 2009). For the Micropholcommatidae, no molecular dating data are currently available, and preliminary observations on live micropholcommatid specimens suggest that these spiders are ecologically restricted and highly prone to desiccation (see Natural History, below), rendering long-distance dispersal across the Pacific Ocean unlikely. Similarly, few convincing observations can be made regarding transoceanic distributions that might be explained by dispersal (e.g. see Vidal and Hedges 2009), with the exception that species of *Rayforstia* on Lord Howe Island and New Zealand may have had an Australian ancestor, if a vicariant Gondwanan biogeography is accepted for the tribe Textricellini (see Fig. 217). Similarly, the ancestor/s of species of *Taphiassa* on New Caledonia may also have dispersed there relatively recently, if a 'Darwinian Island' hypothesis is accepted for New Caledonia (see Grandcolas et al. 2008). Several other micropholcommatid taxa have been recorded from offshore islands (e.g. species of *Patelliella*, *Taphiassa*, *Algidiella* and *Rayforstia* on Lord Howe Island, Campbell Island and Auckland Island) (Fig. 210), although the way in which these taxa arrived is unknown, and in the case of all three islands an older vicariant or at least partially-vicariant (e.g. island 'stepping-stone') explanation is feasible (e.g. see Forster 1964; Buckley et al. 2009). As for most animals and plants, dispersal can never be completely ruled out for the micropholcommatid taxa, but a further discussion on this hypothesis requires calibrated molecular data and a more rigorous understanding of micropholcommatid ecology.

One other biogeographic model is also worthy of mention with respect to the Micropholcommatidae – that of Northern Hemisphere extinction, and a possible older, Pangaean origin for the group. This model is often overlooked with respect to southern-temperate taxa, but must be considered here given the well-documented past or present 'bipolar' distributions of certain Arachnida (e.g. pseudoscorpions of the families Syarinidae, Pseudogarypidae and Garypidae, and spiders of the family Archaeidae; see Forster and Platnick 1984; Harvey 1998b; Penney 2003; Selden et al. 2008; Harvey and Šťáhlavský, in press), and given the recent description of a fossil micropholcommatid taxon from the Northern Hemisphere. *Cenotextricella simoni* was described by Penney et al. (2007) from the Eocene amber of the Paris Basin, France, and tentatively placed in the Micropholcommatidae. This placement was based on several characters typical of certain textricellin genera (see Taxonomy, above), although the morphology of *Cenotextricella* was described as being unlike that of any extant species (Penney et al. 2007). Unfortunately, the affinities of *Cenotextricella* remain unknown, as several critical micropholcommatid characters cannot be determined using the X-Ray Computed Tomography method utilised by Penney et al. (2007), and no additional fossil specimens are known. As a result, the previous occurrence of micropholcommatid species in the Northern Hemisphere cannot be rejected nor confirmed, and a Pangaean hypothesis remains un-falsifiable in the absence of further taxa.

Natural history

The natural history of most micropholcommatid spiders remains poorly known, and there is much scope for future studies in this area. Hickman (1944, 1945) and Forster (1959) provided some important contributions regarding the webs and egg sacs of Micropholcommatinae, although there is still much to be determined for the 15 known genera. The biology of the Taphiassinae is now moderately well-known (Fig. 223), although webs of *Taphiassa* are still undescribed. The Gigiellinae and the Patelliellini are the least understood biologically of any Micropholcommatidae.

Web morphology and prey capture. The Micropholcommatidae are derived Araneoidea with a sheet- or tangle-web building ecology (Hickman 1944; Forster 1959) – an observation supported by spinneret spigot morphology. All studied species of Textricellini build very small, horizontal, platform sheet-webs, often between leaflets of moss, on top of which they sit and wait for prey (M. Rix, pers. obs.; Hickman 1945; Forster 1959). Species of *Rayforstia* and *Raveniella* will readily build such webs in captivity (Fig. 221D), and the silk appears to be sticky (M. Rix, pers. obs.). Species of *Micropholcomma*, in contrast, have been shown to build irregular, three-dimensional tangle-webs, not unlike those constructed by certain Theridiidae (M. Rix, pers. obs.; Hickman 1944), and both textricellin and micropholcommatin species have been fed on small Collembola in captivity (Hickman 1944, 1945). Taphiassine webs are poorly-known, and only those of *Olgania excavata* have been described (see Taxonomy, above) (Fig. 223B). Webs of Gigiellinae and Patelliellini are unknown.

Courtship, mating and egg sacs. Knowledge of micropholcommatid reproductive biology is fragmentary, with only a few egg sacs and mating behaviours recorded. Courtship has never been described in any Micropholcommatidae, although it is highly likely that male stridulation plays an important role in most or all micropholcommatine species. *Eterosonycha alpina* has been observed mating in captivity: a male was photographed 'suspended' from a female by his inserted left pedipalp, which pulsated periodically as haemolymph was pumped under pressure (M. Rix, pers. obs.). The male hung motionless from the female throughout the mating process, even while the female walked over and through leaflets of moss (Fig. 222).

Egg sacs have been previously described for species of *Micropholcomma* and *Raveniella*, and egg sacs of Taphiassinae are newly-described. *Micropholcomma parmatum* builds a small, white, "pill-box shaped" egg sac which is attached to leaflets of moss (Hickman 1944), and *R. luteola* also builds a small, white, "biconvex lens shaped" egg sac which is likewise attached to the substrate (Hickman 1945); in Western Australia, similar egg sacs probably belonging to *R. peckorum* have been found attached to leaves in humus and to the underside of logs (M. Rix, pers. obs.). Two spiderlings hatched out of an egg sac made by *M. parmatum* (after 57 days), and egg sacs of *R. luteola* had three or four eggs inside (Hickman 1944, 1945). In *M. parmatum*, females possess vestigial pedipalpal nubbins on the maxillae, and Hickman (1944) recorded that one of two spiderlings that hatched also had vestigial pedipalps, suggesting that micropholcommatid species with vestigial female pedipalps can be sexed at any age. Egg sacs are now known for species of *Taphiassa* and *Olgania*, with both taxa possessing a similar egg sac morphology (Figs 223A, 223D). Taphiassine egg sacs are small and spherical, and composed of a thin layer of fine, loosely-woven elastic silk through which the eggs are usually visible. They are suspended by horizontal supporting-threads which are attached to the egg sac by drawn-out tufts of silk, and are hung either above the female's sheet-web or nearby. Egg sacs seem to contain only a very small number of eggs (one in *O. excavata* and two in *T. globosa*) (Figs 223A, 223D), although females of *O. excavata* have been seen with multiple hanging egg sacs (M. Rix, pers. obs.).

Life cycle and general biology. Based on collection records, micropholcommatid spiders appear to be strictly seasonal, annual breeders in most of south-western Western Australia, where adult specimens are most easily found in the wet winter months of May to September (M. Rix, pers. obs.). Elsewhere in south-eastern Australia and New Zealand micropholcommatids seem less seasonal, with adults often present throughout the year (Forster 1959). The generation-time of most Micropholcommatidae is unknown, although in south-eastern Australia and New Zealand it is likely that there is a strong overlap in generations. Many micropholcommatid populations seem loosely colonial, and specimens are often aggregated within small, favourable microhabitats (M. Rix, pers. obs.). Aerial ballooning has never been observed in any micropholcommatid taxon, and most species seem highly susceptible to desiccation; specimens of *Raveniella peckorum*, once removed from leaf litter, can die in an un-hydrated vial within several minutes (M. Rix, pers. obs.).

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Appendix I

Character matrix for the 'expanded' analysis of Griswold et al. (1998) and Lopardo & Hormiga (2008).

Bold highlighted numbers denote character-states which have been added to, or modified from, Lopardo & Hormiga (2008).

Taxon	1 10	20	30	40	50	60	70	80	90	96
Deinopis	0000000---	0000010000	00000001-0	00000000-0	000?010010	0000000000	0000-00000	00000?0000	000000000-	00000**0**
Uloborus	0000000---	0000000000	00000001-0	00000000-0	000?010000	0000000100	0000-00100	0000000000	002000000-	00000**0**
Metepeira	0100001000	0000000001	0100000011	0000000000	100?000010	1000000000	0101010100	1111001110	1000000010	00000**0**
Argiope	0100001000	0000000001	0100000011	1100000000	1000000010	1000000000	0101010100	1111001110	1000000010	00000**0**
Tetragnatha	0001001120	0010011010	01010101-1	1010000000	1001000000	1000000100	0100010101	1111011110	0000001011	01000**?**
Glenognatha	0001001120	0010011010	01010001-1	1010000000	101?000000	1000000110	0100010101	1111111110	000?001?0-	???00**?**
Leucauge	0000001000	0000011010	0100000001	1000000000	1001000000	1000000100	0100010101	1111011110	0000001011	00000**0**
Meta	0000001060	0000011010	0100000001	1000000000	1000000010	1000000000	0100010100	1111011110	0000001011	00000**?**
Nephila	0000001010	0000011010	0110000001	1100000010	000?001010	1000000000	0100010101	1111011110	101001200-	01-00**0**
Nephilengys	0000001010	0000011010	0110000001	1100000010	100?001010	1000000000	0100010101	1111011110	101001200-	01-00**0**
QueenSymp	0000000---	0001-1-0-0	0000001001	10000101-0	101?000100	111-000010	0110110111	1111111110	?0?1101110	?1?00**0**
Patu	0000000---	0001-1-0-0	0000001001	10000101-0	101?000100	111-000010	0110110111	1111111110	1001101110	?1-00**0**
Anapis	0000000---	0000010000	1001001001	10100100-1	101?001100	111-000010	0100?10111	1111111110	1101121110	11-00**1**
Gertschanapis	0000000---	0001-1-0-0	0001001001	10000100-1	101?001100	111-000010	0100010111	1111111110	?1?1101110	11?00**0**
Mysmena	0010000---	0001-1-0-0	1000000001	10000000-0	101?000100	101-011010	0110010111	1111011110	1101121110	11-00**0**
Maymena	0010000---	0001-1-0-0	0000000001	10000000-0	100?000000	101-011000	0110010111	1111011110	1101101110	11-01**0**
Theridiosoma	0000001000	0000000000	0000100001	1000000000	111?000000	101-000000	1110010111	1111011110	1101001110	11-00**0**
Epeirotypus	0000001000	0000000000	0000100001	1000000000	111?000000	101-000000	1110010111	0111011110	1100001110	11-00**0**
Linyphia	0000001240	0001-11000	0100000001	1010001000	1000000000	1000000001	0100010111	0111111111	1---------	01-00**1**
Pimoa	0000101050	0000000100	0000000001	10000010-0	100?000000	1000000001	0100010111	0111111111	1---------	01?00**?**
Dipoena	0000000---	1100000100	0000010001	10011000-0	101?000000	1001000010	0200111111	011101121-	1---------	00100**0**
Euryopis	0000000---	1100010000	0000010001	10011000-0	101?000000	1001000010	0200111111	012101121-	1---------	?0100**0**
Anelosimus	0000000---	1100000100	0000000001	10000000-0	100?000000	1000000010	0200110111	011101121-	1---------	00100**0**

Taxon	1 10	20	30	40	50	60	70	80	90	96
Steatoda	0000000---	1100000100	0000000001	1000000000	100?000000	1000000010	0200010111	0111011212	1---------	00100**?**
Nesticus	0000001070	0000000100	0000000001	1000000000	100?000010	1000000010	0200010111	1111011212	1---------	00100**?**
Isicabu	0000101031	0000010000	0000000001	10000000-0	101?000001	101-100010	0100010111	0112-11111	1---------	0??00**1**
Tekella	0000101031	0000010000	0000000001	10000000-0	101?000001	101-000010	0100010111	0112-11111	1---------	0??00**0**
Synotaxus	0000011030	0000111000	0000000001	10000000-0	101?000000	1000000010	0100010111	1111011213	1---------	00100**0**
Chileotaxus	0000011030	0000111000	0000000001	10000000-0	101?000000	1000100010	0100010111	1122-11111	?---------	???00**0**
Meringa	1000011030	0000111000	0000000001	10000000-0	101?100000	1000100010	0100010111	0**2**22-11111	?---------	0??00**0**
Pahora	2000011030	0000111000	0000000001	10000000-0	001?100000	1000100010	0100010111	0122-11111	1---------	0??00**0**
Crassanapis	0100**0**00---	0000000100	0001001001	10000000?1	101?001010	111-002?10	0110010111	1111111110	11?112????	???00**0**
Sheranapis	0100?00---	??00000000	0001011001	10100000?1	101?001000	111-002??0	?110010111	1111111110	11?002????	???00**0**
Elanapis	0000?00---	??00211000	0001011001	10000100?1	101?000010	111-000??0	0110010111	1111111110	10?11?????	???00**0**
Cepheia	0002001000	0000200000	0000000??1	10?01000??	101?0001-1	101-0000?0	0100010111	0**2**12-0101?	??????????	???10**1**
Synaphris	0200001010	0000200000	000???0??1	10?10000??	101?000101	1???000??0	0100010111	0**2**????1011	??????????	???10**2**
Acrobleps	0000000---	00?1-1-0-0	0001001??1	10000000?**0**	101?00011-	111-000?10	0110010111	1111111110	11?11?????	???00**0**
'Inflaticrus'	**0100000---**	**0000010000**	**0000001001**	**10000000-0**	**101?001100**	**101-000010**	**0110010111**	**021111111?**	**??????????**	**???000**
Teutoniella	**0100000---**	**0000000000**	**0000001001**	**10000000-0**	**101?000100**	**101-000010**	**0110010111**	**021111111?**	**??????????**	**???000**
Gigiella	**0000000---**	**0001-1-0-0**	**000000?001**	**10000000-0**	**100?000100**	**101-000010**	**0110010111**	**011111101?**	**??????????**	**???001**
Tinytrella	**0000000---**	**0001-1-0-0**	**0000001001**	**10000010-0**	**101?00010-**	**101-000010**	**0110010111**	**011111111?**	**??????????**	**???001**
Micropholcomma	**0000000---**	**0001-1-0-0**	**0000001001**	**10000000-0**	**101?001100**	**111-000010**	**0110010111**	**011111111?**	**??????????**	**???001**
Taphiassa	**0000000---**	**0001-1-0-0**	**0000000001**	**10000000-0**	**101?00010-**	**101-000010**	**0110010111**	**011111111?**	**??????????**	**???001**

Appendix II

Character matrix for the 'new' analysis.

Species examined with a scanning electron microscope are listed under 'SEM', with highlighted (^) taxa partially scanned in a previous study (see Coddington 1986). Bold highlighted ambiguities (**?**) denote SEM-dependent states which could not be scored for some taxa, and generic type species are highlighted (*).

Taxon	SEM	1 10	20	30	40	50	60	67
*Theridiosoma gemmosum**	Yes^	000--00100	00000-0-10	00000-00??	?0?0?100??	-?0-000000	000-0-0001	0000000
*Novanapis spinipes**	Yes	000--00000	0000?00-10	01-00-1000	0010010100	-00-011001	1100212000	0200100
'*Inflaticrus*' sp.	Yes	000--00000	0000100-00	10000-0110	1001010000	-00-001100	11101-0000	0221100
Teutoniella cekalovici	Yes	000--00000	0000100-10	1000100010	0111110000	-00-001000	00001-0000	0221100
Gigiella platnicki	Yes	0011000000	0000100-01	-0000-1110	0010000000	-00-001000	00001-0010	0101102
*Gigiella milledgei**	Yes	0111000000	0000100-01	-0020-1010	0010000000	-00-001000	00001-0010	0101102
Taphiassa robertsi	Yes	0112000000	0001100-01	-000111120	0001110000	-10-001000	0000201011	0201101
Taphiassa castanea	Yes	0112000000	0001100-01	-000111120	0001110000	-10-001001	0000201011	0201101
*Olgania excavata**	Yes	0112000000	0000100-01	-000111120	1101111000	-00-001000	00012010**??**	**???????**
Olgania cracroft		0112000000	0000100-01	-0021111**??**	?1**?**1**?**110**?**0	-00-0**?**1000	000120?0**??**	**???????**
Micropholcomma bryophilum	Yes	0010010000	0000100-01	-0010-0111	0001010001	0010001000	1110210010	0201100
*Micropholcomma caeligenum**		0010010000	0000100-01	-0010-01**??**	00**?**1**?**100**?**1	00100**?**1001	11102100**??**	**???????**
*Pua novaezealandiae**	Yes	0010000001	0100100-01	-0000-0110	1100010001	0010001000	1110212010	0201100
*Austropholcomma florentine**	Yes	0010000000	1000100-01	-0010-0111	0020011001	1010101000	1100212010	1201100
Austropholcomma walpole		0010000000	1000100-01	-0010-01**??**	01**?**0**?**110**?**1	10101**?**1001	11002120**??**	**???????**
*Tricellina gertschi**	Yes	0010000000	1010100-01	-0010-0110	0010011001	1010101000	1100202010	1201100
*Eterosonycha alpina**	Yes	1012001000	0100100-00	00100-0011	0020011011	0011101010	1000202010	0201110
Eterosonycha aquilina		1012001000	0100100-00	00100-00**??**	00**?**0**?**110**?**1	00111**?**1010	10002020**??**	**???????**
*Epigastrina fulva**	Yes	1012000000	0100100-00	00130-0011	0020011011	0011101010	1000202010	0201110
Epigastrina typhlops		1012000000	0100100-00	00130-00**??**	01**?**0**?**110**?**1	00111**?**1010	1000??20**??**	**???????**

Taxon	**SEM**	**1 10**	**20**	**30**	**40**	**50**	**60**	**67**
*Guiniella tropica**		1012000000	0000100-00	0???0-00**??**	00**?**0**?**110**?**1	00111**?**1010	10002020**??**	**???????**
*Raveniella luteola**	Yes	1012000010	0020100-01	-0120-0011	0020011011	0011101010	0000202010	0201110
Raveniella peckorum	Yes	1012000010	0020100-01	-0120-0011	00**?**0**?**110**?**1	00111**?**1010	00002020**??**	**???????**
*Rayforstia vulgaris**	Yes	1012000000	0000100-00	00000-0011	0020011011	0011101000	1000202010	0201110
Rayforstia signata		1012000000	0000100-00	00000-00**??**	00**?**0**?**110**?**1	00111**?**1000	10002020**??**	**???????**
*Normplatnicka lamingtonensis**	Yes	1012000000	0100100-01	-0000-0011	0020011011	0011101000	0000202010	0201110
Normplatnicka chilensis		1012000000	0100100-01	-0000-00**??**	00**?**0**?**110**?**1	00111**?**1000	00002020**??**	**???????**
*Eperiella alsophila**	Yes	1012000000	0000100-01	-0020-0011	0000010001	0011101000	0000202010	0211110
*Algidiella aucklandica**	Yes	1012100000	0000111001	-0000-0010	0010010001	0011101000	0000202010	0211110
*Taliniella nigra**	Yes	1012100000	0000101001	-0000-0010	0010011001	0011101000	0000202010	0201110
*Tinytrella pusilla**	Yes	0012000000	0000101001	-0000-0010	0010010001	0010101000	0000202010	0201110
*Patelliella adusta**	Yes	0012000000	0000101101	-0010-0010	0010011001	0010101000	1000202121	0221100

Appendix III

Characters and states for the 'new' analysis

Morphological characters and states are listed, and the optimisations of characters are described following cladistic analysis of the 'new' matrix (see Appendix II; Figs 3–4). Unambiguous synapomorphies reported for a given node were inferred according to the optimal cladogram presented in Figure 4.

MALE GENITALIA:

Character 1 "*Pedipalpal patella – ornate cuticular sculpturing*: (0) absent; (1) present".

Ornate, ridged sculpturing on the pedipalpal patella (Figs 47C–D) is characteristic of all textricellin genera except *Tinytrella*, and state (1) is here optimised as an unambiguous synapomorphy of the derived Textricellini.

Character 2 "*Pedipalpal patella – strongly recurved distal apophysis*: (0) absent; (1) present".

Determining the homology of pedipalpal patellar apophyses is fraught with difficulty, especially in symphytognathidan spiders, for which patellar modifications are often characteristic. Among micropholcommatid taxa, the distinctive ligulate retrolateral apophysis (Character 3, below) was inferred as the primary patellar apophysis, before invoking the presence of additional distal apophyses. A strongly recurved distal patellar apophysis (Fig. 152E) is characteristic of species of *Taphiassa* and *Olgania*, and state (1) is here optimised as a diagnostic (i.e. ambiguously synapomorphic) character of the subfamily Taphiassinae, with an analogous (or possibly symplesiomorphic) occurrence in *Gigiella milledgei*.

Character 3 "*Pedipalpal patella – ligulate retrolateral apophysis (lRPA)*: (0) absent; (1) present".

The distinctive stalked, ligulate micropholcommatid patellar apophysis (lRPA) (Figs 8E–F) seems to have evolved in concert with the evaginated tegular ridge, and state (1) is here optimised as an unambiguous synapomorphy of the family Micropholcommatidae. The lRPA is a stalked, usually ladle-like structure with one or two proximal setae, which interacts with the evaginated tegular ridge during the expansion of the bulb (Fig. 9B). Retrolateral and distal patellar modifications, including various extensions, flanges, spurs and apophyses, are present in 'teutoniellid' genera and in most Anapidae, but the homology of these structures to the micropholcommatid lRPA is questionable.

Character 4 "*lRPA – shape*: (0) distally-directed, flanged or hooked; (1) distally-directed, forked; (2) retrolaterally-directed, hooked".

The shape of the micropholcommatid lRPA varies among subfamilies and tribes, but can be broadly divided into three morphologies. The characteristically hooked, retrolaterally-directed lRPA (Figs 8E–F) is present in all Taphiassinae, Textricellini and Patelliellini, while other distally-directed forms occur in Gigiellinae (Figs 202E–F) and Micropholcommatini (Figs 12A–B). State (0) is here optimised as an unambiguous synapomorphy of the tribe Micropholcommatini, and state (1) is here optimised as an unambiguous synapomorphy of the subfamily Gigiellinae.

Character 5 "*lRPA – flange-like dorsal projection*: (0) absent; (1) present".

An unusual flange-like dorsal projection on the lRPA (Fig. 125E) is characteristic of species of *Algidiella* and *Taliniella*, and state (1) is here optimised as an unambiguous synapomorphy uniting these two textricellin genera.

Character 6 "*Pedipalpal patella – retrolateral stridulatory system*: (0) absent; (1) present". See also Schütt (2003) character 64(2).

The presence of an apparent stridulatory system on the pedipalps of males – whereby a field of stout tubercles on the femur of leg I abuts a stridulatory file on the retrolateral surface of the pedipalpal patella (Figs 18C, 21D) – is characteristic of species of *Micropholcomma*. It is unknown what role, if any, this stridulatory system plays during courtship and mating, but state (1) is here optimised as an unambiguous synapomorphy of the genus *Micropholcomma*.

Character 7 "*Pedipalpal tibia*: (0) simple, flattened; (1) enlarged, with posterior processes".

The pedipalpal tibia of male symphytognathidans is usually a simple, relatively flat disk-shaped structure (Fig. 21F), without prominent apophyses or processes. Among micropholcommatid taxa, an enlarged pedipalpal tibia with pronounced posterior processes (Figs 60F–G) is characteristic of species of *Eterosonycha*, and state (1) is here optimised as an unambiguous synapomorphy of this genus.

Character 8 "*Paracymbium*: (0) absent; (1) present". See also Griswold et al. (1998) character 7; Schütt (2003) characters 67–69.

Among symphytognathidan taxa, a paracymbium has been recorded only in Theridiosomatidae, and state (1) is here optimised as an autapomorphy of *Theridiosoma gemmosum*.

Character 9 "*Cymbium – 3 posterior, parallel macrosetae*: (0) absent; (1) present".

The presence of three parallel macrosetae on the posterior margin of the cymbium (Figs 77A, 82C, 82G) is characteristic of species of *Raveniella*, and state (1) is here optimised as an unambiguous synapomorphy of this genus.

Character 10 "*Bulb – unexpanded orientation*: (0) normal, embolus insertion basal or sub-basal; (1) bulb rotated 180 degrees, embolus insertion distal relative to cymbium".

A hemispherical rotation of the unexpanded bulb relative to the cymbium, whereby the embolus inserts distally and projects posteriorly (Figs 29A–B), is characteristic of *Pua novaezealandiae*, and state (1) is here optimised as an autapomorphy of this species.

Character 11 "*Embolus – 90 degree bifurcation*: (0) absent; (1) present".

A remarkably-modified embolus – whereby a distal embolic portion (or embolus 'proper') bifurcates at 90 degrees from a looped basal embolic portion (Fig. 39D) – is characteristic of species of *Austropholcomma* and *Tricellina*. This extremely unusual embolic morphology is associated with modified female insemination ducts, whereby defined proximal ducts lead into expanded, membranous distal ducts (Fig. 33), through which the distal embolic portion presumably passes before entering the spermathecae. State (1) is here optimised as an unambiguous synapomorphy uniting the micropholcommatin genera *Austropholcomma* and *Tricellina*.

Character 12 "*Embolus – length*: (0) long (length > 5x width), curved, sinuous, looped or coiled; (1) short (length < 5x width), spur-like or hooked". See also Schütt (2003) character 71.

The morphology of the embolus varies greatly among micropholcommatid taxa, with an apparent general tendency towards elongation and coiling; concomitant morphologies can also be found in the female insemination ducts (see Character 24, below). This embolic variation is clearly homoplastic, and quantification of different morphologies is highly subjective, and as a result a simple binary measure of embolus length is employed here. Among micropholcommatid taxa, a very short, spur-like embolus (Figs 29C, 107C) is unusual and characteristic of species in four genera, and may have evolved independently on three occasions. State (1) is here optimised as: (A) an unambiguous synapomorphy of the genus *Normplatnicka*; (B) an unambiguous synapomorphy uniting the genera *Eterosonycha* and *Epigastrina*; and (C) an autapomorphy of *Pua novaezealandiae*.

Character 13 "*Embolus – interaction with pedipalp*: (0) exposed or interacting with tegular sclerites; (1) complexly woven around bulb; (2) posteriorly-directed, interacting with patella".

In the unexpanded state, the embolus of most symphytognathidan spiders is restricted to the region of the tegulum, exposed or otherwise interacting only with tegular sclerites (Fig. 118A). In two micropholcommatid genera the embolus interacts with the pedipalp more inclusively, by either winding in a complex fashion around the entire pedipalpal bulb (Figs 45A–C), or extending posterior to the cymbium and interacting with the pedipalpal patella (Figs 77, 82). State (1) is here optimised as an autapomorphy of *Tricellina gertschi*, and state (2) is here optimised as an unambiguous synapomorphy of the genus *Raveniella*.

Character 14 "*Subtegulum*: (0) normal; (1) enlarged".

The subtegulum of most Micropholcommatidae is relatively obscure in the unexpanded state, situated below the alveolus of the cymbium and mostly hidden from view by the larger tegulum. An enlarged, proximally-bulging and clearly visible subtegulum (Fig. 174A) is characteristic of species of *Taphiassa*, and state (1) is here optimised as an unambiguous synapomorphy of this genus.

Character 15 "*Evaginated tegular ridge (ETR)*: (0) absent; (1) present".

An evaginated tegular ridge (ETR) (Figs 8A–B) is found in all micropholcommatid taxa studied to date, and a similar structure is also present in the 'teutoniellid' taxa *Teutoniella* and '*Inflaticrus*' (Figs 5B, 6B). A homologous structure does not seem to occur in the Anapidae or Symphytognathidae, although a myriad of complex tegular modifications have evolved in anapid genera, and homology assignment is difficult. The ridge is formed from a simple, folded evagination of the tegulum, and in the absence of other tegular sclerites, seems to lock the tegular bulb to the retrolateral patellar apophysis during mating. A simple, curved embolus, overlying the tegulum and surrounding the tegular ridge seems to be the symplesiomorphic male pedipalpal condition for the Micropholcommatidae, with species in all subfamilies exhibiting this characteristic morphology (e.g. see Figs 142A–B, 161A, 201A–B). However, notable and sometimes extreme conductor-like modifications to the tegular region adjacent to the evaginated tegular ridge have evolved in several derived Textricellini (i.e. *Eterosonycha*, *Epigastrina*, *Rayforstia* and *Guiniella*), most spectacularly so in *Guiniella* and *Epigastrina*. It is unclear whether state (1) is synapomorphic for the family Micropholcommatidae (with an analogous occurrence in *Teutoniella* and '*Inflaticrus*'), or symplesiomorphic, possibly uniting micropholcommatid and 'teutoniellid' taxa.

Character 16 "*ETR – medial crest*: (0) absent; (1) present".

Among micropholcommatid taxa, a medial crest behind a distally-raised ETR (Figs 125B–C) is characteristic of *Algidiella aucklandica*, and state (1) is here optimised as an autapomorphy of this species.

Character 17 "*Tegulum – basal embolic bulge*: (0) absent; (1) present".

A bulging tegular projection adjacent to the base of the embolus (Fig. 125H) is characteristic of species of *Patelliella*, *Tinytrella*, *Taliniella* and *Algidiella*, although the morphology of this structure varies among taxa. State (1) is here optimised as diagnostic of these genera.

Character 18 "*Basal embolic bulge – shape*: (0) small, rounded; (1) expanded, disk-like."

A significantly expanded, disk-like basal embolic bulge (Fig. 150A), covering much of the proximal tegulum, is characteristic of *Patelliella adusta*, and state (1) is here optimised as diagnostic of this species.

Character 19 "*Median apophysis*: (0) absent; (1) present". See also Griswold et al. (1998) character 16; Schütt (2003) character 70.

The coding of this character follows that of Griswold et al. (1998), whereby the presence of a second tegular apophysis, in addition to a conductor, was coded as a median apophysis before invoking homology with additional tegular sclerites. Among the taxa scored for the current study, a median apophysis was present only in *Theridiosoma gemmosum*, *Novanapis spinipes* and *Teutoniella cekalovici*. While the loss of the median apophysis (state 0) is here diagnostic (i.e. an ambiguous synapomorphy) of the family Micropholcommatidae (with an analogous occurrence in '*Inflaticrus*'), this optimisation can be properly assessed only with a wider selection of symphytognathidan outgroup taxa, and a better understanding of tegular sclerites in these taxa. Indeed, the loss of the median apophysis was optimised in Griswold et al. (1998) as a synapomorphy of the clade (Mysmenidae + Anapidae + Symphytognathidae), and its presence in *Novanapis* and *Teutoniella* may be secondary.

Character 20 "*Conductor*: (0) present; (1) absent". See also Griswold et al. (1998) character 15; Schütt (2003) character 72.

As for the median apophysis (Character 19, above), the absence of a conductor (Figs 8A–B) was optimised in Griswold et al. (1998) as a synapomorphy of the clade uniting Mysmenidae, Anapidae and Symphytognathidae, but is here optimised as a synapomorphy of the family Micropholcommatidae (state 1). Clearly, as noted by

Griswold et al. (1998) for *Anapis*, and as highlighted by the current study, many derived symphytognathidan genera do indeed possess a functional conductor (as in *Novanapis*, *Teutoniella* and '*Inflaticrus*'), and the symplesiomorphic loss (or otherwise) of this character requires further testing. Among micropholcommatid taxa, a conductor-like sclerite appears to have evolved independently on two occasions within the Textricellini, and state (0) is here optimised as: (A) an unambiguous synapomorphy of the genus *Rayforstia*; and (B) an unambiguous synapomorphy of the clade uniting *Guiniella*, *Epigastrina* and *Eterosonycha*.

Character 21 "*Conductor – position*: (0) terminal; (1) basal".

The position of the tegular conductor is best interpreted in most symphytognathidan taxa as being terminal or at least marginally distal, relative to the insertion of the embolus. In such taxa, the terminal conductor wraps, guides or supports the distal portion of the embolus, and the base of the conductor originates from the tegulum *anterior* to the base of the embolus. In *Teutoniella* and '*Inflaticrus*', however, the conductor is extremely unusual in inserting basally on the tegulum, proximal and *posterior* to the base of the embolus; in *Teutoniella* the conductor is so widely expanded and flattened proximally as to overlay the tegulum and straddle the embolus for its entire length (Figs 5A–D); in '*Inflaticrus*', the basal, rod-like conductor supports the much smaller distal embolus (Figs 6A–C). State (1) is here optimised as an unambiguous synapomorphy uniting the 'teutoniellid' genera *Teutoniella* and '*Inflaticrus*'.

FEMALE GENITALIA:

Character 22 "*Fertilisation ducts*: (0) present, entelegyne; (1) absent, haplogyne". See also Griswold et al. (1998) character 24; Schütt (2003) character 79(1).

The presence of entelegyne female genitalia is the symplesiomorphic condition for the superfamily Araneoidea, and secondary haplogyny is relatively rare among araneoid taxa; certainly, all micropholcommatid and 'teutoniellid' taxa in the current study possessed entelegyne female genitalia, including *Tricellina gertschi*. State (1) is here optimised as an autapomorphy of *Novanapis spinipes* (coded according to Platnick and Forster 1989), although it is worth noting that this character may be a more inclusive synapomorphy of one or more anapid clades.

Character 23 "*Fertilisation ducts – shape*: (0) simple, curved; (1) filiform".

Very long, filiform fertilisation ducts (Figs 51, 63B) are characteristic of species of *Raveniella*, *Eterosonycha* and *Epigastrina*, and state (1) is here optimised as an unambiguous synapomorphy uniting these three genera (+/- *Guiniella*, for which the morphology of the epigyne is imprecisely known).

Character 24 "*Insemination ducts – shape*: (0) simple, curved or looped, separated from fertilisation ducts; (1) coiled around fertilisation ducts; (2) coiled around receptacula; (3) filiform, contiguous with fertilisation ducts for entire length. See also Schütt (2003) character 78.

The evolution of the female insemination ducts in the Micropholcommatidae appears closely tied to the evolution of the male embolus, such that lengthening and/or coiling of the male embolus is usually associated with concomitant coiling of the female insemination ducts. The trajectory of a female's ducts can thus be relatively simple, leading from the gonopore more or less straight into the spermathecae (Fig. 99), or significantly more complex, winding and coiling around the fertilisation ducts (Figs 15A–E) or around the receptacula themselves (Figs 75, 112, 178D). Indeed, there appears to be a general tendency among micropholcommatid taxa towards an elongation and coiling of the embolus and insemination ducts, such that long, variously looped or coiled insemination ducts are found in all three subfamilies and are characteristic of species in at least eight different micropholcommatid genera. Even within several genera there exist species exhibiting a spectrum of morphologies, from taxa with relatively simple ducts (e.g. *Micropholcomma caeligenum*, *Olgania excavata*) to congeneric species with very long, coiled ducts (e.g. *M. longissimum*, *O. cracrofti*); *Micropholcomma longissimum* alone may have the longest embolus and insemination ducts of any spider in the world, relative to its body size (see Fig. 15E; Forster and Platnick 1984, fig. 369)! This character is thus highly homoplastic, but nonetheless informative in the context of particular clades. Within the context of the tribe Micropholcommatini, state (0) is here optimised as an autapomorphy of *Pua novaezealandiae*. Within the context of the subfamily Micropholcommatinae, state (1) is here optimised as a synapomorphy of the clade uniting the Micropholcommatini and the Patelliellini (with a reversal in *Pua*). State (2) is here optimised as: (A) an autapomorphy of *Gigiella milledgei*; (B) an autapomorphy of *Eperiella alsophila*; (C) an autapomorphy of *O. cracrofti*; and (D) and unambiguous synapomorphy of the genus *Raveniella*. State (3) is here optimised as an unambiguous synapomorphy of the genus *Epigastrina*.

CEPHALOTHORAX AND LEGS:

Character 25 "*Carapace – pits*: (0) absent; (1) present". See also Schütt (2003) character 6.

Defined, crater-like pits on the carapace (Fig. 170E) are present in many different araneoid taxa, although the function of such pits is usually unknown. In taphiassine species of *Taphiassa* and *Olgania*, these pits may play an important glandular role, as a glandular pore is usually present at the base of each pit (Figs 157C, 188F). State (1) is here optimised as an unambiguous synapomorphy of the subfamily Taphiassinae, with an analogous occurrence in *Teutoniella cekalovici*.

Character 26 "*Carapace – distribution of pits*: (0) pits restricted to clypeus and margins of carapace; (1) carapace uniformly punctate". See also Schütt (2003) character 6.

The distribution of pits on the carapace varies among taxa, and taphiassine species of *Taphiassa* and *Olgania* are remarkable in possessing a uniformly punctate carapace morphology (Figs 152A–D); *Teutoniella cekalovici*, in comparison, possesses pits only on the carapace margins.

Character 27 "*Carapace – anterior pore-bearing depression*: (0) absent; (1) present". See also Schütt (2003) character 8.

A pair of defined depressions or sulci on the antero-lateral corners of the carapace, each bearing multiple glandular pores (Figs 157G, 205E), is characteristic of several araneoid taxa, including species of Linyphiidae, Anapidae and Micropholcommatidae. This unusual character has been variously called a "cephalothoracic sulcus", a "glandular/pore-bearing depression", or an "oval glandular area" by various authors (Platnick and Forster 1989; Hormiga 1999; Schütt 2003; Lopardo & Hormiga 2008; Rix et al. 2008), and has probably evolved independently on several occasions. *Novanapis spinipes*, like most Anapidae, possesses a pore-bearing depression above the maxillae, as do species of *Gigiella*, *Taphiassa* and *Olgania* among micropholcommatid taxa. State (1) is here optimised as an unambiguous synapomorphy uniting the subfamilies Taphiassinae and Gigiellinae, with an analogous occurrence in *Novanapis*.

Character 28 "*Carapace – lateral margins*: (0) not fused to sternum; (1) fused to sternum via pleural sclerites". See also Schütt (2003) character 12.

The complete fusion of the lateral margins of the carapace to the sternum is characteristic of many symphytognathidan taxa, including *Gigiella platnicki* and species of Micropholcommatini and Taphiassinae. In these taxa, pleural sclerites extend unbroken between the coxae of the legs, 'bridging' the pleural gap and creating coxal foramens in an otherwise 'armoured' cephalothorax. The condition is not universal, however, and *Teutoniella cekalovici*, *Novanapis spinipes*, *G. milledgei* along with species of Textricellini and Patelliellini do not possess bridging, fully fused pleural sclerites (contrary to Schütt 2003), although some taxa possess separate, triangular pleural sclerites between coxae. State (1) is here optimised as diagnostic (i.e. ambiguously synapomorphic) of the Micropholcommatini and Taphiassinae, with analogous occurrences in *G. platnicki* and '*Inflaticrus*'.

Character 29 "*Pars thoracica – cuticle*: (0) roughly rugose; (1) discoid-granulate; (2) smooth". See also Schütt (2003) character 6.

The microstructure of the carapace cuticle has been shown to vary widely among symphytognathidan spiders (e.g. see Platnick and Forster 1989), and this character may be an unexpected source of phylogenetically informative character-states. While the margins of the pars thoracica may exhibit a different, overlying cuticular microstructure (see Character 30, below), an underlying discoid-granulate morphology (Figs 139C, E) is characteristic of most micropholcommatid and 'teutoniellid' taxa. This discoid-granulate morphology is well-defined and heavily granulate in 'teutoniellid', gigielline, patelliellin and most textricellin taxa, but is less obviously granulate in micropholcommatin taxa. Although species of *Olgania* and *Taphiassa* possess a heavily punctate cephalothoracic morphology, otherwise smooth cuticle on the pars thoracica (Fig. 170E) is characteristic of these genera, and state (2) is here optimised as an unambiguous synapomorphy of the subfamily Taphiassinae.

Character 30 "*Pars thoracica – reticulate margins*: (0) absent; (1) present".

As discussed for Character 29 (above), the margins of the pars thoracica can exhibit a separate, overlying cuticular microstructure. A distinctly reticulate marginal microstructure (Figs 18E, 36E, 56A–B), composed of a network of mostly pentagonal cells near the lateral margins of the pars thoracica, is characteristic of *Micropholcomma bryophilum*, *Austropholcomma florentine* and many species of derived Textricellini, most strongly-developed in *M. bryophilum*. State (1) is here optimised as an unambiguous synapomorphy uniting the genera *Eperiella*, *Normplatnicka*, *Rayforstia*, *Raveniella*, *Guiniella*, *Epigastrina* and *Eterosonycha*, with an analogous occurrence in *M. bryophilum* and *A. florentine*.

Character 31 "*Pars thoracica – setal tubercles*: (0) absent; (1) present".

Small, defined tubercles on the pars thoracica (Fig. 26E), each bearing a short seta, are characteristic of several species, including *Olgania excavata*, *Pua novaezealandiae* and '*Inflaticrus*', and state (1) is here optimised as an autapomorphy of these species.

Character 32 "*AME*: (0) present; (1) absent". See also Griswold et al. (1998) character 27; Schütt (2003) character 9(1).

The anterior median eyes of most Symphytognathidan taxa are usually reduced to some degree, often much smaller than the lateral eyes (Fig. 84C), and sometimes completely absent (Figs 25B, 86E, 100C). Quantifying this reduction is, however, highly subjective, as reductional states are usually coded on the basis of AME diameters relative to the diameters of other eyes, which may themselves be small or reduced. Apparent AME size can also be influenced by the relative size of the carapace and clypeus, or the degree of 'clumping' of the eyes relative to each other. Griswold et al. (1998) coded the AME as "present" versus "reduced or absent", therefore avoiding potentially subjective states of reduction, but unfortunately missing the complete loss of the AME as a uniquely derived state. The complete loss of the AME among symphytognathidans, while clearly homoplastic, is an extremely informative character in context, and among micropholcommatid and 'teutoniellid' taxa the AME have been independently lost multiple times. State (1) is here optimised as: (A) an unambiguous synapomorphy of the genus *Olgania*; and (B) an autapomorphy of *Pua novaezealandiae*, *Austropholcomma walpole*, *Epigastrina typhlops* and *Teutoniella cekalovici*. It is worth noting, however, that AME have also been lost in several other micropholcommatid taxa, including species of *Micropholcomma* (e.g. *M. junee*), *Normplatnicka* (e.g. *N. barrettae*), *Rayforstia* (e.g. *R. propinqua*) and *Eperiella* (e.g. *E. hastings*).

Character 33 "*Sternum*: (0) smooth; (1) rugose; (2) reticulate".

As discussed for the carapace (Characters 29–30, above), the cuticle of the sternum is a source of phylogenetically informative character-states. Among micropholcommatid taxa, strongly reticulate cuticle (Figs 56E–F, 78A–B) is characteristic of species of *Austropholcomma*, *Normplatnicka*, *Rayforstia*, *Raveniella*, *Epigastrina* and *Eterosonycha*, whereas smooth cuticle (Fig. 115B) is characteristic of species of *Eperiella*, *Micropholcomma*, *Pua*, *Taphiassa* and *Olgania*. Rugose sternal cuticle (Fig. 122D) is widespread among symphytognathidan genera, and may be the symplesiomorphic condition for the Micropholcommatidae, present in species of Gigiellinae, Patelliellini, *Tricellina*, *Tinytrella*, *Algidiella* and *Taliniella*. State (0) is here optimised as: (A) an unambiguous synapomorphy of the subfamily Taphiassinae; (B) an unambiguous synapomorphy uniting the genera *Micropholcomma* and *Pua*; and (C) an autapomorphy of *Eperiella alsophila* and '*Inflaticrus*'. State (2) is here optimised as: (A) an autapomorphy of *Austropholcomma florentine*; and (B) a diagnostic (i.e. an ambiguously synapomorphic) character uniting *Normplatnicka*, *Rayforstia*, *Raveniella*, *Guiniella*, *Epigastrina* and *Eterosonycha*.

Character 34 "*Sternum – surface pits*: (0) absent; (1) present".

Defined, crater-like pits can be present on the sternum (Fig. 170B) as on the carapace, although the morphology of these pits varies; some are circular (Fig. 170B), others are heart-shaped (Fig. 6E), and some are glandular (Fig. 170D) (see Character 35, below). State (1) is here optimised as: (A) an unambiguous synapomorphy uniting the 'teutoniellid' genera *Teutoniella* and '*Inflaticrus*'; (B) an unambiguous synapomorphy of the subfamily Taphiassinae; and (C) an unambiguous synapomorphy of the genus *Micropholcomma*.

Character 35 "*Sternum – multiple glandular openings*: (0) absent; (1) present".

Multiple glandular pores, each situated at the base of a sternal pit (Fig. 170D), are characteristic of species of *Taphiassa*, *Olgania* and *Teutoniella*, and state (1) is here optimised as an unambiguous synapomorphy of the subfamily Taphiassinae, with an analogous occurrence in *Teutoniella cekalovici*.

Character 36 "*Sternum – posterior apex*: (0) pointed; (1) obtuse or truncate". See also Griswold et al. (1998) character 43; Schütt (2003) character 11.

An obtuse or truncate posterior sternum (Figs 36B, 86F), whereby the coxae of leg IV are widely separated by a distance greater than or equal to the diameter of the fourth coxa (Griswold et al. 1998), is characteristic of species in the symphytognathidan lineage. While this character is open to a degree of subjective interpretation (Griswold et al. 1998), reversal to an obviously pointed posterior apex can be informative, as in *Maymena* (Griswold et al. 1998). Among micropholcommatid taxa, a pointed posterior apex of the sternum (Figs 193A–B) is characteristic of species of *Gigiella*, and state (0) is here optimised as an unambiguous synapomorphy of the subfamily Gigiellinae.

Character 37 "*Size of male versus female chelicerae*: (0) same; (1) male chelicerae obviously larger, each with a bulging anterior projection". See also Schütt (2003) character 14(2).

This character is open to a degree of subjective coding, but species in at least 13 genera of Micropholcommatidae exhibit obvious sexual dimorphism in the size and shape of the chelicerae (Figs 57A, 57G). While this character is clearly homoplastic both within and among genera, state (1) is here optimised as: (A) an unambiguous synapomorphy of the genus *Olgania*; (B) an unambiguous synapomorphy of the clade uniting the genera *Normplatnicka*, *Rayforstia*, *Raveniella*, *Guiniella*, *Epigastrina* and *Eterosonycha*; (C) diagnostic (i.e. ambiguously synapomorphic) of the clade uniting *Austropholcomma* and *Tricellina*; and (D) an autapomorphy of *Patelliella adusta* and *Taliniella nigra*.

Character 38 "*Cheliceral teeth – origin*: (0) sessile; (1) from mound". See also Griswold et al. (1998) character 36; Schütt (2003) character 16.

Origin of the cheliceral teeth from a common central mound is characteristic of many species of Anapidae, and state (1) is here optimised as an autapomorphy of *Novanapis spinipes*.

Character 39 "*Cheliceral promargin – inner denticles*: (0) absent; (1) present".

Denticles on the inner promargin of the cheliceral paturon, near the tip of the fang (Figs 105E–F), are characteristic of species of *Rayforstia*, *Normplatnicka*, *Raven-*

iella, *Epigastrina* and *Eterosonycha*, and state (1) is here optimised as an unambiguous synapomorphy uniting these genera. It is unknown what role these denticles play, but it is possible they have a stridulatory function.

Character 40 "*Cheliceral promargin – pair of raised, fused setal sockets adjacent to fang*: (0) absent; (1) present".

The cheliceral promargin of micropholcommatid spiders is an important source of phylogenetically informative characters, with variously modified setae and peg teeth. In species of Micropholcommatinae, the bases of two setae adjacent to the base of the fang have fused, creating a pair of distinctly raised, fused setal sockets (Figs 11A–B). The proximal seta of this pair is shorter, stiffened and peg-tooth like; the distal seta is longer and plumose. State (1) is here optimised as an unambiguous synapomorphy of the subfamily Micropholcommatinae.

Character 41 "*Male cheliceral promargin – peg tooth-like seta of fused setal socket*: (0) cylindrical; (1) thickened, proximally flattened".

In species of *Austropholcomma* and *Tricellina*, the proximal peg tooth-like seta of the fused setal socket (Character 40, above) is modified such that it is thickened and proximally flattened (Figs 37F, 43F), and state (1) is here optimised as an unambiguous synapomorphy uniting these two genera.

Character 42 "*Cheliceral promargin – seta projecting from proximal toothed mound*: (0) absent; (1) present".

The presence of a long seta projecting from the prolateral side of the proximal cheliceral toothed mound (Fig. 159B) is characteristic of species of *Taphiassa*, and state (1) is here optimised as an unambiguous synapomorphy of this genus.

Character 43 "*Male cheliceral promargin – peg teeth*: (0) absent; (1) present". See also Schütt (2003) character 18.

The presence of distinctive peg teeth on the male cheliceral promargin (Figs 11A–B) is characteristic of species of Micropholcommatinae, and state (1) is here optimised as an unambiguous synapomorphy of this subfamily.

Character 44 "*Male promarginal peg teeth – number*: (0) 1; (1) 2–3".

Among those micropholcommatine genera with peg teeth on the male cheliceral promargin, the presence of one peg tooth (state 0) (Fig. 11B) seems to be the symplesiomorphic condition. The presence of two or three peg teeth (Fig. 11A) is characteristic of derived Textricellini, for which three peg teeth seems to be symplesiomorphic (reduced to two only in *Algidiella aucklandica*, *Taliniella vinki* and species of *Eperiella*). State (1) is here optimised as an unambiguous synapomorphy uniting the nine genera of derived Textricellini.

Character 45 "*Male chelicerae – ectal stridulatory system*: (0) absent; (1) present". See also Schütt (2003) character 14(3).

An ectal stridulatory system on the chelicerae of males – whereby a stout, pick-like seta on the pedipalpal trochanter (i.e. the stridulatory 'tooth') abuts a stridulatory file on the ectal margin of the cheliceral paturon (Figs 11C–D) – is characteristic of most genera of Micropholcommatinae. It is unknown what role, if any, this stridulatory system plays during courtship and mating, but state (1) is here optimised as an unambiguous synapomorphy of the subfamily Micropholcommatinae, lost only in species of *Pua* and *Micropholcomma* (for which state 0 is an unambiguous synapomorphy).

Character 46 "*Labrum – spur*: (0) absent; (1) present". See also Griswold et al. (1998) character 40; Schütt (2003) characters 20–21.

The morphology and phylogenetic significance of the symphytognathidan "labral spur" – proposed by several authors as a possible anapid synapomorphy – has generated much debate and little consensus, although a recent summary by Miller et al. (2009) has helped clarify this issue. All anapid, micropholcommatid and 'teutoniellid' taxa possess a region near the base of the labral tongue which is elevated to some degree, although in micropholcommatids, 'teutoniellids' and *Acrobleps* (see Lopardo and Hormiga 2008), as in many anapid genera (see Miller et al. 2009) the labral tongue is otherwise recumbent, and the labrum does not project anteriorly dorsal to this region (Fig. 104F). In *Novanapis*, as in several other anapid genera, the labrum does project anteriorly in a distinctly pointed, spur-like fashion, dorsal to the base of the labral tongue; a morphology which seems best described as a "labral spur" (see Miller et al. 2009). State (1) is thus here optimised as an autapomorphy of *Novanapis spinipes*.

Character 47 "*Femoral macrosetae*: (0) present; (1) absent". See also Griswold et al. (1998) character 59; Schütt (2003) character 33.

The absence of femoral macrosetae (i.e. 'spines') on the legs is characteristic of derived symphytognathidans, and state (0) is here optimised as an autapomorphy of *Theridiosoma gemmosum*.

Character 48 "*Tibia I*: (0) cylindrical; (1) swollen".

A distinctly swollen tibia on the male and female leg I is characteristic of '*Inflaticrus*', and state (1) is here optimised as an autapomorphy of this species.

Character 49 "*Male tibia I – distal prolateral macroseta*: (0) absent; (1) present". See also Schütt (2003) character 35(2).

The presence of a distinctive, subtly bent, distal prolateral macroseta on the tibia I of males (Figs 59C–D) is characteristic of species of *Guiniella*, *Rayforstia*, *Epigastrina* and *Eterosonycha*, and state (1) is here optimised as an unambiguous synapomorphy uniting these four genera.

Character 50 "*Female pedipalp*: (0) present, with four or five distal segments; (1) highly reduced or absent, with three or fewer distal segments". See also Griswold et al. (1998) character 52; Schütt (2003) character 23.

Reduction of the female pedipalps is characteristic of many symphytognathidan taxa, although a full spectrum of morphologies can be found even among members of the same genus; in *Taphiassa*, for example, there exist species with the usual five articulating distal segments (e.g. *T. robertsi*), three articulating distal segments (e.g. *T. punctata*; Forster 1959, fig. 81; Schütt 2000, fig. 3F), or only a single vestigial nubbin (e.g. *T. castanea*). In species of Micropholcommatini, fusing of the pedipalpal tibia and tarsus, resulting in a fused 'tibia-tarsus' (Figs 19C–D), is also not uncommon, although the pedipalp of these species is otherwise obvious and presumably still functional. To simplify the range of morphologies encompassed by the symphytognathidan female pedipalp, this character has been coded to distinguish clearly visible, functional female pedipalps (i.e. those with at least four articulating distal segments) from highly reduced, barely visible pedipalps with three or fewer vestigial segments (Fig. 170F). State (1) is here optimised as an autapomorphy of *Novanapis spinipes*, *Taphiassa castanea*, *Austropholcomma walpole* and *Micropholcomma caeligenum*.

ABDOMEN:

Character 51 "*Male abdomen – dorsal scute*: (0) absent; (1) present". See also Griswold et al. (1998) character 47; Schütt (2003) character 41.

The presence of a large dorsal scute on the male abdomen (Fig. 12C) is characteristic of many symphytognathidan genera, although the absence of this character (state 0) is probably symplesiomorphic for the Micropholcommatidae. Among micropholcommatid taxa, a dorsal scute on males may have evolved independently on at least four occasions, and state (1) is here optimised as: (A) an unambiguous synapomorphy uniting the tribes Patelliellini and Micropholcommatini; (B) an unambiguous synapomorphy of the genus *Rayforstia*; and (C) an unambiguous synapomorphy uniting the genera *Guiniella*, *Epigastrina* and *Eterosonycha*. It is worth noting, however, that not all species of *Rayforstia* possess a dorsal scute (e.g. *R. lordhowensis*), and at least one species of *Taliniella* (i.e. *T. vinki*) also possesses a dorsal scute. Males of *Normplatnicka barrettae* possess a rudimentary 'scute-like' region of thickened abdominal cuticle anteriorly (Fig. 100A).

Character 52 "*Male abdomen – lateral sclerotic strips*: (0) absent; (1) present".

As for the male dorsal scute (Character 51, above), lateral sclerotic strips on the male abdomen (Fig. 12C) are characteristic of many 'armoured' symphytognathidan spiders. Among micropholcommatid taxa, only species of *Micropholcomma*, *Pua*, *Austropholcomma* and *Tricellina* possess obvious, unbroken lateral sclerotic strips between the margins of the dorsal scute and anterior sclerite, and state (1) here optimised as an unambiguous synapomorphy of the tribe Micropholcommatini, with an analogous occurrence in *Novanapis* and '*Inflaticrus*'.

Character 53 "*Female abdomen – dorsal scute*: (0) absent; (1) present". See also Schütt (2003) character 42.

The presence of a dorsal scute on the female abdomen (Fig. 13B) is relatively unusual among symphytognathidan taxa, even in those taxa with 'armoured' males. Among micropholcommatid taxa, a female dorsal scute is found only in species of *Micropholcomma* and *Pua*, and state (1) is here optimised as an unambiguous synapomorphy uniting these two genera, with an analogous occurrence in '*Inflaticrus*'. It should be noted, however, that many species of *Micropholcomma* do not possess a dorsal scute on the female abdomen (e.g. *M. longissimum*, *M. linnaei*, *M. mirum*, *M. turbans*), and this character may have evolved independently in both genera.

Character 54 "*Anterior sclerite – size*: (0) restricted to epigastric and petiolar region of abdomen; (1) covering entire anterior portion of abdomen".

The anterior sclerite of most anapid, micropholcommatid and 'teutoniellid' genera is a relatively simple, plate like structure, covering the epigastric region of the abdomen and often extending anteriorly to encircle the petiole (Figs 15A, 165C). In species of *Olgania*, however, the anterior sclerite is a greatly enlarged, uniquely wedge-shaped structure (Figs 176D, 177A) which covers the entire anterior portion of the abdomen, and state (1) is here optimised as an unambiguous synapomorphy of this genus.

Character 55 "*Anterior book lungs*: (0) present; (1) reduced to a 'bed' of parallel lamellae; (2) fully transformed into anterior tracheae". See also Griswold et al. (1998) character 48; Schütt (2003) character 48.

The study of the morphology of the respiratory systems of Australasian symphytognathidan spiders was pioneered by V. Hickman, who noted in his early research on Australian "Apneumonomorphae" that the book lungs of Micropholcommatidae were reduced and fully modified into anterior tracheae (Hickman 1944, 1945). Subsequent work by Forster (1959) showed conclusively that a modified anterior tracheal system was widespread among Australasian symphytognathidan spiders, and that there existed a large variation in morphology among different genera; some taxa even retained anterior book lungs. Platnick and Forster (1986) first recognised the existence of an intermediate "reduced lamellar" or "incipient tracheal" respiratory morphology in *Teutoniella cekalovici*, and this morphology (Figs 197B, 197D) seems characteristic of both 'teutoniellid' and gigielline taxa. State (1) is thus here optimised as: (A) an unambiguous synapomorphy uniting the genera *Teutoniella* and '*Inflaticrus*'; and (B) an unambiguous synapomorphy of the subfamily Gigiellinae. State (0) is here optimised as an autapomorphy of *Theridiosoma gemmosum*.

Character 56 "*Anterior tracheae*: (0) restricted to abdomen; (1) extending into cephalothorax". See also Schütt (2003) character 49.

Among micropholcommatid taxa, the extension of a single pair of anterior tracheal tubes into the cephalothorax (Figs 12D, 15B) is characteristic of species of *Micropholcomma*, *Pua* and *Austropholcomma*, and state (1) is here optimised as an unambiguous synapomorphy of the tribe Micropholcommatini, with an autapomorphic reversal to state (0) in *Tricellina gertschi*.

Character 57 "*Posterior tracheal spiracle*: (0) present; (1) vestigial; (2) absent". See also Schütt (2003) character 51.

The presence of a posterior tracheal spiracle anterior to the colulus is the symplesiomorphic condition for spiders in the superfamily Araneoidea. However, many small symphytognathidan spiders have lost the posterior tracheae, and this character is highly homoplastic, as highlighted by the current study. In taphiassine species in the genera *Taphiassa* and *Olgania* there is no evidence internally of posterior tracheae (Fig. 154D), and yet these taxa retain an apparently vestigial posterior spiracle (state 1) (Fig. 152F), which is here optimised as an unambiguous synapomorphy of the subfamily. Even within the subfamily Micropholcommatinae only species of *Micropholcomma* retain posterior tracheae, and while state (0) is here optimised as a synapomorphy of the genus *Micropholcomma*, it would seem more likely that the posterior tracheae have been lost independently in micropholcommatine taxa on at least four occasions.

Character 58 "*Petiole of female abdomen*: (0) circular; (1) tear-drop shaped".

The presence of an unusual, 'tear-drop' shaped petiole (Fig. 146) on the female anterior sclerite is characteristic of *Patelliella adusta*, and state (1) is here optimised as an autapomorphy of this species.

SPINNERETS:

Character 59 "*PMS – number of anterior setae*: (0) ≥ 2; (1) 1; (2) 0".

The small, posterior median spinnerets of araneoid species in the "reduced piriform clade" (Griswold et al. 1998) are an important source of phylogenetically informative characters. The symplesiomorphic condition for female symphytognathidan taxa seems to be the presence of a single anterior CY gland spigot, three AC gland spigots, a single posterior mAP gland spigot and an associated posterior mAP nubbin and tartipore. Setae are also usually present on the anterior and posterior margins of the PMS; usually three or fewer anteriorly and two or fewer posteriorly. Most studied symphytognathidan taxa (including species of Theridiosomatidae, Mysmenidae, Symphytognathidae, Anapidae and 'teutoniellid' taxa) possess two or three anterior setae on the PMS (Fig. 5F), one situated retro-basally and one or two situated medially, near the anterior CY gland spigot. In all Micropholcommatidae, and with an analogous occurrence in some Mysmenidae (e.g. *Isela*) and some Anapidae (e.g. *Anapis*) (see Griswold et al. 1998, figs 29–32), one or two setae have been lost, leaving only a single anterior seta near the CY gland spigot (Figs 8G–H). State (1) is here optimised as an unambiguous synapomorphy of the family Micropholcommatidae, with an autapomorphic reduction to state (2) in *Patelliella adusta*.

Character 60"*PMS – posterior setae*: (0) absent; (1) present".

Although broadly common among Araneoidea, posterior setae on the PMS are relatively unusual in symphytognathidan species. Among micropholcommatid taxa, a single posterior seta on the PMS (Fig. 8D) is characteristic of species of *Taphiassa* and *Patelliella*, and state (1) is here optimised as diagnostic (i.e. ambiguously synapomorphic) of the genus *Taphiassa*, with an analogous occurrence in *Patelliella adusta*. It is unknown whether species of *Olgania* also possess posterior setae on the PMS.

Character 61 "*PMS – anterior cylindrical (CY) gland spigot*: (0) present; (1) absent".

An anterior cylindrical gland spigot is present on the female PMS of virtually all Araneoidea, including most Micropholcommatidae. Among micropholcommatid taxa, the anterior CY gland spigot appears to have been lost in species of *Austropholcomma* and *Tricellina*, as evidenced by the presence of an identical PMS spigot morphology in males and females of *T. gertschi*, and the presence of a smaller (presumably AC gland) spigot situated anterior to the posterior mAP gland spigot in females of both genera (Fig. 23). State (1) is here optimised as an unambiguous synapomorphy uniting these two genera.

Character 62 "*PMS – number of aciniform (AC) gland spigots*: (0) 3; (1) 2; (2) 1 or none".

The number of aciniform gland spigots on the PMS of symphytognathidan species varies from three to none, although many species possess two or fewer; in the current study, only *Theridiosoma gemmosum* possessed three AC gland spigots. Among micropholcommatid species there appears to be a general tendency towards reduction in the number of AC gland spigots, and state (2) is characteristic of all Micropholcommatidae with the exception of species of *Gigiella*. State (1) is thus here optimised as an unambiguous synapomorphy of the subfamily Gigiellinae.

Character 63 "*PMS – posterior minor ampullate (mAP) gland spigot*: (0) present; (1) nubbin; (2) absent". See also Griswold et al. (1998) character 72.

The presence of a single posterior minor ampullate gland spigot on the PMS (Figs 8C–D) is the symplesiomorphic condition for spiders in the superfamily Araneoidea (Griswold et al. 1998), and its absence is unusual. Several basal textricellin species (i.e. *Algidiella aucklandica*, *Eperiella alsophila*) possess a vestigial mAP spigot (state 1) (Fig. 126C), although this state is not to be confused with the araneoid mAP spigot nubbin, which is absent in all micropholcommatid taxa (see Character 64, below). Among symphytognathidan taxa the complete loss of the posterior mAP spigot (Figs 5F, 6F, 151C–D) is characteristic of species of *Teutoniella*, '*Inflaticrus*' and *Patelliella*, and state (2) is here optimised as an unambiguous synapomorphy uniting the 'teutoniellid' genera *Teutoniella* and '*Inflaticrus*', with an analogous occurrence in *P. adusta*.

Character 64 "*PMS – posterior mAP spigot nubbin and tartipore*: (0) present; (1) absent". See also Griswold et al. (1998) character 71; Schütt (2003) character 55.

The presence of a posterior minor ampullate gland spigot nubbin and adjacent tartipore is characteristic of most Araneoidea, including orb-web building symphytognathidans in the families Mysmenidae, Symphytognathidae and Anapidae (Griswold et al. 1998; Lopardo and Hormiga 2008). Within the broader Araneoidea, loss of the mAP spigot nubbin is, however, clearly homoplastic and associated with a sheet-web building ecology, and occurs in *Comaroma* (see Schütt 2003, fig. 9), some *Anapistula* (see Cardoso and Scharff 2009, figs 5–6) along with many other non-symphytognathidan taxa (e.g. Linyphiidae, Pimoidae, Nesticidae, Theridiidae, Cyatholipidae, Synotaxidae and Synaphridae; see Griswold et al. 1998; Lopardo and Hormiga 2008). The loss of the posterior mAP spigot nubbin and tartipore (Figs 8C–D) is also characteristic of all species of Micropholcommatidae, along with species in the 'teutoniellid' genera *Teutoniella* and '*Inflaticrus*', and state (1) is here optimised as an unambiguous synapomorphy uniting these taxa.

Character 65 "*PLS – basal cylindrical (bCY) gland spigot base*: (0) normal; (1) enlarged". See also Griswold et al. (1998) character 75; Schütt (2003) character 57.

The presence of an enlarged basal cylindrical gland spigot base (Figs 2, 108E) is unusual among the Araneoidea (see cladistic Discussion, above), but is characteristic of symphytognathidan species in the families Anapidae, Symphytognathidae and Micropholcommatidae, along with 'teutoniellid' species in the genera *Teutoniella* and '*Inflaticrus*'. Given the results of the 'expanded' analysis (above), state (1) is here optimised as an unambiguous synapomorphy of the 'enlarged bCY' (EbCY) clade, uniting all anapid, symphytognathid, micropholcommatid and 'teutoniellid' taxa.

Character 66 "*PLS – flagelliform (FL) gland spigot*: (0) cylindrical; (1) sinuous, enlarged". See also Schütt (2003) character 59.

The 'triad' or 'triplet', consisting of one flagelliform gland spigot and two aggregate gland spigots on the posterior lateral spinnerets (Fig. 11E), is characteristic of web-building Araneoidea, and is usually maintained (in-full or in-part) in symphytognathidan taxa. Among micropholcommatid taxa, the presence of a distinctive, enlarged and sinuous FL gland spigot (the 'textricellin' FL gland spigot) (Fig. 46) is characteristic of all Textricellini, and state (1) is here optimised as an unambiguous synapomorphy of this tribe. It is worth noting, however, that a similar FL gland spigot has also been reported in *Comaroma simoni* (see Schütt 2003, fig. 9).

Character 67 "*PLS – number of aggregate (AG) gland spigots*: (0) 2; (1) 1; (2) 0".

The triad on the PLS is usually maintained in both female and male symphytognathidan spiders (Lopardo & Hormiga 2008), although in some species one or both aggregate gland spigots may be lost. In the taphiassine and gigielline species examined as part of this study, coding of the triad was consistent with this observation, in that AG gland spigots were presumed lost before invoking the loss of the FL gland spigot, or the complete loss of the triad. Among micropholcommatid taxa, an apparent reduction of the AG gland spigot pair to a single AG gland spigot (state 1) is characteristic of species of *Taphiassa*, whereas the apparent loss of both AG gland spigots (state 2) is diagnostic (i.e. ambiguously synapomorphic) of the subfamily Gigiellinae.

Appendix IV: Plates

Abbreviations used in the plates

Ab	abdomen
AC	aciniform gland spigot
AG	aggregate gland spigot
ALE	anterior lateral eyes
ALS	anterior lateral spinnerets
AME	anterior median eyes
as	anterior seta
ASc	anterior sclerite
ATrS	anterior tracheal spiracle
bCY	basal cylindrical gland spigot
bEB	basal embolic bulge
C	conductor
C3	inferior claw
Ca	carapace
Ch	chelicera
ChP	cheliceral projection
Cl	clypeus
CO	colulus
Co1–4	coxa (1–4)
Cr	crest
CS	cuticular sculpturing
Cy	cymbium
CY	cylindrical gland spigot
dFl	dorsal flange
E	embolus
EF	epigastric furrow
EP	epigastric plate
EPc	corner of epigastric plate
EPm	margin of epigastric plate
EpSc	epigastric sclerite
ETR	evaginated tegular ridge
F	fang
FD	fertilisation duct
Fe1–4	femur (1–4)
FL	flagelliform gland spigot
G	gland
GM	cheliceral gland mound
ID	insemination duct
is1–2	inner seta (1–2)
L	labrum
LA	lateral atrium
La	lamellae
LE	lateral eyes
LO	lyriform organ
lRPA	ligulate retrolateral patellar apophysis
LT	labral tongue
M	maxilla
MAP	major ampullate gland spigot
mAP	minor ampullate gland spigot
Me1–4	metatarsus (1–4)
MS1–3	macroseta (1–3)
n	nubbin
P	pedipalp
p	glandular pore
pD	prolateral denticles
PE	petiole
pFe	pedipalpal femur
pFS	prolateral fused setal socket
PI	piriform gland spigot
PMS	posterior median spinnerets
pPa	pedipalpal patella
ps	posterior seta
PT1–3	peg tooth (1–3)
pTa	pedipalpal tarsus
pTi	pedipalpal tibia
pTi-Ta	pedipalpal tibia-tarsus (fused)
pTr	pedipalpal trochanter
PTrS	posterior tracheal spiracle
S	sternum
scID	supercoiled insemination duct
SF	stridulatory file
SP	spermatheca
Sp	spinnerets
ST	stridulatory 'tooth'
sT	setal tubercle
sTe	subtegulum
T	tooth
t	tartipore
TA	transverse atrium
Ta1–4	tarsus (1–4)
Te	tegulum
Ti1–4	tibia (1–4)
TiMS	tibial macroseta
TO	tarsal organ
TR	tracheae
Tr	trichobothrium

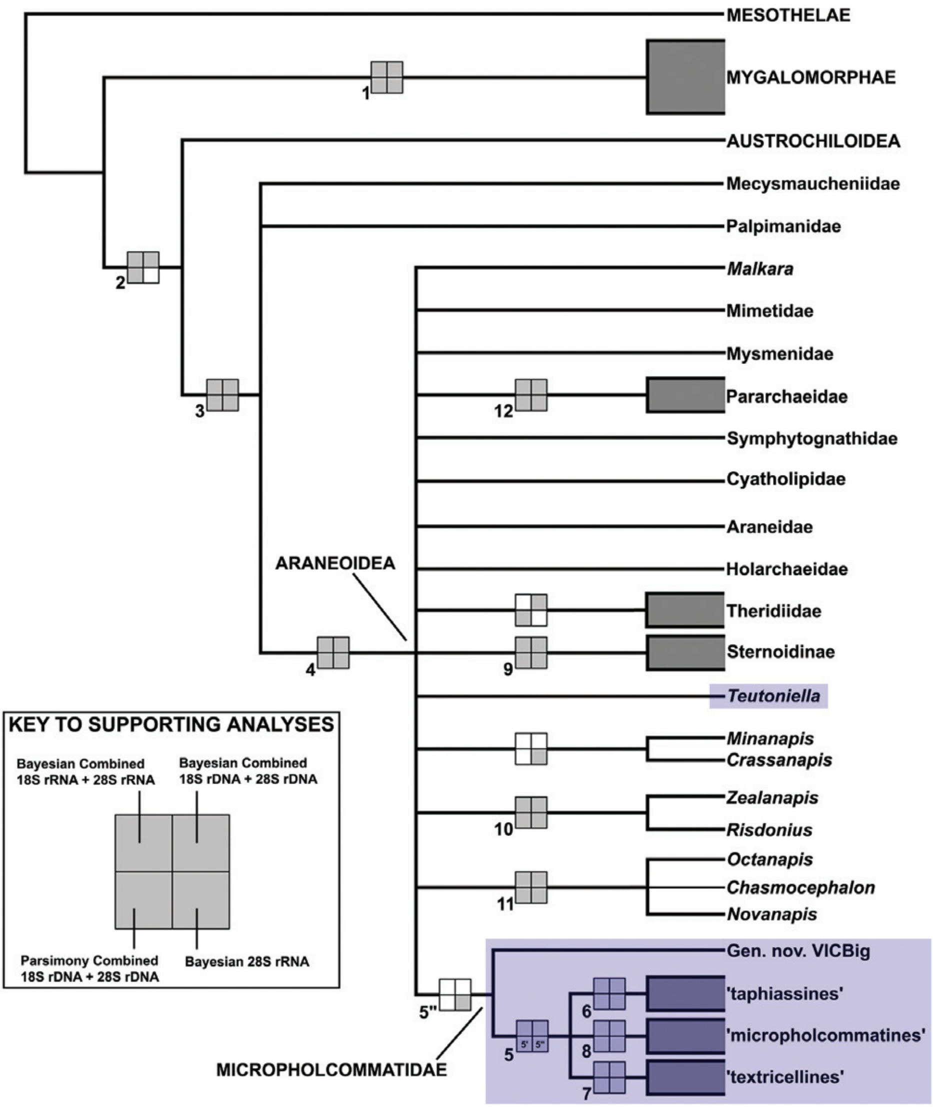
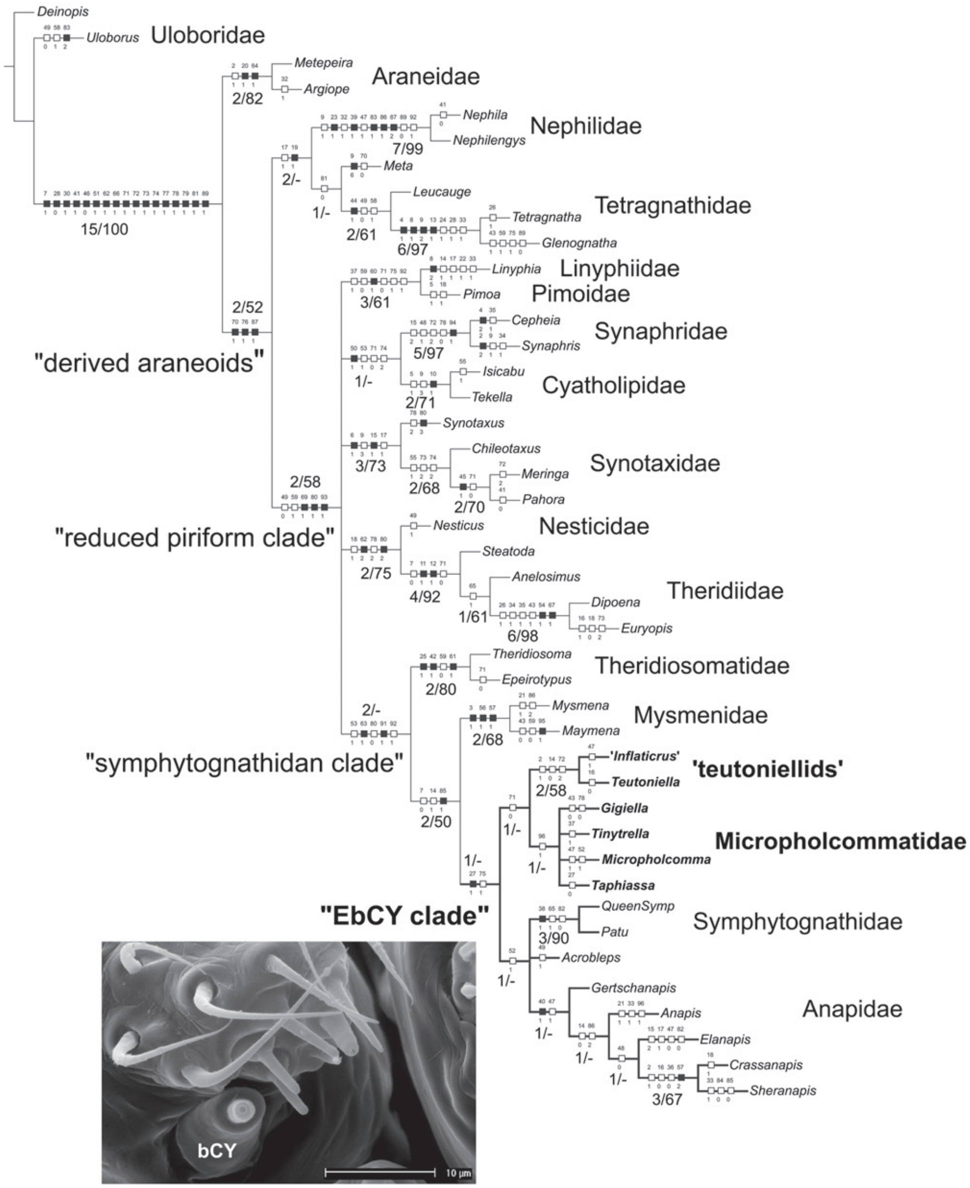


Figure 1. Phylogenetic tree summarising the results of Rix et al. (2008), showing key clades (numbered 1–12) recovered in four separate analyses of the 18S rRNA and/or 28S rRNA data, with putative micropholcommatid taxa highlighted. Note the lack of phylogenetic resolution within the Araneoidea, the three major sub-lineages of Micropholcommatidae, and the ambiguous phylogenetic position of *Teutoniella cekalovici*.



Taphiassa robertsi sp. nov. ♀ PLS, showing the enlarged bCY gland spigot base (Character 75, State 1)

Figure 2. Strict consensus cladogram resulting from an equal weights parsimony analysis of the 'expanded' matrix of Griswold et al. (1998) and Lopardo and Hormiga (2008) (see Appendix I), showing common clades recovered in 6 equally parsimonious trees (length = 225; CI = 0.52; RI = 0.77). Unambiguous character optimisations and clade support indices are shown for each node (Bremer support/ Jackknife frequencies > 50). The symphytognathidan "EbCY clade" is highlighted, including all anapid, symphytognathid, micropholcommatid and 'teutoniellid' taxa; an implied weights analysis (K=1–6) did not affect the monophyly or composition of this clade.

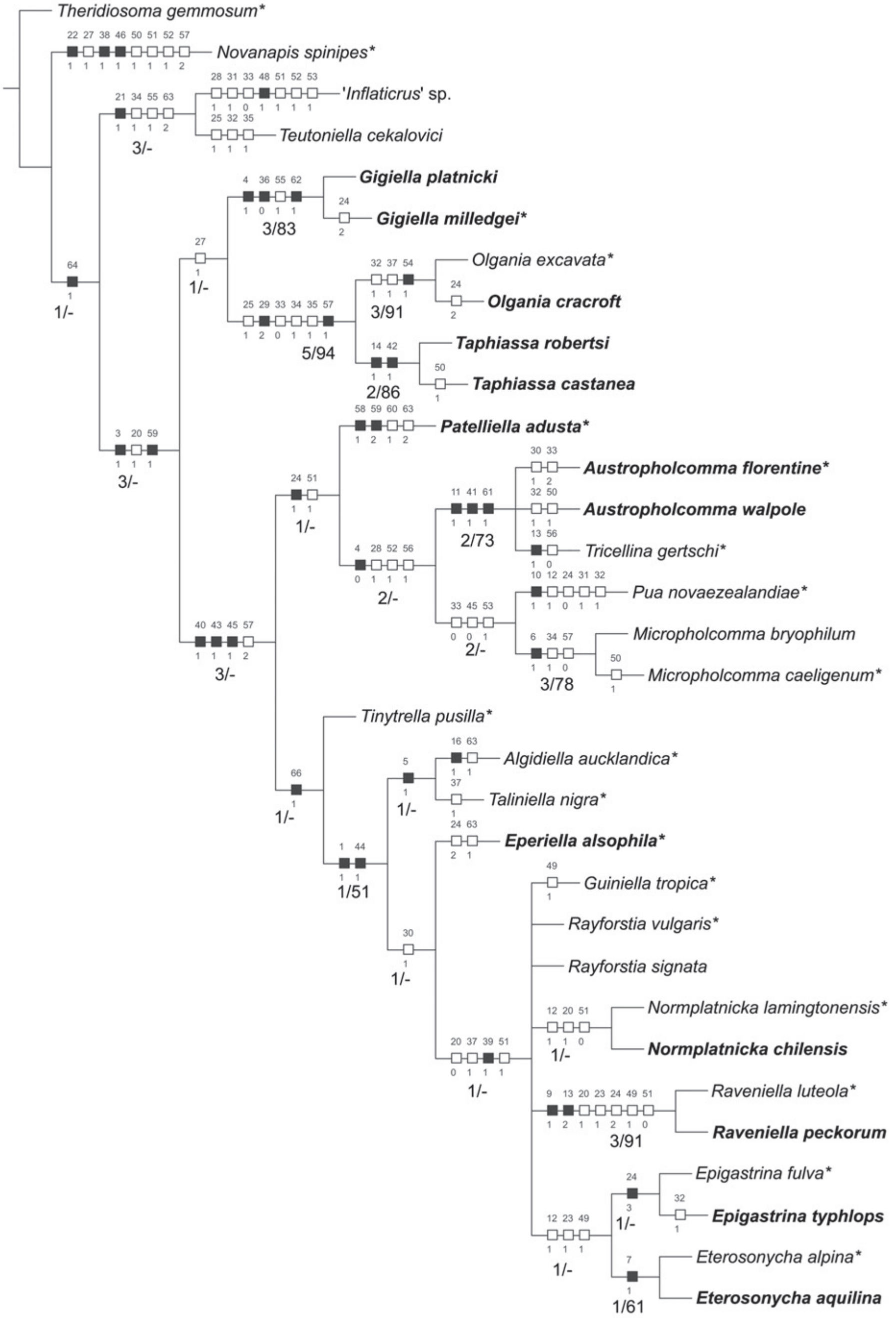


Figure 3. Strict consensus cladogram resulting from an equal weights parsimony analysis of the 'new' matrix (see Appendix II), showing common clades recovered in six equally parsimonious trees (length = 135; CI = 0.58; RI = 0.78). Unambiguous character optimisations and clade support indices are shown for each node (Bremer support/Jackknife frequencies > 50). Bold species are newly described, with generic type species highlighted (*).

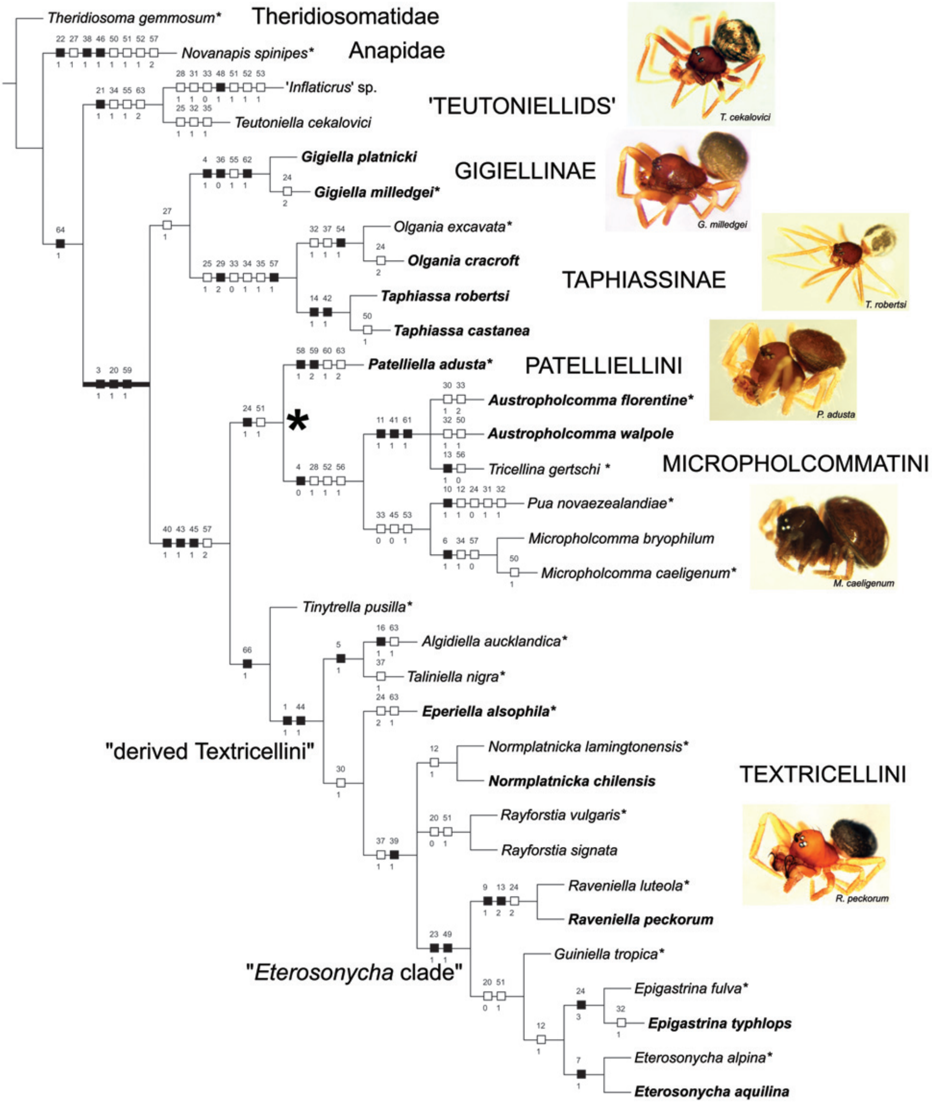


Figure 4. Optimal cladogram for the Micropholcommatidae under equal and implied weights, and one of six equally parsimonious trees recovered from an equal weights analysis of the 'new' matrix (length = 135; see Appendix II). With the exception of the highlighted (*) node '*Patelliella adusta* + Micropholcommatini', all clades shown were recovered in all iterations of an implied weights analysis (K=1–6); the phylogenetic position of *P. adusta* changed to '*P. adusta* + Textricellini' under K-values 1–5. Unambiguous character optimisations are shown for each node, and bold species are newly described, with generic type species highlighted (*).

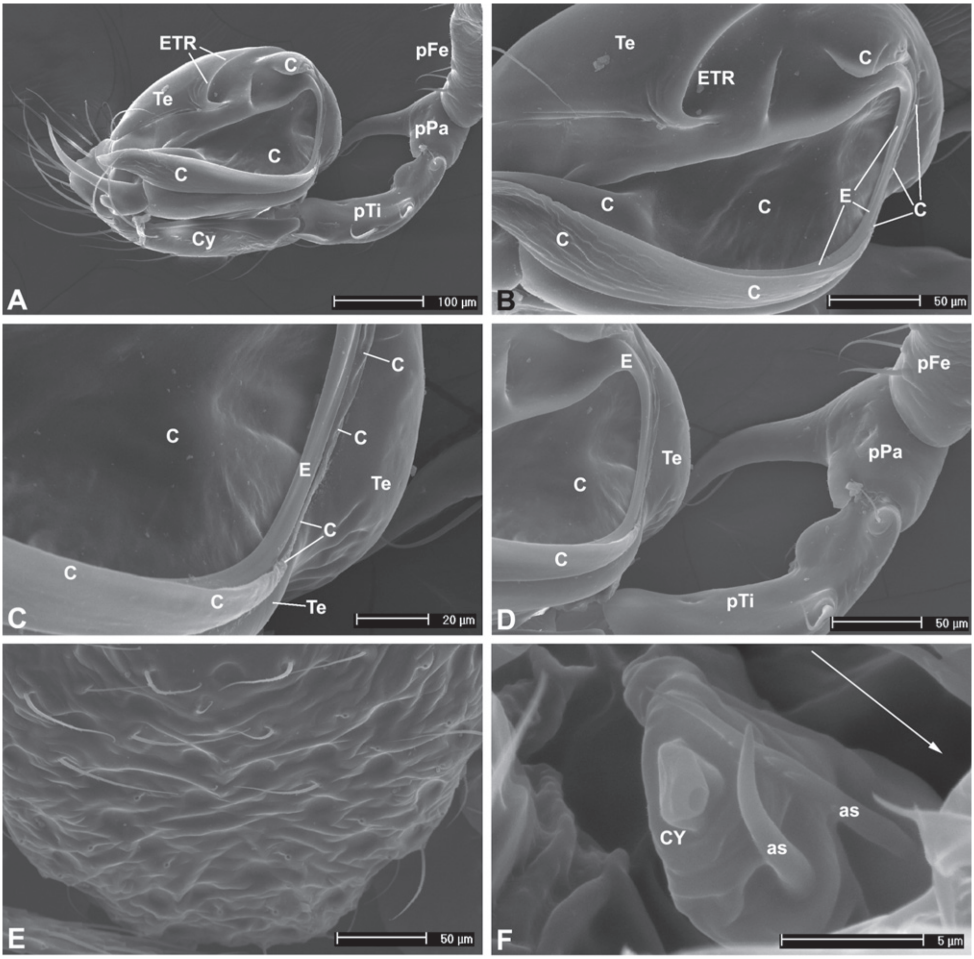


Figure 5. Scanning electron micrographs of *Teutoniella cekalovici* Platnick & Forster from Mirador Alemán, Chile (WAM T94536): **A** male pedipalp, pro-ventral view **B** male bulb, ventral view **C** detail of (B), showing basal conductor straddling embolus **D** male pedipalpal tibia and patella, pro-ventral view **E** male sternum, antero-ventral view, showing sternal pits **F** female left posterior median spinneret, antero-ventral view, showing single cylindrical gland spigot and absence of any posterior minor ampullate gland spigot or nubbin (arrow denotes the anterior, mesal direction).

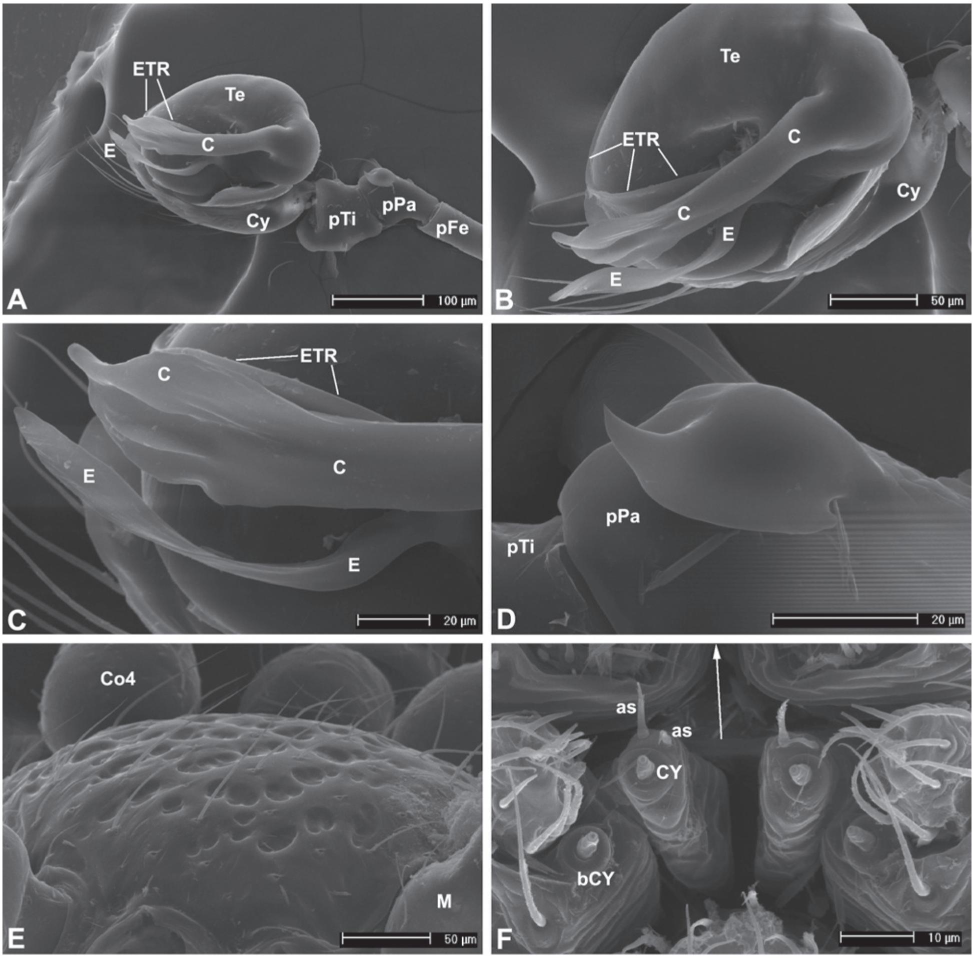


Figure 6. Scanning electron micrographs of '*Inflaticrus*' sp. from the Langeberg Range, Western Cape province, South Africa (TM 15228): **A** male pedipalp, pro-ventral view **B** male bulb, pro-ventral view **C** detail of (B), showing basal conductor and embolus **D** tip of male pedipalpal patella, pro-ventral view **E** female sternum, ventro-lateral view, showing sternal pits **F** female posterior median and posterior lateral spinnerets, ventral view. Note the enlarged bCY gland spigot base on the PLS, the single cylindrical gland spigot on the PMS, and the absence of any posterior minor ampullate gland spigot or nubbin on the PMS (arrow denotes the anterior, mesal direction).

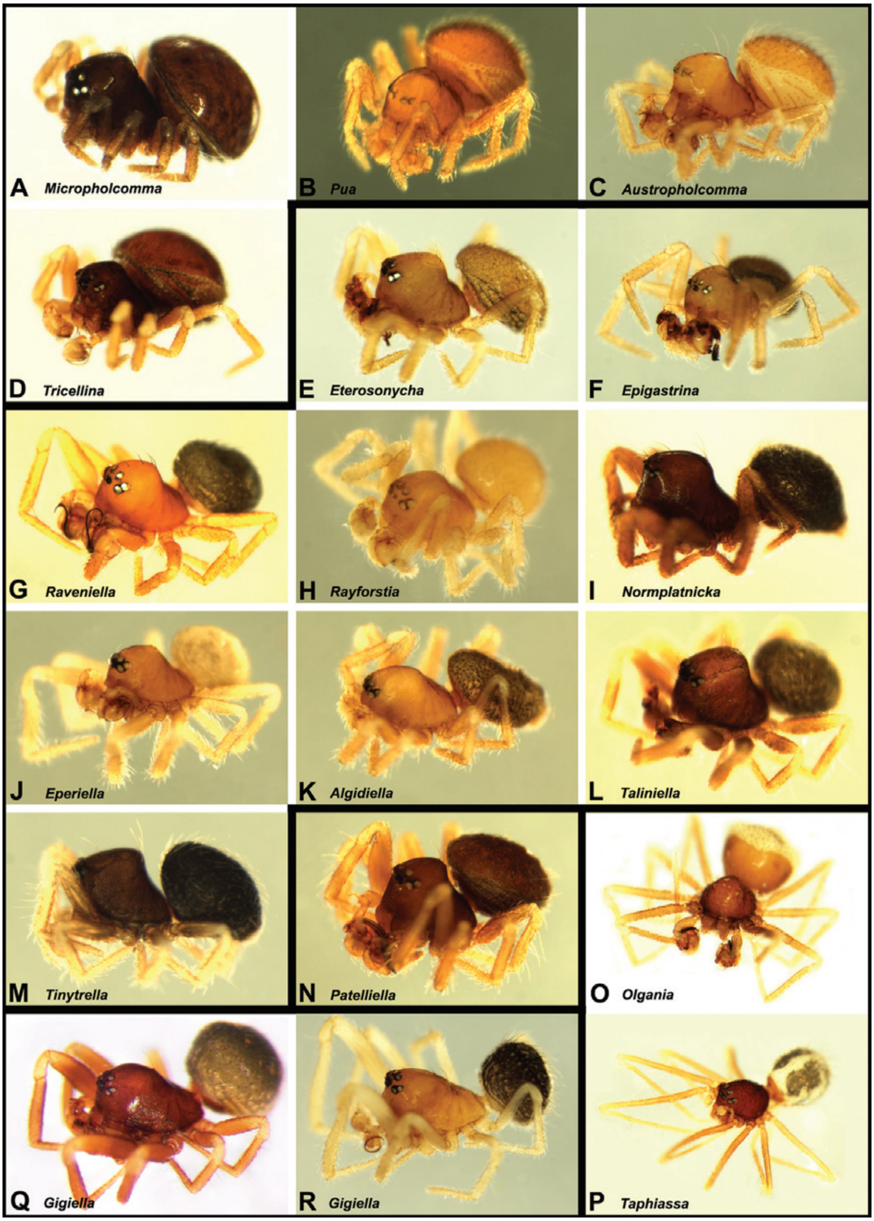


Figure 7. The genera of Micropholcommatidae, illustrated with habitus photographs of representative male specimens. **A–D** tribe Micropholcommatini: **A** *Micropholcomma caeligenum* Crosby & Bishop **B** *Pua novaezealandiae* Forster **C** *Austropholcomma florentine* sp. n. **D** *Tricellina gertschi* (Forster & Platnick). **E–M** tribe Textricellini: **E** *Eterosonycha aquilina* sp. n. **F** *Epigastrina fulva* (Hickman) **G** *Raveniella peckorum* sp. n. **H** *Rayforstia vulgaris* (Forster) **I** *Normplatnicka lamingtonensis* (Forster) **J** *Eperiella alsophila* sp. n. **K** *Algidiella aucklandica* (Forster) **L** *Taliniella nigra* (Forster) **M** *Tinytrella pusilla* (Forster). **N** *Patelliella adusta* sp. n., tribe Patelliellini. **O–P** subfamily Taphiassinae: **O** *Olgania excavata* Hickman **P** *Taphiassa robertsi* sp. n. **Q–R** subfamily Gigiellinae: **Q** *Gigiella milledgei* sp. n. **R** *Gigiella platnicki* sp. n. Note that *Guiniella tropica* (Forster) is not illustrated.

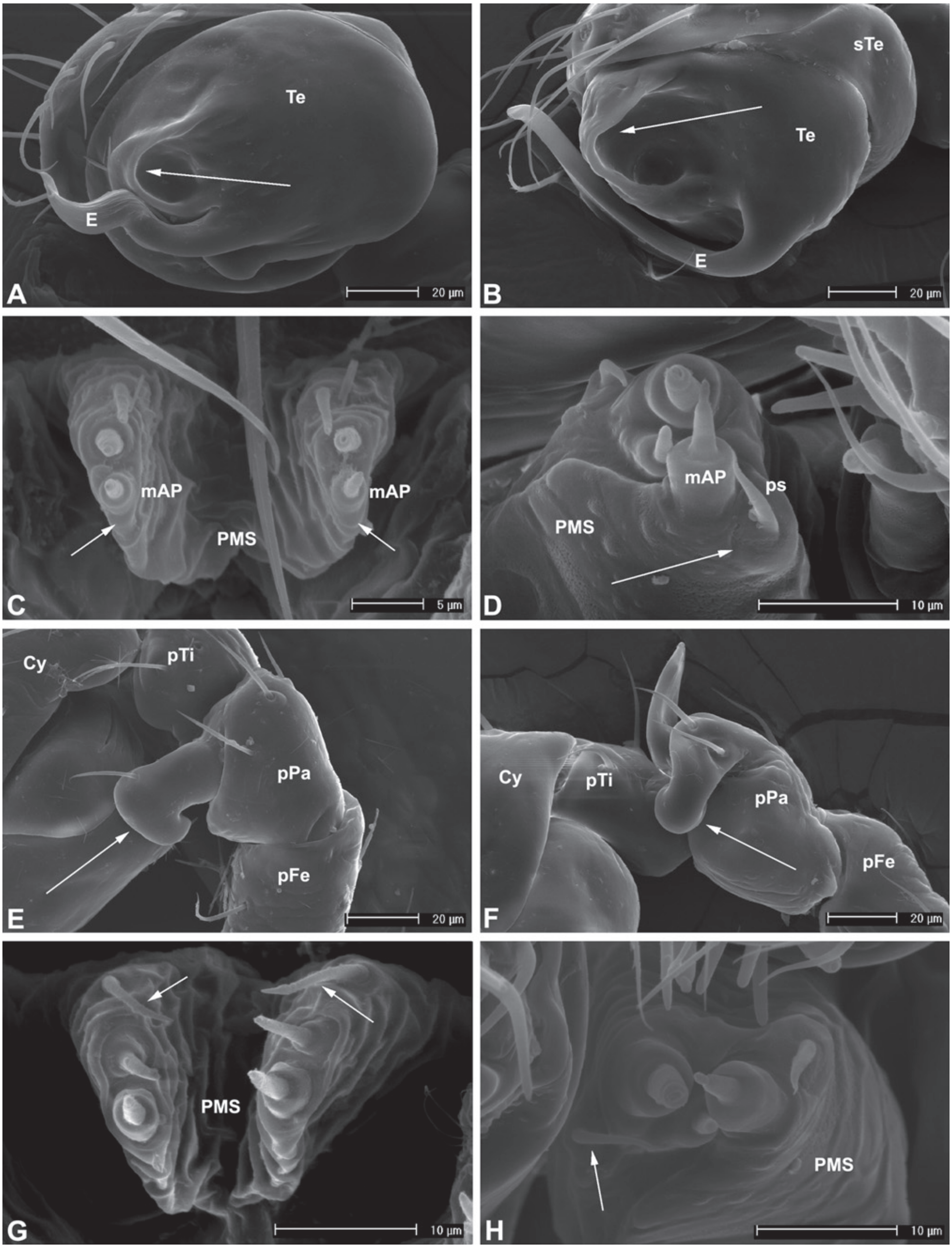


Figure 8. Diagnostic characters of the family Micropholcommatidae, illustrated with scanning electron micrographs: **A–B** evaginated tegular ridge and otherwise smooth tegulum of male *Tinytrella pusilla* (Forster) (left) and male *Taphiassa robertsi* sp. n. (right) **C–D** absence of the posterior minor ampullate gland spigot nubbin and tartipore on the posterior median spinnerets of female *T. pusilla* (left) and female *T. robertsi* (right) **E–F** ligulate retrolateral patellar apophysis of male *T. pusilla* (left) and male *T. robertsi* (right) **G–H** single anterior seta on the posterior median spinnerets of male *Normplatnicka lamingtonensis* (Forster) (left) and female *T. robertsi* (right).

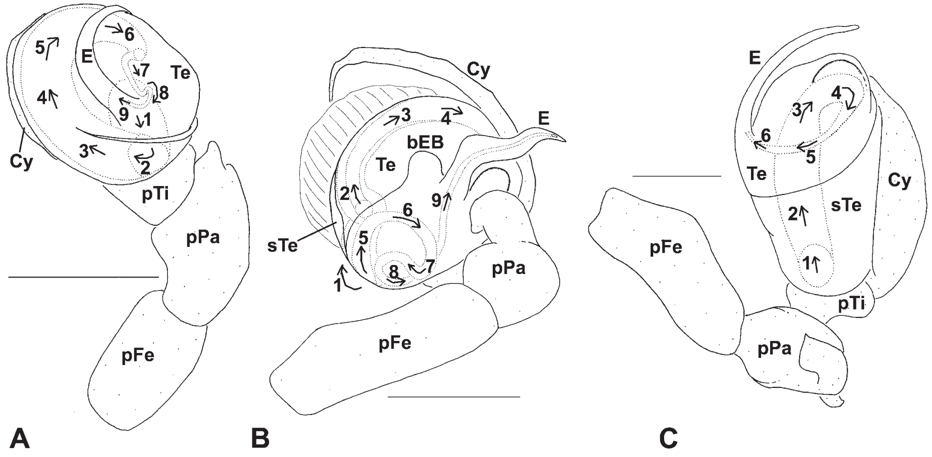


Figure 9. Left pedipalps of male Micropholcommatini, Textricellini and Taphiassinae, showing trajectory of the sperm ducts: **A** *Micropholcomma caeligenum* Crosby & Bishop **B** *Tinytrella pusilla* (Forster) **C** *Taphiassa punctata* (Forster). Scale bars = 0.065 mm (65 µm). Numbered arrows denote the trajectory of the ducts, from the subtegular fundibule (1) to the base of the embolus.

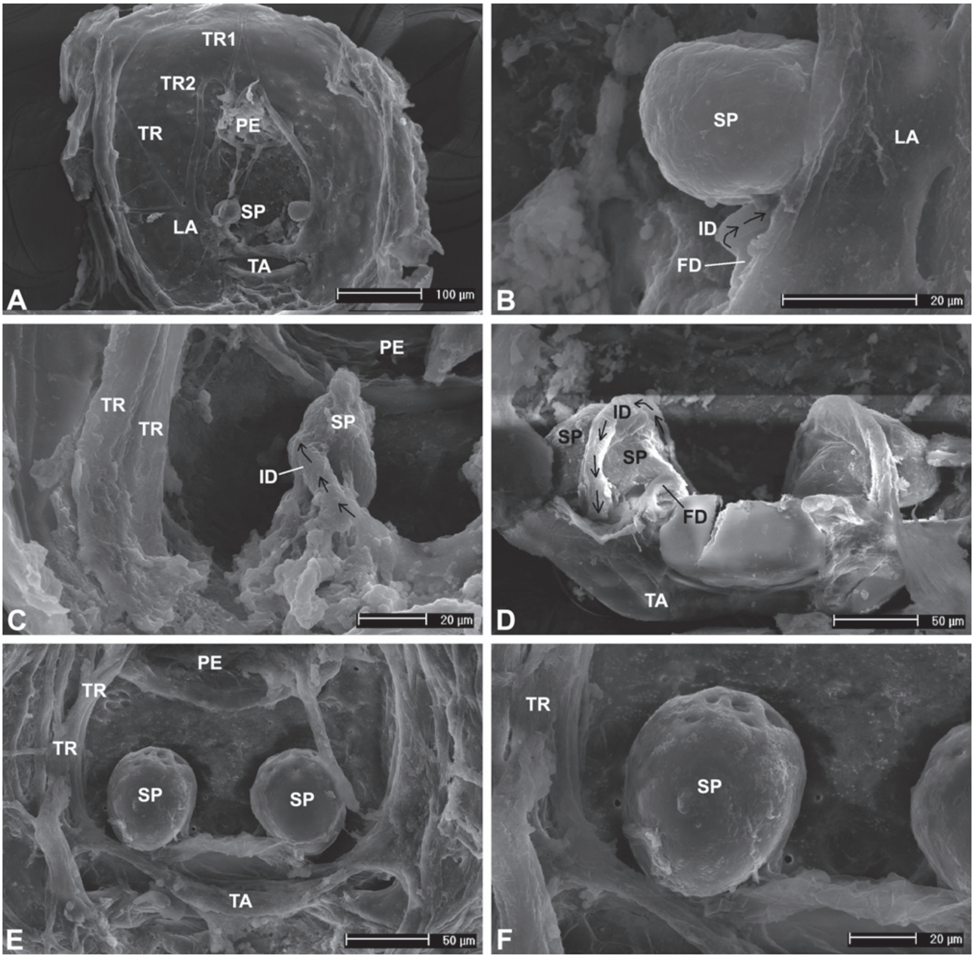


Figure 10. Scanning electron micrographs of anterior respiratory systems and epigynes of Micropholcommatidae: **A–B** female *Micropholcomma bryophilum* (Butler) **C** female *Tinytrella pusilla* (Forster) **D** female *Gigiella milledgei* sp. n. **E–F** female *Taphiassa robertsi* sp. n. Arrows denote the trajectory of insemination ducts.

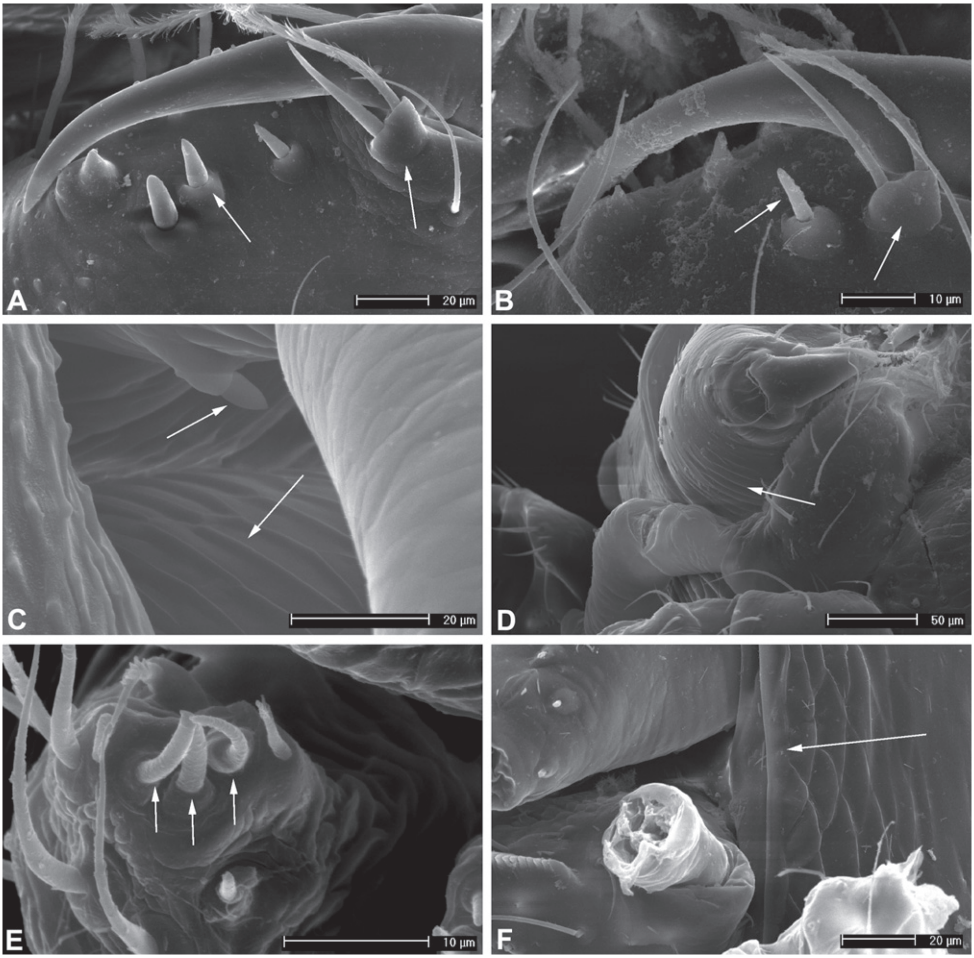


Figure 11. Diagnostic characters of the subfamily Micropholcommatinae, illustrated with scanning electron micrographs: **A–B** peg teeth and an adjacent pair of raised, fused setal sockets on the cheliceral promargin of male *Normplatnicka lamingtonensis* (Forster) (left) and male *Micropholcomma bryophilum* (Butler) (right) **C** ectal cheliceral stridulatory file and antagonistic stridulatory 'tooth' on the pedipalpal trochanter of male *Raveniella peckorum* sp. n. **D** ectal cheliceral stridulatory file of male *Eterosonycha alpina* Butler **E** triad of two AG gland spigots and one (sinuous) FL gland spigot on the PLS of male *N. lamingtonensis* **F** margin of carapace above maxilla of male *Pua novaezealandiae* Forster, showing the absence of a glandular depression.

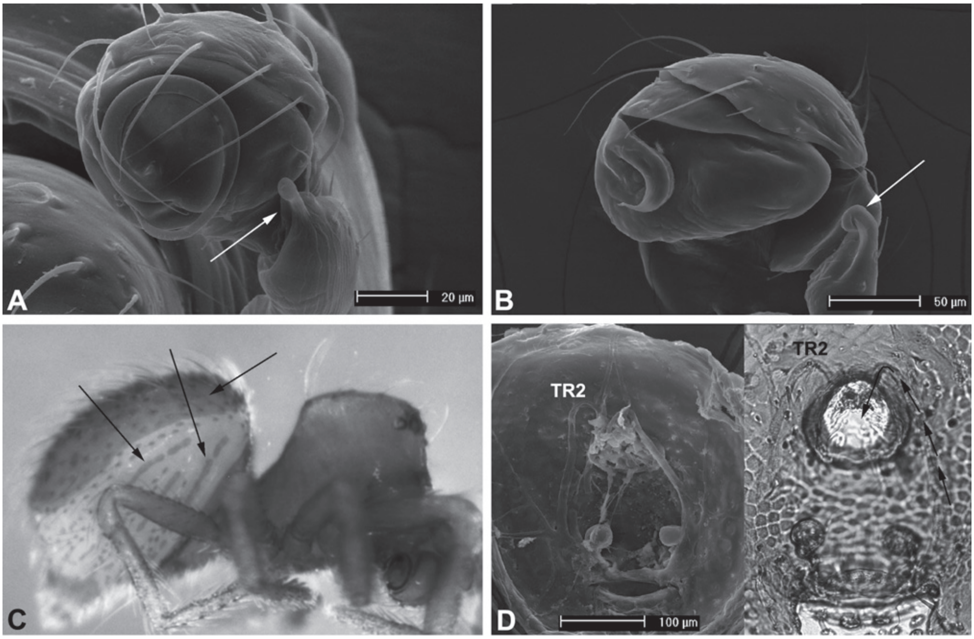


Figure 12. Diagnostic characters of the tribe Micropholcommatini: **A–B**, scanning electron micrographs showing the distally-directed retrolateral patellar apophysis of male *Micropholcomma bryophilum* (Butler) (left) and male *Pua novaezealandiae* Forster (right) **C** male *Austropholcomma florentine* sp. n., lateral view, showing the lateral abdominal sclerotic strips and dorsal abdominal scute **D** scanning electron micrograph of female *M. bryophilum* (Butler) (left) and equivalent compound microscope image of female *M. caeligenum* Crosby & Bishop (right), showing the extension of two anterior tracheal tubes into the cephalothorax.

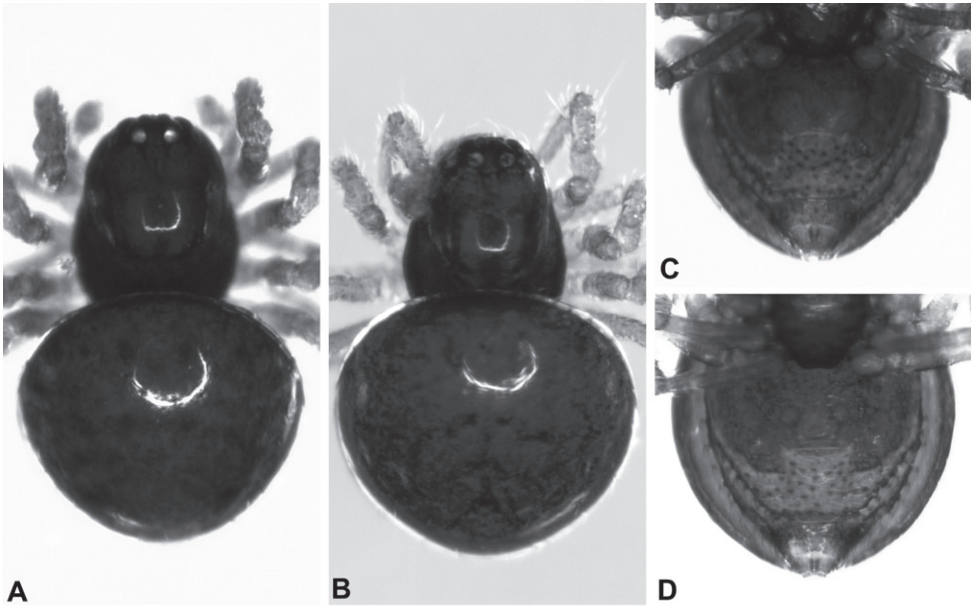


Figure 13. *Micropholcomma caeligenum* Crosby & Bishop from near Marysville, Victoria (WAM T94448): **A** male habitus, dorsal view **B** female habitus, dorsal view **C** male abdomen, ventral view **D** female abdomen, ventral view.

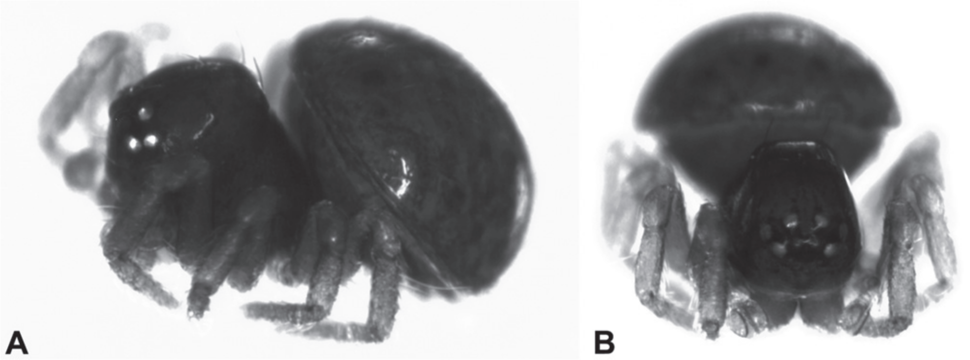


Figure 14. *Micropholcomma caeligenum* Crosby & Bishop from near Marysville, Victoria (WAM T94448): **A** male habitus, lateral view **B** male habitus, frontal view.

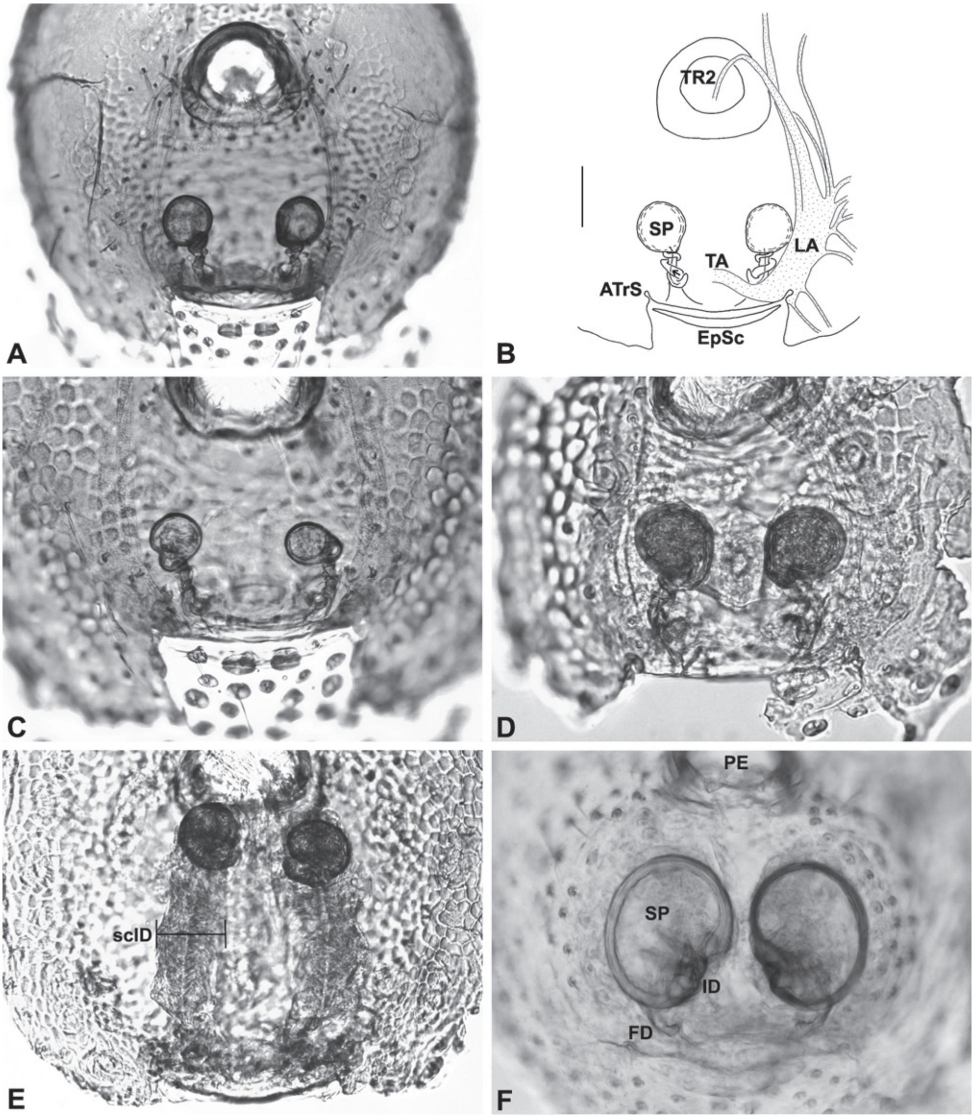


Figure 15. *Micropholcomma*, *Pua* species, female cleared receptacula, dorsal view: **A–B** *M. caeligenum* Crosby & Bishop from near Marysville, Victoria (WAM T94448) **C** *M. bryophilum* (Butler) from near Lorne, Victoria (WAM T77726) **D** allotype *M. junee* sp. n. from the Junee-Florentine karst, Tasmania (QVM 13: 13292) **E** *M. longissimum* (Butler) from near Genoa, Victoria (WAM T94468), showing super-coiled insemination ducts **F** *P. novaezealandiae* Forster from the Makarora Valley, New Zealand (AMNH). Arrows indicate the trajectory of insemination ducts. Scale bar = 0.065 mm (65 μm).

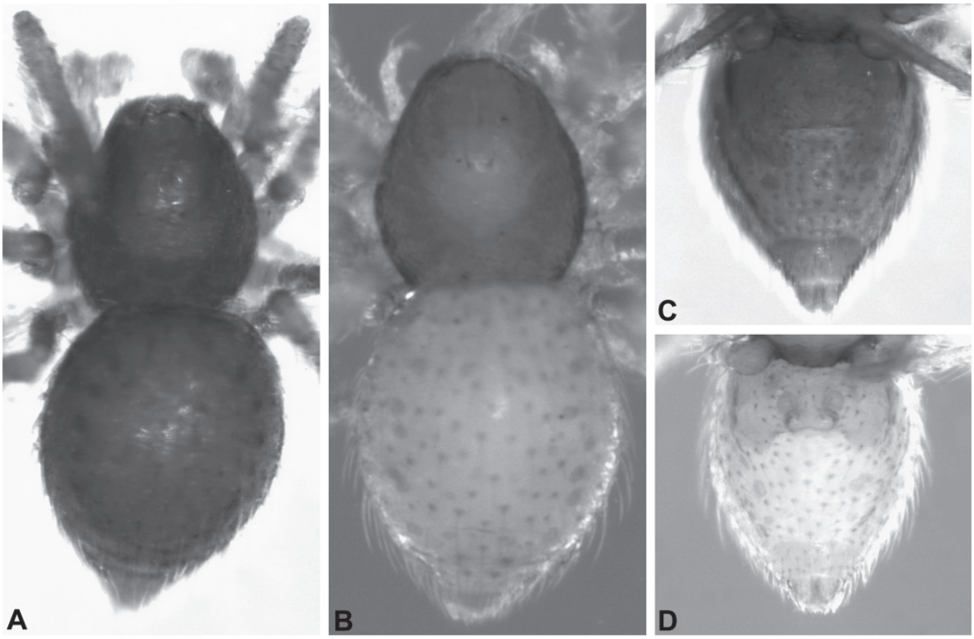


Figure 16. *Micropholcomma junee* sp. n. from the Junee-Florentine karst, Tasmania. **A, C** holotype male (AMS KS97172): **A** habitus, dorsal view **C** abdomen, ventral view. **B, D** allotype female (QVM 13: 13292): **B** habitus, dorsal view **D** abdomen, ventral view.

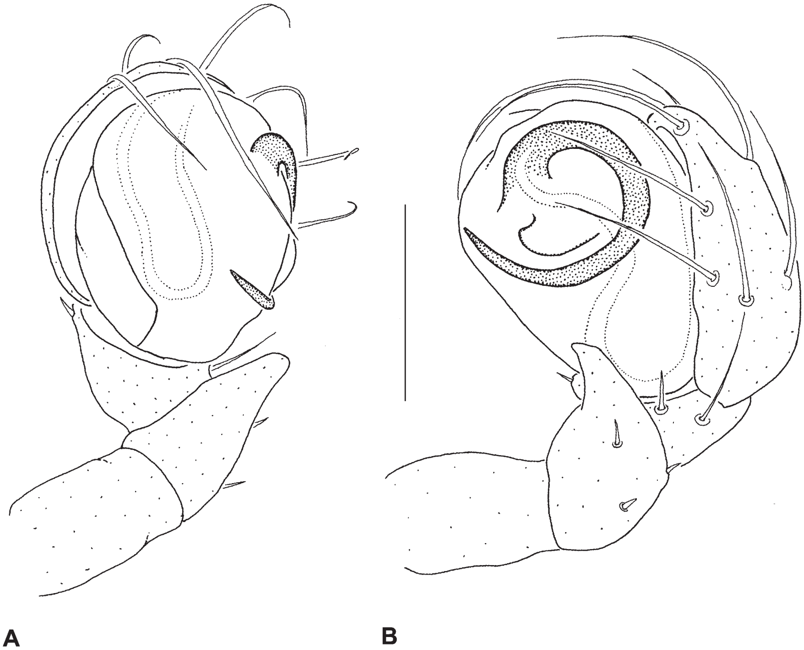


Figure 17. *Micropholcomma junee* sp. n., paratype male from the Junee-Florentine karst, Tasmania (AMNH): **A** left pedipalp, ventral view **B** left pedipalp, retrolateral view. Note that pedipalp is partially expanded. Scale bar = 0.065 mm (65 µm).

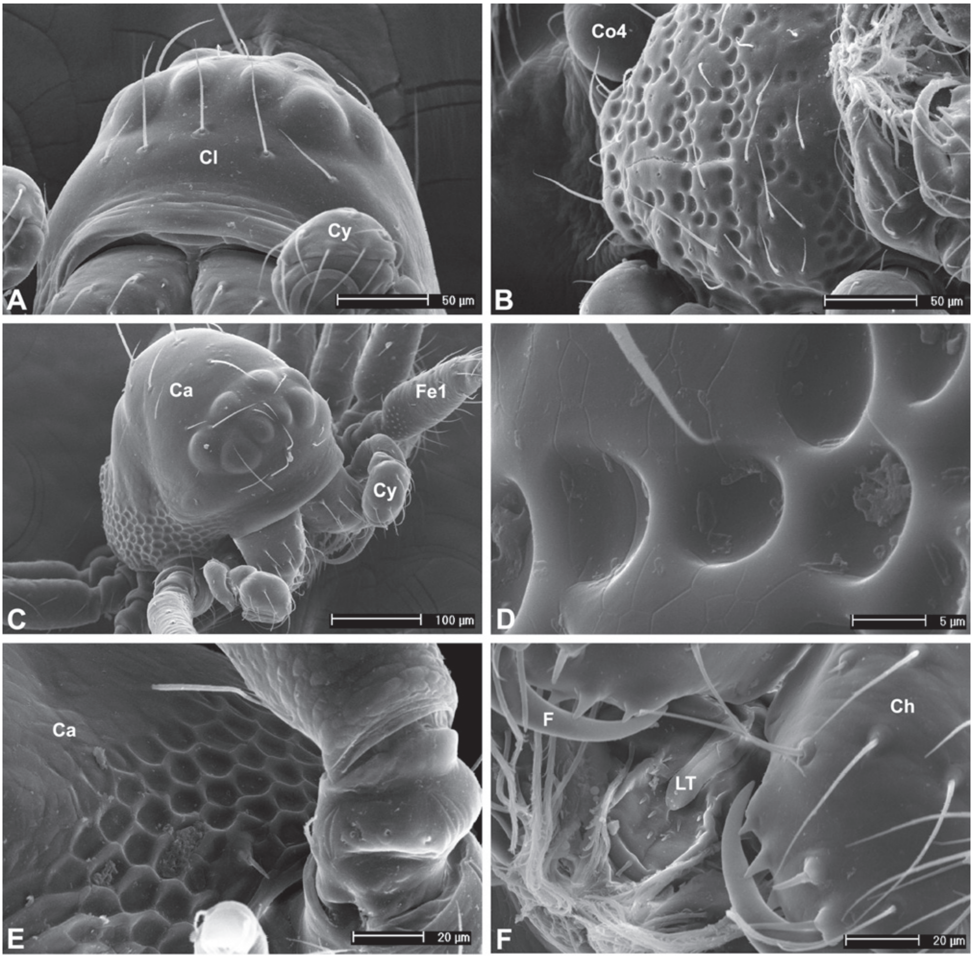


Figure 18. Scanning electron micrographs of *Micropholcomma bryophilum* (Butler) from near Marysville, Victoria (WAM T94453): **A** male eyes and clypeus, frontal view **B** male sternum, ventral view **C** male cephalothorax, antero-lateral view **D** detail of (B), showing sternal pits **E** female pars thoracica, dorso-lateral view, showing reticulate margin **F** female chelicerae and labrum.

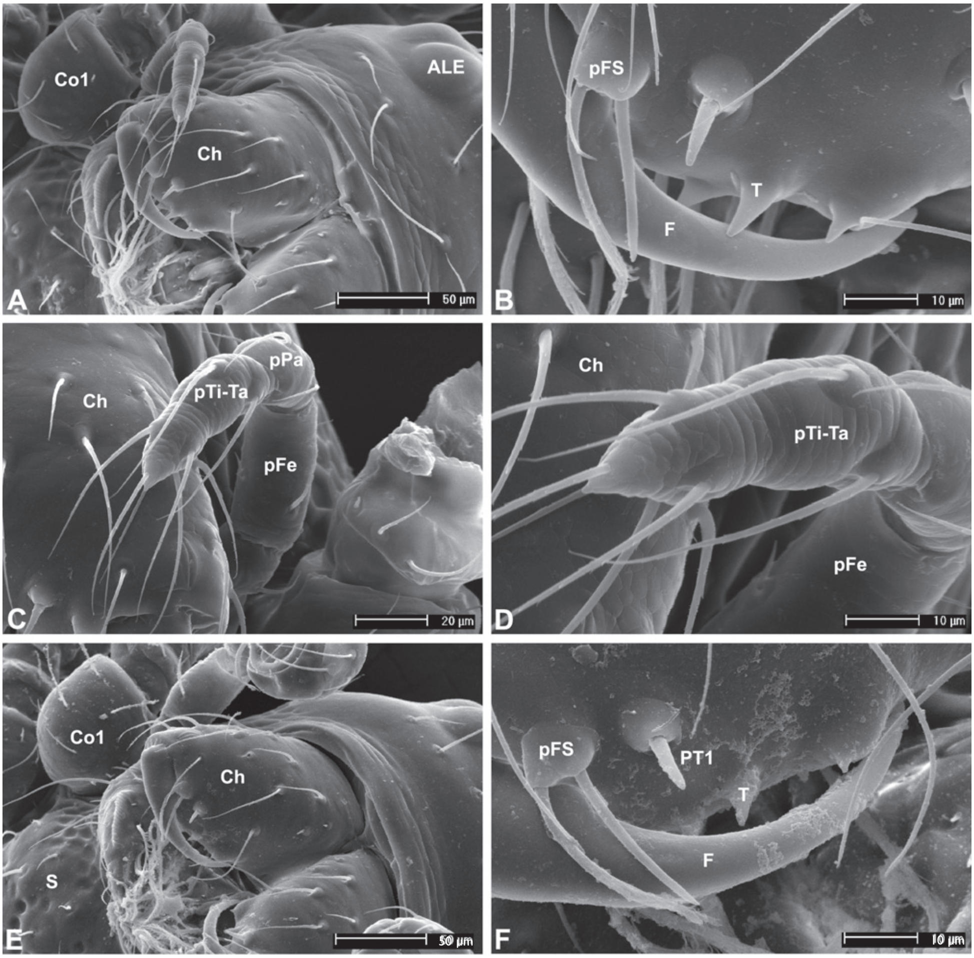


Figure 19. Scanning electron micrographs of *Micropholcomma bryophilum* (Butler) from near Marysville, Victoria (WAM T94453): **A** female chelicera, frontal view **B** female cheliceral promargin **C** female pedipalp, frontal view **D** tip of female pedipalp, showing fused tibia-tarsus **E** male chelicera, frontal view **F** male cheliceral promargin.

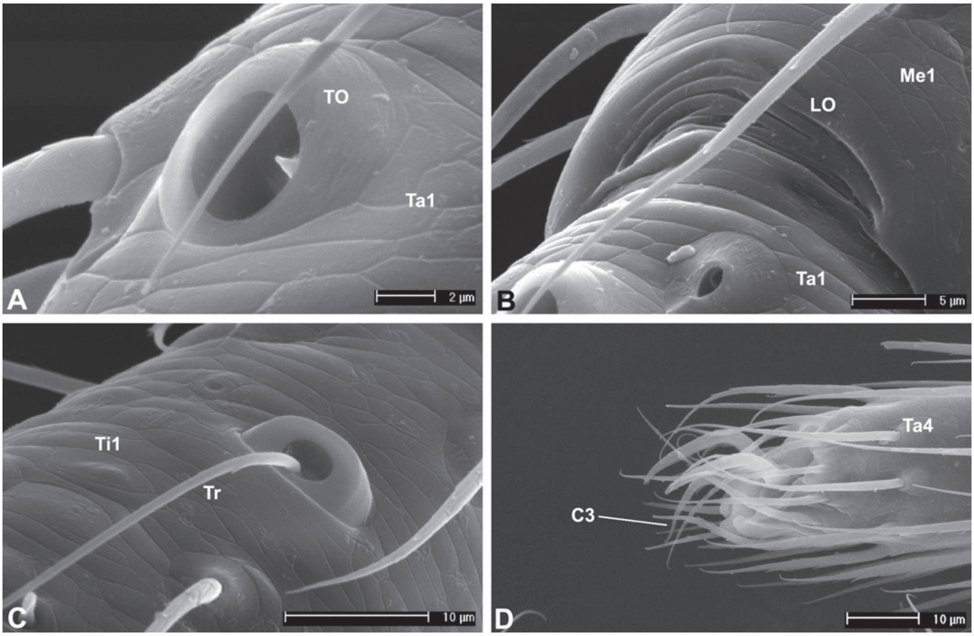


Figure 20. Scanning electron micrographs of female *Micropholcomma bryophilum* (Butler) from near Marysville, Victoria (WAM T94453): **A** leg I tarsal organ **B** leg I lyriform organ **C** leg I tibial trichobothrium **D** leg IV claws, showing elongate inferior claw.

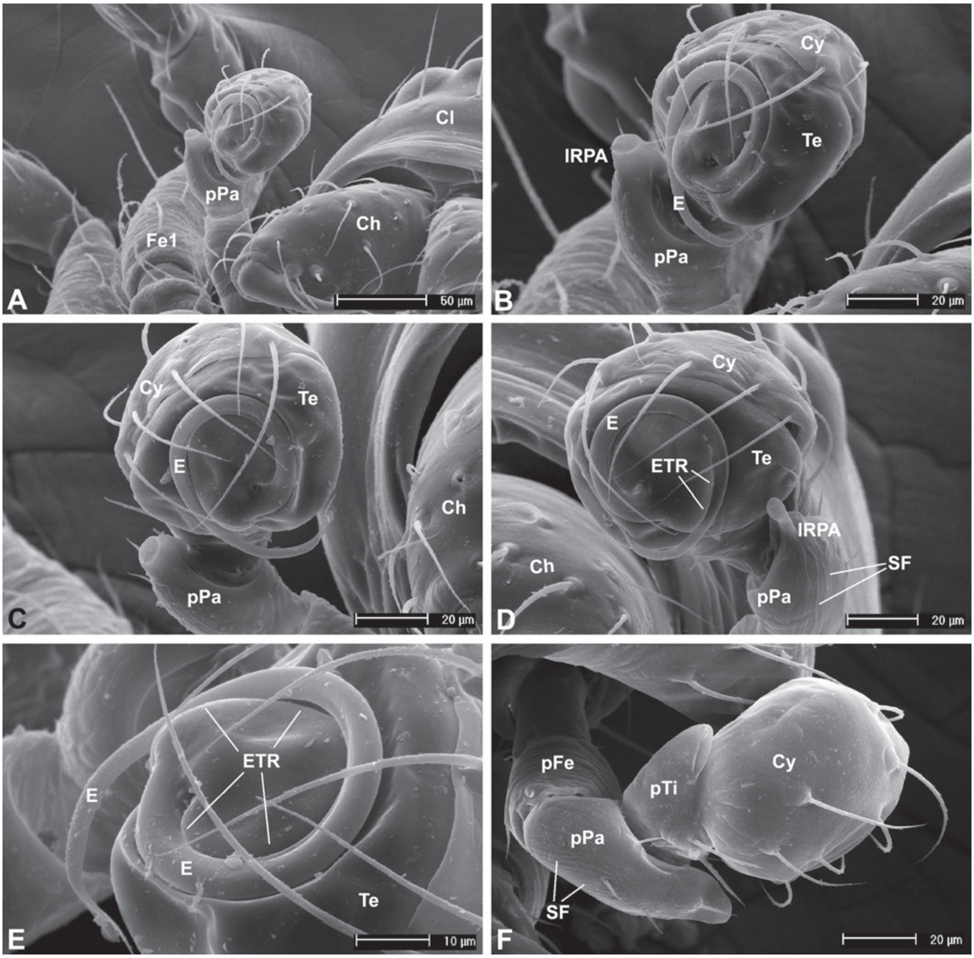


Figure 21. Scanning electron micrographs of pedipalp of male *Micropholcomma bryophilum* (Butler) from near Marysville, Victoria (WAM T94453).

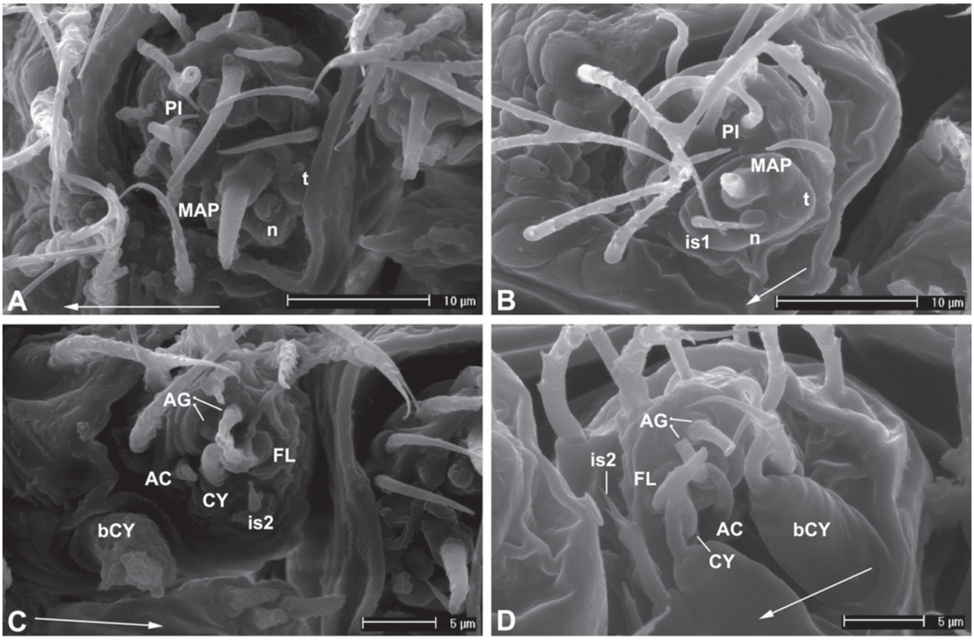


Figure 22. Scanning electron micrographs of spinnerets of female *Micropholcomma bryophilum* (Butler) from near Marysville, Victoria (WAM T94453) (left) and paratype female *Austropholcomma florentine* sp. n. from the Florentine Valley, Tasmania (FMC) (right): **A–B** anterior lateral spinnerets **C–D** posterior lateral spinnerets. Arrows denote the anterior, mesal direction.

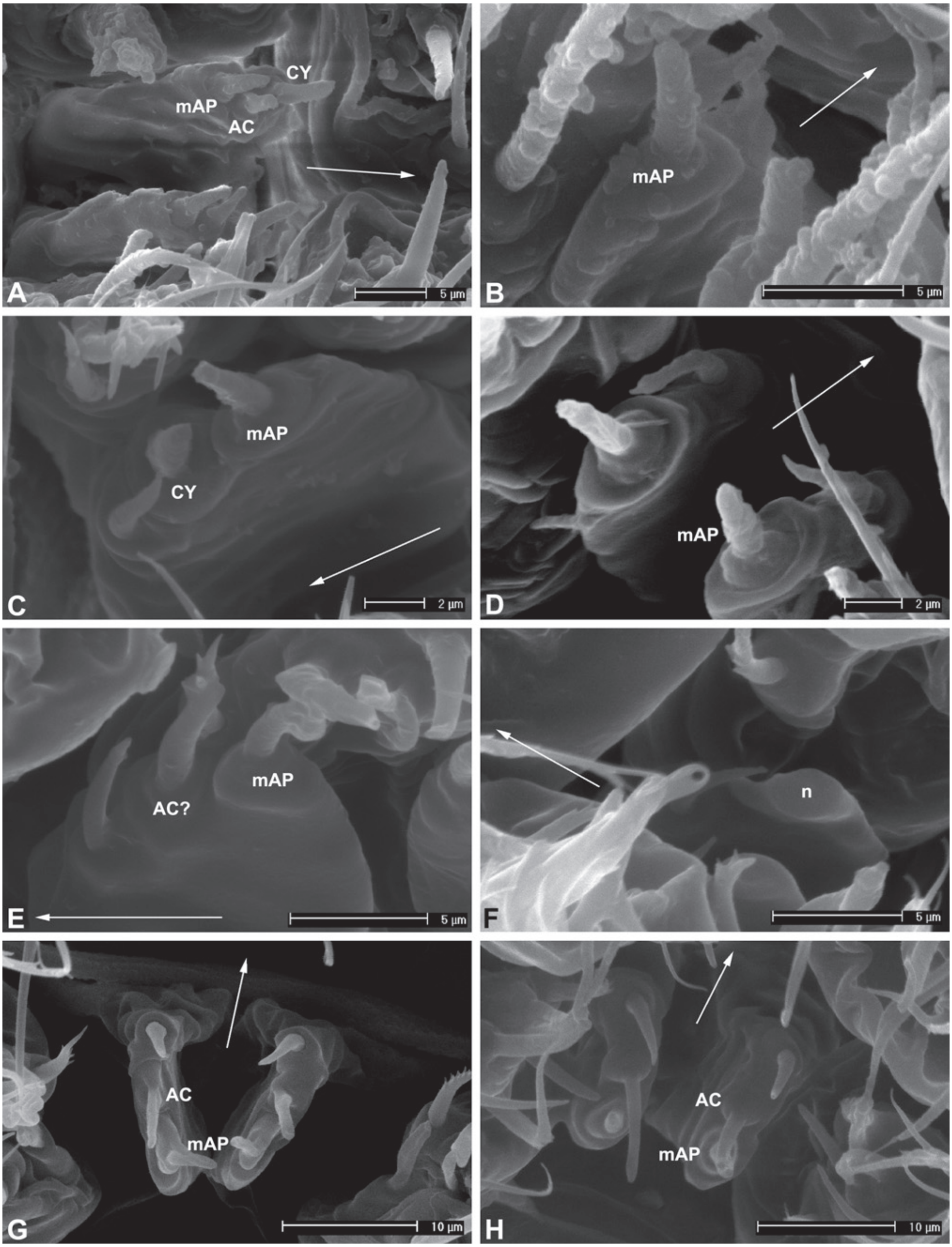


Figure 23. Scanning electron micrographs of posterior median spinnerets of female (left) and male (right) Micropholcommatini: **A–B** *Micropholcomma bryophilum* (Butler) from near Marysville, Victoria (WAM T94453) **C–D** *Pua novaezealandiae* Forster from the Makarora Valley, New Zealand (AMNH) **E–F** *Austropholcomma florentine* sp. n. from the Florentine Valley, Tasmania (FMC) **G–H** *Tricellina gertschi* (Forster & Platnick) from near Chaitén, Chile (AMNH). Note the apparent loss of the anterior CY gland spigot in female *Austropholcomma* and *Tricellina*. Arrows denote the anterior, mesal direction.

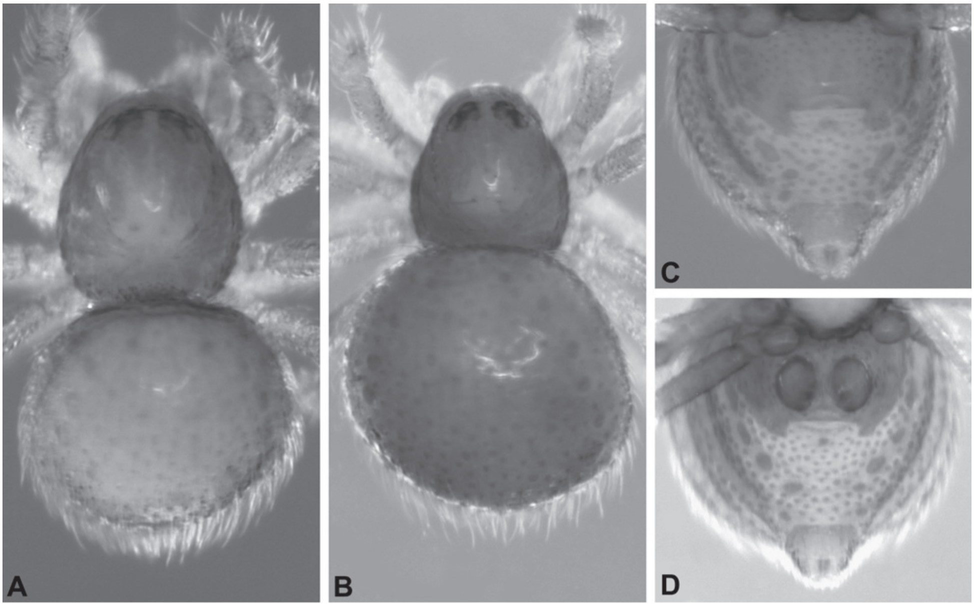


Figure 24. *Pua novaezealandiae* Forster from the Makarora Valley, New Zealand (AMNH): **A** male habitus, dorsal view **B** female habitus, dorsal view **C** male abdomen, ventral view **D** female abdomen, ventral view.

Figure 25. *Pua novaezealandiae* Forster from the Makarora Valley, New Zealand (AMNH): **A** male habitus, antero-lateral view **B** female cephalothorax, frontal view.

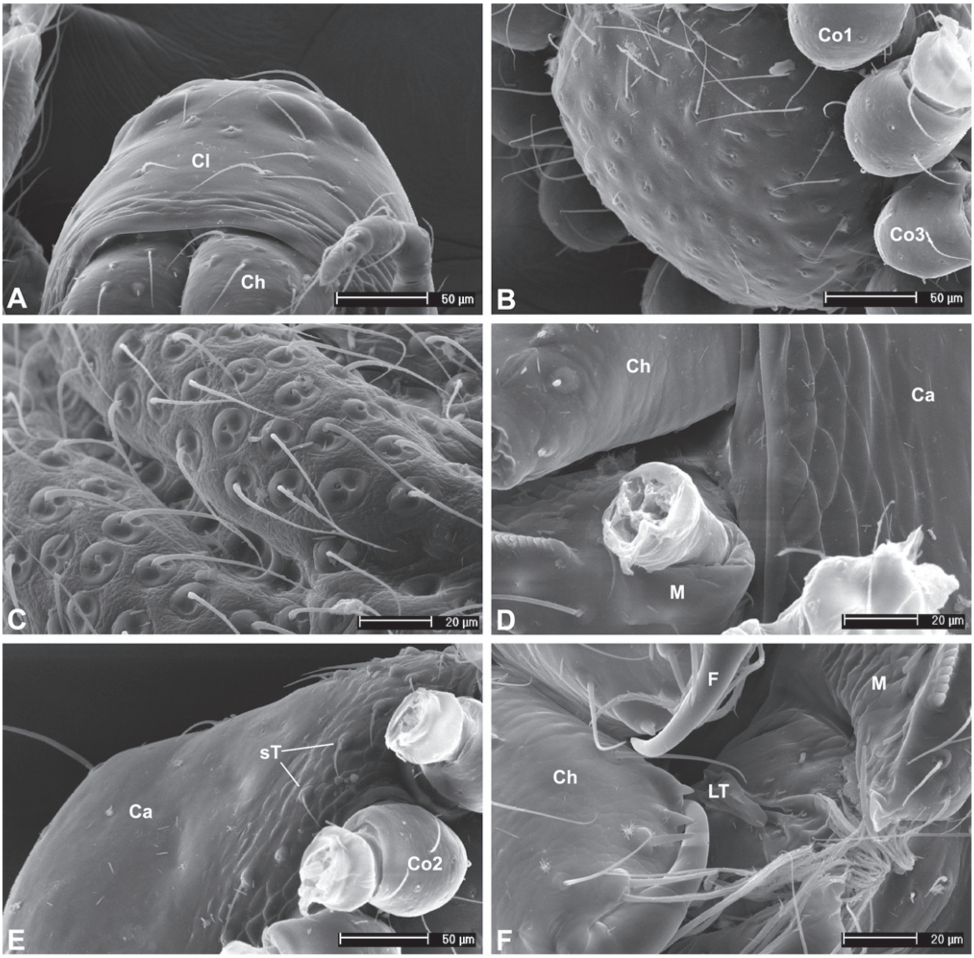


Figure 26. Scanning electron micrographs of *Pua novaezealandiae* Forster from the Makarora Valley, New Zealand (AMNH): **A** female eyes and clypeus, frontal view **B** male sternum, ventro-lateral view **C** male abdominal cuticle **D** male corner of carapace above left maxilla **E** female pars thoracica, lateral view, showing setal tubercles **F** female chelicerae and labrum.

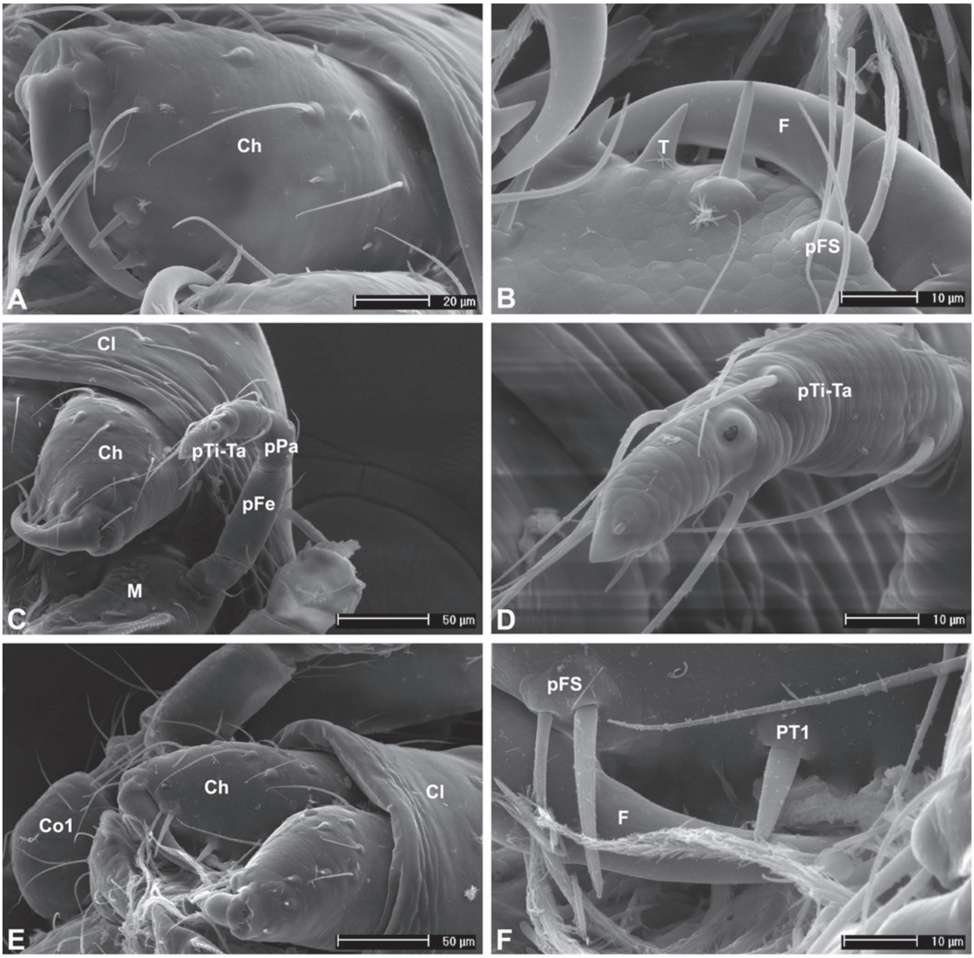


Figure 27. Scanning electron micrographs of *Pua novaezealandiae* Forster from the Makarora Valley, New Zealand (AMNH): **A** female chelicera, frontal view **B** female cheliceral promargin **C** female pedipalp, frontal view **D** tip of female pedipalp, showing fused tibia-tarsus **E** male chelicera, antero-lateral view **F** male cheliceral promargin.

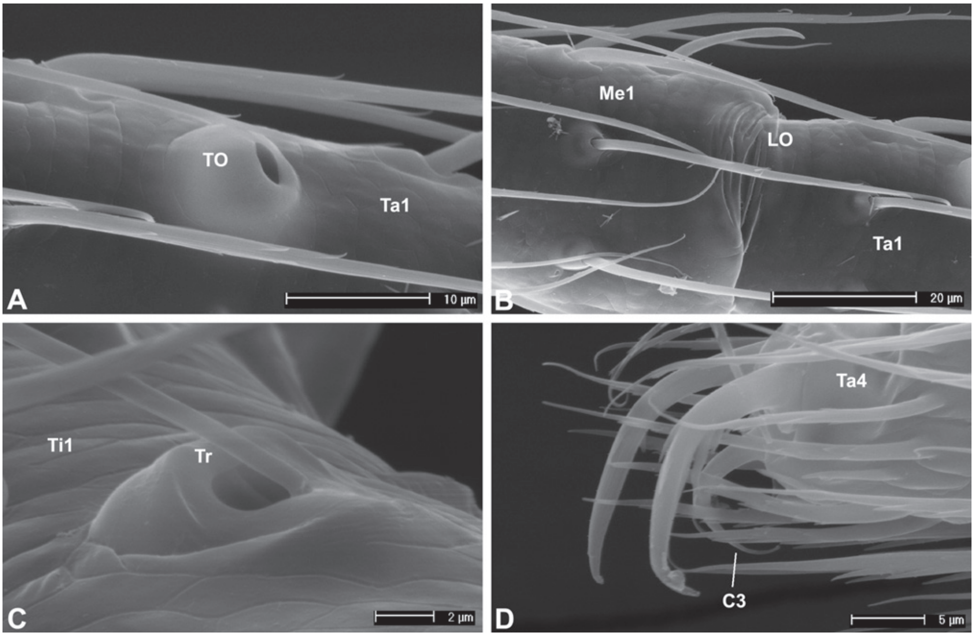


Figure 28. Scanning electron micrographs of female *Pua novaezealandiae* Forster from the Makarora Valley, New Zealand (AMNH): **A** leg I tarsal organ **B** leg I lyriform organ **C** leg I tibial trichobothrium **D** leg IV claws, showing elongate inferior claw.

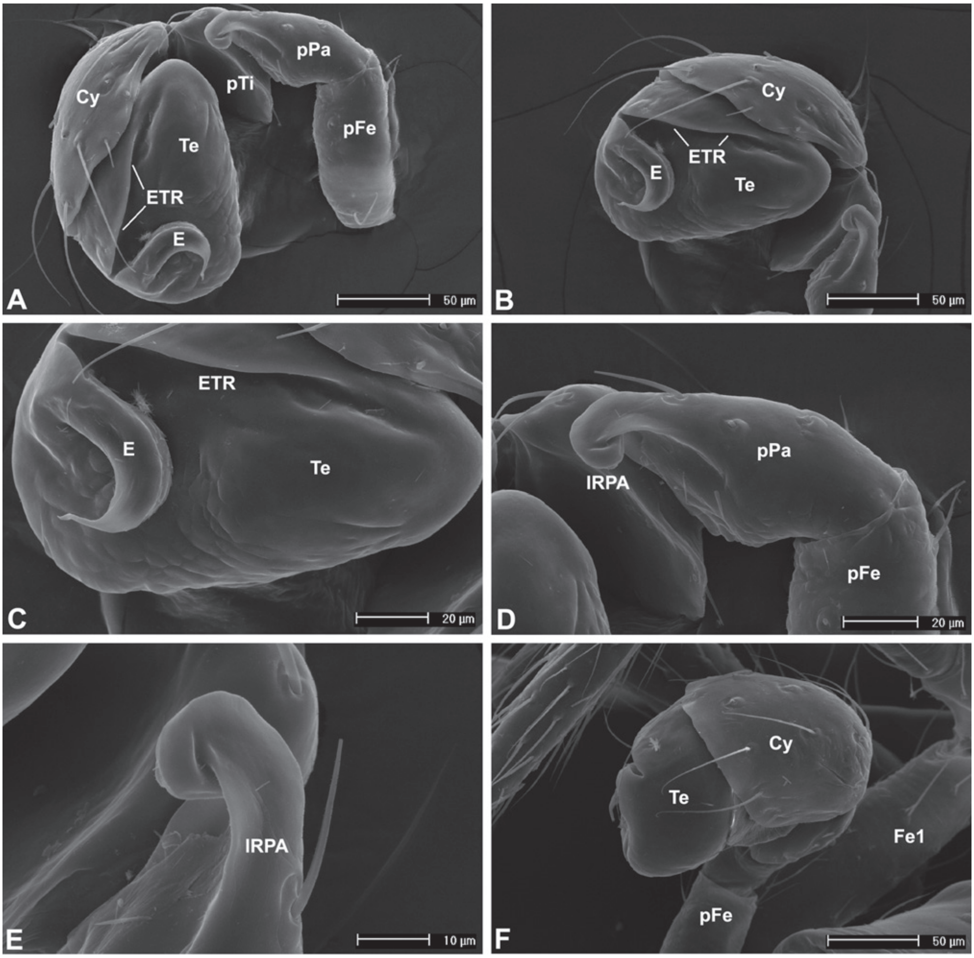


Figure 29. Scanning electron micrographs of pedipalp of male *Pua novaezealandiae* Forster from the Makarora Valley, New Zealand (AMNH).

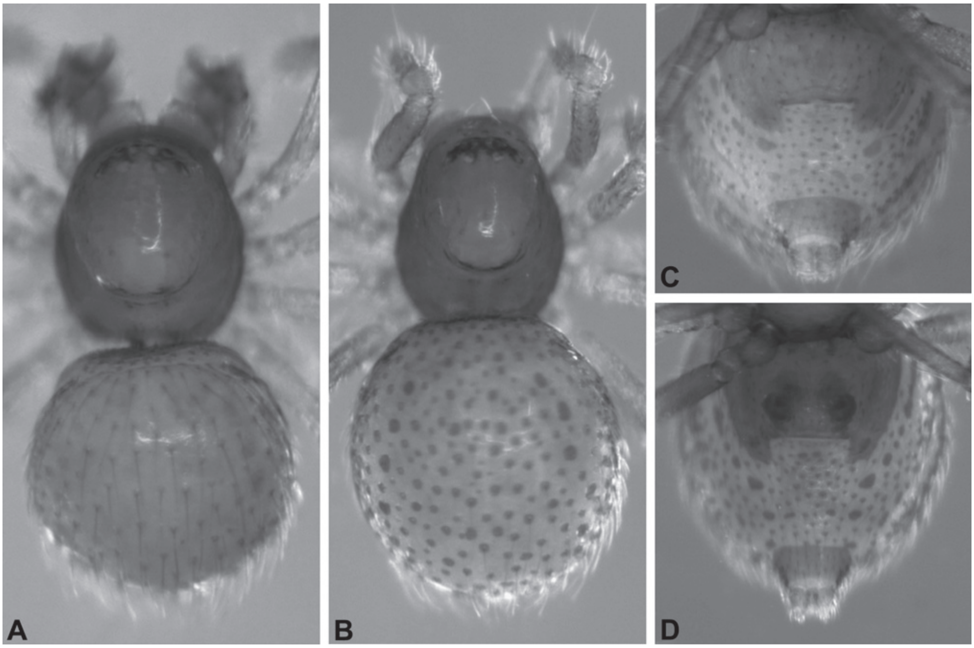


Figure 30. *Austropholcomma florentine* sp. n. from the Florentine Valley, Tasmania. **A, C** holotype male (TMAG): **A** habitus, dorsal view **C** abdomen, ventral view. **B, D** allotype female (TMAG): **B** habitus, dorsal view **D** abdomen, ventral view.

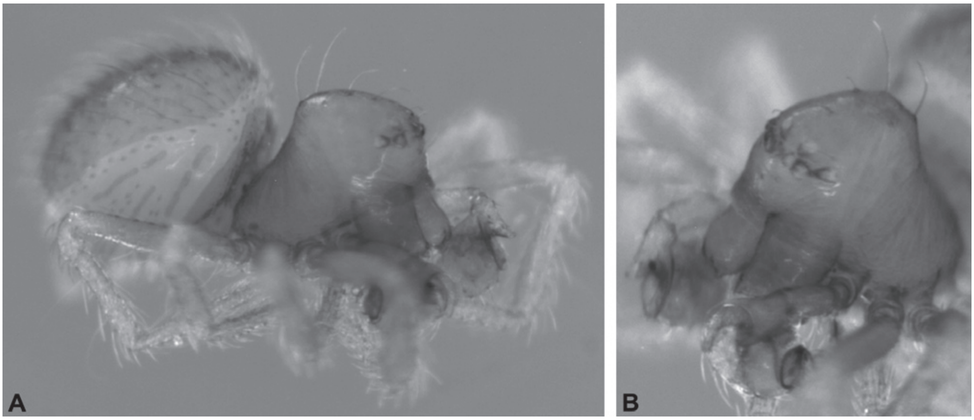


Figure 31. *Austropholcomma florentine* sp. n., holotype male from the Florentine Valley, Tasmania (TMAG): **A** habitus, antero-lateral view **B** cephalothorax, antero-lateral view.

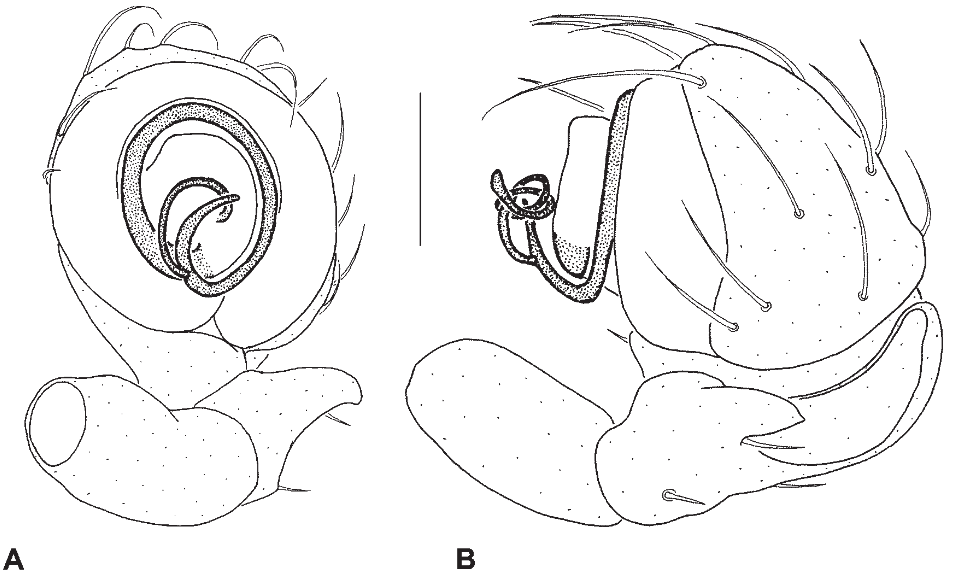


Figure 32. *Austropholcomma florentine* sp. n., paratype male from the Florentine Valley, Tasmania (FMC): **A** left pedipalp, ventral view **B** left pedipalp, retrolateral view. Scale bar = 0.065 mm (65 µm). Note that the distal, intertwined embolus has been omitted in (A) for clarity.

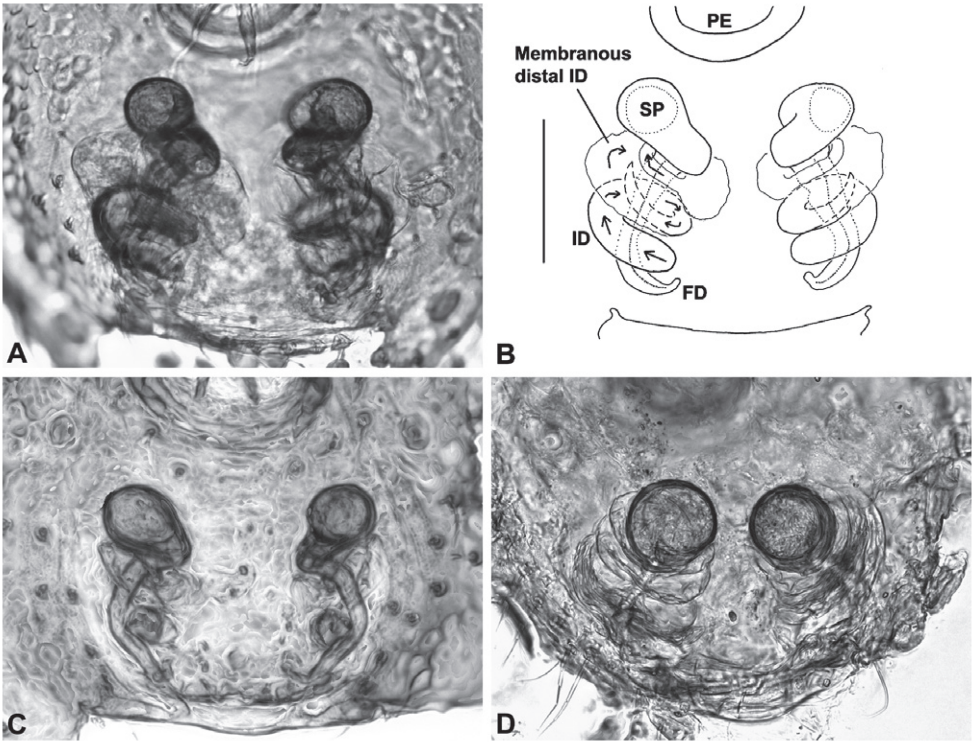


Figure 33. *Austropholcomma*, *Tricellina* species, female cleared receptacula, dorsal view: **A–B**, paratype *A. florentine* sp. n. from the Florentine Valley, Tasmania (FMC) **C** paratype *A. walpole* sp. n. from Walpole-Nornalup National Park, Western Australia (WAM T94440) **D** *T. gertschi* (Forster & Platnick) from south of Chaitén, Chile (AMNH). Arrows indicate the trajectory of insemination ducts. Scale bar = 0.065 mm (65 μm).

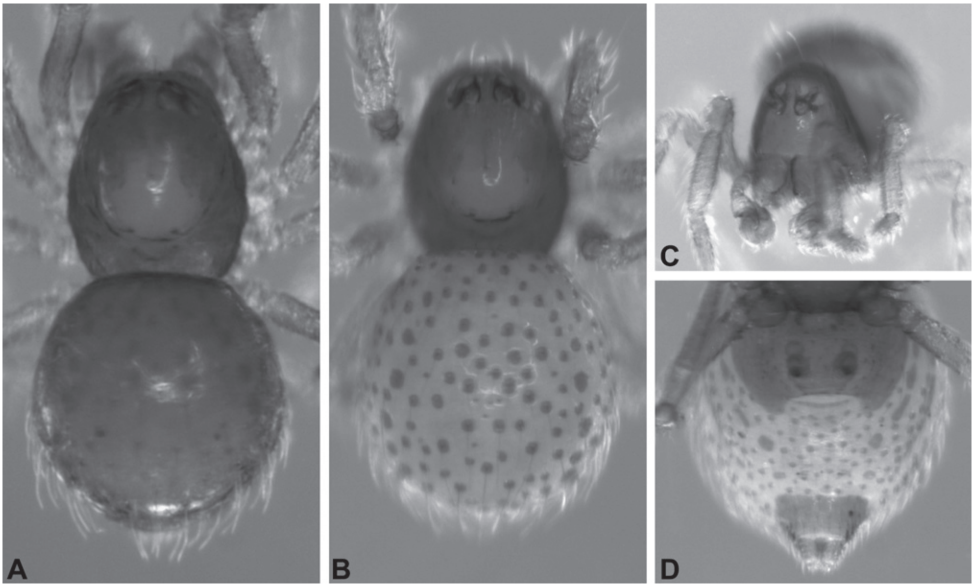


Figure 34. *Austropholcomma walpole* sp. n. from Walpole-Nornalup National Park, Western Australia. **A, C** holotype male (WAM T94438): **A** habitus, dorsal view **C** cephalothorax, frontal view. **B, D** allotype female (WAM T94439): **B** habitus, dorsal view **D** abdomen, ventral view.

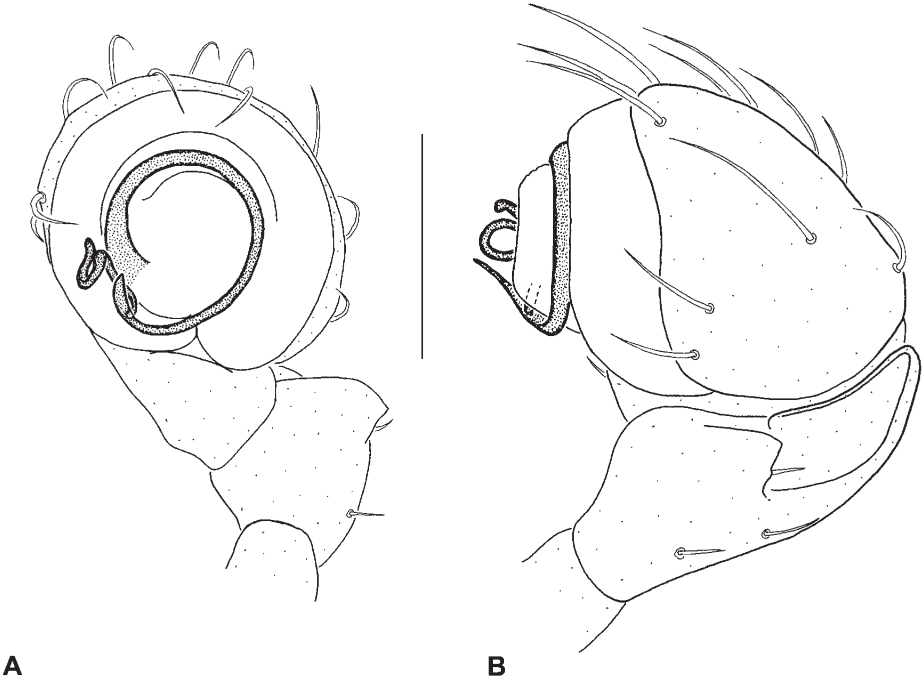


Figure 35. *Austropholcomma walpole* sp. n., paratype male from Walpole-Nornalup National Park, Western Australia (WAM T94440): **A** left pedipalp, ventral view **B** left pedipalp, retrolateral view. Scale bar = 0.065 mm (65 µm).

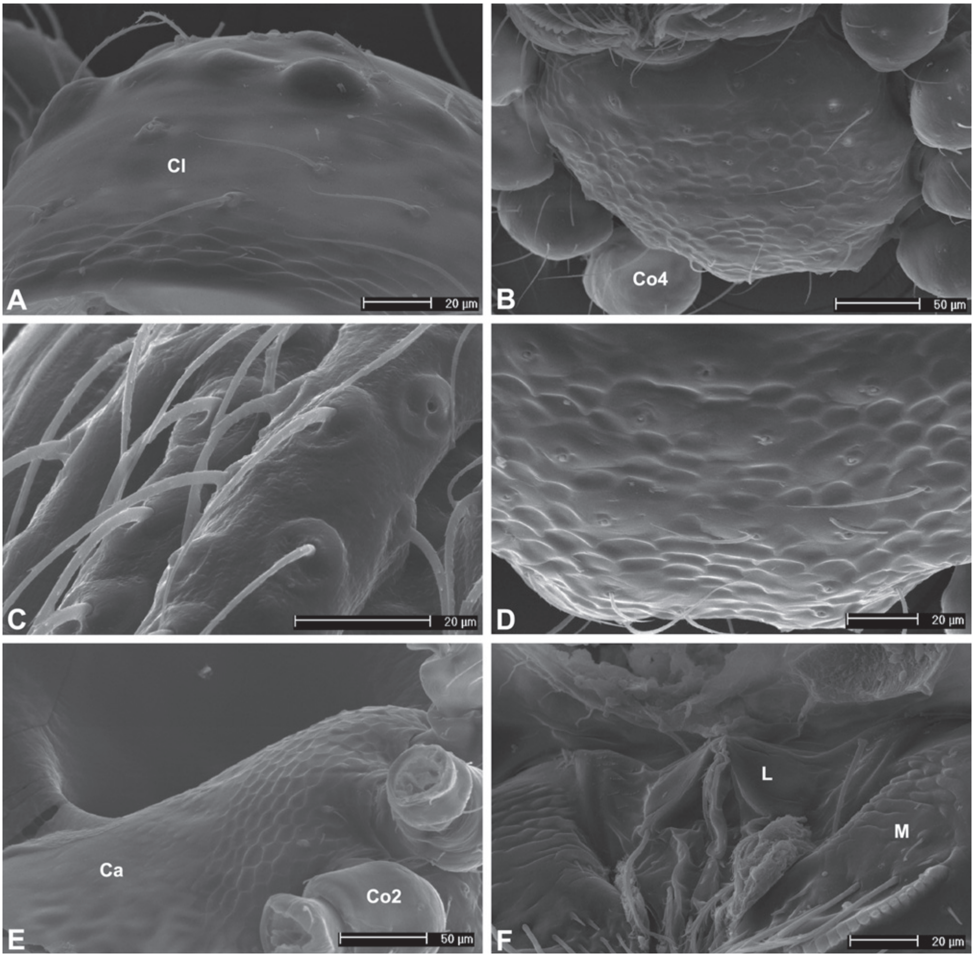


Figure 36. Scanning electron micrographs of *Austropholcomma florentine* sp. n. from the Florentine Valley, Tasmania (FMC): **A** female eyes and clypeus, frontal view **B** female sternum, ventral view **C** male abdominal cuticle **D** detail of (B) showing reticulate cuticle **E** male pars thoracica, lateral view **F** female labrum.

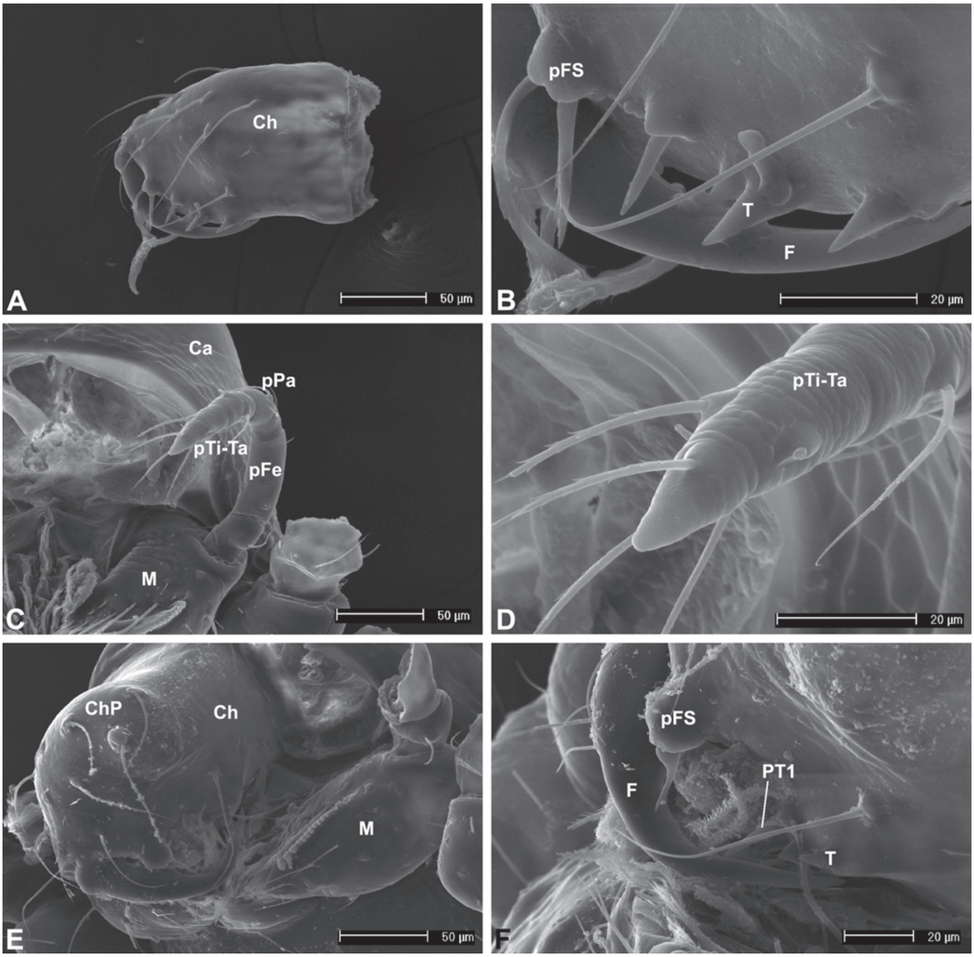


Figure 37. Scanning electron micrographs of *Austropholcomma florentine* sp. n. from the Florentine Valley, Tasmania (FMC): **A** female right chelicera, dorsal view **B** female cheliceral promargin **C** female pedipalp, frontal view **D** tip of female pedipalp, showing fused tibia-tarsus **E** male right chelicera (left removed), frontal view **F** male cheliceral promargin.

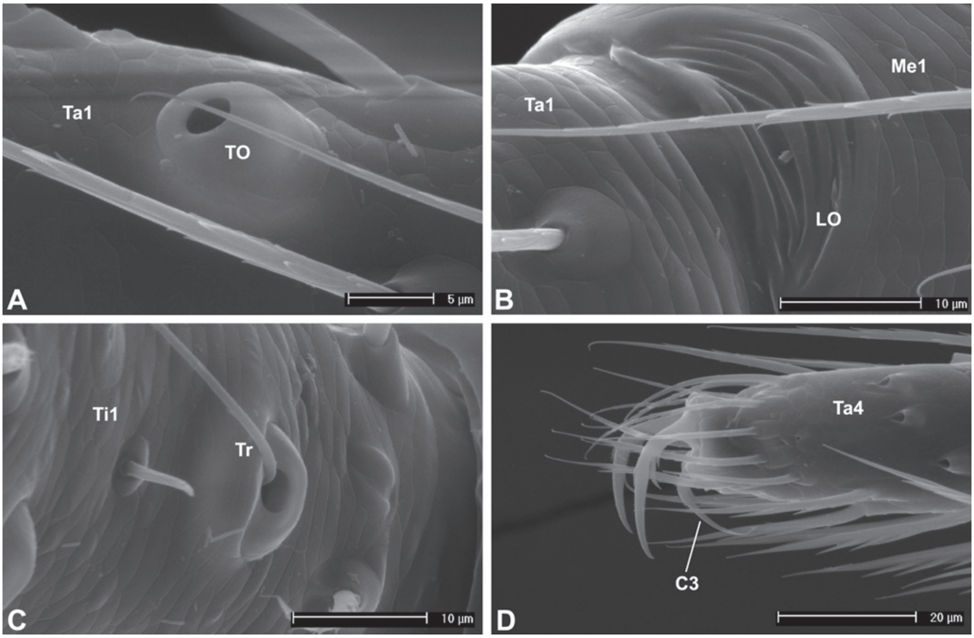


Figure 38. Scanning electron micrographs of female *Austropholcomma florentine* sp. n. from the Florentine Valley, Tasmania (FMC): **A** leg I tarsal organ **B** leg I lyriform organ **C** leg I tibial trichobothrium **D** leg IV claws, showing elongate inferior claw.

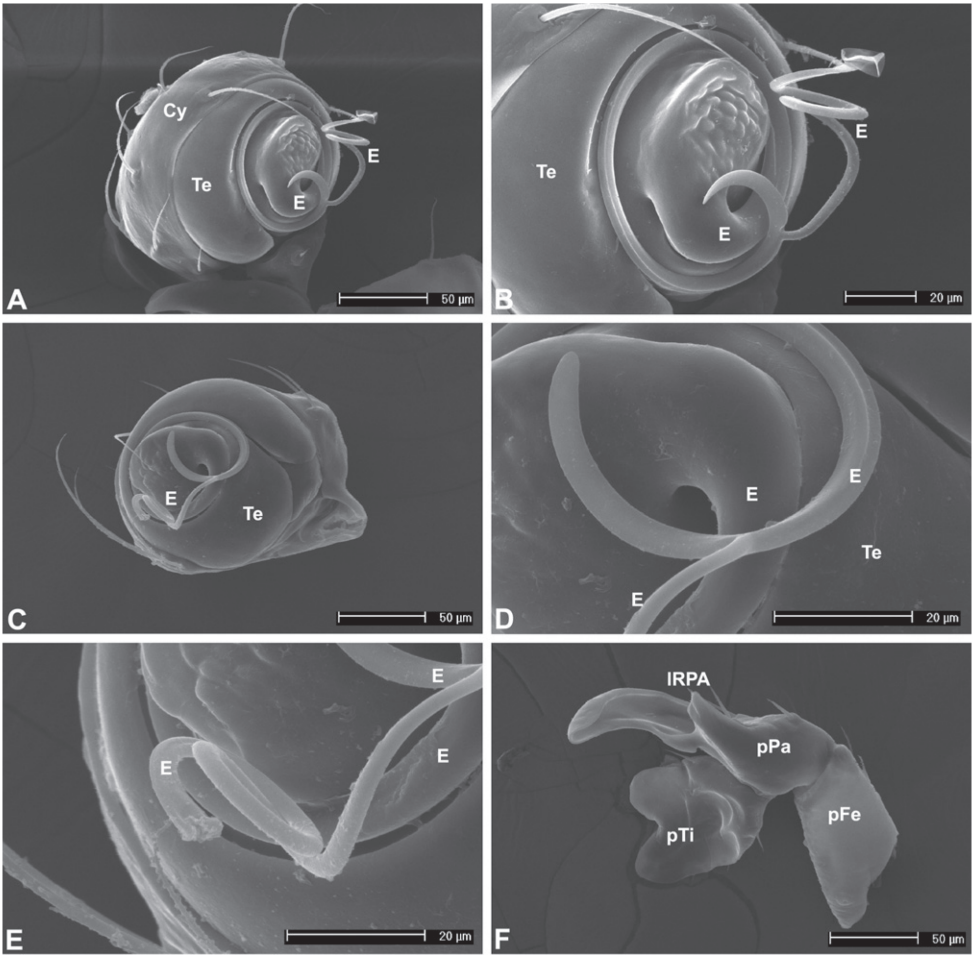


Figure 39. Scanning electron micrographs of pedipalp of male *Austropholcomma florentine* sp. n. from the Florentine Valley, Tasmania (FMC).

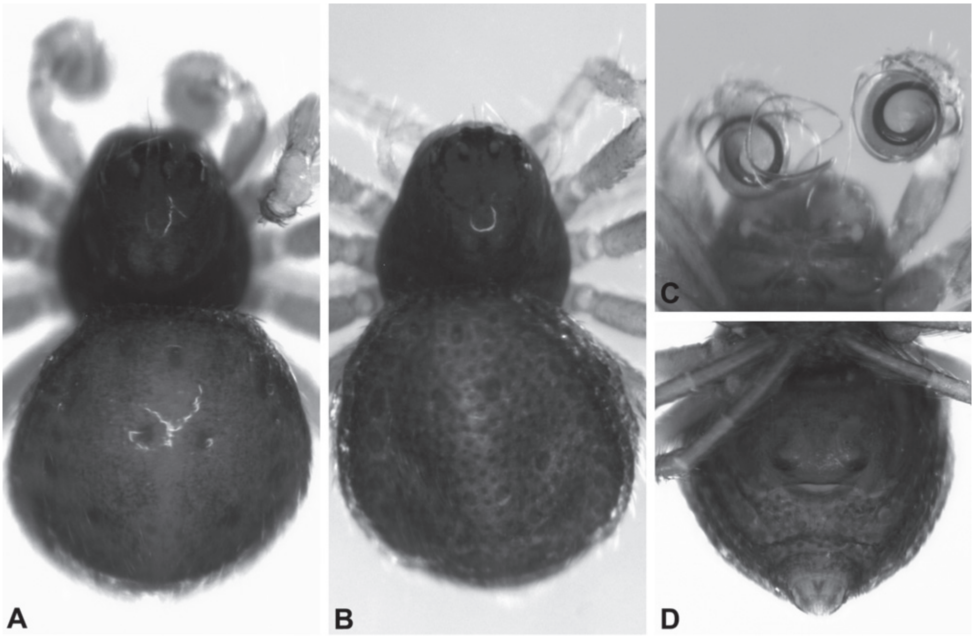


Figure 40. *Tricellina gertschi* (Forster & Platnick) from south of Chaitén, Chile (AMNH): **A** male habitus, dorsal view **B** female habitus, dorsal view **C** male pedipalps, ventral view **D** female abdomen, ventral view.

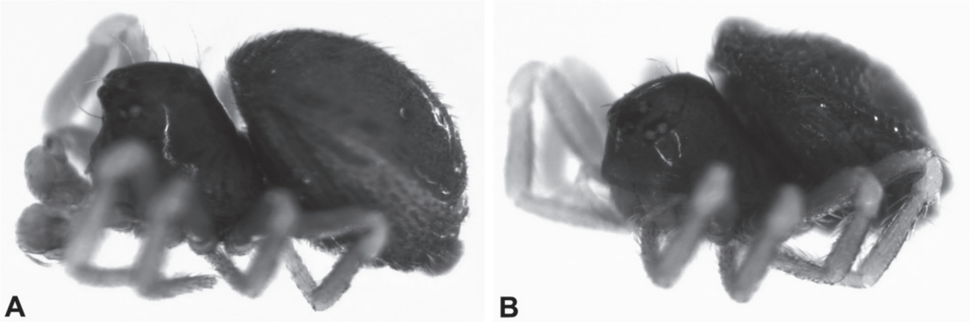


Figure 41. *Tricellina gertschi* (Forster & Platnick) from south of Chaitén, Chile (AMNH): **A** male habitus, lateral view **B** female habitus, antero-lateral view.

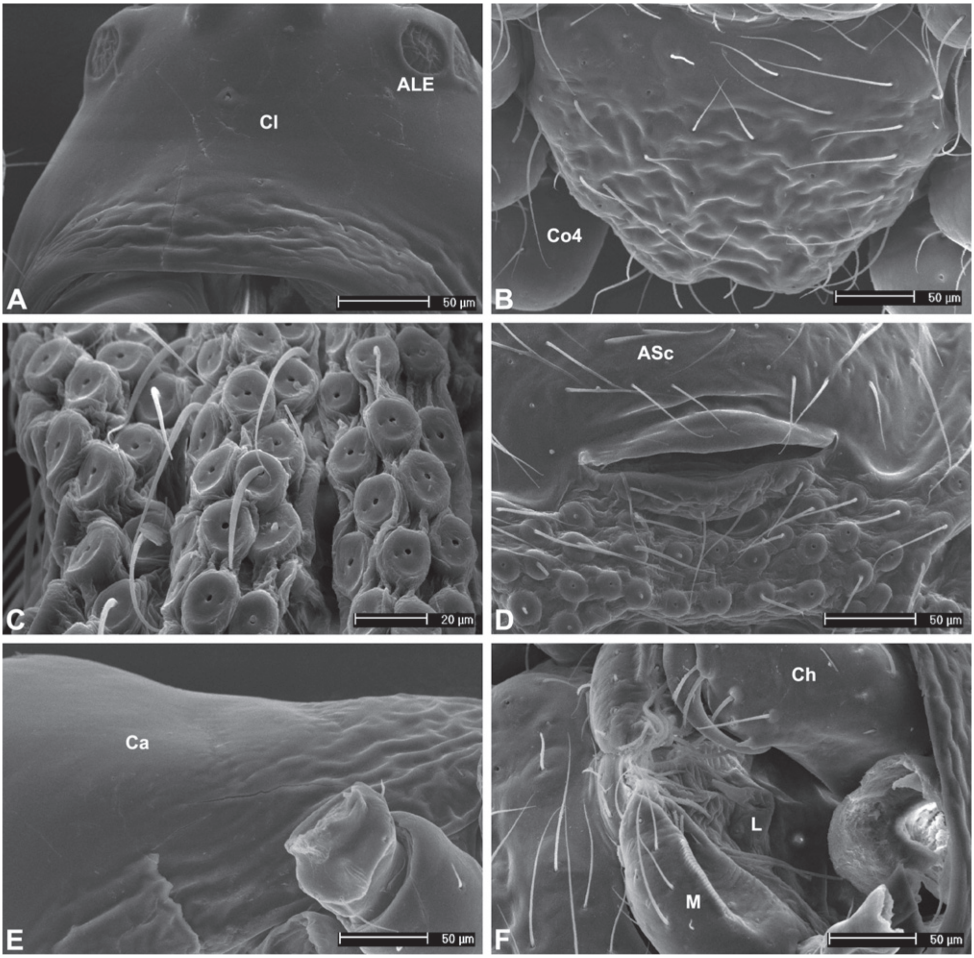


Figure 42. Scanning electron micrographs of *Tricellina gertschi* (Forster & Platnick) from near Chaitén, Chile (AMNH): **A** male eyes and clypeus, frontal view **B** female sternum, ventral view **C** female abdominal cuticle **D** male epigastric furrow, showing the absence of epiandrous gland spigots **E** female pars thoracica, lateral view **F** female chelicera and labrum.

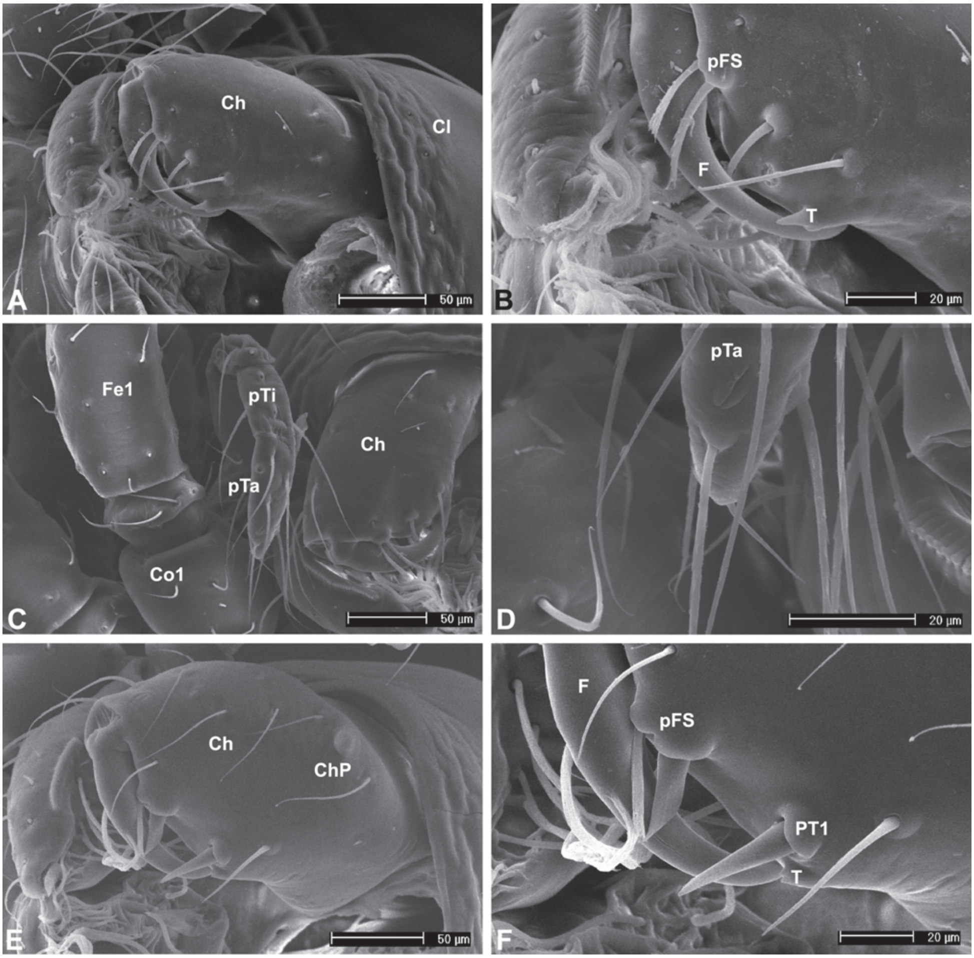


Figure 43. Scanning electron micrographs of *Tricellina gertschi* (Forster & Platnick) from near Chaitén, Chile (AMNH): **A** female right chelicera (left removed), frontal view **B** female cheliceral promargin **C** female pedipalp, frontal view **D** tip of female pedipalp **E** male right chelicera (left removed), frontal view **F** male cheliceral promargin.

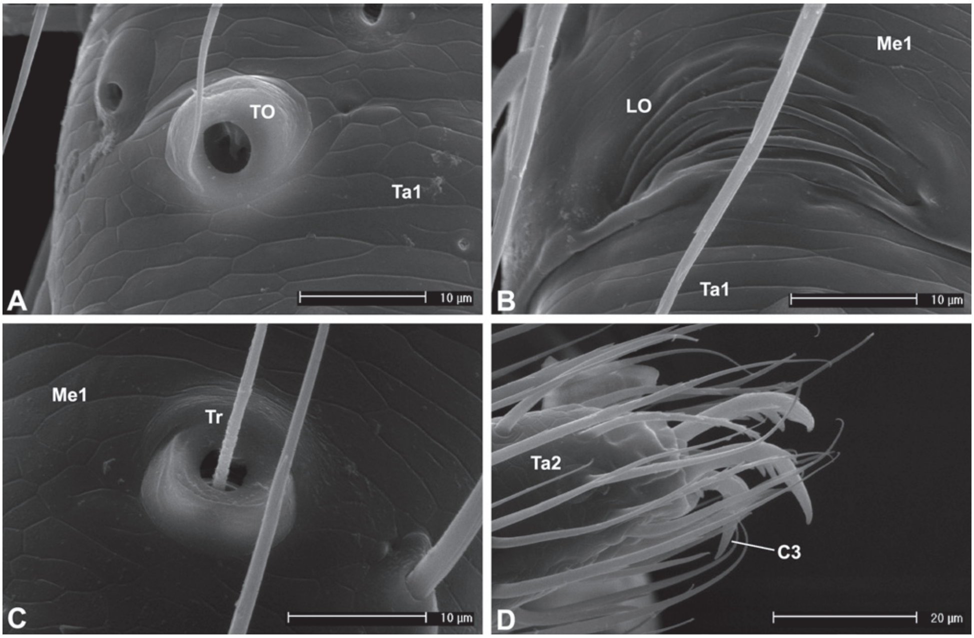


Figure 44. Scanning electron micrographs of female *Tricellina gertschi* (Forster & Platnick) from near Chaitén, Chile (AMNH): **A** leg I tarsal organ **B** leg I lyriform organ **C** leg I metatarsal trichobothrium **D** leg II claws.

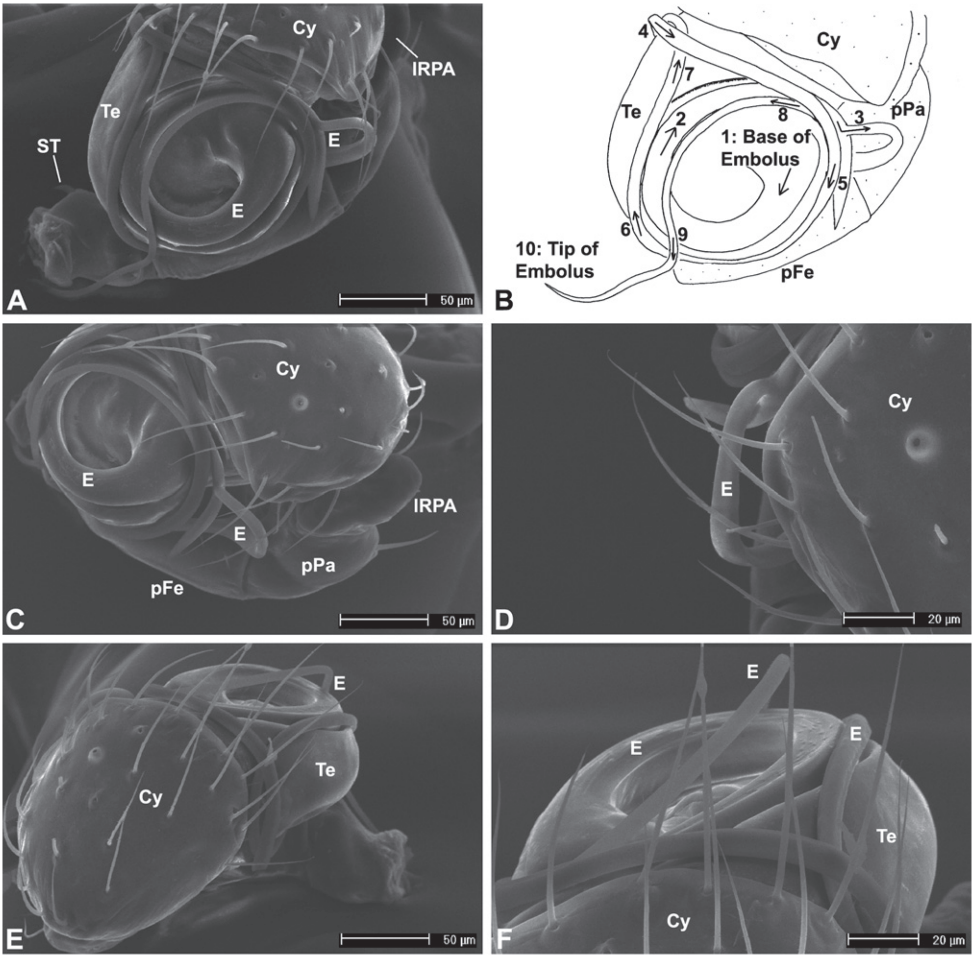


Figure 45. Scanning electron micrographs of pedipalp of male *Tricellina gertschi* (Forster & Platnick) from near Chaitén, Chile (AMNH). **B** simplified illustration of (A) showing the complex trajectory of the embolus.

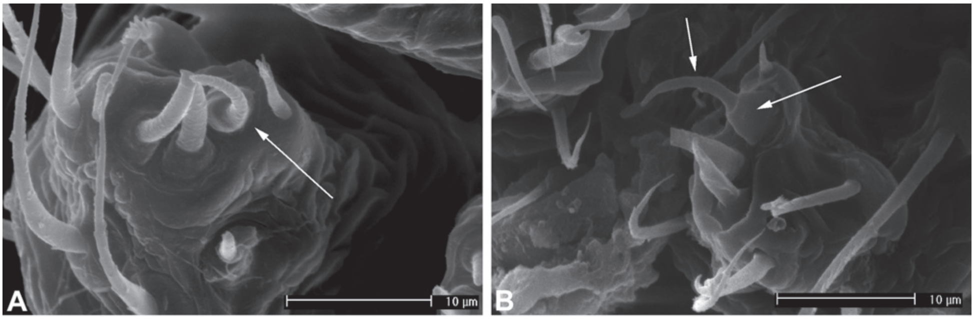


Figure 46. The enlarged, sinuous textricellin flagelliform gland spigot: **A–B** scanning electron micrographs of posterior lateral spinnerets of male *Normplatnicka lamingtonensis* (Forster) (left) and male *Raveniella luteola* (Hickman) (right), showing the characteristic FL gland spigot.

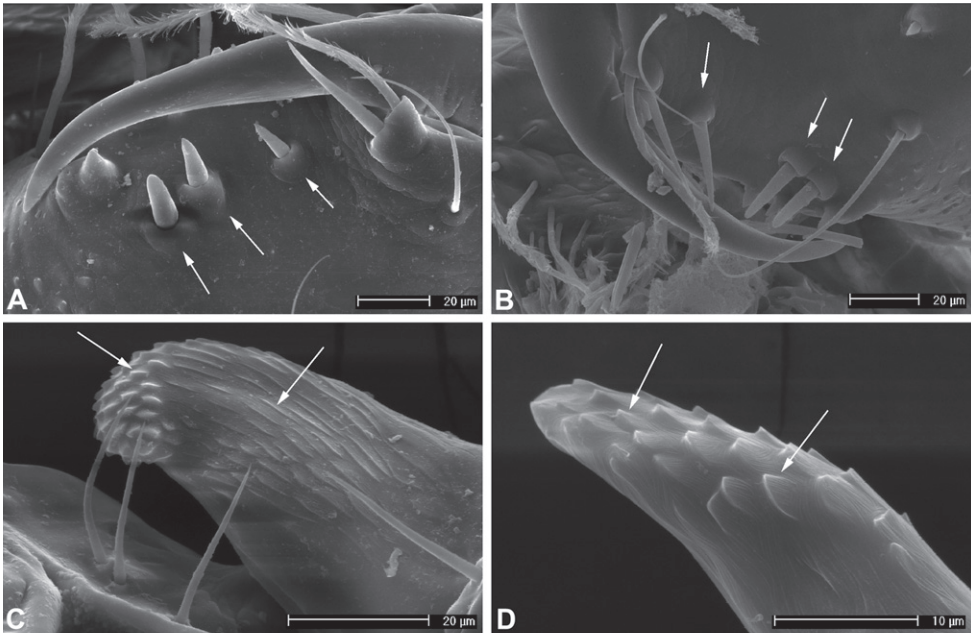


Figure 47. Diagnostic characters of the derived Textricellini (i.e. all textricellin genera except *Tinytrella*), illustrated with scanning electron micrographs: **A–B** three peg teeth on the cheliceral promargin of male *Normplatnicka lamingtonensis* (Forster) (left) and male *Rayforstia vulgaris* (Forster) (right) **C–D** ornate, ridged cuticular microstructure on the pedipalpal patella of male *N. lamingtonensis* (left) and male *Eperiella alsophila* sp. n. (right).

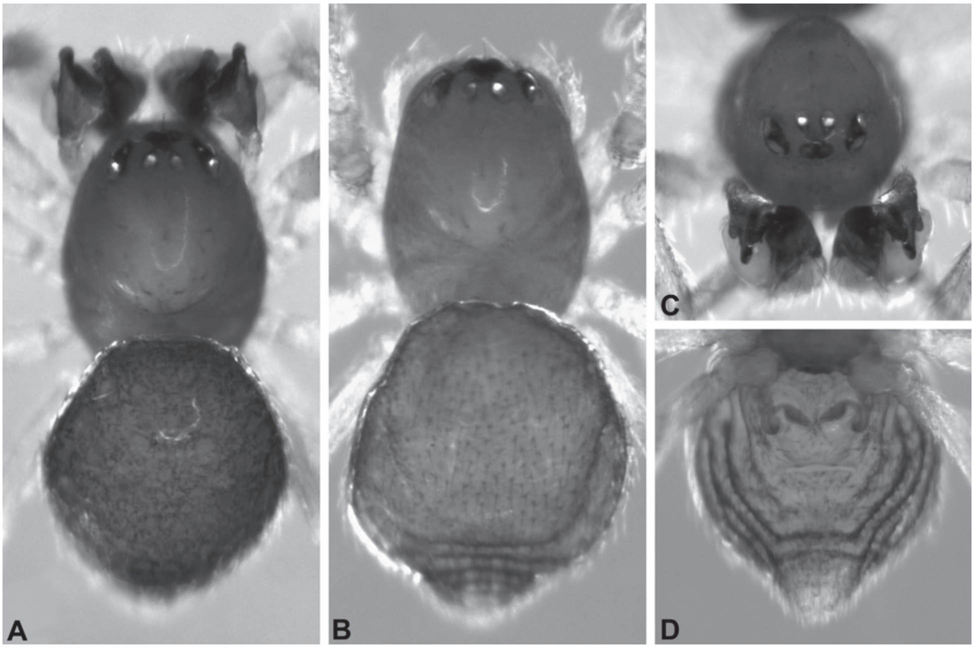


Figure 48. *Eterosonycha alpina* Butler from Mount Wellington, Tasmania (WAM T77729): **A** male habitus, dorsal view **B** female habitus, dorsal view **C** male cephalothorax, antero-dorsal view **D** female abdomen, ventral view.

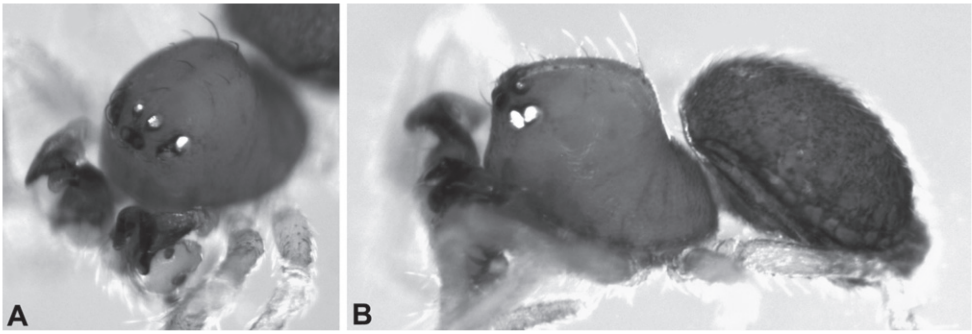


Figure 49. *Eterosonycha alpina* Butler from Mount Wellington, Tasmania (WAM T77729): **A** male cephalothorax, antero-dorsal view **B** male habitus, lateral view.

Figure 50. *Eterosonycha alpina* Butler, syntype male from Mount Kosciusko, New South Wales (NMV K099), left pedipalp, retrolateral view.

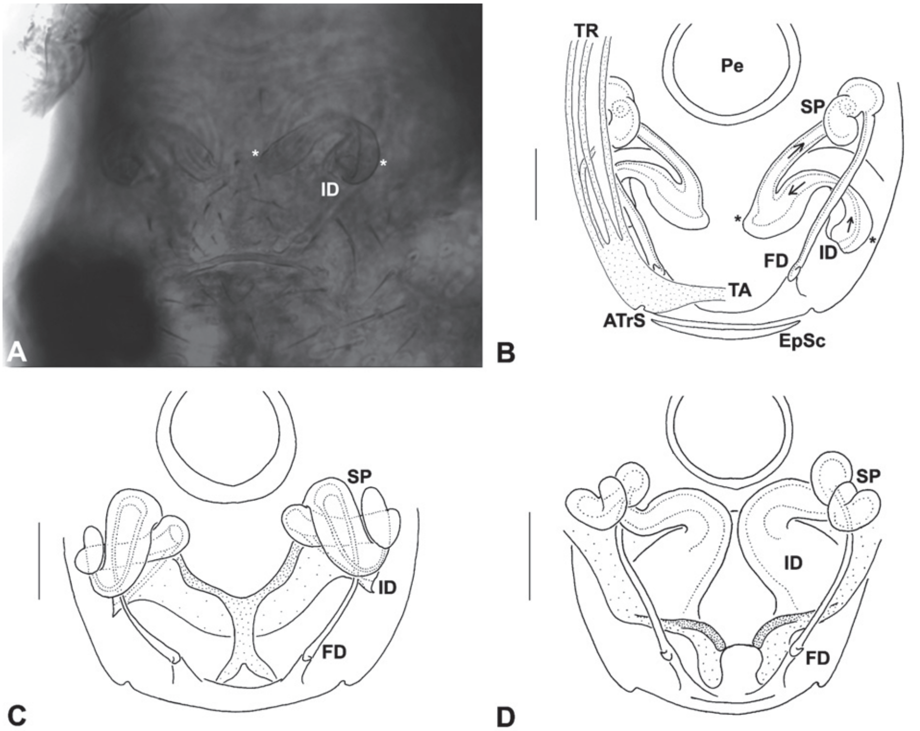


Figure 51. *Eterosonycha* species, female cleared receptacula, dorsal view: **A** ventral view of epigyne of slide-mounted syntype *E. alpina* Butler from Mount Kosciusko, New South Wales (NMV K098) **B** *E. alpina* Butler from Mount Wellington, Tasmania (WAM T77729) **C** paratype *E. aquilina* sp. n. from Mount Donna Buang, Victoria (WAM T94446) **D** allotype *E. ocellata* sp. n. from the Otway Ranges, Victoria (NMV K10769). Arrows indicate the trajectory of insemination ducts, and highlighted (*) points in (A) and (B) indicate homologous positions on insemination ducts. Scale bars = 0.065 mm (65 µm).

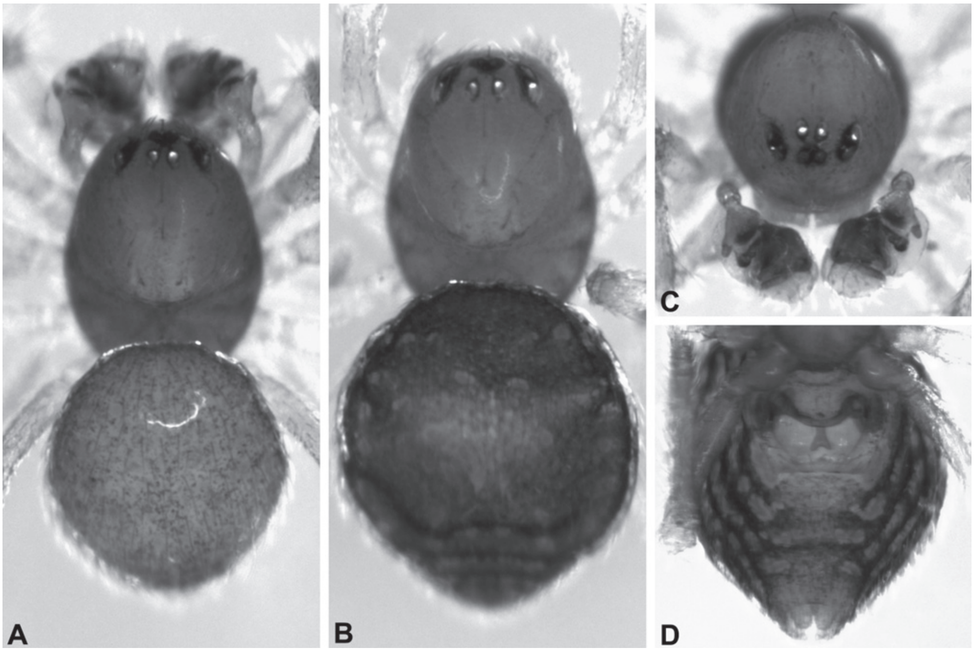


Figure 52. *Eterosonycha aquilina* sp. n. from Mount Donna Buang, Victoria. **A, C** holotype male (NMV K10766): **A** habitus, dorsal view **C** cephalothorax, antero-dorsal view. **B, D** allotype female (NMV K10767): **B** habitus, dorsal view **D** abdomen, ventral view.

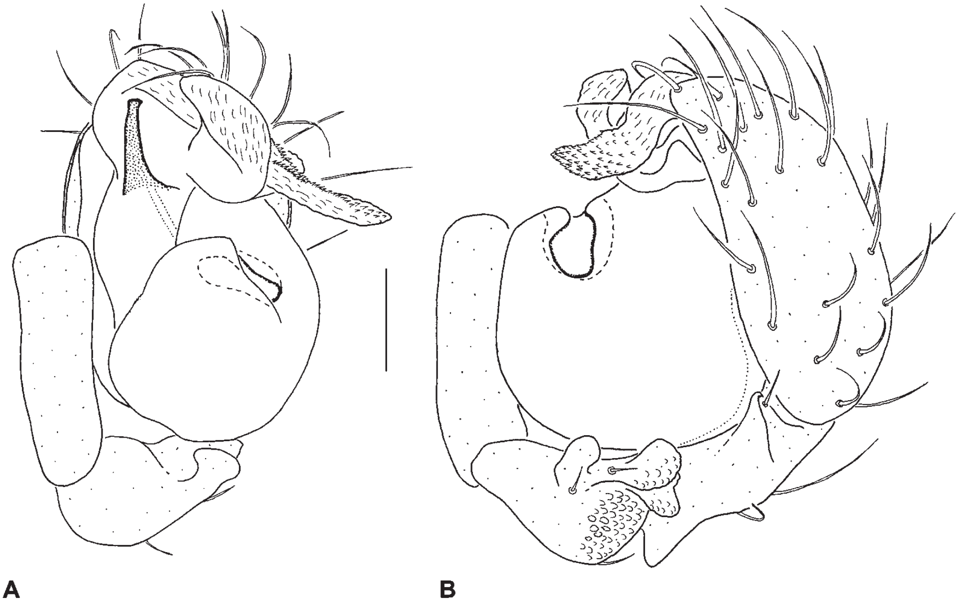


Figure 53. *Eterosonycha aquilina* sp. n., paratype male from Mount Donna Buang, Victoria (WAM T94446): **A** left pedipalp, ventral view **B** left pedipalp, retrolateral view. Scale bar = 0.065 mm (65 µm).

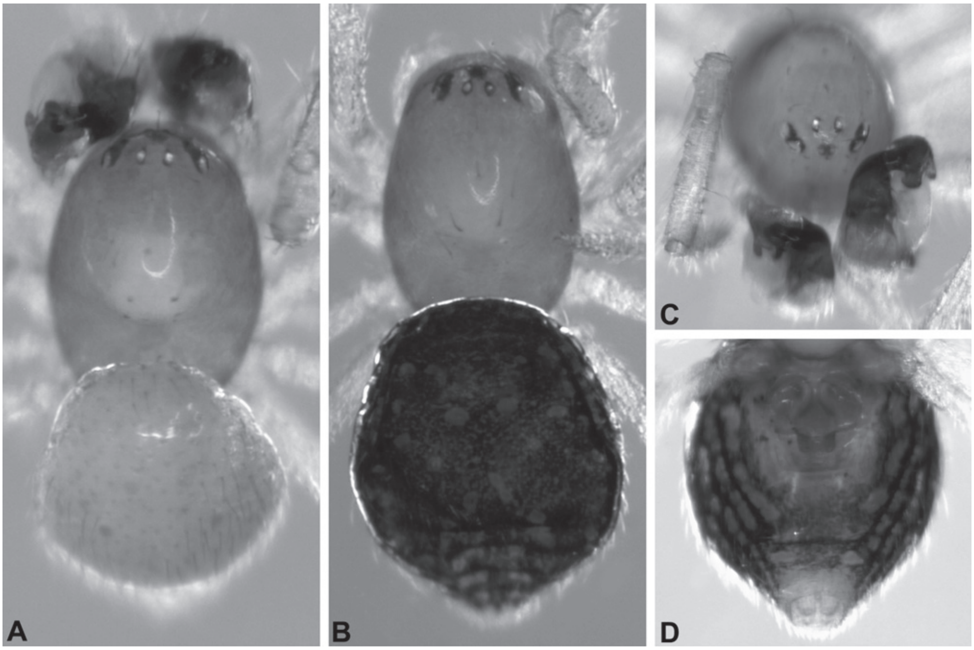


Figure 54. *Eterosonycha ocellata* sp. n. from the Otway Ranges, Victoria. **A, C** holotype male (NMV K10768): **A** habitus, dorsal view **C** cephalothorax, antero-dorsal view. **B, D** allotype female (NMV K10769): **B** habitus, dorsal view **D** abdomen, ventral view.

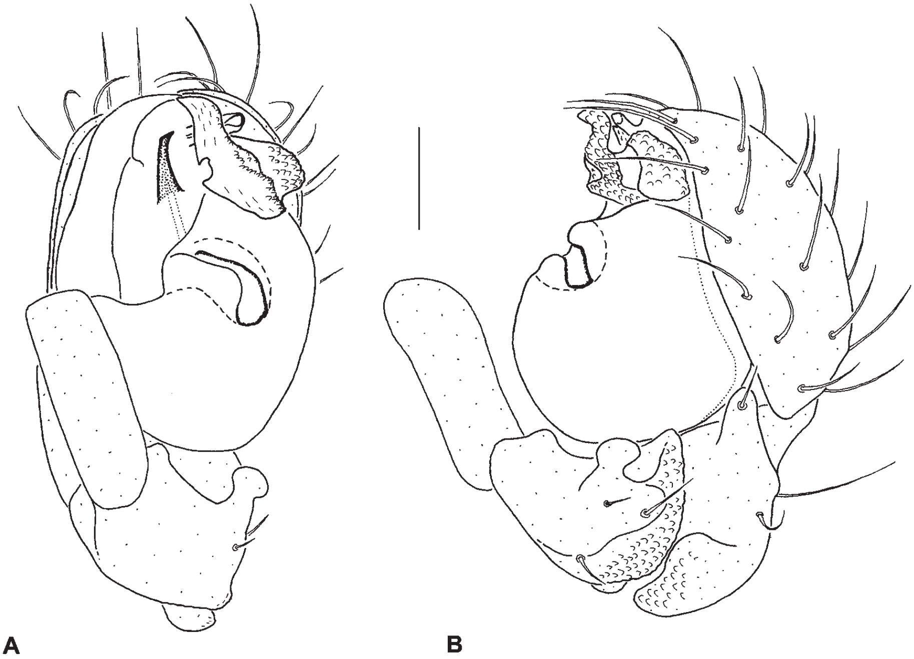


Figure 55. *Eterosonycha ocellata* sp. n., paratype male from the Otway Ranges, Victoria (WAM T94443): **A** left pedipalp, ventral view **B** left pedipalp, retrolateral view. Scale bar = 0.065 mm (65 µm).

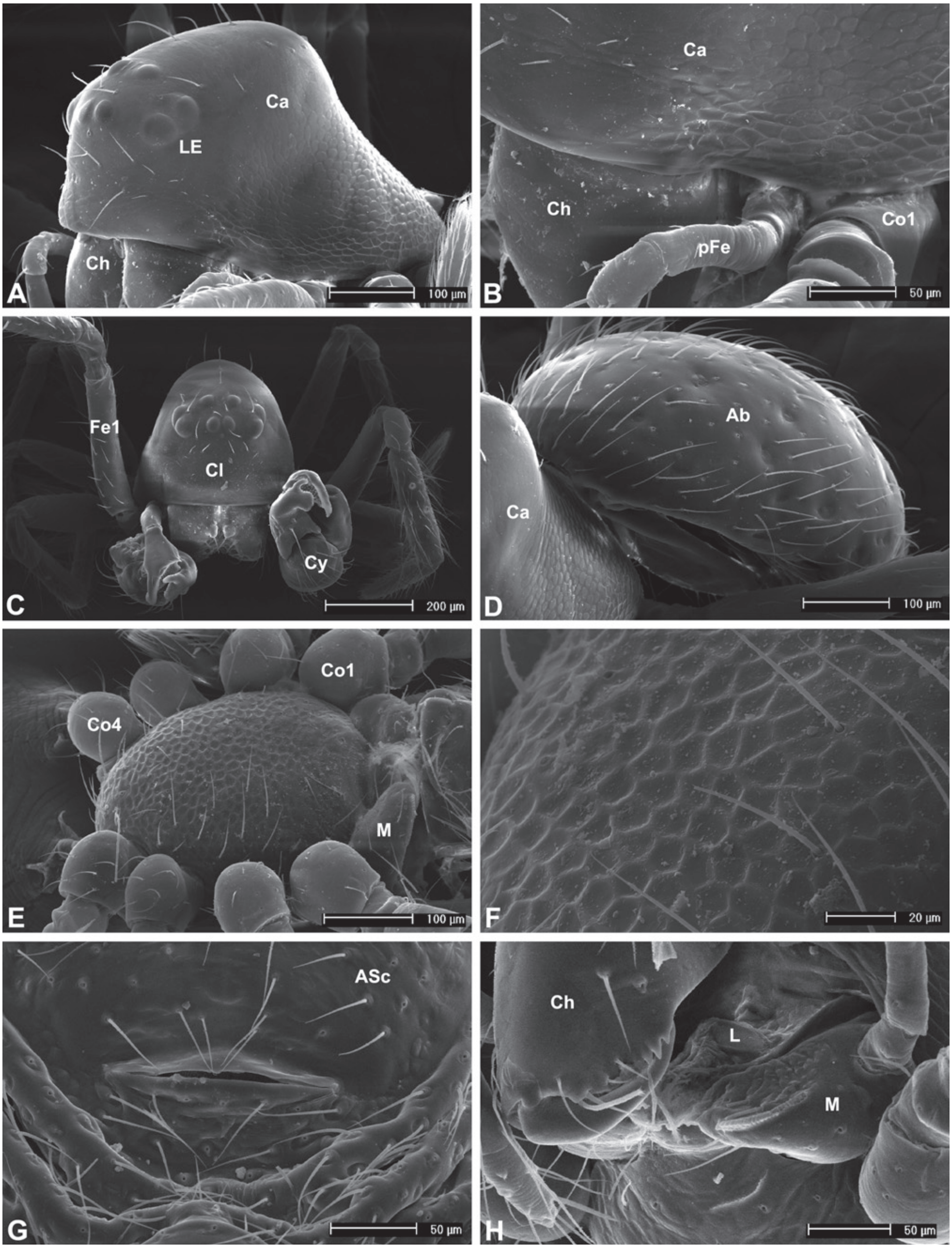


Figure 56. Scanning electron micrographs of *Eterosonycha alpina* Butler from Mount Wellington, Tasmania (WAM T94105): **A** female carapace, lateral view **B** detail of (A), showing corner of carapace above left pedipalp **C** male cephalothorax, frontal view **D** male abdomen, antero-dorsal view **E** female sternum, ventro-lateral view **F** detail of (E), showing reticulate cuticle **G** male epigastric furrow, showing the absence of epiandrous gland spigots **H** female chelicera and labrum.

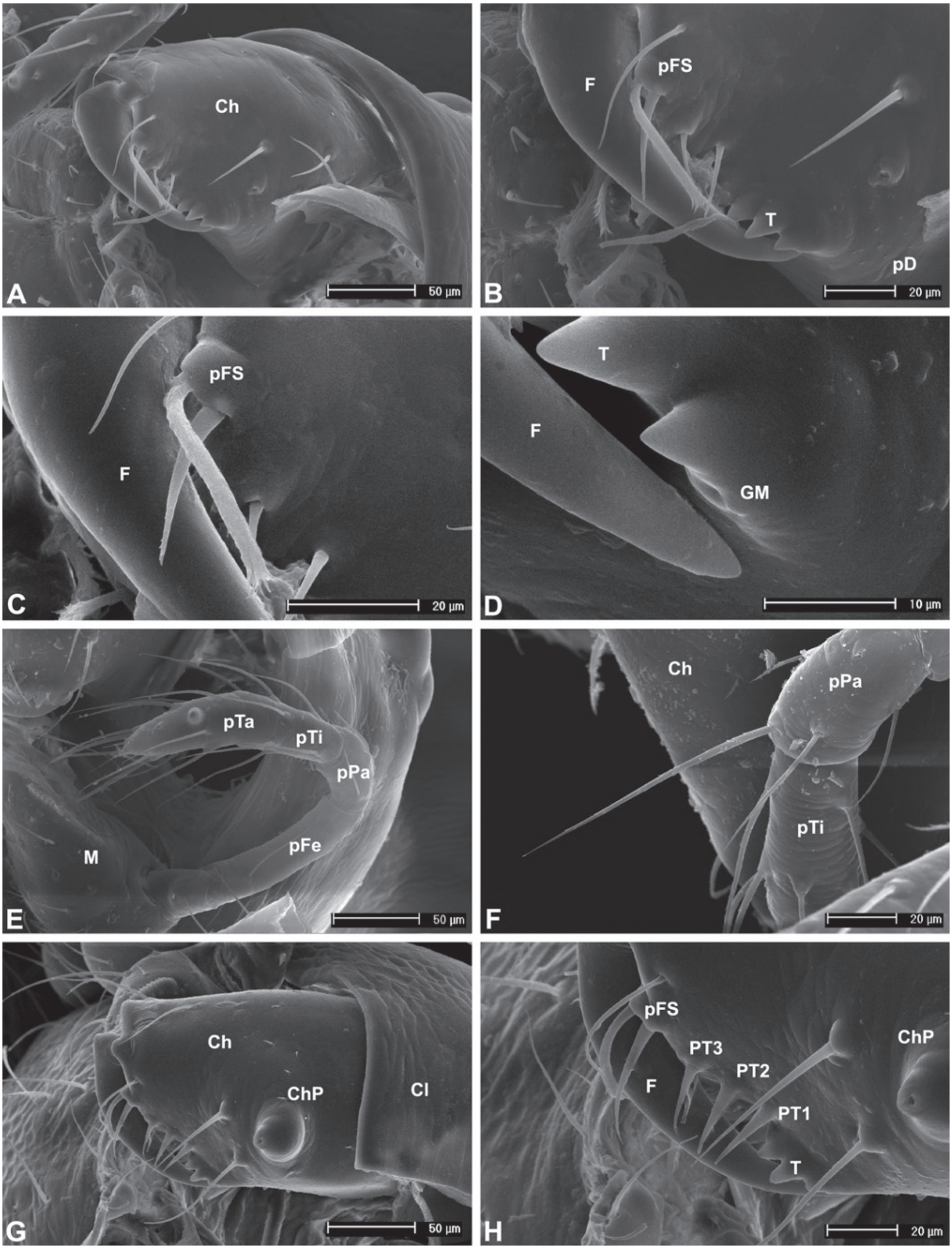


Figure 57. Scanning electron micrographs of *Eterosonycha alpina* Butler from Mount Wellington, Tasmania (WAM T94105): **A** female right chelicera (left removed), frontal view **B** female cheliceral promargin **C** detail of (B), showing prolateral fused setal sockets **D** detail of (B), showing cheliceral gland mound **E** female pedipalp, ventro-lateral view **F** female pedipalpal patella, showing distal bristle-like seta **G** male right chelicera (left removed), frontal view **H** male cheliceral promargin.

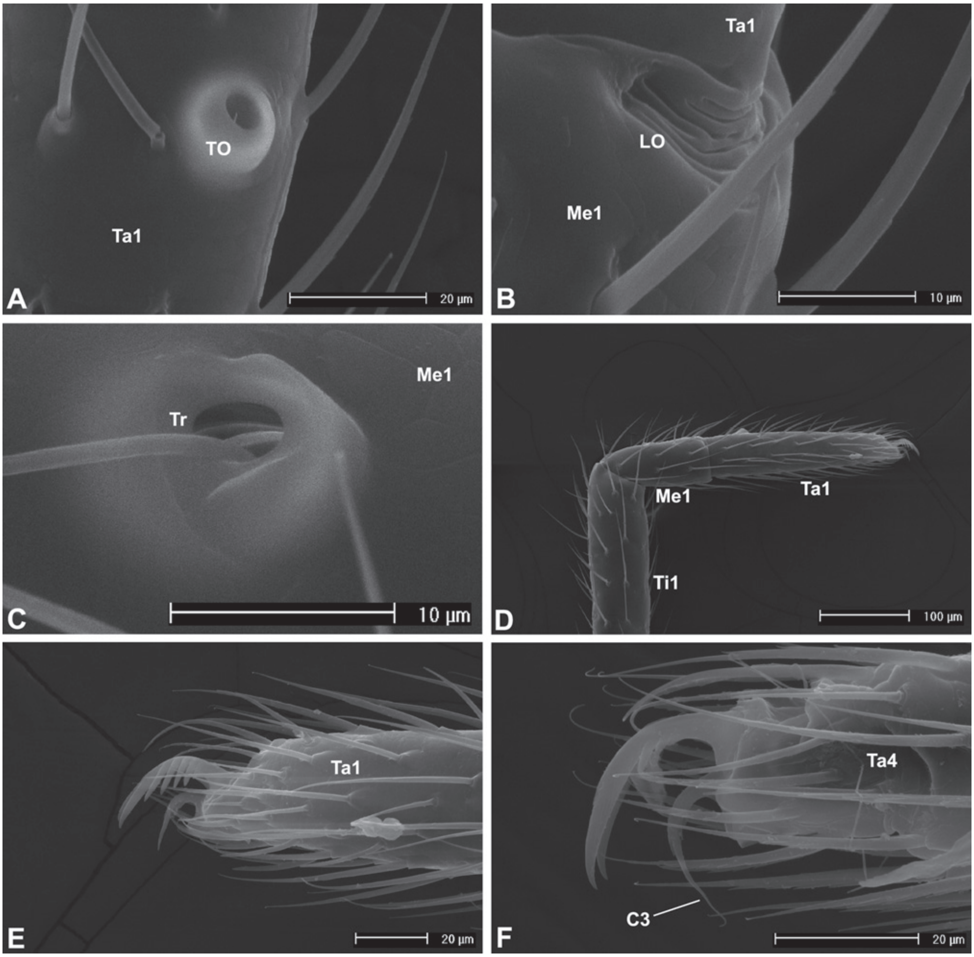


Figure 58. Scanning electron micrographs of female *Eterosonycha alpina* Butler from Mount Wellington, Tasmania (WAM T94105): **A** leg I tarsal organ **B** leg I lyriform organ **C** leg I metatarsal trichobothrium **D** leg I distal segments **E** leg I claws **F** leg IV claws, showing elongate inferior claw.

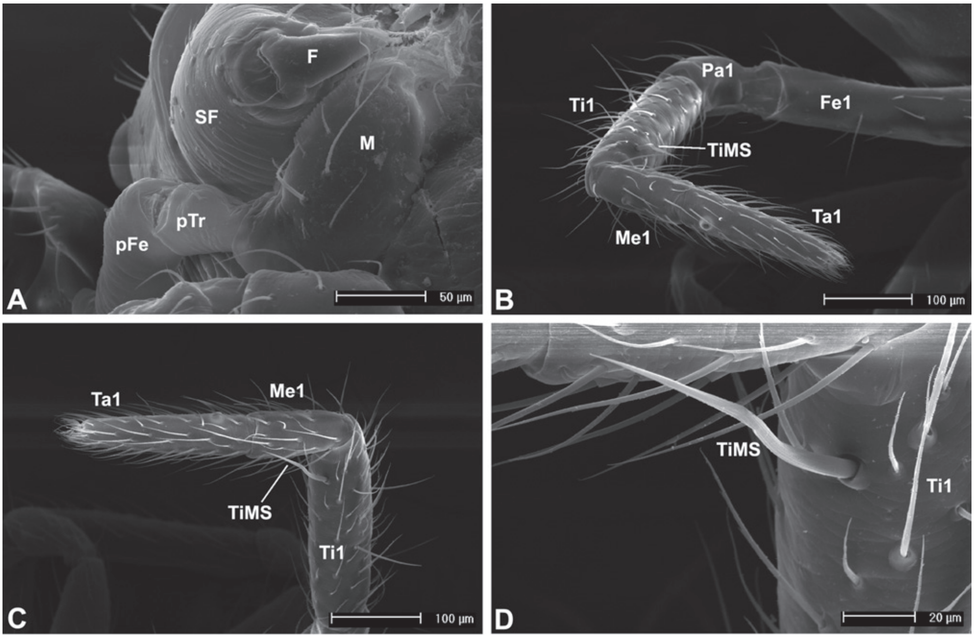


Figure 59. Scanning electron micrographs of male *Eterosonycha alpina* Butler from Mount Wellington, Tasmania (WAM T94105): **A** ectal cheliceral stridulatory file, ventral view **B** leg I distal segments, prodistal view **C** leg I distal segments, prolateral view **D** detail of (C), showing distal tibial macroseta.

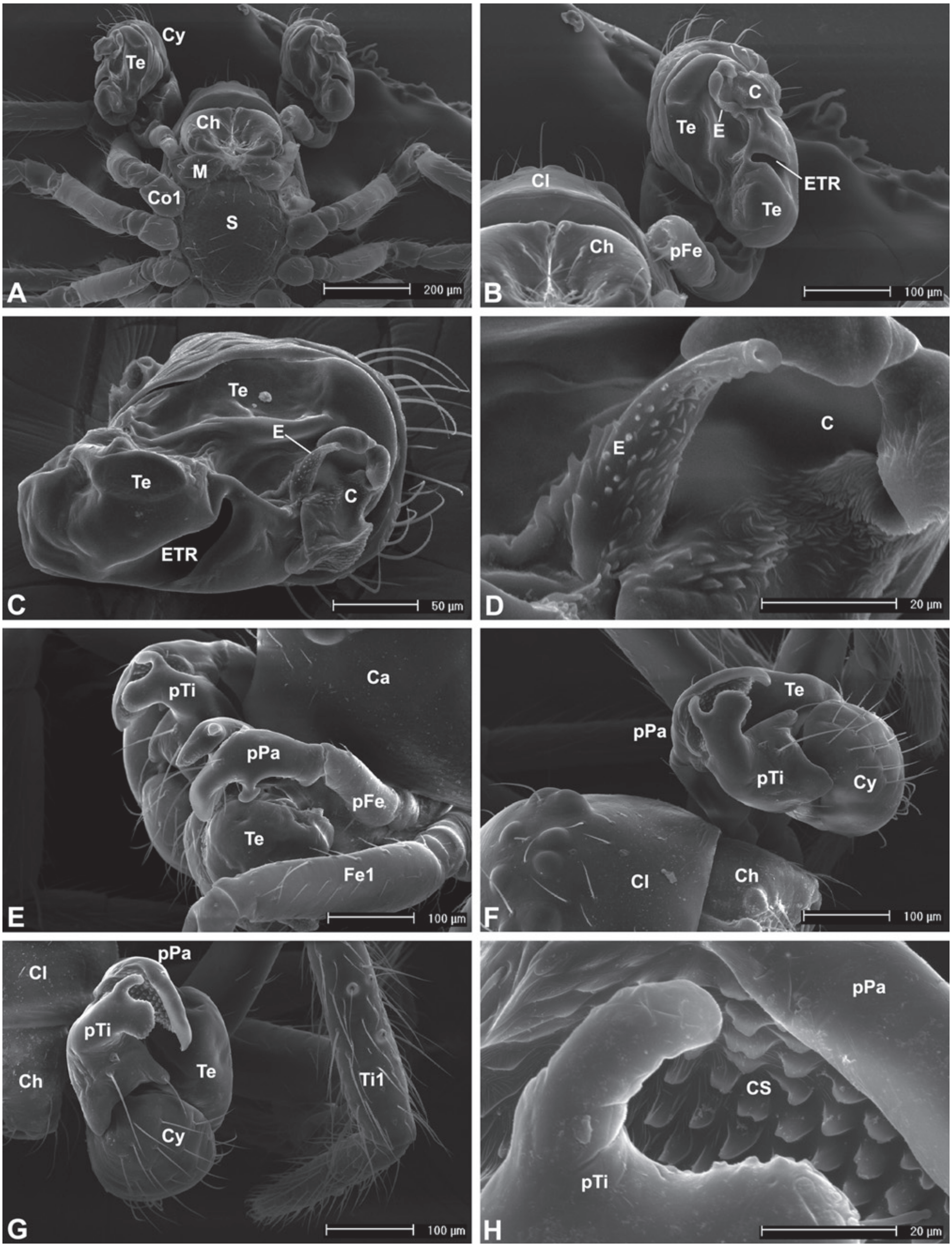


Figure 60. Scanning electron micrographs of pedipalp of male *Eterosonycha alpina* Butler from Mount Wellington, Tasmania (WAM T94105).

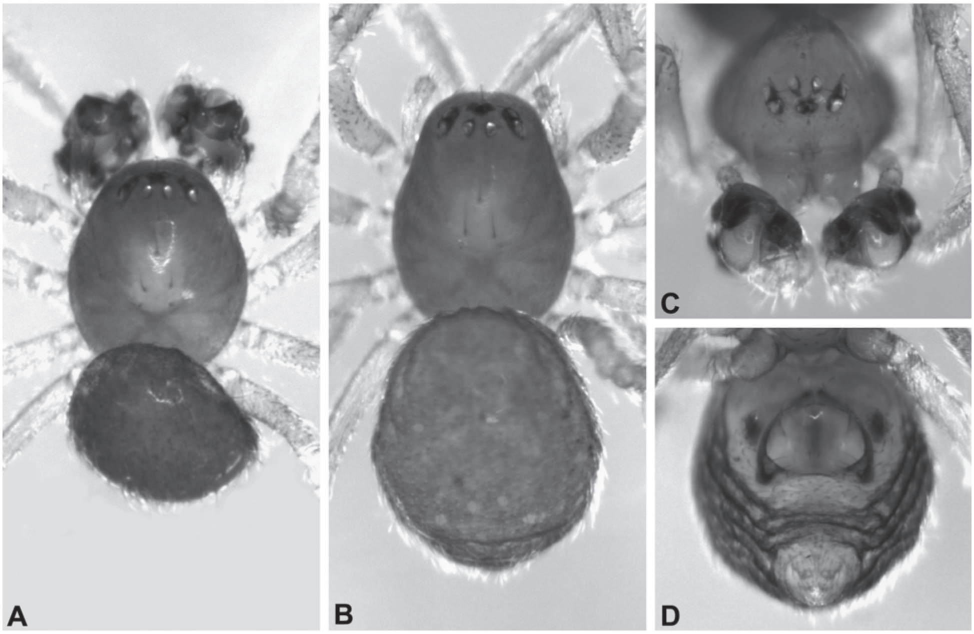


Figure 61. *Epigastrina fulva* (Hickman) from Mount Wellington, Tasmania (WAM T77728): **A** male habitus, dorsal view **B** female habitus, dorsal view **C** male cephalothorax, antero-dorsal view **D** female abdomen, ventral view.

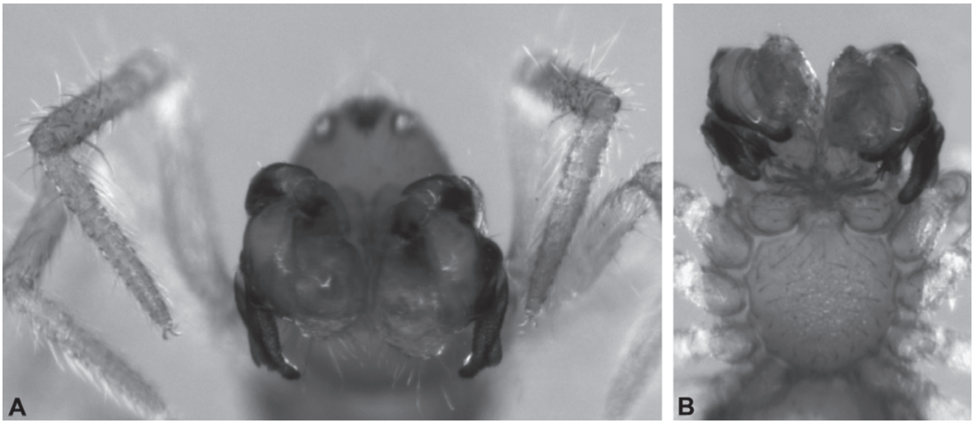


Figure 62. *Epigastrina fulva* (Hickman) from Mount Wellington, Tasmania (WAM T77728): **A** male cephalothorax and pedipalps, antero-ventral view **B** male pedipalps, ventral view. Note the very large conductor.

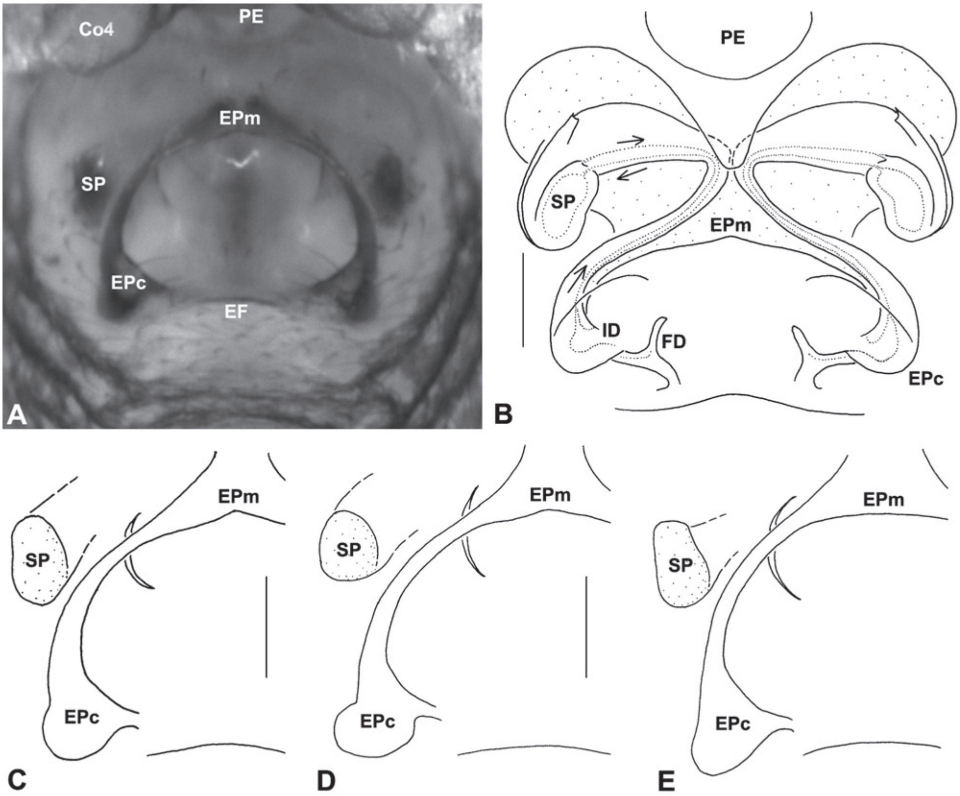


Figure 63. *Epigastrina* species, female epigynes and receptacula. **A–B** *E. fulva* (Hickman) from Mount Wellington, Tasmania: **A** external epigyne, ventral view, showing the very large epigastric plate **B** cleared receptacula, dorsal view. **C–E** external epigynes, ventral view, at scale-identical size for comparison: **C** *E. fulva* from Mount Wellington, Tasmania **D** holotype *E. loongana* sp. n. from the Loongana karst, Tasmania; **E**, allotype *E. typhlops* sp. n. from the Mole Creek karst, Tasmania. Arrows indicate the trajectory of insemination and proximal fertilisation ducts. Scale bars = 0.065 mm (65 μm).

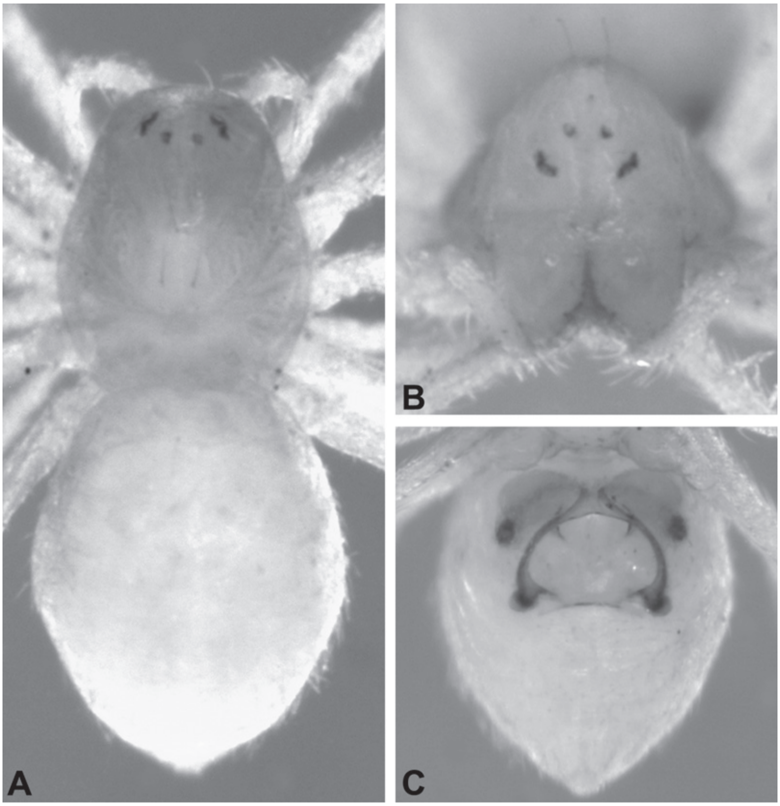


Figure 64. *Epigastrina loongana* sp. n. from the Loongana karst, Tasmania. **A–C** holotype female (AMS KS72935): **A** habitus, dorsal view **B** cephalothorax, frontal view **C** abdomen, ventral view. Note the pale body colouration and reduced eyes.

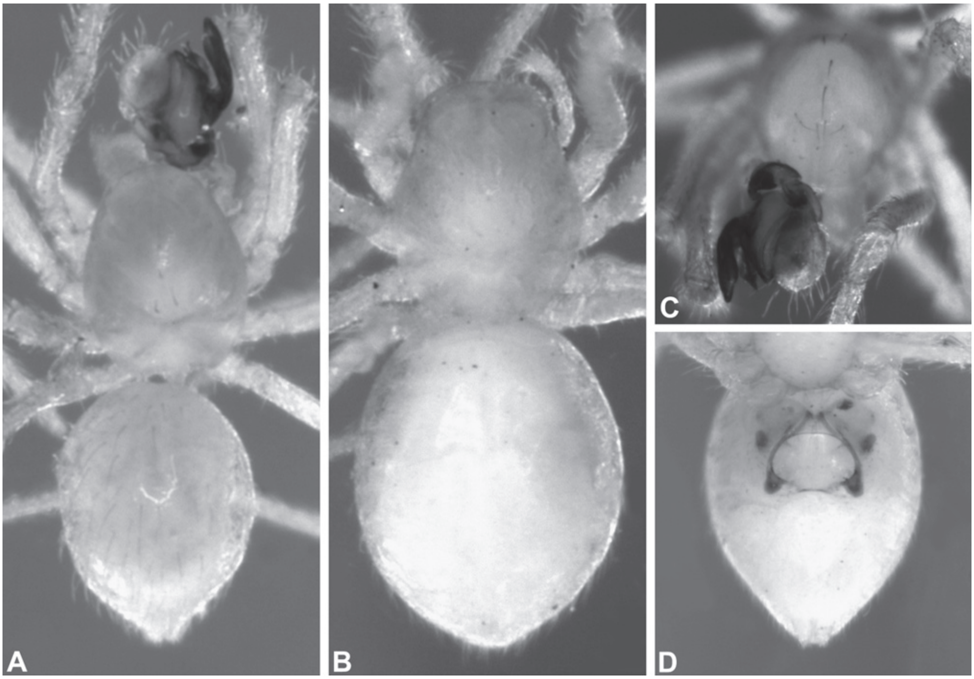


Figure 65. *Epigastrina typhlops* sp. n. from the Mole Creek karst, Tasmania. **A, C** holotype male (AMS KS29793): **A** habitus, dorsal view **C** cephalothorax and right pedipalp (left removed), antero-dorsal view. **B, D** allotype female (QVM 13:12765): **B** habitus, dorsal view **D** abdomen, ventral view. Note the pale body colouration and complete absence of eyes.

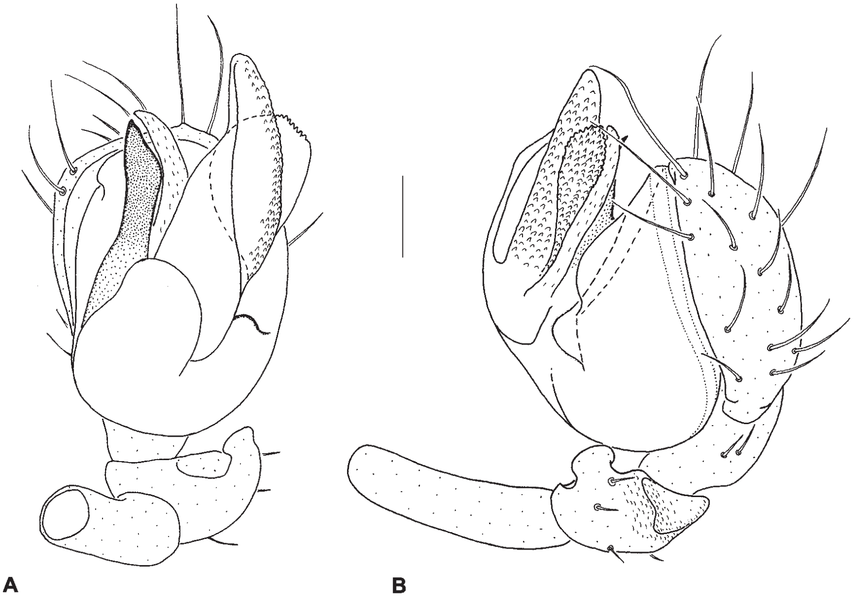


Figure 66. *Epigastrina typhlops* sp. n., holotype male from the Mole Creek karst, Tasmania (AMS KS29793): **A** left pedipalp, ventral view **B** left pedipalp, retrolateral view. Scale bar = 0.065 mm (65 µm).

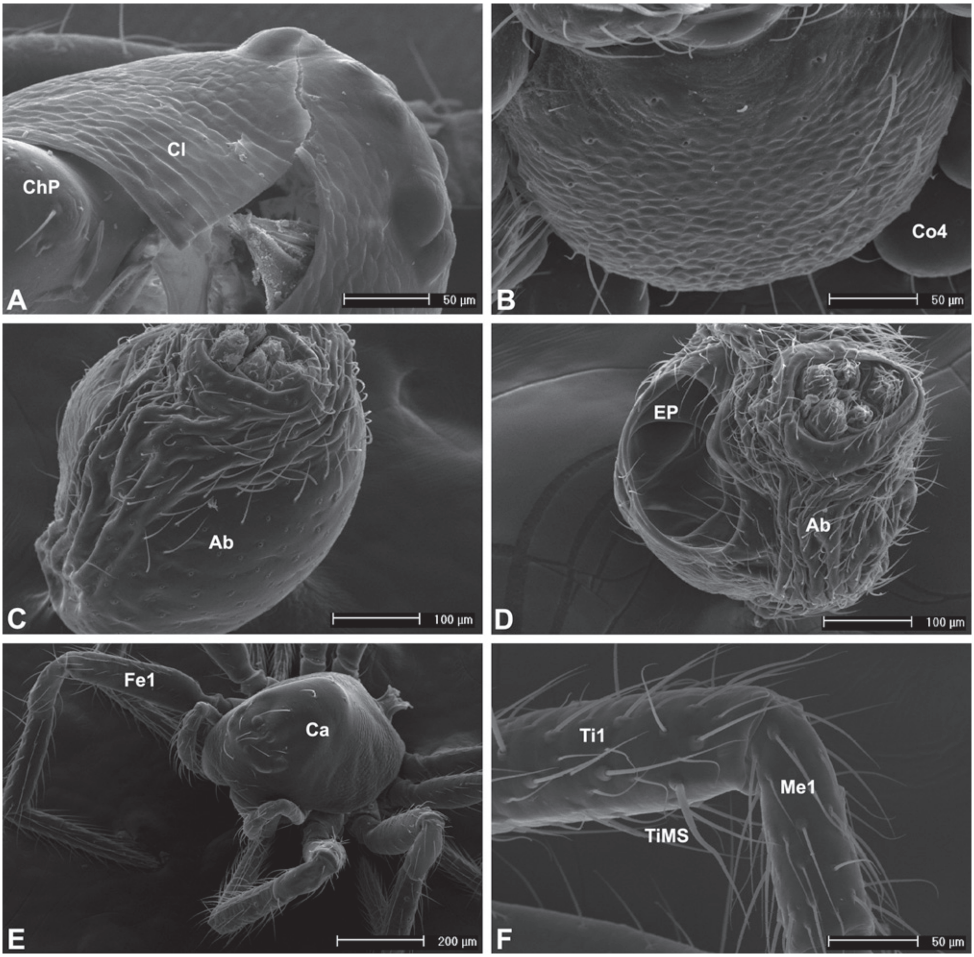


Figure 67. Scanning electron micrographs of *Epigastrina fulva* (Hickman) from Mount Wellington, Tasmania (WAM T77728): **A** males eyes and clypeus, frontal view **B** female sternum, antero-ventral view **C** male abdomen, postero-lateral view **D** female abdomen, postero-ventral view, showing the very large epigastric plate and epigynal atrium **E** female cephalothorax, dorso-lateral view **F** male leg I tibia and metatarsus, prolateral view, showing distal tibial macroseta.

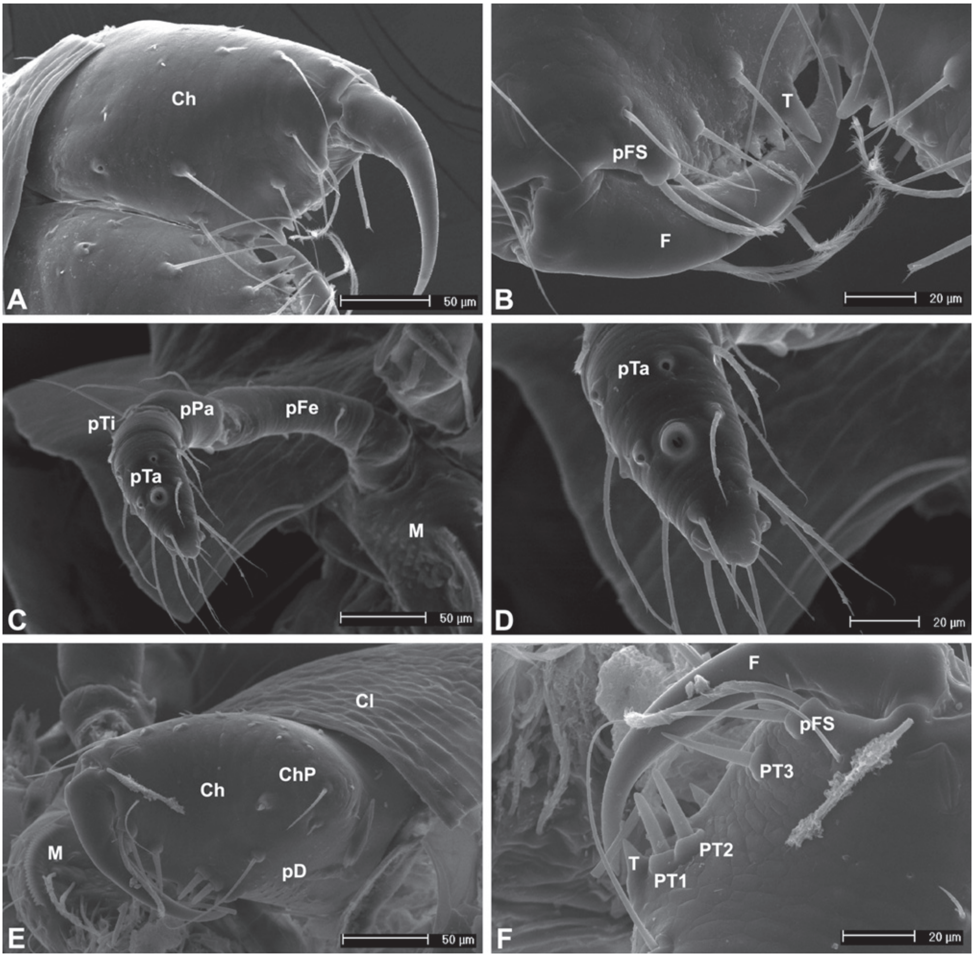


Figure 68. Scanning electron micrographs of *Epigastrina fulva* (Hickman) from Mount Wellington, Tasmania (WAM T77728): **A** female chelicerae, frontal view **B** female cheliceral promargin **C** female pedipalp, antero-lateral view **D** tip of female pedipalp **E** male right chelicera (left removed), frontal view **F** male cheliceral promargin.

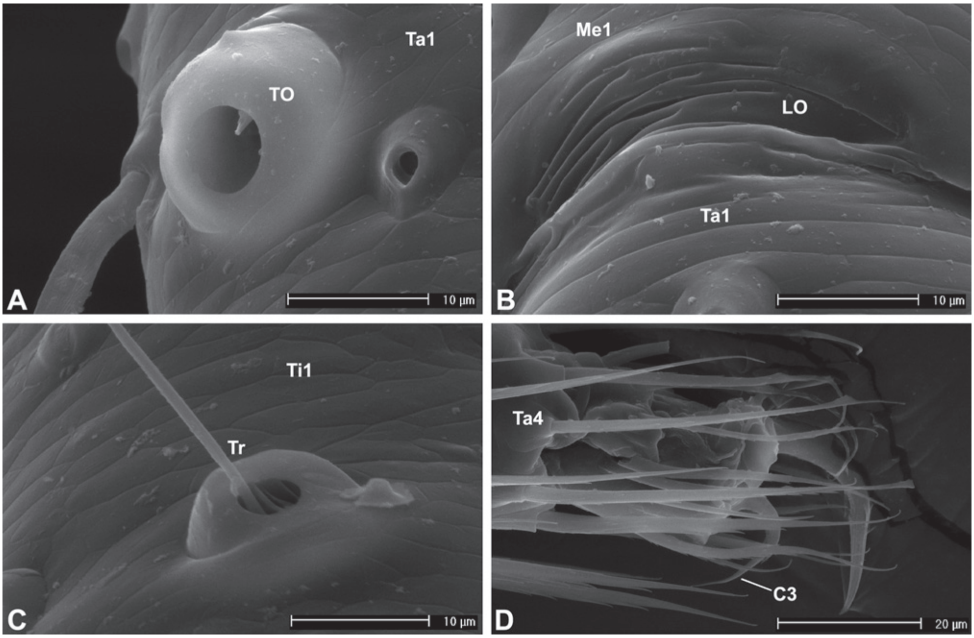


Figure 69. Scanning electron micrographs of female *Epigastrina fulva* (Hickman) from Mount Wellington, Tasmania (WAM T77728): **A** leg I tarsal organ **B** leg I lyriform organ **C** leg I tibial trichobothrium **D** leg IV claws, showing elongate inferior claw.

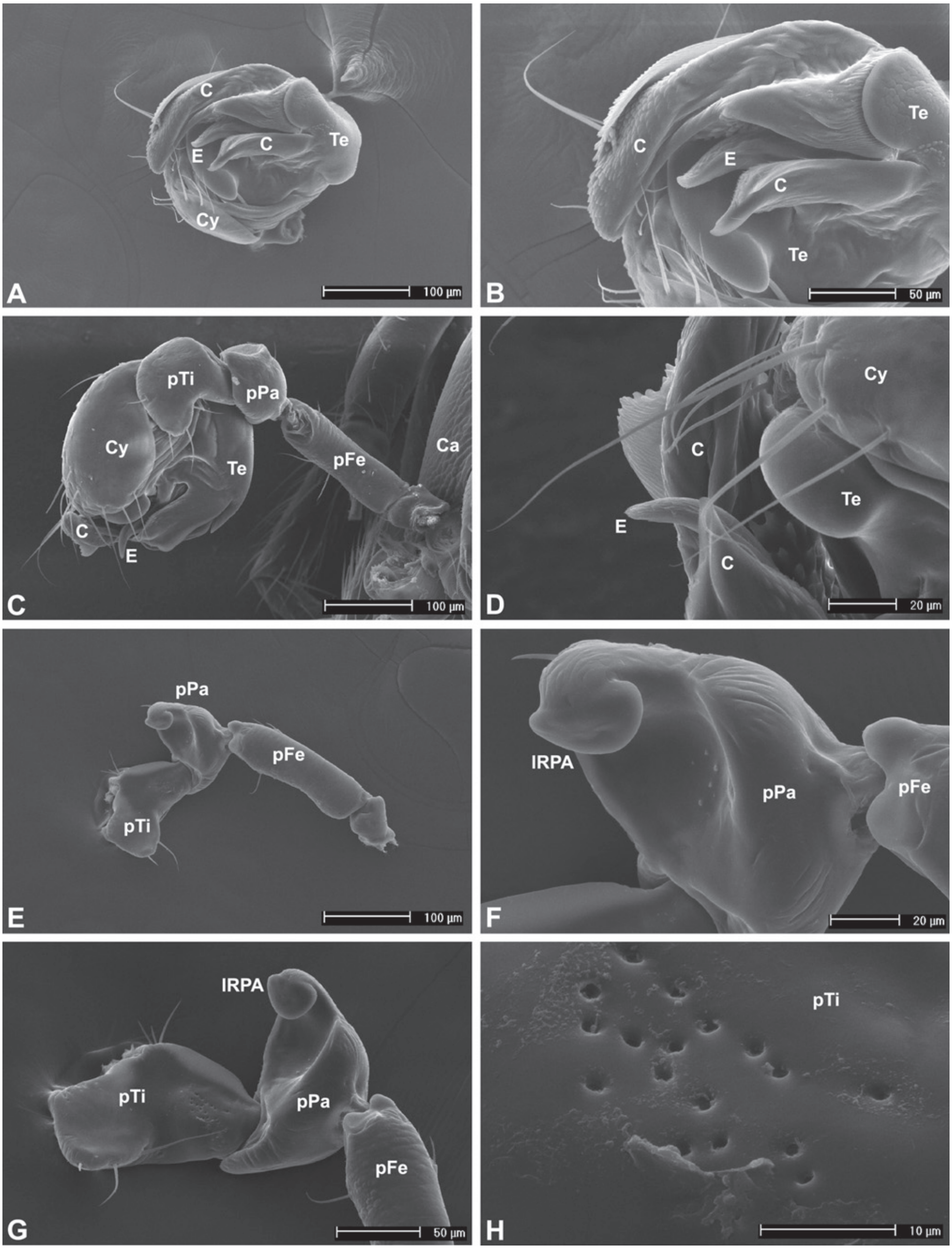


Figure 70. Scanning electron micrographs of pedipalp of male *Epigastrina fulva* (Hickman) from Mount Wellington, Tasmania (WAM T77728).

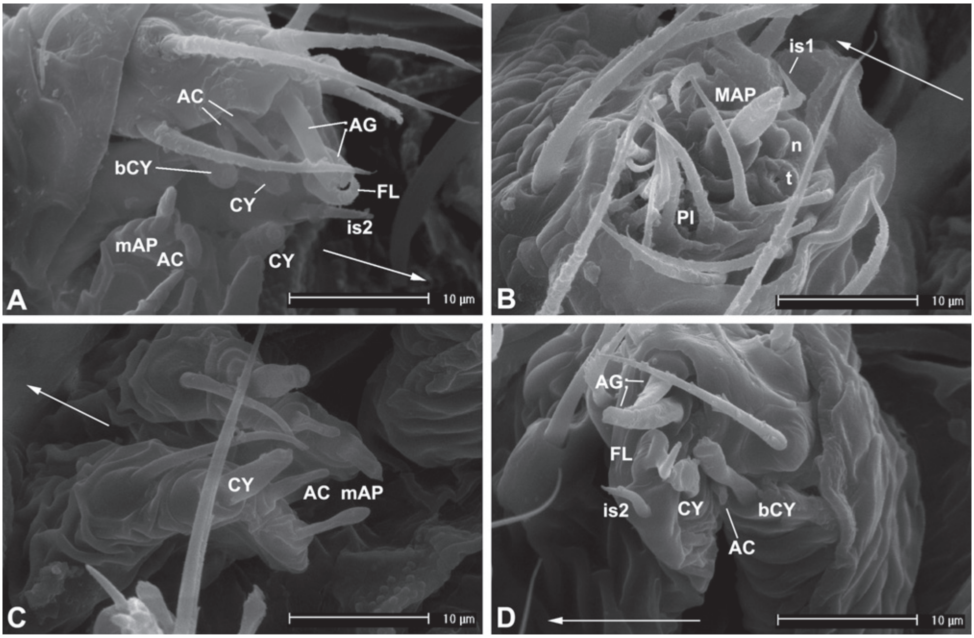


Figure 71. Scanning electron micrographs of spinnerets of female *Eterosonycha alpina* Butler from Mount Wellington, Tasmania (WAM T94105) (top-left) and female *Epigastrina fulva* (Hickman) from Mount Wellington, Tasmania (WAM T77728) (top-right, bottom): **A** posterior lateral spinnerets and posterior median spinnerets **B** anterior lateral spinnerets **C** posterior median spinnerets **D** posterior lateral spinnerets. Arrows denote the anterior, mesal direction.

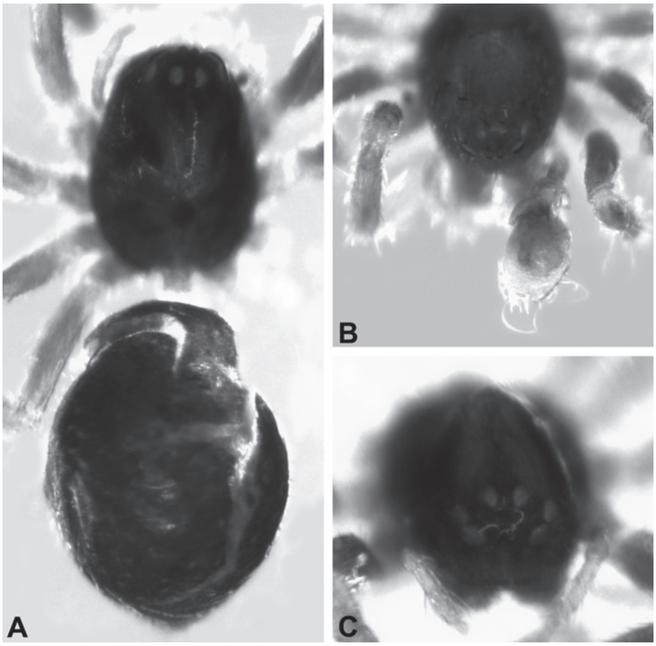


Figure 72. *Guiniella tropica* (Forster) from Daulo Pass, Papua New Guinea (QMB S111): **A** allotype female habitus, dorsal view **B** holotype male cephalothorax, dorsal view **C** allotype female cephalothorax, antero-dorsal view. Note the very poor condition of the type specimens.

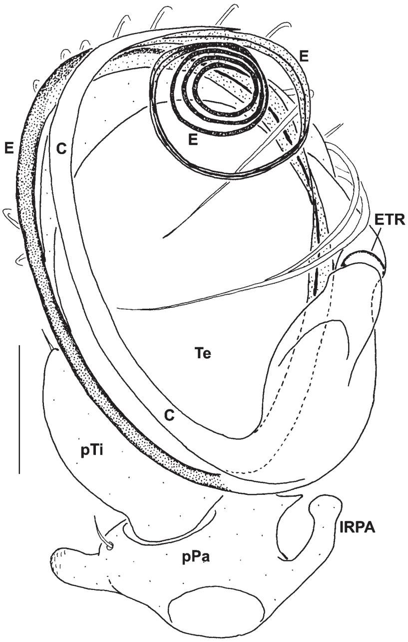


Figure 73. Right pedipalp of holotype male *Guiniella tropica* (Forster) from Daulo Pass, Papua New Guinea (QMB S111). Note that the illustration has been mirror-imaged for comparison to other left pedipalps. Scale bar = 0.065 mm (65 µm).

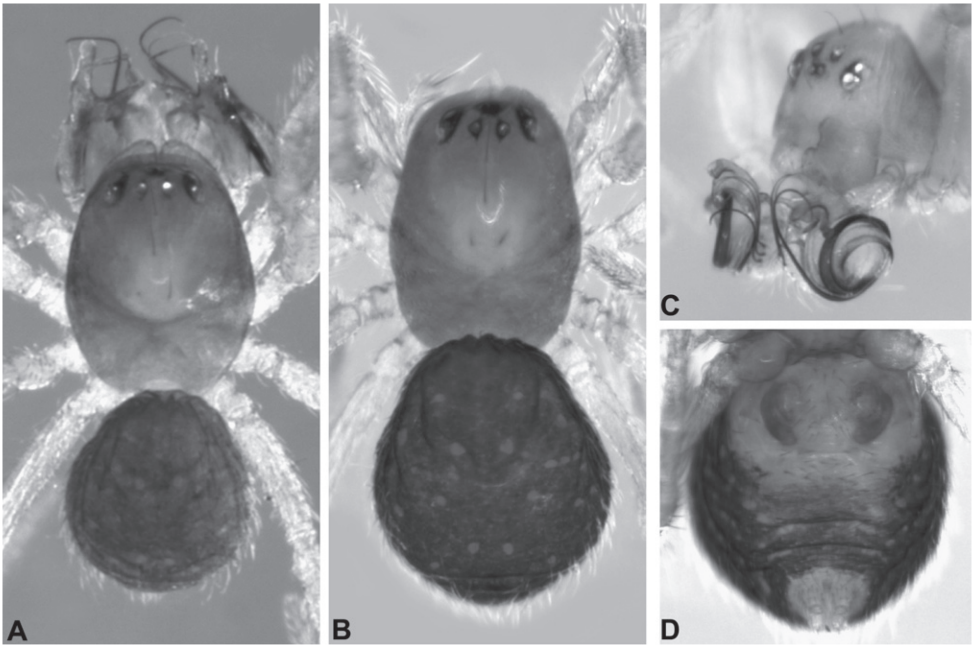


Figure 74. *Raveniella luteola* (Hickman) from Mount Wellington, Tasmania (WAM T77730): **A** male habitus, dorsal view **B** female habitus, dorsal view **C** male cephalothorax, antero-lateral view **D** female abdomen, ventral view.

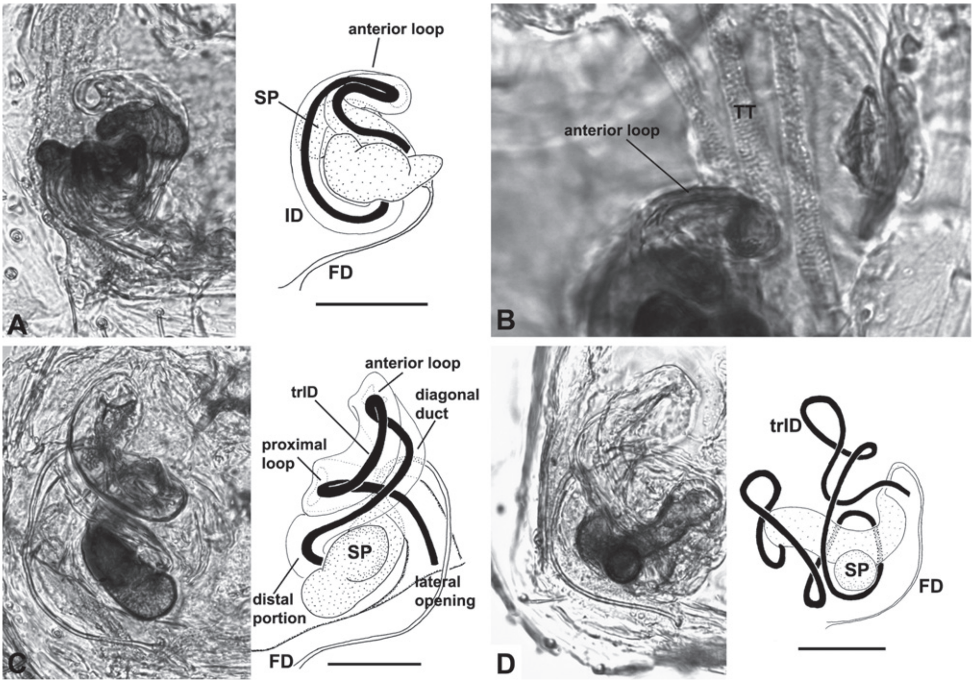


Figure 75. *Raveniella* species, female cleared receptacula, dorsal view: **A** *R. hickmani* (Forster) from near Marysville, Victoria (WAM T94096) **B** detail of tracheae and right receptaculum of *R. hickmani* from near Marysville, Victoria (WAM T94096) **C** *R. luteola* (Hickman) from Mount Wellington, Tasmania (WAM T77730) **D** paratype *R. peckorum* sp. n. from Modong Nature Reserve, Western Australia (WAM T94408). Scale bars = 0.065 mm (65 µm).

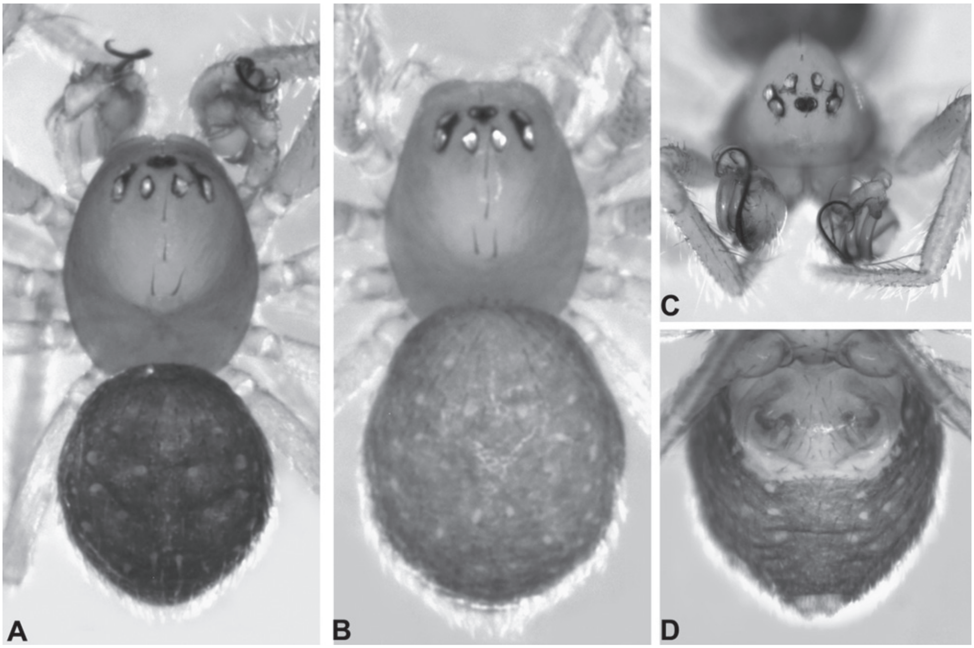


Figure 76. *Raveniella peckorum* sp. n. from Modong Nature Reserve, Western Australia. **A, C** holotype male (WAM T94549): **A** habitus, dorsal view **C** cephalothorax, anterior view. **B, D** allotype female (WAM T94550): **B** habitus, dorsal view **D** abdomen, ventral view.

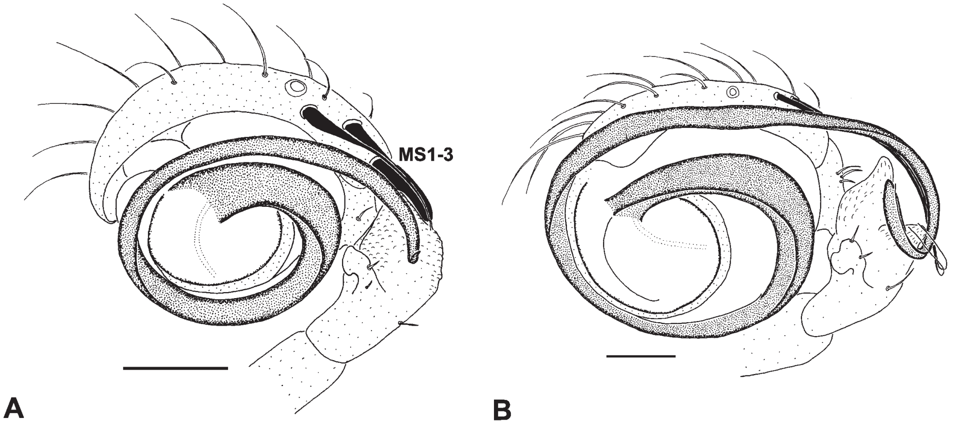


Figure 77. *Raveniella* species, male left pedipalps, retro-ventral view: **A** *R. hickmani* (Forster) from near Marysville, Victoria (WAM T94096) **B** paratype *R. peckorum* sp. n. from Modong Nature Reserve, Western Australia (WAM T94408). Scale bars = 0.065 mm (65 µm).

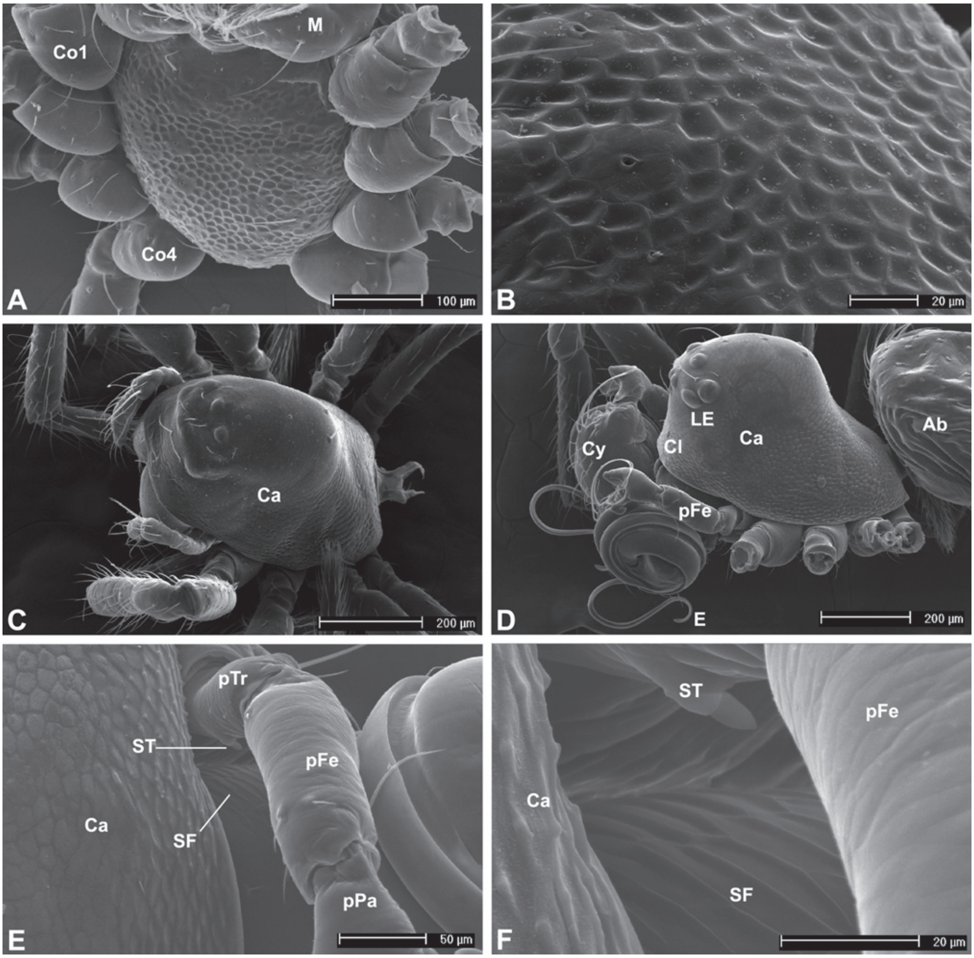


Figure 78. Scanning electron micrographs of female *Raveniella luteola* (Hickman) from Mount Wellington, Tasmania (WAM T94103) and paratype male *Raveniella peckorum* sp. n. from Modong Nature Reserve, Western Australia (WAM T94408) (D–F): **A** *R. luteola* sternum, ventral view **B** detail of (A), showing reticulate sternal cuticle **C** *R. luteola* cephalothorax, dorso-lateral view **D** *R. peckorum* cephalothorax, lateral view **E** *R. peckorum* corner of carapace and ectal margin of left cheliceral paturon, antero-dorsal view **F** detail of (E), showing cheliceral-pedipalpal stridulatory system.

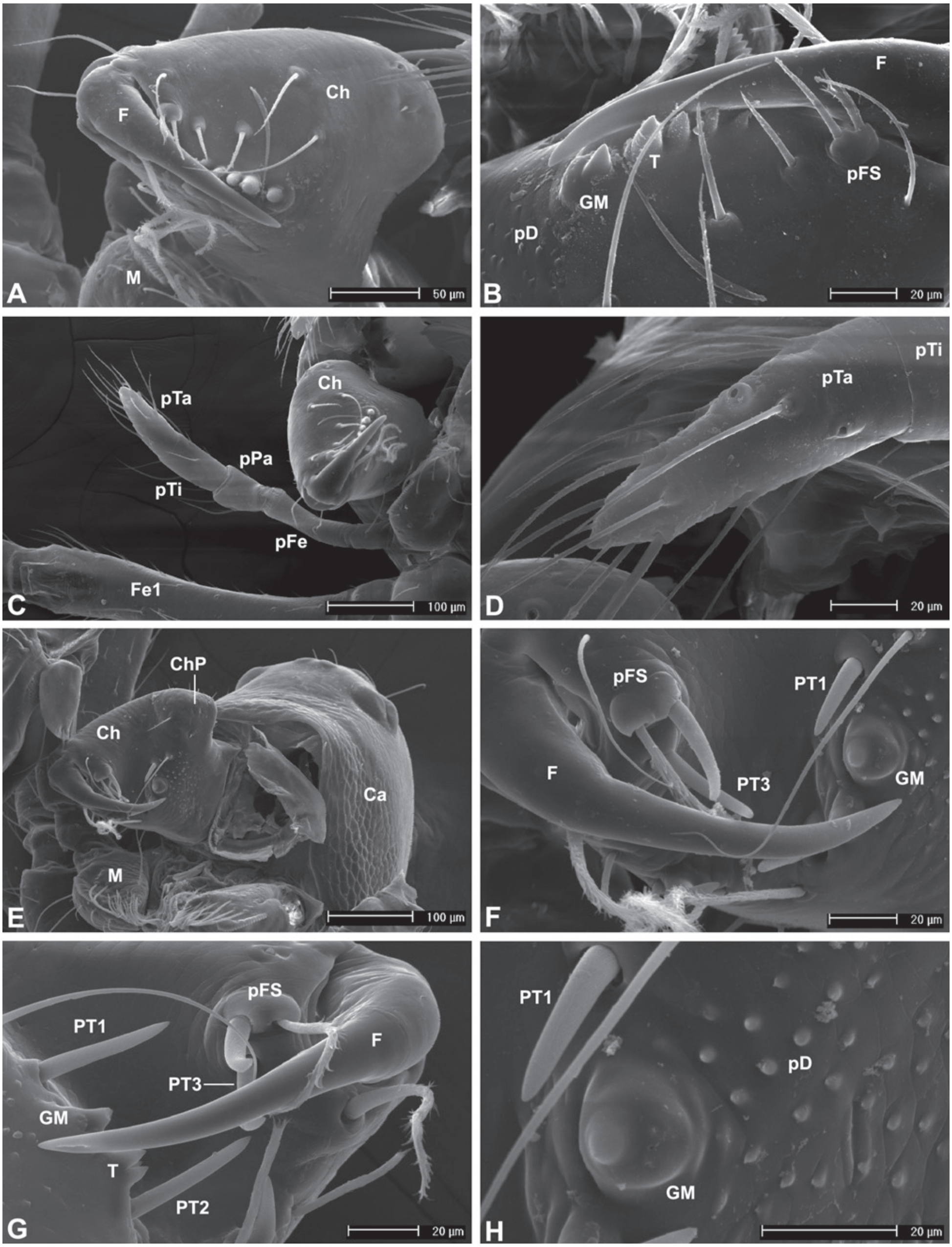


Figure 79. Scanning electron micrographs of male (WAM T77730) and female (WAM T94103) *Raveniella luteola* (Hickman) from Mount Wellington, Tasmania: **A** female right chelicera (left removed), ventro-lateral view **B** female cheliceral promargin **C** female pedipalp, ventral view **D** tip of female pedipalp **E** male right chelicera (left removed), ventro-lateral view **F** male cheliceral promargin **G** male fang and cheliceral dentition, ventral view **H** detail of (F), showing cheliceral gland mound and prolateral denticles.

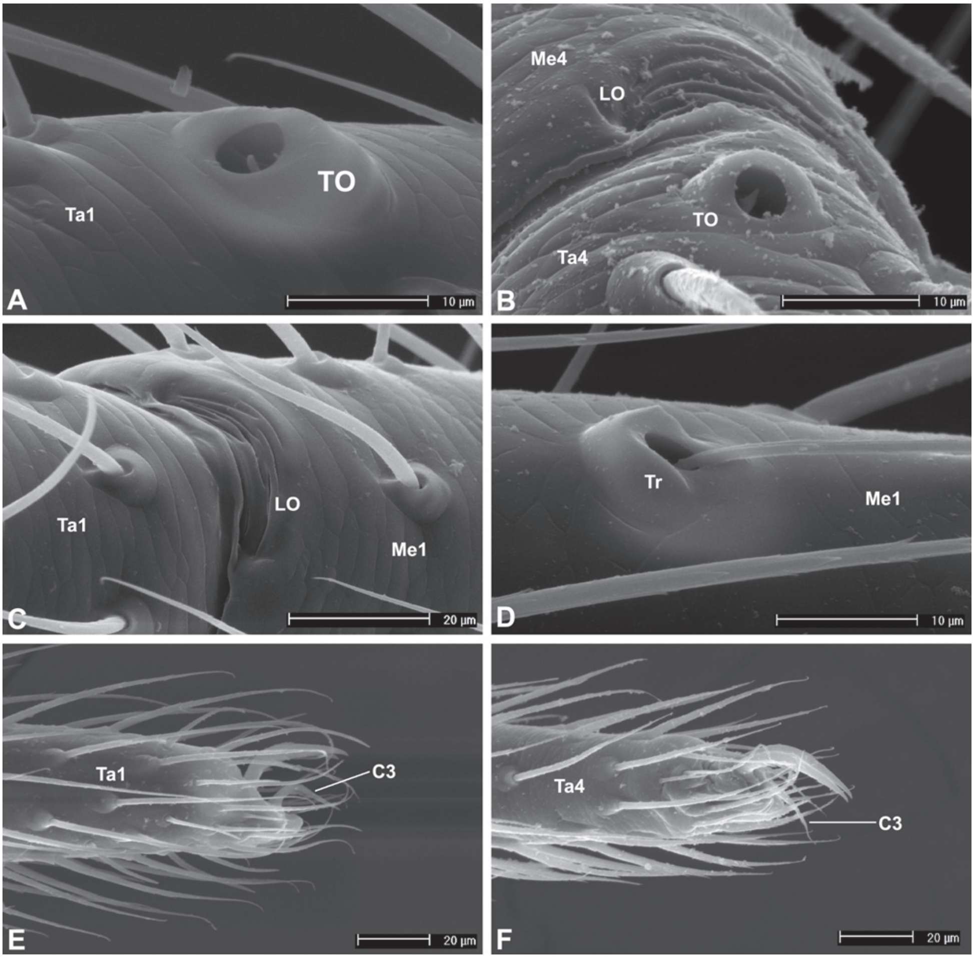


Figure 80. Scanning electron micrographs of female *Raveniella luteola* (Hickman) from Mount Wellington, Tasmania (WAM T94103): **A** leg I tarsal organ **B** leg IV tarsal organ **C** leg I lyriform organ **D** leg I metatarsal trichobothrium **E** leg I claws **F** leg IV claws, showing elongate inferior claw.

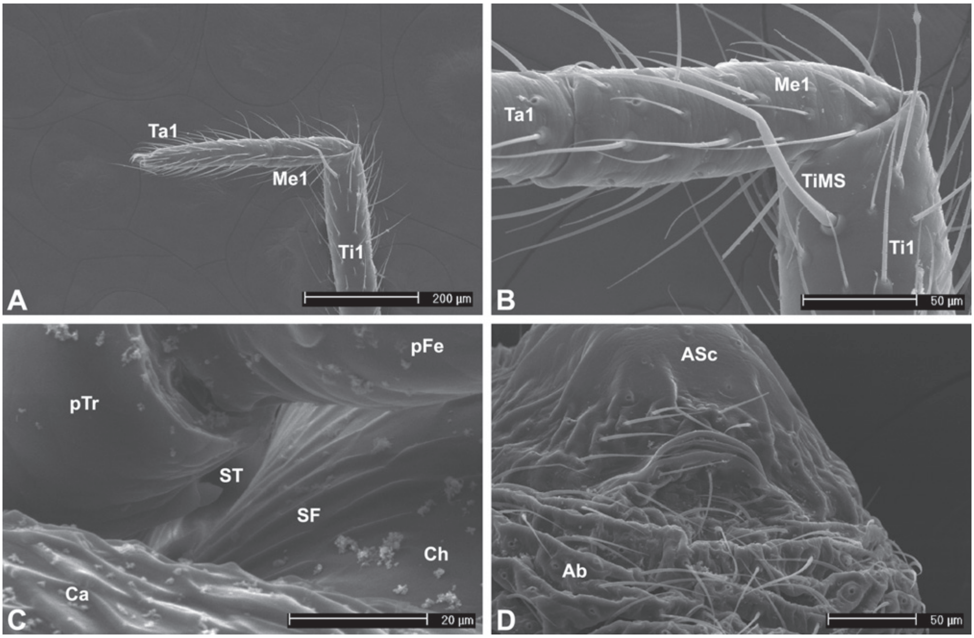


Figure 81. Scanning electron micrographs of male *Raveniella luteola* (Hickman) from Mount Wellington, Tasmania (WAM T77730): **A** leg I distal segments, prolateral view **B** detail of (A), showing distal tibial macroseta **C** corner of carapace and ectal margin of left cheliceral paturon, antero-dorsal view, showing detail of cheliceral-pedipalpal stridulatory system **D** epigastric region and anterior sclerite of abdomen, ventral view, showing absence of epiandrous gland spigots.

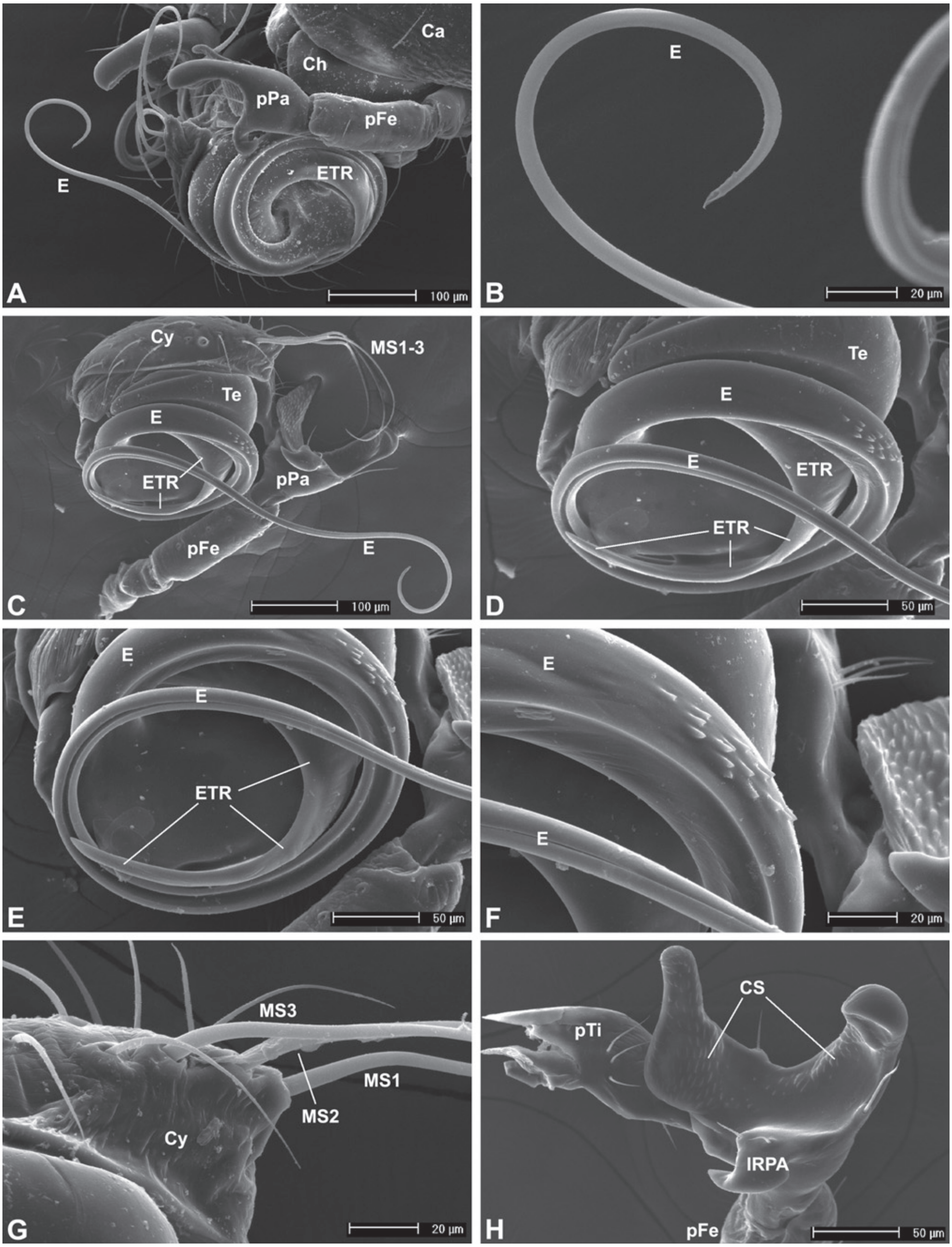


Figure 82. Scanning electron micrographs of pedipalp of male *Raveniella luteola* (Hickman) from Mount Wellington, Tasmania (WAM T77730).

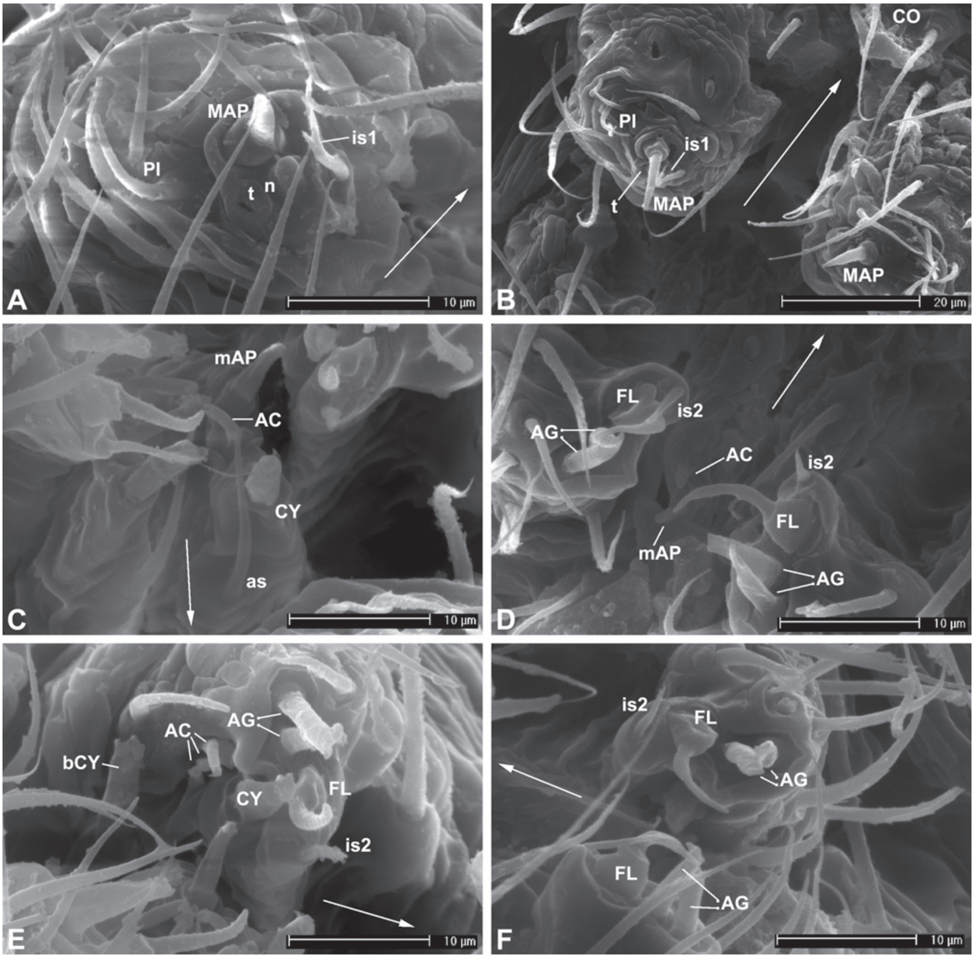


Figure 83. Scanning electron micrographs of spinnerets of female (WAM T94103) (left) and male (WAM T77730) (right) *Raveniella luteola* (Hickman) from Mount Wellington, Tasmania: **A–B** anterior lateral spinnerets **C–D** posterior median spinnerets **E–F** posterior lateral spinnerets. Arrows denote the anterior, mesal direction.

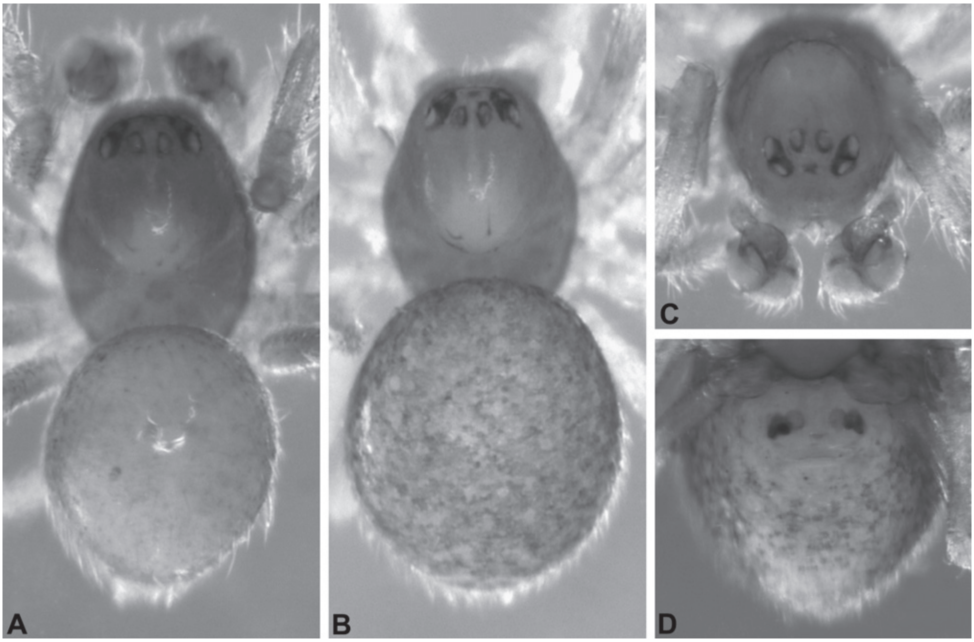


Figure 84. *Rayforstia vulgaris* (Forster) from Lake Te Au, New Zealand (MCZ): **A** male habitus, dorsal view **B** female habitus, dorsal view **C** male cephalothorax, antero-dorsal view **D** female abdomen, ventral view.

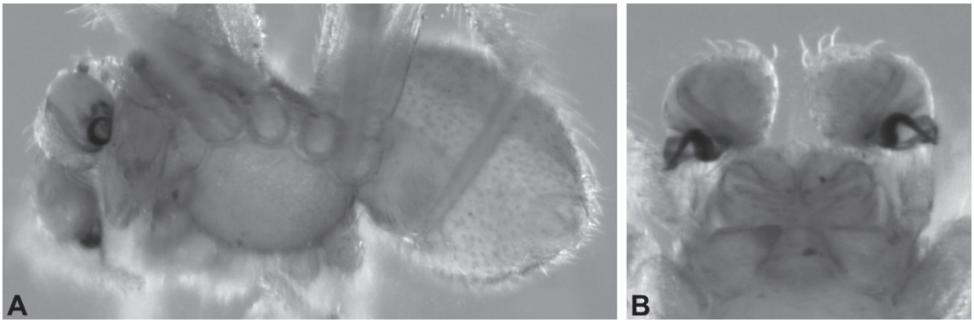


Figure 85. *Rayforstia vulgaris* (Forster) from Lake Te Au, New Zealand (MCZ): **A** male habitus, ventro-lateral view **B** male pedipalps, ventral view.

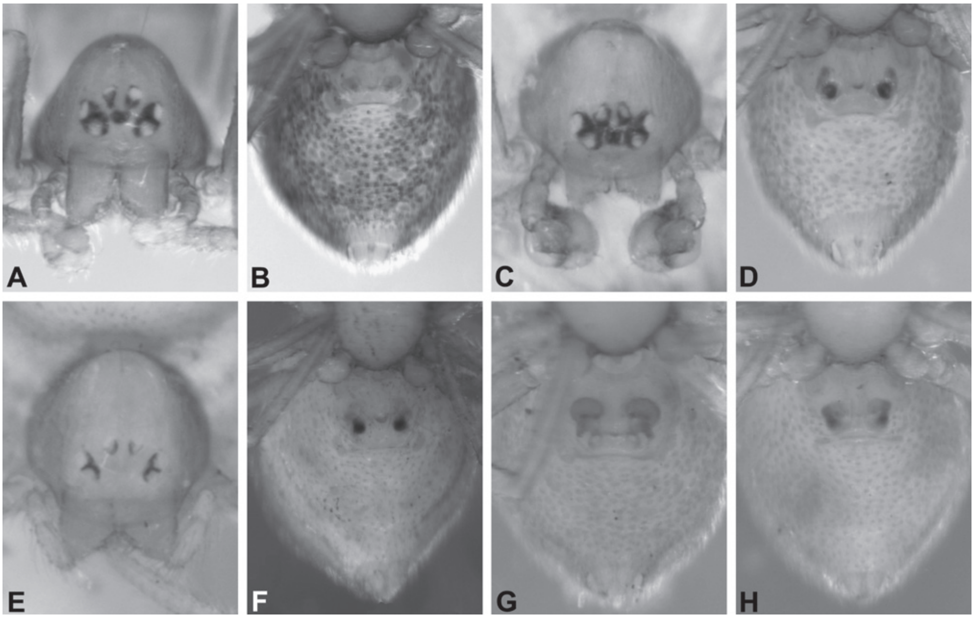


Figure 86. New Zealand *Rayforstia* species, eyes and external epigynes. **A–D** eight-eyed species of *Rayforstia*: **A** eyes of male *R. signata* (Forster) from the Puhipuhi Valley (AMNH) **B** ventral abdomen of female *R. signata* from the Puhipuhi Valley (AMNH) **C** eyes of male *R. antipoda* (Forster) from Lake Hawea (AMNH) **D** ventral abdomen of female *R. antipoda* from Lake Hawea (AMNH). **E–H** six-eyed species of *Rayforstia*: **E** eyes of female *R. propinqua* (Forster) from Broken River (MCZ) **F** ventral abdomen of female *R. propinqua* from Broken River (MCZ) **G** ventral abdomen of paratype female *R. salmoni* (Forster) from Waiouru (AMNH) **H** ventral abdomen of female *R. scuta* (Forster) from Norsewood (MCZ).

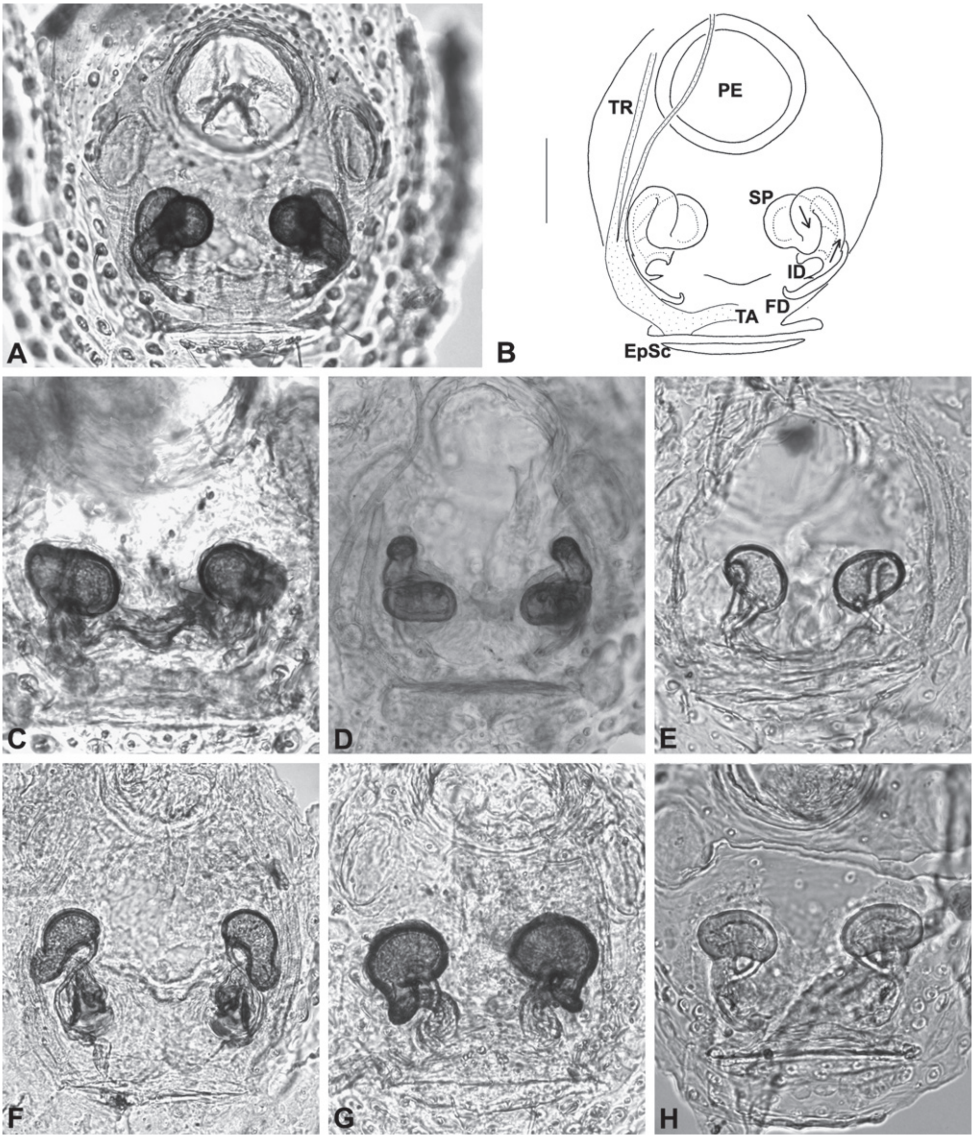


Figure 87. *Rayforstia* species, female cleared receptacula, dorsal view: **A–B** *R. vulgaris* (Forster) from Lewis Pass, New Zealand (WAM T94455) **C** *R. signata* (Forster) from the Puhipuhi Valley, New Zealand (AMNH) **D** *R. antipoda* (Forster) from Lake Hawea, New Zealand (AMNH) **E** allotype *R. lordhowensis* sp. n. from Lord Howe Island, New South Wales (AMS KS76260) **F** *R. propinqua* (Forster) from Broken River, New Zealand (MCZ) **G** *R. salmoni* (Forster) from Desert Road, New Zealand (AMNH) **H** *R. scuta* (Forster) from Norsewood, New Zealand (AMNH). Arrows indicate the trajectory of insemination ducts. Scale bar = 0.065 mm (65 µm).

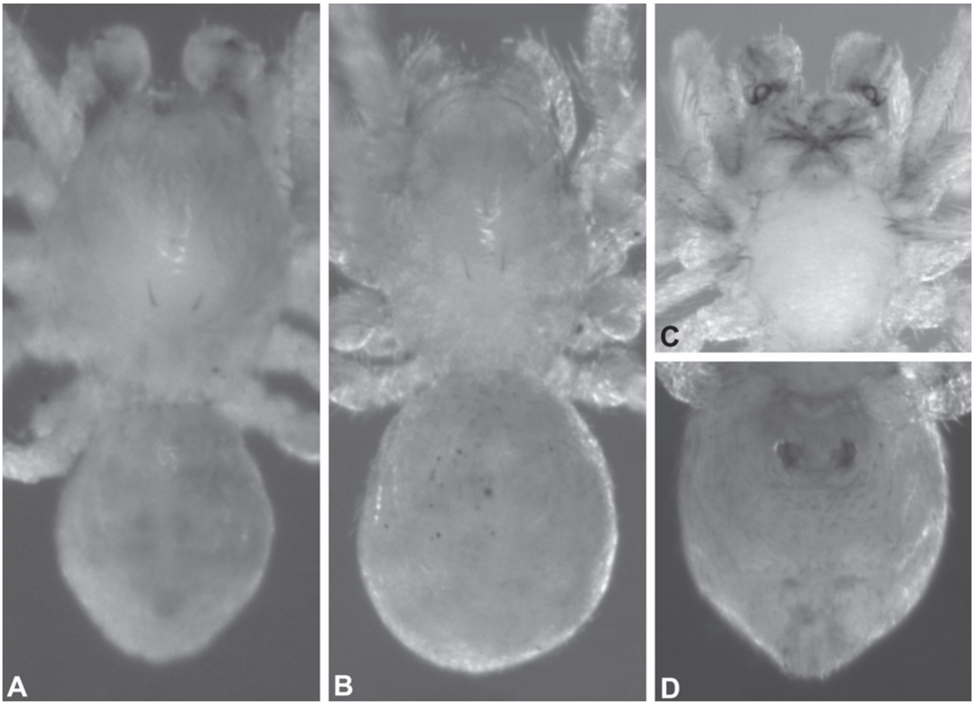


Figure 88. *Rayforstia lordhowensis* sp. n. from Lord Howe Island, New South Wales. **A, C** holotype male (AMS KS88916): **A** habitus, dorsal view **C** cephalothorax and pedipalps, ventral view. **B, D** allotype female (AMS KS76260): **B** habitus, dorsal view **D** abdomen, ventral view. Note the pale body colouration.

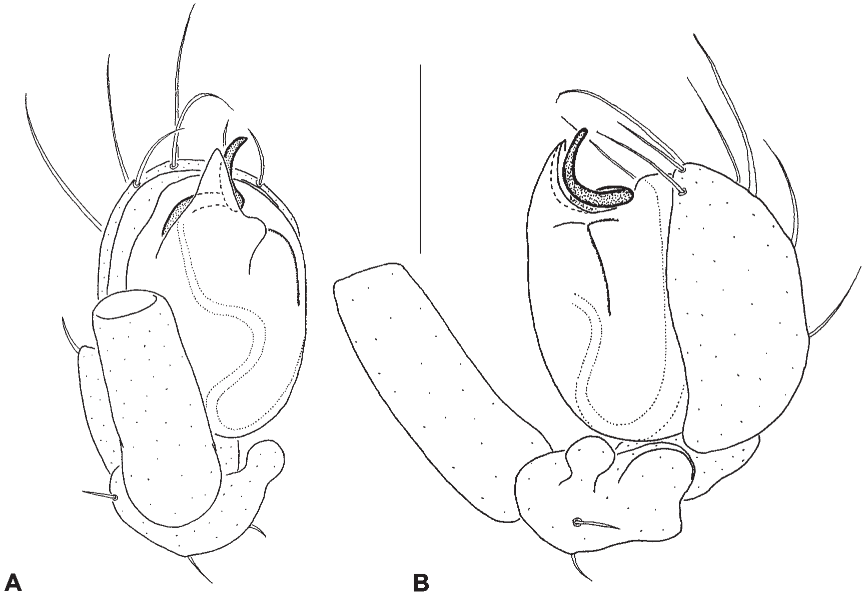


Figure 89. *Rayforstia lordhowensis* sp. n., holotype male from Lord Howe Island, New South Wales (AMS KS88916): **A** left pedipalp, ventral view **B** left pedipalp, retrolateral view. Scale bar = 0.065 mm (65 µm).

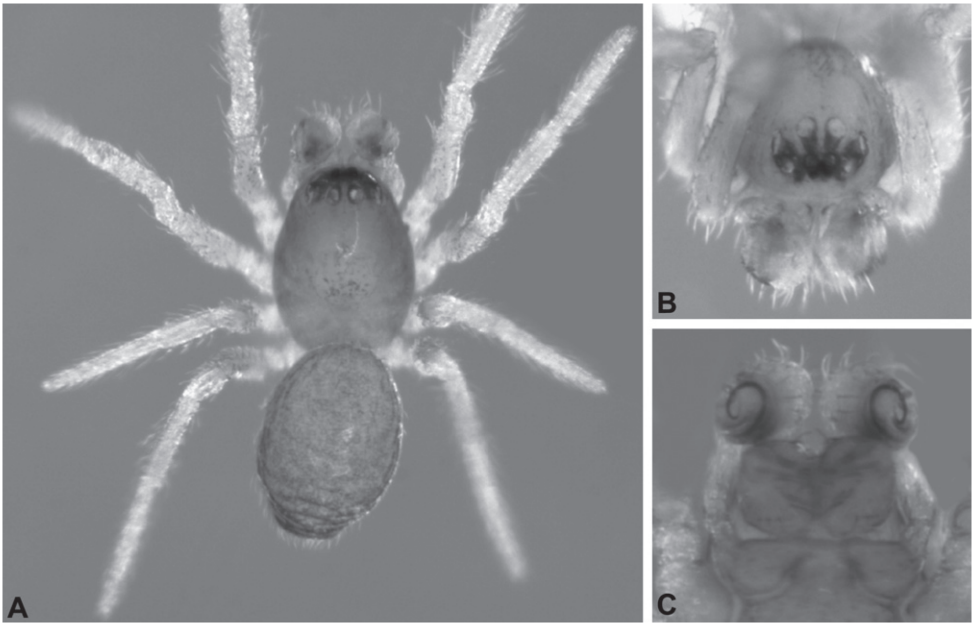


Figure 90. *Rayforstia raveni* sp. n. from Boondall Wetlands, Queensland. **A–C** holotype male (QMB S83999): **A**, habitus, dorsal view **B** cephalothorax, antero-dorsal view **C** pedipalps, ventral view.

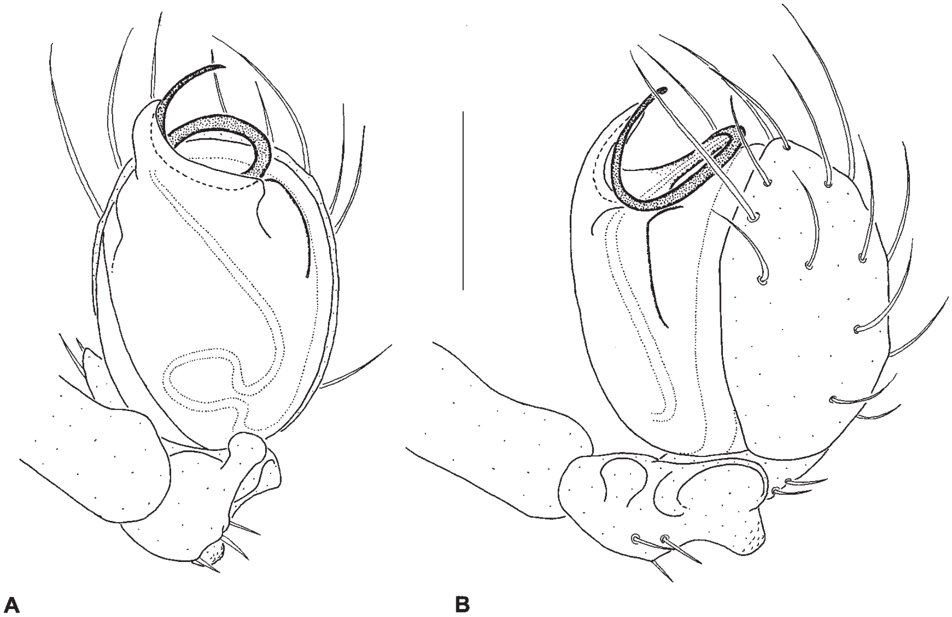


Figure 91. *Rayforstia raveni* sp. n., holotype male from Boondall Wetlands, Queensland (QMB S83999): **A** left pedipalp, ventral view **B** left pedipalp, retrolateral view. Scale bar = 0.065 mm (65 µm).

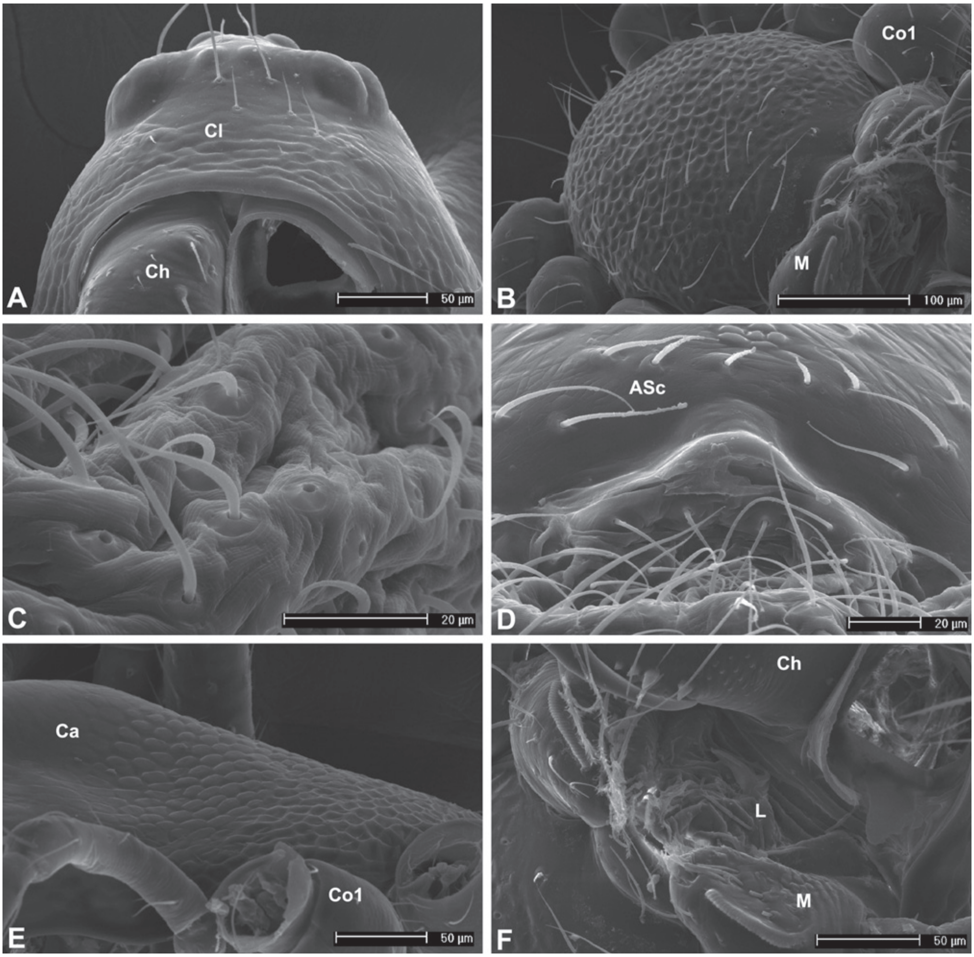


Figure 92. Scanning electron micrographs of *Rayforstia vulgaris* (Forster) from Lewis Pass, New Zealand (WAM T94455): **A** male eyes and clypeus, frontal view **B** female sternum, antero-ventral view **C** male abdominal cuticle **D** male epigastric furrow, showing the absence of epiandrous gland spigots **E** female carapace, lateral view **F** female chelicera and labrum.

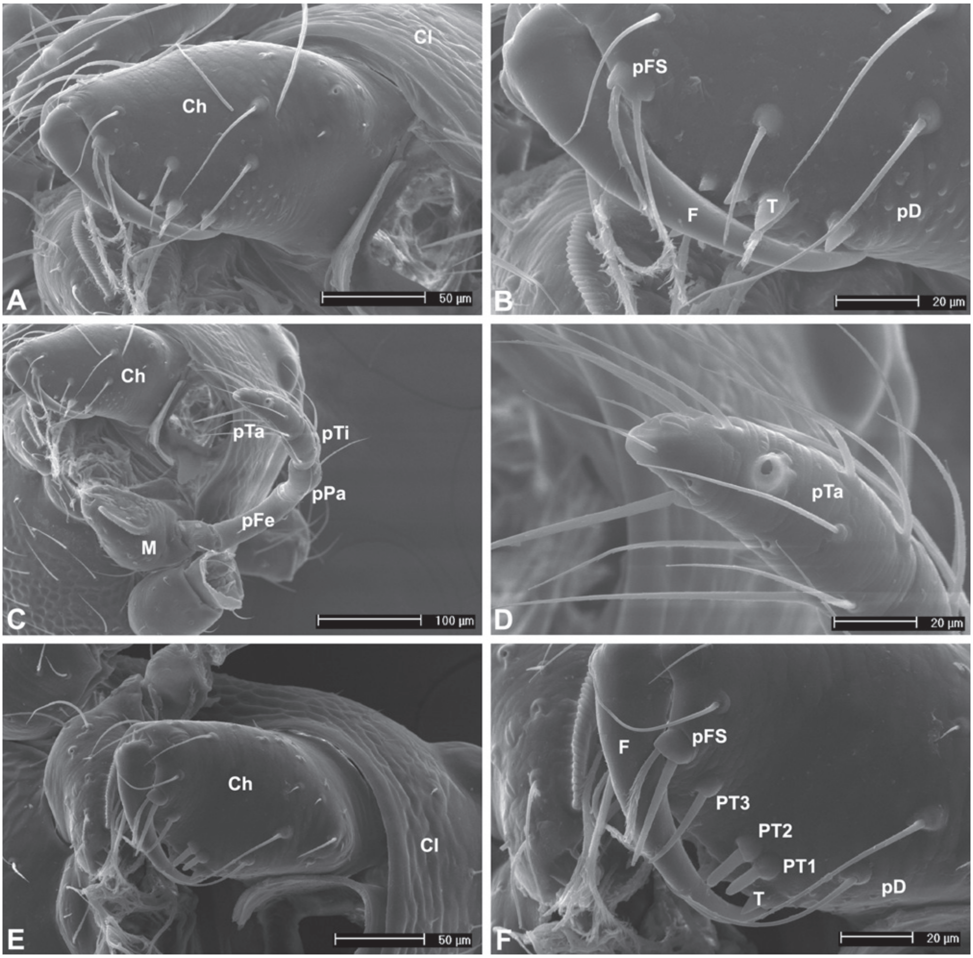


Figure 93. Scanning electron micrographs of *Rayforstia vulgaris* (Forster) from Lewis Pass, New Zealand (WAM T94455): **A** female right chelicera (left removed), frontal view **B** female cheliceral promargin **C** female pedipalp, ventro-lateral view **D** tip of female pedipalp **E** male right chelicera (left removed), frontal view **F** male cheliceral promargin.

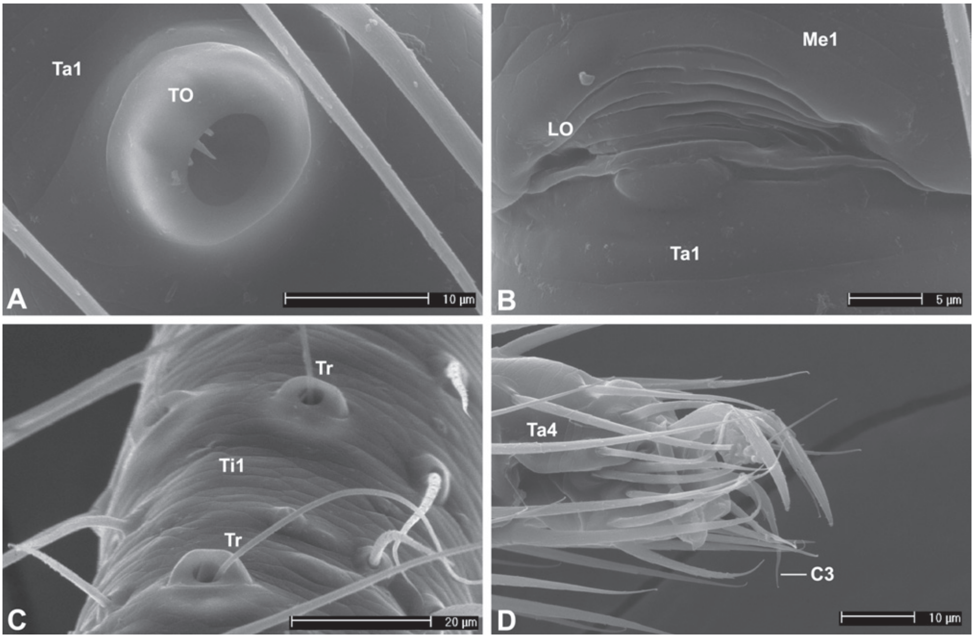


Figure 94. Scanning electron micrographs of female *Rayforstia vulgaris* (Forster) from Lewis Pass, New Zealand (WAM T94455): **A** leg I tarsal organ **B** leg I lyriform organ **C** leg I tibial trichobothria **D** leg IV claws, showing elongate inferior claw.

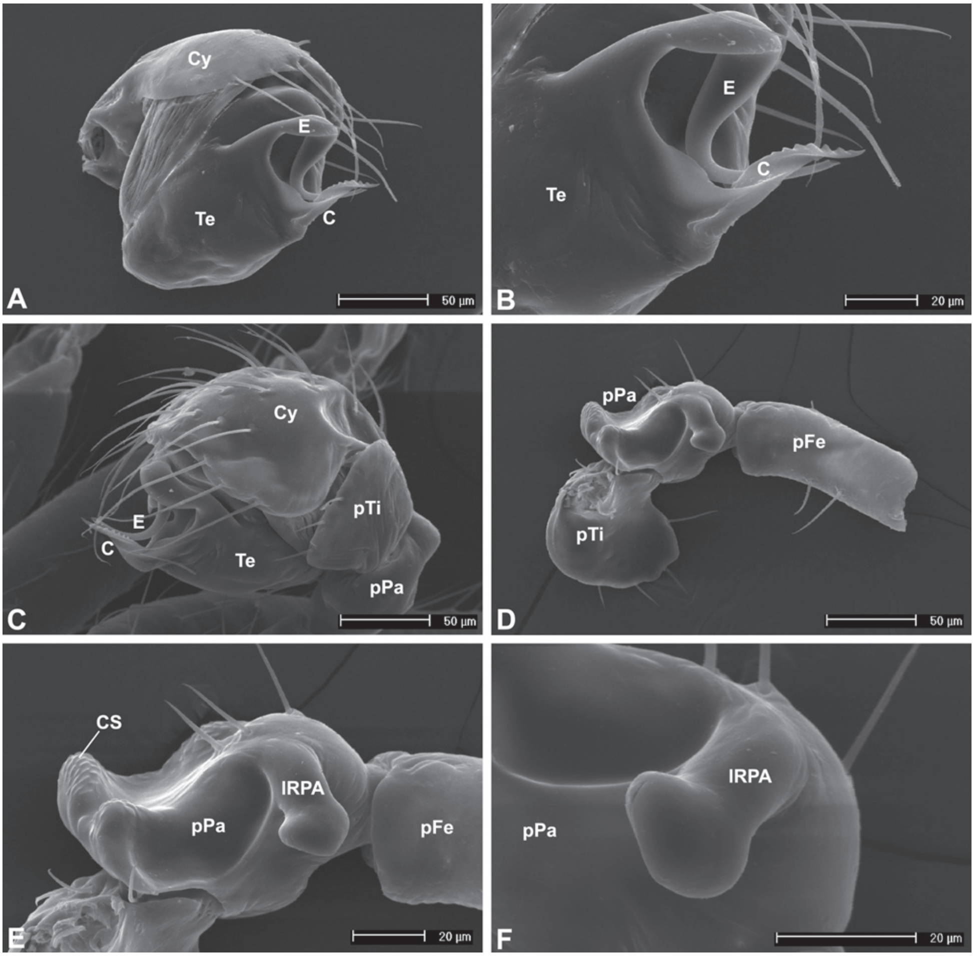


Figure 95. Scanning electron micrographs of pedipalp of male *Rayforstia vulgaris* (Forster) from Lewis Pass, New Zealand (WAM T94455).

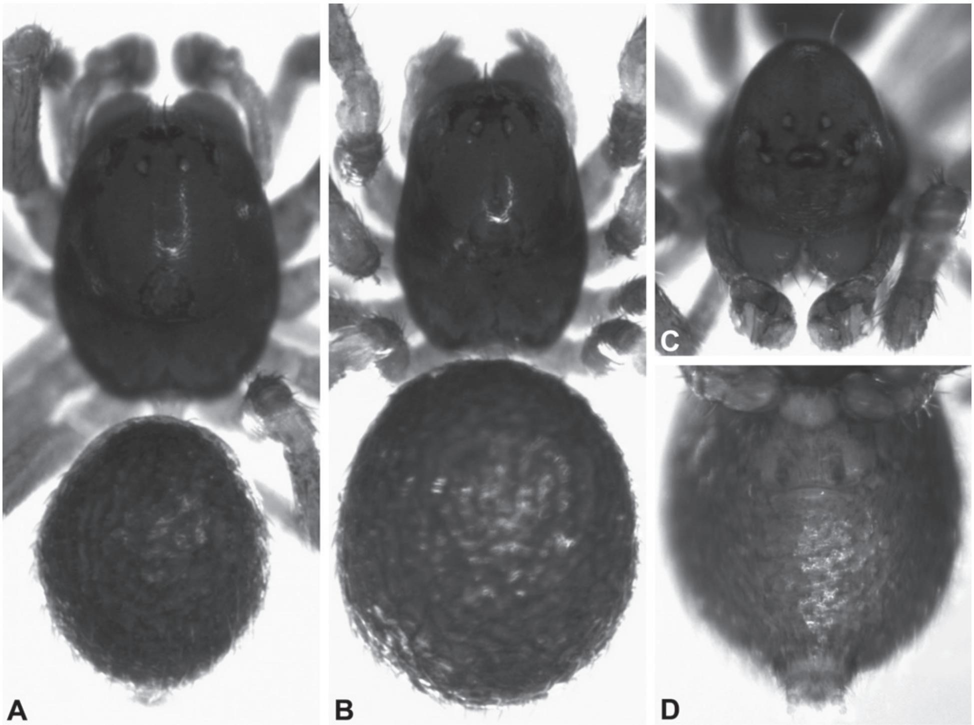


Figure 96. *Normplatnicka lamingtonensis* (Forster) from Acheron Gap, Victoria (AMNH): **A** male habitus, dorsal view **B** female habitus, dorsal view **C** male cephalothorax, antero-dorsal view **D** female abdomen, ventral view.

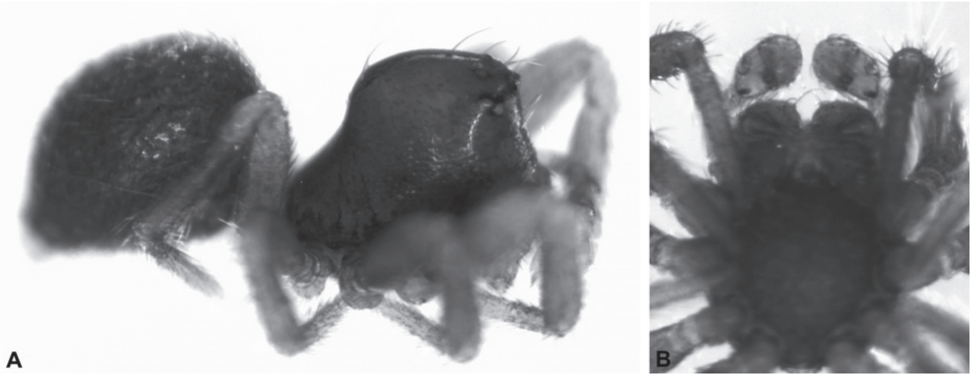


Figure 97. *Normplatnicka lamingtonensis* (Forster) from Acheron Gap, Victoria (AMNH): **A** male habitus, lateral view **B** male cephalothorax and pedipalps, ventral view.

Figure 98. *Normplatnicka lamingtonensis* (Forster), male from Acheron Gap, Victoria (AMNH), left pedipalp, retrolateral view. Scale bar = 0.065 mm (65 µm).

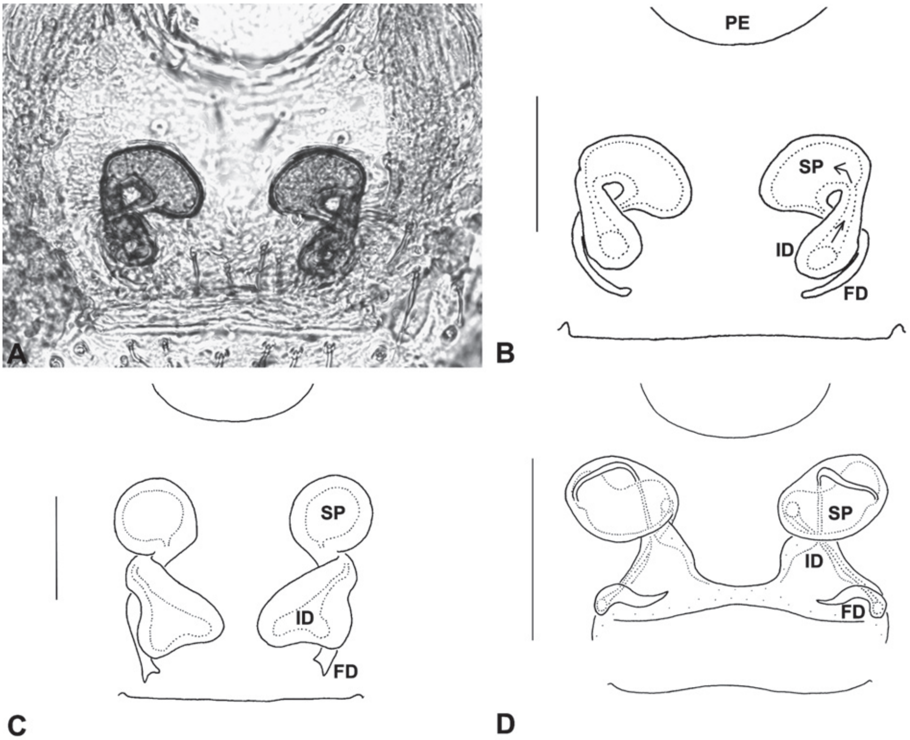


Figure 99. *Normplatnicka* species, female cleared receptacula, dorsal view: **A–B** *N. lamingtonensis* (Forster) from Acheron Gap, Victoria (AMNH) **C** paratype *N. chilensis* sp. n. from Parque Nacional Queulat, Chile (AMNH) **D** paratype *N. barrettae* sp. n. from Walpole-Nornalup National Park, Western Australia (WAM T94473). Arrows indicate the trajectory of insemination ducts. Scale bars = 0.065 mm (65 µm).

Figure 100. *Normplatnicka barrettae* sp. n. from Walpole-Nornalup National Park, Western Australia. **A, C** holotype male (WAM T94471): **A** habitus, dorsal view **C** cephalothorax, antero-dorsal view. **B, D** allotype female (WAM T94472): **B** habitus, dorsal view **D** abdomen, ventral view.

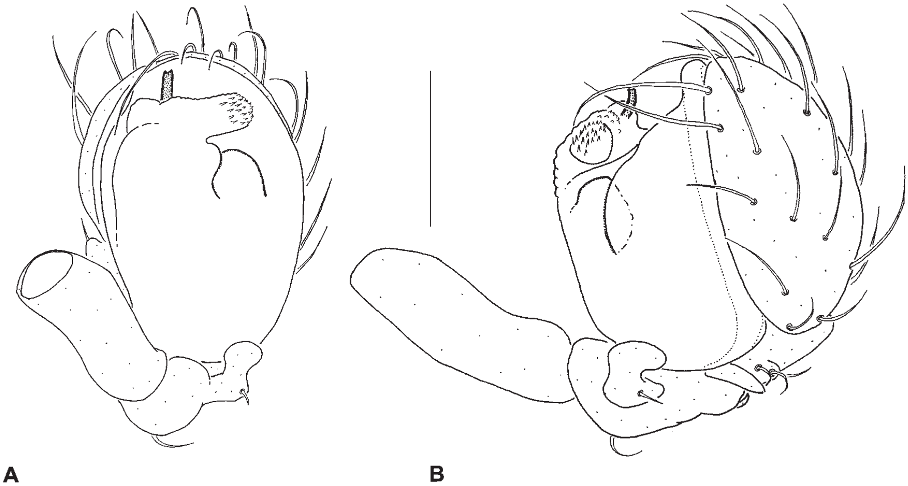


Figure 101. *Normplatnicka barrettae* sp. n., paratype male from Walpole-Nornalup National Park, Western Australia (WAM T94473): **A** left pedipalp, ventral view **B** left pedipalp, retrolateral view. Scale bar = 0.065 mm (65 µm).

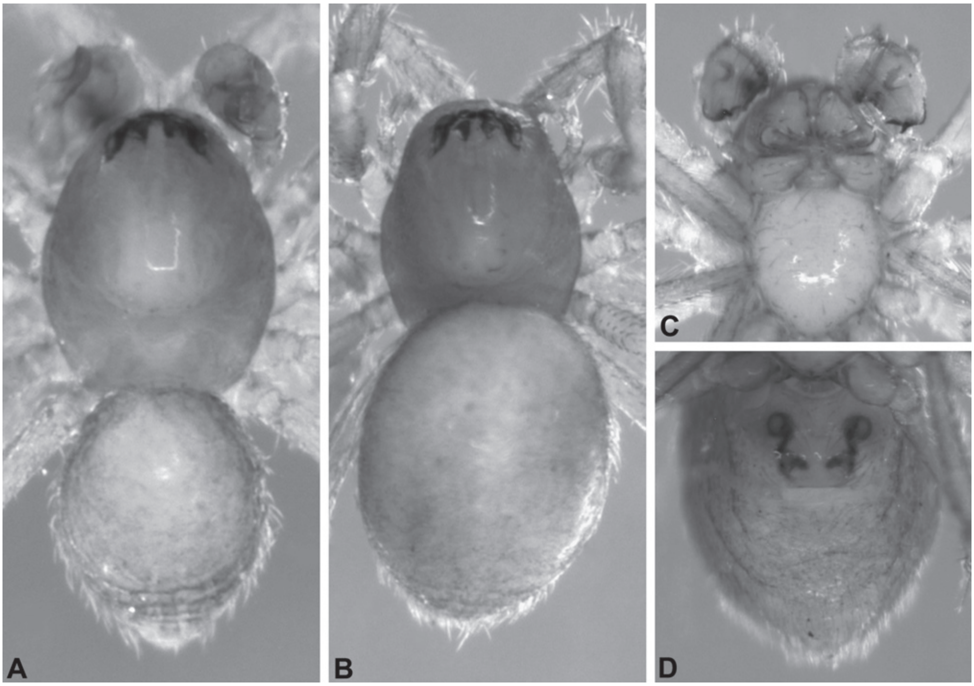


Figure 102. *Normplatnicka chilensis* sp. n. from Parque Nacional Queulat, Chile. **A, C** holotype male (AMNH): **A** habitus, dorsal view **C** cephalothorax and pedipalps, ventral view. **B, D** allotype female (AMNH): **B** habitus, dorsal view **D** abdomen, ventral view.

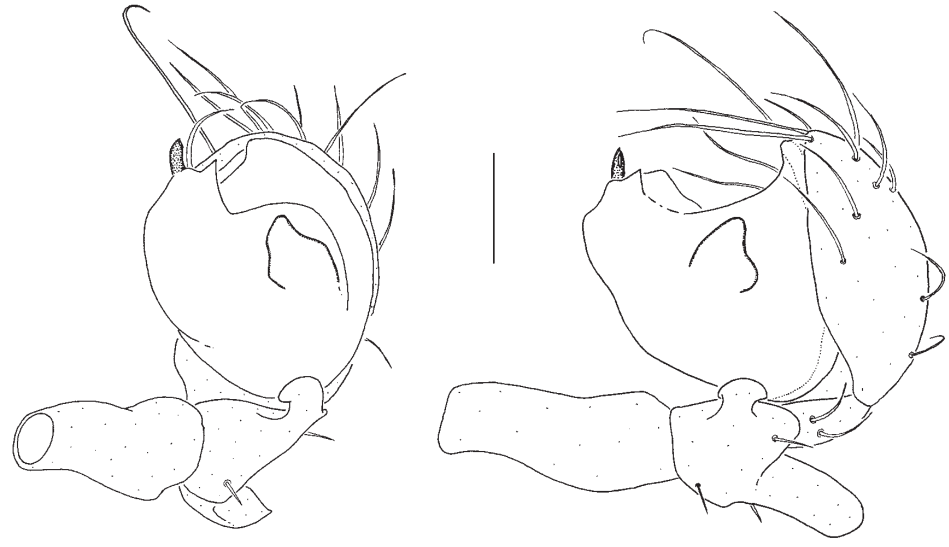


Figure 103. *Normplatnicka chilensis* sp. n., holotype male from Parque Nacional Queulat, Chile (AMNH): **A** left pedipalp, ventral view **B** left pedipalp, retrolateral view. Scale bar = 0.065 mm (65 μm).

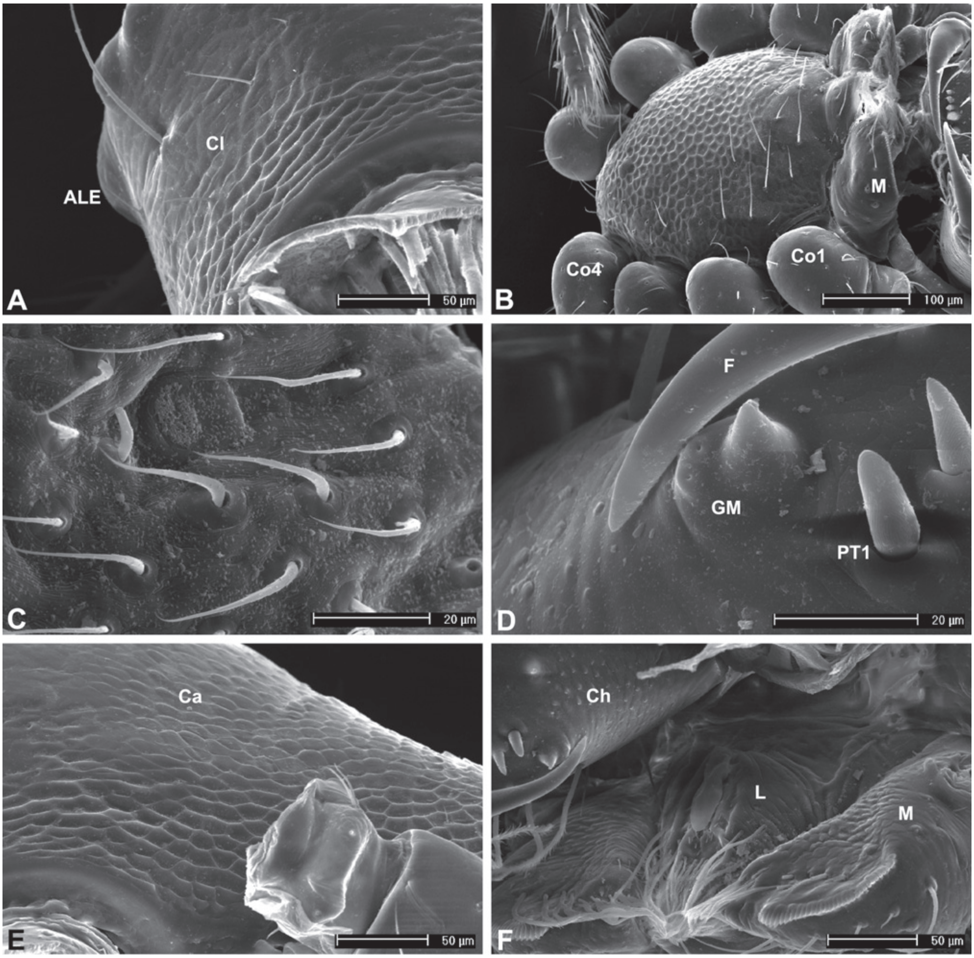


Figure 104. Scanning electron micrographs of *Normplatnicka lamingtonensis* (Forster) from Acheron Gap, Victoria (AMNH): **A** male clypeus, antero-lateral view **B** female sternum, ventro-lateral view **C** female abdominal cuticle **D** male tip of fang and cheliceral gland mound **E** male carapace, lateral view **F** male chelicera and labrum.

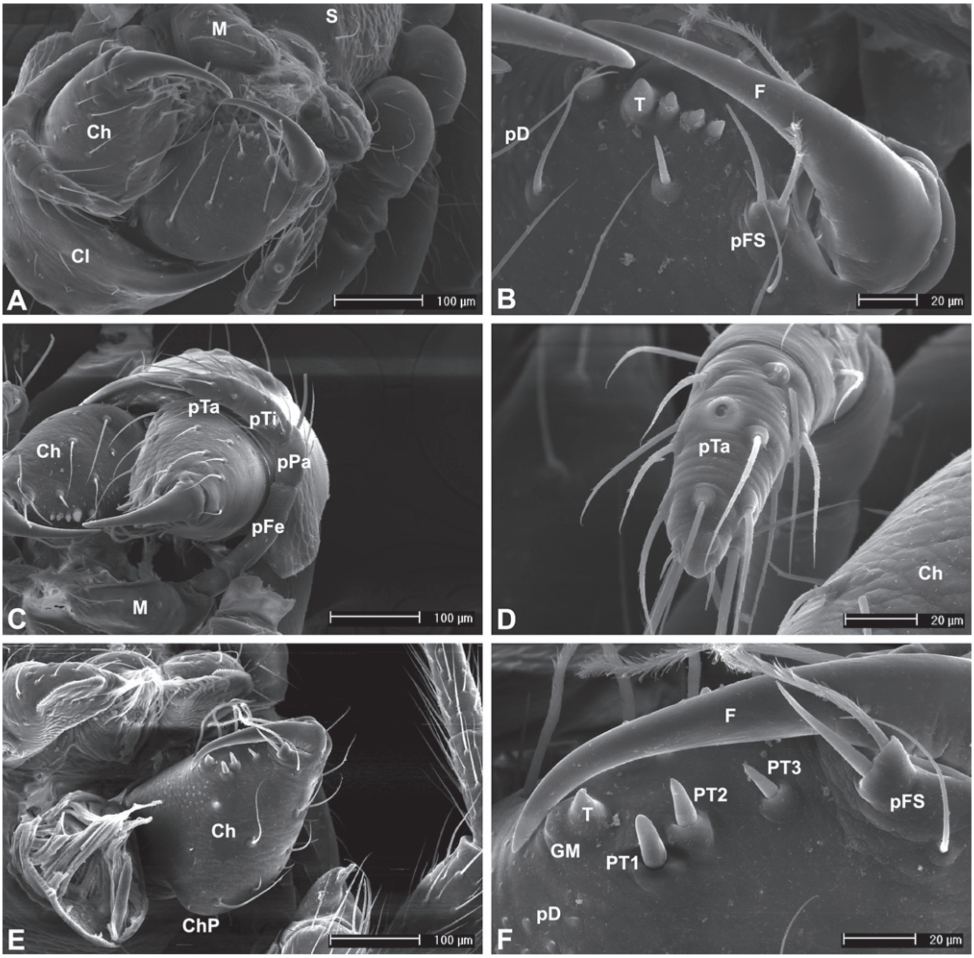


Figure 105. Scanning electron micrographs of *Normplatnicka lamingtonensis* (Forster) from Acheron Gap, Victoria (AMNH): **A** female chelicerae, antero-ventral view **B** female cheliceral promargin **C** female pedipalp, ventro-lateral view **D** tip of female pedipalp **E** male right chelicera (left removed), ventro-lateral view **F** male cheliceral promargin.

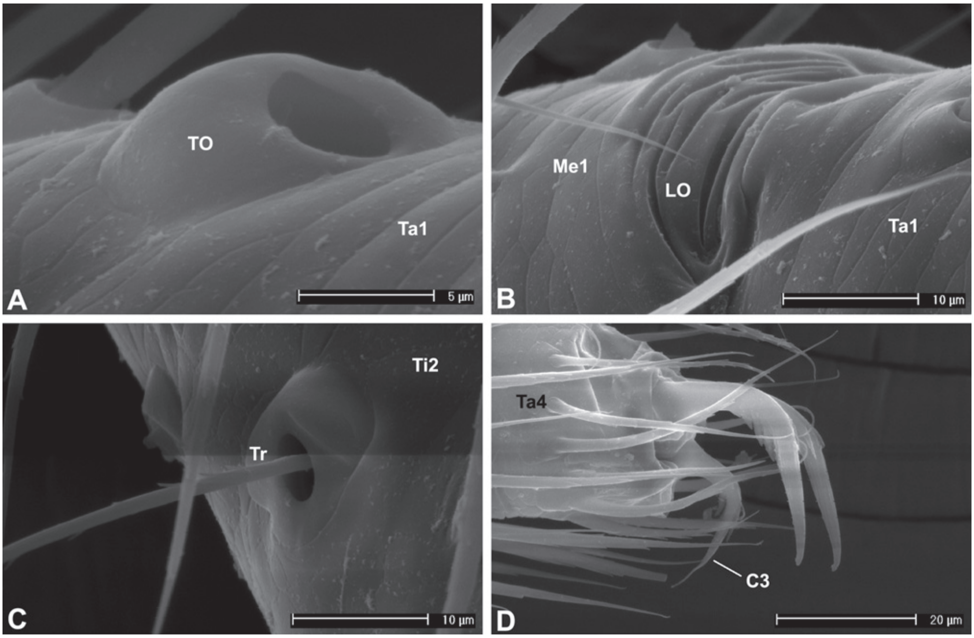


Figure 106. Scanning electron micrographs of female *Normplatnicka lamingtonensis* (Forster) from Acheron Gap, Victoria (AMNH): **A** leg I tarsal organ **B** leg I lyriform organ **C** leg II tibial trichobothrium **D** leg IV claws, showing elongate inferior claw.

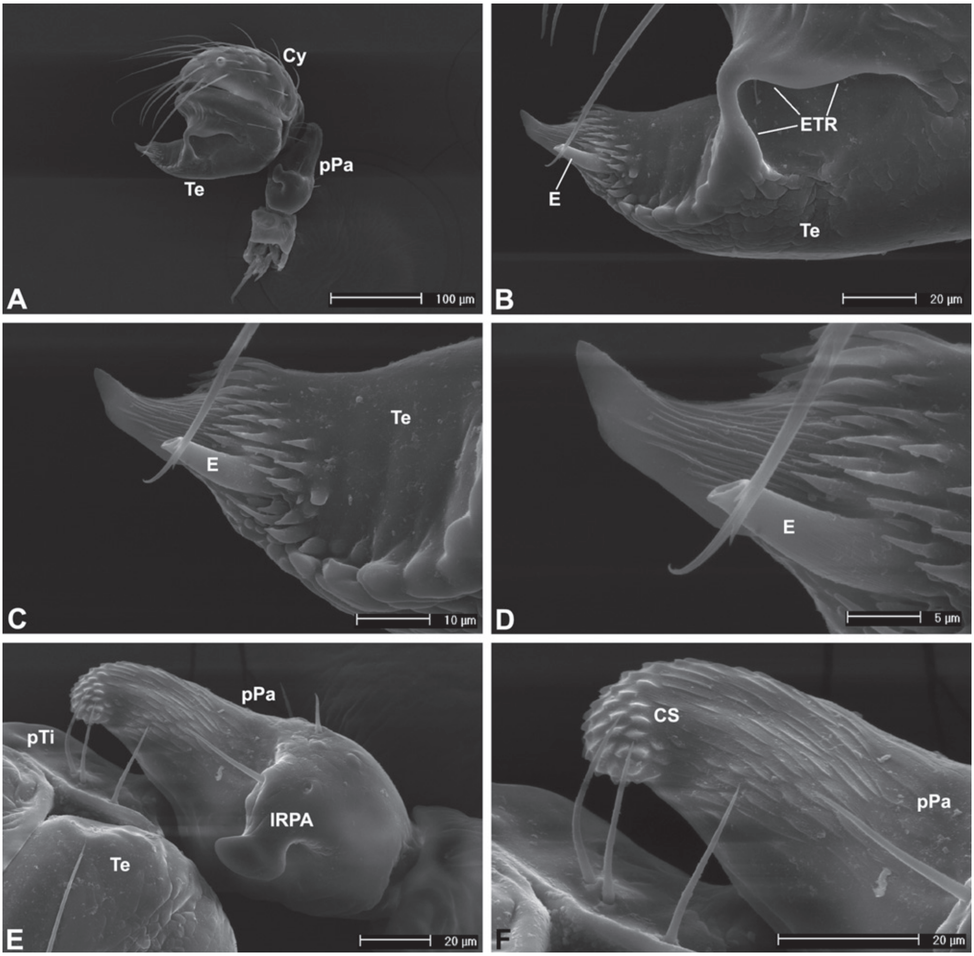


Figure 107. Scanning electron micrographs of pedipalp of male *Normplatnicka lamingtonensis* (Forster) from Acheron Gap, Victoria (AMNH).

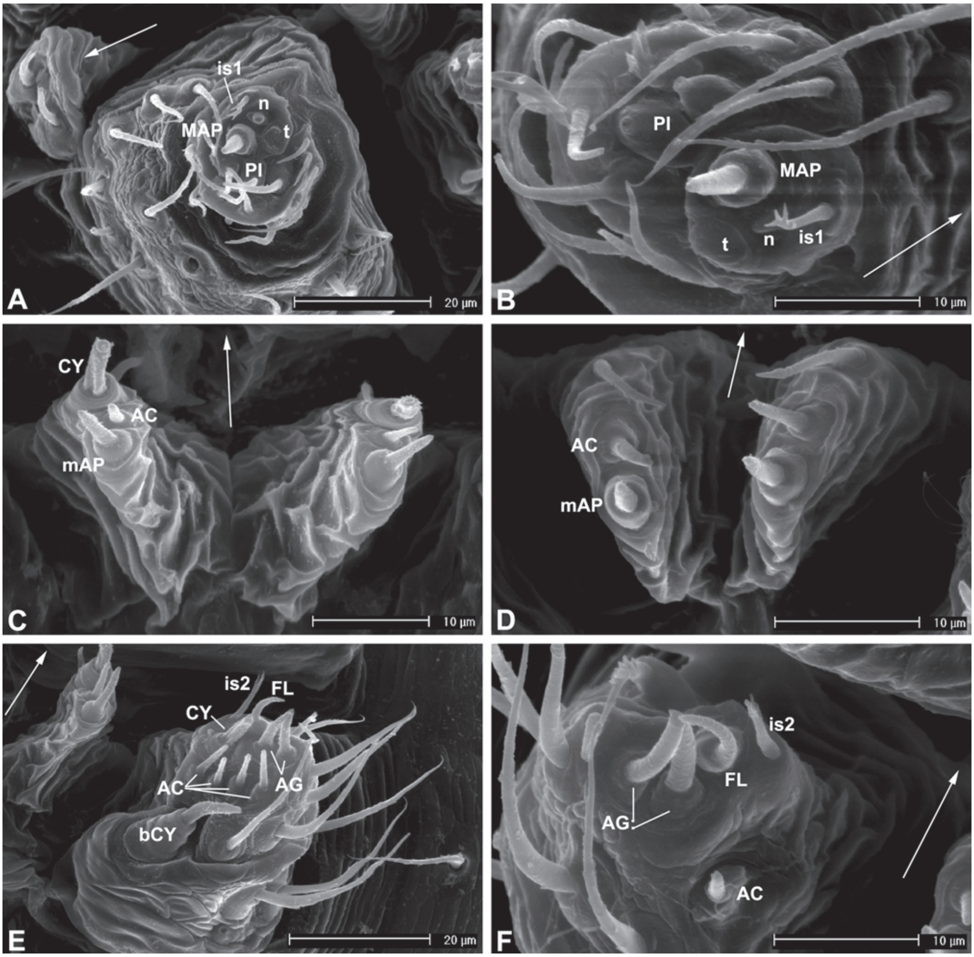


Figure 108. Scanning electron micrographs of spinnerets of female (left) and male (right) *Normplatnicka lamingtonensis* (Forster) from Acheron Gap, Victoria (AMNH): **A–B** anterior lateral spinnerets **C–D** posterior median spinnerets **E–F** posterior lateral spinnerets. Arrows denote the anterior, mesal direction.

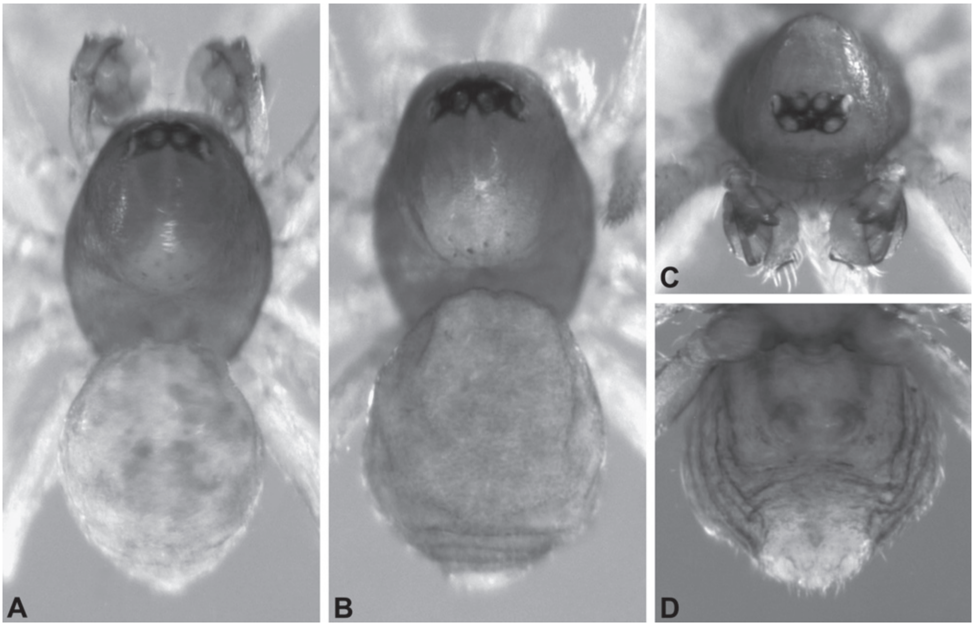


Figure 109. *Eperiella alsophila* sp. n. from north of Chaitén, Chile. **A, C** holotype male (AMNH): **A** habitus, dorsal view **C** cephalothorax, antero-dorsal view. **B, D** allotype female (AMNH): **B** habitus, dorsal view **D** abdomen, ventral view.

Figure 110. *Eperiella alsophila* sp. n., holotype male from north of Chaitén, Chile (AMNH): **A** habitus, lateral view **B** cephalothorax and pedipalps, ventral view.

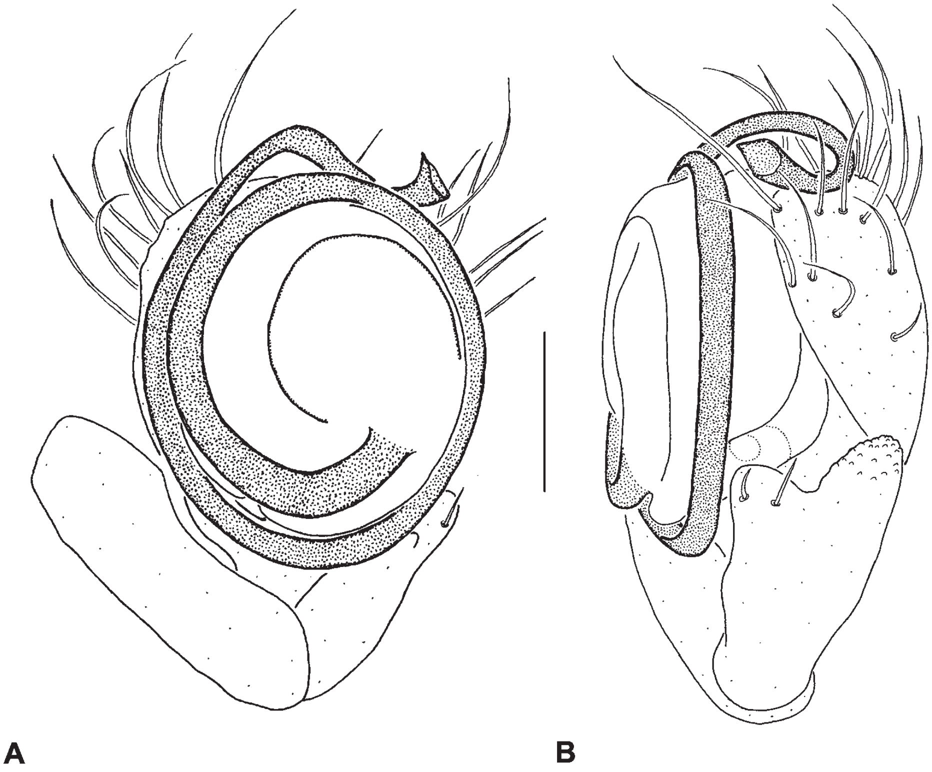


Figure 111. *Eperiella alsophila* sp. n., paratype male from north of Chaitén, Chile (AMNH): **A**, left pedipalp, ventral view; **B**, left pedipalp, retrolateral view. Scale bar = 0.065 mm (65 µm).

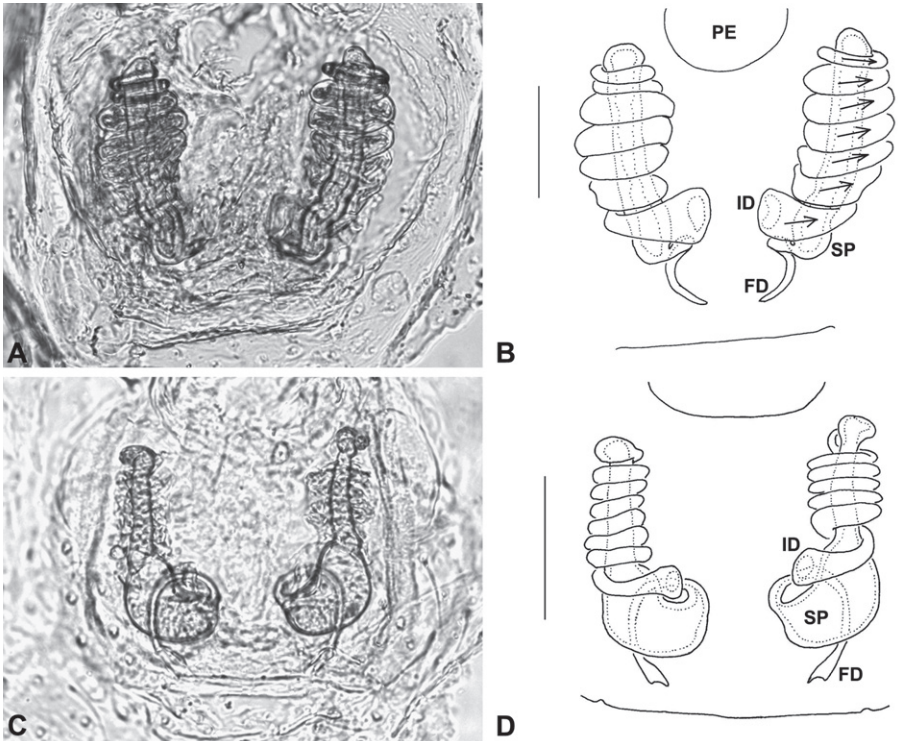


Figure 112. *Eperiella* species, female cleared receptacula, dorsal view: **A–B** paratype *E. alsophila* sp. n. from north of Chaitén, Chile (AMNH) **C–D** paratype *E. hastings* sp. n. from the Hastings karst, Tasmania (QVM 13: 44522). Arrows indicate the trajectory of insemination ducts. Scale bars = 0.065 mm (65 µm).

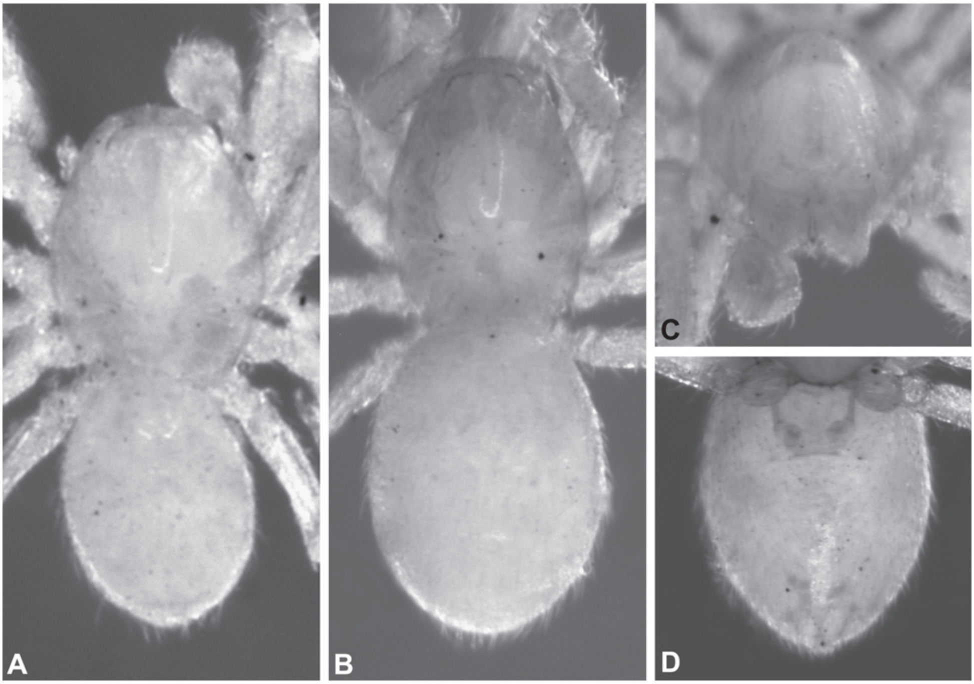


Figure 113. *Eperiella hastings* sp. n. from the Hastings karst, Tasmania. **A, C** holotype male (QVM 13: 13533): **A** habitus, dorsal view **C** cephalothorax, antero-dorsal view. **B, D** allotype female (QVM 13: 44521): **B** habitus, dorsal view **D** abdomen, ventral view. Note the pale body colouration and reduction of the eyes.

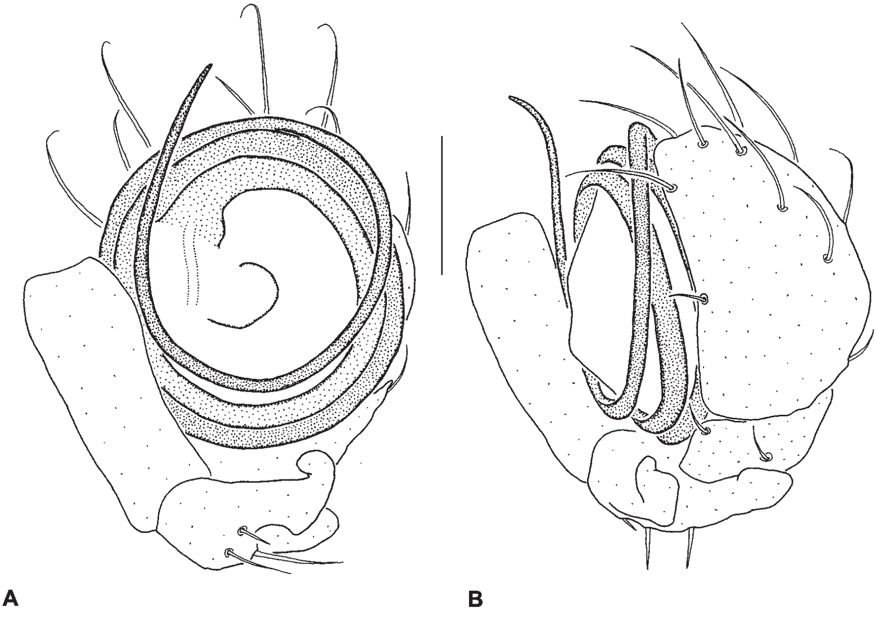


Figure 114. *Eperiella hastings* sp. n., holotype male from the Hastings karst, Tasmania (QVM 13: 13533): **A** left pedipalp, ventral view **B** left pedipalp, retrolateral view. Scale bar = 0.065 mm (65 µm).

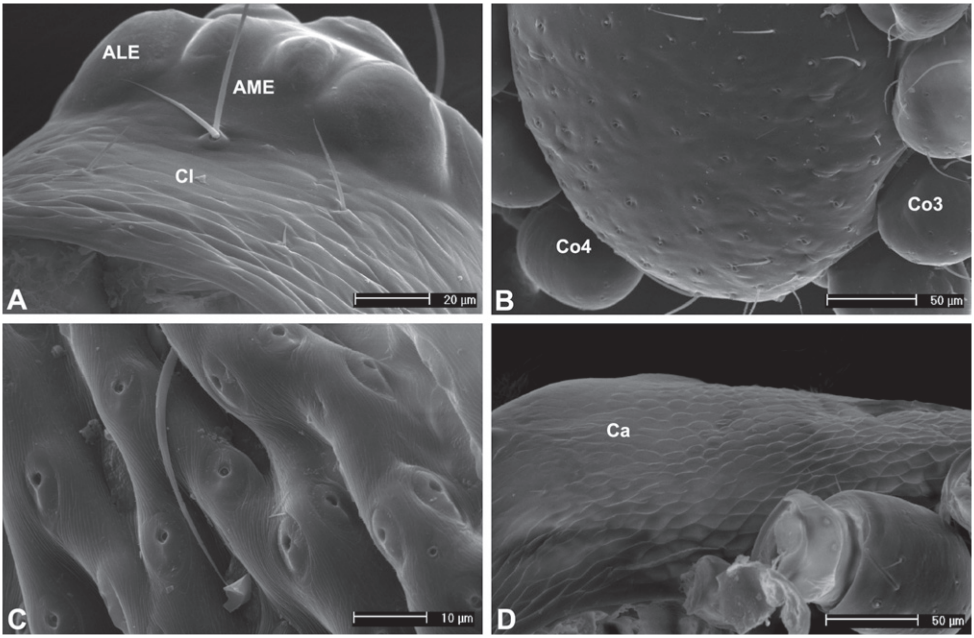


Figure 115. Scanning electron micrographs of *Eperiella alsophila* sp. n., male from north of Chaitén, Chile (AMNH) and female from Chiloé Island, Chile (AMNH): **A** male eyes and clypeus, frontal view **B** female sternum, ventral view **C** male abdominal cuticle **D** male carapace, lateral view.

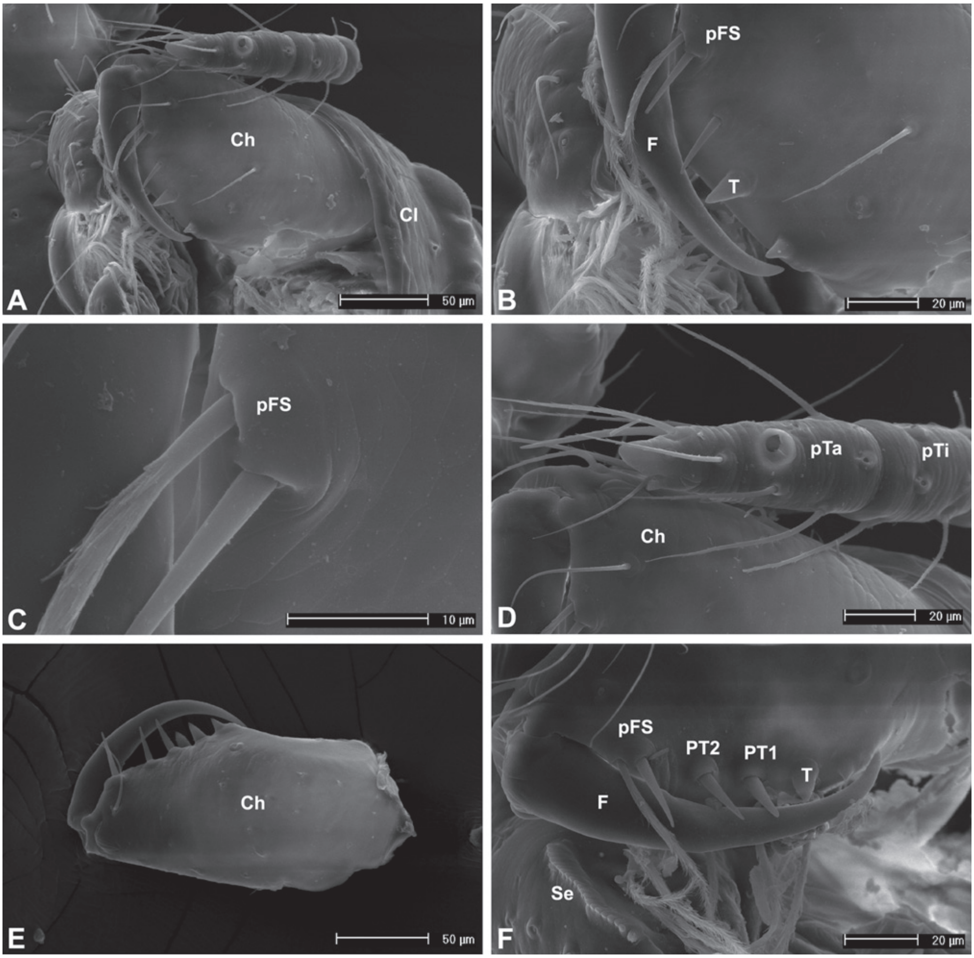


Figure 116. Scanning electron micrographs of *Eperiella alsophila* sp. n., male from north of Chaitén, Chile (AMNH) and female from Chiloé Island, Chile (AMNH): **A** female right chelicera (left removed), frontal view **B** female cheliceral promargin **C** detail of (B), showing prolateral fused setal sockets **D** tip of female pedipalp **E** male left chelicera, dorsal view **F** male cheliceral promargin, showing the absence of PT3.

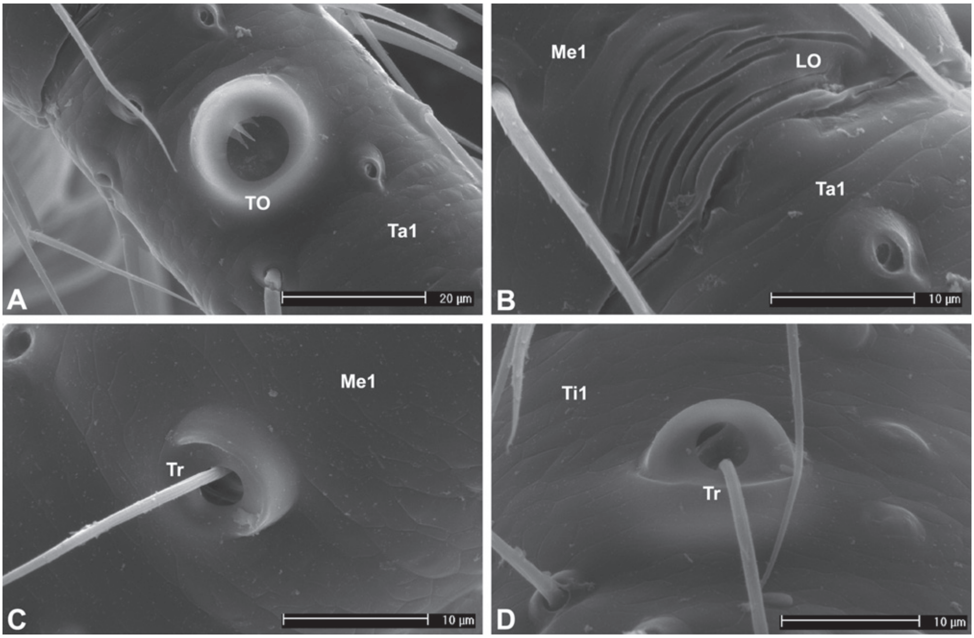


Figure 117. Scanning electron micrographs of female *Eperiella alsophila* sp. n. from Chiloé Island, Chile (AMNH): **A** leg I tarsal organ **B** leg I lyriform organ **C** leg I metatarsal trichobothrium **D** leg I tibial trichobothrium.

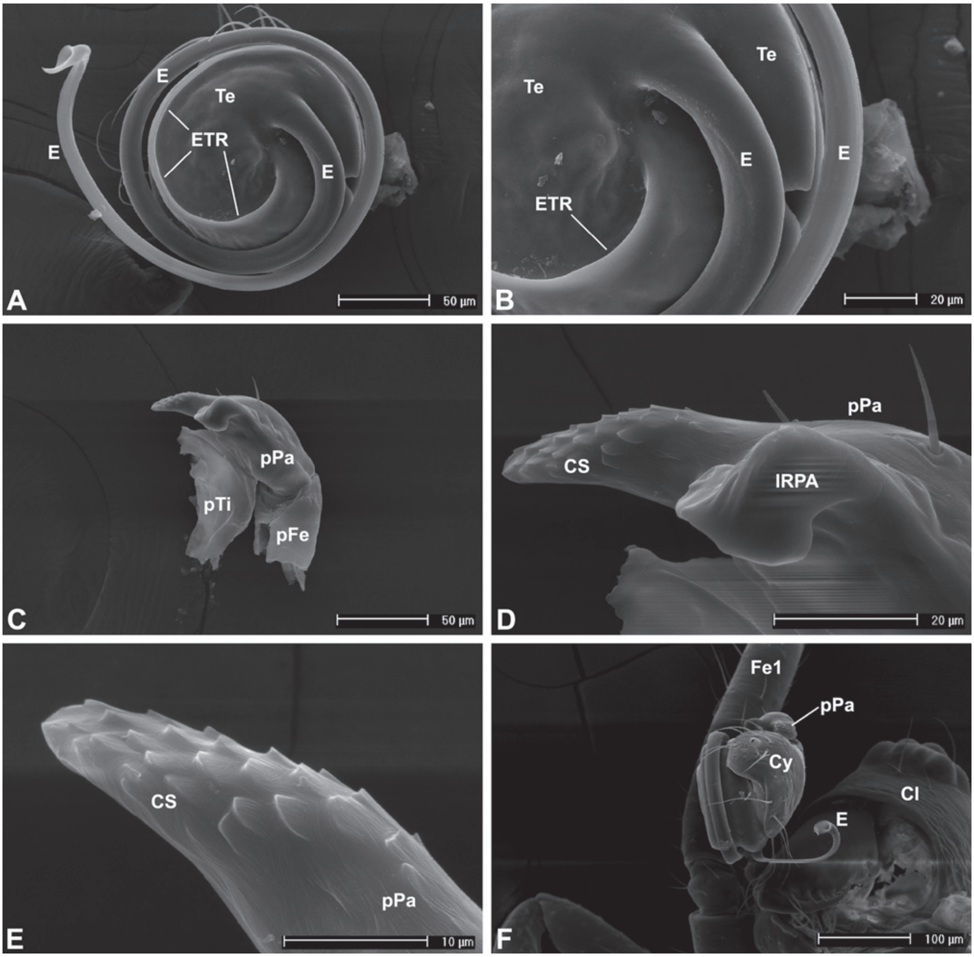


Figure 118. Scanning electron micrographs of pedipalp of male *Eperiella alsophila* sp. n. from north of Chaitén, Chile (AMNH).

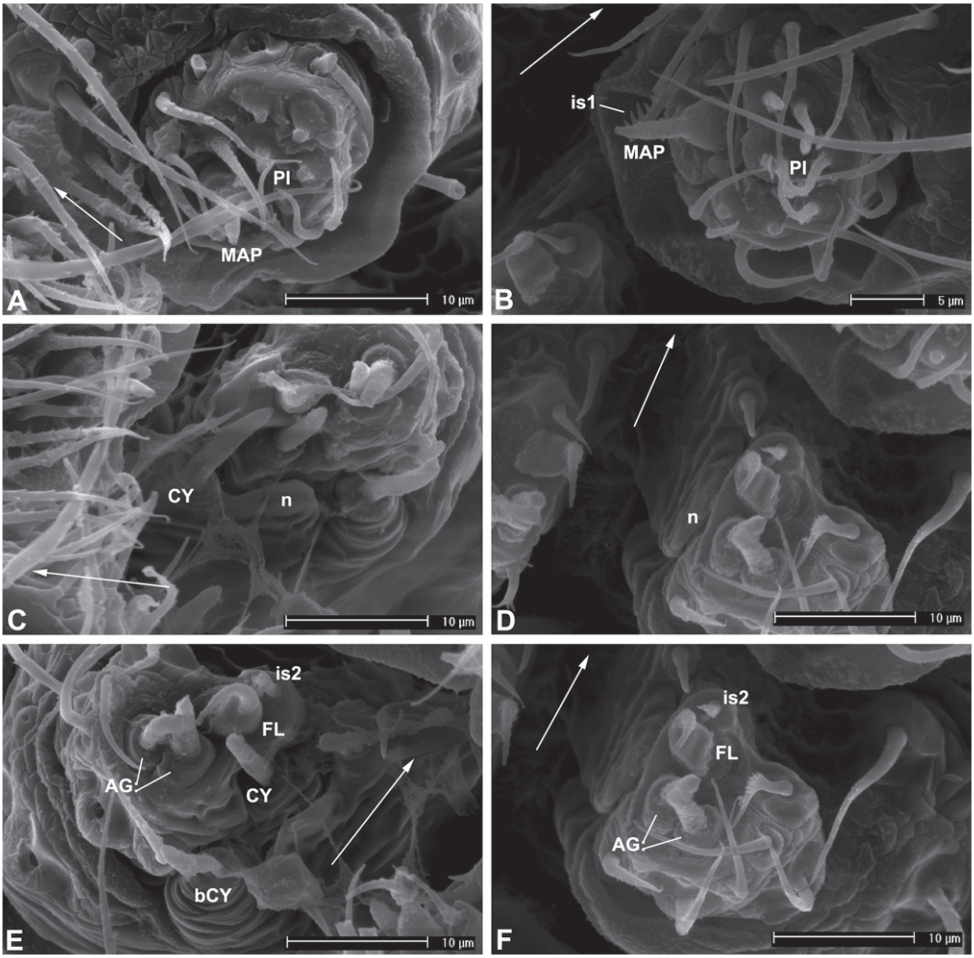


Figure 119. Scanning electron micrographs of spinnerets of female *Eperiella alsophila* sp. n. from Chiloé Island, Chile (AMNH) (left) and male *E. alsophila* from north of Chaitén, Chile (AMNH) (right): **A–B** anterior lateral spinnerets **C–D** posterior median spinnerets **E–F** posterior lateral spinnerets. Arrows denote the anterior, mesal direction.

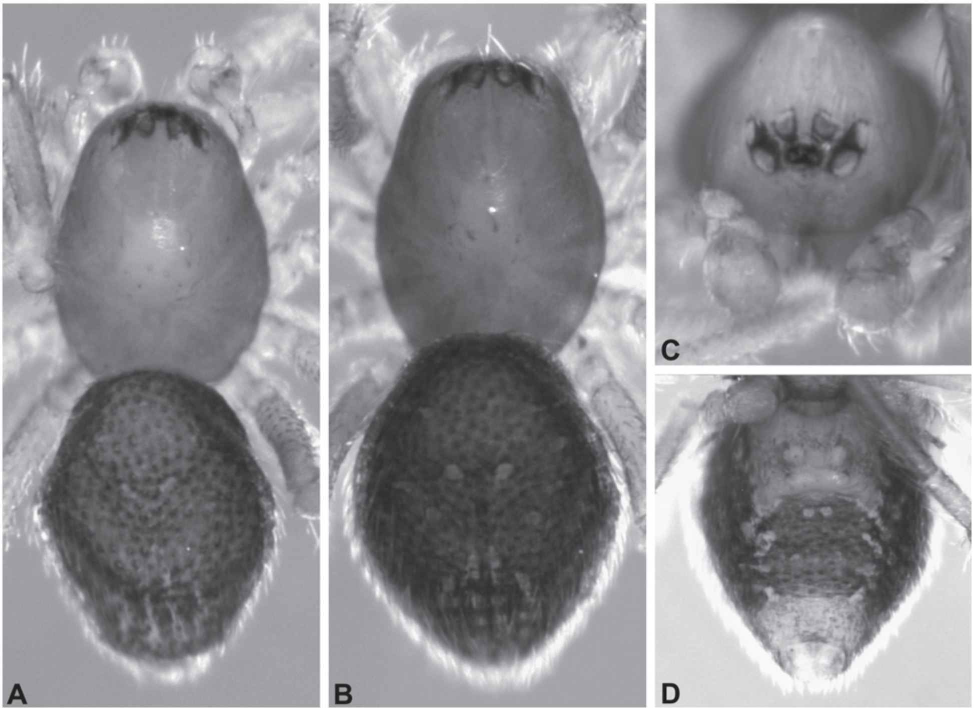


Figure 120. *Algidiella aucklandica* (Forster) from Auckland Island, New Zealand (AMNH): **A** male habitus, dorsal view **B** female habitus, dorsal view **C** male cephalothorax, antero-dorsal view **D** female abdomen, ventral view.

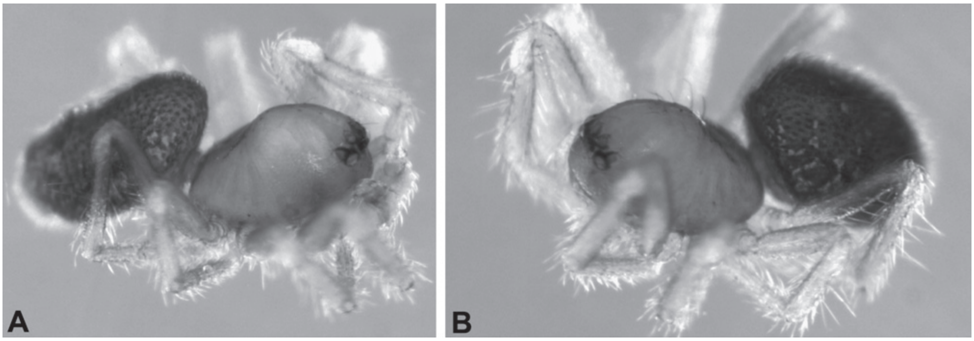


Figure 121. *Algidiella aucklandica* (Forster) from Auckland Island, New Zealand (AMNH): **A** male habitus, lateral view **B** female habitus, antero-lateral view.

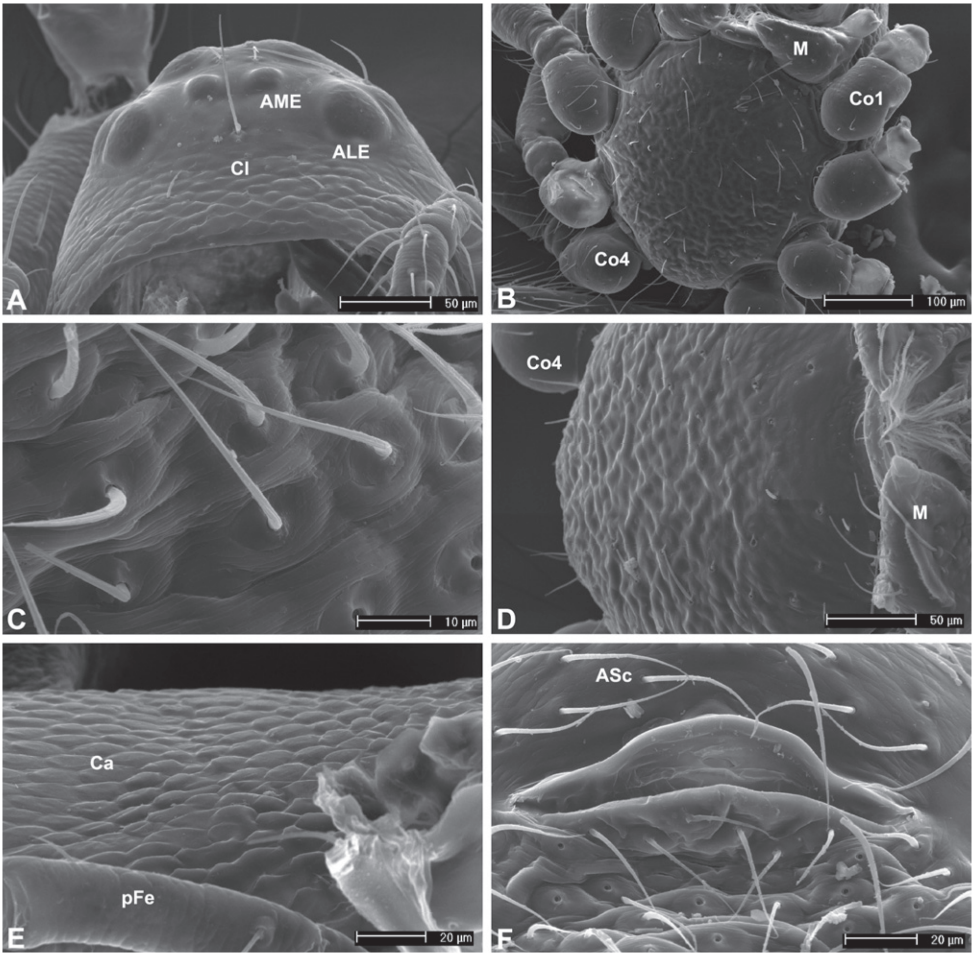


Figure 122. Scanning electron micrographs of *Algidiella aucklandica* (Forster) from Auckland Island, New Zealand (AMNH): **A** female eyes and clypeus, frontal view **B** male sternum, ventral view **C** female abdominal cuticle **D** female sternum, antero-ventral view, showing rugose cuticle **E** female carapace, lateral view **F** male epigastric furrow, showing the absence of epiandrous gland spigots.

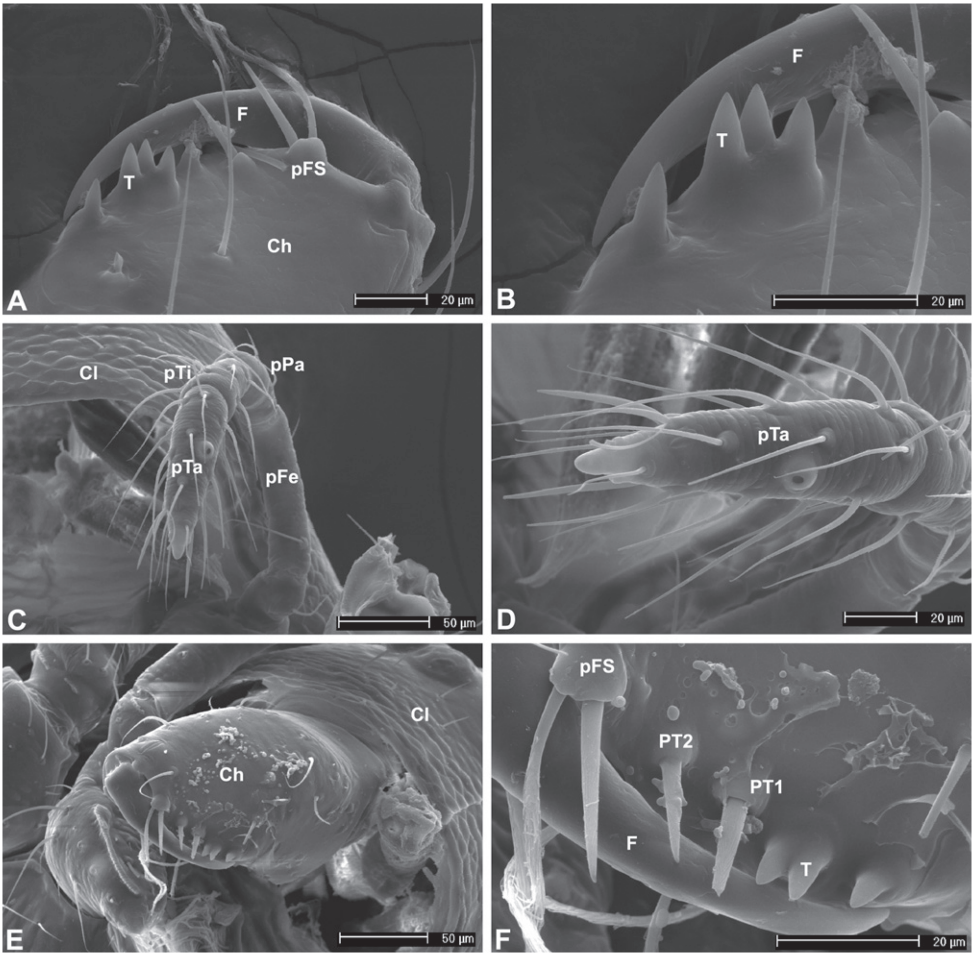


Figure 123. Scanning electron micrographs of *Algidiella aucklandica* (Forster) from Auckland Island, New Zealand (AMNH): **A** female cheliceral promargin **B** detail of (A), showing prolateral teeth **C** female pedipalp, frontal view **D** tip of female pedipalp **E** male right chelicera (left removed), frontal view **F** male cheliceral promargin, showing the absence of PT3.

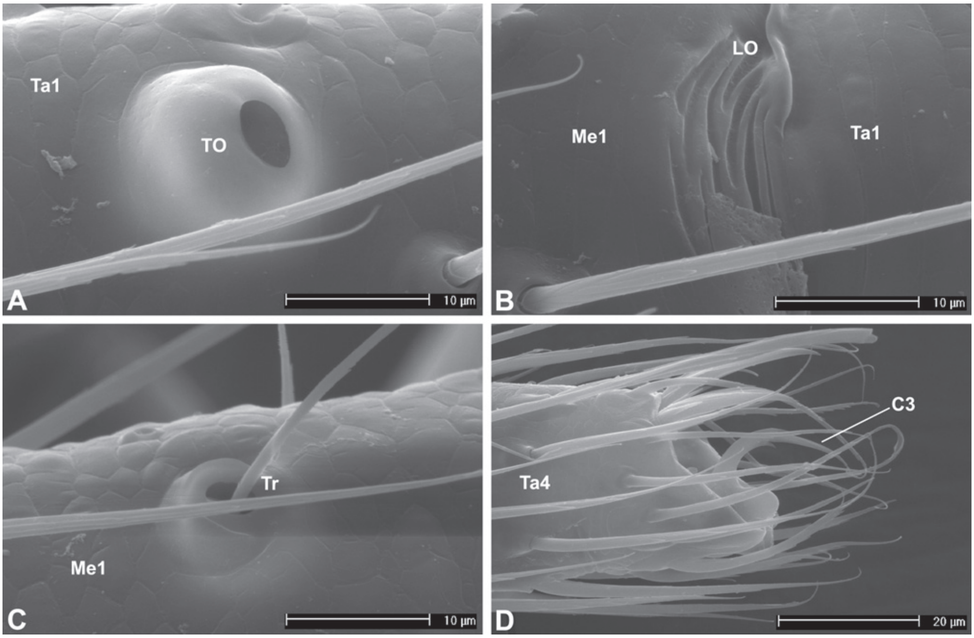


Figure 124. Scanning electron micrographs of female *Algidiella aucklandica* (Forster) from Auckland Island, New Zealand (AMNH): **A** leg I tarsal organ **B** leg I lyriform organ **C** leg I metatarsal trichobothrium **D** leg IV claws, showing elongate inferior claw.

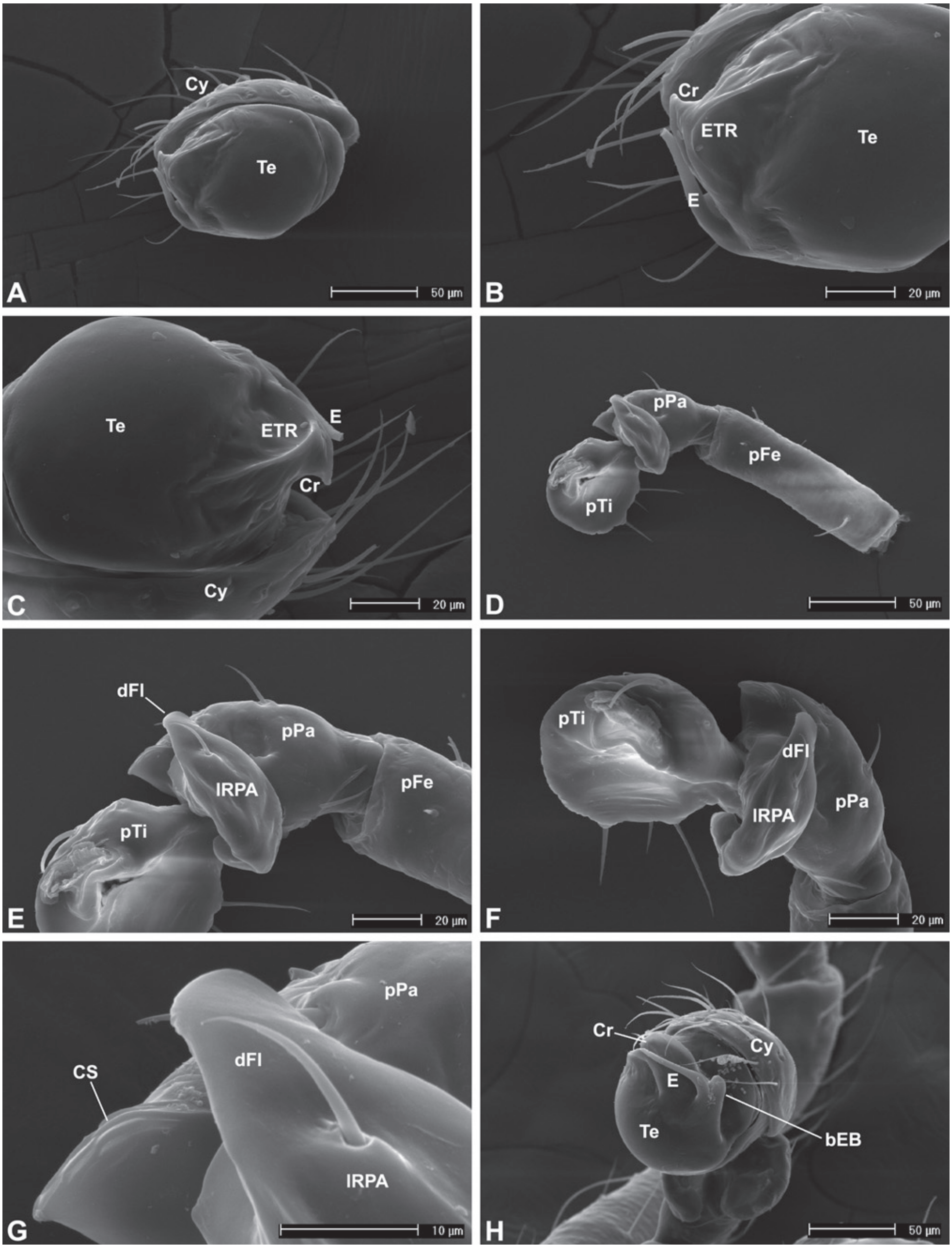


Figure 125. Scanning electron micrographs of pedipalp of male *Algidiella aucklandica* (Forster) from Auckland Island, New Zealand (AMNH).

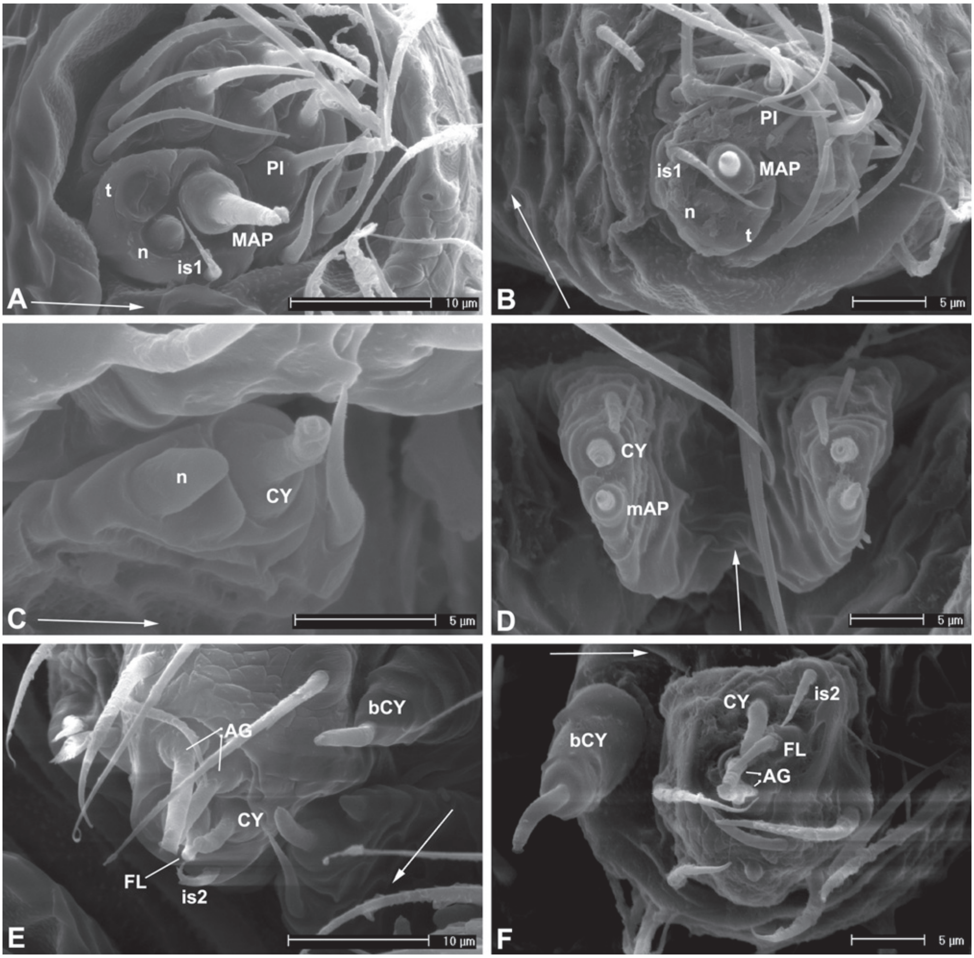


Figure 126. Scanning electron micrographs of spinnerets of female *Algidiella aucklandica* (Forster) from Auckland Island, New Zealand (AMNH) (left) and female *Tinytrella pusilla* (Forster) from north of Te Anau, New Zealand (AMNH) (right): **A–B** anterior lateral spinnerets **C–D** posterior median spinnerets **E–F** posterior lateral spinnerets. Arrows denote the anterior, mesal direction.

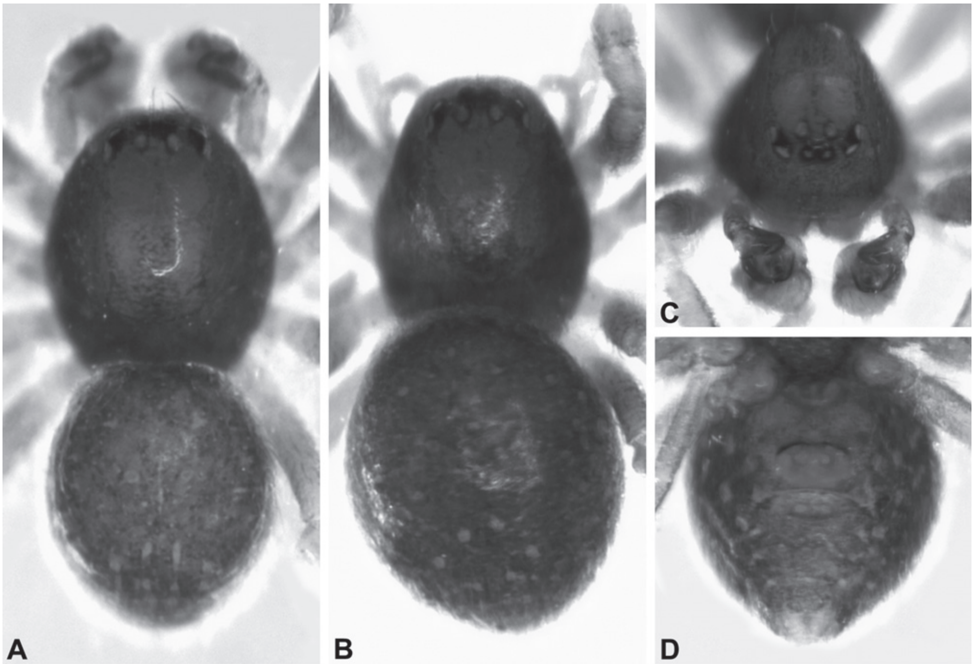


Figure 127. *Taliniella nigra* (Forster) from Little Barrier Island, New Zealand (AMNH): **A** male habitus, dorsal view **B** female habitus, dorsal view **C** male cephalothorax, antero-dorsal view **D** female abdomen, ventral view.

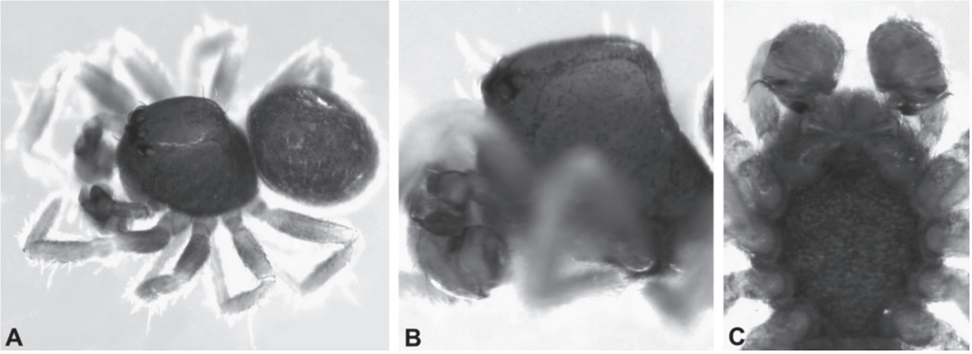


Figure 128. *Taliniella nigra* (Forster) from Little Barrier, New Zealand (AMNH): **A** male habitus, dorso-lateral view **B** male cephalothorax, lateral view **C** male cephalothorax and pedipalps, ventral view.

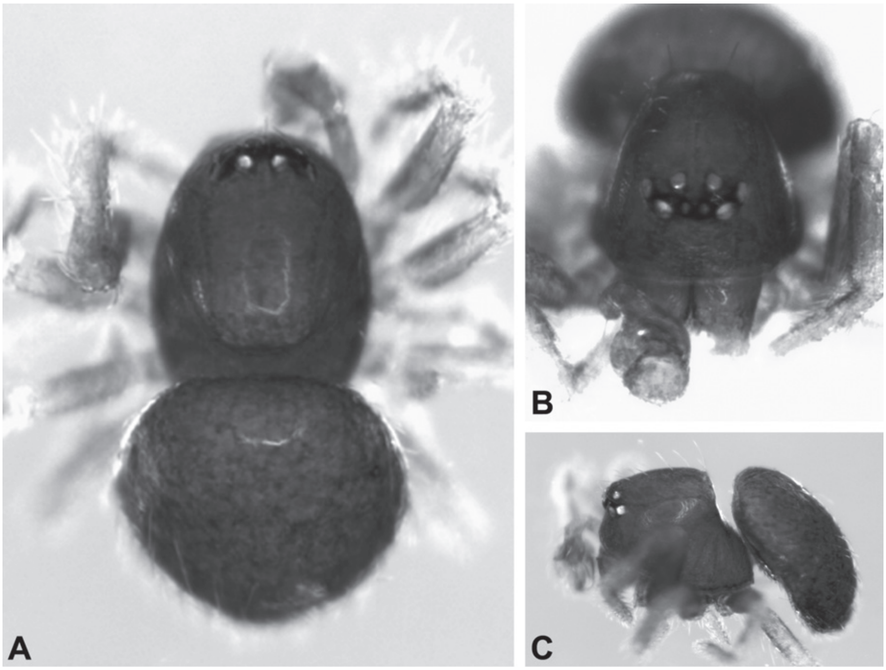


Figure 129. *Taliniella vinki* sp. n., holotype male from Mount Thomas, New Zealand (MNZ): **A** habitus, dorsal view **B** cephalothorax, antero-dorsal view **C** habitus, lateral view.

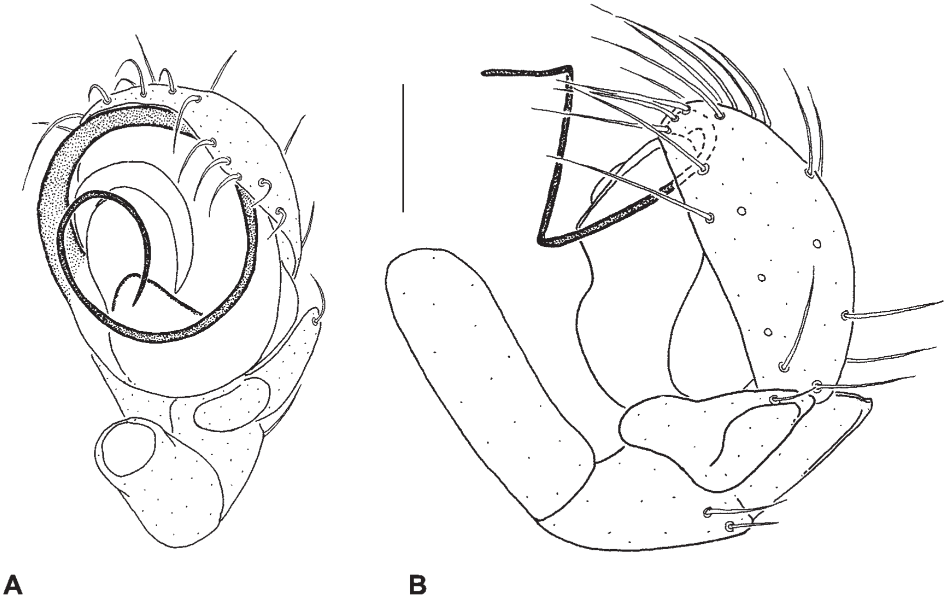


Figure 130. *Taliniella vinki* sp. n., holotype male from Mount Thomas, New Zealand (MNZ): **A** left pedipalp, ventral view **B** left pedipalp, retrolateral view. Scale bar = 0.065 mm (65 μm).

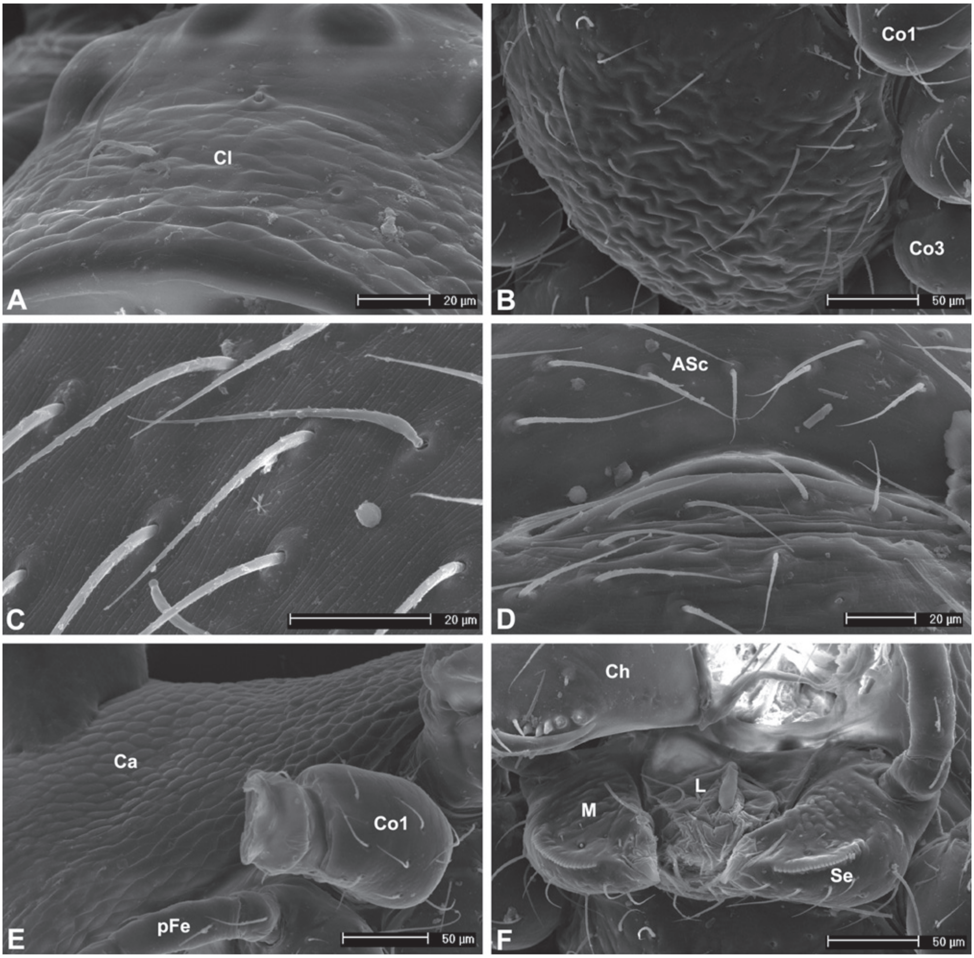


Figure 131. Scanning electron micrographs of *Taliniella nigra* (Forster) from the Aorangi Mountains, New Zealand (AMNH): **A** female eyes and clypeus, frontal view **B** female sternum, ventral view **C** female abdominal cuticle **D** male epigastric furrow, showing the absence of epiandrous gland spigots **E** female carapace, lateral view **F** female chelicera and labrum.

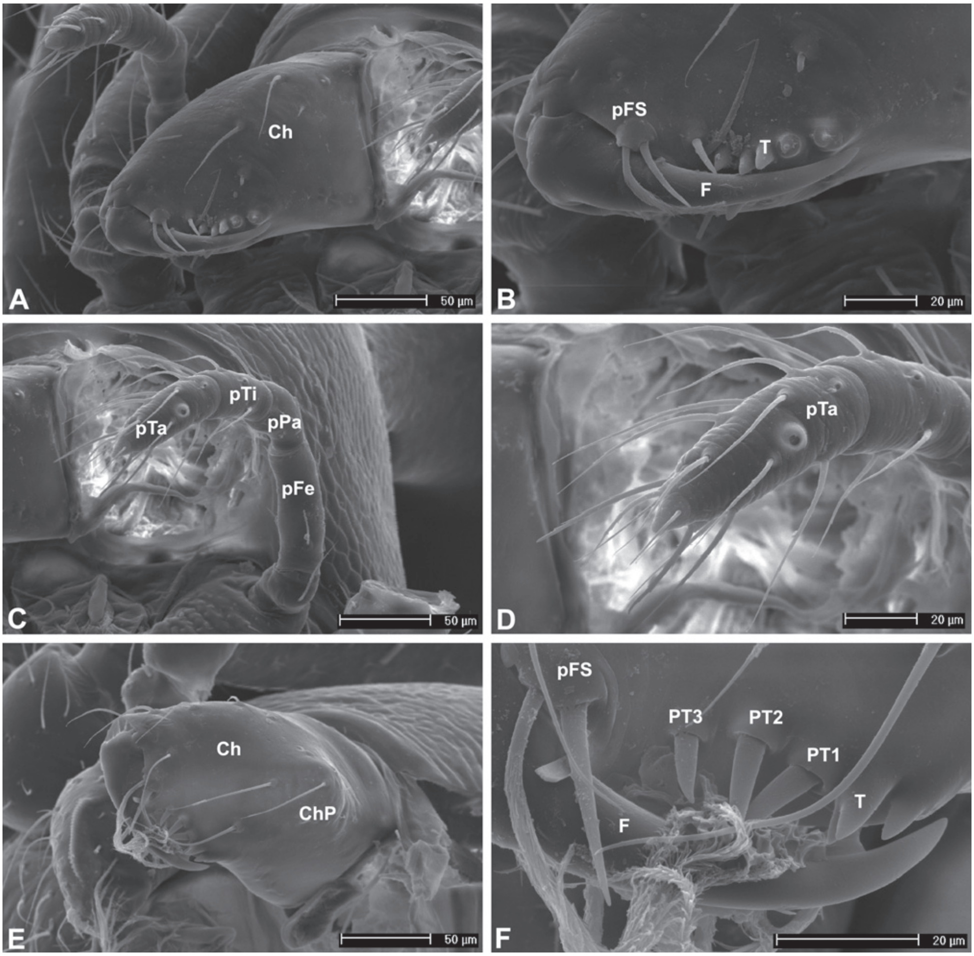


Figure 132. Scanning electron micrographs of *Taliniella nigra* (Forster) from the Aorangi Mountains, New Zealand (AMNH): **A** female right chelicera (left removed), frontal view **B** female cheliceral promargin **C** female pedipalp, frontal view **D** tip of female pedipalp **E** male right chelicera (left removed), frontal view **F** male cheliceral promargin.

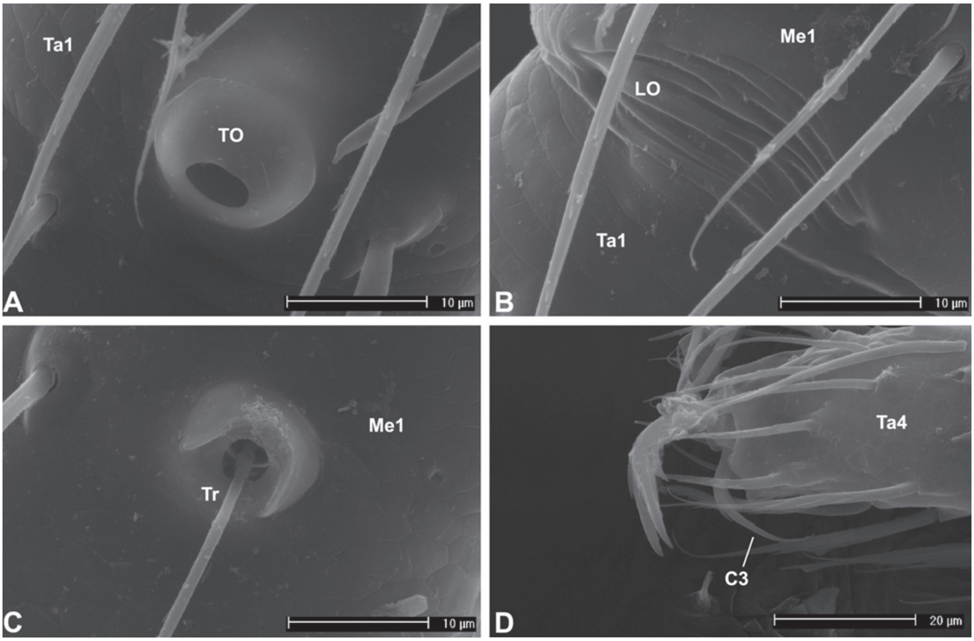


Figure 133. Scanning electron micrographs of female *Taliniella nigra* (Forster) from the Aorangi Mountains, New Zealand (AMNH): **A** leg I tarsal organ **B** leg I lyriform organ **C** leg I metatarsal trichobothrium **D** leg IV claws, showing elongate inferior claw.

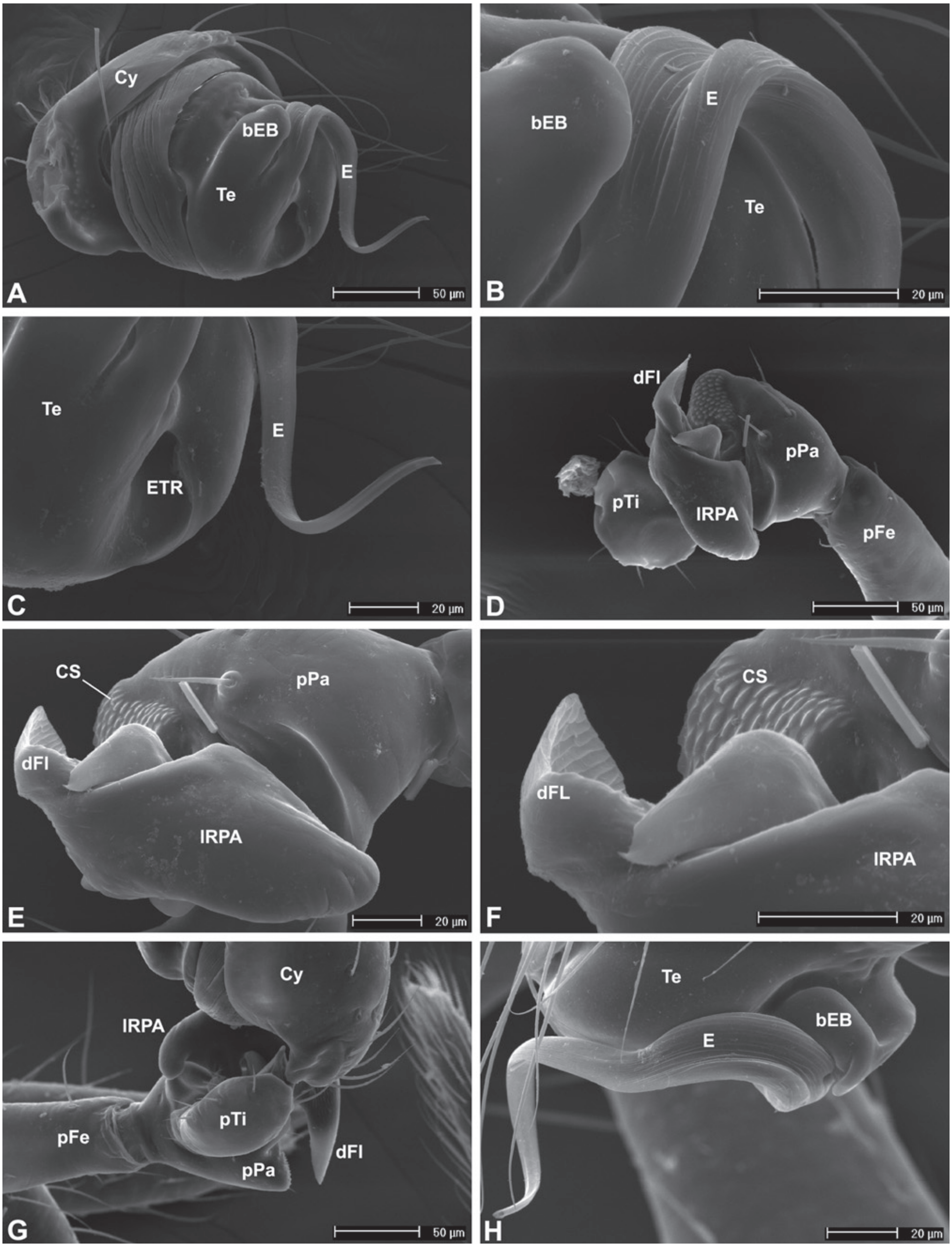


Figure 134. Scanning electron micrographs of pedipalp of male *Taliniella nigra* (Forster) from the Aorangi Mountains, New Zealand (AMNH).

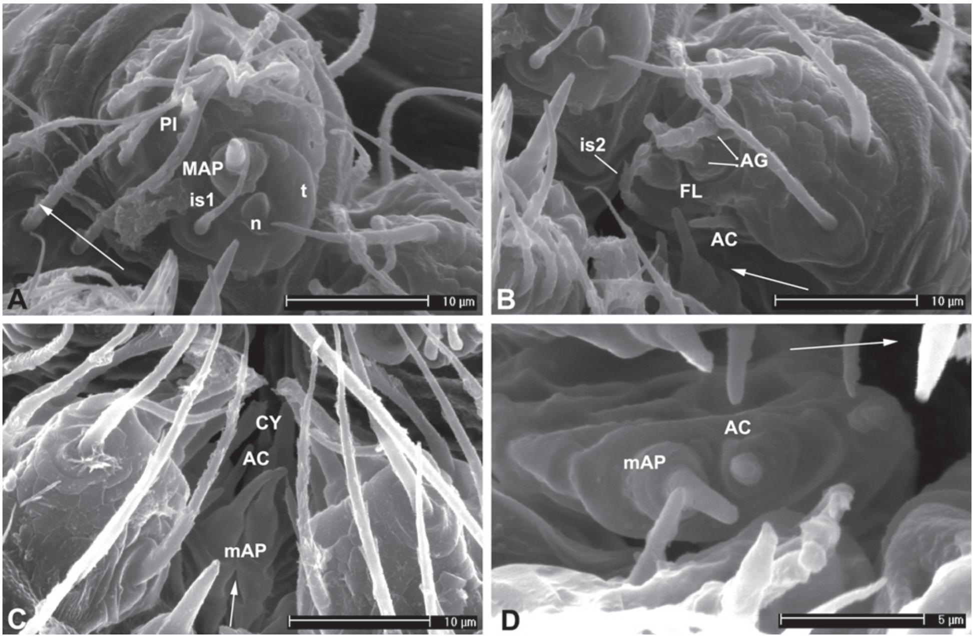


Figure 135. Scanning electron micrographs of spinnerets of *Taliniella nigra* (Forster) from the Aorangi Mountains, New Zealand (AMNH): **A** male anterior lateral spinnerets **B** male posterior lateral spinnerets **C** female posterior median spinnerets **D** male posterior median spinnerets. Arrows denote the anterior, mesal direction.

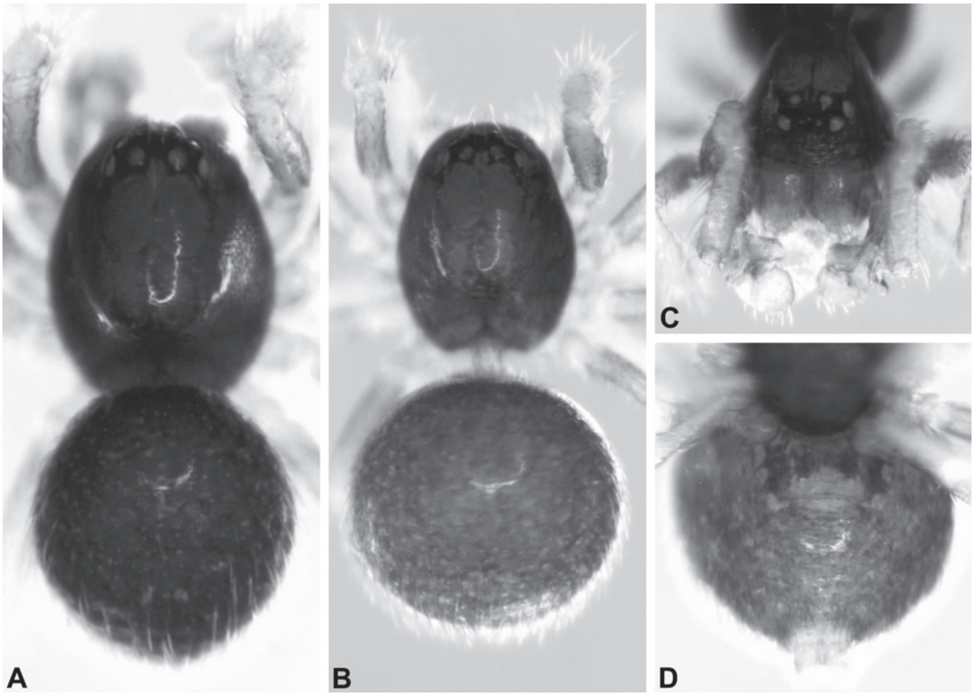


Figure 136. *Tinytrella pusilla* (Forster) from Lake Te Anau, New Zealand (CAL): **A** male habitus, dorsal view **B** female habitus, dorsal view **C** male cephalothorax, frontal view **D** female abdomen, ventral view.

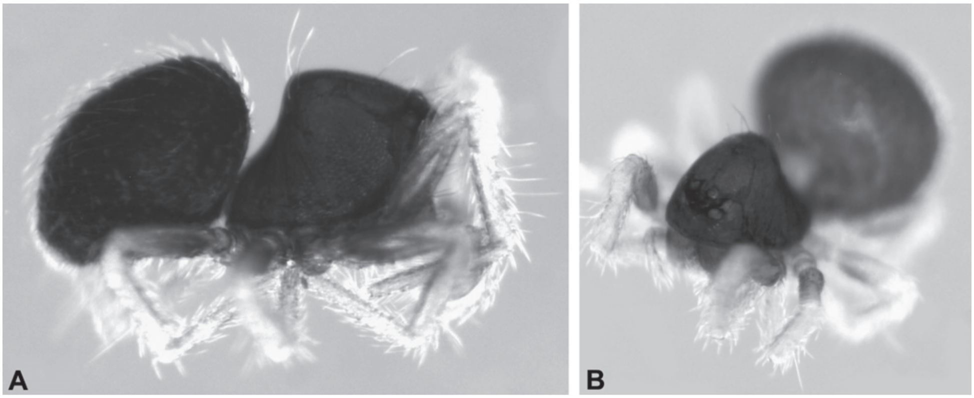


Figure 137. *Tinytrella pusilla* (Forster) from Lake Te Anau, New Zealand (CAL): **A** male habitus, lateral view **B** female habitus, antero-lateral view.

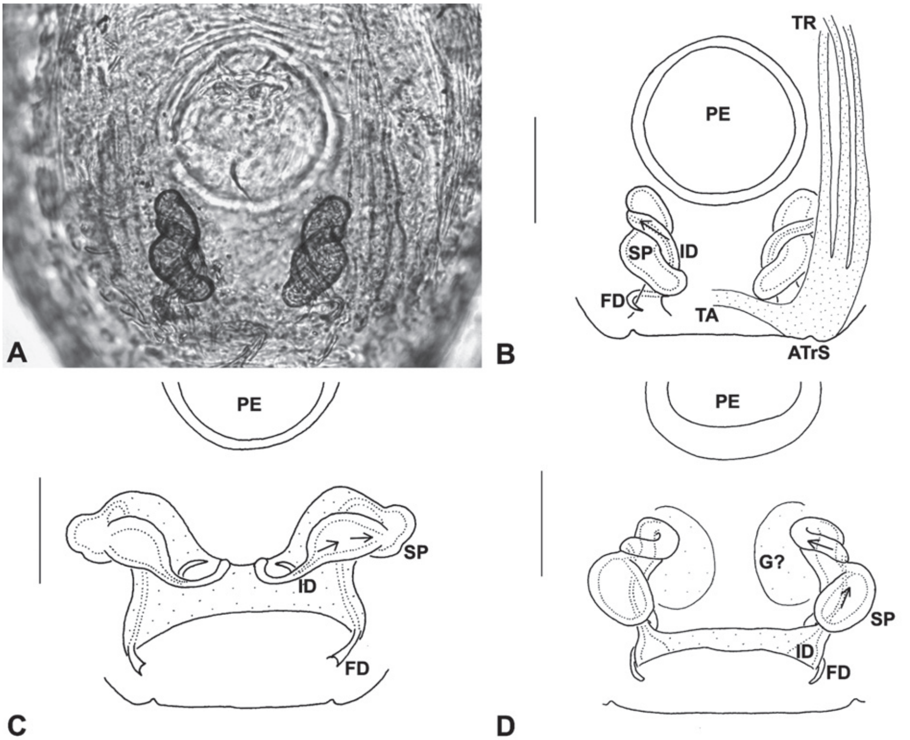


Figure 138. *Tinytrella*, *Taliniella*, *Algidiella* species, female cleared receptacula, dorsal view: **A–B** *Tinytrella pusilla* (Forster) from north of Te Anau, New Zealand (AMNH) **C** *Taliniella nigra* (Forster) from the Aorangi Mountains, New Zealand (AMNH) **D** *A. aucklandica* (Forster) from Auckland Island, New Zealand (AMNH). Arrows indicate the trajectory of insemination ducts. Scale bars = 0.065 mm (65 μm).

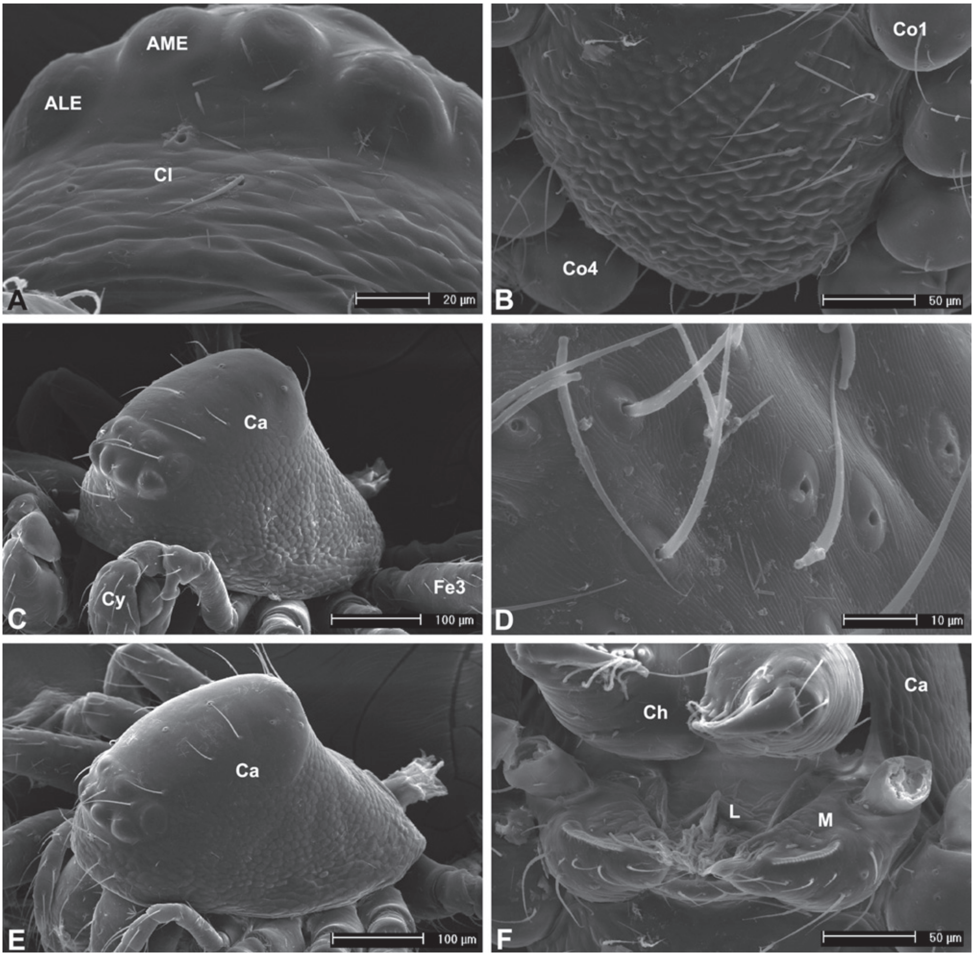


Figure 139. Scanning electron micrographs of *Tinytrella pusilla* (Forster) from north of Te Anau, New Zealand (AMNH): **A** male eyes and clypeus, frontal view **B** male sternum, ventral view **C** male cephalothorax, antero-lateral view **D** male abdominal cuticle **E** female cephalothorax, dorso-lateral view **F** male chelicerae and labrum.

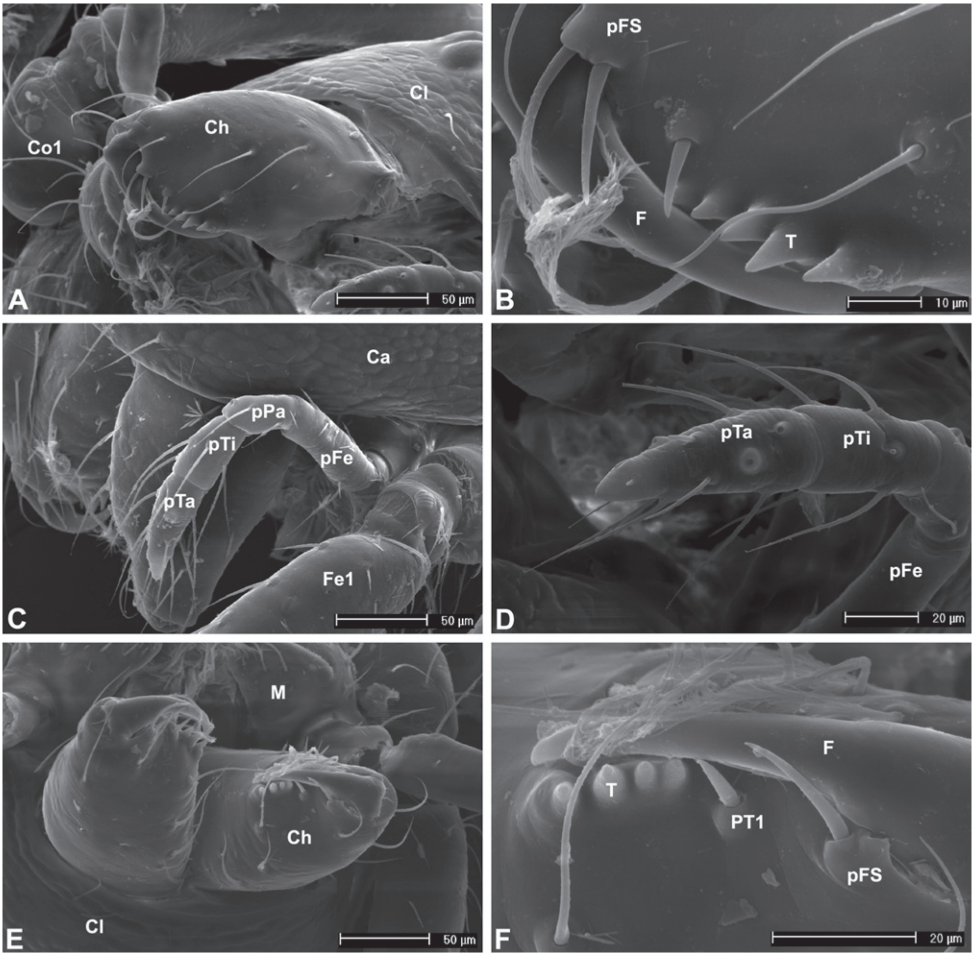


Figure 140. Scanning electron micrographs of *Tinytrella pusilla* (Forster) from north of Te Anau, New Zealand (AMNH): **A** female right chelicera (left removed), frontal view **B** female cheliceral promargin **C** female pedipalp, antero-lateral view **D** tip of female pedipalp; **E**, male chelicerae, antero-ventral view **F** male cheliceral promargin.

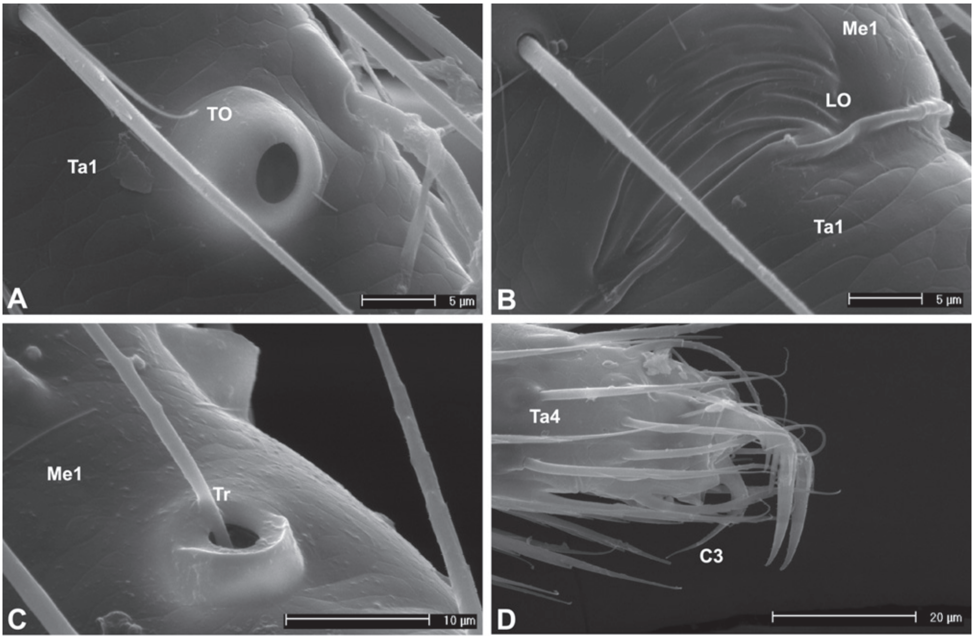


Figure 141. Scanning electron micrographs of female *Tinytrella pusilla* (Forster) from north of Te Anau, New Zealand (AMNH): **A** leg I tarsal organ **B** leg I lyriform organ **C** leg I metatarsal trichobothrium **D** leg IV claws, showing elongate inferior claw.

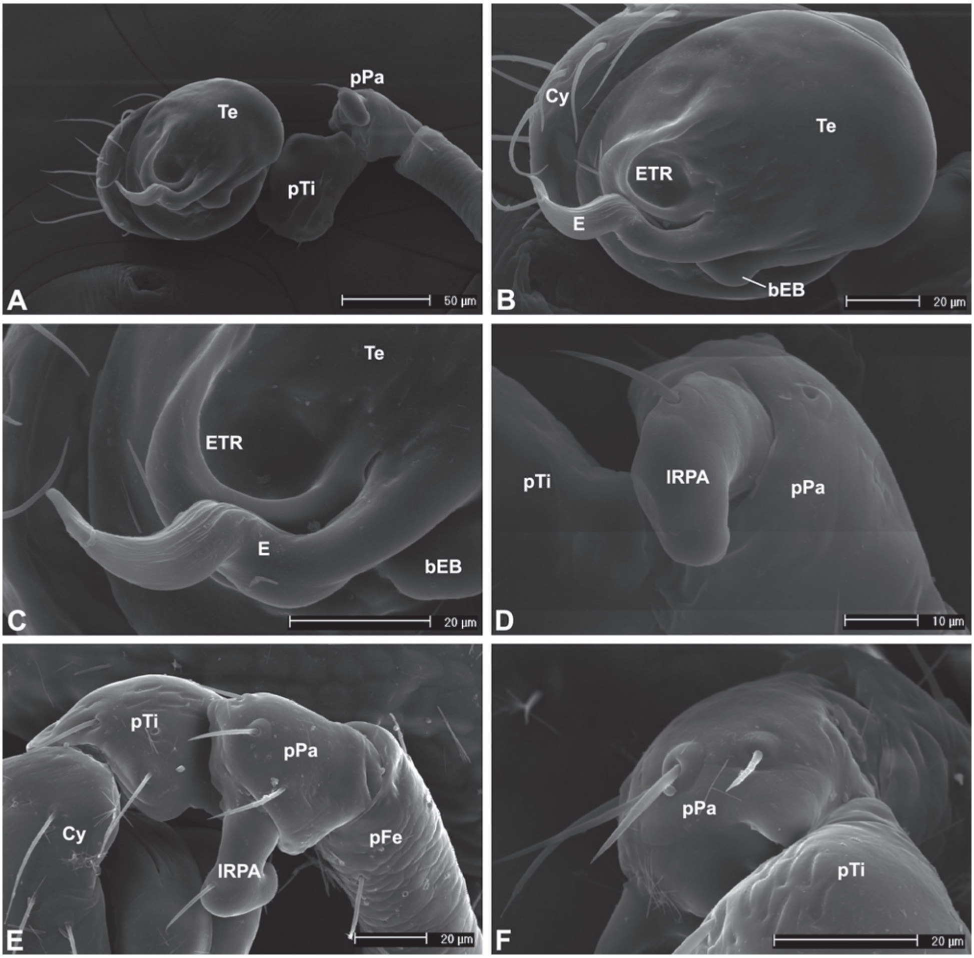


Figure 142. Scanning electron micrographs of pedipalp of male *Tinytrella pusilla* (Forster) from north of Te Anau, New Zealand (AMNH).

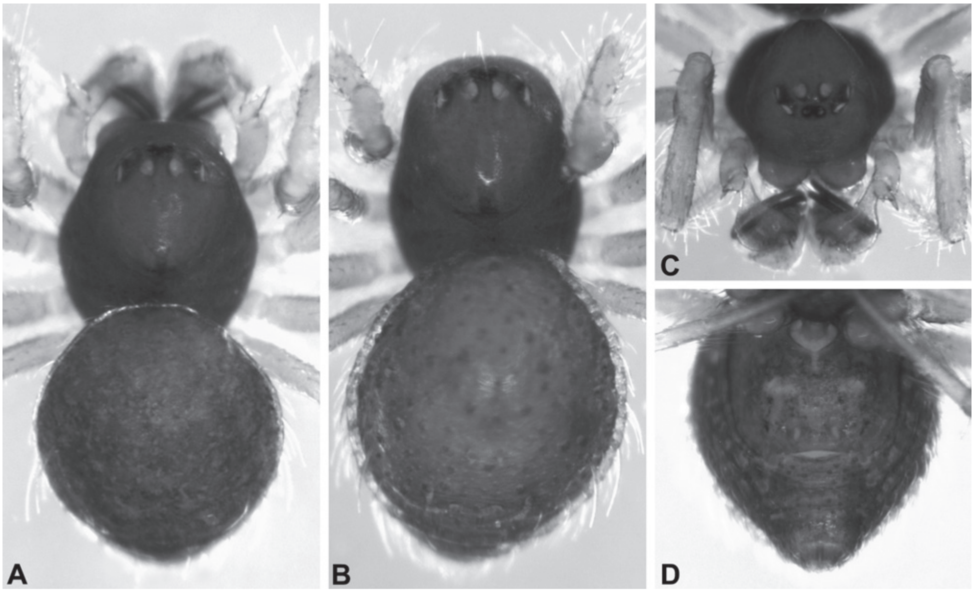


Figure 143. *Patelliella adusta* sp. n. from Lord Howe Island, New South Wales. **A, C** holotype male (QMB S88030): **A** habitus, dorsal view **C** cephalothorax, antero-dorsal view. **B, D** allotype female (QMB S88031): **B** habitus, dorsal view **D** abdomen, ventral view.

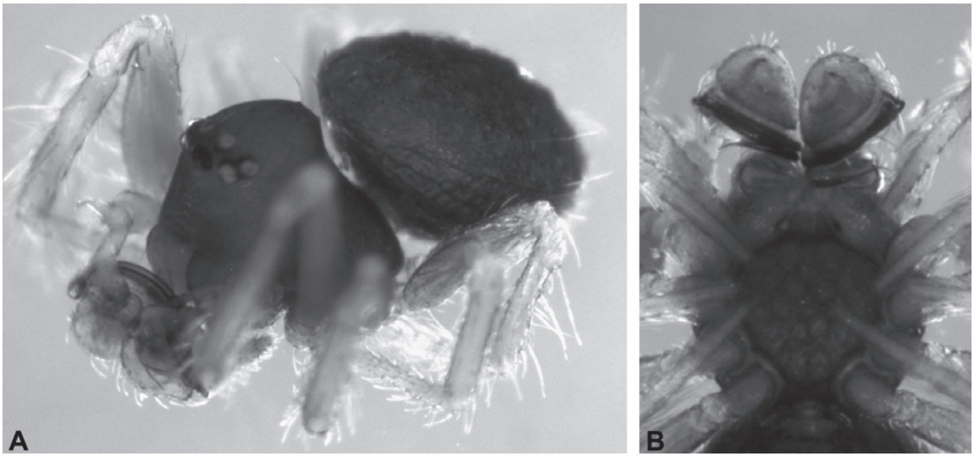


Figure 144. *Patelliella adusta* sp. n., holotype male from Lord Howe Island, New South Wales (QMB S88030): **A** habitus, antero-lateral view **B** cephalothorax and pedipalps, ventral view.

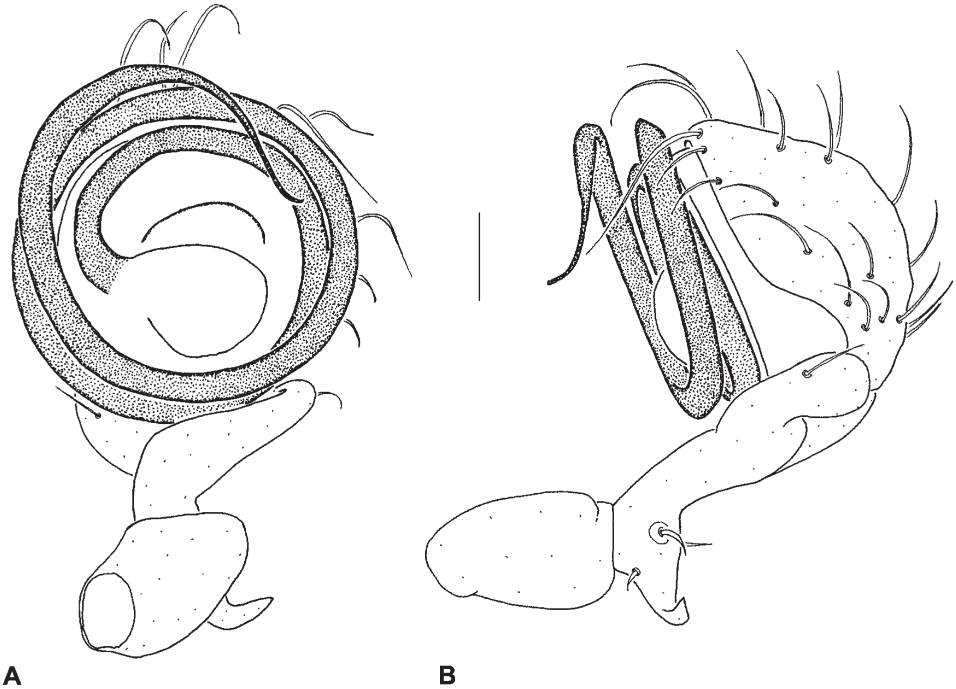


Figure 145. *Patelliella adusta* sp. n., paratype male from Lord Howe Island, New South Wales (QMB S88032): **A** left pedipalp, ventral view **B** left pedipalp, retrolateral view. Scale bar = 0.065 mm (65 µm).

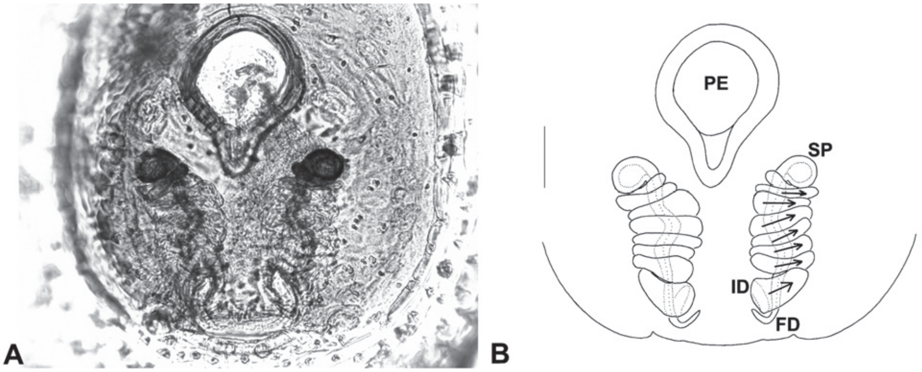


Figure 146. *Patelliella adusta* sp. n., paratype female from Lord Howe Island, New South Wales (AMS KS79112), cleared receptacula, dorsal view. Arrows indicate the trajectory of insemination ducts. Scale bar = 0.065 mm (65 µm).

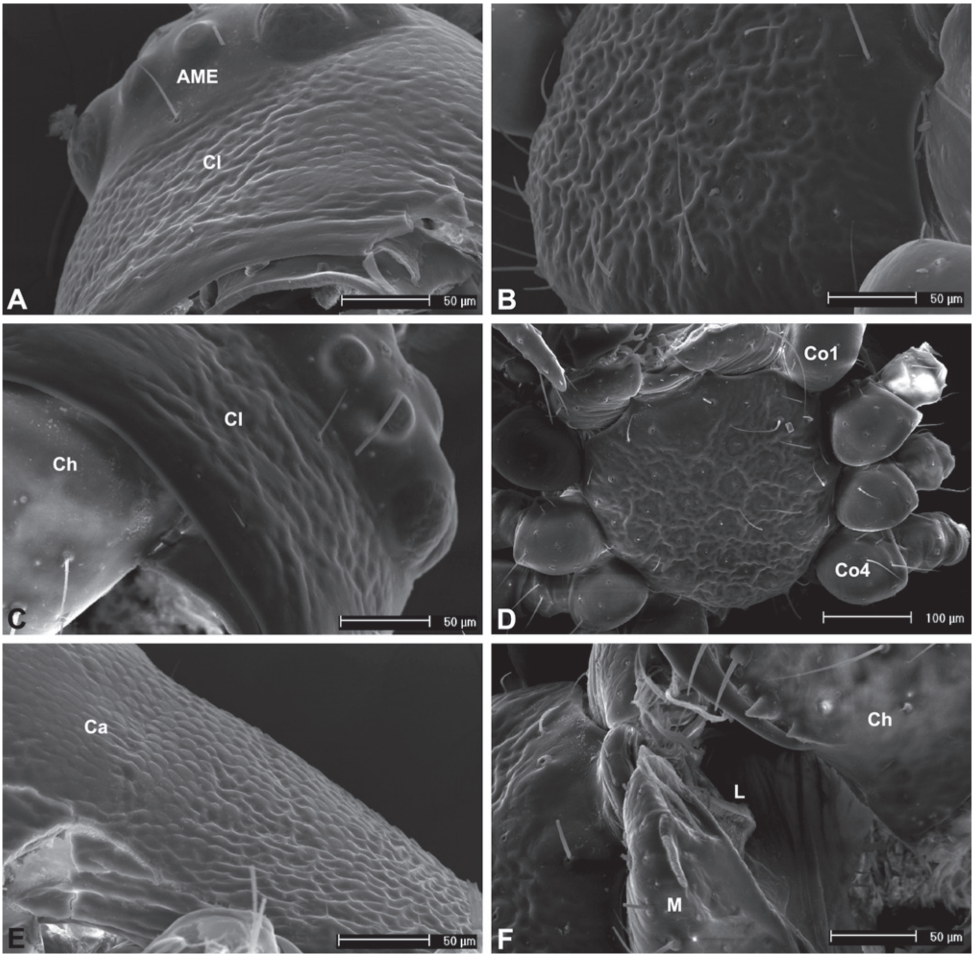


Figure 147. Scanning electron micrographs of *Patelliella adusta* sp. n. from Lord Howe Island, New South Wales (QMB S88032): **A** male eyes and clypeus, antero-ventral view **B** male sternum, ventral view **C** female eyes and clypeus, frontal view **D** female sternum, ventral view **E** male carapace, lateral view **F** female chelicera and labrum.

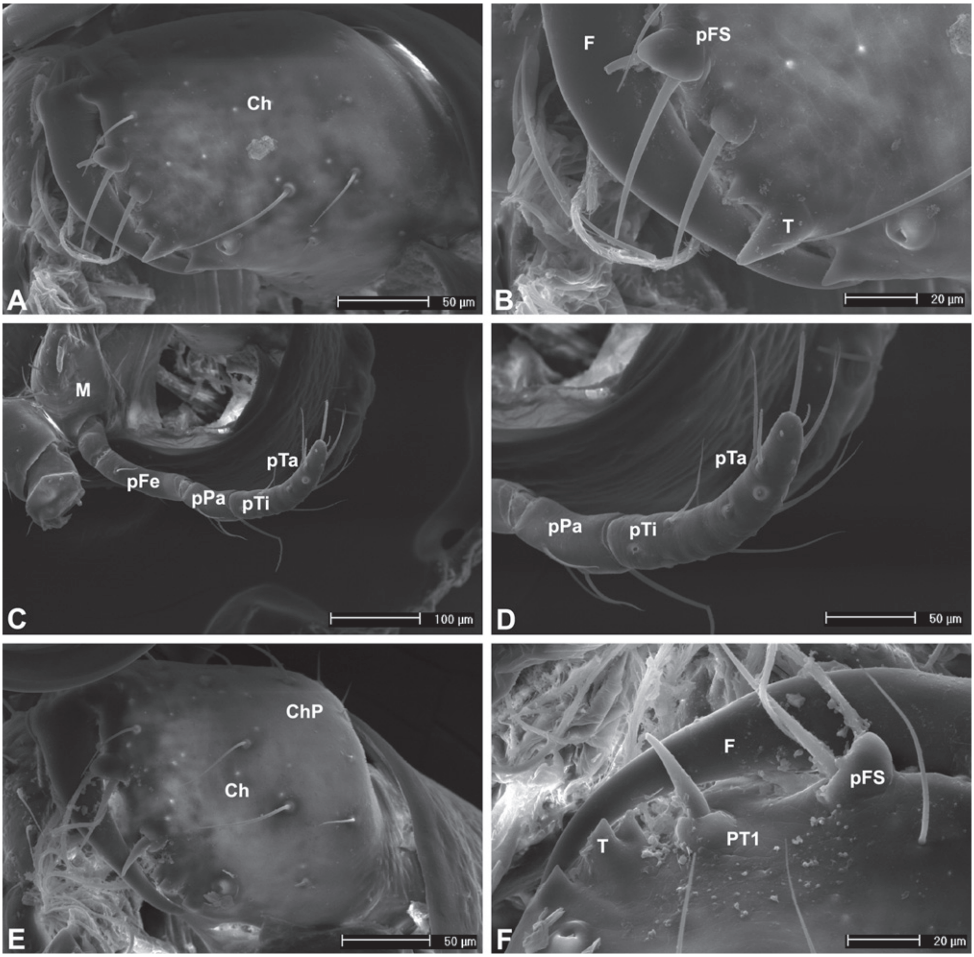


Figure 148. Scanning electron micrographs of *Patelliella adusta* sp. n. from Lord Howe Island, New South Wales (QMB S88032): **A** female right chelicera (left removed), frontal view **B** female cheliceral promargin **C** female pedipalp, frontal view **D** tip of female pedipalp **E** male right chelicera (left removed), frontal view **F** male cheliceral promargin.

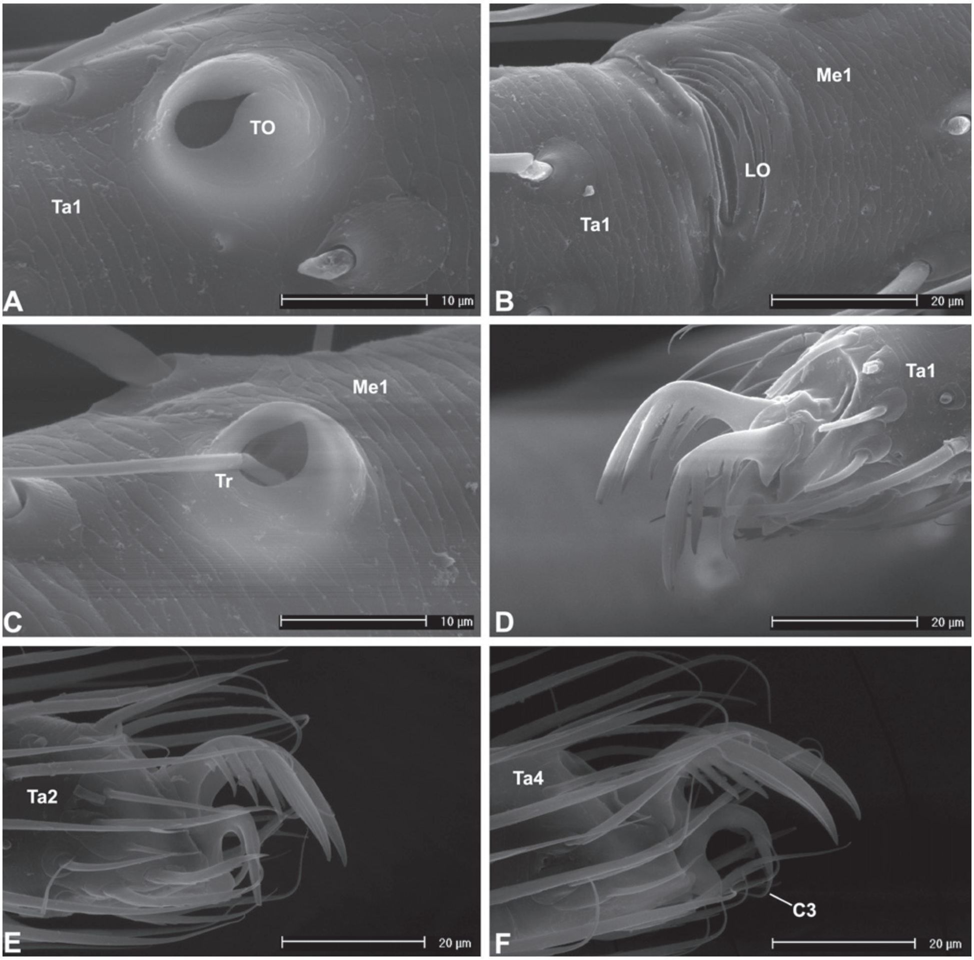


Figure 149. Scanning electron micrographs of female *Patelliella adusta* sp. n. from Lord Howe Island, New South Wales (QMB S88032): **A** leg I tarsal organ **B** leg I lyriform organ **C** leg I metatarsal trichobothrium **D** leg I claws **E** leg II claws **F** leg IV claws, showing elongate inferior claw.

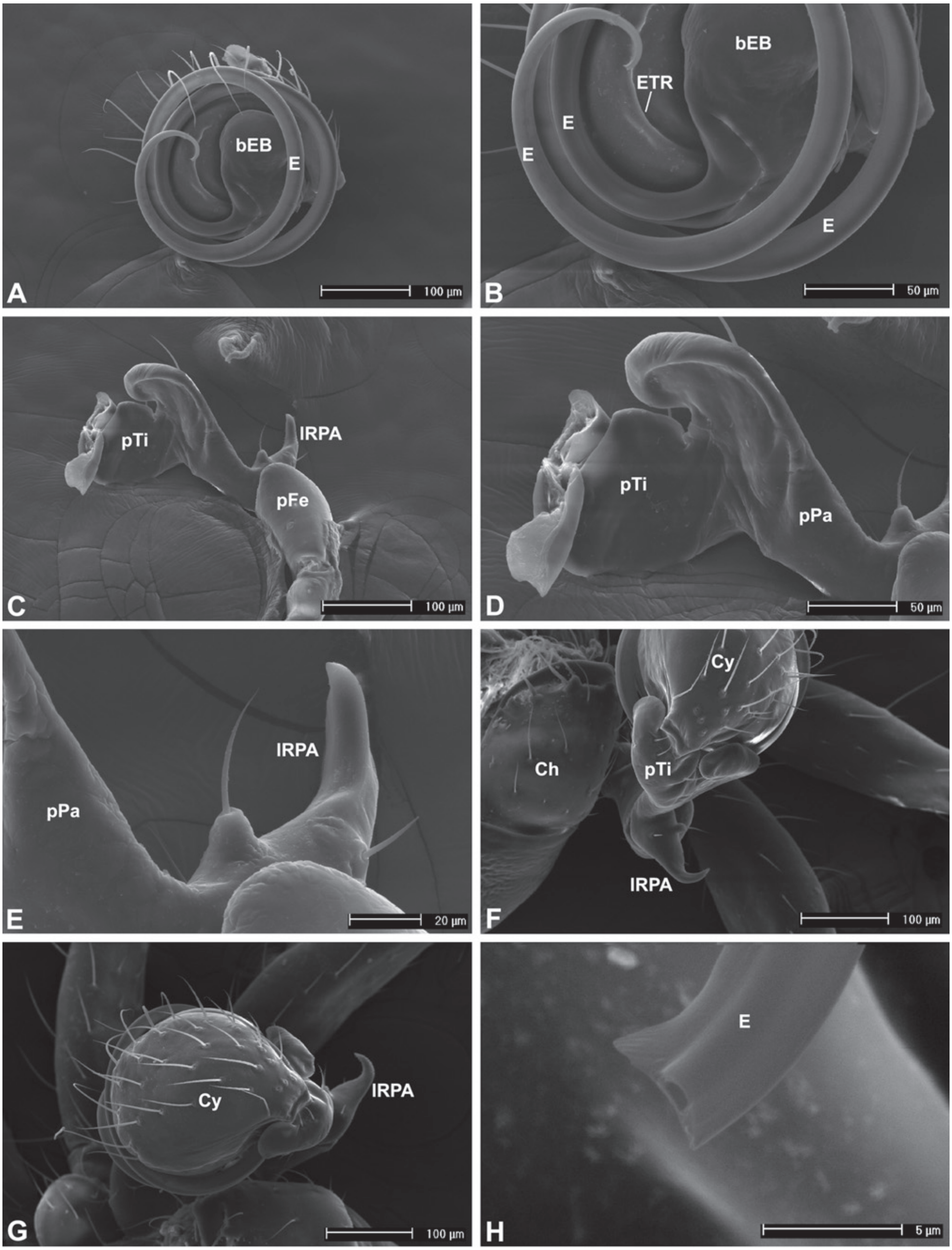


Figure 150. Scanning electron micrographs of pedipalp of male *Patelliella adusta* sp. n. from Lord Howe Island, New South Wales (QMB S88032).

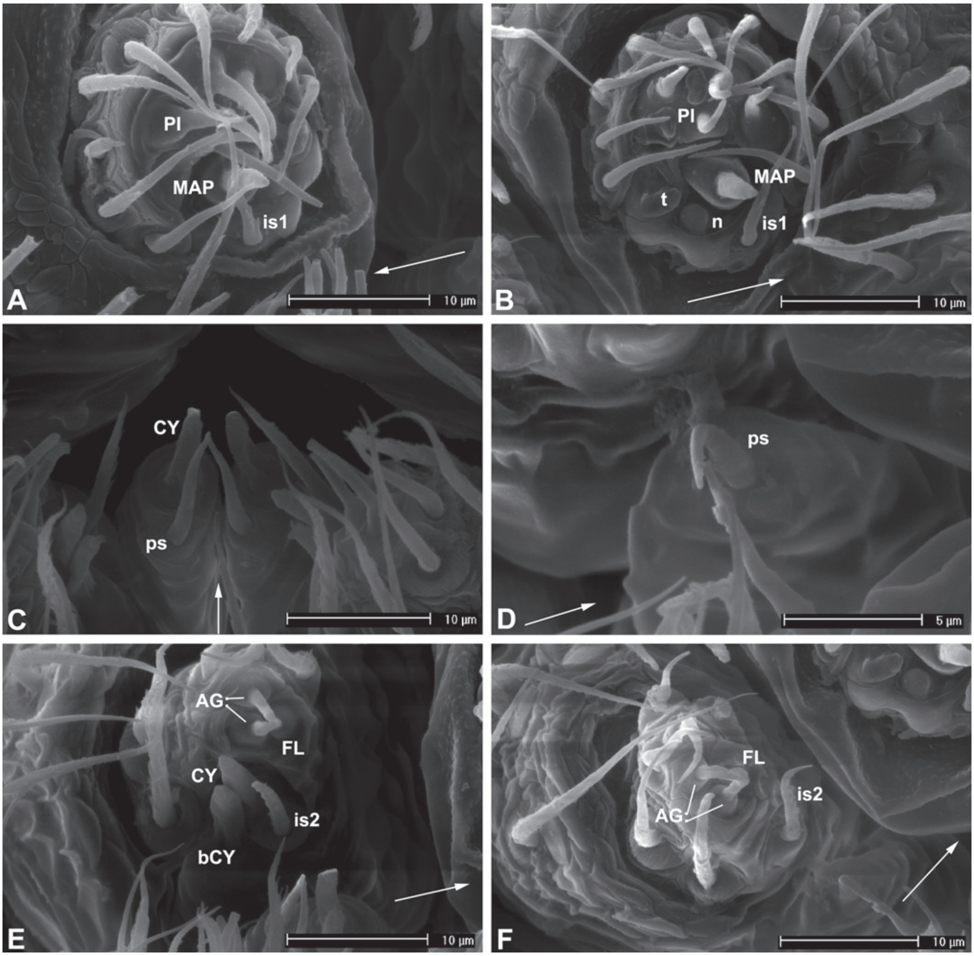


Figure 151. Scanning electron micrographs of spinnerets of female (left) and male (right) *Patelliella adusta* sp. n. from Lord Howe Island, New South Wales (QMB S88032): **A–B** anterior lateral spinnerets **C–D** posterior median spinnerets **E–F** posterior lateral spinnerets. Arrows denote the anterior, mesal direction.

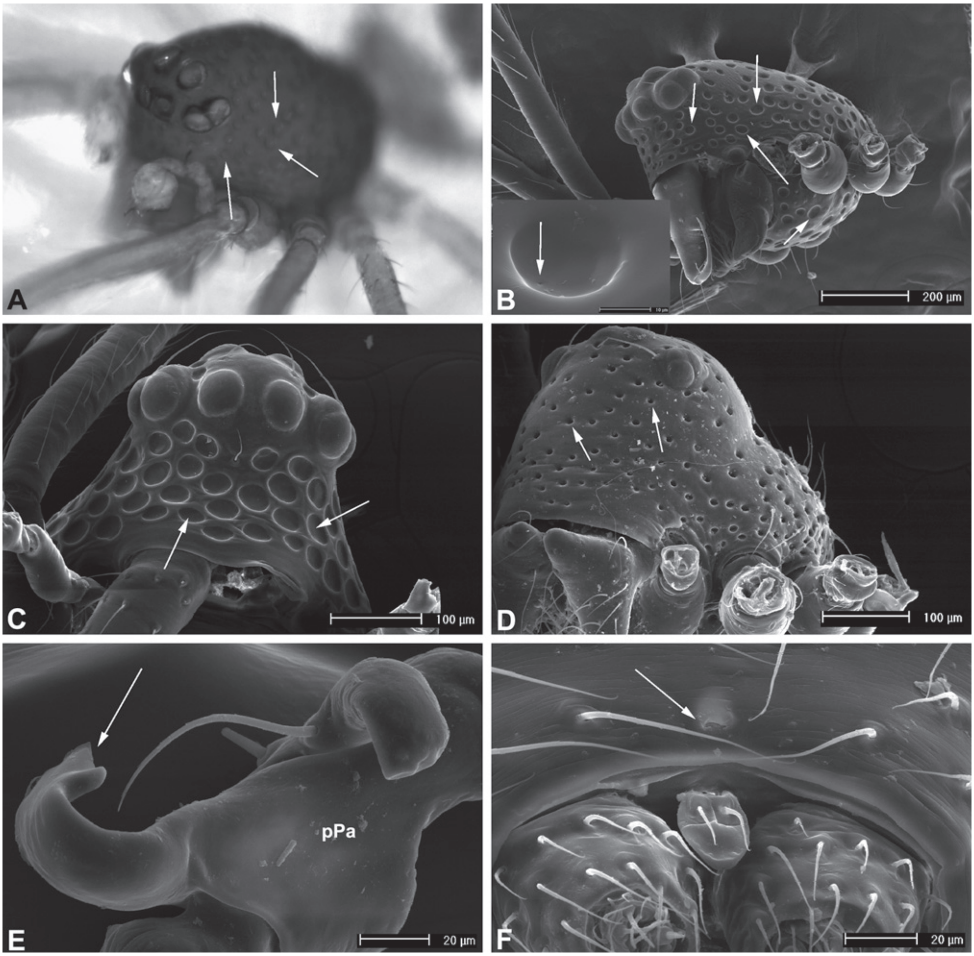


Figure 152. Diagnostic characters of the subfamily Taphiassinae. **A** cephalothorax of male *Taphiassa robertsi* sp. n., antero-lateral view, showing the many large pits evenly-distributed over the carapace **B–D** scanning electron micrographs showing glandular pits on cephalothorax of male *T. robertsi* (B), male *T. castanea* sp. n. (C) and male *Olgania excavata* Hickman (D) **E** scanning electron micrograph showing the strongly-recurved distal patellar apophysis of male *O. excavata* **F** scanning electron micrograph showing the vestigial posterior tracheal spiracle of male *T. robertsi*.

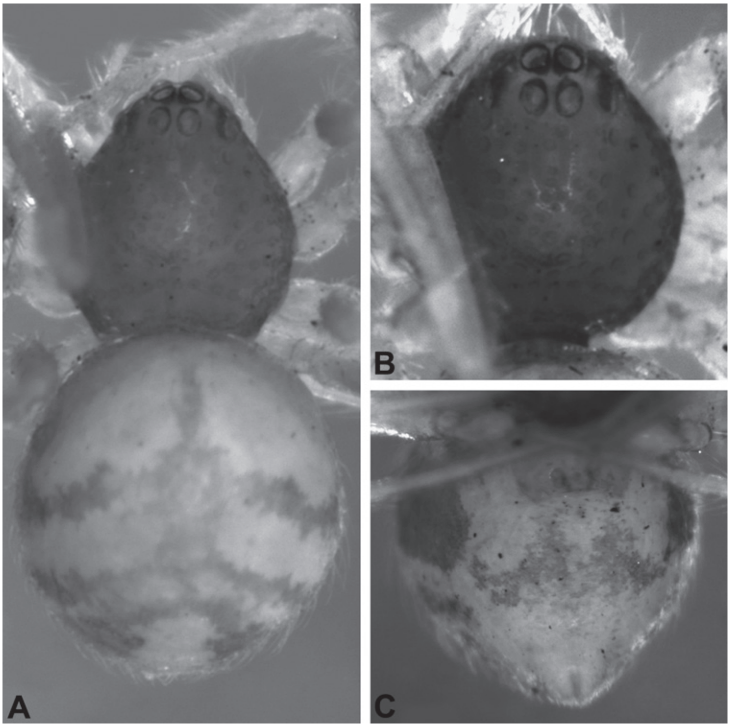


Figure 153. *Taphiassa impresssa* Simon, holotype female from Nouméa, New Caledonia (MNHN AR3747): **A** habitus, dorsal view **B** carapace, dorsal view **C** abdomen, ventral view.

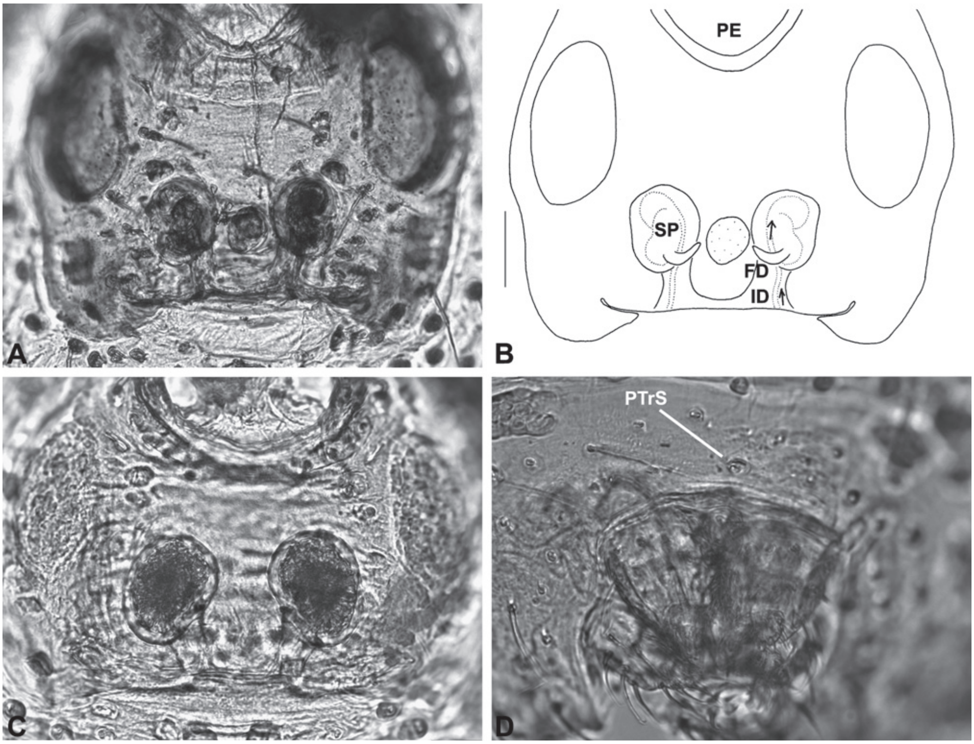


Figure 154. *Taphiassa* species, female cleared receptacula, dorsal view: **A–B**, *T. ~impressa* Simon from Mont Koghis, New Caledonia (AMNH) **C** *T. robertsi* sp. n. from Yanchep National Park, Western Australia (WAM T94522) **D** cleared posterior abdomen of *T. robertsi*, showing the vestigial posterior tracheal spiracle and absence of posterior tracheae. Arrows indicate the trajectory of insemination ducts. Scale bar = 0.065 mm (65 μm).

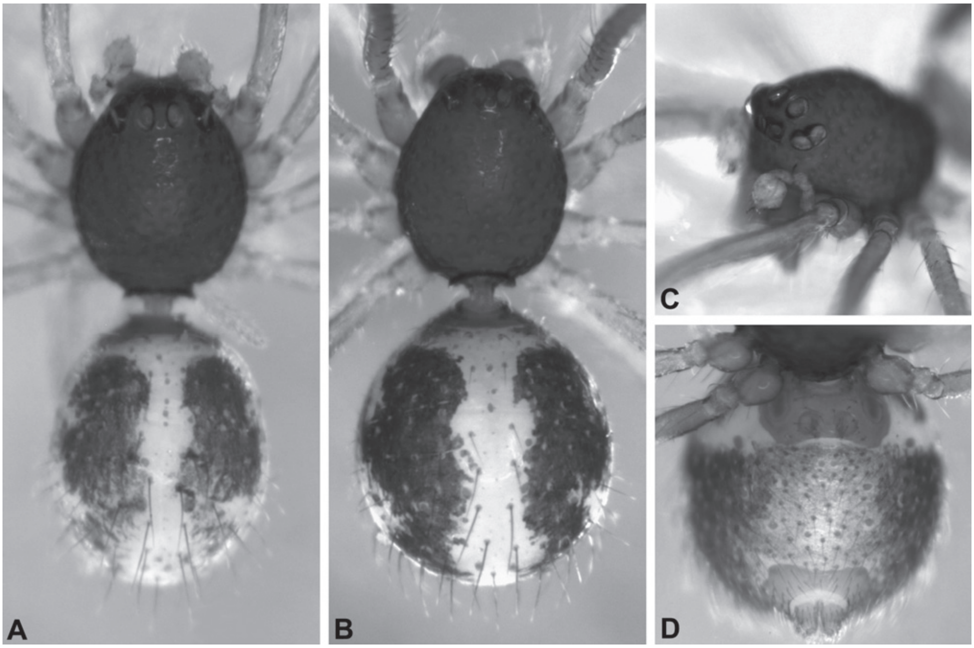


Figure 155. *Taphiassa robertsi* sp. n. from Yanchep, Western Australia. **A, C** holotype male (WAM T94519): **A** habitus, dorsal view **C** cephalothorax, antero-lateral view. **B, D** allotype female (WAM T94520): **B** habitus, dorsal view **D** abdomen, ventral view.

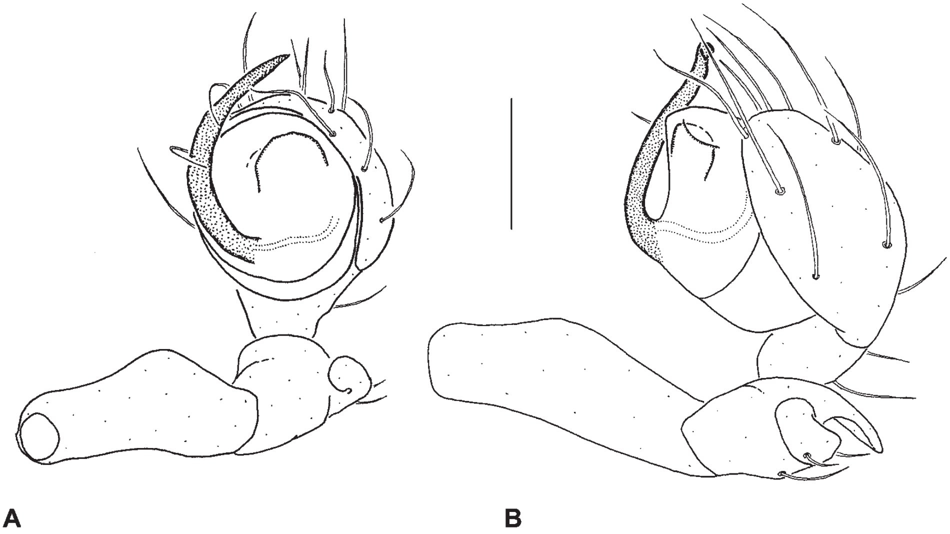


Figure 156. *Taphiassa robertsi* sp. n., holotype male from Yanchep National Park, Western Australia (WAM T94519): **A** left pedipalp, ventral view **B** left pedipalp, retrolateral view. Scale bar = 0.065 mm (65 µm).

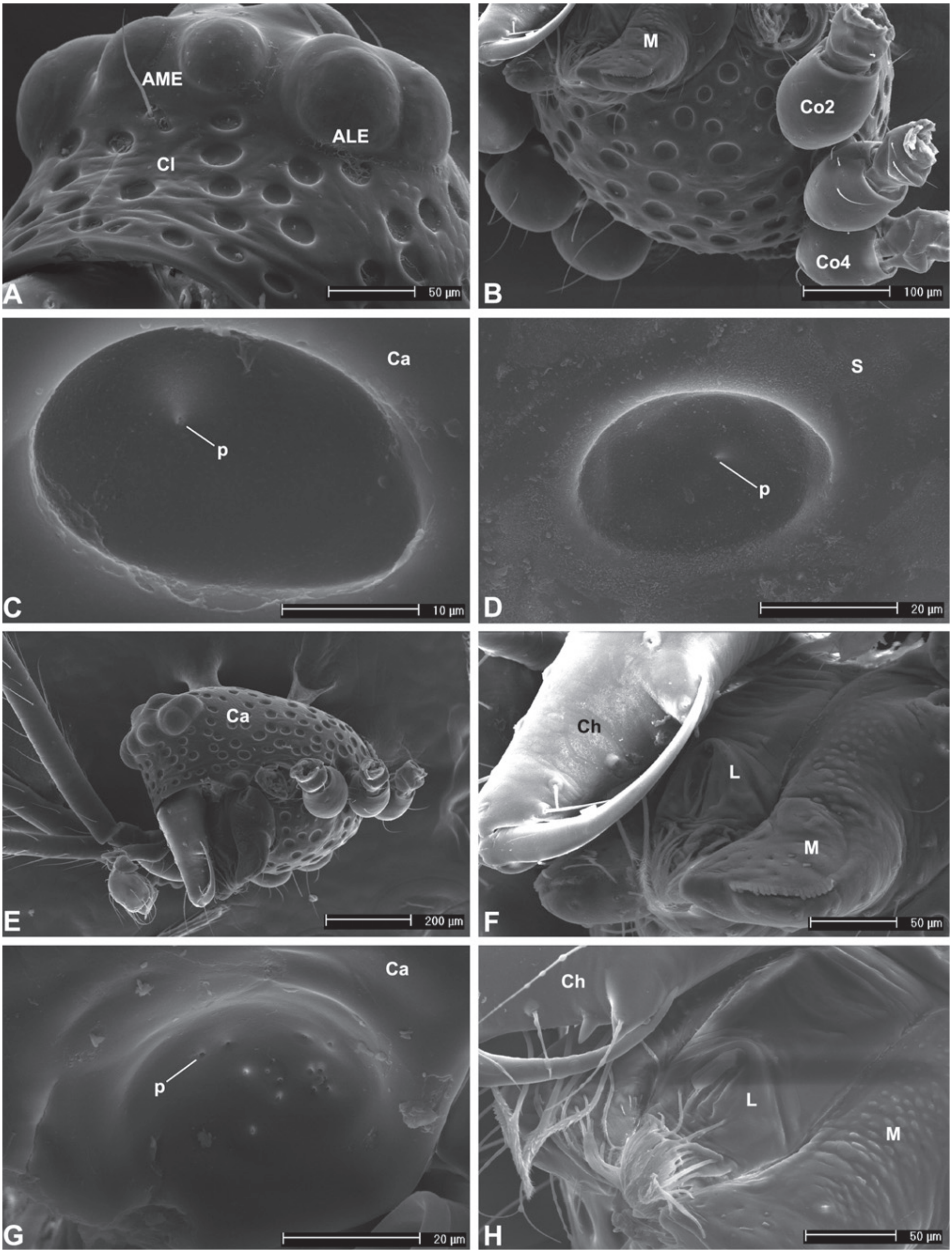


Figure 157. Scanning electron micrographs of male (WAM T94521) and female (WAM T94525) *Taphiassa robertsi* sp. n. from Yanchep National Park, Western Australia: **A** male eyes and clypeus, frontal view **B** male sternum, ventro-lateral view **C** male carapace pit and glandular pore **D** male sternal pit and glandular pore **E** male cephalothorax, antero-lateral view **F** male chelicera and labrum **G** male corner of carapace above left maxilla, showing glandular depression **H** female chelicera and labrum.

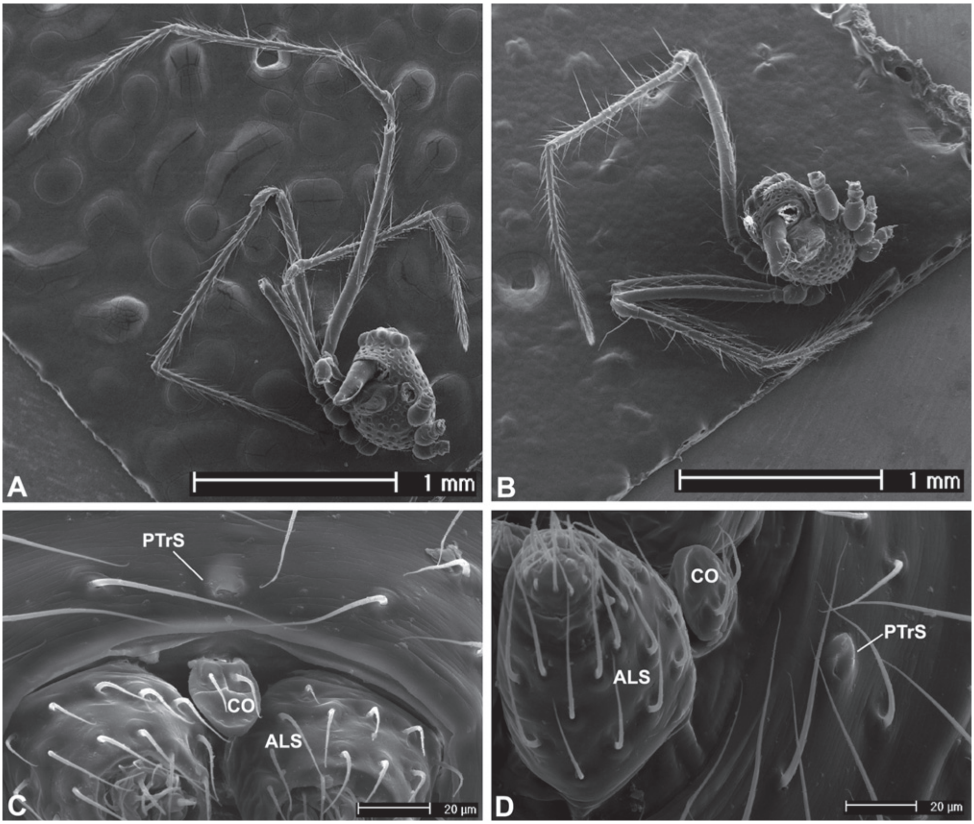


Figure 158. Scanning electron micrographs of male (WAM T94521) and female (WAM T94525) *Taphiassa robertsi* sp. n. from Yanchep National Park, Western Australia: **A** male cephalothorax and legs **B** female cephalothorax and legs **C** male vestigial posterior tracheal spiracle **D** female vestigial posterior tracheal spiracle.

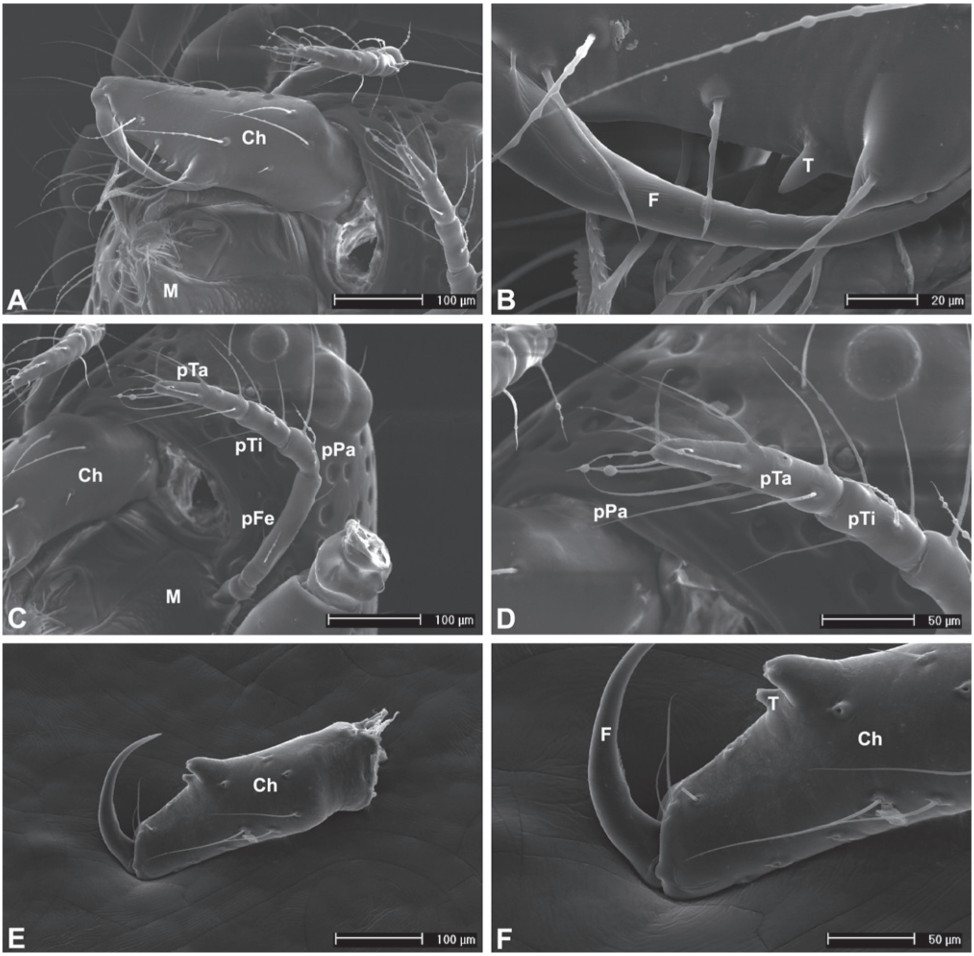


Figure 159. Scanning electron micrographs of male (WAM T94521) and female (WAM T94525) *Taphiassa robertsi* sp. n. from Yanchep National Park, Western Australia: **A** female right chelicera (left removed), antero-lateral view **B** female cheliceral promargin **C** female pedipalp, frontal view **D** tip of female pedipalp **E** male left chelicera, dorsal view **F** male cheliceral promargin.

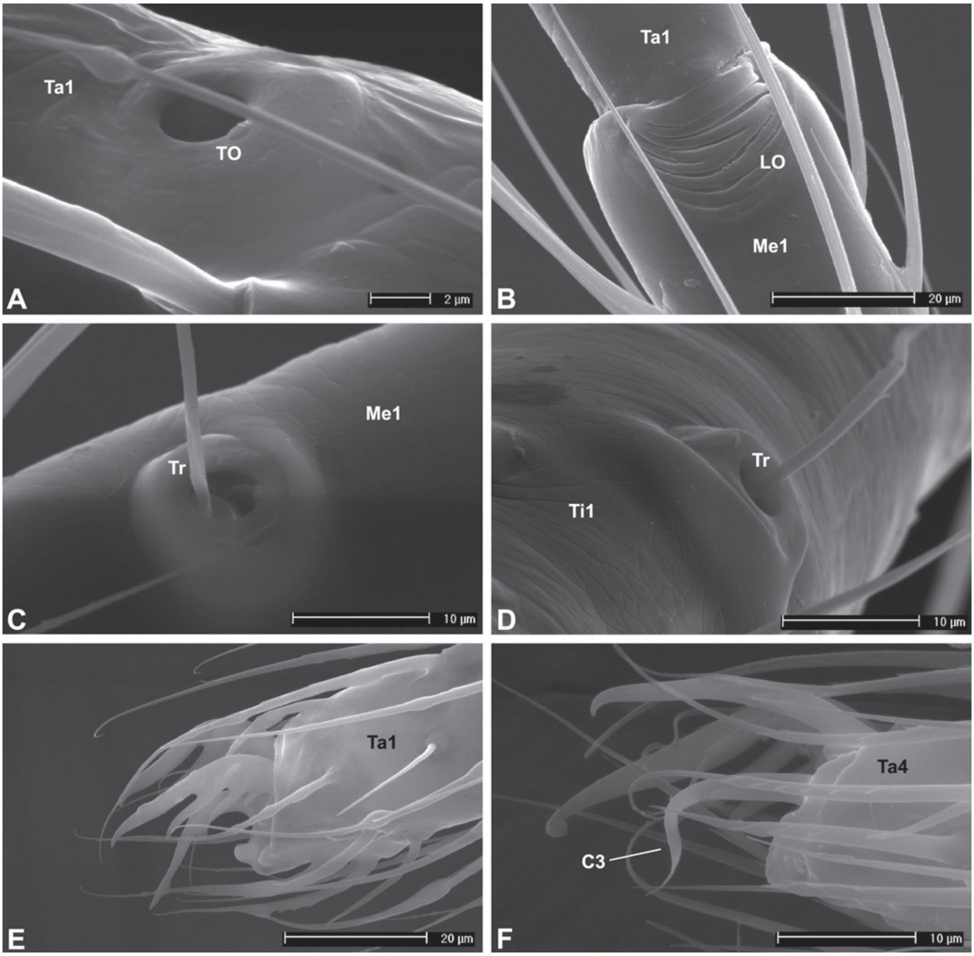


Figure 160. Scanning electron micrographs of female *Taphiassa robertsi* sp. n. from Yanchep National Park, Western Australia (WAM T94525): **A** leg I tarsal organ **B** leg I lyriform organ **C** leg I metatarsal trichobothrium **D** leg I tibial trichobothrium **E** leg I claws **F** leg IV claws, showing elongate inferior claw and asymmetric superior claws.

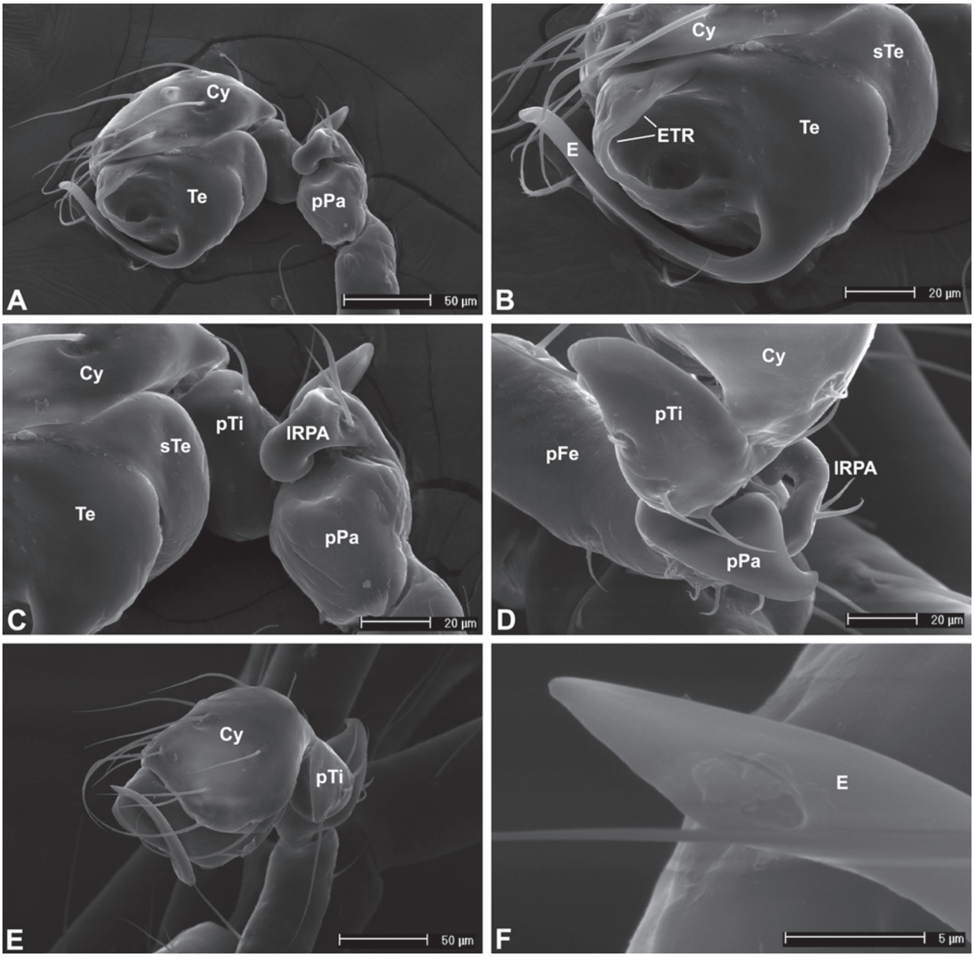


Figure 161. Scanning electron micrographs of pedipalp of male *Taphiassa robertsi* sp. n. from Yanchep National Park, Western Australia (WAM T94521).

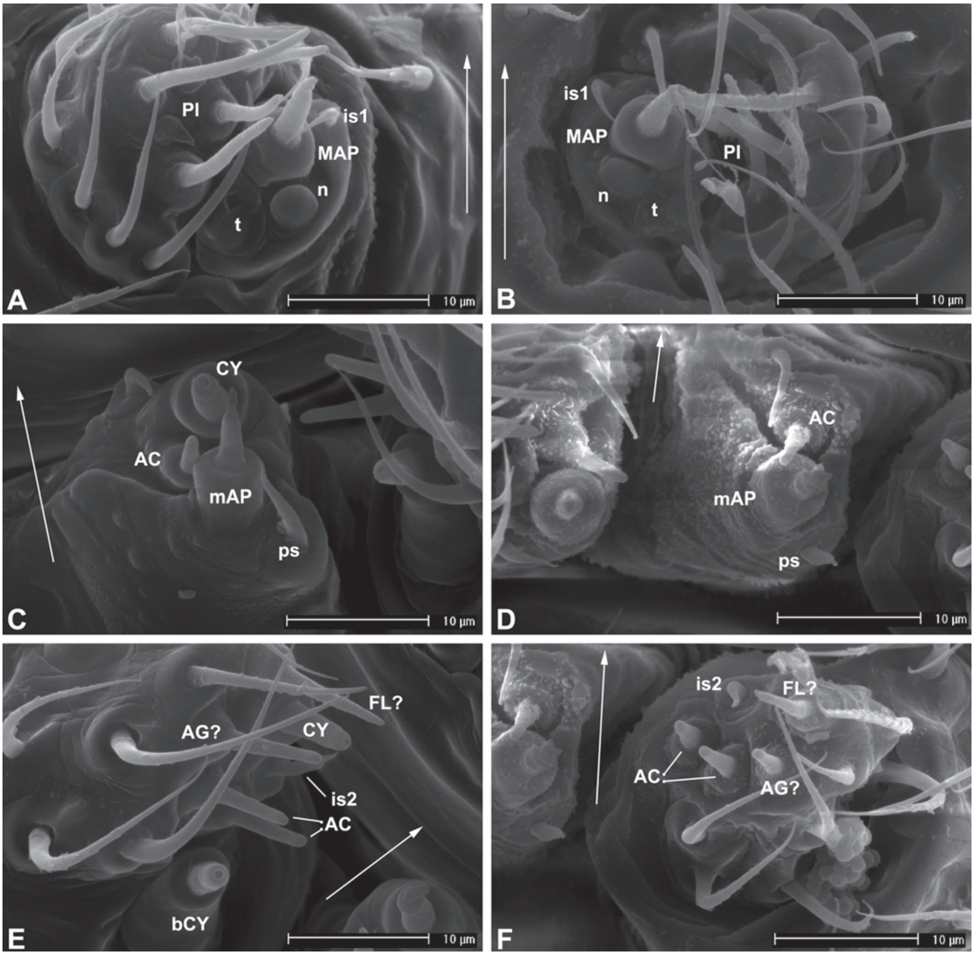


Figure 162. Scanning electron micrographs of spinnerets of female (WAM T94525) (left) and male (WAM T94521) (right) *Taphiassa robertsi* sp. n. from Yanchep National Park, Western Australia: **A–B** anterior lateral spinnerets **C–D** posterior median spinnerets **E–F** posterior lateral spinnerets. Arrows denote the anterior, mesal direction.

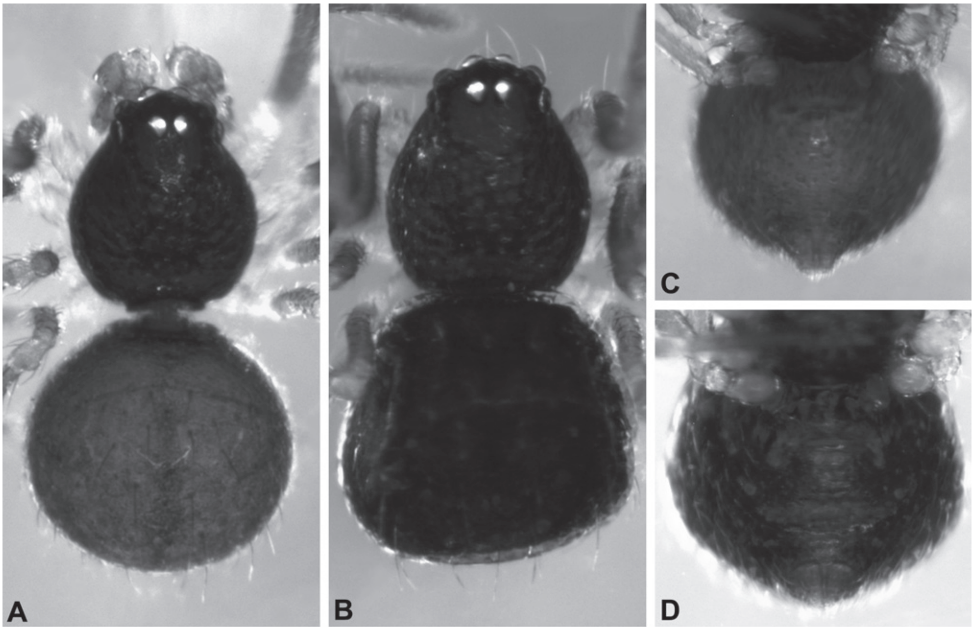


Figure 163. *Taphiassa castanea* sp. n. from Cuckoo Falls, Tasmania. **A, C** holotype male (TMAG): **A** habitus, dorsal view **C** abdomen, ventral view. **B, D** allotype female (TMAG): **B** habitus, dorsal view **D** abdomen, ventral view.

Figure 164. *Taphiassa castanea* sp. n., paratype male from Cuckoo Falls, Tasmania (WAM T94478): **A** left pedipalp, ventral view **B** left pedipalp, retrolateral view. Scale bar = 0.065 mm (65 µm).

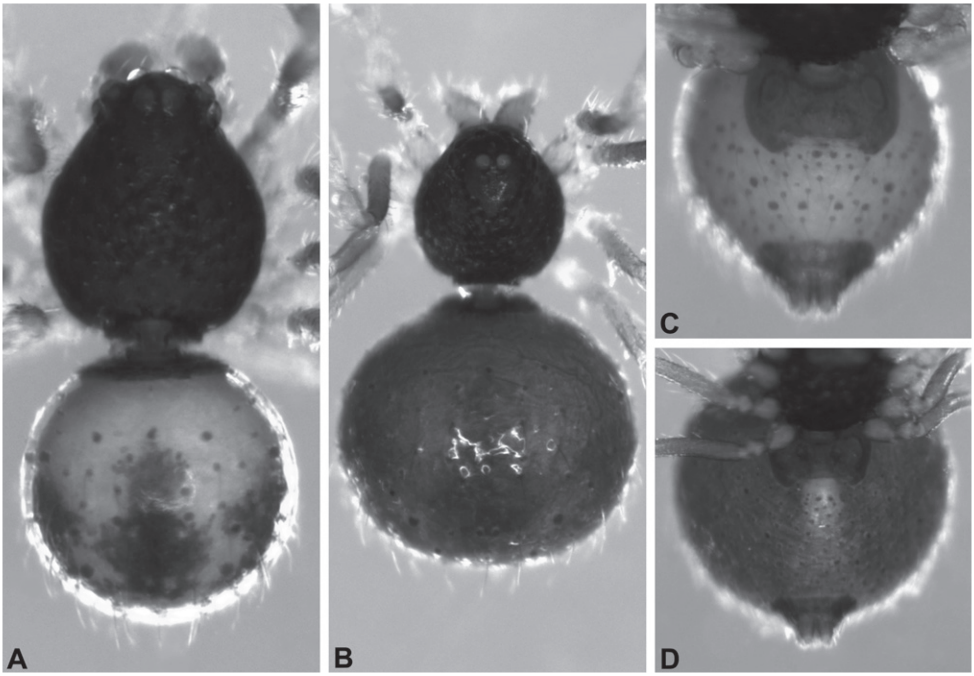


Figure 165. *Taphiassa globosa* sp. n. from Walpole-Nornalup National Park, Western Australia. **A, C** holotype male (WAM T96810): **A** habitus, dorsal view **C** abdomen, ventral view. **B, D** allotype female (WAM T96811): **B** habitus, dorsal view **D** abdomen, ventral view.

Figure 166. *Taphiassa globosa* sp. n., holotype male from Walpole-Nornalup National Park, Western Australia (WAM T96810): **A** left pedipalp, ventral view **B** left pedipalp, retrolateral view. Scale bar = 0.065 mm (65 µm).

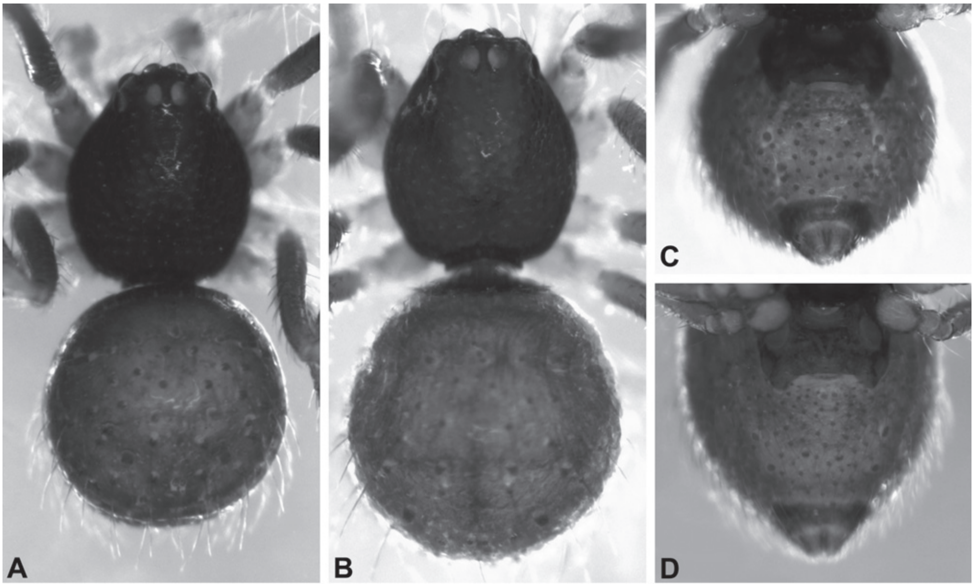


Figure 167. *Taphiassa magna* sp. n. from Lord Howe Island, New South Wales. **A, C** holotype male (QMB S88033): **A** habitus, dorsal view **C** abdomen, ventral view. **B, D** allotype female (AMS KS76214): **B** habitus, dorsal view **D** abdomen, ventral view.

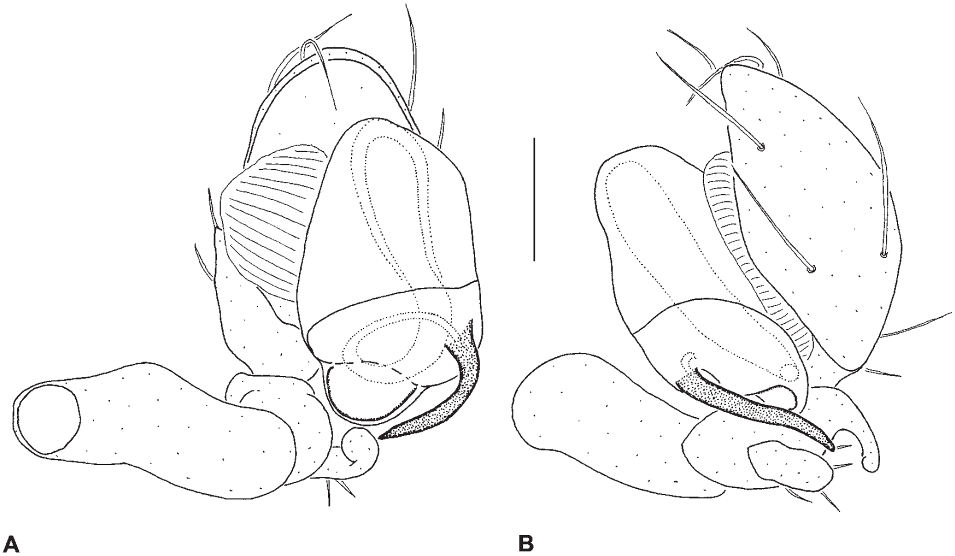


Figure 168. *Taphiassa magna* sp. n., holotype male from Lord Howe Island, New South Wales (QMB S88033): **A** left pedipalp, ventral view **B** left pedipalp, retrolateral view. Note the pedipalp is fully expanded. Scale bar = 0.065 mm (65 µm).

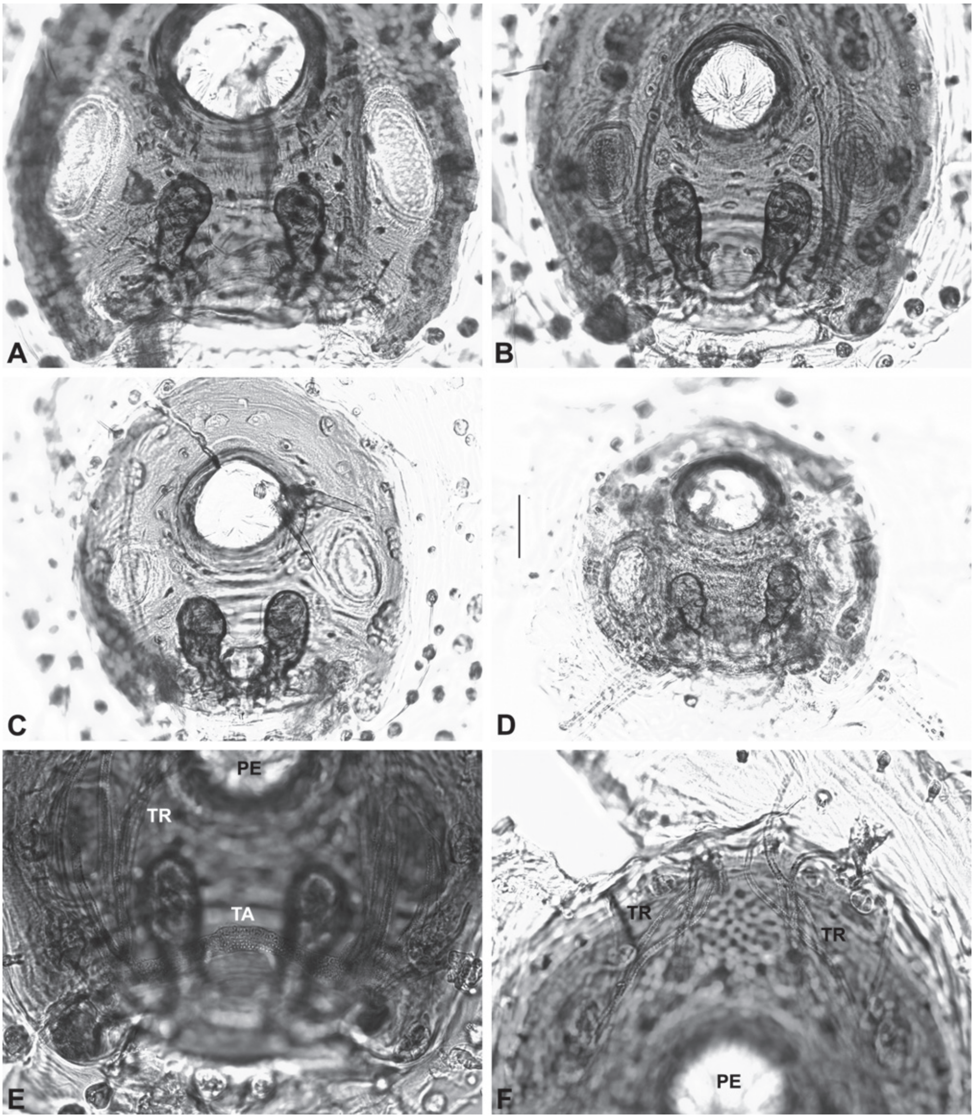


Figure 169. *Taphiassa* species, female cleared receptacula, dorsal view, (A)–(D) at scale-identical size for comparison: **A** *T. magna* sp. n. from Lord Howe Island, New South Wales (AMS KS76237) **B** *T. punctata* (Forster) from Lewis Pass, New Zealand (WAM T94480) **C** allotype *T. castanea* sp. n. from Cuckoo Falls, Tasmania (TMAG) **D** allotype *T. globosa* sp. n. from Walpole-Nornalup National Park, Western Australia (WAM T96811) **E–F** anterior tracheae of *T. punctata*. Scale bar = 0.065 mm (65 µm) for (A)-(D). Note the relatively large sizes of *T. magna* and *T. punctata*.

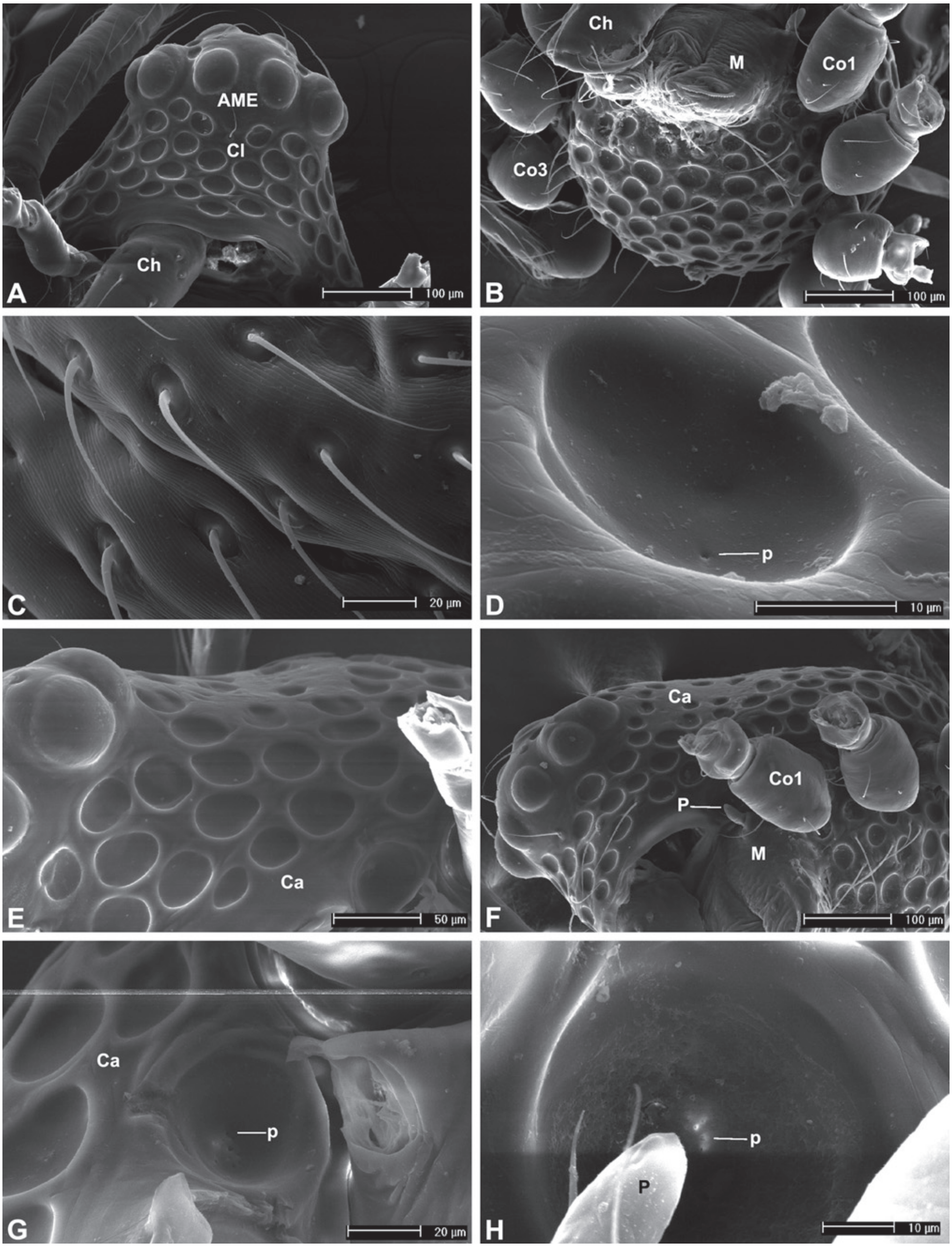


Figure 170. Scanning electron micrographs of *Taphiassa castanea* sp. n. from Mount Wellington, Tasmania (WAM T94475): **A** male eyes and clypeus, frontal view **B** female sternum, antero-ventral view **C** female abdominal cuticle **D** female sternal pit and glandular pore **E** male carapace, lateral view **F** female cephalothorax, ventro-lateral view **G** male corner of carapace above left maxilla, showing glandular depression **H** female corner of carapace above left maxilla, showing glandular depression and nubbin of pedipalp.

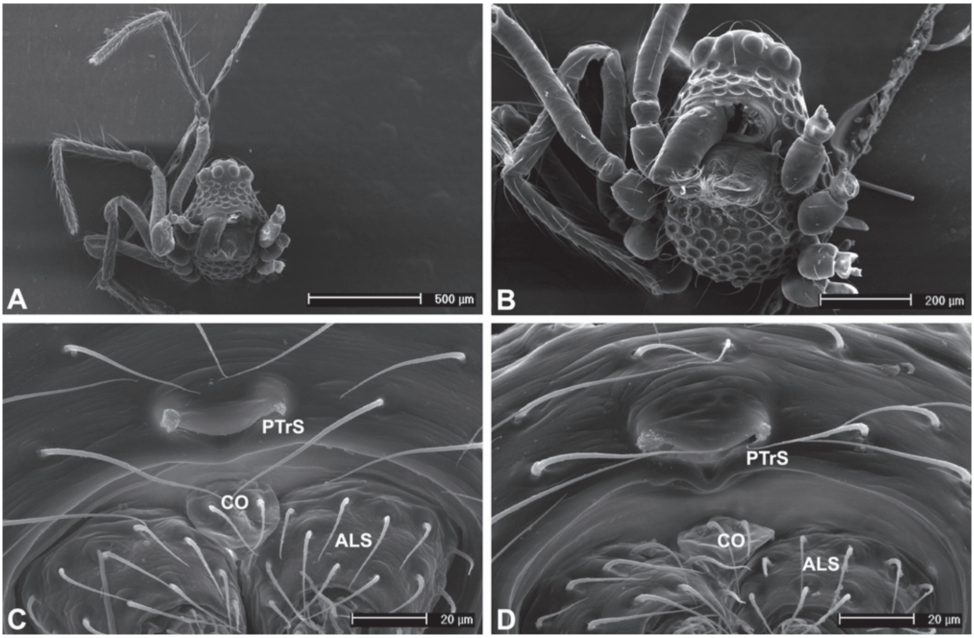


Figure 171. Scanning electron micrographs of *Taphiassa castanea* sp. n. from Mount Wellington, Tasmania (WAM T94475): **A** male cephalothorax and legs **B** female cephalothorax, antero-ventral view **C** male vestigial posterior tracheal spiracle **D** female vestigial posterior tracheal spiracle.

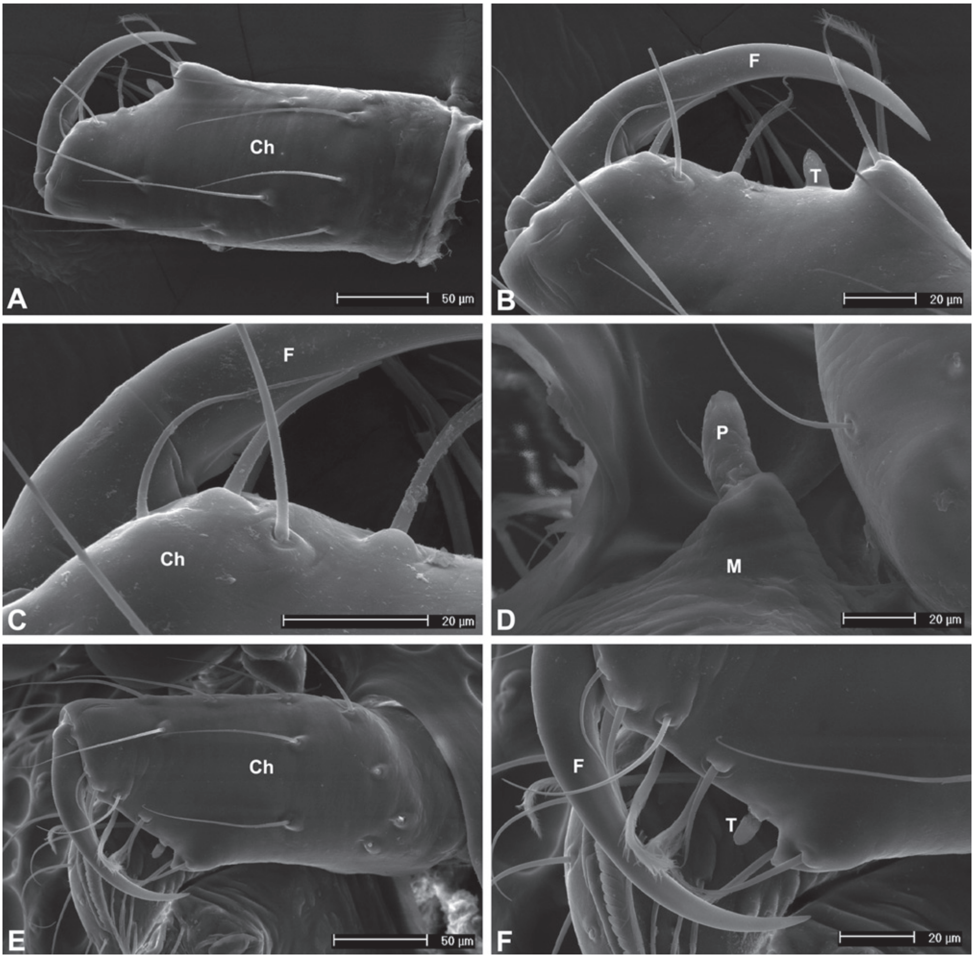


Figure 172. Scanning electron micrographs of *Taphiassa castanea* sp. n. from Mount Wellington, Tasmania (WAM T94475): **A** female left chelicera, dorsal view **B** female cheliceral promargin **C** detail of (B), showing setae adjacent to base of fang **D** nubbin of female pedipalp **E** male right chelicera (left removed), frontal view **F** male cheliceral promargin (note that tooth is broken proximally).

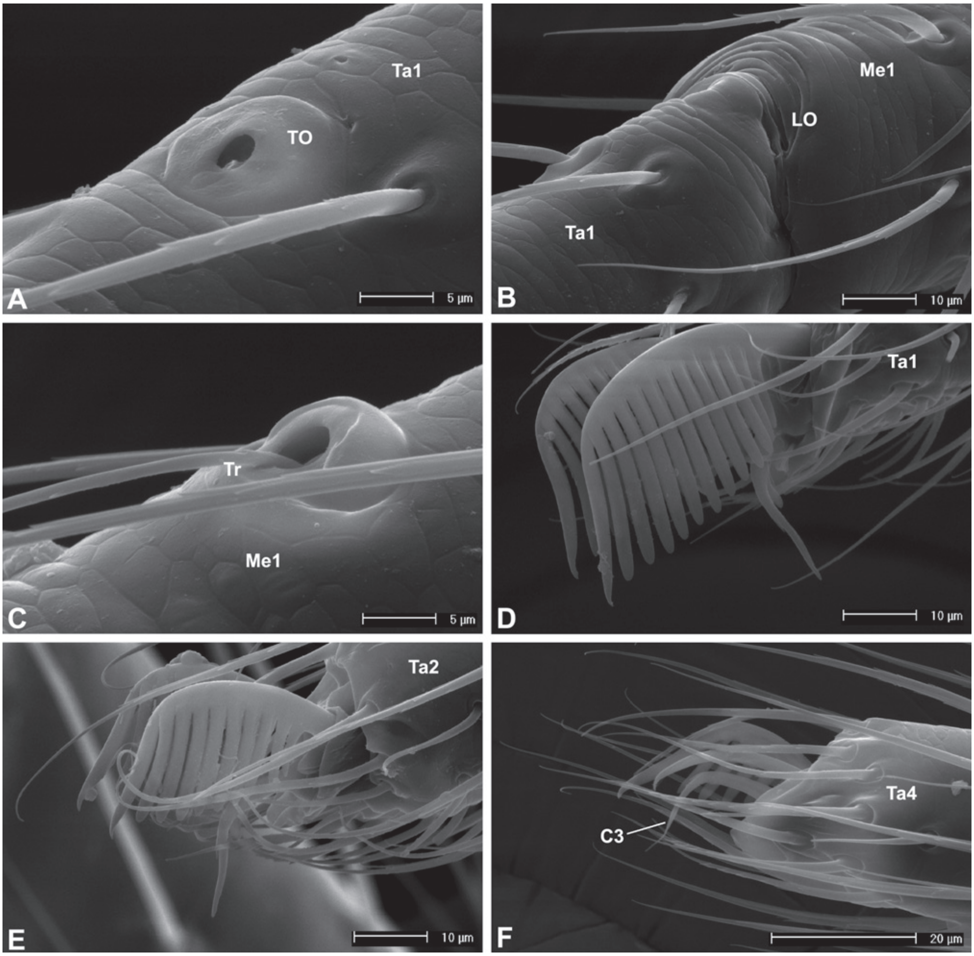


Figure 173. Scanning electron micrographs of female *Taphiassa castanea* sp. n. from Mount Wellington, Tasmania (WAM T94475): **A** leg I tarsal organ **B** leg I lyriform organ **C** leg I metatarsal trichobothrium **D** leg I claws **E** leg II claws **F** leg IV claws, showing elongate inferior claw and asymmetric superior claws.

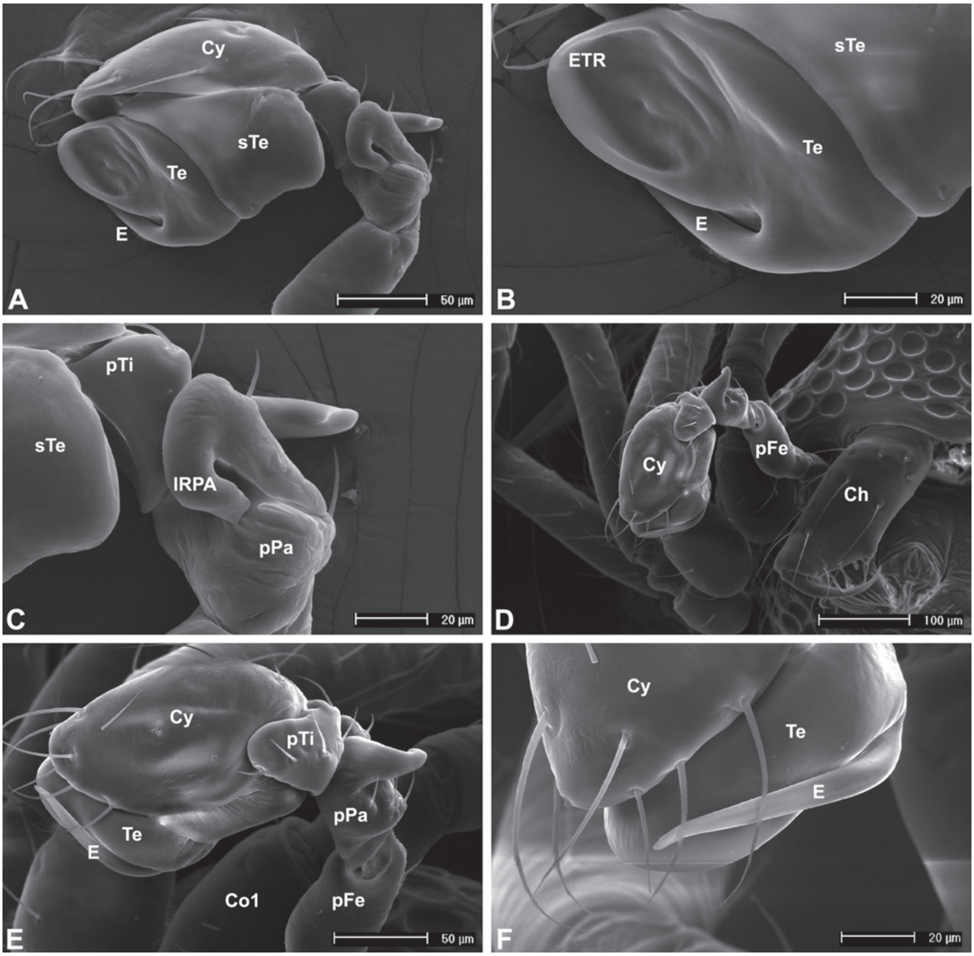


Figure 174. Scanning electron micrographs of pedipalp of male *Taphiassa castanea* sp. n. from Mount Wellington, Tasmania (WAM T94475).

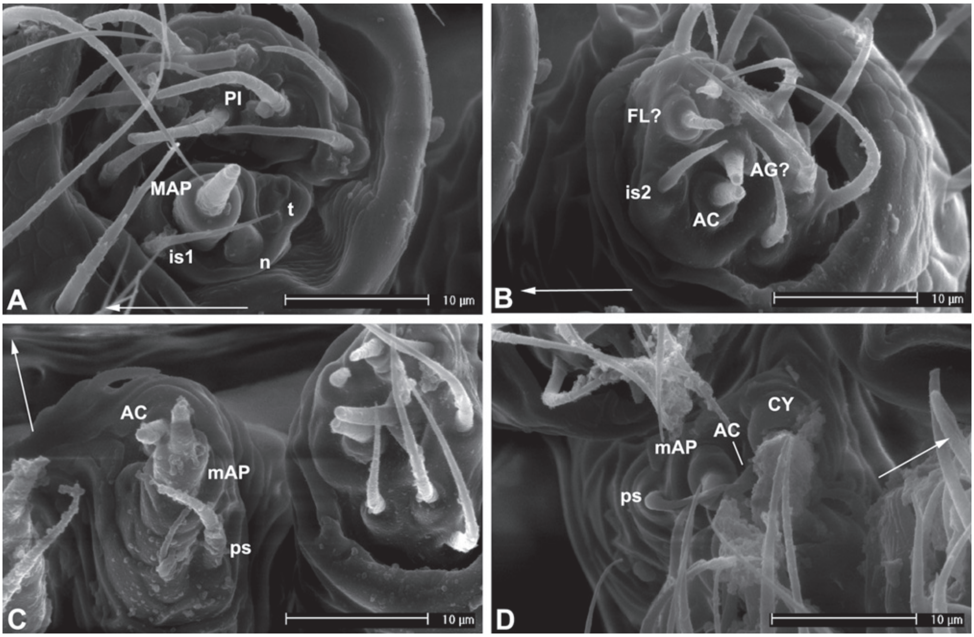


Figure 175. Scanning electron micrographs of spinnerets of female (bottom-right) and male (top, bottom-left) *Taphiassa castanea* sp. n. from Mount Wellington, Tasmania (WAM T94475): **A** anterior lateral spinnerets **B** posterior lateral spinnerets **C–D** posterior median spinnerets. Arrows denote the anterior, mesal direction.

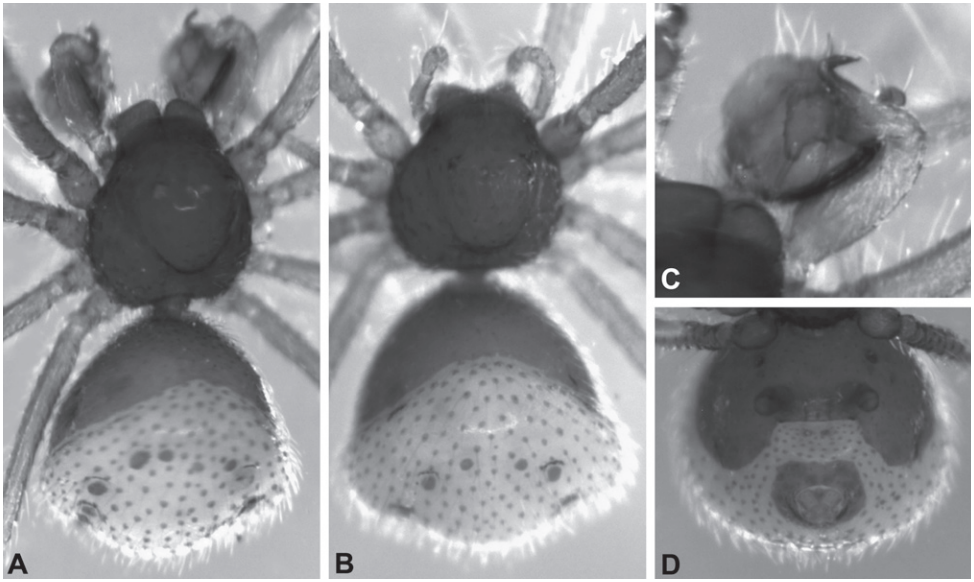


Figure 176. *Olgania excavata* Hickman from the Bubs Hill karst, Tasmania (AMNH): **A** male habitus, dorsal view **B** female habitus, dorsal view **C** male pedipalp, pro-dorsal view **D** female abdomen, ventral view.

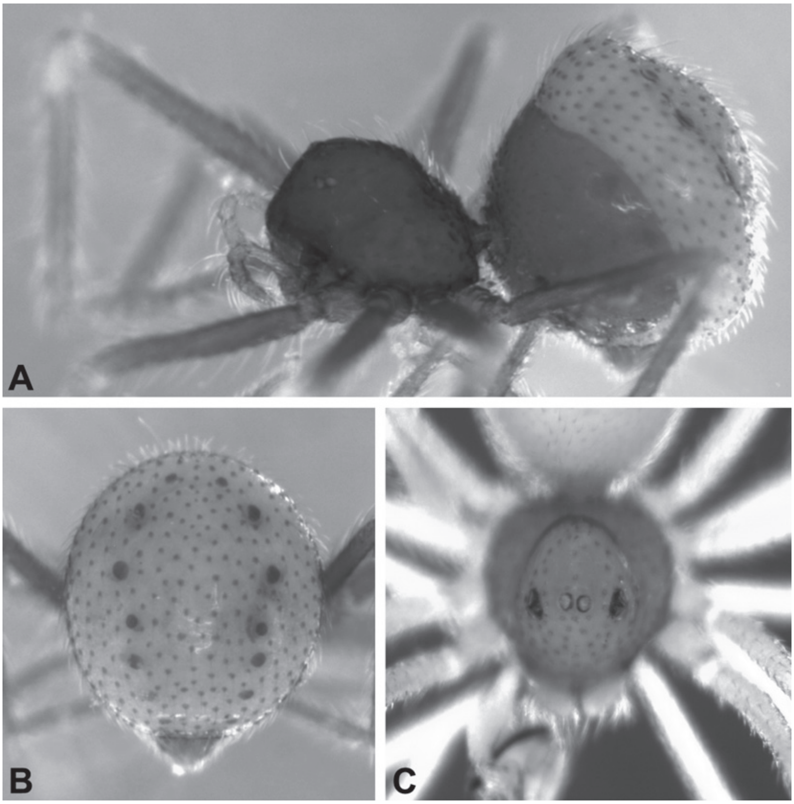


Figure 177. *Olgania excavata* Hickman. **A–B** female from the Bubs Hill karst, Tasmania (AMNH): **A** habitus, lateral view **B** abdomen, posterior view **C** holotype male from the Gordon River Valley, Tasmania (AMS KS2709), cephalothorax, antero-dorsal view.

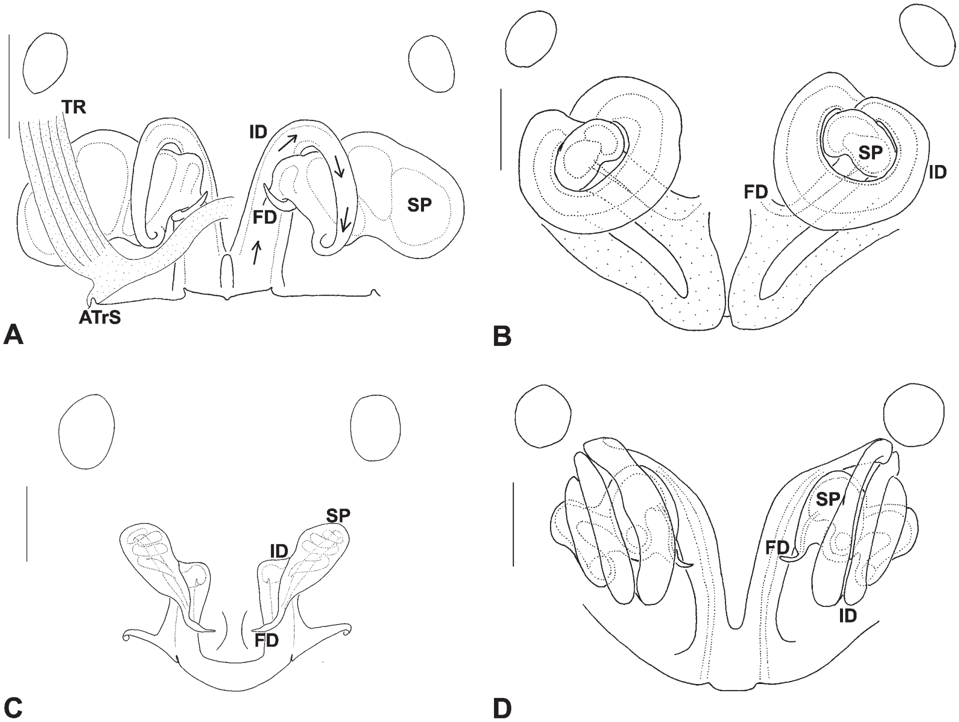


Figure 178. *Olgania* species, female cleared receptacula, dorsal view: **A** *O. excavata* Hickman from the Bubs Hill karst, Tasmania (WAM T76938) **B** allotype *O. weld* sp. n. from Weld River Arch and Arch Caves karst, Tasmania (AMS KS97171) **C** paratype *O. troglodytes* sp. n. from the Ida Bay karst, Tasmania (AMS KS97164) **D** paratype *O. cracroft* sp. n. from the Cracroft karst, Tasmania (QVM 13: 12662). Arrows indicate the trajectory of insemination ducts. Scale bars = 0.065 mm (65 µm).

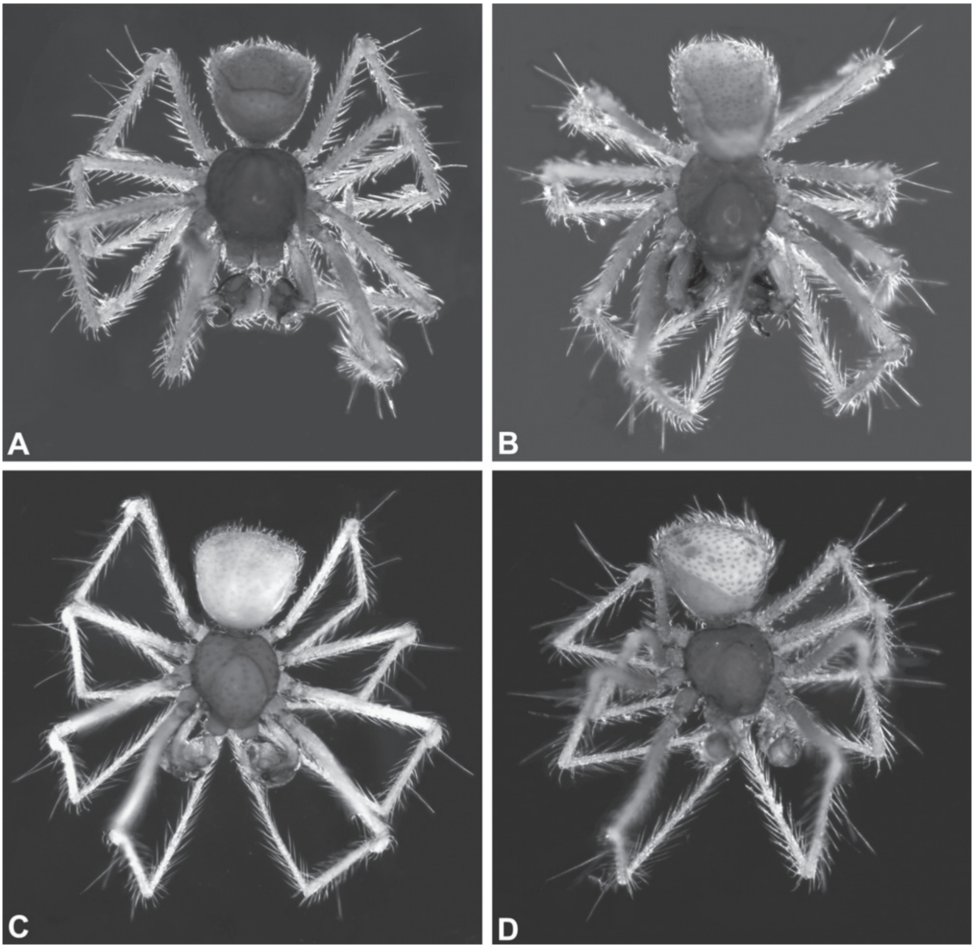


Figure 179. Habitus images of troglomorphic *Olgania* species, dorsal view: **A** holotype male *O. eberhardi* sp. n. from the Junee-Florentine karst, Tasmania (AMS KS97169) **B** holotype male *O. weld* sp. n. from the Weld River Arch and Arch Caves karst, Tasmania (AMS KS97170) **C** holotype male *O. cracroft* sp. n. from the Cracroft karst, Tasmania (AMS KS29532) **D** holotype male *O. troglodytes* sp. n. from the Ida Bay karst, Tasmania (AMS KS32002).

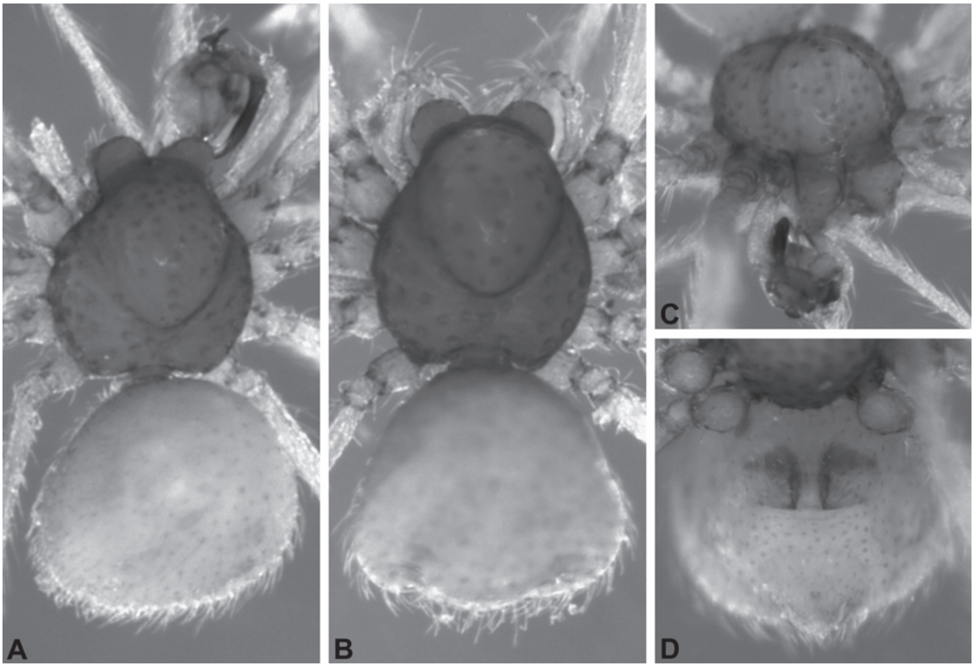


Figure 180. *Olgania cracroft* sp. n. from the Cracroft karst, Tasmania. **A, C** holotype male (AMS KS29532): **A** habitus, dorsal view **C** cephalothorax, antero-dorsal view. **B, D** allotype female (AMS KS97161): **B** habitus, dorsal view **D** abdomen, ventral view.

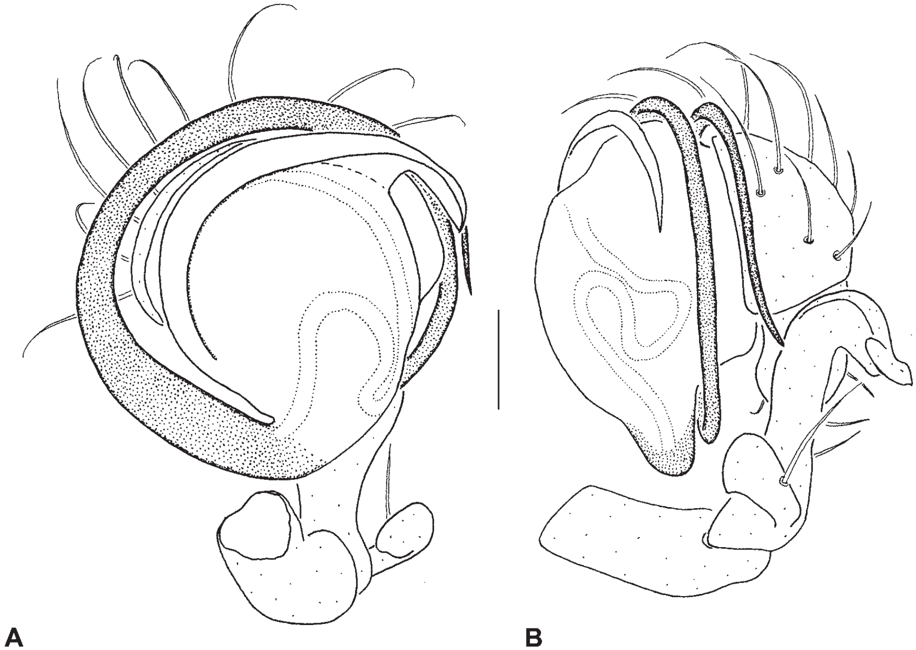


Figure 181. *Olgania cracroft* sp. n., holotype male from the Cracroft karst, Tasmania (AMS KS29532): **A** left pedipalp, ventral view **B** left pedipalp, retrolateral view. Scale bar = 0.065 mm (65 µm).

Figure 182. *Olgania eberhardi* sp. n., holotype male from the Junee-Florentine karst, Tasmania (AMS KS97169): **A** habitus, dorsal view **B** pedipalp, pro-dorsal view **C** cephalothorax, antero-lateral view.

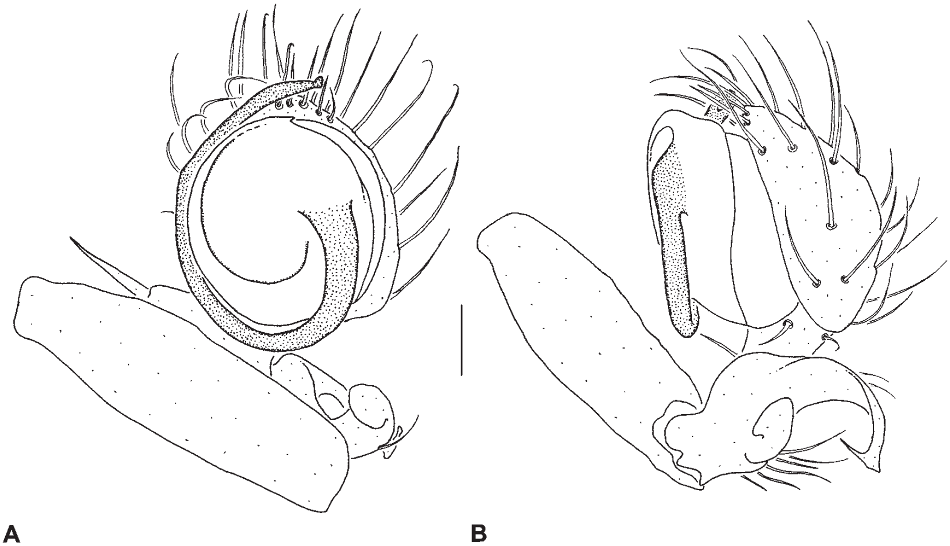


Figure 183. *Olgania eberhardi* sp. n., holotype male from the Junee-Florentine karst, Tasmania (AMS KS97169): **A** left pedipalp, ventral view **B** left pedipalp, retrolateral view. Scale bar = 0.065 mm (65 μm).

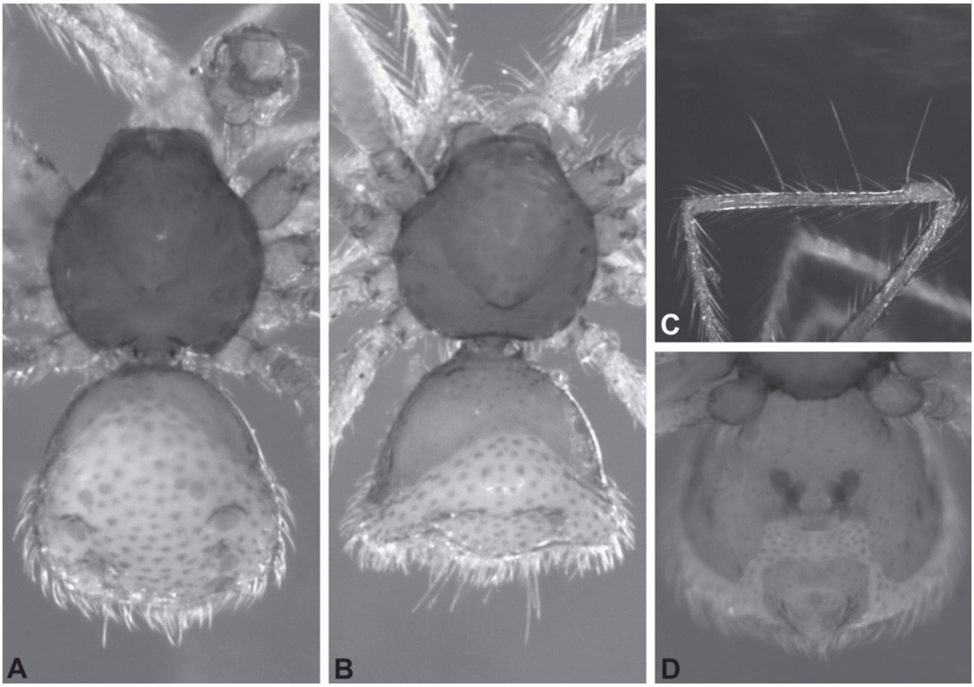


Figure 184. *Olgania troglodytes* sp. n. from the Ida Bay karst, Tasmania. **A** holotype male (AMS KS32002) habitus, dorsal view. **B–D** allotype female (AMS KS97163): **B** habitus, dorsal view **C** leg I patella and tibia, lateral view, showing long bristle-like setae **D** abdomen, ventral view.

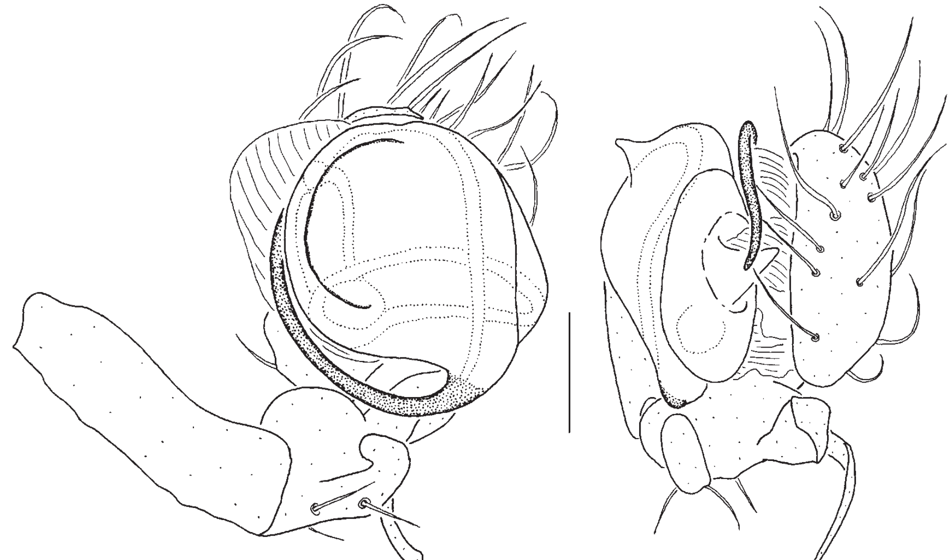


Figure 185. *Olgania troglodytes* sp. n., holotype male from the Ida Bay karst, Tasmania (AMS KS32002): **A** left pedipalp, ventral view **B** left pedipalp, retrolateral view. Note that pedipalp is partially expanded. Scale bar = 0.065 mm (65 µm).

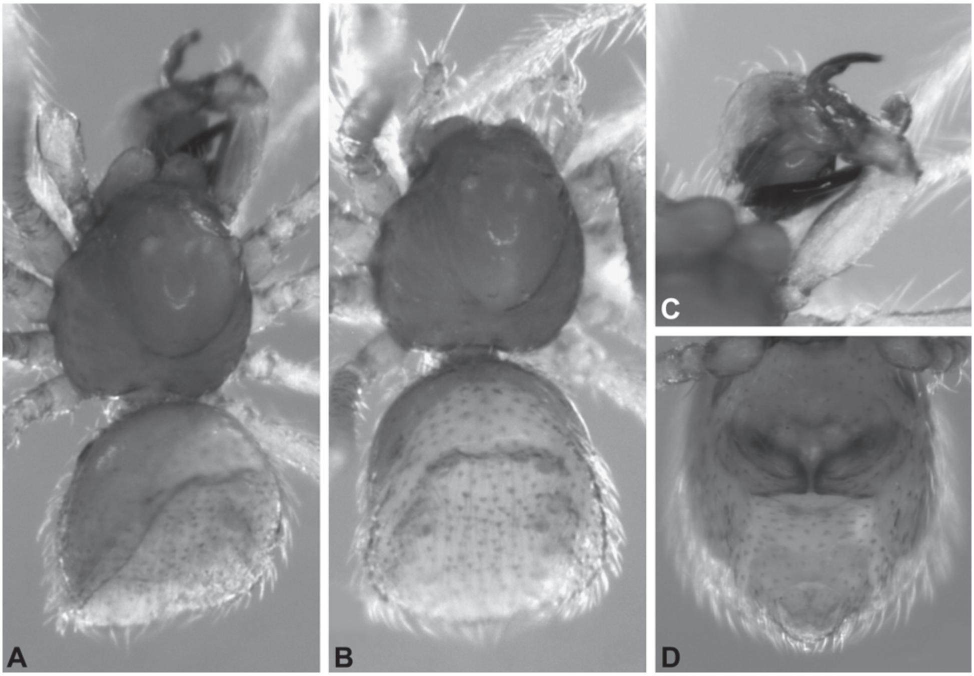


Figure 186. *Olgania weld* sp. n. from the Weld River Arch and Arch Caves karst, Tasmania. **A, C** holotype male (AMS KS97170): **A** habitus, dorsal view **C** pedipalp, pro-dorsal view. **B, D** allotype female (AMS KS97171): **B** habitus, dorsal view **D** abdomen, ventral view.

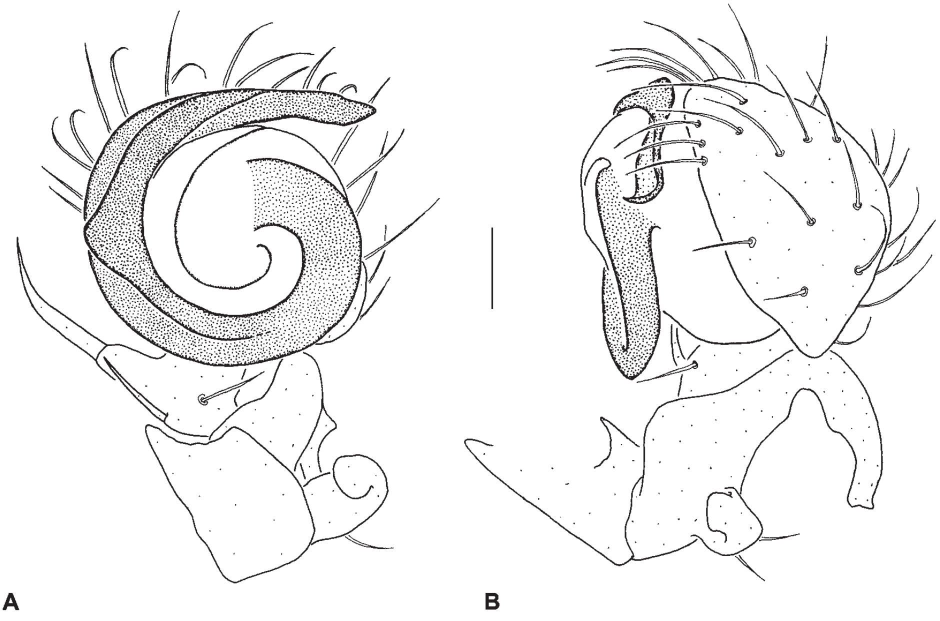


Figure 187. *Olgania weld* sp. n., holotype male from the Weld River Arch and Arch Caves karst, Tasmania (AMS KS97170): **A** left pedipalp, ventral view **B** left pedipalp, retrolateral view. Scale bar = 0.065 mm (65 μm).

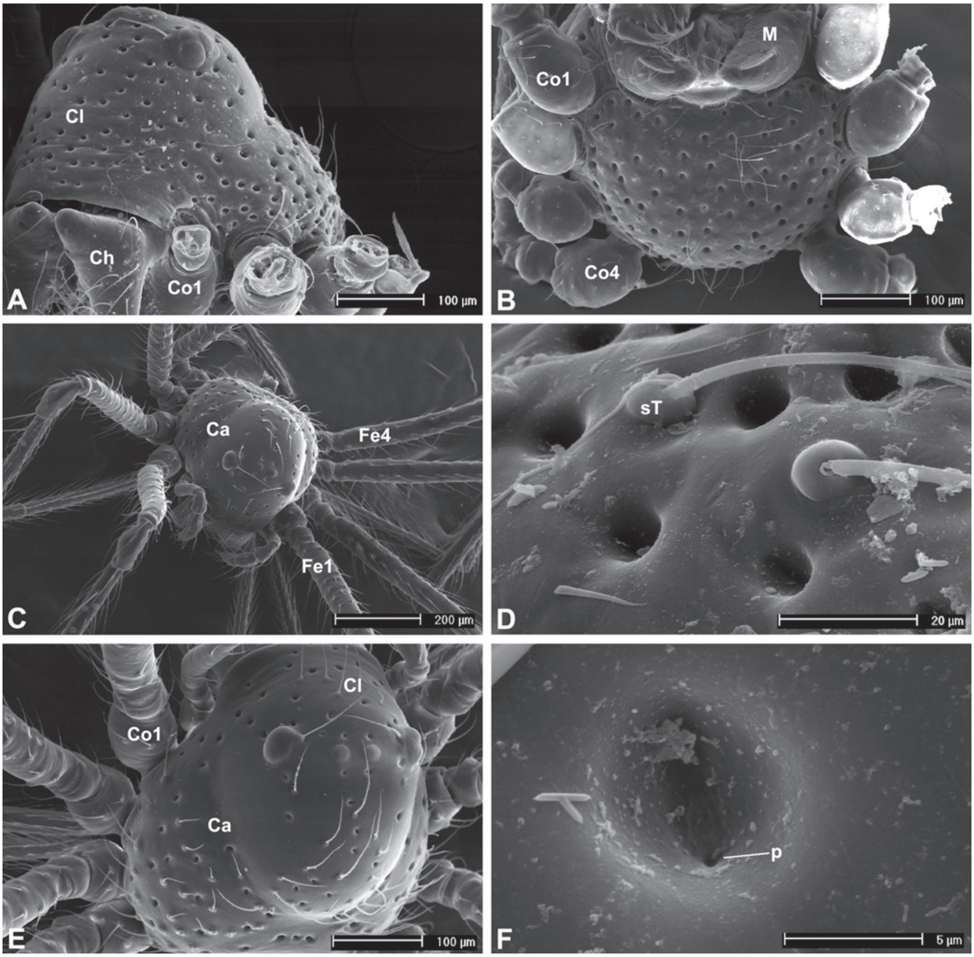


Figure 188. Scanning electron micrographs of *Olgania excavata* Hickman, male and female from the Franklin River karst (FRK), Tasmania (AMS KS21297) and female from the Bubs Hill karst (BHK), Tasmania (WAM T76938): **A** male cephalothorax, antero-lateral view **B** female (FRK) sternum, antero-ventral view **C** female (BHK) cephalothorax, antero-dorsal view **D** female (BHK) carapace cuticle, showing setal tubercles **E** female (BHK) cephalothorax, dorso-lateral view **F** male carapace pit and glandular pore.

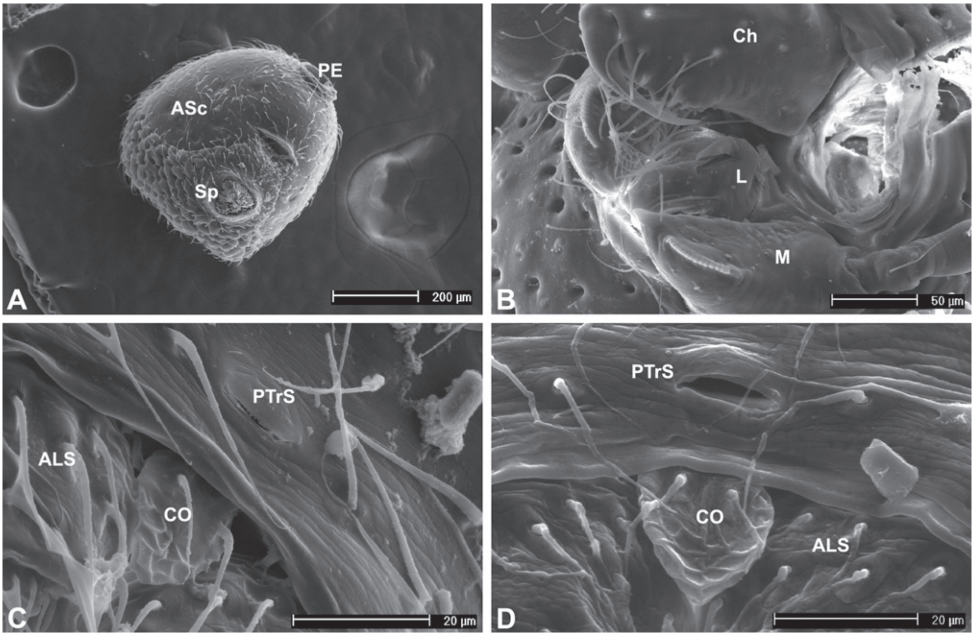


Figure 189. Scanning electron micrographs of *Olgania excavata* Hickman from the Franklin River karst, Tasmania (AMS KS21297): **A** male abdomen, ventro-lateral view, showing large anterior sclerite **B** female chelicera and labrum **C** male vestigial posterior tracheal spiracle **D** female vestigial posterior tracheal spiracle.

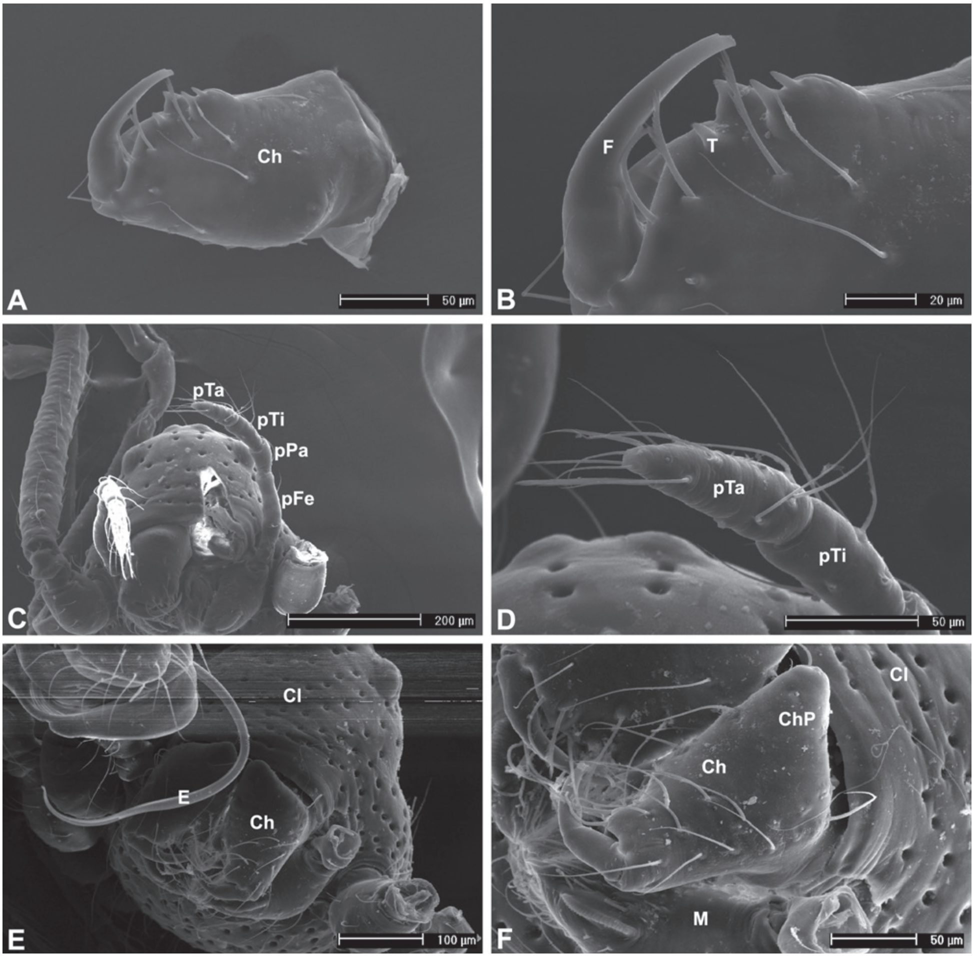


Figure 190. Scanning electron micrographs of *Olgania excavata* Hickman from the Franklin River karst, Tasmania (AMS KS21297): **A** female left chelicera, dorsal view **B** female cheliceral promargin **C** female pedipalp, frontal view **D** tip of female pedipalp **E** male chelicerae, frontal view **F** male left chelicera, frontal view.

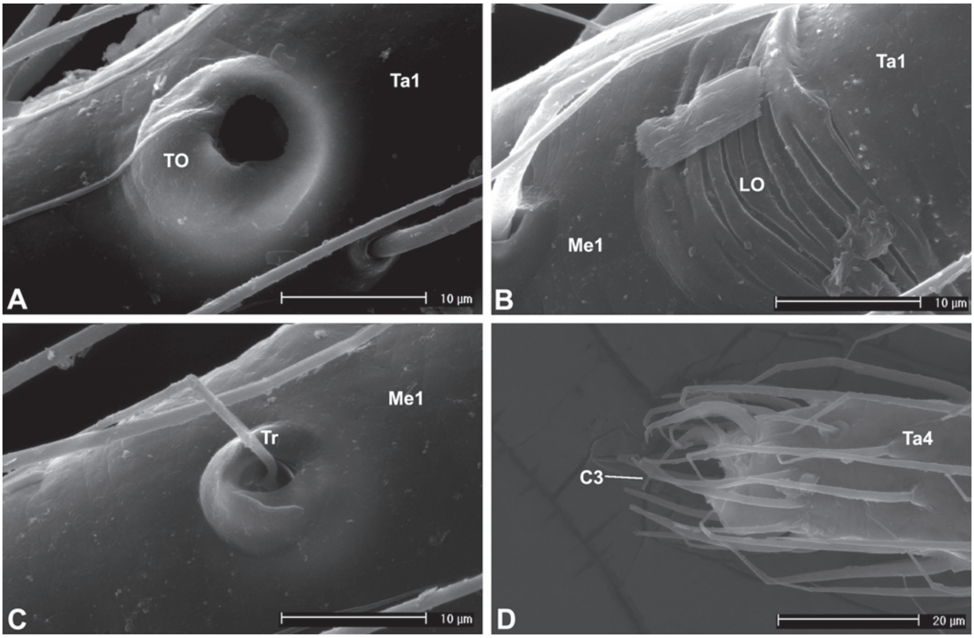


Figure 191. Scanning electron micrographs of female *Olgania excavata* Hickman from the Franklin River karst, Tasmania (AMS KS21297): **A** leg I tarsal organ **B** leg I lyriform organ **C** leg I metatarsal trichobothrium **D** leg IV claws, showing elongate inferior claw.

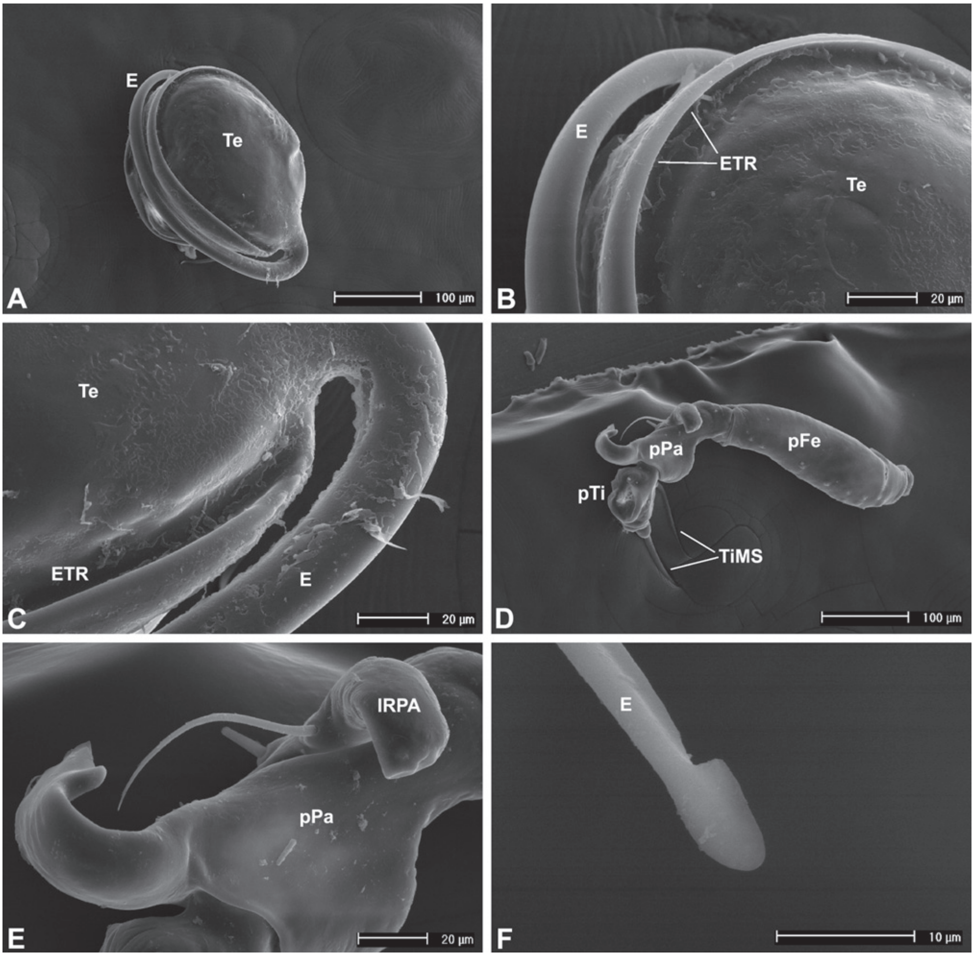


Figure 192. Scanning electron micrographs of pedipalp of male *Olgania excavata* Hickman from the Franklin River karst, Tasmania (AMS KS21297).

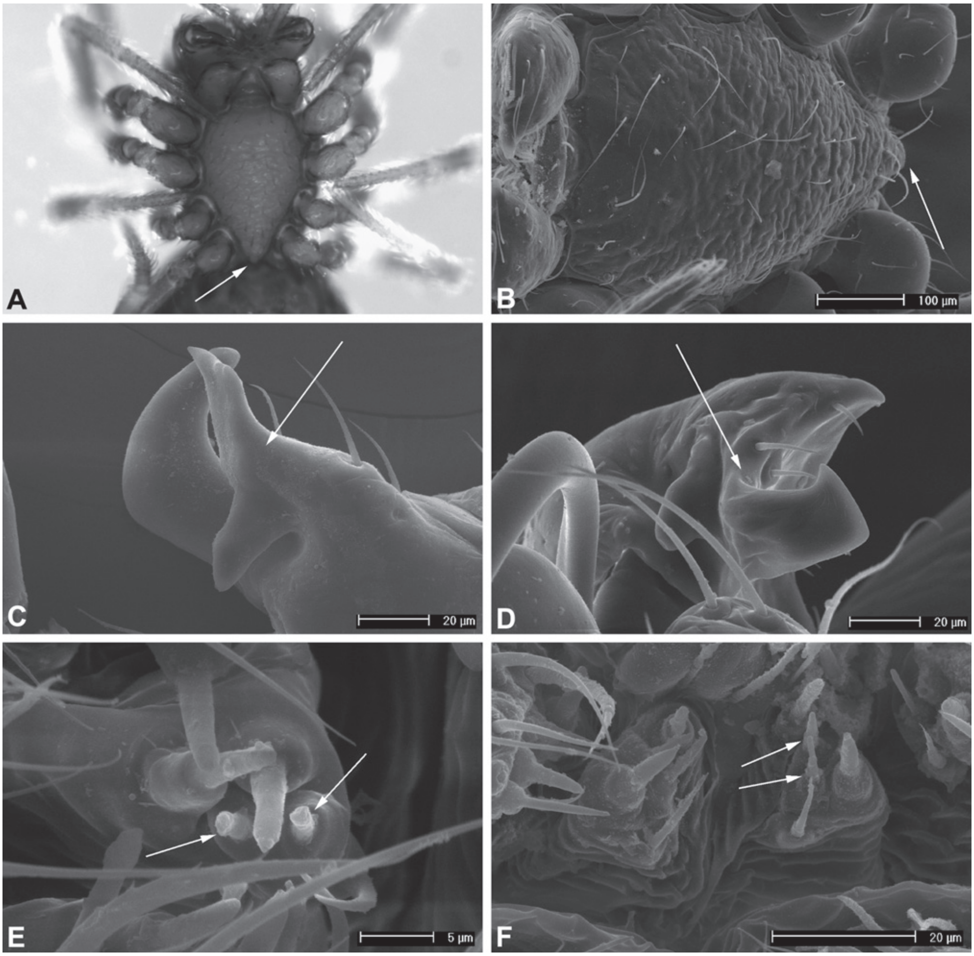


Figure 193. Diagnostic characters of the subfamily Gigiellinae: **A–B** habitus image (left) and scanning electron micrograph (right) of sternum of female *Gigiella platnicki* sp. n., showing the pointed posterior apex **C–D** scanning electron micrographs showing the forked, ligulate retrolateral patellar apophysis of male *G. milledgei* sp. n. (left) and male *G. platnicki* (right) **E–F** scanning electron micrographs of the posterior median spinnerets of female *G. milledgei* (left) and female *G. platnicki* (right), showing the two aciniform gland spigots.

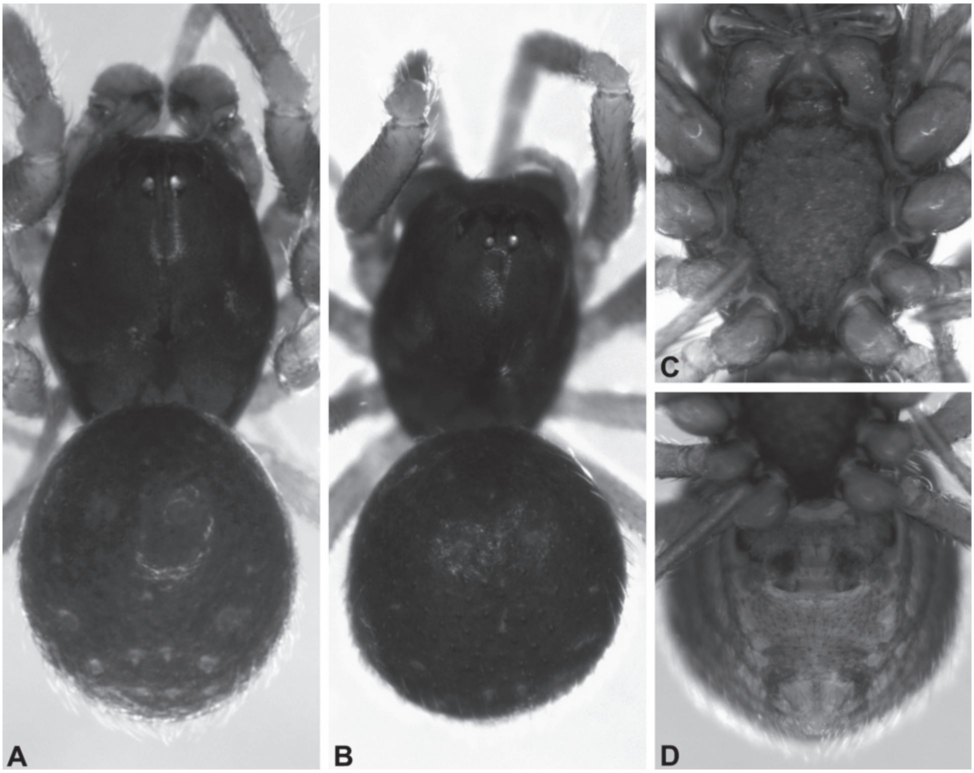


Figure 194. *Gigiella milledgei* sp. n. from Mount Sabine, Victoria. **A, C** holotype male (QMB S88028): **A** habitus, dorsal view **C** sternum, ventral view. **B, D** allotype female (QMB S88029): **B** habitus, dorsal view **D** abdomen, ventral view.

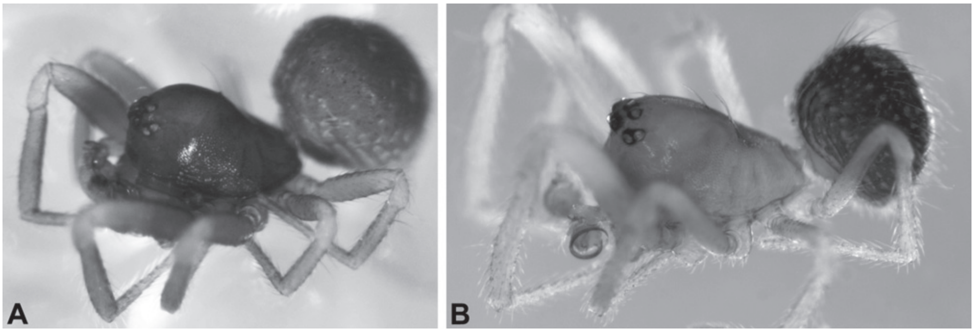


Figure 195. Habitus images of *Gigiella* species, lateral view: **A** male *Gigiella milledgei* sp. n. from Melba Gully, Victoria (QMB S43235) **B** holotype male *G. platnicki* sp. n. from south of Puerto Puyuguapi, Chile (AMNH).

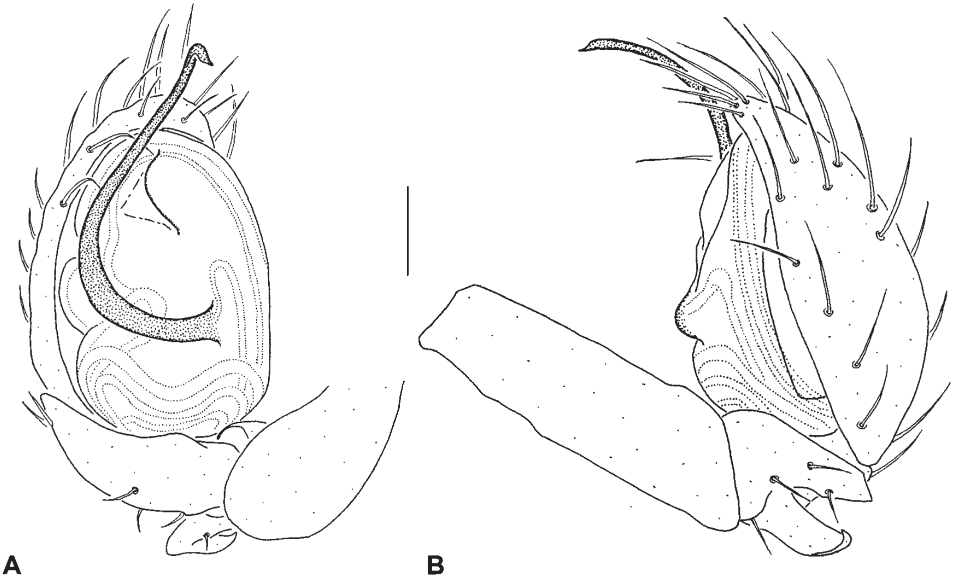


Figure 196. *Gigiella milledgei* sp. n., paratype male from Mount Sabine, Victoria (QMB S43059): **A** left pedipalp, ventral view **B** left pedipalp, retrolateral view. Scale bar = 0.065 mm (65 µm).

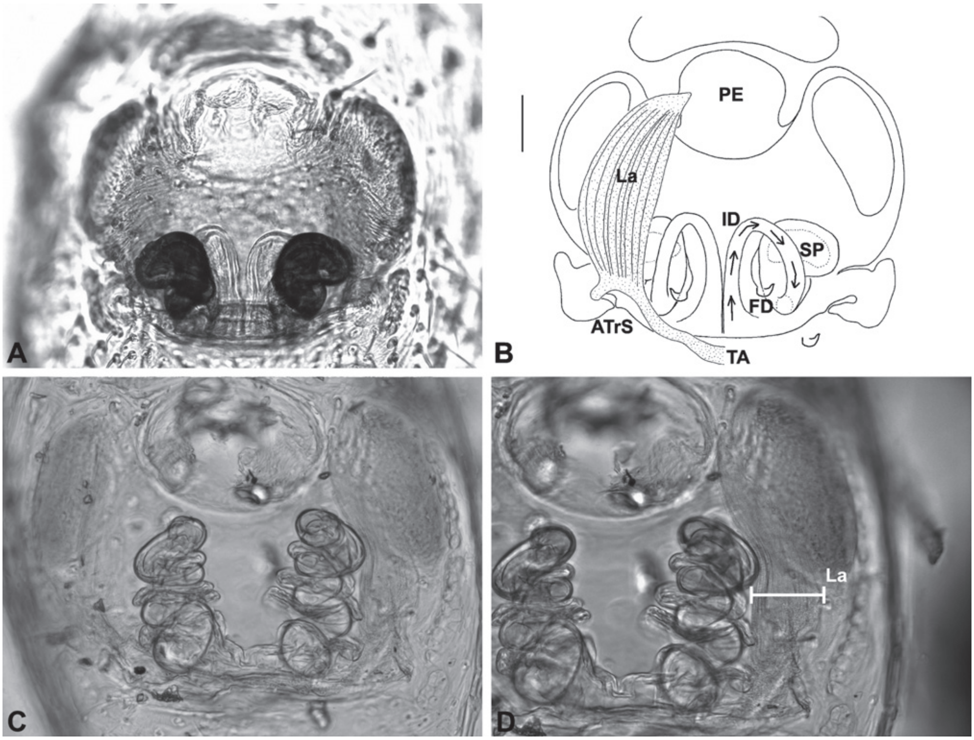


Figure 197. *Gigiella* species, female cleared receptacula, dorsal view: **A–B** paratype *G. milledgei* sp. n. from Mount Sabine, Victoria (QMB S43059) **C–D** paratype *G. platnicki* sp. n. from south of Puerto Puyuguapi, Chile (AMNH). Arrows indicate the trajectory of insemination ducts. Scale bar = 0.065 mm (65 μm). Note the 'bed' of parallel lamellae in (B) and (D).

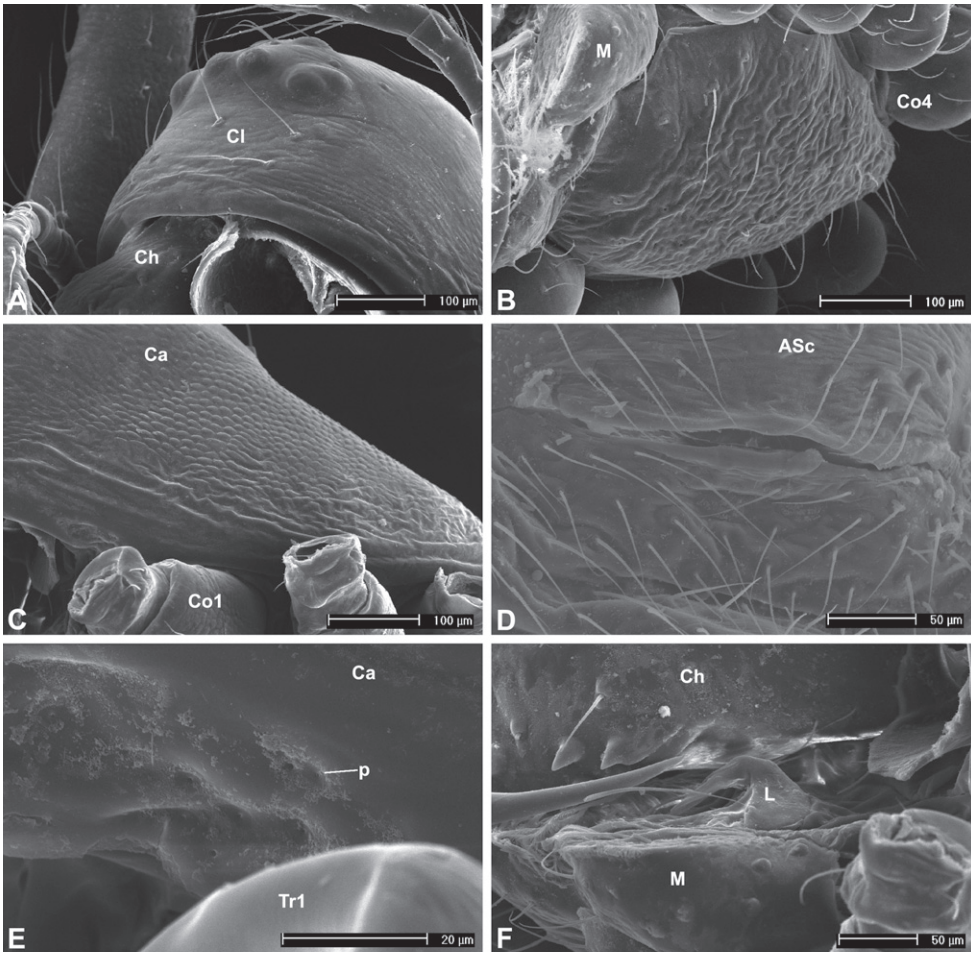


Figure 198. Scanning electron micrographs of *Gigiella milledgei* sp. n. from Mount Sabine, Victoria (QMB S43059): **A** female eyes and clypeus, antero-lateral view **B** female sternum, ventro-lateral view **C** male carapace, lateral view **D** male epigastric furrow, showing the absence of epiandrous gland spigots **E** male corner of carapace above left maxilla, showing glandular depression **F** male chelicera and labrum.

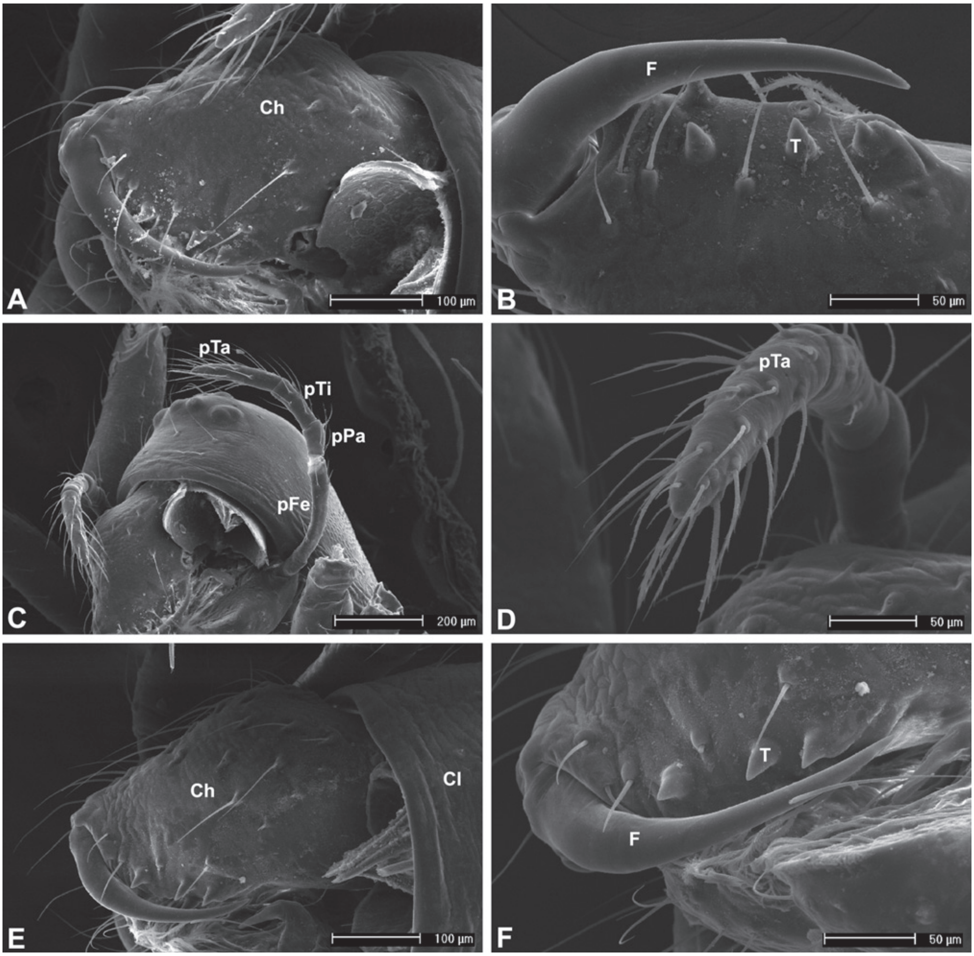


Figure 199. Scanning electron micrographs of *Gigiella milledgei* sp. n. from Mount Sabine, Victoria (QMB S43059): **A** female right chelicera (left removed), frontal view **B** female cheliceral promargin **C** female pedipalp, antero-lateral view **D** tip of female pedipalp **E** male right chelicera (left removed), frontal view **F** male cheliceral promargin.

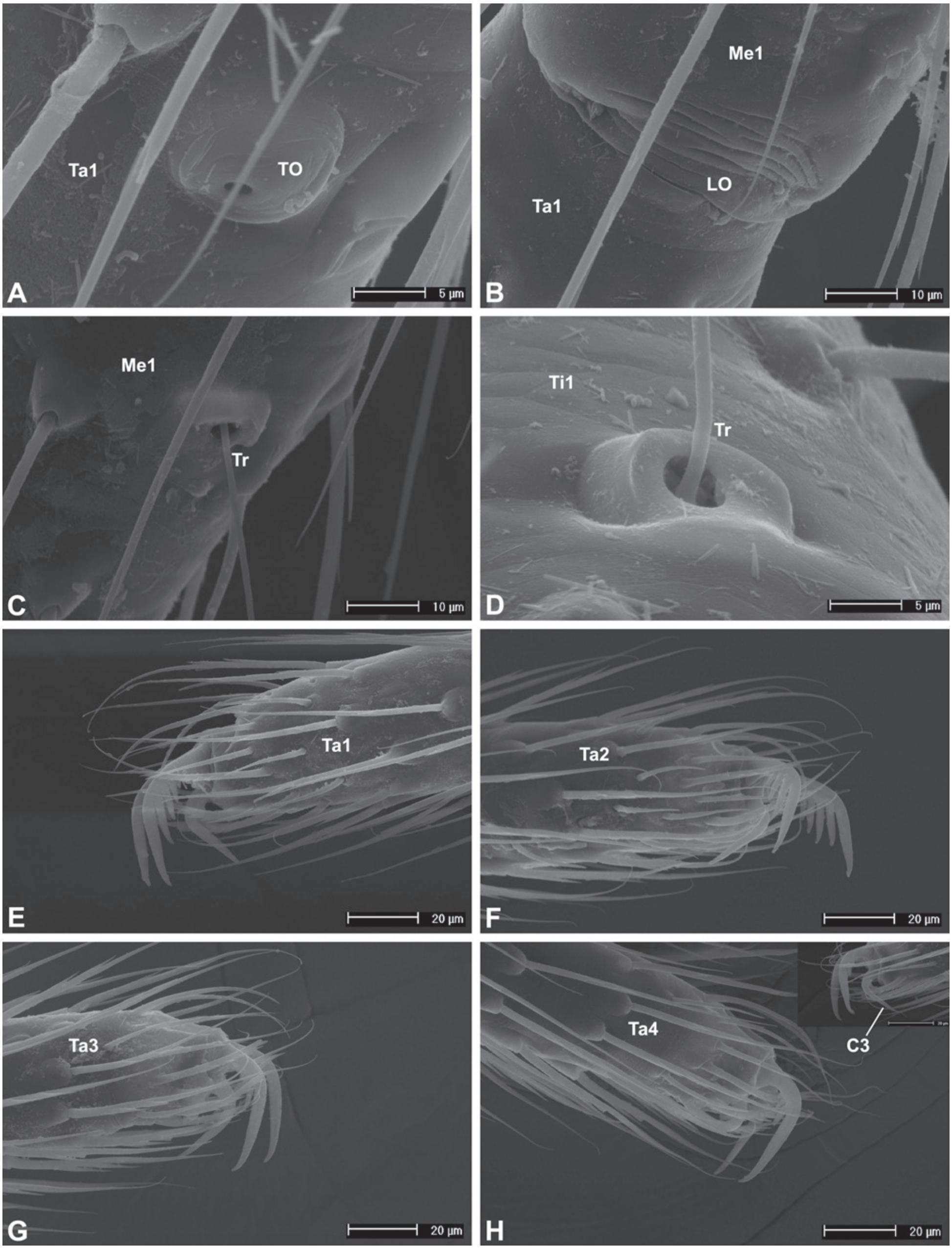


Figure 200. Scanning electron micrographs of female *Gigiella milledgei* sp. n. from Mount Sabine, Victoria (QMB S43059): **A** leg I tarsal organ **B** leg I lyriform organ **C** leg I metatarsal trichobothrium **D** leg I tibial trichobothrium **E** leg I claws **F** leg II claws **G** leg III claws **H** leg IV claws (male inset), showing elongate inferior claw on male.

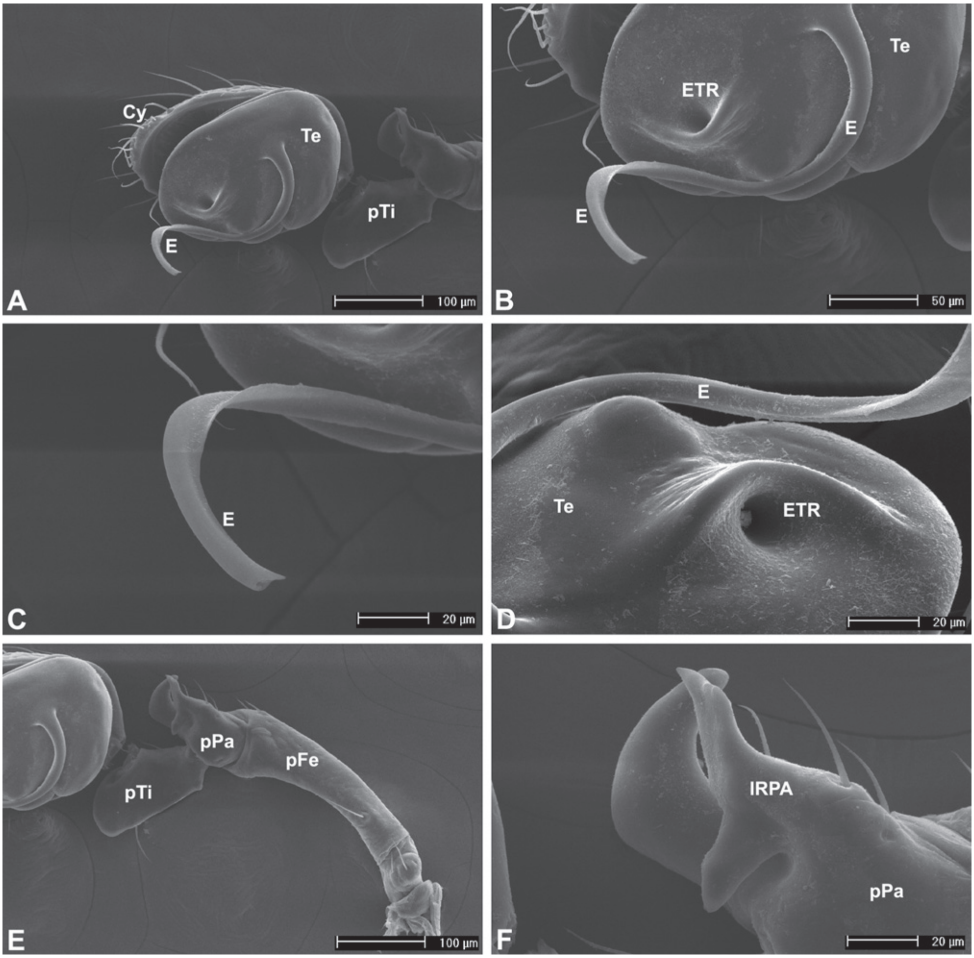


Figure 201. Scanning electron micrographs of pedipalp of male *Gigiella milledgei* sp. n. from Mount Sabine, Victoria (QMB S43059).

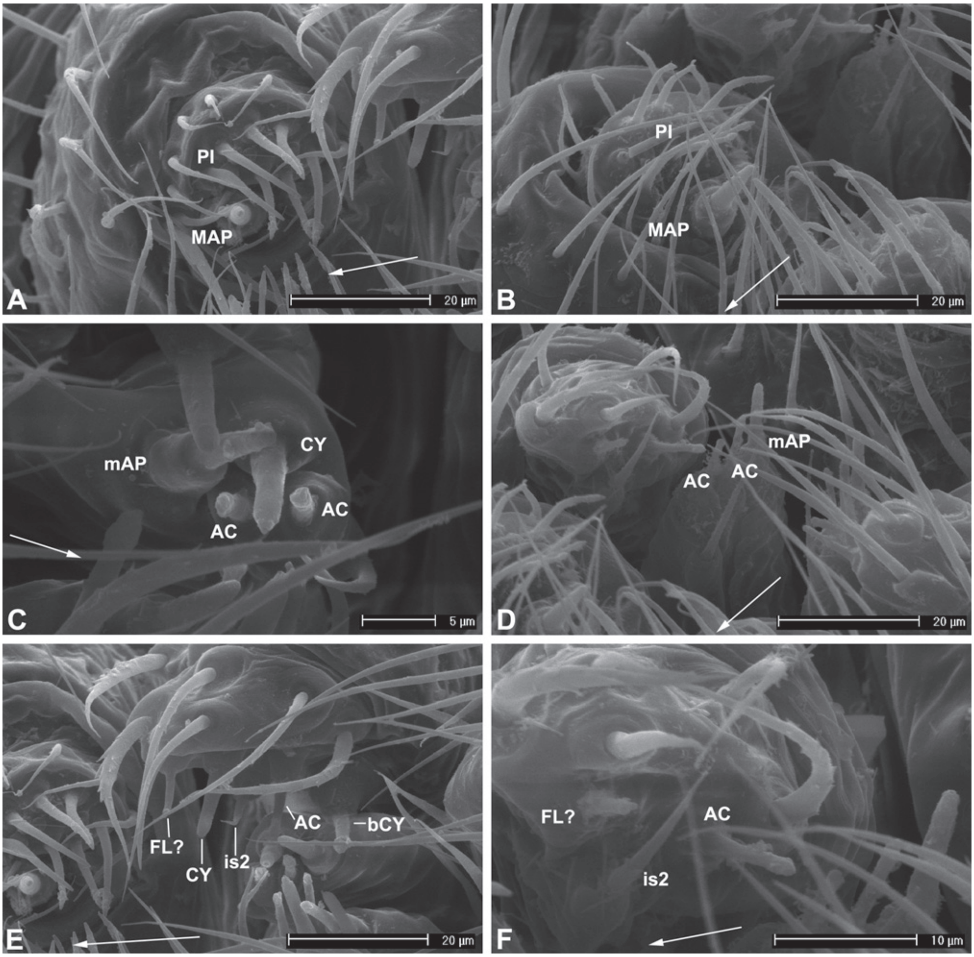


Figure 202. Scanning electron micrographs of spinnerets of female (left) and male (right) *Gigiella milledgei* sp. n. from Mount Sabine, Victoria (QMB S43059): **A–B** anterior lateral spinnerets **C–D** posterior median spinnerets **E–F** posterior lateral spinnerets. Arrows denote the anterior, mesal direction.

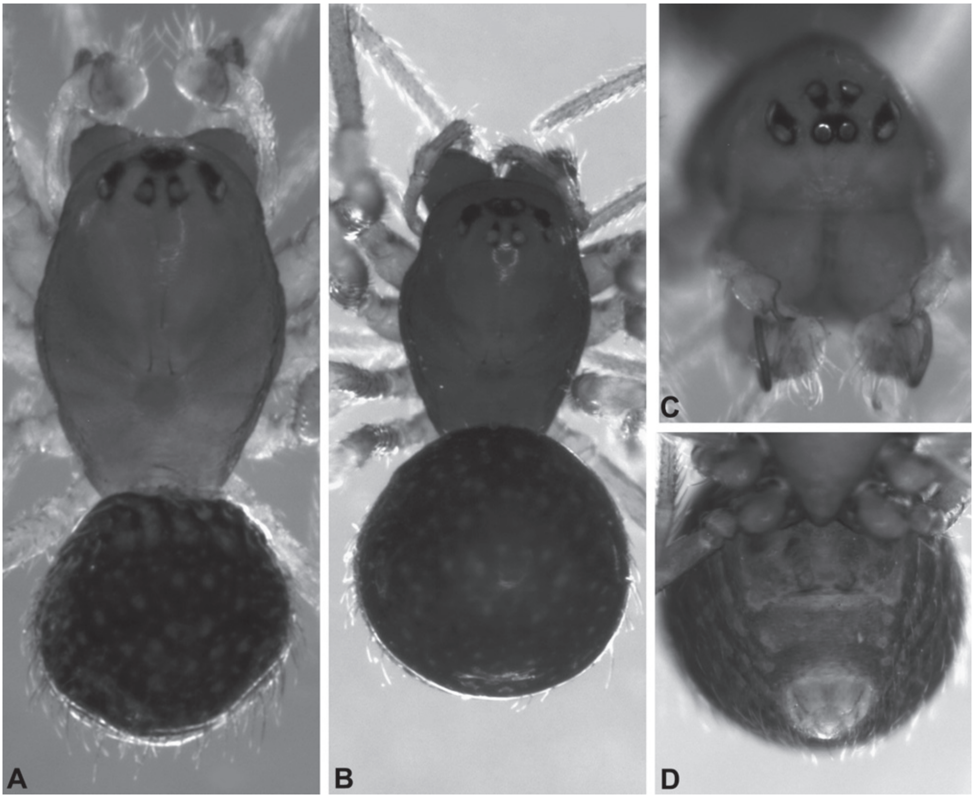


Figure 203. *Gigiella platnicki* sp. n. from south of Puerto Puyuguapi, Chile. **A, C** holotype male (AMNH): **A** habitus, dorsal view **C** cephalothorax, frontal view. **B, D** allotype female (AMNS): **B** habitus, dorsal view **D** abdomen, ventral view.

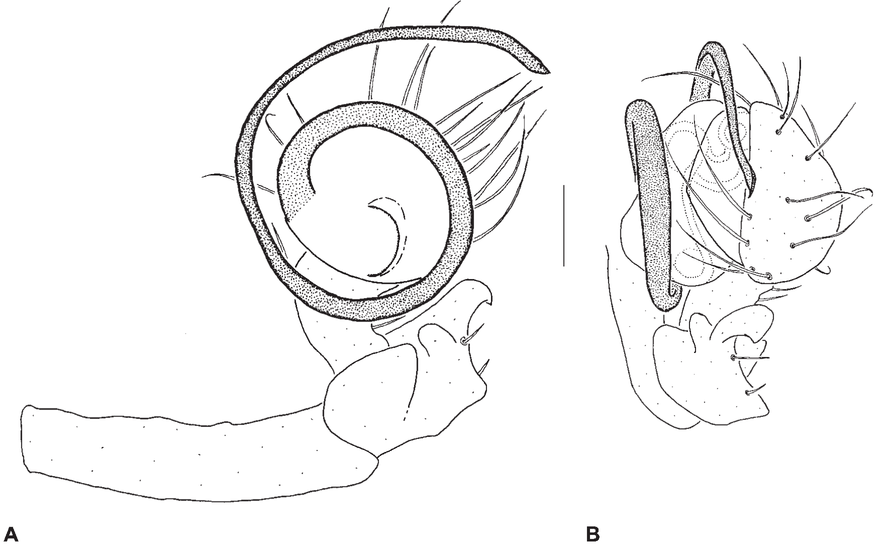


Figure 204. *Gigiella platnicki* sp. n., holotype male from south of Puerto Puyuguapi, Chile (AMNH): **A** left pedipalp, ventral view **B** left pedipalp, retrolateral view. Scale bar = 0.065 mm (65 µm).

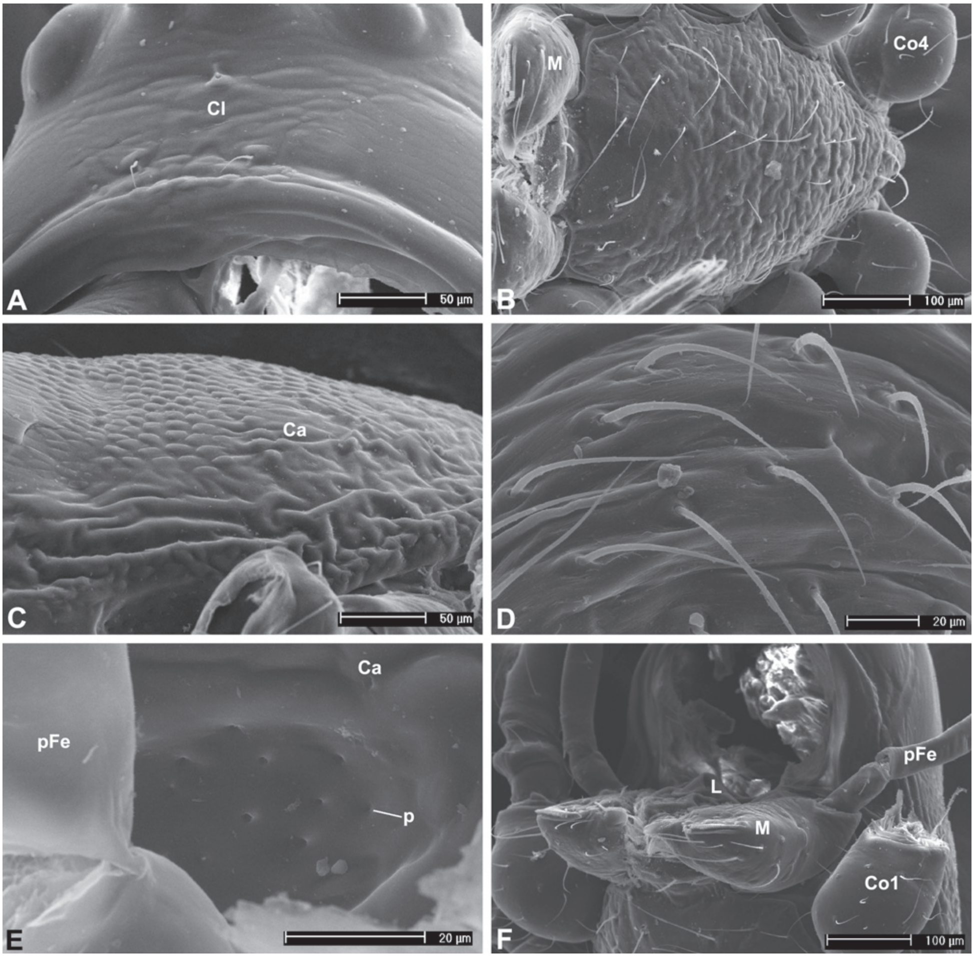


Figure 205. Scanning electron micrographs of *Gigiella platnicki* sp. n. from south of Puerto Puyuguapi, Chile (AMNH): **A** male eyes and clypeus, frontal view **B** female sternum, ventral view **C** male carapace, lateral view **D** female abdominal cuticle **E** female corner of carapace above left maxilla, showing glandular depression **F** female labrum.

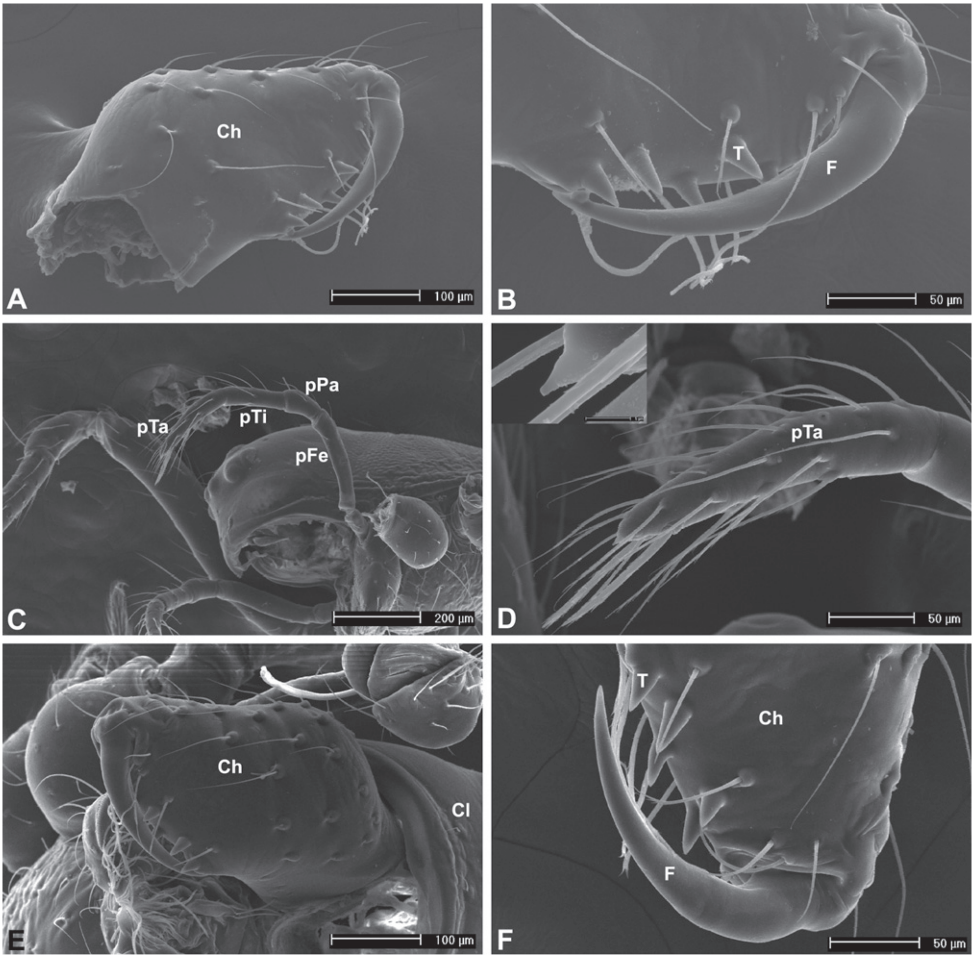


Figure 206. Scanning electron micrographs of *Gigiella platnicki* sp. n. from south of Puerto Puyuguapi, Chile (AMNH): **A** female left chelicera, dorsal view **B** female cheliceral promargin **C** female pedipalp, lateral view **D** tip of female pedipalp (detail inset) **E** male right chelicera (left removed), frontal view **F** male cheliceral promargin.

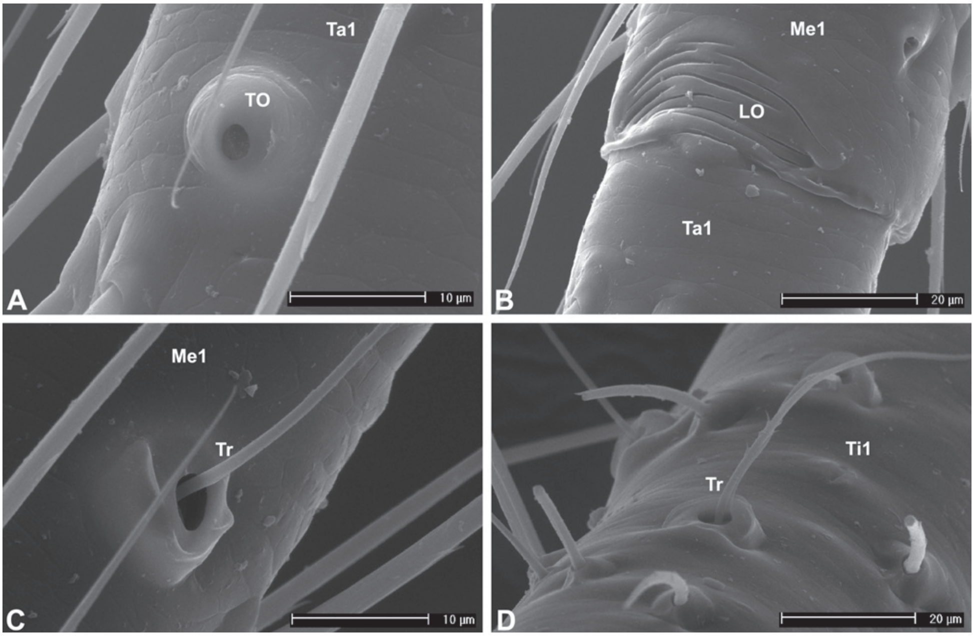


Figure 207. Scanning electron micrographs of female *Gigiella platnicki* sp. n. from south of Puerto Puyuguapi, Chile (AMNH): **A** leg I tarsal organ **B** leg I lyriform organ **C** leg I metatarsal trichobothrium **D** leg I tibial trichobothrium.

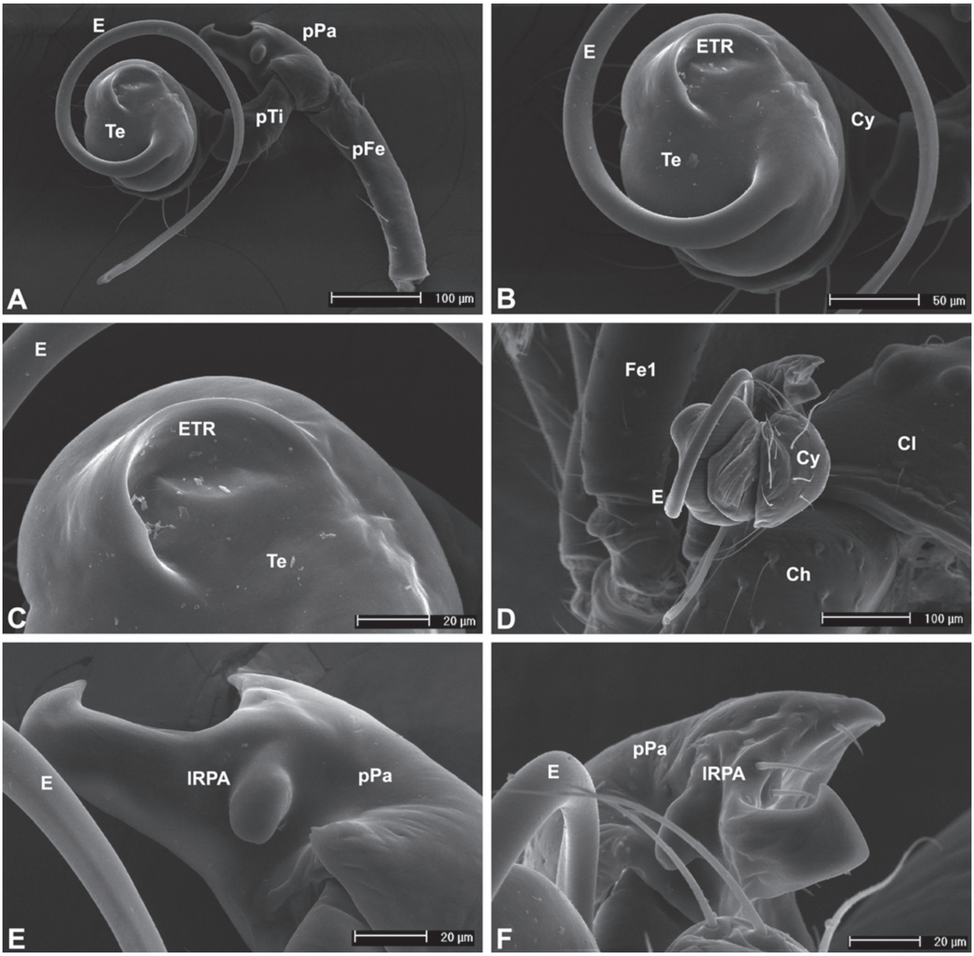


Figure 208. Scanning electron micrographs of pedipalp of male *Gigiella platnicki* sp. n. from south of Puerto Puyuguapi, Chile (AMNH).

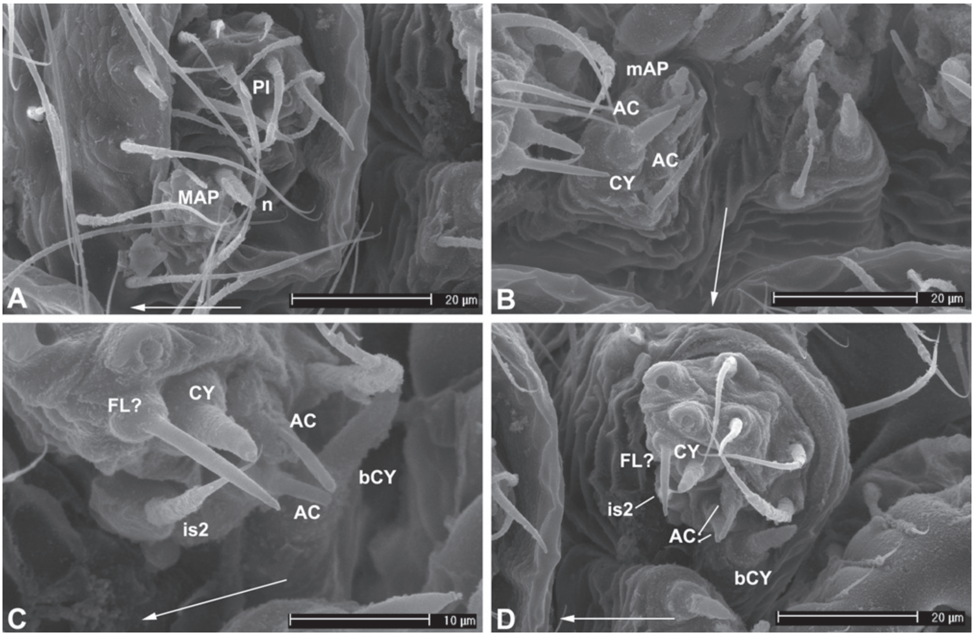


Figure 209. Scanning electron micrographs of spinnerets of female *Gigiella platnicki* sp. n. from south of Puerto Puyuguapi, Chile (AMNH): **A** anterior lateral spinnerets **B** posterior median spinnerets **C–D** posterior lateral spinnerets. Arrows denote the anterior, mesal direction.

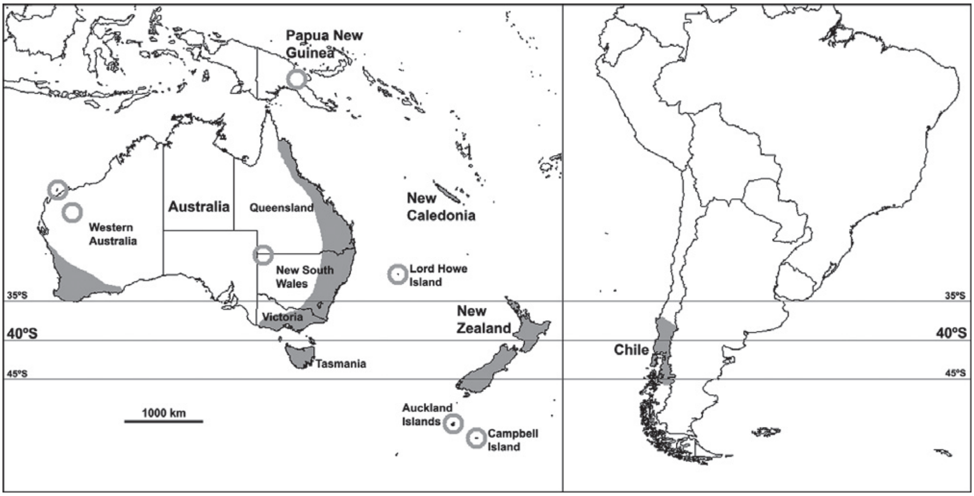


Figure 210. Maps of Australasia (left) and southern South America (right), showing the recorded distribution of the spider family Micropholcommatidae. More than 80% of all micropholcommatid genera occur within just 10 degrees of latitude, between 35°S and 45°S.

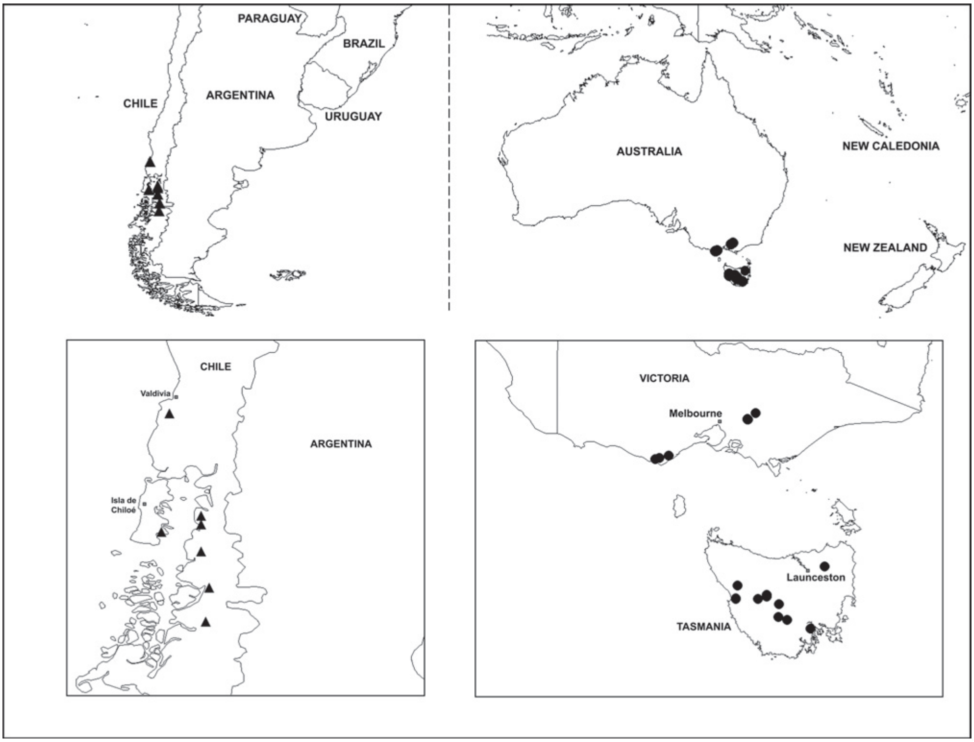


Figure 211. Maps of southern South America (left) and Australia (right), showing the recorded distributions of species of *Gigiella*: *G. platnicki* sp. n. (left) and *G. milledgei* sp. n. (right).

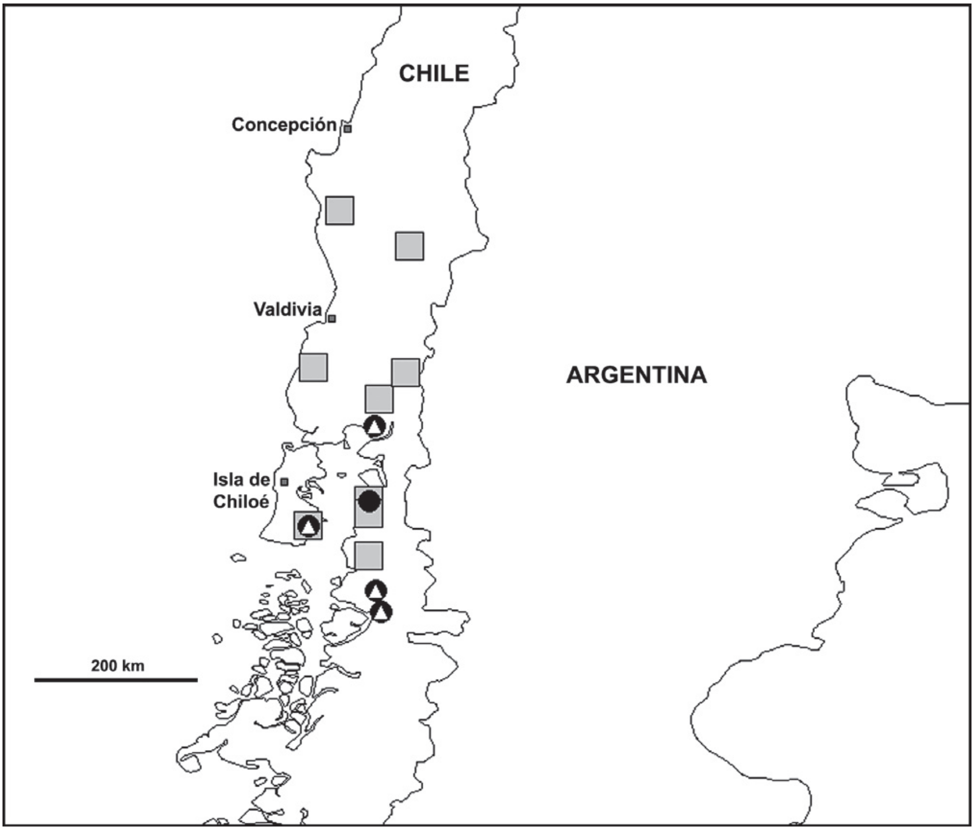


Figure 212. Map of southern Chile, showing the recorded distributions of *Tricellina gertschi* (Forster & Platnick) (grey squares), *Normplatnicka chilensis* sp. n. (black circles) and *Eperiella alsophila* sp. n. (open triangles).

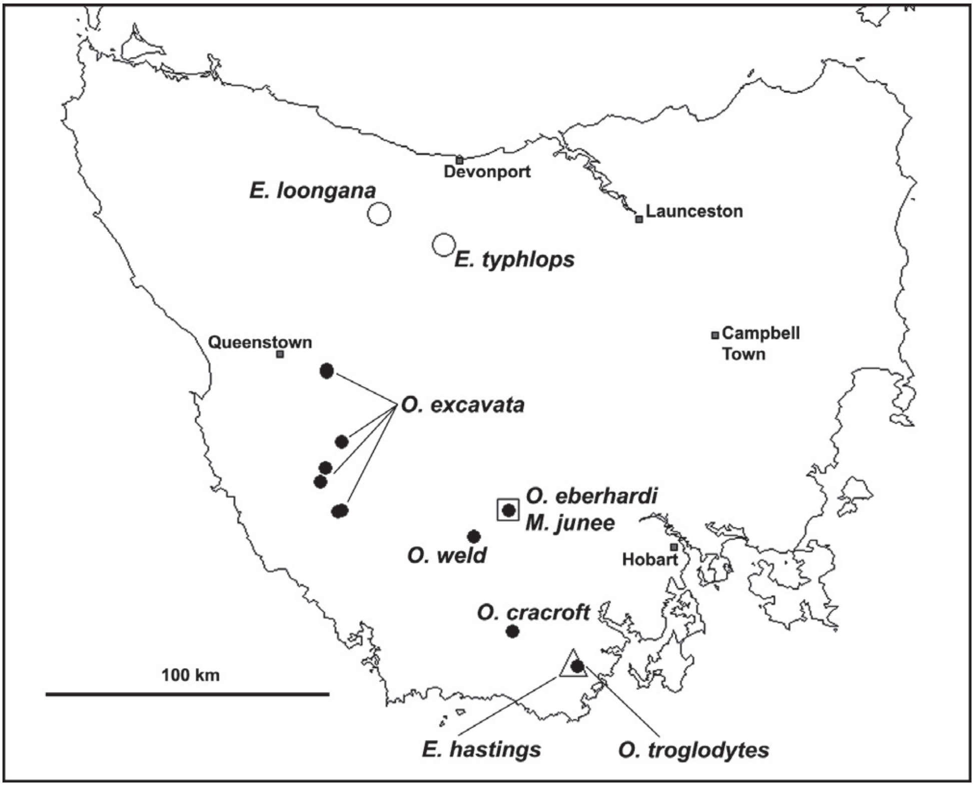


Figure 213. Map of Tasmania, showing the recorded distributions of troglobitic Micropholcommatidae of the genera *Olgania* (black circles), *Epigastrina* (open circles), *Micropholcomma* (open square) and *Eperiella* (open triangle).

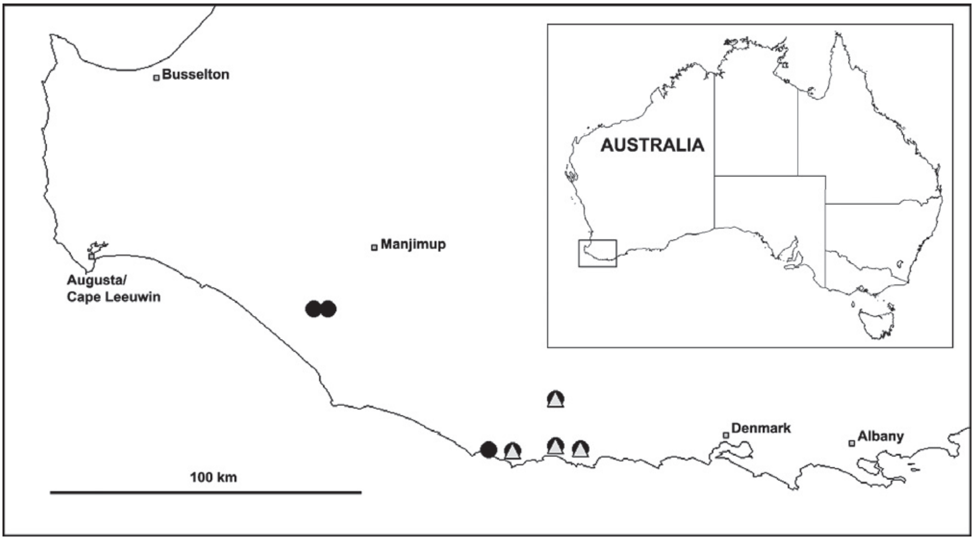


Figure 214. Map of south-western Western Australia, showing the recorded distributions of *Normplatnicka barrettae* sp. n. (black circles) and *Austropholcomma walpole* sp. n. (grey triangles).

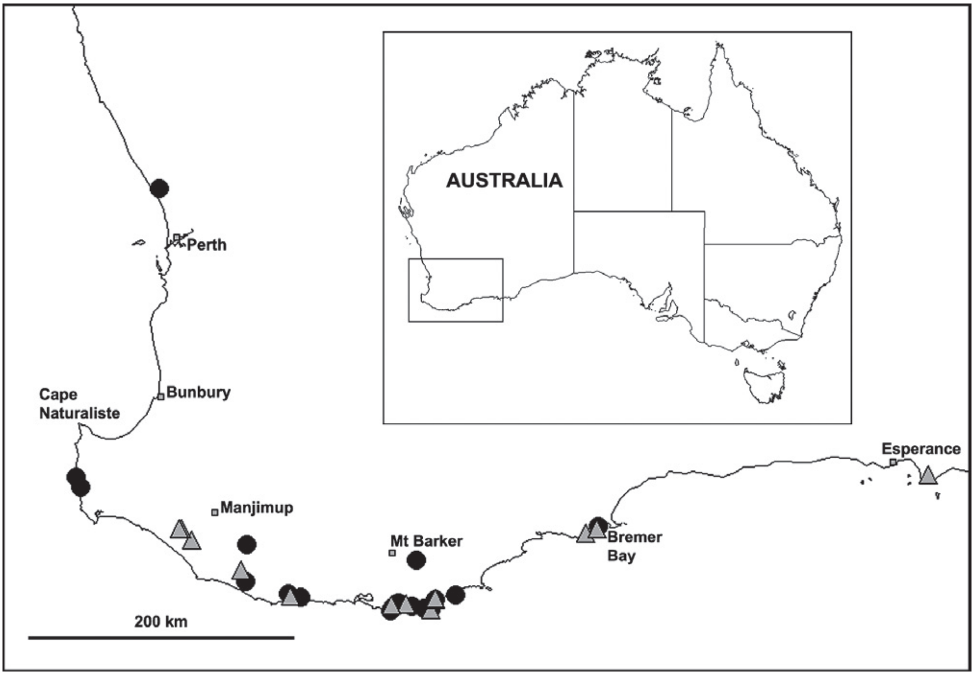


Figure 215. Map of south-western Western Australia, showing the recorded distributions of *Taphiassa robertsi* sp. n. (black circles) and *Taphiassa globosa* sp. n. (grey triangles).

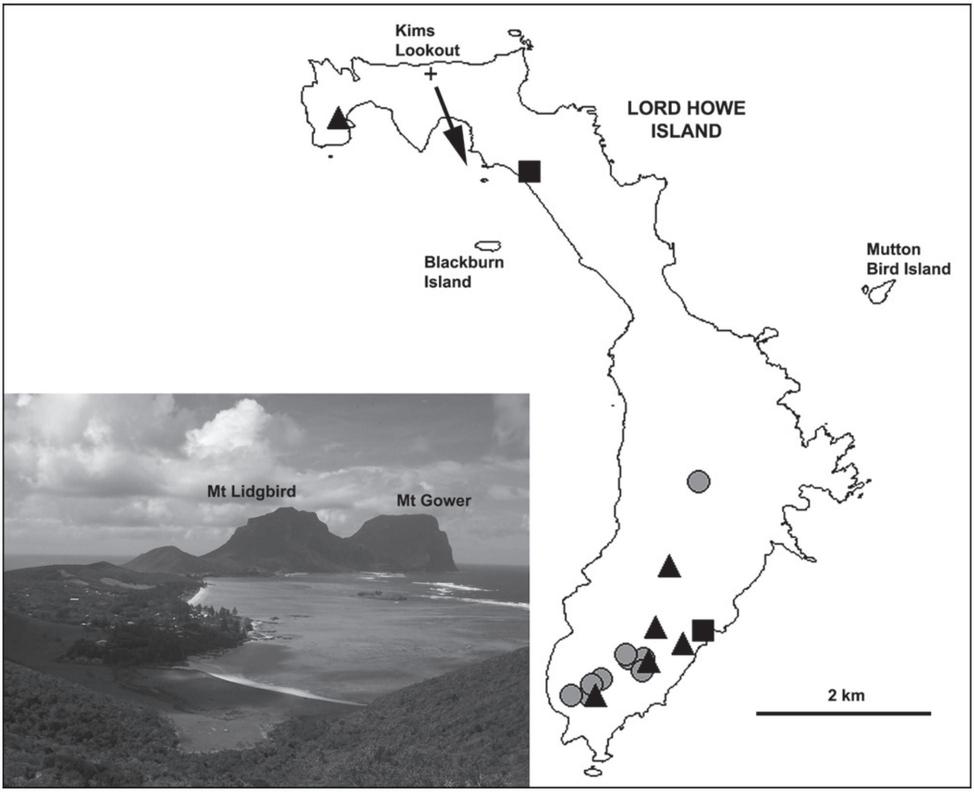


Figure 216. Map of Lord Howe Island, western Pacific Ocean, showing the recorded distributions of *Patelliella adusta* sp. n. (grey circles), *Taphiassa magna* sp. n. (black triangles) and *Rayforstia lordhowensis* sp. n. (black squares). Inset is a photograph of the island looking south-east from Kims Lookout (direction denoted by arrow), highlighting the mountainous topography of the island.

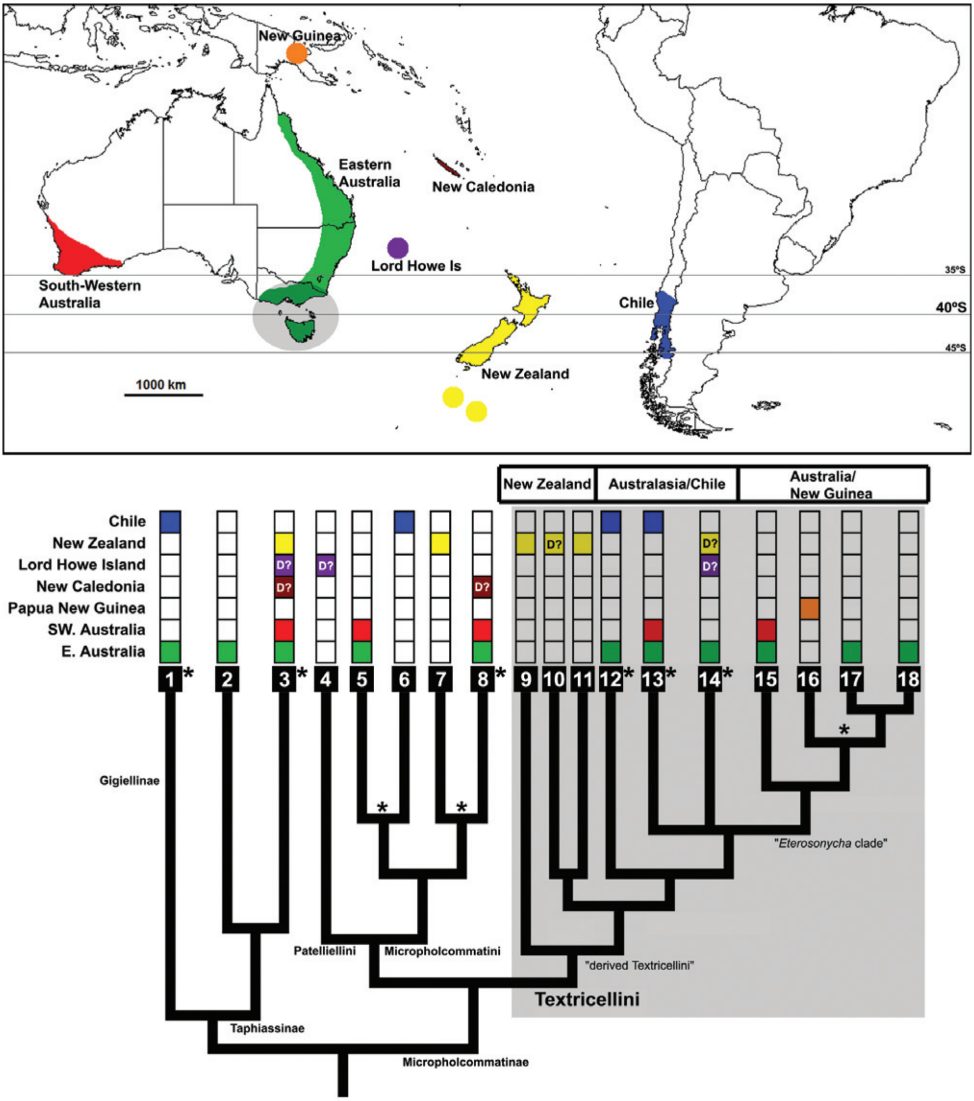


Figure 217. Distribution map and summary area cladogram for the 18 genera of Micropholcommatidae, colour-coded according to different regions in Australasia and South America. Highlighted (*) clades indicate taxa with potentially vicariant distributions on Gondwanan landmasses, and 'D?' indicates distributions which may be explained by dispersal. Note especially the shaded tribe Textricellini, which presents a phylogenetic hypothesis largely congruent with the Mesozoic break-up of eastern Gondwana, and the south-eastern Australian 'epicentre' of diversity, where 11 genera of Micropholcommatidae can be found. Numbered lineage labels are as follows: **1** *Gigiella* **2** *Olgania* **3** *Taphiassa* **4** *Patelliella* **5** *Austropholcomma* **6** *Tricellina* **7** *Pua* **8** *Micropholcomma* **9** *Tinytrella* **10** *Algidiella* **11** *Taliniella* **12** *Eperiella* **13** *Normplatnicka* **14** *Rayforstia* **15** *Raveniella* **16** *Guiniella* **17** *Epigastrina* **18** *Eterosonycha*.

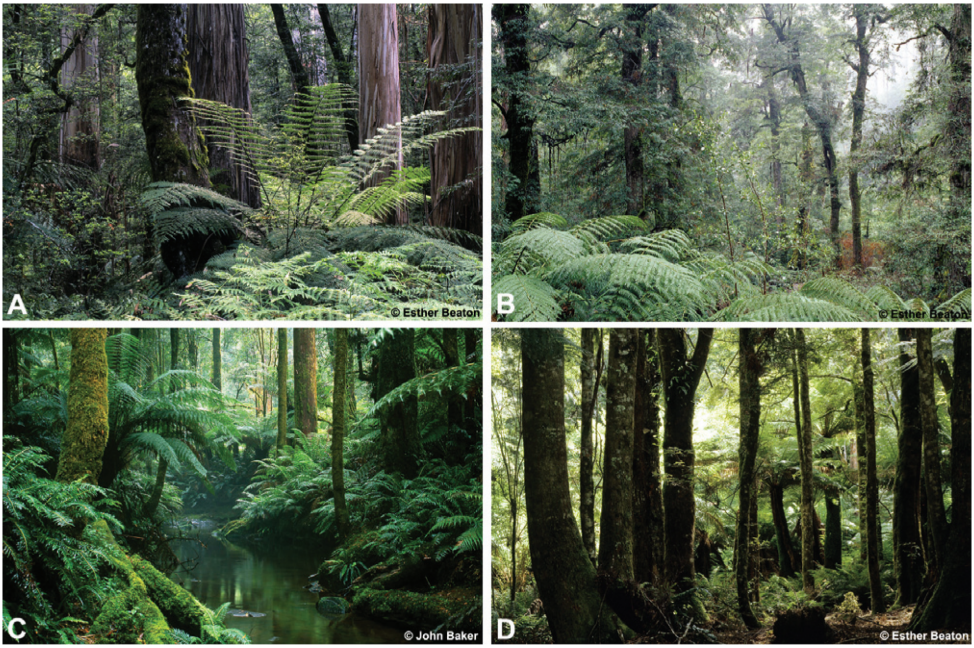


Figure 218. Habitat images of the Yarra Ranges, Victoria (top), Otway Ranges, Victoria (bottom-left), and Tasmania (bottom-right) – the south-eastern Australian 'epicentre' of micropholcommatid diversity. All three subfamilies and 11 micropholcommatid genera occur in these mesic, southern forests, where sub-alpine, tall Mountain Ash, wet sclerophyll, Southern Beech and cool temperate rainforests combine. **A** Mountain Ash and Southern Beech forest near Watts River, Central Highlands, Victoria **B** Southern Beech forest at Mt Donna Buang, Yarra Ranges National Park, Victoria **C** cool-temperate rainforest near Beauchamp Falls, Otway Ranges, Victoria **D** Southern Beech forest, north-eastern Tasmania. Image (C) copyright John P. Baker, with permission. All other images copyright Esther Beaton, with permission.

Figure 219. Entrance to *Thylacine Lair* cave (BH-203) in the Bubs Hill karst of western Tasmania, home to a population of *Olgania excavata* Hickman. Tasmanian caves are home three genera and at least nine species of troglobitic Micropholcommatidae. Image by M. Rix.

Figure 220. Lord Howe Island, western Pacific Ocean – home to three genera of Micropholcommatidae, including *Patelliella adusta* sp. n., the only known member of the tribe Patelliellini. **A** view across Lord Howe Island from Kims Lookout, showing southern mountains in the distance **B** Mount Lidgbird and Mount Gower from Transit Hill, showing cloud-covered summits **C–E** fern- and moss-covered vegetation on the summit of Mount Gower, habitat of *P. adusta* **F** lowland kentia palm rainforest at Stephens Reserve, habitat of *Rayforstia lordhowensis* sp. n. Images by M. Rix.

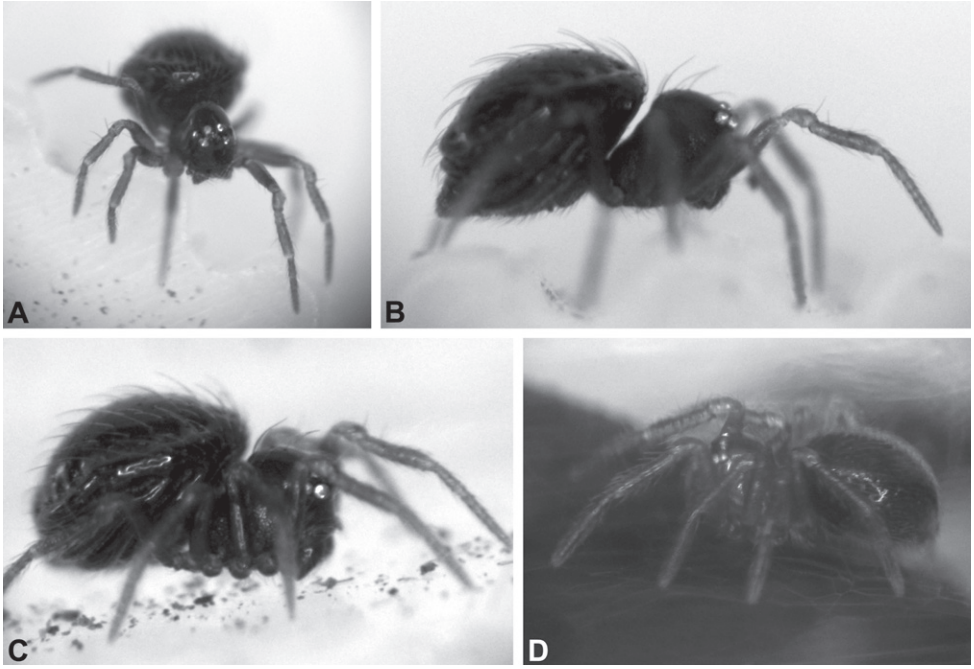


Figure 221. Live Micropholcommatini and Textricellini, photographed in captivity: **A–C** undescribed female *Micropholcomma* sp. from Bold Park, Perth (WAM) **D** female *Raveniella peckorum* sp. n. from Bold Park, Perth (WAM T94363), sitting on a small platform sheet-web. Images by M. Rix.

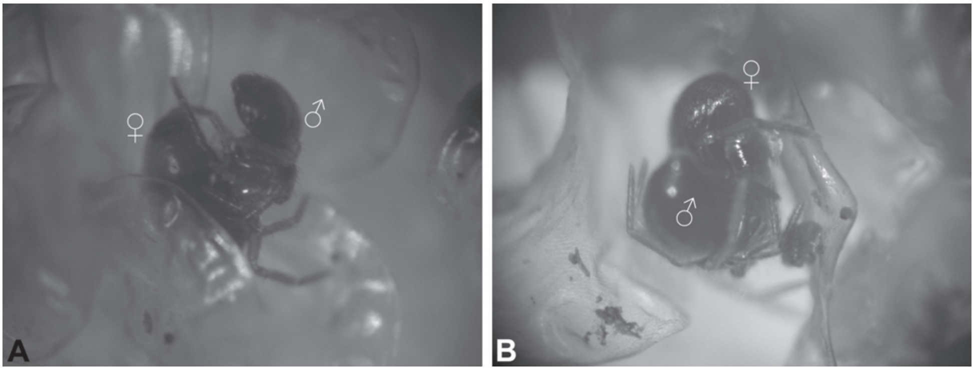


Figure 222. Mating pair of *Eterosonycha alpina* Butler from Cuckoo Falls, Tasmania (WAM T94106), photographed in captivity. The female is walking on leaflets of moss, while the male hangs, suspended and motionless, from his inserted left pedipalp. Images by M. Rix.

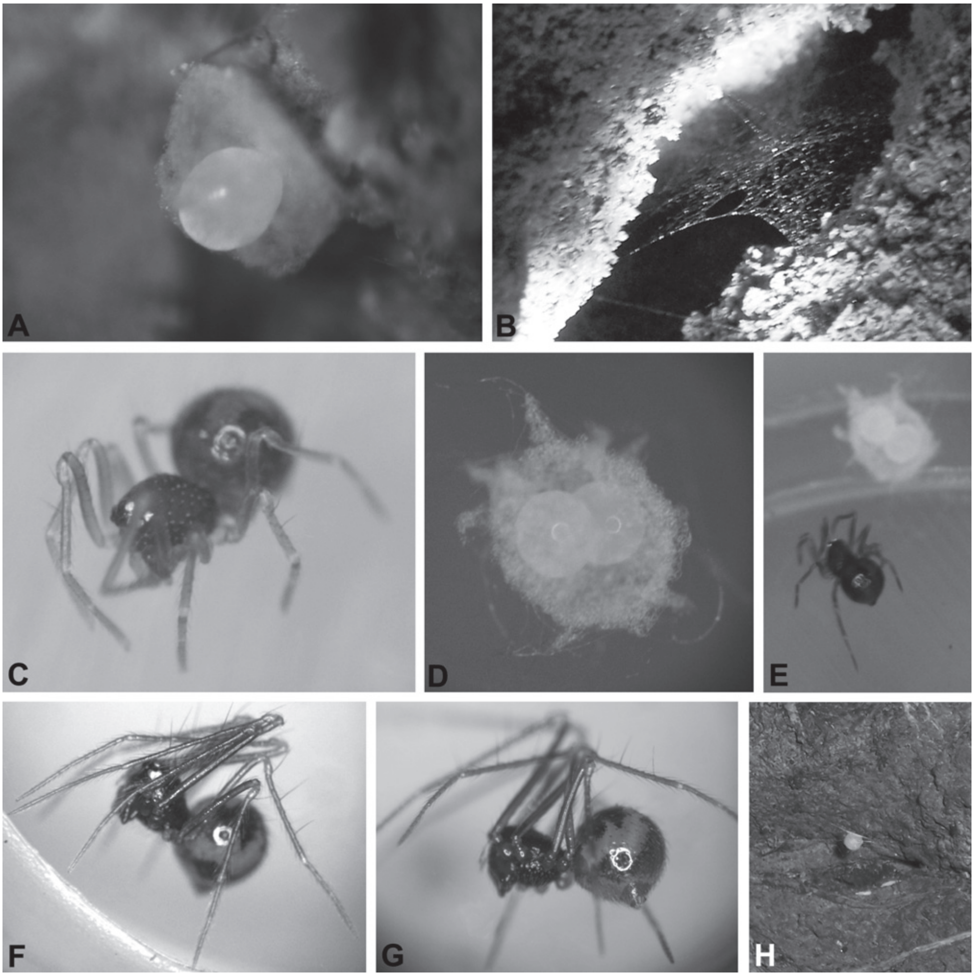


Figure 223. Biology of Taphiassinae. **A–B** *Olgania excavata* Hickman from the Bubs Hill karst, Tasmania: **A** egg sac (removed from web) and single egg **B** sheet-web, suspended on wall of cave at *Thylacine Lair*, Bubs Hill karst. **C–E** *Taphiassa globosa* sp. n. from Cape Le Grand National Park, Western Australia (WAM T94488): **C** live female photographed in captivity 'cleaning' leg I **D** egg sac and two eggs, laid in captivity **E** live female with egg sac. **F–G** live female *T. robertsi* sp. n. from D'Entrecasteaux National Park, Western Australia (WAM T94528), photographed in captivity. **H** possible egg sac of *T. magna* sp. n., photographed suspended on a moist, mossy rock wall near Goathouse Cave, Mount Lidgbird, Lord Howe Island. Images by M. Rix.

Appendix V: Index of new synonymies

Appendix VI: Index of new combinations

Appendix VII: Index of valid taxon names

Adapted from Ramírez (2003)